8.5 Local Agency Comments and Responses

8.5.1 City of Marina

City of Marina – Main Letter
City of Marina – Jacobson James & Associates Letter

8.5.2 Marina Coast Water District (MCWD)

MCWD – Main Letter
MCWD – Hopkins Groundwater Consultants (HGC)
MCWD – GeoHydros
MCWD – EKI
MCWD – IntakeWorks
MCWD – Hopkins Groundwater Consultants2 (HGC2)
MCWD – EKI2

8.5.3 Monterey Bay Air Resources District (MBARD)

8.5.4 Monterey County Resource Management Agency (MCRMA)

8.5.5 Monterey County Water Resources Agency (MCWRA)

8.5.6 Monterey Peninsula Regional Water Authority (MPRWA)

8.5.7 Monterey Peninsula Water Management District (MPWMD)

8.5.8 Monterey Regional Waste Management District (MRWMD

8.5.9 Monterey Regional Water Pollution Control Agency (MRWPCA)

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Re: Draft Environmental Impact Report/Environmental Impact Statement Monterey Peninsula Water Supply Project

Dear Ms. Borak and Ms. Grimmer:

We represent the City of Marina, California ("Marina" or "the City") and hereby provide written comments on Marina's behalf regarding the Draft Environmental Impact Report/Environmental Impact Statement ("Draft EIR/EIS") issued in January 2017 for the Monterey Peninsula Water Supply Project ("Project") proposed by California American Water Company ("CalAm"). Please ensure that these comments are made a part of the administrative record for all state and federal proceedings relating to the Project.

Marina is providing these comments in several different capacities. First, it is a Responsible Agency for the Project under the California Environmental Quality Act ("CEQA") because it will be considering the Coastal Development Permit for the Project in accordance with the California Coastal Act. Cal. Pub. Res. Code §§ 30000, *et seq*. In this capacity, the City will be focusing on the adequacy of the Draft EIR/EIS for this purpose.[1] Second, the City is

[1] The scope of the City's inquiry as a Responsible Agency for a Coastal Development Permit is extremely broad. It includes, but is not limited to, the analysis of potential individual and cumulative impacts to, and mitigation measures for, environmentally sensitive habitat areas; marine/ocean resources and species (including the biological productivity and quality of coastal waters); special land habitat areas and wetlands; archaeological and cultural resources; preventing depletion of groundwater supplies; scenic and visual qualities; erosion and geologic

providing CEQA comments on behalf of its citizens relating to the full range of environmental issues that affect Marina. Third, the City is providing a full set of comments on the adequacy of the Draft EIR/EIS under the National Environmental Policy Act ("NEPA"). The City has organized its comments to track the numbering of sections in the Draft EIR/EIS.

Although the California Public Utilities Commission ("CPUC") and Monterey Bay National Marine Sanctuary ("MBNMS") are being requested to issue permits and/or authorizations for different aspects of the Project, it is important to note that the CPUC and MBNMS each has a legal obligation to assess the full environmental impacts, mitigation measures and alternatives for the entire Project, not just those portions of the Project that are under their respective permitting jurisdiction. Thus, for example, since MBMNS has determined that this is a "major federal action significantly affecting the quality of the human environment" under NEPA, the Project has been federalized for purposes of environmental review, and NEPA review of the entire Project for all federal agencies is mandated.

These written comments are the product of a joint effort by Farella Braun + Martel, Emily Creel and her team at SWCA Environmental Consultants, and City staff. Most of the technical analysis in this letter has been prepared by SWCA and the legal analysis has been provided by Farella.

This letter also transmits to CPUC/MBNMS and relies upon the expert hydrogeologic Memorandum prepared for Marina by Dr. Robert Abrams, a principal hydrogeologist with Jacobson James & Associates, Inc., that is enclosed herewith as Appendix 1. We also enclose two sets of slides that were presented and submitted to the Marina City Council at its meeting on February 7, 2017: (1) Marina Coast Water District presented its "Marina Coast Water District Water Supply Planning Overview" enclosed as Appendix 2; and (2) Stanford Professor Rosemary Knight and two colleagues offered a presentation entitled "The Acquisition of Geophysical Data Along the Monterey Coast" enclosed as Appendix 3.

INTRODUCTION AND SUMMARY

The current Project is the latest in a sequence of proposals by CalAm to develop a desalination plant and associated facilities to supply water to areas that it serves on the Monterey Peninsula. As these proposals have evolved over time and are now focused on a large project located in Marina, the City has become increasingly concerned about the potentially significant and irreversible impacts of the Project on Marina's water supply, water quality, sensitive coastal environment and citizens. Now that the City has had an opportunity to review the Draft EIR/EIS issued in January 2017, it has become clear that the potentially serious, significant and long-term

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instability; and public access. Cal. Pub. Res. Code §§ 30116, 30231, 30240, 30251, 30252 and 30253. The City must also examine, for coastal-dependent facilities (if this provision is applicable), whether alternative locations are infeasible or more environmentally damaging, the adverse impacts on public welfare, and ensure that adverse environmental impacts are mitigated to the maximum extent feasible. *Id*. § 30260. The Legislature has further specified that all public agencies administering the Coastal Act must apply environmental justice principles regarding the siting and impacts of projects. *Id*. § 30013; Cal. Gov't Code § 65040.12.

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adverse environmental impacts of the Project on the City have not been adequately studied, evaluated or mitigated, and a proper evaluation of the Project alternatives has been undermined by the legal deficiencies in the individual environmental analyses.

Marina is a vibrant, racially diverse community located along the central coast of California. It has special and unique natural resources, including its coastal ecosystems, and values its desirable quality of life. It is officially recognized as a minority community under federal, state and local laws and programs. The City is currently 100 percent dependent for its water supply on groundwater within the Salinas Valley Groundwater Basin. Marina's continued use of and access to this supply is essential to its continued economic vitality.

Marina's comments on the Draft EIR/EIS are set forth in the chapters below. In brief, the Draft EIR/EIS is legally inadequate in many critical subject areas and fails to meet the requirements of CEQA and NEPA. The Draft EIR/EIS also falls far short of meeting the adequacy requirements for the City's use of it as a Responsible Agency. Cal. Code Regs. tit. 14, § 15096 ("CEQA Guidelines"). These shortcomings include the following:

- **Inflated Water Demand:** The Draft EIR/EIS contains a bloated and unsupported water demand "need" for the Project of 10,750 acre-feet per year ("afy"), which by itself exceeds the total water deliveries by CalAm to its customers in each of 2014 and 2015. With the Project, CalAm would have a future water supply of over 16,000 afy, of which only about 9,500 afy is for currently existing demand. The remaining 7,000 afy is for uncertain or unspecified future uses. The Draft EIR/EIS fails to critically analyze and downwardly adjust this "need." CalAm's true "need" for new water is actually much less and could be supplied by other projects. These deficiencies in the Project Objectives and Purpose and Need Statement also improperly skew the environmental impact and alternatives analyses, rendering them legally inadequate. (*See* chapters 1, 2.1-2.5, and 5.)

- **No Water Rights:** It is undisputed that the Project (whose sole purpose is to deliver water to customers) does not have water rights to extract and export the groundwater it admits it will pump from the Salinas Valley Groundwater Basin, which is in a "critical overdraft" condition. Although the Draft EIR/EIS attempts to construct a legal argument that CalAm may be able to establish such water rights in the future and therefore make this a "feasible" project, this is a contrived argument based on an implausible series of future events. Indeed, since there is no "permit" process for CalAm to obtain such rights, any future attempt to extract water and establish rights will certainly be tied up in litigation or other proceedings and very likely will never ripen into actual water rights. This is a "showstopper" issue – the CPUC/MBNMS should not allow the Project to move forward until CalAm can demonstrate that it actually holds rights to extract this groundwater. (*See* chapter 2.6.)

- **SGMA Conflicts:** In 2014, the California Legislature enacted the Sustainable Groundwater Management Act, which adopted a stringent and comprehensive management scheme for California groundwater. The 180/400 Foot Aquifer Subbasin, which the Project would use for groundwater extractions, is one of only 21 California groundwater basins that has been designated as "critically overdrafted" and it is receiving expedited management treatment. The anticipated implementation of this law makes it even less likely that any Project groundwater withdrawals for export can or will occur. The Draft EIR/EIS's failure to analyze this issue is a critical inadequacy. (*See* chapter 2.6.)

- **Direct Legal Prohibitions:** The extraction and/or export of Basin groundwater is directly prohibited by one state law (the Monterey County Water Resources Agency Act), one local ordinance (MCWRA Ordinance No. 3709) and one annexation agreement applicable to the CEMEX Property signed by parties including the City. The Draft EIR/EIS asserts, based on an untested legal argument with no textual support and no analysis, that the Project "would be consistent" with each law and agreement. This unsupported conclusion defies the facts and is legally inadequate under CEQA and NEPA. (*See* chapter 2.6.)

- **Inadequate Project Description:** The Draft EIR/EIS incorrectly and misleadingly identifies the source of the Project's water. The document repeatedly asserts that the source is "seawater from beneath the ocean floor," but the facts reflect that 75-93 percent of the source water will be groundwater in aquifers under land within Marina rather than seawater under MBNMS jurisdiction. The Draft EIR/EIS also fails to disclose or discuss, in either its intake alternative study or its main text, that the proposed slant wells are a risky and unproven technology with no operational track record. Indeed, it appears that no commercial desalination plant in the world uses such wells. The Draft EIR/EIS is inadequate for failing to evaluate in its alternative selection process or disclose to the public the risky and unproven nature of this technology. (*See* chapter 3.0.)

- **Wrong Environmental Baseline:** The Draft EIR/EIS incorrectly chose 2012 environmental conditions as the "baseline" date for environmental analysis. In fact, the environmental baseline should be August 2015 or later for both NEPA and CEQA purposes because that is the time when the Federal Notice of Intent to prepare an EIS was first announced and because of the significant Project changes that have occurred after 2012. (*See* chapter 4.1.)

- **Anticipated Groundwater Impacts:** The best available scientific information indicates that the Project's subsurface slant wells could significantly and adversely diminish the available water supply and water storage in Basin aquifers and cause or exacerbate water quality problems in Basin groundwater. However, instead of acknowledging and addressing these very important issues, the Draft

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EIR/EIS erroneously concludes that the extraction of groundwater by the slant wells will have no significant impact on the groundwater basin. These findings lack substantial evidence in the record to support them. (*See* chapter 4.4.)

- **<u>Inadequate Modeling:</u>** As described in Dr. Abrams' technical report, the modeling that the Draft EIR/EIS relies upon to support its "no significance" finding for groundwater impacts is not state-of-the-art and lacks the capability to credibly evaluate the Project's likely range of groundwater impacts. Among other flaws, it fails to analyze impacts to the 900 Foot Aquifer, fails to evaluate the downward vertical migration of seawater into lower aquifers, and fails to incorporate the existing two-dimensional geophysical studies of this coastline by Stanford Professor Rosemary Knight and her colleagues that delineate the pathways between groundwater aquifers and downward seawater migration between them. (*See* chapter 4.4.)

- **<u>Brine Discharge Impacts:</u>** The Draft EIR/EIS fails to adequately assess the environmental impacts from the discharge of 14 million gallons per day of high-salinity brine through an aging outfall diffuser into this diverse and sensitive marine sanctuary environment. These discharges may cause extremely serious impacts, particularly during the six-month period each year when they would not be mixed with the sewage treatment plant effluent. No adequate mitigation measures are proposed for any such impacts. (*See* chapter 4.5.)

- **<u>Coastal Ecosystem Impacts:</u>** The Draft EIR/EIS finds that the Project will have significant impacts on Marina's coastal ecosystem and observes that development of the slant wells, new desalinated water pipeline, transmission main and staging areas would be located in Primary and Secondary Habitat areas (which also constitute Environmentally Sensitive Habitat Areas ("ESHA") under the Coastal Act) where this type of development is directly prohibited (with no exception) by Marina's Local Coastal Plan. However, the Draft EIR/EIS fails to explain credibly how this prohibition will not apply or how it will be reconciled. It proposes only one mitigation measure, which essentially defers to a later time the formulation of a plan for compensatory and other mitigation, which constitutes improper deferral of mitigation under CEQA. (*See* chapter 4.6.)

- **<u>Greenhouse Gas Emissions</u>**: The Draft EIR/EIS concedes that, because of its highly intensive use of electricity for long-term operation, the Project will have significant effects on the environment and climate change and that these impacts are "inconsistent" with climate change laws and an Executive Order by Governor Brown. However, the Draft EIR/EIS fails to propose a legally adequate set of mitigation measures in contravention of CEQA or recent case law decisions. Instead of proposing feasible mitigation, the document immediately jumps to the unjustified conclusion that the impact is "significant and unavoidable," thereby attempting to avoid the requirement to propose mitigation. (*See* chapter 4.11.)

- **<u>Significant Historic Resource Impact:</u>** The Draft EIR/EIS failed to address the Project's impacts to the Lapis Sand Mining Plant (confirmed in June 2014 to be eligible for listing in the National Register) and the Lapis Siding. The document's assertion that no such historic structures are contained within the Project's Area of Potential Effect is untrue and these significant impacts must be addressed and recirculated for public comment in a new Draft EIR/EIS. (*See* chapter 4.15.)

- **<u>Deficient Environmental Justice Analysis:</u>** The NEPA environmental justice analysis and corresponding CEQA analysis as applied to Marina are fatally deficient. In fact, Marina's minority community and its environment will be suffering a wide array of significant adverse environmental impacts, while substantial amounts of its groundwater supply would be exported out of its groundwater basin to customers on the Monterey Peninsula. The Draft EIR/EIS contravenes applicable federal and state law and guidance by concluding that these impacts are less than significant. (*See* chapter 4.20.)

- **<u>Inadequate Alternatives Analysis:</u>** The Draft EIR/EIS alternatives analysis is undermined by its wholesale incorporation of a flawed Project Objective/Purpose and Need Statement, deficient environmental analyses, and inadequate mitigation measures. In fact, an accurate comparison of alternatives is impossible at this point. The Draft EIR/EIS concludes, without substantial evidence, that Alternative 5a (a 6.4 mgd plant at the CEMEX site paired with the Pure Water Monterey Groundwater Replenishment Project) is the environmentally superior/preferred alternative. In fact, a wider set of alternatives should have been selected, including a significantly smaller project that will meet the actual Project "need" and mitigate for significant Project impacts. If a scientifically credible analysis had been performed, several other alternatives, including the Potrero Road alternative, likely would have been designated as the environmentally superior/preferred alternative. (*See* chapter 5.0.)

In view of the key missing information, faulty Project Objective/Purpose and Need statements, inadequate analysis of multiple environmental impacts, deficient mitigation measures, and resulting inability to properly select and evaluate alternatives, this Draft EIR/EIS must be completely redone and recirculated for public review and comment. Each of the four specific criteria for recirculation in CEQA Guidelines § 15088.5(a) is met here, including that "the draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1130 (1993); *Mountain Lion Coal. v. Fish and Game Comm'n*, 214 Cal. App. 3d 1043 (1989).

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EXECUTIVE SUMMARY

The Draft EIR/EIS's Executive Summary contains a synopsis of the analyses and conclusions from other sections of the Draft EIR/EIS. The City incorporates herein by reference each of its written comments herein regarding those Draft EIR/EIS sections.

The Draft EIR/EIS does not include a Mitigation Monitoring and Reporting Program ("MMRP"). An MMRP identifies the method, timing, and the party responsible for mitigation implementation and verification. The Draft EIR/EIS identified a wide range of potentially significant effects that could occur throughout an extended area and affect numerous agencies, jurisdictions, and other interested parties and established a mitigation program to reduce or avoid significant effects. Many of the significant effects of the Project would occur within the City, yet many of the identified mitigation measures lack sufficient detail to clearly establish the feasibility of implementation and methods in which measures would be implemented. The Draft EIR/EIS should have included the MMRP to provide Responsible Agencies and other interested parties with the opportunity to comment on it. Because of the gravity of the potential effects of the Project, the Draft EIR/EIS should be revised to include the MMRP and be recirculated to allow for Responsible Agency and stakeholder comment.

Marina-1

CHAPTER 1 – INTRODUCTION AND BACKGROUND

CEQA requires that the CPUC prepare an accurate and clearly written statement of the Project's objectives. CEQA Guidelines § 15124(b). This statement is particularly necessary when evaluating mitigation measures and alternatives for the Project. NEPA correspondingly requires that an EIS "specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. § 1502.13. NOAA's NEPA Compliance Manual (2017) makes clear that the "decision maker" (MBNMS here) "must clearly identify the purpose and need for the action," that "the 'need' is the underlying problem that the proposed action addresses," and that "a carefully crafted purpose and need statement can be an effective tool in managing the scope of the NEPA analysis." It is important that the agencies carefully use their own judgment in defining the project objectives and needs, rather than simply adopting the "objective" or "need" statements provided by the applicant.

Marina-2

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The Project Objectives in chapter 1.3.1 (page 1-5) of the Draft EIR/EIS do not meet these requirements. They include a series of purported objectives – including "sufficient water supplies to serve existing vacant lots of record," providing water supplies so CalAm can "pay back the Seaside Groundwater Basin" with water for 25 years, and to "provide sufficient conveyance capacity to accommodate supplemental water supplies that may be developed at some point in the future to meet build out demand" by unspecified future customers – that appear to merely represent a "wish list" of vague objectives to justify building a Project that will provide CalAm with large amounts of additional water that it does not truly need.

Marina-2 cont.

Although the Project seeks to extract Salinas Valley Groundwater Basin water to produce water far beyond its existing water needs, the CPUC and MBNMS are required to scrutinize and apply a more rigorous standard when evaluating and stating the true amount of Project water needs. The failure to do so here has resulted in a request for water that dramatically exceeds the Project's actual needs as detailed in the City's comments on chapters 2.1 – 2.5 herein. This deficiency has resulted in an unnecessarily inflated water demand that is causing a wide array of significant harmful effects. The CPUC and MBNMS should omit these three project objectives and define the true objectives and needs of the Project.

CHAPTERS 2.1 TO 2.5 – WATER DEMAND AND SUPPLIES

The concerns that the City expressed for Draft EIR/EIS chapter 1 herein become particularly important given the information in chapters 2.1 to 2.5. It appears that the Project "water demand" greatly exceeds CalAm's actual needs, which unnecessarily intensifies all of the Project's environmental impacts and undermines the formulation and comparison of Project alternatives.

These chapters disclose that the proposed desalination Project (9.6 mgd size) is expected to produce 10,750 acre-feet per year ("afy") of water for delivery to CalAm customers. This annual amount exceeds CalAm's total water deliveries to its entire network of customers in both 2014 (10,250 afy) and 2015 (9,545 afy). No figures are provided for 2016; these should be added. In addition to this requested annual amount from the Project, CalAm expects to receive a total of between 5,544 and 6,244 afy of additional water every year in the future, primarily from the Carmel River, Seaside Basin and ASR (even after the anticipated litigations and restrictions are imposed), resulting in a total of between 16,294 and 16,911 afy of CalAm water supply each year. *See* Table 2-4.

Marina-3

The Draft EIR/EIS analysis of water demand is legally inadequate under CEQA and NEPA because:

- The Draft EIR/EIS has selected the wrong existing annual water demand figure based on the information provided by CalAm. Table 2-2 reflects that CalAm's annual service area demand has declined consistently over a ten-year period from 14,176 afy in 2006 to 9,545 afy in 2015. This steady decline is the result of many factors including permanent water conservation measures. There is no reason to believe that these annual declines will not continue in the future. Nonetheless,

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CalAm has proposed and the CPUC has apparently accepted the ten-year average of these deliveries, or 12,351 afy, as the appropriate "existing demand" number. In fact, this figure is factually unsupported and should be no higher than 9,545 afy.

- CalAm then adds to its "water demand" request a total of 2,005 afy for "rebound of the Monterey Peninsula tourist industry," water for paper "legal lots" that do not now use water, and potential Pebble Beach water entitlements. The Draft EIR/EIS fails to adequately scrutinize these amounts. The tourist industry rebounded strongly already in 2014-15 (*see* Dean Runyon Associates Study, 2016, discussed on page 6-16), yet CalAm had its lowest customer demand in the last ten years in 2014 and 2015. Thus, this "rebound demand" number is simply not credible. The other two components are also not firm demand amounts, but rather are based merely on future speculation.

- Finally, CalAm confirms that the Project will supply it with an extra amount of between 2,019 and 2,719 afy of water each year that it plans to apply to unspecified "other uses." *See* Table 2-4. There is no demand at all for this water. This surplus and unallocated quantity is obviously not part of CalAm's actual "need" for the Project and should therefore also be subtracted from the asserted water demand for this Project.

Marina-3 cont.

In sum, the Draft EIR/EIS analysis of Project water demand is scientifically and legally inadequate. CalAm does not "need" 10,750 afy from the Project or a total of over 16,000 afy of water supply when its existing total service area demand is 9,545 afy and steadily declining. Since by its own calculations, CalAm will receive up to 6,244 afy of water from other sources in future years, its apparent true demand and need from the Project or other water sources is at most in the range of 3,000 afy.

This incorrect water demand analysis also creates serious water rights and water supply issues because of the overdrafted condition of the Basin and the water supply needs of the Basin's current legal users. The California Constitution provides that "the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare." Cal. Const. art. X, § 2. Thus, an attempted export of groundwater that is for a purpose in excess of current needs, and particularly for unspecified or projected future needs, is a prohibited "waste" of groundwater, particularly in an overdrafted basin in which this new user would have the lowest priority rights.

Marina-4

This deficient supply/demand analysis forms the basis of the CEQA project objectives and federal "need" statement defines the nature, intensity and scope of the environmental impacts in many important subject areas, ranging from the physical impacts to the sensitive coastal ecosystem, to the major potential impacts to the Basin aquifers, to the volume and impacts of the brine discharge. It also drastically and unreasonably limits the selection of potential CEQA/NEPA alternatives as summarized in our comments for chapter 5 herein.

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Moreover, as discussed in the next section, California water law bars any groundwater extractions that would cause potentially far-reaching water supply and water quality impacts to Marina's groundwater basin to supply CalAm with 7,000 afy of water that it does not currently need.

Marina-4 cont.

CHAPTER 2.6 – WATER RIGHTS

A. Introduction

At the outset, we disagree with the legal contention in the Draft EIR/EIS that water rights is not an appropriate topic for a NEPA EIS or CEQA EIR and only needs to be addressed here in the context of Project "feasibility." Although the Draft EIS/EIR acknowledges that an EIR for a "large scale land use development project" should "show a reasonable likelihood that water will be available from an identified source," it attempts to argue that the cases mandating these legal requirements arise in a different context and should not apply to a water supply project itself. *Id.* at 2-13.

In fact, it is absolutely essential that a water supply project demonstrate that it has a firm right to obtain water from an identified source, particularly since the sole purpose of such a project is to procure water for customers. In many cases under CEQA, courts have invalidated EIRs in which the document does not adequately analyze a project's water rights and sources. *See, e.g., Santa Clarita Org. for Planning the Env't v. Cty. of Los Angeles*, 106 Cal. App. 4th 715, 723 (2003) ("Instead of undertaking a serious and detailed analysis of SWP supplies, the EIR does little more than dismiss project opponents' concerns about water supply. Water is too important to receive such cursory treatment."); *Save Our Peninsula Comm. v. Monterey Cty. Bd. of Supervisors*, 87 Cal. App. 4th 99, 131-33 (2001) (the failure to discuss asserted riparian rights required invalidation of the EIR); *Cadiz Land Co. v. Rail Cycle, LP*, 83 Cal. App. 4th 74, 92-93 (2000) (EIR failed to "discuss the volume of the aquifer groundwater, particularly potable water, which is a valuable and relatively scarce resource in the region" and other water supply information was needed because "an informed decision cannot be made as to whether it is worth taking the risk of subjecting a valuable water source to contamination.").

Marina-5

The Draft EIR/EIS fails to appreciate the tremendous public concern regarding the Project's groundwater supply and contamination issues. It is surprising and inadequate that for a project of this size, complexity and expense, the Draft EIR/EIS would dismiss the importance of carefully addressing within the Draft EIR/EIS CalAm's lack of current water rights to appropriate and export water from the Basin. Instead, the authors apparently assume (in contravention of the best scientific information available and legal precedent) that such groundwater rights will be established in the future. However, in so assuming, the Draft EIR/EIS mistakenly ignores the vital public information role that the document must play on this topic. *See Laurel Heights Improvement Assn. v. Regents of the Univ. of Cal.*, 47 Cal.3d 376, 392 (1988); *California Oak Found. v. City of Santa Clarita*, 133 Cal. App. 4th 1219, 1237 (2005) ("'To facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions of opinions.' This standard is not met in the absence of a forthright discussion of a significant factor that could affect water supplies. The EIR is devoid of any such discussion.") (quoting *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agric. Ass'n*, 42 Cal. 3d 929, 935 (1986)).

The City of Marina currently obtains 100 percent of its potable water from the Salinas Valley Groundwater Basin ("SVGB" or "Basin"). In addition, many agricultural and other overlying users of water within the City rely on wells that extract water from the Basin. It is undisputed that the Basin has been in an overdraft condition for decades, which means that there currently is no surplus water available. Indeed, the Department of Water Resources recently designated the 180/400 Foot Aquifer as one of only 21 basins in California that are "critically overdrafted" for purposes of California's new Sustainable Groundwater Management Act. Accordingly, this groundwater aquifer is oversubscribed with no surplus water available for export outside the Basin.

Marina-5 cont.

The Marina Coast Water District ("MCWD") recently reported that Marina and other cities/areas that it serves have land use plans that reflect robust projected growth rates, with the population of the MCWD service area anticipated to double in the next 15-20 years. (*See* App. 2 herein.) Future landowners of current lots have overlying rights to the Basin groundwater and the City and MCWD also have corresponding overlying and appropriative pumping rights. And as summarized herein, the water that would be extracted by the slant wells is presumed by California law to be groundwater rather than seawater (see comments on Draft EIR/EIS Chapter 4.4). Thus, there is not now and likely will not for the foreseeable future be any groundwater in this Basin available for export.

It is also important to note that Marina is a recognized minority community under local, state and federal standards (see comments on Draft EIR/EIS chapter 4.20 herein). The City's access to a clean and sufficient water supply is very important to this community and any injury to or interference with this access will cause serious social and economic impacts to the City because of the prohibitive cost of obtaining any replacement water. In short, it appears that any use of groundwater by the Project could cause serious and unmitigatible impacts to Marina's water supply, water rights and groundwater quality.

B. The Project Does Not Now Have And May Not Be Able To Establish In The Future Any SVGB Appropriative Water Right.

Marina-6

It is undisputed that the Project has no existing rights to extract groundwater in the SVGB. It currently has no significant "overlying rights" to groundwater, no prescriptive groundwater rights and no appropriative right to groundwater. Draft EIR/EIS at 2-30 to 2-31. Rather, despite the critical overdraft condition of the Basin, CalAm apparently plans to just build its facilities and start pumping groundwater from the Basin on the theory that it will later be able to establish such appropriative rights.

In a surprising analysis in chapter 2.6, the Draft EIR/EIS takes the unwarranted position that CalAm will have the right to extract groundwater from the Basin. Although the authors and

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CPUC disclaim that they are providing a legal opinion regarding such water rights, and assert that they are only looking at the issue from the viewpoint of whether the Project is "feasible," the document then concludes that "there is a sufficient degree of likelihood" that CalAm will have necessary water rights (page 2-30). However, this speculation is based on a faulty reading of the *Final Review of California American Water Company's Monterey Peninsula Water Supply Project*, State Water Resources Control Board, July 31, 2013 ("State Board Report"), enclosed as Appendix B2 to the Draft EIR/EIS.

The Draft EIR/EIS has mischaracterized the findings of the State Board Report. The Report does not find that such water rights exist. In fact, as detailed below, the Report emphasizes the heavy proof burden that CalAm would have to carry to demonstrate that it would not be causing injury to current or future users of the Basin and to establish any water rights in this critically overdrafted basin. Since the Draft EIR/EIS has not accurately summarized the State Board Report, we will briefly do so here.

The State Board Report explains that there are three successive legal hurdles that CalAm would need to overcome to establish water rights. First, because CalAm proposes to "export" water from the Basin to non-overlying parcels in the Monterey region, CalAm would need to demonstrate that "the water is 'surplus' to existing uses or does not exceed the 'safe yield' of the affected basin." *Id.* at 35. However, since the groundwater in the Basin is in a critical overdraft condition, it is undisputed that there is not any "surplus water" available for export to non-overlying parcels. *Id*. Thus, the only conceivable way to export water is by establishing a new water source (discussed further below).

Marina-6 cont.

The second impediment to establishing water rights is that CalAm must demonstrate that the Project "will not harm or cause injury to any other legal user" of the groundwater. This "no injury" rule has been a bedrock principle of California surface water and groundwater law since the 1800s. It is codified in multiple sections of the Water Code with respect to surface waters. *See, e.g.*, Cal. Water Code § 1702 (a change to an appropriative water right requires a finding "that the change will not operate to the injury of any legal user of the water involved"); *id*. § 1706 (changes can be made "if others are not injured by such change"); *id*. § 1727 (a temporary change requires demonstration that it "would not injure any legal user of the water"). *See also State Water Res. Control Bd. Cases*, 136 Cal. App. 4th 674, 736-44 (2006).

A landmark California Supreme Court case applied the "no injury" rule to exports from groundwater basins. *Allen v. Cal. Water and Tel. Co.*, 29 Cal. 2d 466 (1946). This case was an action by overlying and prior appropriative users to enjoin a water company from exporting water from an underground river basin. The plaintiffs alleged that extraction of the large quantity of water which the company proposed to export would leave insufficient water for other users and would impair the water quality (salinity and other components) for domestic and agricultural use. The trial court agreed and found that there was no surplus available for export because all of the water was necessary to meet the "paramount rights" of the overlying users and prior appropriative rights. Moreover, the court found that the water company could not establish that no injury to water quality or water levels would occur. The Supreme Court affirmed these findings although it adopted slight modifications to the injunction.

The *Allen* case illustrates both the extreme difficulties that a proposed water exporter such as CalAm will face in meeting the stringent “no injury” rule and the likelihood of a court injunction barring its plans based on the current situation. According to the State Board Report, to show lack of injury, CalAm would need to demonstrate no injury to legal users in each of the following subject areas: (1) the amount of fresh water it will use, (2) the lack of pumping impacts to the water table level in existing wells, (3) that pumping is not affecting seawater intrusion within the Basin, (4) the plans for return of fresh water to the Basin if CalAm plans to propose a physical solution, and (5) the potential future impacts of changes in the fresh water and seawater on groundwater rights. Moreover, this demonstration must be made not only for existing users, but also for overlying landowners and other appropriators using the Basin who can be reasonably expected to extract groundwater in the future. State Board Report at 55 (the analysis must examine “all present and potential reasonable potential uses,” in part because “[p]otential overlying uses are often inherently implicated in determining whether a long-term surplus actually exists”).

The third tier of legal tests that CalAm would need to successfully navigate involves a demonstration that it is developing a new source of water. The exporter must demonstrate that “it is extracting groundwater that no Basin user would put to beneficial use” and any source that is considered fresh water “would not be considered developed water.” *Id.* at 36-37. Moreover, it must demonstrate that its developed seawater is a new supply to the existing Basin groundwater resources, that “replacement water methods are effective and feasible,” and that the Project “can operate without injury to others.” *Id.* at 47.

Marina-6 cont.

The State Board Report does not state that CalAm is likely to meet any of these tests or establish water rights. Rather, the most the Report can state is that it “may be possible” for CalAm to establish a right to extract this groundwater. *Id.* at ii. And the Report repeatedly identifies many areas of missing information that prevented it from drawing any definitive conclusions, including whether the aquifers are confined or unconfined, what the actual extent of water use is, specific information about the aquitards, whether gravity or pumping wells will be used (because pumping wells generally have more extensive impacts), key hydrogeological information, and a credible groundwater model that also examines cumulative impacts. *Id.* at i-iii, 5, 21-23, 50-51. Given these and other “significant unknowns,” the Board could not provide any definitive conclusions regarding this Project’s water rights or its potential effect on water quality.

The Draft EIR/EIS discussion of CalAm’s potential water rights in section 2.6 fails to address or resolve these critical data gaps and legal issues. It confuses the concept of “significant impacts” under CEQA with the “no injury” water law rule (which is not based on or equivalent to a significant impacts CEQA test), fails to address the missing technical information identified by the State Board Report, and simply does not analyze the series of legal hurdles that CalAm would need to surmount to establish such rights. It also ignores the fact that, if there is uncertainty regarding whether a type of injury is occurring, this would prevent CalAm’s future establishment of a water right because CalAm would have failed to meet its proof burden. Rather, in contravention of over a century of water rights law, the Draft EIR/EIS turns this proof

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burden on its head: the Draft EIR/EIS asserts that since it has not found "significant impacts" to a few water supply and quality issues, then CalAm will meet its burden to show that no injury to legal users is present.

It is not surprising that, after creating this faulty analytical framework, the Draft EIR improperly concludes: "it seems reasonable to conclude that the MPSWP would not cause harm or injury to Basin water rights holders such that CalAm would possess the right to withdraw water from the Basin to produce 'developed water' for beneficial use and under the physical solution doctrine." *Id*. at 2-37. The section also points out that no water right is needed for seawater extraction and states that no permit is needed for groundwater withdrawal (implying that this somehow makes it more likely that the right will exist). These assertions reflect a misunderstanding of water rights procedure and jurisprudence. It is undisputed that the proposed slant wells will extract substantial amounts of groundwater (which the State Board Report asserts could be as high as 762-3250 acre-feet each year), so the seawater point is immaterial. Since no permit system exists for the water right CalAm hopes to establish, CalAm's path to establish such rights will be more difficult and time-consuming than if a permit system was available. Thus, any claim to such water rights likely will be tied up for years in judicial and/or regulatory water rights proceedings, indefinitely delaying the onset of the Project.

In fact, the available hydrogeologic and scientific data strongly indicate that the Project will not be able to surmount the three tiers of legal hurdles for the following reasons:

Marina-6 cont.

- It is undisputed that the Basin is "critically overdrafted" – therefore, no surplus water is available for export.
- Large amounts of groundwater, including some municipal water for the City of Marina, are extracted by current legal users from the 180/400 Foot Aquifers in which CalAm proposes to install its slant wells.
- It appears from scientific studies that there could be injury to water quality in the 180/400 Foot Aquifers and potentially the 900 Foot Aquifer given the communication between these aquifers and other available data.
- The slant wells are a new and unproven technology as described in the comments on chapter 3 herein.
- The groundwater model described in the Draft EIR/EIS does not credibly or sufficiently analyze the impacts of the proposed slant well extractions, thereby failing to demonstrate the lack of injury to legal users.
- The CalAm replacement water proposal recited in the Draft EIR/EIS fails to meet legal requirements. Rather than restoring the groundwater resources in the Basin through injection or other means, it involves delivery of water to a few selected users in the hopes that they will cease pumping groundwater in that amount. It is unworkable and infeasible because it does not restore Basin groundwater

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hydrology and supplies, protect a full range of legal users, or contain necessary regulatory controls.

In sum, the Draft EIR/EIS analysis of water rights is inaccurate, legally flawed and factually unsupported and therefore legally inadequate. There are a variety of injuries to present and future legal users of this groundwater that have not been analyzed and, if the technical information is not sufficient to demonstrate that an injury is not occurring, CalAm will not establish any water right. The three tiers of legal criteria that CalAm must navigate to establish an appropriate water right are extremely daunting and must be supported by credible scientific evidence every step of the way. It appears unlikely that CalAm will ever be able to successfully run this legal gauntlet. Although it is theoretically possible (as the State Board Report recognized when it said that it "may be possible" for CalAm to do so), it is highly unlikely that CalAm ever can or will. The absence of any demonstrated water rights is a fundamental Project deficiency that prevents the Project from being "feasible" at the current time within the meaning of applicable law.

Marina-6 cont.

C. The Implementation Of California's New Sustainable Groundwater Management Act Will Likely Prevent Establishment Of Project Water Rights.

The Draft EIR/EIS fails to appreciate or disclose that the State Board Report was written before the enactment and implementation of the Sustainable Groundwater Management Act ("SGMA"), which is the first comprehensive legislation in California history that regulates the extraction and use of groundwater. *See* Cal. Water Code §§ 10720, *et seq*. The adoption of SGMA fundamentally changes the ground rules for the management and use of groundwater and adds an additional important layer of regulation applicable to the Project that was *not* addressed in the State Board Report. Moreover, it is yet further evidence that the Project is unlikely to obtain appropriative groundwater rights to the Basin.

SGMA has established a new regulatory regime for groundwater that is currently being implemented. The general steps in the process consist of classifying the priority of groundwater basins, adopting regulations governing different aspects of the process, forming Groundwater Sustainability Agencies ("GSAs"), and preparing and implementing Groundwater Sustainability Plans ("GSPs"). The baseline condition for purposes of the Act is the condition of a groundwater basin as of January 1, 2015. Cal. Water Code § 10727(b)(4). The Plan prepared by each GSA must ensure that a particular groundwater basin is not subjected to "undesirable effects," which include the following: lowering of groundwater levels; reduction of groundwater storage; seawater intrusion; degraded water quality; land subsidence; and depletions of interconnected surface water. Cal. Water Code § 10721(w). Indeed, the Basin must be managed to "achieve the sustainability goal in the basin within 20 years of the implementation of the plan." *Id*. § 10727(b)(1).

Marina-7

One important cornerstone of SGMA is its commitment to local agency management of groundwater basins. This policy is stated in the first section of the law: "Sustainable groundwater management is best achieved locally through the development, implementation, and updating of plans and programs based on the best available science." Cal. Water Code § 113.

This policy is reflected in several findings by the Legislature, including: "[g]roundwater resources are most effectively managed at the local or regional level" and "[l]ocal and regional agencies need to have the necessary support and authority to manage groundwater sustainably." SGMA is designed to organize and address the many adverse groundwater impacts caused by individual and uncoordinated extractions by private companies, individuals and other entities. The stated intent of the Legislature in enacting the SGMA includes "to enhance local management of groundwater consistent with rights to use or store groundwater…," "to provide local groundwater agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater," and "to manage groundwater basins through the actions of local governmental agencies to the greatest extent feasible, while minimizing state intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner." Cal. Water Code § 10720.1(b), (d) & (h).

The SVGB (from which CalAm hopes to extract groundwater) has been targeted for expedited treatment under SGMA because it is one of only 21 groundwater basins in California (out of hundreds) that is deemed to be critically overdrafted. Given this serious condition, the Basin must have an adopted GSP in place by January 31, 2020. Among other things, the GSP can contain such restrictions as limiting or suspending well extractions, regulating construction of new wells, and establishing groundwater extraction allocations.

Marina-7 cont.

The Draft EIR/EIS attempts to avoid and trivialize the substantial impact of SGMA's new regulatory regime by stating that it does not affect water rights and therefore will not affect the Project. However, this position is inaccurate in two key respects. First, CalAm does not currently have any water rights in the Basin and will not be in any position to attempt to establish them for years. Thus, although it is true that SGMA does not modify "rights or priorities to use or store groundwater" (Cal. Water Code § 10720.5), CalAm does not have any existing rights or priorities. Indeed, SGMA explicitly bars the use of groundwater extraction after January 1, 2015 in high-priority basins (like the SVGB) to establish prescriptive water rights. *Id.* Second, the groundwater extraction limitations and other powers of the GSA for this Basin are highly likely to be implemented quickly for this Basin given its critical overdraft condition and water quality issues.

In sum, the Draft EIR/EIS's attempt to assess the feasibility of the Project from a water rights viewpoint is deficient for its failure to analyze the impact of SGMA's new and comprehensive groundwater legal regime. This legislation will adversely affect CalAm's ability to establish water rights in the first place because it does not have any overlying or prescriptive water rights and must rely on future pumping activity to attempt to establish the rights. Moreover, even if CalAm is able to begin pumping any groundwater from the Basin (which appears unlikely), it is almost certain that the existing groundwater quality and water shortage issues in the Basin will result in imposition by the GSA of strong limitations on the location and volume of CalAm groundwater extractions because it will have the lowest priority of all Basin users.

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D. The Project's Plans To Export Water Out Of This Basin Conflict With And Violate The Agency Act And Ordinance No. 3709.

In 1990, the California Legislature adopted the Monterey County Water Resources Agency Act ("Agency Act"). Cal. Water Code App., § 52. Section 21 of the Agency Act states:

> *[n]o groundwater from that basin [Salinas River Groundwater Basin] may be exported for any use outside the basin*, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export. If any export of water from the basin is attempted, [the Monterey County Water Resources Agency] may obtain from the superior court, and the court shall grant, injunctive relief prohibiting that exportation of groundwater. Cal. Water Code App. § 52-21 (emphasis added).

In 1993, in furtherance of the Agency Act, the Monterey County Water Resources Agency ("MCWRA") adopted Ordinance No. 3709, the "purpose" of which is "to prohibit groundwater extractions from extraction facilities located in the northern Salinas Valley with perforations between zero feet mean sea level and -250 feet as of January 1, 1995, so as to reduce the rate of seawater intrusion and allow recharge to raise groundwater levels." *Id*. § 1.01.02.

Both CEQA and NEPA require conflicts with existing plans and law to be identified and addressed. For example, the Council on Environmental Quality ("CEQ") regulations implementing NEPA contain very specific requirements, directly implicated here, that "statements [EISs] shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, *the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law*." 40 C.F.R. § 1506.2(d) (emphasis added). Marina-8

It is undisputed that the Project proposes to extract groundwater from the Salinas Valley Groundwater Basin in the geographic area covered by the Agency Act and Ordinance No. 3709 for export to non-overlying users. Although the Draft EIR/EIS appears to argue that some of the extraction locations may be just outside Monterey County boundaries, the Draft EIR/EIS reflects that in fact all or almost all of the screened areas of the proposed slant wells would extract water from within County boundaries. *See* Figure 3-3a. Accordingly, the proposed Project extraction and export plans are directly prohibited by the Agency Act and Ordinance.

Nonetheless, the Draft EIR/EIS states (page 2-40) that it is "at least preliminarily reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance such that those laws would not impair project feasibility." This conclusion is not based on any specific factual or legal analysis. Rather, it relies solely on a section of the State Board Report which suggests that, because the Project "would return any incidentally extracted usable groundwater to the Basin," there would be no "net effect" in exporting the water, which might provide a legal ground to avoid the water export ban.

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This thin analysis is legally inadequate for multiple reasons and does meet the requirements of CEQA and NEPA recited above. First, the State Board has no jurisdiction or special expertise to interpret the Agency Act or Ordinance No. 3709 and would not be accorded any judicial deference for its interpretation. Second, the State Board assumed, when offering these advisory thoughts, that the Project would return any pumped groundwater directly to the Basin itself. However, the Draft EIR/EIS discloses that the Project has changed this plan and now will instead be delivering water to a select group of overlying users and not injecting it back into groundwater. Thus, the factual rationale for the State Board's idea is no longer operative.

Third, neither the Agency Act nor the Ordinance provides any textual support for an argument that a blanket prohibition on export actually means that export is allowed so long as the "net effect" (with return groundwater) is not to take water out. This "net effect" approval focuses only on the total quantity of groundwater in the Basin, not on groundwater quality or other issues. In contrast, the Act has a broad range of groundwater purposes, which include "to increase, and prevent the waste or diminution of the water supply in the agency, including the control of groundwater extractions as required to prevent or deter the loss of usable groundwater through intrusion of seawater" and "to prohibit groundwater exportation" from the Basin. *Id.* § 52-8. Similarly, the Ordinance expresses a wide range of seawater intrusion and groundwater recharge concerns which go far beyond the total amount of water in the Basin, including because "seawater intrusion is most extensive in the Pressure 180 Foot Aquifer and threatens to contaminate lower aquifers which supply drinking water to thousands of Salinas Valley residents" and such intrusion is "in and near these areas."

Marina-8 cont.

In short, the Draft EIR/EIS fails to adequately analyze or reconcile these direct statutory prohibitions on the Project's planned export of Basin groundwater. These are significant legal obstacles which have not been thoroughly assessed and no explicit plan for reconciliation is provided.

E. The Project Is Inconsistent With The CEMEX Property Annexation Agreement.

In 1996, the City entered into an agreement with RMC Lonestar (the owner of what is now sometimes called the CEMEX Property) and other parties entitled *Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands* ("Annexation Agreement"). The purpose of the Annexation Agreement is to "help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin" and to provide conditions for annexation of the Lonestar and other properties to MCWRA zones. *Id.* § 1.1. One key Annexation Agreement condition is that "[c]ommencing on the effective date of this Agreement and Framework, Lonestar shall limit withdrawal and use of groundwater from the Basin to Lonestar's historical use of 500 afy of groundwater." *Id.* § 7.2

Marina-9

This provision, which remains applicable to the CEMEX Property, directly limits groundwater extractions from the property to 500 afy. The effective date of the Annexation Agreement is defined as "Subject to paragraph 4, this Agreement and Framework shall be fully effective when executed by all of the Parties." All of the Parties executed it in 1996 and it thereby became effective at that time. The reference to paragraph 4 does not change the effective date because that paragraph merely provides that Lonestar (the owner of the CEMEX Property at that time) requests immediate annexation of its land. Accordingly, this extraction limitation is binding on all property users and directly prohibits the annual total groundwater extractions by the Project (and CEMEX, to the extent it extracts groundwater) from exceeding 500 afy. This is an important constraint on the Project because, according to the State Board Report, it seeks to extract up to 3,250 afy of Basin groundwater.

In section 2.6.4 of the Draft EIR/EIS, the CPUC and MBNMS mistakenly conclude that this groundwater withdrawal limitation in the Annexation Agreement "does not apply" to the Project. They assert two bases for this position: (1) that the limitation only applies once the Lonestar Property has been formally annexed; and (2) that if the extraction limitation does go into effect in the future, it would be avoided by using the same "net effect" approach discussed in the previous section. Draft EIR/EIS at 2-42.

The Draft EIR/EIS discussion of this issue is both legally incorrect and legally inadequate. First, there is no textual support for its view that annexation of the CEMEX Property is a precondition to the extraction limitation. The document clearly says that it commences on the "effective date" of the Agreement rather than on the date that the later annexation occurs. This difference is vividly illustrated by the parallel extraction limitation for the Armstrong Property, which states, in part: "Armstrong shall limit potable water withdrawn from the Basin ... to no more than 20 afy when this Agreement and Framework becomes effective, 150 afy *upon annexation* to the Zones, and …" *Id.* § 6.9.1 (emphasis added). As you can see, the drafters carefully distinguished between the effective date and the annexation date and, if they wanted annexation itself to be a precondition to an extraction limitation, they said so. Thus, the document's plain language demonstrates that annexation cannot be read into the Agreement as a precondition to the 500 afy limitation for the CEMEX Property.

Marina-9 cont.

Second, even as the Draft EIR/EIS concedes, formal annexation could occur at a future time, so the extraction limitation would become effective at that time and bar extraction of more than 500 afy of Basin groundwater at the CEMEX Property.

Third, the Draft EIR/EIS erroneously contends that, once the extraction limitation is in place, "operation of the MPWSP could still be feasible" because CalAm "could conceivably construct" an injection well on the CEMEX site to return 500 afy of groundwater or it could use the water return program mentioned above to result in "no net effect" to groundwater. Draft EIR/EIS at 2-42. However, these speculative statements are improper and have no textual or legal support.

If CalAm is going to construct a new injection well on the CEMEX Property to inject water back into the Basin, this new component should have been included in the Project Description. Since it is not now in the Project Description and its potentially significant environmental impacts have not been analyzed in the Draft EIR/EIS, this significant change

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would require recirculation of the document. Moreover, since the extraction limit is 500 afy, the amount that would have to be returned via injection well would not be 500 afy; rather, it would be at least in the range of 2,750 afy, which is the amount of groundwater over the 500 afy limit that the Project concedes it will extract from the Basin.

Finally, the unsupported statement on page 2-42 of the Draft EIR/EIS that the return water program would "keep the Basin whole, serving the purpose of the Annexation Agreement" is not correct for the same suite of reasons as mentioned in the Agency Act section. The Annexation Agreement is designed to reduce seawater intrusion, protect groundwater resources and preserve the environment of the Basin. It is simply not credible to assert that water injection at the CEMEX Property or delivery of water to Castroville customers will have all of these positive hydrologic and environmental effects on the Basin.

Therefore, the 500 afy groundwater extraction limitation in the Annexation Agreement poses a significant and potentially fatal impediment to the Project's groundwater extraction plans. In fact, unless groundwater withdrawals are limited to 500 afy, the Project cannot go forward. If the Project plans to address or mitigate for these impacts as part of a legal argument that it will not be violating the Annexation Agreement, any new facilities, mitigation measures and impacts need to be fully discussed and be included in the comparison of alternatives in a new EIR/EIS that is recirculated for public comment.

Marina-9 cont.

CHAPTER 3 – PROJECT DESCRIPTION

It is essential that the project description in an EIR/EIS be accurate, stable and include all elements of a Project. *See, e.g., Dry Creek Citizens Coal. v. Cty. of Tulare*, 70 Cal. App. 4th 20, 26 (1999) (an EIR needs to be "prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences"); *County of Inyo v. City of Los Angeles*, 71 Cal. App. 3d 185, 192-93 (1977). The Draft EIR/EIS fails to meet these standards in the respects identified below.

A. The Draft EIR/EIS Incorrectly And Misleadingly States The Location And Source Of The Water For The Project.

Marina-10

The Draft EIR/EIS repeatedly and inaccurately asserts that the Project's water source is seawater. Thus, the text of section 3.2.1.1 claims that the Project's slant wells "would draw seawater from beneath the ocean floor." *Id.* at 3-7. The wells that will accomplish the extraction of seawater under the ocean floor "would be drilled from an onshore location and would extend under the seafloor within MBMNS using a 36-inch- to 22-inch-diameter steel casing." *Id.* at 3-15.

However, these descriptions incorrectly describe the location and source of the Project source water. In fact, only a very small percentage of each well extends beneath the ocean floor within the MBNMS (defined as beyond the mean high water line), ranging from 7 percent to 25

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percent of the total length, and one well does not extend under the ocean at all. Table 3-3b. Thus, 75-93 percent or more of the water captured by the wells would be withdrawn from groundwater aquifers within the City of Marina, not from areas under MBNMS jurisdiction. Indeed, as the document concedes, the wells are being screened to extract water from the Dune Sand and 180 Foot Aquifers on land, rather than being located and screened to extract seawater from beneath the ocean floor. *Id.* at 3-15. Thus, a true description is that the slant wells are primarily designed to draw groundwater from two aquifers, with a small seawater component.

Marina-10 cont.

This is an important distinction that strikes at a fundamental misconception at the heart of the Draft EIR/EIS's description of the Project. This Project is not an ocean water desalination project. Rather, it is specifically targeted to extract groundwater from the 180/400 Foot Aquifers beneath land under Marina's jurisdiction (rather than the MBNMS) that it recharacterizes as "seawater" based on an argument that it is too saline for use by the current legal users. However, both State Board Resolution No. 88-63 (discussed in the chapter 4.4 comments) and the Water Code establish that all underground water not in a defined channel is groundwater. *See, e.g.*, Cal. Water Code § 10721. The quality of this water may be degraded by seawater intrusion, but that does not somehow transform this groundwater in aquifers underlying the City of Marina into ocean water.

B. The Draft EIR/EIS Fails To Disclose That The Proposed Slant Wells Are A Risky And Unproven Technology With No Operational Track Record.

The description of the proposed subsurface slant wells in section 3.2.1.1 is flawed because it does not disclose to the reader that slant wells are a new and unproven technology whose long-term reliability is unknown.

Marina-11

The Independent Scientific Technical Advisory Panel (ISTAP) appointed by the California Coastal Commission to examine subsurface intake technologies for the potential Huntington Beach seawater desalination plant concluded that slant well technology is unproven and "the long-term performance of the technology has yet to be confirmed." ISTAP, *Phase 1, Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California* (2014). Another 2016 technical study concluded, in connection with assessing intake options for the proposed Santa Barbara desalination facility, that "no full-scale desalination plants exist that employ slant wells for source seawater collection." Carollo, *Subsurface Desalination Intake Feasibility Study, Technical Memorandum No. 1*, at 3-19 (Mar. 2016) ("Carollo Report"). This and other factors led to the choice of an open-water intake rather than a sub-surface intake for the Santa Barbara Plant.

Apart from the CalAm test slant well, the only other known location as of March 2016 where this technology has been field tested is at a Dana Point, California pilot desalination facility. Carollo Report at 3-19. In fact, the Dana Point slant well experience raises important red flags relating to its use for the Project. The Carollo Report states that the system "did not collect only seawater but instead a mix of seawater and fresh water from the alluvial aquifer in

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the vicinity of the intake location." *Id*. Moreover, over time, the content of iron and manganese in the source water increased to levels "which would require complex pretreatment to implement at full scale" and the source water had very low dissolved oxygen concentration, which would require reaeration before being sent to the outfall. *Id*. The construction time for the slant well was unusually long, estimated to take approximately one year for a single well and two years for a multiple well program.

Nowhere in the Draft EIR/EIS are these technology, reliability and performance issues for subsurface slant wells discussed. The technical document (App. I2) that discusses the intake options for the Project fails to make any mention that this is a new and unproven technology with no track record at any desalination plant in the world, and it does not allude to any of the performance or environmental issues identified in the Huntington Beach and Santa Barbara intake option studies referenced above. In fact, all of the other intake options except for open water intake were eliminated, without any discussion of technical performance or track record factors, because of the supposedly superior performance and lesser environmental impacts of the slant well option. The failure to address such issues renders the selection of intake alternatives legally inadequate.

Marina-11 cont.

Since the track record, performance and reliability of such an important component of the Project is a critical factor to impact assessment, alternative selection, and feasibility here, the failure to disclose this information in the Project Description and to analyze it sequentially in the environmental impact assessments and alternatives analyses is a significant inadequacy that requires full disclosure and recirculation of a new Draft EIR/EIS.

C. There Are Other Inaccuracies In The Project Description That Need To Be Corrected Or Clarified To Meet CEQA/NEPA Requirements.

The Project Description contained in chapter 3.0 of the Draft EIR/EIS is missing key information and needs clarification of other significant issues. Our comments are organized by reference to the applicable section number or table.

Section 3.1 (Page 3-2, Paragraph 4)

Marina-12

This paragraph fails to state when CalAm constructed the test well. Please clarify when the test well was constructed and how long it has been operational. This section also fails to provide any discussion of the test well pumping results. The test well was approved by the CCC (over the objections of the City) due to CalAm's purported need for a test well to confirm feasibility and inform design of the MPWSP. The Project Description should be revised to disclose and discuss the results of the test well pumping program, including impacts that occurred as anticipated and any that varied from modeled/anticipated effects of the pumping. The ways in which the Project has been modified (if any) to account for the test pumping results should be clearly identified.

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Section 3.1 (Table 3-1, Page 3-10)

The Brine Storage and Disposal section generally states that "The brine aeration system would maintain dissolved oxygen concentrations in the brine at acceptable levels." Please clarify what threshold is being employed to determine what the acceptable levels are. Marina-13

In addition, this section describes the location of the slant wells as being in a "retired" mining area of the CEMEX facility. Please describe what is meant by "retired mining area." Have all mining operations ceased? Is future mining prohibited in this area? Marina-14

Table 3-1

Table 3-1 describes the location of the proposed wellheads "along the back (inland) side of the dunes." However, the entire CEMEX Property is comprised of a large dune complex and the slant wells and wellheads would be located in the middle of the dune complex. The Project's location in the middle of this significant dune complex should be accurately stated and the related impact analysis should be revised accordingly. The incorrect location of the wells as being "inland" of the dunes is also repeatedly stated in section 3.2.1.1. Marina-15

Table 3-1 describes the Terminal Reservoir and its intended purpose to store desalinated water and ASR product water. However, there is no new pipeline proposed to convey desalinated water to the Terminal Reservoir location. How would the desalinated water be conveyed to the Terminal Reservoir and, if no new pipelines are proposed, has the capacity of existing infrastructure been analyzed? Marina-16

Figure 3-3a

The graded access road shown in this figure does not connect to any other roadways. How was its location determined and how will access to existing roadways and the proposed graded roadway be maintained during the life of the Project? This component is not mentioned in any other portion of the Project Description. Due to the shifting nature of the dunes, this road will require frequent and routine grading to maintain, resulting in additional long-term disturbance of sensitive dune habitat and resources. Impacts related to long-term maintenance of the road (i.e., disturbance of ESHA, potential take of sensitive plant species, conflicts with mining operations, maintenance trips and emissions) do not appear to be addressed anywhere in the Draft EIR/EIS. They should be addressed in a revised, recirculated Draft EIR/EIS. Maintenance of the road would be required for frequent and regular inspections of the slant wells, much more frequently than the described maintenance of the slant wells every 5 years. The Draft EIR/EIS fails to identify and analyze this increase in the severity of long-term impacts in the dunes. Additional mitigation should be required to reduce and avoid impacts to the greatest extent feasible. Marina-17

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Section 3.2.1.2

This section references "well clusters." This reference is unclear and the wells should be described consistently throughout the document.

If it is intended that the Draft EIR/EIS provide CEQA/NEPA clearance for the Source Water Pipeline optional alignment, this area should be included in the Project area boundary and associated impacts must be analyzed.

Marina-18

Section 3.2.2

The MPWSP Desalination Plant Site Plan includes a Salinas River Overlook Tour Rest Stop, yet this component is not described in this section. If public tours of the plant are proposed, this proposed use must be described and the impacts associated with the use must be analyzed in the Draft EIR/EIS.

Marina-19

Section 3.2.2.5

This section describes temporary storage where brine could be stored for up to 5 hours. This temporary storage appears inadequate. What would trigger the need for temporary storage? Repairs to the outfall could last much longer than 5 hours – where would the brine be stored if temporary storage in excess of 5 hours were necessary? Have water supply issues been addressed in the Draft EIR/EIS in the event of a necessary shutdown of the desalination plant?

Marina-20

The last paragraph of this section (page 3-28) states that the outfall diffuser ports vary in height above the sea floor and that the dilution calculations assume they are four feet above the seafloor. Based on the information in this section, it is impossible to determine whether this assumption is appropriate. Identified impacts would be underestimated in any areas in which the ports are less than four feet above the seafloor. The location of the ports should be confirmed so that it can be determined whether or not the dilution analysis is adequate and accurate. This information should be recirculated for public review and comment once accurate information has been provided.

Marina-21

Section 3.2.3.3

Figure 3-6 does not appear to match the description provided in this section. The Monterey Peninsula Recreational Trail, as shown, is located east of the Project area boundary. If the New Desalinated Water Pipeline is to be constructed along the west side of the trail (as described), then the identified Project area boundary fails to include the area of disturbance for this component. If this project component is missing in the Draft EIR/EIS analysis, and the surveys, existing condition evaluations, and analysis in the Draft EIR/EIS failed to address impacts in this area, then this component has not been adequately addressed in the Draft EIR/EIS. As shown in Figure 3-6, it appears that the New Desalinated Water Pipeline crosses

Marina-22

under the existing railroad tracks near the Lapis Road/Del Monte Boulevard intersection and runs south on the west side of the railroad tracks. Marina-22 cont.

If it is intended that this Draft EIR/EIS provide CEQA/NEPA clearance for the New Desalinated Water Pipeline optional alignment, then this area should be included in the Project area boundary and any associated impacts must be identified and discussed.

Figures 3-6 through 3-9

The Project area boundary, as reflected in Figures 3-6 through 3-9, does not appear adequate to accommodate necessary access for construction equipment and laydown areas for trenchless construction. The Project area boundary should be revised to conservatively include all areas of potential disturbance and the Draft EIR/EIS analysis should be revised accordingly. If the Project area boundary is adequate to accommodate these construction staging and laydown areas, the Draft EIR/EIS should reflect this more accurately by showing the proposed 50 x 50 foot entry and receiving pits at an accurate scale. Marina-23

Section 3.2.3.8

This section references potential engineering constraints associated with the proposed Castroville Pipeline connection. What are the constraints? How feasible is the proposed Castroville Pipeline connection? The Draft EIR/EIS should fully describe and disclose the feasibility of this component. If the Castroville Pipeline connection is determined to be infeasible or unlikely to be feasible, the Draft EIR/EIS should disclose why it is being analyzed as part of the proposed Project and the public should have the opportunity to review and comment on whether the return of groundwater from the Salinas Valley Groundwater Basin to the CSIP Pond via the Pipeline to the CSIP pond has been fully analyzed. Engineering constraints and associated engineering design changes could result in additional or more severe environmental impacts which have not been adequately disclosed in the Draft EIR/EIS. Marina-24

Section 3.3.2.1

This section describes a 6,000 square-foot concrete pad for discharge piping. This pad and those required for each wellhead vault should be shown on all Draft EIR/EIS graphics and quantified in the Project Description and throughout the Draft EIR/EIS, so that the extent of disturbance within the dune complex is accurately and clearly stated. Marina-25

This section also states that the wellheads would be accessible at grade level upon completion. The Draft EIR/EIS inadequately describes the wellheads (will they be built above grade or subsurface?) and omits analysis of maintenance requirements related to the continuously changing elevation and grade of the dunes in which the wellheads would be placed. What type of “at grade” access is proposed and how will it be maintained through the lifespan of the Project? How will changes in surface grade be monitored and addressed throughout the Project life?

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Section 3.3.2.1

This section describes the proposed disposal of drilling spoils generated during the lower portion of slant well drilling by spreading the spoils within the disturbed dune area. This unnecessarily worsens and increases impacts on the sensitive dune habitat where the slant wells would be located. There is no evaluation of what types of spoils material would be generated by drilling to the proposed depths and whether or not disposal of up to 100 cubic yards of drilling spoils within the dune complex would adversely affect sensitive dune habitat or species. The disposal of drilling spoils in the dunes should be considered a permanent impact to sensitive dune habitat (ESHA); identified impacts and necessary mitigation requirements should be revised accordingly in a recirculated Draft EIR/EIS. Marina-26

Section 3.3.6

The Project area boundary surrounding the proposed Terminal Reservoir as shown in Figure 3-9b does not appear to be based solely on construction of the reservoir and the 6 acres of disturbance described in this section. What is proposed in the remainder of this area? Additional activity planned in this area must be described in the Project Description and analyzed in the Draft EIR/EIS. Is there existing infrastructure at this location that would connect to the proposed Terminal Reservoir? How would this reservoir be accessed? These components must be fully identified and described in the Draft EIR/EIS. The graphic should also be revised to reflect the total Project area boundary in this location, as it is impossible to determine the potential extent of disturbance and impacts in surrounding areas not reflected in the Draft EIR/EIS. The Draft EIR/EIS should be recirculated once the total area of disturbance has been identified so the public can determine whether additional sensitive resources exist in the areas not shown in the Draft EIR/EIS and whether additional or more severe environmental impacts would occur. This omission has deprived the public of a meaningful opportunity to comment upon potentially significant adverse effects on the environment and the feasible ways in which to mitigate or avoid those effects. Marina-27

Section 3.3.9

This section describes the well locations as within the “CEMEX active mining area.” References to the mining area as “active” or “retired” should be corrected to accurately reflect baseline conditions and should be consistently described throughout the document. Marina-28

Table 3-6

Why are the wet seasons for injection different for Desalinated Project Water and Carmel River Supplies? Marina-29

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Section 3.4

This section fails to identify an operational lifespan of the Project. This information is necessary to identify and evaluate the extent and duration of potential impacts of the Project. Marina-30

Section 3.4.1

Again, this section describes the location of the slant wells as "on the back side of the dunes." This statement is inaccurate and misleading. The slant wells would be located in the center of the large dune complex that comprises the CEMEX Property and routine maintenance activities would directly disturb this dune habitat. Marina-31

Section 3.4.2

This section states that "From the Terminal Reservoir, the water would be injected into the northern subbasin of the Seaside Groundwater Basin." Are injection wells proposed at this location? If so, they must be described and analyzed in the Draft EIR/EIS. If not, the description of ASR operations should be revised to accurately reflect proposed ASR operations and locations. Marina-32

Section 3.4.5

This section describes the electrical power demands of the Project, which would require 51,698 million kilowatt hours per year in additional demand – a more than 450 percent increase over existing demand for CalAm's entire water supply system in the Monterey District Service Area. This large expenditure of energy is not adequately analyzed in the Draft EIR/EIS. Has PG&E indicated it could provide this amount of energy? And if the increased demand is proposed to be partially met through a separate renewable power source, that source must be identified and the feasibility of that source must be analyzed in the Draft EIR/EIS. Any renewable power sources to be constructed to facilitate operation of the Project must be included in the project description and analyzed in the Draft EIR/EIS. Failure to include these Project components constitutes improper CEQA/NEPA piecemealing. Marina-33

CHAPTER 4.1 – ENVIRONMENTAL SETTING OVERVIEW

This chapter contains information regarding several important environmental assessment parameters, including the Project "baseline" and the treatment of Project inconsistencies. We have comments on each topic. Marina-34

The Draft EIR/EIS states that the Project environmental "baseline" for purposes of the Draft EIR/EIS is the existing conditions in 2012, which is five years ago. *Id.* at 4.1-8. This baseline is apparently based on the CEQA Guideline which states the existing physical conditions at the time the Notice of Preparation ("NOP") is published "will normally constitute the baseline physical conditions." CEQA Guidelines § 15125(a).

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However, the Draft EIR/EIS makes a fundamental error. This is a situation where a more recent baseline must be utilized because the federal government did not join and notice its intent to make this an EIS for federal purposes until August 2015. Federal law mandates that the baseline for NEPA review be the physical condition at the time the EIS is prepared, which is August 2015 at the earliest. The CEQA Guidelines require that an EIS include the alternative of no action. 40 C.F.R. § 1502.14(d). These and other NEPA authorities require that the condition of the environment at the time the EIS is undertaken or the action will be implemented (which can sometimes be at some point in the future) be utilized for the analysis. There is no authority for using a significantly earlier date such as 2012. When a joint EIR/EIS is being drafted, it is sometimes necessary to have two impact analyses, one for CEQA and one for NEPA, so that the proper baseline is established for each. Thus, since the wrong NEPA baseline was chosen, the NEPA impact analyses need to be redone with the correct baseline and recirculated for public review.

In fact, this does not qualify as a "normal" situation under CEQA either in which a 2012 baseline should be utilized. Although the original Project NOP was issued in 2012, the proposed Project reflected in the new Draft EIR/EIS was substantially modified in March 2016 from the version originally noticed in 2012 and the public was first notified in late 2015 that the environmental document was now a joint EIR/EIS. Moreover, there have been significant environmental developments, technical studies and new information in the last five years that make a 2012 baseline an improper choice. The Draft EIR/EIS is therefore inadequate because it chose the wrong environmental baseline for both NEPA and CEQA purposes.

Marina-34 cont.

In addition, the Draft EIR/EIS description of how inconsistencies of the Project are to be treated under NEPA is incomplete and inaccurate. According to the document, NEPA and CEQA require that there be a discussion of "possible conflicts between the proposed project and the objectives of federal, regional, state and local land use plans and policies." *Id.* at 4.1-9. In fact, NEPA also requires an analysis of any inconsistencies with state and local "laws" and requires a reconciliation analysis when such inconsistencies are found:

> To better integrate environmental impact statements into State or local planning processes, statements shall discuss *any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned)*. Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law. 40 C.F.R. § 1506.2(d) (emphasis added).

This federal inconsistency and reconciliation analysis requirement is very important because all or at least portions of the Project are inconsistent with, and in fact directly prohibited by, state or local laws and plans which are discussed in more detail in our comments for sections 2.6 and 4.6 herein.

Marina-35

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CHAPTER 4.2 – GEOLOGY, SOILS AND SEISMICITY

One major deficiency in this Draft EIR/EIS section is its failure to analyze the Project's potential acceleration or exacerbation of coastal erosion and dune retreat, thereby causing damage to nearby dunes, properties and coastal environment. We agree with the stated threshold of significance and accompanying impact question no. 4.2-10, which ask whether the Project will "accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment." However, the impact section inexplicably fails to address this question.

Instead, the document states that "the primary concern" in this area is whether the natural rate of coastal retreat associated with sea level rise will result in the slant wells and associated facilities becoming uncovered or located on the beach within the Project lifetime. *Id.* at 4.2-68. The analysis of this issue is then carried through and a mitigation measure (discussed below) is adopted to address this impact. Remarkably, however, the document never returns to discuss the major potential impact posed by this question, which is whether the Project slant wells and other facilities located in this coastal strip will accelerate or exacerbate coastal erosion or dune retreat, or otherwise damage nearby beaches and properties. This is an important and appropriate topic for CEQA and NEPA analysis, particularly because it does not address the impact of the environment on the Project – rather, it evaluates the impact of the Project on the ongoing natural processes. The complete failure to address this issue requires a full analysis in a new Draft EIR/EIS that is recirculated for public comment.

Marina-36

The second legal infirmity in this section relates to the apparent insufficiency of Mitigation Measure 4.2-9 that is proposed to evaluate the coastal retreat impacts on the Project components that were analyzed in this section. In brief, this measure provides that the rate of coastal retreat will be monitored and the slant wells will be removed from service before they are exposed. However, this measure does not address basic Project questions relating to this measure, including: (1) can the Project operate without one or more slant wells in service; (2) will new slant wells need to be drilled to replace the out-of-service wells and where and how will that be accomplished; and (3) what is the exact procedure for slant well abandonment and replacement? The mitigation measure is incomplete without this information.

Marina-37

CHAPTER 4.3 – SURFACE WATER HYDROLOGY AND WATER QUALITY

A. The Description Of Applicable Laws And The Evaluation Criteria Are Inadequate.

The Regulatory Framework (section 4.3.2) mentions that the California Coastal Act contains applicable legal requirements applicable to the Project, but fails to describe in detail any of the specific requirements of the Act, such as all of the Public Resources Code Sections which are identified in footnote 1 of this comment letter. A similar omission is made in the evaluation criteria in section 4.3.3. The criteria are inadequate because they fail to include relevant Coastal Act requirements (e.g., Public Resources Code Section 30231).

Marina-38

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B. The Analysis Of Alternative Brine Discharge Systems Is Deficient.

The existing MRWPCA ocean outfall was not designed for brine discharge. The outfall has horizontally-oriented discharge ports rather than inclined diffusers, which are preferred for brine disposal and—as the Draft EIR/EIS admits—"increase[] dilution substantially." *See* Draft EIR/EIS at 4.3-105; Southern California Coastal Water Research Project , *Management of Brine Discharges to Coastal Waters: Recommendations of a Science Advisory Panel,* 23-27 (Mar. 2012) ("SCCWRP Report"). Accordingly, use of inclined diffusers should be a required component of the Project, rather than just potential mitigation.

Impacts related to surface water hydrology and water quality generally relate to water intake and brine discharge from structures within or beneath Monterey Bay. Water quality impacts from brine discharge are evaluated based on modeling for the existing MRWPCA ocean outfall pipeline and diffuser, but it appears from the Draft EIR/EIS that no such modeling was performed for alternative brine discharge systems. Modeling and analysis at a comparable level of detail should be provided for each alternative that is evaluated to allow the public to compare the various brine discharge alternatives.

Marina-39

C. Mitigation Measure 4.3-4: Operational Discharge Monitoring, Analysis, Reporting, And Compliance Is Legally Deficient In Multiple Ways.

First, Mitigation Measure 4.3-4 illegally defers mitigation and lacks adequate performance standards. A Mitigation Monitoring & Reporting Plan must be published and circulated along with Draft EIR/EIS; thus, the Draft EIR/EIS must be re-circulated here once the MMRP is prepared. An opportunity for public comment on the MMRP is essential where so much of the mitigation is deferred and the potential impacts are both extremely uncertain and potentially very significant, particularly considering the unique, protected ecosystem into which the Project plans to discharge 14 million gallons of brine daily—totally undiluted during at least half of each year. Not only does this Mitigation Measure thus illegally defer mitigation, but it also lacks performance standards by which to measure the mitigation.

Marina-40

Second, Mitigation Measure 4.3-4 purports to do things that should have been done as part of assessing the environmental baseline per CEQA's requirements. The Mitigation Measure states, "The Plan shall establish protocols to establish baseline biological conditions at the discharge location as well as at a reference location outside the influence of the discharge for at least one year prior to commencement of project construction." (page 4.3-69.) But assessing, establishing and monitoring baseline environmental conditions is a mandatory step in CEQA and NEPA analysis, and cannot be deferred until after Project approval. CEQA and NEPA prohibit a lead agency from deferring the analysis of potential impacts by claiming they will monitor those impacts just before the Project is constructed and figure out at that later date if mitigation measures are needed. Moreover, an impacts analysis that is based on an inadequate evaluation of the environmental baseline is necessarily flawed. Thus, not only is Mitigation Measure 4.3-4 itself flawed in that it illegally defers mitigation, but the impacts analysis underlying Impact 4.3-4 is also flawed and must be redone after a proper assessment of the environmental baseline that

Marina-41

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includes biological conditions at the discharge location as well as the vicinity of the discharge location. Marina-41 cont.

Third, Mitigation Measure 4.3-4 states monitoring may cease after five years if a certain salinity performance standard is met for a period of 45 days at the end of the five years of monitoring. Does this mean that the standard must be met for any 45-day period during the entire five-years? If not, the measurement for the standard is unclear and must be explained. Also, if the standard is not met at the end of five years, additional mitigation should be required in order to meet the standard, and yet the Mitigation Measure apparently does not require any. Marina-42

D. Mitigation Measure 4.3-4: Operational Discharge Monitoring, Analysis, Reporting, and Compliance; and Mitigation Measure 4.3-5: Implement Protocols to Avoid Exceeding Water Quality Objectives Should Be Applied To All Alternatives.

These mitigation measures address water quality impacts to Monterey Bay through water quality studies before implementing operational discharges, incorporating supplemental water treatment components, and implementing a discharge monitoring and mitigation plan. Both mitigation measures are identified as applying only to operational discharges associated with the Project desalination plant through the existing Monterey Regional Water Pollution Control Agency outfall (i.e., the Project and Alternatives 1, 2, and 5a/5b). On page 5.5-50, the Draft EIR states that the salinity impact to Monterey Bay under Alternative 3 (new outfall at Moss Landing) would be reduced to less than significant (same impact conclusion as the Proposed Project) with the implementation of Mitigation Measure 4.3-4. On page 5.5-56, the Draft EIR states that the salinity impact to Monterey Bay under Alternative 4 (new outfall at Moss Landing) would be significant and unavoidable (increased impact compared with the Proposed Project) and Mitigation Measure 4.3-4 is not mentioned. The narrative descriptions for Mitigation Measures 4.3-4 and 4.3-5 are general enough that it seems they could be applied to any brine discharge system, and therefore any Alternative. The Draft EIR/EIS should apply the mitigation measures consistently to the Project and Alternatives following the assumptions listed for the mitigation measures, and impacts should be determined accordingly. Marina-43

CHAPTER 4.4 – GROUNDWATER RESOURCES

A. The Factual Predicate For The Groundwater Analysis Is Inadequate Because It Fails to Discuss Key Facts And Hydrology Concepts And Thereby Undermines The Discussion Of Project Impacts And Mitigation Measures.

The Draft EIR/EIS is deficient because it fails to mention, discuss and properly analyze important facts and hydrology concepts affecting the Project's impacts on groundwater resources. Marina-44

First, chapter 4.4.2 fails to identify and discuss the application of State Board Resolution No. 88-63, which provides that all "ground waters of the State are considered to be suitable, or potentially suitable for municipal or domestic water supply and should be so designated by the

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Regional Boards. . . ." A Regional Board may de-designate this beneficial use, but only if it is demonstrated that the water being de-designated consists of a TDS concentration exceeding 3,000 mg/L (5,000 uS/cm, electrical conductivity). However, unless and until a formal de-designation of this beneficial use occurs for a particular location (which involves a complex Regional and State Board process), all groundwater in an aquifer is presumptively considered suitable for municipal or domestic water supply use under California law. Since none of the aquifers in this Basin have been de-designated for this MUN beneficial use, all groundwater in the SVGB is presumptively groundwater, potentially suitable for the MUN beneficial use, not seawater. Marina-44 cont.

Second, the Draft EIR/EIS does not clearly define what it means by its use of the term "brackish water" (see, e.g., page 4-4.8) and this confusion leads to analytical deficiencies later in the chapter. The text implies that brackish water cannot be used for domestic, agricultural or industrial purposes, which is not true. For example, the premise of Resolution No. 88-63 is that a legal user such as a water district could extract and treat groundwater to meet MUN uses. A related ambiguity is present in the seawater intrusion charts marked as Figures 4.4-10 and 4.4-11, which are intended to show "seawater intrusion" into the 180/400 Foot Aquifers. However, since the term "seawater" is not defined, it gives the erroneous impression that the entire groundwater area out to the identified limits on the Figures exceeds applicable State Board standards and is supposedly not suitable for any beneficial uses. Moreover, the accompanying text refers to "the leading edge of the inland seawater intrusion front," but again does not define what this means or how it is even relevant to the analysis. The information being gathered by Dr. Rosemary Knight and her colleagues very clearly shows that the extent, degree, and location of seawater intrusion in the areas immediately surrounding the proposed slant well intake system is much more complex than reflected in Figures 4.4-10 and 4.4-11 and the accompanying Draft EIR/EIS analysis (refer to Section E, below). Marina-45

In fact, the aquifers in this Basin are the proposed water supply source for the Project. The Draft EIR/EIS relies on the conclusion that "the groundwater in the Dune Sand, 180-FTE, and 400-foot Aquifer is therefore unsuitable for potable supply" to support a determination that the Project would have a less than significant impact on groundwater supplies from the SVGB (pages 4.4-59, 60), while also identifying these exact same water resources as the water supply source for the Project. This irreconcilable discrepancy reflects an unpersuasive attempt, as improperly re-stated and supported in the Draft EIR/EIS, to establish a feasible legal right to pump groundwater from the SVGB.

Third, the Draft EIR/EIS is inadequate because it does not clearly state the amount of "groundwater" that it anticipates extracting from the groundwater aquifers. The State Board Report, which was based on a previous version of the Project, states that the CalAm's calculation was that 762 to 3,250 afy of groundwater would be extracted (although this was before the slant wells were moved landward, which will increase the groundwater portion substantially). App. B2 at 29. The Draft EIR uses a 0-12 percent figure for calculating the amount of groundwater as a percentage of total extracted water, but does not state a daily or annual amount. However, assuming that 24 mgd of total water is extracted 365 days per year by the slant wells and using Marina-46

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the 12 percent figure utilized in the Draft EIR/EIS, the "groundwater" extracted supposedly could be 1,152,000 gallons per day and 3,226 acre-feet per year.

However, these groundwater extraction amounts and percentages appear to be vastly understated. The slant wells have been repositioned further inland, so the groundwater component recited by the State Board is significantly higher, probably closer to the 75-93 percent figure recited in our chapter 3 comments. Further, State Board Resolution 88-63 provides that all water pumped from under land (as distinguished from under the ocean) is presumptively groundwater, not seawater. In addition, the 0-12 percent groundwater calculations appear to have been based on a "groundwater" standard linked to a TDS value of 420 mg/L, rather than on use of the 3,000 mg/L potential MUN de-designation standard. If the water actually extracted by the slant well is less than the projected seawater TDS value for the extracted water, the amount of "groundwater" extracted under the Project's calculations could be multiples of the maximum 12 percent value utilized in the Draft EIR/EIS. Marina-46 cont.

In this context, it is also important to point out that, for purposes of the Agency Act, Ordinance No. 3709 and the Annexation Agreement, all extraction and/or export of groundwater is prohibited, regardless of the TDS concentration of the water. Accordingly, the calculations made by the Draft EIR/EIS on what it believes is "groundwater" for purposes of sending return water to the Basin does not alter the fact that all groundwater in this Basin being extracted landward of the mean high tide line, regardless of the amount or percentage of TDS it contains, is groundwater which cannot be extracted and exported pursuant to these laws and agreement. Marina-47

We know that MCWD and other users extract a substantial amount of groundwater from the 180 and 400 Foot Aquifers, and therefore that much of the "brackish" water identified is available to support the applicable domestic, agricultural and industrial beneficial uses. Indeed, Table 4.4-3 reveals that a total of between 103,000 and 130,000 acre feet of water has been extracted from these entire groundwater aquifers each year since 2008. It also apparent from the technical studies that the water in the aquifers within the identified areas contains large areas of higher quality groundwater, so it is neither hydrogeologically nor legally appropriate to state that this water cannot be extracted to support the three designated beneficial uses. Marina-48

Fourth, the Draft EIR/EIS's limited description of Professor Rosemary Knight's work (page 4.4-31) is inadequate and the Draft EIR/EIS failure to discuss and incorporate its findings is unwarranted. These issues are discussed in greater detail in Subsection E herein. Marina-49

Fifth, the brief mention of the applicability and implications of SGMA (page 4.4-37) is incomplete and inadequate. It fails to state that the 180/400 Foot Aquifer has been classified under SGMA as one of only 21 California aquifers that is "critically overdrafted." The Draft EIR/EIS text wrongly claims that SGMA "does not have a direct impact on the MPWSP." It also improperly attempts to trivialize the new groundwater law's impact by summarily concluding without support that "[t]he proposed project would not adversely affect groundwater management in the Basin, because it would not be extracting groundwater that is not presently being used as a potable or an irrigation supply." It then concludes that the Project will have a "positive contribution" to managing groundwater in the Basin. Marina-50

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This explanation oversimplifies and reflects a misunderstanding of how SGMA is designed and works, which we have described in out comments to chapter 2.6 above. The legal inadequacies in this portion of the Draft EIR/EIS include:

- It fails to recognize that the "undesirable results" that SGMA is designed to avoid include seawater intrusion, degraded water quality, lowering of groundwater levels and reduction of groundwater storage. In stating that SGMA will not have a direct impact on the Project because it is supposedly not extracting groundwater presently being used applies the wrong benchmark to this situation. The real question is whether the Project may directly or indirectly cause seawater intrusion, degradation of water quality, lower groundwater levels or reduced groundwater storage. If the Project will contribute to any of these conditions (as the current scientific information indicates it likely will), the Project will be directly affected, if not foreclosed, by SGMA. Marina-50 cont.

- In stating (without any support) that the Project may have a positive contribution to groundwater management in this Basin, the Draft EIR/EIS and CalAm appear to attempting to substitute their own private views for the technical decisions on groundwater management by the GSA. This approach expressly contravenes the local agency groundwater management goal of SGMA and is an impermissible judgment by a private outside third party as to "what is right" for the Basin and its users. The Draft EIR/EIS lacks the best available science and the local history and experience to make any such judgment for this Basin. Marina-51

- The application of SGMA could have a dramatic impact on the Project. Management measures will be decided upon by the GSA based on a comprehensive data set. These measures could well include a prohibition on new groundwater extractions in the basin, severe restrictions on such withdrawals and a variety of other measures that could include many measures that prohibit or restrict the Project's hoped-for extraction activities. Marina-52

- It is untrue, and contradictory to other statements in the Draft EIR/EIS, to state that the Project will not extract groundwater that is used as a potable or irrigation water supply. In fact, the Draft EIR admits that the water the Project will pump would consist of between 1 and 12 percent of groundwater from these aquifers (and these withdrawals could be even greater if state-of-the-art models are used). And, as discussed above, all of the water is presumptively groundwater, not seawater, and it is defined as usable for the applicable beneficial uses under State Board standards. Marina-53

- For the reasons set forth in Dr. Abrams' report, the groundwater model on which the Project relies to support this conclusion is too simplistic (and not state-of-the-art) and fails to address the key potential groundwater impacts of the Project. Marina-54

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B. The Thresholds Of Significance For Groundwater Impacts Are Inadequate.

Section 4.4.3 of the Draft EIR/EIS delineates thresholds of significance (which it terms "evaluation criteria") to evaluate potential impacts of the Project on groundwater resources. It lists two threshold criteria and then, confusingly, lists nine further "descriptions" to "elaborate on how these criteria are applied." These collective "criteria" reflect several important deficiencies.

First, the first overall threshold of significance targeted to interference with groundwater supplies or recharge is incorrectly formulated because it defines (for no apparent reason) a supply or recharge interference as a "net deficit in aquifer volume." By gerrymandering the interference concept in this manner, it automatically characterizes the Project's projected extractions of groundwater to not qualify as a significant environmental effect because it plans to "return" an equivalent amount of water to selected recipients within the Basin area. However, in so doing, it mistakenly fails to analyze the impacts of its pumping on a range of water availability and recharge issues, particularly since the delivered groundwater will not be reinjected into the aquifer.

Marina-55

Second, although we agree that a threshold of significance should be whether the proposed slant well extractions "degrade groundwater quality," the further interpretation of this criteria on page 4.4-21 to be that it "adversely affected groundwater quality by exacerbating seawater intrusion in the SVGB" dramatically and improperly limits its scope. As discussed in subsection C below, the Draft EIR/EIS attempts to condense this water quality degradation inquiry into a narrow analysis of whether the extractions will move the "seawater/freshwater interface" in the 180/400 Foot Aquifers, which is neither factually appropriate nor a true measure of all potential groundwater quality impacts. The threshold of significance, and all interpretive descriptions, should be whether the slant wells will degrade groundwater quality for any current or future legal user in any of the 180/400/900 Foot Aquifers.

Marina-56

Third, these evaluation criteria are inadequate because they do not address the water rights and SGMA management criteria in this "critically overdrafted" subbasin, and therefore do not provide any factual basis for assessing such environmental impacts when evaluating Project feasibility. Thus, for example, one evaluation criterion should be whether the slant well extractions may cause any short-term or long-term harm to any current or anticipated future legal user of this groundwater basin. Companion criteria should be adopted for each potential groundwater impact issue identified in our comments in section 2.6 herein.

Marina-57

C. The Draft EIR/EIS Fails To Adequately Assess The Project's Groundwater Quality Impacts And Therefore Erroneously Concludes That They Are Less Than Significant.

Marina-58

The preceding discussion of potential groundwater impacts of the Project in the contexts of water rights and SGMA make it clear that the Draft EIR must analyze a full array of environmental impacts from groundwater extraction. For purposes of water rights, the inquiry is whether the Project will cause harm or injury to any current or future legal user of the

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groundwater, including water quality impacts, seawater intrusion impacts, water table impacts and the expected impacts over time. *See* section 2.6 herein. Under the comprehensive groundwater management scheme in SGMA, the undesirable results of the Project to groundwater that must be evaluated include lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence and depletions of interconnected surface water. Cal. Water Code § 10721(w).

Unfortunately, the analysis in the Draft EIR/EIS fails to adequately address these issues. It focuses primarily on the question of whether extraction from the wells would affect "drawdown" in nearby wells by lowering the groundwater levels. *Id.* at 4.4-57, *et seq*. It briefly raises the topic of seawater intrusion, but for unexplained reasons confines its discussion to the "location of the seawater/freshwater line," which it mistakenly believes is a surrogate for a discussion of seawater and water quality impacts. *Id.* at 4.4-78. It also refers to several contaminated groundwater plumes that originated at Fort Ord, but proposes a monitoring program which supposedly mitigates these impacts to less than significant levels. *Id.* at 4.4-86.

This limited analysis of groundwater quality impacts is patently insufficient and legally inadequate. It is inappropriate to limit the discussion of seawater intrusion impacts to the location of the "seawater/freshwater interface," because the location of this line does not describe the quality of groundwater within or beyond this line, only that chloride concentrations exceed a certain level at this line. The Draft EIR/EIS appears to make the mistaken assumption that all groundwater seaward of this line is not fit for beneficial uses and, therefore, draws the erroneous conclusion that so long as the progressive horizontal inland migration of that front does not continue, the Project is not causing significant impacts to groundwater quality. In fact, however, the available data (including information generated by Professor Knight discussed herein) demonstrate that there are large areas of good quality water available for beneficial uses seaward of this line, so use of the line in this manner avoids analyzing Project groundwater impacts in any close detail.

Marina-58 cont.

Dr. Abrams shows in his Memorandum (App. 1) that there are MCWD wells in the 900 Foot Aquifer that currently supply drinking water for the City of Marina, both inside and just outside the seawater intrusion line in the 180/400 Foot Aquifer. Moreover, there are overlying users within the City who utilize wells within the seawater intrusion area. One important question, that remains unaddressed by the Draft EIR/EIS, is how the future water quality (including salinity) of these wells will be affected by the pumping of 24 million gallons per day ("mgd") of water by the slant wells. If, as appears entirely likely, the water quality in these wells will be adversely affected by the Project pumping, the MCWD and City water supply will be adversely affected. This potential significant impact is entirely missing from the Draft EIR/EIS analysis.

In short, the "Impact Conclusion for Groundwater Quality" on page 4.4-86 conducted an unreasonably restrictive scope of analysis for potential seawater intrusion impacts both inside and outside the seawater intrusion point it identifies and fails to assess the full range of water quality impacts for legal users of the aquifer. The resulting conclusion that the Project will have

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no impacts on groundwater quality is not supported by substantial evidence and cannot stand. Accordingly, a comprehensive water quality impact analysis must be performed and a new Draft EIR/EIS needs to be recirculated to provide the public with an opportunity to review and comment on the analysis. Marina-58 cont.

D. The Draft EIR/EIS Is Inadequate Because It Completely Fails To Analyze the Potential Impacts Of The Project On Groundwater In The 900 Foot Aquifer.

Marina-59

The 900 Foot Aquifer (sometimes referred to as the Deep Aquifer) is a confined aquifer that lies below the 180/400 Foot Aquifers in and near the City of Marina. This aquifer represents a very important water resource for MCWD and the City and, as shown in Dr. Abrams' Memorandum, there are three MCWD wells in this aquifer seaward of the "seawater intrusion" line in the 180/400 Foot Aquifers and another such well just outside this line in the 180 Foot Aquifer According to Dr. Abrams, the 900 Foot Aquifer consists of a thick sequence of alternating layers of sand-gravel mixtures and clays.

The Draft EIR/EIS essentially ignores any discussion of the nature, function or potential Project impacts with regard to the 900 Foot Aquifer. The document devotes only three uninformative sentences to a description of the hydrogeology of this aquifer. *Id.* at page 4.4-12. The Groundwater Elevation and Flow Direction section (page 4.4-14) does not cover groundwater flow or response to pumping for the 900 Foot Aquifer. Indeed, this section only discusses lateral groundwater flow – it conspicuously fails to include any discussion of vertical groundwater flow in the aquifer system or flow in the 900 Foot Aquifer. The Groundwater Extraction Summary Table No. 4.4-3 does not cover extractions from the 900 Foot Aquifer. And there is no discussion of the 900 Foot Aquifer in the Groundwater Quality section (section 4.4.1.4). Not surprisingly, there is no analysis of potential impacts to this groundwater aquifer in the Project operational impact or mitigation sections.

The Draft EIR/EIS's failure to discuss the potential impacts of the Project on groundwater in the 900 Foot Aquifer is an unexplained and significant omission. In fact, given the importance of the aquifer, the discontinuous nature of the aquitards above it, the hydrogeologic findings in Professor Knight's studies (see Subsection E herein), and the evidence of vertical seawater contamination reflected in the best available hydrogeologic information, the failure to address the potentially important set of groundwater impacts is a significant gap in the environmental analysis and must be addressed in a new, recirculated Draft EIR/EIS.

E. The Draft EIR/EIS Failed To Utilize, Without Explanation, The Important Electrical Resistivity Tomography Studies Prepared By Professor Knight And Her Colleagues.

Marina-60

As described in Dr. Abrams' Memorandum, Stanford University Professor of Geophysics Rosemary Knight, with her colleagues and other researchers, has utilized electrical resistivity tomography ("ERT"), a standard and accepted field test methodology, to characterize seawater intrusion into the subsurface along the Monterey County coastline in the immediate vicinity of

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the Project. ERT is a type of geophysical survey that can provide valuable groundwater quality data to "fill in the gaps" that exist when only well datapoints are used. Despite the fact that Professor Knight conducted a coastline study in the immediate vicinity of the Project area that provided a vertical two-dimensional image reflecting the distribution of seawater intrusion at different depths and concentrations in the 180/400 Foot Aquifers, the Draft EIR/EIS failed, without any explanation, to utilize its data and scientific findings.

It is undisputed that the results of Professor Knight's studies were available to the public long before the Draft EIR/EIS was issued, but were not utilized in formulating the Draft EIR/EIS. Indeed, these studies and results were presented to the public in a series of forums, including the following:

- In October 2014, Professor Knight announced that she was planning to use the ERT technology to investigate seawater intrusion into groundwater aquifers along a 24-mile stretch of coastline that includes the proposed CalAm slant well site. The key details relating to this work was made available in permit applications to a variety of public agencies and was publicized in the press.

- On May 26, 2015, at the Hopkins Marine Station in Pacific Grove, Professor Knight and Adam Pidlisecky presented a public lecture entitled "Salt Water Imaging Along the Monterey Coast" in which they discussed their research techniques and results to date regarding saltwater intrusion into groundwater aquifers.

- On November 1, 2016, at the Hopkins Marine Station, Professor Knight and a colleague presented a program entitled "Geophysical Imaging of Saltwater Intrusion Along the Monterey Coast." This lecture covered the geophysical methods and results that they used to create images of the distribution of saltwater and freshwater hundreds of feet into the ground along the coastline area where the Project would be built.

Nonetheless, despite the public availability and widely shared information regarding this research work, it was not carefully analyzed and incorporated into the Draft EIR/EIS. The Draft EIR/EIS (on page 4.3-3) devotes only three sentences to Professor Knight's study. Two sentences attempt to describe briefly what she studied and the third sentence states: "The study found that the electrical resistivity readings positively correlate with measured TDS concentrations to a depth of 500-feet in four area groundwater wells." In short, the Draft EIR/EIS attempts to create the erroneous impression that Professor Knight's study essentially corroborated the findings of the Draft EIR/EIS analyses and essentially ignores, without explanation, all of its findings. Dr. Knight, in a presentation before the Marina City Council on February 7, 2017 (see slide deck attached as App. 3), stated that this statement in the Draft EIR/EIS failed to accurately reflect the extent of uncertainty remaining in the Draft EIR/EIS analysis and the substantial additional information that would be provided through the use of ERT.

Marina-60 cont.

In fact, the work by Professor Knight and her colleagues is directly relevant to the important seawater intrusion and groundwater quality issues that are posed by the Project and which are, at this point, inadequately analyzed in the Draft EIR/EIS. Among other things, as explained more fully in Dr. Abrams' Report, the previously published studies by Professor Knight and her colleagues reflect:

- There are physical gaps in the aquitards separating the 180, 400 and 900 Foot Aquifers that provide pathways that allow migration of contaminants between each of these aquifers. According to Dr. Abrams: "the results show that there are numerous locations where pathways exist for migration of seawater and seawater-impacted groundwater from shallower to deeper levels of the aquifer system…." In short, these aquifers appear to be in hydraulic communication with each other more than previously believed or as apparently assumed by the Draft EIR/EIS.

- The ERT results delineate the extent of seawater in the 180 and 400 Foot Aquifers at the specific locations along the coast and reflect that "the distribution of seawater intrusion in these aquifers is highly variable horizontally and vertically." Thus, even at the coastline, there are large pockets of low-saline groundwater in the shallower aquifers as well as substantial evidence of seawater migration downward into the deeper aquifers in which many of the City of Marina's water supply wells are located.

Marina-60 cont.

These studies are directly relevant to the groundwater quality issues that are at the heart of potential Project impacts. They undercut the assumptions in the Draft EIR/EIS regarding the vertical and horizontal distribution of seawater impacts and indicate that pathways exist for vertical and horizontal contamination of aquifers at the Project location. Given the inability of the current groundwater modeling relied on by the Draft EIR/EIS to analyze these issues and the complete lack of any analysis of the 900 Foot Aquifer in the document, this information (which was available to the drafters before the Draft EIR/EIS was released) must be utilized to inform the discussion of these potentially significant impacts. Since ERT is a standard and accepted methodology that can feasibly be used to assess the significant groundwater aquifer impacts of the Project, the CPUC and MBNMS must assess this impact. *See Berkeley Keep Jets Over the Bay Comm. v. Bd. of Port Comm'rs*, 91 Cal. App. 4th 1344, 1370 (2001).

In addition, as the CPUC and MBNMS are aware, Professor Knight and her colleagues are in the midst of a new ERT study, using the SkyTEM methodology, that will provide a three-dimensional image of seawater intrusion in the groundwater in a wide area underneath and around the City. This new study (whose field work is scheduled for May 2017) will provide a three-dimensional depiction of the distribution and extent of seawater intrusion in the immediate Project area and will facilitate determining the evaluation of the likelihood of adverse impacts from Project pumping to area groundwater wells in all aquifers. The CPUC and MBNMS should obtain the results of this study and incorporate them into a new Draft EIR/EIS that is recirculated for review and comments by Responsible Agencies (such as Marina) and the public.

F. The Groundwater Modeling Used By The Draft EIR/EIS Is Inadequate To Determine The Potential Harm To The Wells That Serve Marina And Its Citizens.

One critical groundwater impact question is whether the Project may cause harm to current and future legal users of the three groundwater aquifers. As Dr. Abrams describes in his Memorandum, the model that forms the basis of the impact analysis in the Draft EIR/EIS cannot be effectively utilized to address this question. The deficiencies include:

- The model does not analyze the probability of adverse impacts to water used by Deep Aquifer wells.

- The model fails to address the key water rights and/or SGMA "harm" subject areas of water quality, seawater intrusion or water supply limitations at the various wells. Rather, it only addresses drawdown in nearby wells and looks at seawater only in a horizontal, not a vertical, direction. Professor Knight's work demonstrates that there are many locations where seawater appears to move downward where aquitards are absent.

- The model does not include the detailed heterogeneity indicated by the geophysical data which can provide increased certainty regarding the hydrogeologic characterization of these aquifers.

- The site-specific model contains important conceptual flaws that impair its ability to provide a reliable work product.

- Dr. Abrams believes that the parameterization of the model "is too simplified to fully evaluate the potential or probability of adverse impacts to groundwater users in the City of Marina from proposed MPWSP pumping" and that this "is especially relevant in light of the newly available information regarding the heterogeneous, vertically-connected nature of the aquifer system, the presence of significant downward vertical hydraulic gradients, and the potential for exacerbated seawater intrusion."

In short, the "superposition" model used as the basis for the groundwater impact analysis in the Draft EIR/EIS fails to meet the requirements and CEQA and NEPA. The model is not a precise and state-of-the-art hydrogeologic conceptual model (as demonstrated by Professor Knight's findings) and it is not well calibrated to evaluate the impact of the Project on a wide range of potential groundwater harms.

Marina-61

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G. The Draft EIR/EIS Analysis Fails To Take Into Account The Anticipated Future Impact Of Ongoing Seawater Intrusion Mitigation Efforts On Groundwater Flow Directions.

As explained by Dr. Abrams in his Memorandum, the Monterey County Water Resources Agency has implemented for many years a concerted and successful effort to increase groundwater levels to slow, halt or reverse seawater intrusion. This effort has been significantly financed and supported by Marina citizens and other water customers in these water zones. Dr. Abrams provides the following explanation of the likely outcome of these efforts:

> If these mitigation efforts continue to be successful, as will likely be required under the Sustainable Groundwater Management Act (SGMA), the magnitude of the landward hydraulic gradient will decrease as inland groundwater levels increase, thus the shape of the capture zone and extent of the source area for the proposed slant wells will change substantially.… Thus, the continued success of ongoing seawater-intrusion mitigation projects could potentially strand the MPWSP desalination plant from its source of seawater.… Possible future groundwater conditions such as those described above were not evaluated or discussed in Appendix E2 of the Draft EIR/EIS, even though the goal of MCWRA's ongoing seawater-intrusion control efforts is to increase inland groundwater levels, and such conditions may be considered to be reasonably foreseeable. As such, the Draft EIR/EIS failed to consider that a more substantial fraction of freshwater resources may be captured during feedwater pumping than has been assumed

Marina-62

It is undisputed that the groundwater model described in Appendix E2 of the Draft EIR/EIS that was used for the groundwater analysis assumed that the regional groundwater flow direction at the Project subsurface slant wells was in the landward gradient direction. However, if these significant ongoing mitigation efforts continue to be successful, it is entirely possible that the current groundwater flow direction will reverse and be in exactly the opposite direction from what the groundwater model assumed. Even if groundwater flows do not reverse, flows from the seaward direction could substantially slow or disappear. The implications and results of this change in groundwater flow were not evaluated or discussed in this Appendix or the Draft EIR/EIS itself. As a result, the calculations of the amount of inland groundwater captured by the Plant could be significantly higher and, as Dr. Abrams describes, the continued success of these projects "could potentially strand the MPWSP desalination plant from its source of seawater."

This is a critical factor from both water rights and "injury to legal user" viewpoints. In the water rights arena, the State Board Report was absolutely clear that, to establish future water rights, the Project would need to address its future groundwater impacts, which has not been done adequately here without this analysis. From the viewpoint of a legal user of this Basin's groundwater, the reasonably foreseeable reversal of the landward groundwater flow direction could mean that most and possibly all of the water pumped by the slant wells would be groundwater from the Basin rather than seawater, regardless of how those concepts are defined.

In sum, the Draft EIR/EIS's failure to discuss and analyze these developments, and to incorporate them into the groundwater modeling effort, makes the groundwater impact analysis legally inadequate.

Marina-62 cont.

CHAPTER 4.5 – MARINE BIOLOGICAL RESOURCES

A. The Draft EIR's Analysis Of Impacts To Marine Resources Is Inadequate.

1. The Project Is Sited In A Unique Marine Ecosystem Protected By Numerous Laws.

The Project is located in a unique ecological area that encompasses both a national marine sanctuary (MBNMS) and a national estuary (Elkhorn Slough National Estuarine Research Reserve). Draft EIR/EIS at 4.5-32. The MBNMS was established for the purposes of research and monitoring, education and outreach, public use and resource protection. It includes a variety of habitats that support highly productive biological communities, including extensive marine life: 34 species of marine mammals, over 180 species of seabirds and shorebirds, at least 525 fish species, four sea turtle species, 31 different invertebrate phyla, and over 450 species of marine algae. It hosts one of the highest levels of marine biodiversity in the world, and includes 27 federally listed threatened and endangered species. *Id.* at Section 4.5.1.

Marina-63

A number of laws protect the area affected by the Project. The National Marine Sanctuaries Act ("NMSA") prohibits a person from destroying, causing the loss of, or injuring any sanctuary resource managed under law or regulations for that sanctuary. The NMSA prohibits discharge of brine effluent. The Magnuson-Stevens Conservation and Management Act ("Magnuson Act") requires all federal agencies to protect areas designated as "Essential Fish Habitat." Monterey Bay is designated as "Essential Fish Habitat" under four Fishery Management Plans. In addition, the Marine Mammal Protection Act and the Federal Endangered Species Act protect numerous species that occur in Monterey Bay and in the Study Area in particular.

The area is also protected by several state laws. The California Endangered Species Act, the Marine Life Protection Act, and the Marine Life Management Act all operate to protect species and fisheries in the Study Area and the vicinity of the Project. In addition, the California Ocean Plan ("Ocean Plan") establishes water quality objectives and beneficial uses for waters of the Pacific Ocean within three miles of the California Coast. The Project is subject to all Ocean Plan water quality objectives, including: marine communities, including vertebrate, invertebrate, and plant species shall not be degraded; waste management systems that discharge into the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community; and waste discharged to the ocean must be essentially free of substances that will accumulate to toxic levels in marine waters, sediments, or organisms.

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Of particular relevance here, MBNMS, in collaboration with the California Coastal Commission ("CCC"), Regional Water Quality Control Board ("RWQCB"), and NOAA Fisheries, published a 2010 report entitled *Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary* ("MBNMS Guidelines"). The MBNMS Guidelines were developed to help ensure that any future desalination plants in the MBNMS would be sited, designed, and operated in a manner that minimizes impacts on the marine environment. Several guidelines are relevant to minimizing impacts on marine resources, as discussed further below. Marina-63 cont.

2. The Draft EIR/EIS Fails To Adequately Describe The Baseline.

CEQA requires an adequate description of the existing environmental baseline. CEQA Guidelines § 15125(a). In addition, the Ocean Plan requires an assessment of baseline biological conditions before construction of a new desalination plant. *See* State Water Resources Control Board, *California Ocean Plan,* at M.4(a)(2) (2016). The Draft EIR/EIS fails to meet this basic but essential prerequisite of both CEQA and the Ocean Plan in at least three key ways. Marina-64

First, the Study Area is too narrowly drawn. In particular, the Study Area for marine biological resources should extend to the Monterey/Seaside/Pacific Grove shorelines. The EIR provides no explanation or rational basis for drawing the boundaries as narrowly as it does. To exclude the area extending from the existing Study Area to the Monterey/Seaside/Pacific Grove shorelines, the EIR must explain why the Project will not have direct or indirect impacts south of the northern limits of Sand City. The northern boundary of the Study Area also appears too limited, and the Draft fails to explain why the Project's impacts will not extend beyond the Salinas River. Furthermore, the Study Area appears to extend from the shoreline outward five miles toward the ocean, but the Draft fails to explain why the Project will not have effects beyond those nearshore waters.

Second, the Study Area must be surveyed to determine exactly what the environmental baseline is. For example, the Study Area should be investigated for cold water seeps. The Draft EIR/EIS states there are no "known" cold water seeps in the area (page 4.5-2), but does not clearly state whether the Study Area was actually surveyed for cold water seeps, and if it was not, why it was not. Even more critical is the dearth of information describing the existing environmental baseline near the point of brine discharge. Given the Project's undeniable significant environmental impact on the water quality and marine resources in the area near the discharge, documentation of the environmental baseline in this area is particularly critical. Yet the Draft EIR/EIS merely contains a general, minimal description of the ecosystem in the area. Marina-65

Indeed, it appears only extremely limited sampling was conducted, which is inadequate to determine the environmental baseline. For example, the Draft EIR/EIS states that analysis of impacts on plankton near the outfall is based on sampling of small zooplankton conducted on one day in Spring 2016 (pages 4.5-6-7). This sampling is wholly insufficient. Sampling should be conducted multiple times, and throughout the year due to the variability in the marine ecosystem as the Draft EIR/EIS states elsewhere (see, e.g., section 4.5.1.1). Also, the Draft

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EIR/EIS does not explain why only small zooplankton were surveyed, and why other plankton (e.g., macro zooplankton, phytoplankton) and other organisms (invertebrates, fish, mammals) were not sampled/surveyed. Inadequate data precludes sufficient analysis of impacts, and renders the whole analysis of the Project's brine discharge impacts on marine resources inadequate.

Furthermore, the Draft EIR/EIS should require monitoring and period surveying of the ecosystem in the vicinity of the outfall so that the impacts of the Project can be determined, measured, and mitigated "to the maximum extent feasible," as required by law. *See, e.g.*, Coastal Act, Cal. Pub. Res. Code § 30260.

The Draft EIR/EIS does contain an opaque reference to rocky habitat that "coincides with the ballast rock that is used to secure the MRWPCA outfall on the seabed." *Id.* at 4.5-9. But it is not entirely clear from the language in the Draft EIR/EIS whether this means that productive, species-rich habitat such as that observed during the 2014 NOAA inspection occurs near the outfall: the language on pages 4.5-9, 4.5-11, and 4.5-28 suggests that it does, but then Figure 4.5-2 does not show any hard substrate habitat near the outfall (page 4.5-10). If Figure 4.5-2 is inaccurate, then the Draft EIR/EIS should be recirculated with a corrected version of Figure 4.5-2 that clearly shows all areas where rocky substrate habitat are found in the Study Area. In addition, assuming it is true that a diverse, rich assemblage of organisms lives at the outfall, then this area should be more closely inspected and surveyed to determine what organisms live there and exactly what species' habitats exist near the outfall. The Draft EIR/EIS must also be revised accordingly to address impacts of the Project on these habitats, and mitigate them per CEQA and other legal requirements (*e.g.*, Cal. Pub. Res. Code § 30260).

Marina-65 cont.

Third, the Draft EIR/EIS is inadequate because it fails to explain the basis for determining several species' potential to occur in the Study Area, and/or provides inconsistent information regarding their potential to occur. As a result, any evaluation of impacts to those species is inadequate in that the Draft EIR/EIS fails to recognize their potential presence in the Study Area and thus fails to address potential impacts and mitigate them. For example:

1) **Stellar sea lion.** Because there is a known breeding population of stellar sea lion in the Project vicinity and known occurrences within the MBNMS, there is no rationale for the "Not Expected" potential for occurrence within the Study Area. The Draft EIR/EIS's conclusion here is unjustified at best, and likely incorrect. Moreover, the analysis is insufficient to the extent that no surveys were conducted to determine the presence (or absence) of this species in the Study Area.

2) **Northern fur seal.** Because this species has been observed within 5 km of the Study Area, the Draft EIR/EIS is inadequate in that it fails to explain the assumptions and evidence that support the Draft EIR/EIS's determination that this species is not expected to occur within the Study Area, and because it fails to address impacts on the species due to an incorrect conclusion about its likelihood of occurring in the Study Area.

Marina-66

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3) **Northern elephant seal.** Because the Draft EIR/EIS states that this species is widely distributed in MBNMS waters and rookeries are present north and south of the Study Area, the Draft EIR/EIS's conclusion that this species has a low potential to occur within the Study Area appears incorrect. The Draft EIR/EIS is then inadequate because it fails to address impacts on the species due to an incorrect conclusion about its likelihood of occurring in the Study Area. At the very least, this conclusion needs explanation of the assumptions/evidence that support the determination that this species has a low potential to occur within the Study Area.

4) **Guadalupe fur seal.** The Draft EIR/EIS states that this species has been sighted in MBNMS waters and stranded on beaches within the Study Area, and yet concludes that this species has a "Not expected to low" potential to occur within the Study Area. This inconsistency suggests the conclusion is incorrect, and that the species actually has a higher potential to occur in the Study Area, and thus the Draft EIR/EIS should analyze impacts to this species. At the very least, this conclusion needs explanation of the assumptions/evidence that support the determination that this species has a "Not expected to low" potential to occur within the Study Area.

5) **Minke whale.** The Draft EIR/EIS states that there have been numerous sightings of Minke whale species in nearshore waters of Monterey Bay, and yet concludes that the potential for this species to occur is only "low-moderate." This incongruity suggests the conclusion regarding the species' likelihood to occur is incorrect, and that the species actually has a higher potential to occur in the Study Area (and thus, that the Draft EIR/EIS should analyze impacts to this species). At the very least, this conclusion needs explanation of the assumptions/evidence that support the determination that this species has only a low-to-moderate potential to occur.

Marina-66 cont.

6) **Olive Ridley sea turtle and Loggerhead sea turtle.** The Draft EIR/EIS is flawed in that it fails to explain what assumptions or evidence (beyond geographic distribution) support the determinations that these species are not expected to occur (Olive Ridley Sea Turtle) or have a low potential to occur (Loggerhead Sea Turtle) within the Study Area. Consequently, the Draft EIR/EIS may be inadequate for failing to analyze potential impacts to these species.

7) **Leatherback sea turtle**. The Draft EIR/EIS asserts in Table 4.5-4 that this species has low potential to occur in the Study Area, but provides no basis for this conclusion. Indeed, the Draft EIR/EIS states that leatherback sea turtles are "most commonly seen in Monterey Bay from July to October" and that all of Monterey Bay is leatherback sea turtle critical habitat (page 4.5-23), which is strong evidence that this species may be seasonally likely to occur in areas affected by the Project. This point must be discussed and impacts to the leatherback sea turtle and its critical habitat must be addressed and mitigated.

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8) **Chinook Salmon (Central California ESU).** If the Draft EIR/EIS is correct that the current range of Chinook salmon still extends into Monterey Bay, why is the potential to occur within the Study Area determined to be low? Shouldn't it be moderate, similar to Chinook winter run? The Draft EIR/EIS appears to be incorrect here, and flawed for not analyzing impacts to this ESU. At the very least, the basis for this determination regarding low potential to occur must be discussed and explained.

9) **Cowcod.** If juveniles were documented within the Study Area, the "potential to occur" determination should be high rather than moderate. The Draft EIR/EIS must explain what assumptions/evidence support the determination that this species has a moderate potential to occur.

10) **Calico rockfish, copper rockfish, gopher rockfish, grass rockfish, kelp greenling, monkeyface prickleback, olive rockfish, quillback rockfish, California scorpionfish, treefish.** The Draft EIR/EIS fails to explain what assumptions and evidence (beyond geographic distribution) support the occurrence determinations for these species. The Draft EIR/EIS must be revised accordingly.

11) **Kelp rockfish.** The Draft EIR/EIS fails to set forth what assumptions/evidence (beyond geographic distribution) support the high potential for occurrence determination for this species. The Draft EIR/EIS must be revised accordingly.

Marina-66 cont.

12) **Mammals.** This section appears to be deficient because it fails to provide a detailed explanation for why the additional mammal species known to occur in Monterey Bay are not likely to occur or rarely occur within the Study Area. General geographic distribution is insufficient supporting evidence for potential to occur.

13) **Turtles.** This discussion states that the potential for these species to occur is "very low," which is inconsistent with the potential occurrence determinations in Table 4.5-2. This inconsistency must be resolved and any analysis contingent on the incorrect information/assumptions must be corrected, revised, and/or developed (as appropriate).

14) **Fish.** The sentence that states "Chinook salmon, depending on the run, is State endangered or threatened, federally endangered or threatened and has a moderate to high potential to occur in the Study Area" is inconsistent with Table 4.5-2, which states Chinook salmon have a low to moderate potential to occur. This inconsistency must be resolved and any analysis reliant on incorrect information/assumptions must be corrected. In addition, this section appears to be missing a discussion for tidewater goby and white shark potential to occur within the Study Area: General information is provided, but a discussion related to the Study Area is not. If tidewater goby occurs seasonally in Elkhorn Slough, why is that species identified as only having a low potential to occur? The Draft EIR/EIS is inadequate unless the assumptions and evidence that support this determination are fully explained.

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3. The Draft EIR/EIS's Analysis Of The Impacts Of The MPWSP's Brine Discharges Is Inadequate And Incorrect.

The MPWSP will produce up to 14 *million* gallons *per day* of high-salinity brine discharge during the desalination process. The Project plans to discharge the brine effluent directly into the federally protected Sanctuary. The brine discharges will result in significant adverse impacts to the environment, but the Draft EIR/EIS's assessment and analysis of such impacts is insufficient. First, the Draft EIR/EIS claims the Project would be consistent with the MLMA (page 4.5-39), despite the admission that it would result in the decimation of 2,010-5,900 square meters of market squid habitat (page 4.5-61). The Draft EIR/EIS attempts to label this impact as less than significant by comparing the amount of lost habitat to the total area of suitable spawning ground on the sea floor south of Monterey Submarine Canyon, but there is no justifiable basis for this comparison. Indeed, tellingly, the Draft EIR/EIS completely omits any explanation of why the proper comparison of area is the entire sea floor south of the Monterey Submarine Canyon. In any case, the elimination of so much suitable spawning habitat is certainly a significant impact that must be mitigated.

Marina-67 cont.

Although the Draft EIR/EIS admits the Project will have adverse impacts to squid (which the Draft EIR/EIS wrongly describes as less than significant), the Draft EIR/EIS fails to sufficiently consider and analyze impacts to other species in the same area. Instead of conducting a thorough analysis, the Draft EIR/EIS writes off such impacts by referring to "unanticipated effects" on "benthic and pelagic communities in the vicinity of the discharge" (page 4.5-61). This is an inadequate analysis of one of the Project's most significant effects: the brine discharge. The inadequacy of this analysis is likely a result of the Draft EIR/EIS's incomplete and insufficient description of the environmental baseline (see above), particularly in the area where the brine will be discharged. Without inclusion of information necessary to understand the Project's potential impacts, the EIR is defective. *See Berkeley Keep Jets Over the Bay Comm.*, 91 Cal. App. 4th at 1382-83.

4. The Draft EIR/EIS's Conclusion Regarding Impacts To Essential Fish Habitat Under The Magnuson Act Is Fatally Flawed.

As noted in the Draft EIR/EIS, "*All* of the coastal waters of Central California and Monterey Bay are identified as Essential Fish Habitat for [several fish species]." *Id.* at page 4.5-24 (emphasis added). As such, all federal agencies are *required* to protect these areas under the Magnuson Act. The Draft EIR/EIS summarily states that the Project "would be consistent with the MSA because the construction and operational impacts of the proposed project are not expected to result in any degradation of essential fish habitat within Monterey Bay" (page 4.5-31), but fails to support this with any data or substantive analysis. This clearly violates both CEQA and NEPA, which require that documents' conclusions regarding environmental impacts be based on actual scientific information and that agencies take a "hard look" at potential adverse environmental impacts.

Marina-68

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5. The Analysis Of Impact 4.5-1 Is Inadequate.

The Draft EIR/EIS must clarify if the ambient underwater noise levels present in the San Francisco study are similar to or substantially different from the ambient underwater noise levels present in the Study Area. The Draft EIR/EIS must also clarify whether the temporary change in noise levels from ambient conditions as a result of Project construction is expected to be consistent. If there is a potential risk for accidental discharge of drilling fluids into the marine environment from the use of drilling additives during drilling of the slant wells, which could constitute a significant impact to marine resources, the Draft EIR/EIS must identify and require any available mitigation to address that potential accidental condition. If no mitigation is required, the Draft EIR/EIS must clarify why mitigation would not be appropriate or feasible to prevent what could be a significant adverse impact to marine resources. Marina-69

Also, the Draft EIR/EIS is unclear as to whether changes in underwater noise levels were measured during construction of the test slant well. If they were, the results of those measurements and any increase in noise should be included in the Draft EIR/EIS and that data should be incorporated into the analysis of impacts to marine biological resources.

CHAPTER 4.6 – TERRESTRIAL BIOLOGICAL RESOURCES

A. The Draft EIR/EIS's Analysis Of The Project's Impacts On Terrestrial Biological Resources Is Inadequate.

1. The Project Has Significant Adverse Impacts On Terrestrial Biological Resources Because It Permits Development Inconsistent With The LCP And The Coastal Act.

The dune habitats in the Project area support several rare and endangered plant and wildlife species. The City's Local Coastal Plan ("LCP") requires any development within protected species' habitat to be evaluated at a project-specific level to determine the presence of "Primary Habitat" and "Secondary Habitat" areas. Primary Habitat includes "habitat for all identified plant and animal species which are rare, endangered, threatened, or are necessary for the survival of an endangered species" and "all native dune vegetation, where such vegetation is extensive enough to perform the special role of stabilizing Marina's natural sand dune formations." City of Marina, Ca, *Coastal Plan* (1982). Secondary Habitat (or support habitat adjacent to areas of Primary Habitat) must also be identified. Marina-70

The LCP mandates that Primary Habitat be protected and preserved. The City's LCP <u>prohibits</u> development in Primary Habitat that is not protective of and dependent upon that habitat: "Primary habitat areas shall be protected and preserved against any significant disruption of habitat values and only uses dependent on those resources shall be allowed within those areas." *Id.* All development in Secondary Habitat must be sited and designed to prevent significant adverse impacts on the adjacent Primary Habitat areas.

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In 2014, SWCA identified Primary and Secondary Habitat in the Project area. Section 4.6.10 inaccurately reflects the location of primary habitat within the CEMEX Property and is inconsistent with the conclusion of the California Coastal Commission in its review of the test slant well. In the staff report for the test slant well California Department of Public Health ("CDP") permit application, the CCC found that although the project is proposed to be located in portions of the CEMEX Property that have been subject to disturbance, the entire area in which the Project would be located is primary habitat and ESHA under the LCP. Therefore, the Draft EIR/EIS is inadequate in that it omits or understates the severity of potentially significant impacts to primary habitat and ESHA.

Despite the CCC's finding in its staff report for the test slant well and the plain language of the City's LCP, the Project proposes to locate several project components in areas classified as Primary and Secondary Habitat. Accordingly, the Project would result in direct impacts to both Primary and Secondary Habitat.

For example, the Project's activities would disturb nesting habitat for the Western snowy plover (federally listed as threatened and also a California species of special concern), host plants for Smith's blue butterfly (federally listed as endangered and protected under the Endangered Species Act ("ESA")), and sandy habitat for the silvery legless lizard (a California species of concern). Project activities would also exacerbate dune erosion and could result in spills of hazardous materials in sensitive habitat areas. Moreover, construction and operation of the subsurface slant wells would <u>permanently</u> disturb up to six acres of central dune scrub and ice plant mats. And the full construction impact area would be disturbed anew every five years when slant well heads would need maintenance. *Id.* at 4.6-235. This would amount to a permanent loss of habitat for the special-status species that have the potential to re-colonize the slant well head area.

Marina-70 cont.

In addition, construction of the Source Water Pipeline, Desalinated Water Pipeline, Transmission Main, and the staging area at Beach Road have the potential to temporarily adversely impact Primary and Secondary Habitat. As the Draft EIR/EIS admits, there is no way to reduce these impacts to a less than significant level. The Draft EIR/EIS proposes compensatory mitigation to reduce the impacts on special-status species habitat, but there are numerous problems with the proposed mitigation measure, as discussed below in our comments relating to chapter 4.8. In sum, the Project is inconsistent with the LCP's habitat protection requirements and cannot be approved as proposed.

Recognizing this irreconcilable conflict, the Draft EIR/EIS suggests that this legal obstacle to the Project may be circumvented because Section 30260 of the Coastal Act "encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned." The CCC relied on this provision in its prior approval of one test well at the CEMEX location. *Id.* at 4.6-224. However, the Project contemplates a vastly greater impact area than was at issue with just one test well, and it is highly unlikely that it would apply to permit the Project when there are alternatives that avoid such fatal flaws. Moreover, operation of the test well has revealed the Project would have several significant adverse impacts not anticipated at the time of approval of the test slant well.

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2. The Draft EIR/EIS Fails To Provide An Adequate Description Of The Environmental Baseline.

CEQA requires an adequate description of the existing environmental baseline. CEQA Guidelines § 15125(a). The Draft EIR/EIS fails to meet this fundamental and critical prerequisite to an adequate analysis of impacts to biological resources. The designated Study Area encompasses only a 50-foot buffer around the Project area. The Draft EIR/EIS offers only this explanation of the boundary: "A 50-foot buffer around the project area was established as the survey area to ensure biological resources within the project area and immediate adjacent vicinity were assessed for potential direct and indirect project impacts." But the Study Area must be large enough to enable an accurate assessment of the environmental baseline. A 50-foot buffer is undoubtedly insufficient. For example, noise impacts from construction will travel beyond 50 feet and may adversely and significantly impact special status animal species. Marina-71

3. The Draft EIR/EIS's Analysis Of The Impacts Of The Subsurface Slant Wells Is Inadequate.

Section 4.6.5.1 reflects an analysis of the old project design, including references to an electrical control panel and electrical control building. The analysis must be revised to account for the current proposed Project design. Once the analysis has been updated to accurately reflect the Project, the Draft EIR/EIS must be recirculated to the public can review and comment on the analysis.

This section also inaccurately describes the location of the slant wells at "the eastern side of the vegetated sand dunes." In fact, the slant wells would be constructed in the middle of the large dune complex that comprises the CEMEX Property. Construction of the slant wells would require increased disturbance and human activity in the center of this highly sensitive dune complex. Per this section, the increased disturbance and human activity could occur year-round during construction. Due to the intrusive type and duration of construction activity, the Project could have indirect long-term effects on the behavior of sensitive species in this area of dunes, particularly Western snowy plover. These impacts are improperly dismissed in the Draft EIR/EIS as "temporary." These impacts must be fully analyzed and disclosed in the Draft EIR/EIS. The potential effects of one year (or more) of excavating, drilling, and other slant well construction activities on sensitive species in the long-term must be evaluated. Marina-72

Throughout this section and others, the Draft EIR/EIS states that the disturbance area for construction of the well "may overlap" with a portion of the Source Water Pipeline disturbance area. Why has it not been determined whether or not these areas overlap? This information should be readily available and the quantified areas of disturbance must be disclosed.

4. The Draft EIR/EIS's Analysis of Impacts 4.6-1 And 4.6-2 Is Inadequate.

These sections fail to identify and address potential impacts to special status species and sensitive habitats as a result of the proposed disposal of up to 100 cubic yards of drilling spoils within the dune habitat at the CEMEX Property as a result of slant well drilling. This proposed Marina-73

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Project component must be identified in this section and analyzed as a potentially permanent disturbance of sensitive habitat and what extent that disturbance could affect sensitive species in the area of disposal and surrounding areas. Adverse impacts related to the type and quantity of material to be disposed of in the on-site dunes (ESHA) should be clearly identified and mitigated. Once properly accounted for in the Draft EIR/EIS, these new and more severe impacts must be analyzed and the document then recirculated for public review. Marina-73 cont.

5. The Analysis of Impact 4.6-C Is Inadequate.

The discussion of Impact 4.6-C inadequately analyzes the Project's potential cumulative impacts on native dune habitat and central dune scrub. The analysis incorrectly determines that cumulative impacts would be less than significant with mitigation due to the (1) limited extent and duration of effects at any MPWSP component site, (2) the prevalence of such habitats within the geographic scope of analysis relative to the areas of the MPWSP effect, and (3) the nearby availability of such habitats for use by species displaced during the construction period. The purported evidence of a less than significant cumulative impact in item number (1) fails to account for the permanent and ongoing operation-related disturbance that would occur in sensitive native dune areas at the CEMEX site. Item number (2) fails to reflect that native dune habitat and central dune scrub are limited and finite resources. According to the Western Snowy Plover Recovery Plan (USFWS 2007), the management potential for plovers in the Lonestar Beach subarea is second only to the Salinas River National Wildlife Refuge (Zander 2013). Marina-74

Therefore, plover habitat comparable to that at the CEMEX (formerly Lonestar) Property may only be located in one other place in Central California: the Salinas River National Wildlife Refuge. The purported "prevalence" of these habitats in the project vicinity, and the nearby availability of such habitats for use by displaced species, both during construction and permanently as a result of Project operations (though not considered in the Draft EIR/EIS) is a gross misstatement. The permanent loss of 6 acres of coastal dune scrub, native dune habitat, and snowy plover habitat is a considerable contribution to cumulative loss of habitat for this species statewide. In fact, it is difficult to imagine a project that would result in greater cumulative impacts to this species. Based on the historic cumulative loss of suitable habitat and decline in species population, the Project's cumulative impacts to Western snowy plover and its habitat should be considered significant and unavoidable.

6. The Analysis of Operational And Siting Impacts Is Inadequate.

Section 4.6.5.2 fails to address the adverse effects that would occur as a result of routine maintenance and grading of the slant well access road. Due to the shifting nature of the dunes, the access road would require regular grading and maintenance. The Draft EIR/EIS fails to identify the level of disturbance necessary to maintain the road to provide access and accommodate routine inspections and site visits at the slant well heads conducted in addition to the 5-year periodic maintenance activities. The evaluation of operational impacts is invalid because it fails to account for potentially significant adverse effects that would result from this activity. Marina-75

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7. The Analysis of Impact 4.6-6 Is Incorrect And Inadequate.

It is unclear why or how the Draft EIR/EIS determined that only 1.6 acres of Smith's blue butterfly habitat would be disturbed during ongoing maintenance activities. Coast buckwheat, host plant for Smith's blue butterfly, occurs throughout the CEMEX Property and has the potential to occur throughout the entire 6 acre area of disturbance. Unless it can be clearly established that the majority of the disturbance area does not provide habitat for Smith's blue butterfly, the Draft EIR/EIS significantly understated the level of impact to Smith's blue butterfly habitat. The Draft EIR/EIS should identify the actual amount of habitat that would be affected; if all six acres of the disturbance area would be affected, the Draft EIR/EIS should be revised to accurate state the level of impact and recirculated to disclose the substantial increase in the severity of this effect.

Marina-76

The discussion of Impact 4.6-6 also fails to explain how and to what extent identified mitigation measures would be applied prior to each five-year slant well maintenance operation. Would a new Hazardous Materials Management Plan ("HMMP") and compensatory mitigation be required each time to minimize impacts related to project disturbance?

B. The Draft EIR/EIS's Mitigation Of The Project's Impacts On Terrestrial Biological Resources Is Inadequate.

1. The Project's Mitigation Measures Are Inadequate Because They Are Not Enforceable.

CEQA mandates that proposed mitigation measures be "fully enforceable." Cal. Pub. Res. Code § 21081.6(b); CEQA Guidelines § 15126.4(a)(2). Several of the proposed mitigation measures directly contravene this CEQA requirement, thus invalidating each of the Draft EIR/EIS's conclusions regarding the significance of the Project's adverse environmental impacts that rely on any of the mitigation measures suffering from this critical flaw.

First, the Draft EIR/EIS's General Avoidance and Minimization Measure (MM 4.6-1c) states that erosion shall be remedied, but fails to specify what counts as erosion, how the erosion shall be remedied, and fails to set performance standards for determining whether the erosion has in fact been remedied. (page 4.6-166). Perhaps most notably, the language of the mitigation measure limiting erosion that must be remedied to only erosion that has been "detected" without requiring any kind of monitoring for erosion (at all, much less someone qualified to monitor for such impacts), guts any mitigation this measure could have possibly effected. Thus, this mitigation measure is wholly inadequate to minimize erosion impacts to less than significant levels.

Marina-77

Mitigation Measure 4.6-2b suffers from a similar flaw. This measure purports to reduce direct impacts on sensitive natural communities and the special-status species that utilize them. However, it is completely inadequate to do that. The specific measures in MM 4.6-2b are all subject to the significant caveat, "to the extent feasible" (see page 4.6-207), which—as with MM 4.6-1c—essentially guts the mitigation measure. Without any standard for what constitutes feasibility or non-feasibility, the developer and its contractors are free to completely disregard these mitigation measures by claiming compliance is not feasible. Furthermore, specific elements of this mitigation measure contain even more feasibility qualifiers, such as for salvaging topsoil "to the extent feasible." *Id.* at page 4.6-208. In addition, see, for example, page 4.6-131 (purported avoidance of special-status plants and host plants only "to the extent feasible"); page 4.6-134 (supposedly avoiding impacts on non-nesting birds by limiting construction to the non-nesting season only "when feasible'); page 4.6-137 (similar).

Mitigation Measure 4.6-1j relating to badgers contains the same critical flaw. This measure provides:

> 4. If the biologist determines that any potential dens identified during the preconstruction surveys are inactive, the biologist shall excavate the dens by hand with a shovel to prevent use by badgers during construction.
>
> 5. If active badger dens are found during the course of preconstruction surveys, the following measures shall be taken to avoid and minimize adverse effects on American badger:
>
>   a. Relocation shall be prohibited during the badger pupping season (typically February 15 to June 1).
>
>   b. Construction activities shall not occur within 50 feet of active badger dens. The Lead Biologist shall contact CDFW immediately if natal badger dens are detected to determine suitable buffers.

Marina-77 cont.

As written, these measures do not provide a reasonable threshold or parameter for the biologist to determine that the den(s) is inactive. The survey would likely be conducted in the daytime, when any badgers are down in the den; therefore, the biologist would not be able to verify the den is inactive before collapsing the den. Accordingly, this measure should be revised to include the use of game cameras on the potentially active den(s) for at least three nights prior to the den(s) being collapsed. Then, only after badgers were not photographed entering or leaving a den for three nights, may that den be collapsed.

In sum, the Draft EIS/EIR's mitigation—and thus the impact conclusions relying on such mitigation—is inadequate under the law. All mitigation measures containing "requirements" that would only be implemented "to the extent feasible," "to the extent possible," or "where practicable" (or similar) must be reassessed to determine the actual extent the measures would be implemented and rewritten accordingly. Only after the level of actual implementation has been determined can a valid analysis be conducted on whether and to what extent significant adverse impacts have been mitigated.

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2. Mitigation Of Impacts On Protected Bird Species Is Inadequate.

The Project area includes significant Western snowy plover habitat, such as the CEMEX Property to be disturbed by the proposed slant well construction, operation, and maintenance. *Id.* at 4.6-50, 4.6-129. The Project area also includes "numerous" native birds protected under the MBTA and California Fish & Game Code (4.6-41, 59-62), including habitat of California species of special concern, the tricolored blackbird, the short-eared owl, and the western burrowing owl (4.6-59-60). There is no doubt that the Project has the potential to have a very significant adverse impact on these bird species. *See, e.g.*, 4.6-129-131.

While the Draft EIR/EIS contains mitigation measures purportedly designed to reduce impacts to these species, these mitigation measures are wholly inadequate. First, MM 4.6-1i, Avoidance and Minimization Measures for Nesting Birds, is insufficient to mitigate the Project's impacts on nesting birds. The preconstruction surveys are only required within 14 days of the commencement of construction, leaving two full weeks for birds to start nesting in between the survey time and the start of construction. This mitigation measure must be revised to require surveys to be conducted within no more than 48 hours of the commencement of construction. In addition, the MM should be revised to specify what type of survey methodology is required. Marina-78

MM 4.6-1h, Avoidance and Minimization Measures for Western Burrowing Owl, is also inadequate as currently proposed. First, as noted for MM 4.6-1i, this MM should be revised measure to require surveys to be conducted within no more than 48 hours of the commencement of construction. Permitting construction to start 14 days after surveys were conducted is not sufficiently protective of the species. Second, the MM currently states that temporarily disturbed habitat shall be restored to pre-construction conditions, "if feasible." But as discussed above, without a clear standard as to what "feasible" means, this mitigation measure is fatally vague and fails to guarantee any *effective* mitigation.

In addition, Mitigation Measure 4.6-6 is inadequate because it fails to make implementation of bird deterrents enforceable, by requiring that such deterrents "should" be used rather than "shall" be used. The use of bird deterrents should be made a requirement, not a suggestion, in order to ensure mitigation is enforceable and will actually reduce adverse impacts to a less than significant level.

3. Mitigation Of Impacts To Sensitive Communities And Their Special-Status Plant And Animal Inhabitants Is Inadequate.

The Draft EIR/EIS identifies potential impacts to sensitive communities and special-status plants and animals that occupy or may occupy the communities. Some of these impacts will require the Project proponent to obtain an Incidental Take Permit under the California Endangered Species Act ("CESA") and an Incidental Take Statement under Section 7 of the Federal Endangered Species Act ("ESA"). The impacts to sensitive communities and special-status resources are expected to vary from permanent loss of habitat and species individuals to temporary disturbance of habitat or species individuals. However, the Draft EIR/EIS does not Marina-79 quantify the amount of permanent impact or temporary impact to sensitive communities and/or species.

To reduce these impacts to less than significant levels under CEQA, the Draft EIR/EIS heavily relies on the preparation and implementation of a Habitat Mitigation and Monitoring Plan (Mitigation Measure 4.6-1n). Mitigation Measure 4.6-1n requires the Habitat Mitigation and Monitoring Plan ("HMMP") to be reviewed and approved by the permitting agencies. Since the Project is anticipated to result in permanent impacts, the HMMP is supposed to address the need for compensatory mitigation (Item 17 in MM-4.6-1n).

However, because the Draft EIR/EIS does not quantify the anticipated permanent impacts to the sensitive resources, the Draft EIR/EIS cannot verify that the Project proponent has, under its ownership or via other property rights, sufficient lands to implement compensatory mitigation for permanent impacts to sensitive resources at a ratio that is adequate to reduce the impacts to less than significant levels under CEQA. In order for the proposed mitigation to adequately reduce the identified impacts to be less than significant, the Draft EIR/EIS must include the following:

1. Quantification of permanent and temporary impacts to sensitive resources;
2. Ratios for mitigating the estimated impacts;
3. Methods of mitigating the identified impacts (restoration, enhancement, land acquisition, preservation, etc.);
4. Success standards for the proposed mitigation measures and an enforcement mechanism that ensures those standards are met;
5. Contingency measures that will be triggered if the success standards are not achieved; and
6. Identification of available, accessible mitigation lands.

Marina-79 cont.

Due to the size of the Project, magnitude of potential impacts, and the need for an Incidental Take Permit from the California Department of Fish & Wildlife ("CDFW"), it is likely that the HMMP will need to include the acquisition and transfer of habitat management lands. The Draft EIR/EIS is flawed in that it fails to identify whether the Project proponent has the lands required to implement compensatory mitigation. *See, e.g.*, *Kings Cty. Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 727 (1990) (mitigation agreement that called for purchases of replacement groundwater supplies without specifying whether water was available was inadequate measure for mitigating project's effect on groundwater supplies). The Draft EIR/EIS needs to quantify the potential impacts, propose mitigation ratios for the impacts, and identify where and how the impacts will be mitigated in sufficient detail to verify that the Project proponent has the means to implement the HMMP. Without this verification, MM-4.6-1 may not be feasible or adequately mitigate impacts. As a result of the above deficiencies, the Draft EIR/EIS's conclusion that the permanent and temporary impacts to sensitive communities and special-status species are mitigated to less than significant is incorrect and invalid.

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This measure also improperly defers mitigation by failing to identify appropriate performance standards that would be included in the HMMP to ensure that any potential impacts would be mitigated to less than significant levels. This contravenes CEQA, which mandates that mitigation not be deferred unless the relevant measure specifies performance standards and further action to carry the project forward is contingent on meeting those specific performance criteria. CEQA Guidelines § 15126.4(a)(1)(B); *Endangered Habitats League, Inc. v. Cty. of Orange*, 131 Cal. App. 4th 777, 794 (2005) (rejecting mitigation measure that did not include any criteria or standards); *Sacramento Old City Ass'n v. City Council*, 229 Cal. App. 3d 1011, 1029 (1991) (mitigation may only be deferred if specific performance criteria are articulated at the time of project approval and the project may not move forward unless it meets them).

Mitigation Measure 4.6-1 not only defers the preparation of the HMMP, but also defers identification of appropriate performance standards "by which successful completion of mitigation can be assessed in comparison to a relevant baseline . . . and by which remedial actions will be triggered." But if the performance standards are not known, it cannot be determined that they would adequately reduce potentially significant impacts to less than significant levels. Thus, this impact must be properly mitigated or identified as significant and unavoidable. Any added performance standards must be recirculated so they public, interested stakeholders, and Responsible Agencies have the opportunity to comment on the feasible ways to mitigate or avoid the substantial adverse effect.

Many of the impacts identified in this section rely back on Mitigation Measure 4.6-1n to support a less than significant impact determination. Each of these determinations is inadequately supported due to the multiple shortcomings of this measure.

Marina-79 cont.

4. Mitigation Measures Involving Capture And Relocation Must Be Revised.

Mitigation Measure 4.6-1o requires capture and relocation of ESA and CESA protected species, but does not clearly state that ESA and CESA issued incidental take permits are necessary prior to capturing these species. The EIR section does identify the need for the applicant to obtain an Incidental Take Permit ("ITP"); however, this requirement is not carried into the mitigation measure. This mitigation measure should be revised to include requirements for the Project to be covered by ITP and to clarify that the implementing biologist must be approved under the ITP.

Similarly, Mitigation Measure 4.6-1g states: "The Lead Biologist shall appoint a qualified biologist possessing a Scientific Collecting Permit issued by CDFW for black legless lizard, silvery legless lizard, and coast horned lizard to conduct preconstruction surveys for legless lizards and coast horned lizards within 24 hours prior to the initiation of ground disturbing activities or vegetation clearing in suitable habitat…" However, possession of a CDFW Scientific Collection Permit does not authorize an individual to capture and/or relocate sensitive species for CEQA compliance. Thus, this measure does not adequately mitigate impacts on these lizard species.

Marina-80

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5. Mitigation Measures Must Be Revised To Correct Improper Deferral Of Mitigation.

Numerous measures throughout sections 4.6.5.1 and 4.6.5.2 improperly defer to the discretion of United States Fish & Wildlife Service ("USFWS") and CDFW to define the extent and limits of what would be required as mitigation. These mitigation measures are inadequate because identified minimum performance standards are not defined in a way that would be enforceable by the lead agencies. Minimum performance standards are provided in an exemplary manner, subject to future reduction or removal by CDFW or USFWS. In the absence of enforceable mitigation measures, it cannot be stated that impacts would be reduced to less than significant. These measures should be rewritten to identify the minimum performance standards with certainty that would be met by CalAm and which could not be further reduced through future negotiations with outside regulatory agencies. Until the minimum mitigation possible is identified (i.e., compensatory mitigation ratios of no less 2:1 would be required), it cannot be established whether mitigation would reduce potentially significant impacts to less than significant levels. Marina-81

6. Mitigation Measure 4.6-1d Is Inadequate.

This measure states that CalAm will identify and secure access rights and other approvals to implement the HMMP. CalAm's ability to secure access rights and necessary approvals may not be feasible, rendering this mitigation potentially infeasible. The Draft EIR/EIS does not provide substantial evidence that suitable, similarly valuable, dune habitat is available for compensatory mitigation in the Project vicinity. Most of the dunes on the Monterey Peninsula have been disturbed or lost due to population growth and development. The dune complex at the CEMEX Property constitutes one of the biggest and best preserved stretches of dune habitat in the entire County and Central California. The Draft EIR/EIS fails to identify the lack of comparable areas suitable for compensatory mitigation as a constraint to implementation of mitigation and improperly concludes that the identified mitigation would reduce potential impacts to a less than significant level. As a result, Mitigation Measure 4.6-1d is flawed and must be redone. *See, e.g., Kings Cty. Farm Bureau*, 221 Cal. App. 3d at 727 (mitigation agreement that called for purchases of replacement groundwater supplies without specifying whether water was available was inadequate measure for mitigating project's effect on groundwater supplies). Marina-82

This measure requires annual monitoring to ensure restoration is successful but fails to identify appropriate performance standards for "success" or the duration of annual monitoring. Would monitoring in perpetuity be required to ensure the restored area of dunes is forever preserved and protected for the benefit of the sensitive species that rely on this habitat? The failure to identify standards on which the determination of "successful" restoration would be met renders this mitigation measure useless; it is impossible to determine whether restoration activities as required by identified mitigation measures would, in fact, reduce significant impacts resulting from the disturbance and permanent loss of ESHA during project construction. Therefore, this impact should be considered significant and unavoidable. Even the proposed mitigation ratio of 2:1 is not made mandatory by the measure, which provides that this ratio could always be renegotiated at a later date. CEQA does not allow a lead agency to merely cite to later processes and approvals (i.e., from USFWS) to establish that an impact would be properly mitigated. If USFWS fails to require adequate mitigation and restoration, the impact would be significant and unavoidable. Deferral of mitigation is prohibited where the agency fails to commit itself to specific performance standards. *See POET, LLC v. State Air Res. Bd.*, 218 Cal. App. 4th 681, 688 (2013) (an agency must commit to "specific performance criteria for evaluating the efficacy of the measures implemented"). At the very least, an EIR must identify methods the agencies will consider for mitigating impacts, and indicate the expected outcome. CEB, *Practice Under the California Environmental Quality Act* § 14.12, p. 14-18.

This measure also provides for alternative mitigation through the payment of funds to a mitigation bank. There is no logical reason provided to show why on-site restoration activities should not also be required to mitigate significant impacts on sensitive species and ESHA to the greatest extent feasible. Restoration should be a required and enforceable mitigation requirement in the Draft EIR/EIS regardless of whether in lieu fees are also required. Due to the permanent loss of dune habitat and ESHA at the site that can never be restored, both restoration and payment of in lieu fees should be required.

The Draft EIR/EIS states that this measure would apply to periodic maintenance of the subsurface slant wells but does not provide any explanation of how that would minimize impacts. Would a separate HMMP be prepared prior to every occurrence of 5-year maintenance activities? Would the HMMP consider disturbance associated with maintenance "new" disturbance, subject to the restoration and compensatory mitigation requirements? This creates an even more blatant feasibility concern, as the area of disturbance for routine maintenance (6 acres) would require CalAm to find 12 acres of land (assuming a 2:1 ratio) suitable for compensatory mitigation every 5 years, or approximately 96 acres of dune habitat for restoration and ongoing monitoring into perpetuity over an estimated 40-year Project lifespan. Do the Project proponents have any evidence to support the feasibility of this requirement? If the identified mitigation is infeasible, the impact should be identified as significant and unavoidable. The mere payment of fees for protection of off-site resources would not reduce the impacts to sensitive biological resources and ESHA to less than significant levels.

Marina-82 cont.

Numerous additional mitigation measures in this section state that the measure would also apply to periodic maintenance of the subsurface slant wells. The Draft EIR/EIS must explain exactly how those measures would be applied and whether or not CalAm would be required to meet the full extent of every measure prior to each 5-year periodic maintenance period. The Draft EIR/EIS's failure to do so makes it impossible to determine whether impacts resulting from periodic maintenance would in fact be reduced to less than significant. Failure to include this information also deprives the public of a meaningful opportunity to comment upon substantial adverse environmental effects of the Project and feasible ways to mitigate or avoid such effects.

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7. Mitigation Measure 4.6-1e Should Apply More Broadly.

Mitigation Measure 4.6-1e should apply to all Project areas that contain sensitive plan species and/or habitats. The Draft EIR/EIS's failure to include this measure for Project components other than the Terminal Reservoir inadequately mitigates the extent of impacts. Marina-83

CHAPTER 4.7 – HAZARDS AND HAZARDOUS MATERIALS

A. This Section Fails To Properly Analyze Project Inconsistencies With Hazardous Waste Regulations And Describe How They Will Be Resolved.

Many of the consistency determinations throughout chapter 4.7 state that, because contractors would be required to comply with the relevant regulations, the Project would be consistent with those regulations. This reasoning is circular and not useful. There is no attempt to establish that the proper procedures and protocols are in place to ensure the contractor would follow the required regulations and the Project would be consistent with the referenced regulations. There is no evaluation as to whether Project redesign or modifications would be necessary to ensure compliance with a particular regulation, the impacts of which would need to be evaluated in the Draft EIR/EIS.

Section 4.7.2 states that contractors are required to comply with the water main separation regulations in Cal. Code Regs. tit. 22 § 64572, which would make the Project consistent. This is circular and not useful, as described above. In addition, this section states that new water supply lines shall not be within 10 horizontal feet of any parallel pipeline carrying secondary-treated wastewater. The proposed source water pipeline runs parallel in very close proximity to the existing MRWPCA outfall (which conveys treated wastewater) and in at least one location, crosses the outfall. It is physically impossible for the crossing location to comply with Section 64572 regulations and it is unclear whether the remainder of the source water pipeline maintains the required 10-foot minimum distance from the outfall. This issue should be clarified and the proposed means for addressing the inconsistency must be identified and analyzed in the Draft EIR/EIS. Are exceptions to this requirement permitted? Would Project redesign be required to ensure consistency? Marina-84

The analysis of "Chapter 15.56 – Digging and Excavation the Former Fort Ord" in Table 4.7-3 states that the Project would be potentially inconsistent with this policy. Regardless of whether previously unknown contamination may be discovered, there is no reason why the Project should not be required to comply with this policy. The policy requires acquisition of permits prior to disturbance, special standards and procedures prior to digging and excavation, and standard noticing and reporting requirements. The potential for discovery of previously unknown contamination would not create inconsistency with this policy; any potential inconsistency with this policy reflects inadequate mitigation of potential project effects and/or failure to comply with required City of Marina Municipal Code special standards and procedures.

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In addition, this table states that the Project would be consistent with City Municipal Code Section 8.12.050, which sets registration and filing requirements for any use that involves hazardous materials for any one time during the year. The Project would require containment of hazardous materials during construction and routine maintenance of the slant wells, resulting in a potential inconsistency with this policy. The analysis seems to assume the requirement only applies to long-term storage of hazardous materials. This section should be rewritten to address short-term storage of hazardous materials and the application of this code section to those uses. Marina-84 cont.

B. The Draft EIR/EIS Fails To Analyze Project Interference With Adopted Emergency Response Plans.

Section 4.7.3 screens out analysis of the Project's potential to physically interfere with an adopted emergency response plan or emergency evacuation plan. As discussed in section 4.9.6, the Project would result in significant and unavoidable traffic and circulation impacts during Project construction due to increased traffic and transportation network disruptions and potentially concurrent construction of the Project and other foreseeable projects listed in Table 4.1-2. The section states, "concurrent construction of these projects could create traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways. Access to adjacent land uses and streets for both general traffic and emergency vehicles could be disrupted." These identified effects indicate that the Project could physically interfere with an adopted emergency response plan or emergency evacuation plan due to significant and unavoidable traffic impacts. Marina-85

The Draft EIR/EIS should include a thorough evaluation of this issue, including a discussion of any applicable emergency response and evacuation plans, identification of the evacuation areas included in those plans, discussion of the emergency response and evacuation routes identified in the plans, identification of alternative emergency response and evacuation routes in the event of loss of access due to Project-related impacts (lane closures and/or access restrictions due to increased congestion), and evaluation of identified measures that would be implemented to ensure no significant impacts would occur (if feasible).

C. There Are Other Deficiencies In The Hazardous Waste Impact Analysis.

Section 4.7.4

The approach to this analysis is inadequate in that it only assumes that "[s]ignificant impacts would occur if the location or activities of project components resulted in conflicts with known hazardous materials sites." Project-related conflicts with unknown hazardous materials sites could result in significant, adverse, and in fact, catastrophic, environmental effects. Other significant impacts, not related to any hazardous materials sites (known or unknown) could also occur due to project construction and operation. The approach to this section should be revised and the analysis revised as necessary to account for all potentially significant impact thresholds identified under CEQA. Marina-86

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Section 4.7.5.1

This section inadequately addresses the potential for frac-out during drilling operations. Frac-out is a potential concern when horizontal directional drilling ("HDD") is used, as is proposed in certain locations throughout the Project area. These areas should be evaluated to determine their sensitivity in the event of a frac-out. If sensitive resources (biological, cultural, hydrological) are present in the areas of proposed HDD, the Draft EIR/EIS must identify potential frac-out as a potentially significant impact to these resources and mitigate the impact accordingly. The Draft EIR/EIS does not specify what type of "drilling fluid" would be used during HDD, but even non-toxic materials such as bentonite (a fine clay material commonly used as a drilling lubricant) can adversely affect sensitive resources. Marina-87

Mitigation Measures 4.7-2a and 4.7-2b

These measures are inadequate in that they do not identify appropriate performance standards that would have to be met in order to ensure potential impacts are mitigated to less than significant. For example, Measure 4.7-2a states that maximum exposure limits for known and reasonably foreseeable site chemicals would be summarized, but there is no requirement that the exposure limits meet acceptable public safety thresholds. Measure 4.7-2b does not include any maximum exposure limits and fails to incorporate RWQCB or California EPA human health screening levels; thus, the measure fails to mitigate a potentially significant impact to worker and human health, and also confirms that the Project would be unnecessarily inconsistent with the identified Environmental Screening Levels ("ESLs") and California Human Health Screening Levels ("CHHSLs") discussed in section 4.7.2.2. Marina-88

Mitigation Measure 4.7-2b

Why does this measure not apply to the slant wells? The Draft EIR/EIS does not support a basis for determining that the potential for exposure to hazardous materials is decreased or absent at this location and, therefore, the mitigation is needed at the slant well location. Since the drilling spoils are proposed to be disposed of on-site by percolating and spreading the excavated material across the sensitive dune sands, the potential for impacting sensitive biological resources as a result of hazardous contamination is increased at this location, justifying more stringent mitigation controls. Marina-89

Impact 4.7-3

This impact discussion understates the potential significance of an unanticipated discovery and detonation of unexploded ordnance, a situation which could not only cause extensive damage to the surrounding environment, but that could also be fatal. Despite compliance with all identified regulations (which is the only mitigation identified to minimize this potential impact), there is still a possibility that a Project-related disturbance in the former Fort Ord Seaside MRS could result in the inadvertent detonation of unexploded ordnance ("UXO"). The Draft EIR/EIS should require that all remedial actions to take place within the Marina-90

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proposed area of disturbance should be completed prior to any Project-related disturbance. This requirement would reduce the potential for unanticipated discovery of UXOs due to Project construction. Alternatively, this impact should be considered significant and unavoidable and risks associated with disturbance within the Seaside MRS should require the lead agencies to make overriding considerations. Marina-90 cont.

Impact 4.7-5

Impacts under this section related to the potential unanticipated disturbance and detonation of UXOs and resulting potential wildfires that could occur, are similarly understated. Although the potential for the impact to occur is reduced through compliance with existing regulations, the potential is not eliminated and the resulting effect would be severe. The Draft EIR/EIS should identify all feasible mitigation available to avoid and minimize this potential impact, including for example, a requirement that site remediation activities be completed before Project-related disturbance is allowed within the Seaside MRS. Alternatively, this potential impact should be considered significant and unavoidable. Marina-91

Section 4.7.5.2, ASR-5 and ASR-6 Wells, and Terminal Reservoir

This section does not adequately address potential groundwater impacts associated with injection of chlorinated water into groundwater aquifers. The Draft EIR/EIS cites to a single test injection well to support a determination of less than significant impacts that could result from proposed injections; the test injection well showed that by-products increased during the first 60 days of storage before declining slowly over the following 90-150 days (3-5 months). The Draft EIR/EIS should, first and foremost, identify the location of the test injection well; second, discuss the factors that cause the formation of disinfection by-products as a result of injection; and third, provide substantial evidence that supports the assumption that conditions and findings at the test injection well would apply and be consistent with potential effects at the proposed ASR injection locations. The fact that groundwater extracted for drinking water supply would have to meet drinking water requirements does not mitigate potential groundwater contamination impacts related to groundwater injection. Marina-92

Section 4.7.6

This section fails to address potential cumulative effects of the Project related to the physical interference with an adopted emergency response plan or emergency evacuation plan. This issue area must be evaluated in the Draft EIR/EIS, particularly in consideration of the identified significant and unavoidable traffic, access, and congestion-related issues during Project construction. Marina-93

<u>CHAPTER 4.8 – LAND USE, LAND USE PLANNING, AND RECREATION</u>

The City is a Responsible Agency for the Project because it will be considering the Coastal Development Permit for the Project according to its Local Coastal Program as authorized by the California Coastal Act. Cal. Pub. Res. Code §§ 30000, *et seq*. It is absolutely essential Marina-94

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that the environmental information contained in the EIR/EIS for the Project be adequate in all respects so that the City can properly exercise its discretionary approval power over the Project. *See* CEQA Guidelines § 15096. Among other things, a full and complete description of the legal authorities relating to this decision must be contained in the document. Unfortunately, this section of the Draft EIR/EIS does not contain a sufficient description of the relevant California Coastal Act provisions (page 4.8-16 to 17) or of the City's Local Coastal Plan (page 4.8-18). Marina-94 cont.

This chapter concludes that the Project is consistent with the Coastal Act policies and with the City's Local Coastal Plan. However, for the reasons set forth in the comments for chapter 4.6 herein, these conclusions are unsupported and inadequate.

CHAPTER 4.9 – TRAFFIC AND TRANSPORTATION

There are several inadequacies in the Draft EIR/EIS analysis of traffic and transportation that are discussed in this section.

Mitigation Measure 4.9-6

Marina-95

The Draft EIR/EIS should explain why pre-project road conditions have not been evaluated yet and potential necessary rehabilitation measures have not yet been identified. By deferring the roadway evaluation and identification of suitable mitigation, the extent of potential impacts has not been adequately identified and the feasibility of appropriate mitigation is unknown. Necessary mitigation could be determined infeasible and/or could have secondary impacts associated with necessary road rehabilitation improvements that have not been addressed. The existing roadway evaluation should be conducted and this mitigation measure should be revised to identify any necessary road rehabilitation measures and associated secondary impacts prior to finalizing the Final EIR/EIS.

Staging Area (Page 4.9-33) and Mitigation Measure 4.9-7

This discussion states that the proposed staging areas would occupy portions of parking lots (e.g. a lot that serves Cal State Monterey and a Walmart parking lot). Mitigation has been applied that requires the construction contractor to coordinate with the affected jurisdictions (i.e., Cal State Monterey and the cities of Marina and Seaside) to design staging areas to avoid or minimize parking impacts in the publicly used parking lots. This mitigation measure should be revised to require coordination with the affected Walmart store to design staging areas to avoid or minimize parking impacts in the Walmart parking lot. Marina-96

CHAPTER 4.10 – AIR QUALITY

Marina-97

There are a variety of inadequacies in the air quality impact analysis and associated mitigation that are discussed in this section.

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Impact 4.10-1 and Mitigation Measure 4.10-1a

The discussion of mitigated construction emissions of NO_x assume that compliance with Mitigation Measure 4.10-1a would result in equipment emissions that would be equivalent to those that would be associated with engines that comply with Tier 3 engine standards. However, Mitigation Measure 4.10-1a only requires CalAm and/or its construction contractor to make a "good faith effort" to use available construction equipment that meets the highest USEPA-certified tiered emission standards. Therefore, the Project would not be required to use only equipment that meets the Tier 3 standard and construction emissions could be even higher than the stated mitigated quantity of 324 pounds per day, which is already 187 lbs above the daily threshold of 137 lbs (by more than double).

Since the Project would result in construction emissions of NO_x that would constitute a significant and unavoidable impact with mitigation, Mitigation Measure 4.10-1a is inadequate in failing to require the use of construction equipment that meets the Tier 3 engine standards (as opposed to requiring a "good faith effort" to use Tier 3 construction equipment). CEQA requires lead agencies to mitigate potentially significant impacts to the extent feasible. The Draft EIR/EIS should have incorporated or provided clear information showing why the following feasible mitigation measures, included in the MBUAPCD's CEQA Air Quality Guidelines, are not feasible or otherwise not included as mitigation to reduce construction emissions of NO_x. Marina-97 cont.

<u>Feasible Mitigation Measures:</u>

- Limit the quantity of equipment.
- Limit the type of equipment.
- Limit the rate and quantity of fuel consumption and/or process throughput.
- Limit the number of hours of operation per day.
- Apply RACT or BACT to stationary sources unregulated by the District.
- Limit the pieces of equipment used at any one time.
- Minimize the use of diesel-powered equipment (i.e., wheeled tractor, wheeled loader, roller) by using gasoline-powered equipment to reduce NO_x emissions.
- Limit the hours of operation for heavy duty equipment.
- Undertake Project during non-zone season (November 1 – April 30).
- Off-site mitigation.

For specific control technologies, the Draft EIR/EIS should refer to and incorporate CAPCOA's BACT Clearinghouse, the South Coast Air Quality Management District's BACT Clearinghouse, or EPA's AP-42 Compilation of Air Pollutant Emission Factors (Volume I). The CEQA lead agency cannot simply identify a significant and unavoidable impact when feasible mitigation options are available. There are numerous mitigation options available for the agency to implement to reduce NO_x emissions, which the Draft EIR/EIS fails to implement to reduce impacts of the MPWSP. These must be identified in the Draft EIR/EIS and the resulting emissions must be quantified to establish whether impacts have been reduced to less than significant. If they have not, then additional mitigation should be required. If minimization of impacts to less than significant is not feasible through implementation of on-site mitigation, then off-site options should be considered. Marina-97 cont.

Impact 4.10-1 and Mitigation Measure 4.10-1c

In Mitigation Measure 4.10-1c, replanted vegetation should be required to be native, drought-tolerate species.

The Draft EIR/EIS is inadequate in that it fails to incorporate or clarify why the following feasible mitigation measures, included in the MBUAPCD's CEQA Air Quality Guidelines, are not included as components of the Construction Fugitive Dust Control Plan to reduce construction emissions of PM_{10}. Marina-98

Feasible Mitigation Measures:

- Prohibit all grading activities during periods of high wind (over 15 mph).
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Limit the area under construction at any one time.

Impact 4.10-3; Sensitive Receptor Exposure to *Coccidioides* Spores

The California Department of Public Health identifies Monterey County as having a high rate of Valley Fever: (http://www.cdph.ca.gov/HealthInfo/discond/Documents/EnglishValleyFeverBrochure.pdf). If construction activities that include ground disturbance have the potential to release *coccidiodes immitis* spores and result in the exposure of sensitive receptors (i.e., construction personnel) to these hazardous conditions, this section should include mitigation that requires CalAm or the construction contractor to prepare and implement a worker training program that describes potential health hazards associated with Valley Fever, common symptoms, proper safety procedures to minimize health hazards, and notification procedures if suspected work-related symptoms are identified during construction. The worker training program should identify safety measures to be implemented by construction contractors during construction. Marina-99

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Additionally, this section should specify what any additional measures would be implemented between June 1 and November 30, when Valley Fever rates of infection are the highest, such as additional water or the application of additional soil stabilizer, prior to and immediately following ground disturbing activities if wind speeds exceed 15 miles per hour (mph) or temperatures exceed 95 degrees Fahrenheit. The Draft EIR/EIS should fully analyze the potential impacts and risks associated with Valley Fever. Once the necessary analysis has been provided, it should be recirculated to provide the public an opportunity to review and comment on the potential impacts and proposed mitigation measures to reduce those impacts. Marina-99 cont.

Impact 4.10-C

The reader should refer to Impact 4.10-1 and Mitigation Measure 4.10-1a discussion above. While mitigation may not be available that would reduce the Project's contribution to less than cumulatively considerable, the Draft EIR/EIS must identify and ensure all feasible mitigation measures have been applied to the Project to reduce construction emissions to the greatest extent feasible. Mitigation Measure 4.10-1a is inadequate in that it does not require the use of construction equipment that meets the Tier 3 engine standards (rather than only requiring a good faith effort to use Tier 3 construction equipment). The document should also either incorporate or clarify why the previously listed standard feasible mitigation measures, included in the MBUAPCD's CEQA Air Quality Guidelines, are not included as mitigation to reduce construction emissions of NO_x and PM_{10}. Marina-100

There are numerous mitigation options available to reduce significant air quality impacts associated with the Project. Unless it can be shown, and supported by substantial evidence, that available mitigation options are not feasible, the Draft EIR/EIS must incorporate any feasible measures to reduce potentially significant impacts. The Draft EIR/EIS is inadequate in that it fails to properly identify and include feasible mitigation measures to reduce potentially significant project-specific and cumulative impacts on air quality.

CHAPTER 4.11 – GREENHOUSE GAS EMISSIONS

Desalination plants and their associated facilities are well known for their highly intensive use of electricity. This chapter concludes that greenhouse gas emissions from the long-term operation of the Project, primarily due to "indirect emissions from the project's use of electricity, which would be provided by the local PG&E electrical power grid," will be a significant environmental impact. Draft EIR/EIS at 4.11-17. The analysis proposes a single Mitigation Measure (MM 4.11-1) that supposedly addresses this impact, but then concludes that the impact is significant and unavoidable, even with mitigation. However, this approach is legally inadequate. Marina-101

First, the Draft EIR/EIS fails to suggest an appropriate mitigation measure for this significant impact. An EIR must propose and describe mitigation measures to minimize significant environmental effects. Cal. Pub. Res. Code § 21100(b)(3); CEQA Guidelines,

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§ 15126.4(a)(1) ("An EIR shall describe feasible mitigation measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy"). Indeed, due to the importance of reducing greenhouse gas emissions in California, the CEQA Guidelines contain a special section relating to mitigation measures for greenhouse gas emissions. *See* CEQA Guidelines § 15126.4(c).

Neither the Energy Conservation Technologies nor the Renewable Energy components of Mitigation Measure 4.11-1 meets these legal requirements. The Energy Conservation Technologies requirement in 1(a) requires CalAm to have a qualified professional prepare and submit a GHG Emissions Reduction Plan prior to the start of project construction activities, which would include a detailed description of the carbon footprint for all operational components of the approved project (e.g., slant well pumping, the MPWSP Desalination Plant, transmission of source and product water, ASR system) based on manufacturer energy usage specification data for each piece of equipment and the most current PG&E power system emissions factor for GHG emissions. The future Plan would include a summary of state-of-the-art energy recovery and conservation technologies available for utility scale desalination facilities and a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the Project, the Plan would clearly explain why such technology is considered to be infeasible.

This Mitigation Measure is effectively deferring the detailed identification of the operational carbon footprint and consideration of energy-efficient technologies. The Draft EIR/EIS should provide the quantitative carbon footprint information, evaluate the feasibility of all possible energy conservation technologies and practices, include implementation of the feasible energy conservation technologies and practices as mitigation, and explain why additional available energy conservation measures are not feasible.

Marina-101 cont.

The Renewable Energy component in section (b) requires CalAm to make good faith efforts to ensure that at least 20 percent of the approved project's operational energy use requirements are achieved with "clean" renewable energy. However, no concrete commitment is made to achieving that performance standard beyond "good faith efforts." If the performance standard is to ensure at least 20 percent of the approved project's operational energy use requirements are achieved with "clean" renewable energy, the mitigation measure should include specific steps for achieving that performance standard that will be feasible for this Project to implement and achieve. The Energy section of the Draft EIR/EIS should quantitatively evaluate proposed energy consumption and the effectiveness of proposed mitigation for reducing consumption by at least 20 percent to demonstrate feasibility.

Substantial evidence that a 20 percent reduction would reduce potential impacts to less than significant levels should be provided, particularly in light of recent case law decisions in *Ctr. for Biological Diversity v. Cal. Dept. of Fish & Wildlife*, 62 Cal. 4th 204 (2015) (EIR's finding that greenhouse gas emissions would be less than significant under threshold of significance must be supported by "a reasoned explanation based on substantial evidence"), *Cal. Clean Energy Comm. v. City of Woodland*, 225 Cal. App. 4th 173 (2014), *Ukiah Citizens for*

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Safety First v. City of Ukiah, 248 Cal. App. 4th 256 (2016), and *Spring Valley Lake Ass'n v. City of Victorville*, 248 Cal. App. 4th 91 (2016). Marina-101 cont.

CHAPTER 4.12 – NOISE AND VIBRATION

This section addresses a variety of deficiencies in the impact analyses and mitigation measures for noise and vibration impacts.

Impact 4.12-1

The impact discussion generally states that "the proposed pipelines and pump station would be constructed during daytime hours to the extent feasible." The Draft EIR/EIS should clarify what the anticipated timeframe of daytime construction operations would be; specify start and stop times. The severity of noise impacts would vary depending on the time of construction; this information is critical to support significance determinations in the Draft EIR/EIS. Marina-102

Pipelines North of Reservation Road

This section states that nighttime construction could be required at certain locations to meet the Project schedule or avoid peak hour traffic impacts. This section concludes that significant impacts would not occur because the maximum noise levels at any one location would be limited to a period of 1 to 3 days and would not exceed the two-consecutive-weeks threshold. However, this impact discussion does not specify how local noise ordinances pertaining to nighttime construction operations would be achieved. Clarity is needed on how the contractor(s) will ensure that nighttime thresholds will not be exceeded, to clearly establish measures are feasible and that impacts would be less than significant. Marina-103

ASR-5 and ASR-6 Wells

This impact discussion concludes that nighttime noise impacts would remain significant and unavoidable even with implementation of mitigation. The Draft EIR/EIS should clarify why construction of ASR-5 and ASR-6 cannot feasibly be restricted to daytime hours when mitigation can feasibly reduce noise levels below the threshold to avoid the significant impact associated with nighttime construction noise. It seems that this impact is avoidable through appropriate modification of the proposed construction schedule. Why is this solution not included as feasible mitigation to reduce the significant impact to be less than significant? Marina-104

Impact Conclusion

Refer to the ASR-5 and ASR-6 comment above. Although CalAm may not want to alter its identified construction schedule, it seems that nighttime noise impacts are avoidable through appropriate modification of the proposed construction schedule. The Draft EIR/EIS should explain why this solution is not included as feasible mitigation to reduce the significant impact to be less than significant, and it should include an analysis of all feasible construction techniques Marina-105 and options for avoiding nighttime construction. Marina-105 cont.

Mitigation Measure 4.12-1a

Marina-106

This measure is inadequate in that it fails to identify the types of feasible measures that "could be implemented to correct the problem." Would construction activities stop? Would different, quieter construction equipment be brought in to address the issue? Are other measures available that would reduce noise in the event of a complaint? Or would a CalAm representative merely respond to the complaint by saying there's nothing they can do about it? This non-specific mitigation measure does not meet the specificity requirements of CEQA/NEPA and also fails to adequately protect nearby residents. A target response time should be specified for addressing reported noise complaints.

Mitigation Measure 4.12-1c

Marina-107

This measure fails to identify appropriate performance standards that would ensure impacts are reduced to the greatest extent feasible. What if moveable noise screens, noise blankets, or other suitable sound attenuation devices do not reduce noise levels below 60 dBA? What other mitigation measures are available? The Draft EIR/EIS must specify why additional suitable noise control procedures have not been identified and included as mitigation.

The Draft EIR/EIS fails to identify suitable mitigation measures that could further avoid and reduce potentially significant impacts. For example, exhaust mufflers and steel muffling sleeves and similar equipment should be required to the greatest extent feasible. All construction equipment should be "quiet" or "whisperized" type equipment to the greatest extent available. All equipment should be electrically powered rather than gasoline or diesel powered to the extent feasible. Sound barriers should be constructed of materials and in a manner to achieve the highest level of noise reduction. Electric power in lieu of internal combustion engine power should be required. Equipment should be maintained to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines should be required to have properly functioning mufflers. Engine shrouds should be required. Noisy equipment, lay-down and vehicle staging areas should be required to be kept as far away from noise-sensitive site boundaries as possible. Vehicles should not be allowed to idle. Construction crews should be prohibited from playing radios, using amplified sound, or other similar items at the construction site. The noisiest construction activities and haul truck activities should be scheduled during periods of the day that would have the least impact on adjacent sensitive receptors.

Clearly, there is a multitude of additional mitigation that could be applied to the Project to further reduce potentially significant impacts. The Draft EIR/EIS should evaluate all feasible mitigation measures available to reduce potentially significant noise impacts to the greatest extent possible. The current mitigation program is wholly inadequate, and the Draft EIR/EIS appears to fall back on the "significant and unavoidable" impact determination without attempting to implement all feasible mitigation. This is also true for the weak mitigation programs set out in the Air Quality, Greenhouse Gas Emissions, and Energy Consumption sections of the Draft EIR/EIS. Marina-107 cont.

Mitigation Measure 4.12-1d

This mitigation measure states that "acoustic barriers and/or enclosures shall be used with a goal of reducing noise from well drilling activities to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area." Ultimately, this mitigation measure would not ensure noise from well drilling activities would be reduced to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area: it only requires the use of acoustic barriers and/or enclosures. This mitigation measure should be revised to require monitoring to ensure noise levels are reduced to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area. In the event the "goal of reducing noise from well drilling activities to 60 dBA or less at a distance of 50 feet" is not being met, the Draft EIR/EIS should specify additional mitigation requirements necessary to avoid or reduce the potentially significant impacts (including stopping drilling activities). Marina-108

MPWSP Desalination Plant

This section states that the proposed desalination plant would be potentially inconsistent with the following standard noise protection measures included in the Monterey County General Plan:

- Construction shall occur only during times allowed by ordinance/code unless such limits are waived for public convenience;
- All equipment shall have properly operating mufflers; and
- Laydown yards and semi-stationary equipment such as pumps or generators shall be located as far from noise-sensitive land uses as practical. Marina-109

The impact discussion concludes that impacts would be less than significant because mitigation addresses these "policy-driven mitigation measures by prohibiting equipment with unmuffled exhaust and requiring that staging areas and stationary noise sources be located as far from nearby receptors as possible." While mitigation may address the second and third noise protection measures, they do not address the first. As stated on page 4.12-23, "Construction at the MPWSP Desalination Plant site on Charles Benson Road would occur over 24 months construction period and would require 24-hour construction." The Project is inconsistent with the first standard noise protection measures included in the Monterey County General Plan and mitigation has not been included to address this impact; therefore, the impact discussion pertaining to this project component is not adequate.

The Draft EIR/EIS must address this issue and provide suitable mitigation that will ensure consistency with the standard noise protection measures included in the Monterey County General Plan, or revise the impact determination to be significant and unavoidable if the impact

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cannot be mitigated. If the impact cannot be mitigated, the Draft EIR/EIS should provide clear substantial evidence that available mitigation is not feasible. Marina-109 cont.

Mitigation Measure 4.12-5

This mitigation measure should be revised to clarify the frequency of monitoring and the reporting protocol for results. Marina-110

Impact 4.12-C

Refer to ASR-5 and ASR-6 and Impact Conclusion comments above. It appears that nighttime noise impacts are avoidable through appropriate modification of the proposed construction schedule or other available mitigation measures and the Draft EIR/EIS is inadequate due to the failure to include additional feasible mitigation for this Project component. Please explain why this solution is not included as feasible mitigation to reduce the significant impact to be less than significant. Marina-111

CHAPTER 4.13 – PUBLIC SERVICES AND UTILITIES

This section addresses inadequacies in the impact analyses and associated mitigation measures for public services.

Impact 4.13-2

Excess spoils and construction debris generated during the construction phase of the Project could be contaminated from previous mining activities and/or construction activities and could require specific disposal methods. The Draft EIR/EIS fails to incorporate mitigation, or clarify why mitigation was not incorporated, which would require spoils to be tested prior to landfill disposal to ensure they meet nonhazardous waste disposal criteria. Marina-112

Impact 4.13-4

Exceed Wastewater Treatment Requirements

The Draft EIR/EIS must specify which ten individual constituents did not have sufficient data to form a compliance determination with the Ocean Plan water quality objectives and are conservatively assumed to exceed Ocean Plan water quality objectives. Additionally, it should clarify why baseline conditions were not already evaluated as part of the Draft EIR/EIS preparation and why this data gathering, Ocean Plan compliance assessment, and potentially necessary design feature and/or operational measure(s) to achieve the required minimum dilution of discharge are incorporated as Mitigation Measure 4.3-5. It seems that project design and impact evaluation included in this Draft EIR/EIS would benefit from the results of the data gathering, especially if the results of the data collection could necessitate a change in project design to achieve compliance with the Ocean Plan water quality objectives. Marina-113

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Wastewater Treatment Plant and Outfall Capacity

We understand that the MRWPCA outfall and junction box were damaged substantially during recent storm events and required emergency repair. The Draft EIR/EIS should clarify if and how the results of the Outfall Capacity Evaluation conducted in 2012 by Trussell Technologies are still accurate based on these storm events, current information regarding the potential wave run-up/storm surge/coastal erosion areas at the CEMEX Property, and the recent repair and planned relocation of that infrastructure. The Draft EIR/EIS should disclose how design of the Project has been changed to account for the recent damage (and/or disclose exactly why no siting/design changes could or would be made). Marina-114

The Draft EIR/EIS should confirm if the existing outfall capacity is still 81.2 mgd and if the outfall is still capable of supporting the Project's discharge when combined with instantaneous peak flows of wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant. Please confirm that the analysis of the outfall capacity of the MRWPCA outfall to service the MPWSP for the life of the Project includes the increase in wastewater flows that would occur as a result of the growth-inducing effects of the Project.

Impact 4.13-5

MRWPCA Ocean Outfall – Offshore Segment and Mitigation Measure 4.13-5a

We are aware that the MRWPCA outfall and junction box were damaged substantially during recent storms and required emergency repair. Please clarify if and how the results of the evaluation of the existing condition of the junction box and offshore outfall segment and potential for increased corrosion due to the addition of brine discharge completed by E2 Consulting Engineering (2015) are still accurate based on current conditions of the existing infrastructure. Considering emergency repairs were required and the physical condition of the infrastructure has been substantially altered since the 2015 evaluation took place, the assessment of existing conditions in this impact discussion no longer seems accurate. Based on the recently compromised structural condition and integrity of these project components, we request that the study prepared by E2 Consulting Engineering in 2015 and this impact discussion be updated to reflect the current conditions of this infrastructure and the impacts that the proposed Project could have on these modified features. The need and applicability of Mitigation Measures 4.13-5a should also be reevaluated based on the new conditions of the infrastructure and revised impacts of the Project, and retained/removed as appropriate. Marina-115

MRWPCA Ocean Outfall – Land Segment and Mitigation Measure 4.13-5b and 4.13.5.4 Secondary Impacts of Mitigation Measure 4.13-5b

Marina-116

The Draft EIR/EIS should clarify why an evaluation of the offshore segment of the outfall was conducted in 2015, but an evaluation of existing conditions of the 13,000-foot-long land segment is planned but has not been conducted yet and has instead been deferred as

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Mitigation Measure 4.13-5b. The existing condition of part or all of the land segment could be compromised beyond what can be repaired by an epoxy lining, as proposed in Mitigation Measure 4.13-5b. Without proper evaluation, how is the epoxy lining determined to be the appropriate solution for any problematic conditions that may be found? Additionally, without proper evaluation, how can the feasibility of installing 13,000 feet of epoxy lining be determined? An evaluation of existing conditions of the land segment prior to approval of the Project, rather than deferring the evaluation to "prior to operation of the MPWSP Desalination Plan" (as stipulated by Mitigation Measure 4.13-5b) would better inform the need, or lack thereof, for suitable mitigation.

Additionally, the proposed remedy to any problematic conditions found during the assessment of the land segment, the installation of an epoxy lining, could have significant secondary impacts beyond what have been evaluated in section 4.13.5.3. Considering installation of the epoxy lining could last 4 to 6 months, any construction activities or vehicle use required for this task could contribute to project air quality and greenhouse gas emissions, soil erosion, hydrology impacts, traffic impacts, and noise impacts. Additionally, considering the length of the land segment and proposed duration of installation, Mitigation Measure 4.13-5b should clearly specify the timing and frequency of "site surveys" to be completed by qualified biologists. The proposed staging area at Armstrong Ranch should be described in more detail (i.e., location, size, graded, etc.). All potential secondary impacts of the epoxy lining installation need to be thoroughly evaluated, particularly air quality, greenhouse gas emissions, soil erosion, hydrology impacts, traffic impacts, and noise impacts. Additionally, if additional repairs are needed in addition to an epoxy lining, the Draft EIR/EIS must identify what exactly would be required and evaluate any potential impacts associated with these repairs.

Marina-116 cont.

4.13.6.2 Cumulative Impacts during Project Operations

The RUWAP Recycled Water Element cumulative project could reduce the volume of wastewater discharged through the outfall and diffuser during the summer months, while the RUWAP Desalination Element could increase the volume of brine effluent discharged through the outfall and diffuser. Implementation of either project would result in an increase in the proportion of effluent that is composed of brine.

Marina-117

As discussed under Impact 4.13-5, "the salinity of brine is estimated to range between approximately 57 and 58 parts per thousand (ppt), compared to salinity of seawater in Monterey Bay, which ranges from 33.1 to 34.2 ppt. The "brine only" discharges and combined discharges of brine and wastewater effluent would expose submerged metals and concrete in the outfall and diffuser to high salinity water." Please clarify what evidence supports the justification in section 4.13.6.2 that "although the total volume of brine would increase with the Project and RUWAP Desalination Element, the salinity would not be expected to change substantially." Was any modeling or quantification of salinity concentrations performed to support this conclusion?

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CHAPTER 4.14 – AESTHETIC RESOURCES

Figure 4.14-1

This figure and this section inappropriately categorize certain areas of the Project area within landscape units that understate the visual quality of the area and understate the associated potential significance of visual impacts. For example, large areas north of Charles Benson Road consist of active agricultural operations with little to no development or use (i.e., intensive row crops and grazing areas). Other sections of the Draft EIR/EIS clearly identify this area as "agricultural land" (refer to, *e.g.*, section 3.2.1.2 of the Project Description). This figure and this section inaccurately refer to this agricultural land as "urban and built up" land, or lands in "surrounding unincorporated areas that are considerably built-up" and "characterized by the predominance of anthropogenic features (i.e., urban development)." Even the site of the proposed desalination plant is identified as "urban and built-up" land, despite being entirely undeveloped and consisting of nothing more than natural vegetation.

The landscape unit classifications used to support the visual analysis fail to accurately identify existing on-site land uses, visual characteristics, and existing levels of development (or lack thereof) within this portion of the Project area. Did the preparer of this section conduct any field work in this area or other areas of the Project? This classification appears to reflect a lack of understanding and familiarity with the Project site. Marina-118

Section 4.14.2.2 states that "Due to the high level of anthropogenic modifications, [the urban and built-up] landscape unit is generally considered to be of low visual quality." This section should be revised to accurately identify and categorize land within landscape units that accurately reflect on-site visual conditions and quality. The categorization of all lands within the city limits of Monterey, Marina, Seaside, and Carmel Valley is clearly inadequate for a visual analysis under CEQA, as lands within these boundaries can have significantly different visual characteristics and qualities. Once the visual setting and baseline conditions have been properly identified, the impact analysis should be revised accordingly to accurately identify the potential impacts of the Project. This substantial change in the Draft EIR/EIS analysis requires recirculation of the Draft EIR/EIS so the public has an opportunity to evaluate the Draft EIR/EIS's evaluation of the Project's potential impacts on existing scenic resources. This is especially critical in areas proximate to the most visible components of the Project (such as the desalination plant, which will be visible from adjacent public roadways and the agricultural areas north of Charles Benson Road – all of which have been inaccurately described as "considerably built-up").

The figure also makes it impossible to distinguish between the different landscape units. The figure should be revised to more clearly distinguish the different units and should use current aerial images as a background, so the reader can determine whether the identified landscape unit actually reflects the existing land use and baseline visual characteristics of the site.

Figure 4.14-2

The acronyms used in this figure are not properly identified. What does “PL” refer to? What is “NM”? What is “TF”? What is “AG”? Why do “Oak Woodland” and “TF Forested Hills” look virtually identical? Why do “PL Urban Builtup Monterey” and “Hillside Residential” look virtually identical? How does the photograph of “Hillside Residential” reflect the description of this unit (i.e., residential housing on large lots, distinguished from the Urban and Built-up landscape unit by the substantially greater distance between dwellings)? Marina-119

Section 4.14.2.3 Subsurface Slant Wells

This section inaccurately describes the baseline visual setting at the CEMEX Property. The large majority of the CEMEX Property is undisturbed dune habitat. The CEMEX property encompasses approximately 400 acres in total. Of those, approximately 104 acres have experienced some disturbance associated with sand mining activities that have occurred at the site since 1906. Currently, approximately 50 acres experience heavy levels of disturbance associated with ongoing mining activities. The remainder of the site consists of undeveloped areas and dune habitat with varying degrees of disturbance (moderate to low). The City’s LCLUP describes the area just north of the Project site as the best preserved area of Marina Dune native habitat. The dunes provide a distinct contrast to the pattern of agricultural and urbanized lands in adjacent areas. This area of north Marina is considered the “scenic gateway to the Monterey Peninsula” (City of Marina 1982). Visual quality of this area of dunes should be considered high.

The Draft EIR/EIS fails to recognize the visual sensitivity of this portion of the Project site. Although the small disturbed area of the CEMEX Property that is currently mined provides a somewhat degraded view, the Draft EIR/EIS fails to accurately account for the breadth and extent of the public viewshed at this location, which would largely be comprised of a vast, relatively undisturbed dune complex unlike any others on the Monterey Peninsula. Marina-120

This section describes the site as “devoid of vegetation” and “sparsely vegetated” and also provides a representative photo of the site that shows dune slopes entirely covered by vegetation (*see* Figure 4.14-3a, Photo 1). The information in this section is inconsistent and misleading.

Figure 4.14-3a Photo 1 does not represent the public vantage point from the beach as stated in this section (section 4.14.2.3, first paragraph). Rather, this vantage point is taken from within the privately-owned CEMEX mining area. These private views from within the mining area reflect a higher level of disturbance than is actually visible from surrounding public views. Views from the public beach are dominated by predominantly undisturbed dunes and views of the internal graded CEMEX access road are limited. Public views of this area are inaccurately described in this section. Information regarding the site’s visual character, quality, and visibility must be accurately stated in the Draft EIR/EIS. A revised Draft EIR/EIS should be recirculated so the public has an adequate opportunity to review and comment on potentially significant impacts on this important visual resource. Marina-120 cont.

Section 4.14.2.3 MPWSP Desalination Plant

Marina-121

This section understates the aesthetic resource value of this site due to the inaccurate determination that the site is "urban and built-up" land.

Sections 4.14.6.1 and 4.14.6.2

Marina-122

These sections improperly understate the severity of the potential visual impacts of the project due to the improper classification of the CEMEX Property and Project desalination plant location as having low to moderate visual resource value.

CHAPTER 4.15 – CULTURAL AND PALEONTOLOGICAL RESOURCES

This chapter fails to identify and address a major impact on historic resources and therefore wrongly concludes that construction of the Project will not have a significant impact on such resources. This omission constitutes significant new information and a significant change in the potential for such impacts, thereby requiring a new analysis and recirculation of a revised Draft EIR/EIS.

This section of the Draft EIR/EIS inaccurately concludes that "No historical resources listed in or eligible for listing in the California Register or historic properties listed in or eligible for listing in the National Register are within the direct or indirect APE of all project components. Therefore, no impact on historical resources or historic properties would result from construction of any project facilities." *Id.* at 4.15-45. This determination fails to recognize that the Source Water Pipeline and Well Site 1 are located in the center of the Lapis Sand Mining Plant Historic District. Marina-123

SWCA Environmental Consultants, in conjunction with the City of Marina and Monterey Bay National Marine Sanctuary, evaluated the Lapis Sand Mining Plant for eligibility for listing in the National Register of Historic Places ("NRHC") in connection with the test slant well CDP permit application and concluded that it was eligible for listing as a historic district containing nine contributing built environmental resources (e.g., structure, infrastructure) under criteria A and C, with a period of significance from 1906 to 1960 (SWCA 2014). The appropriate Department of Parks and Recreation ("DPR") forms were prepared and in June 2014 the State Historic Preservation Officer ("SHPO") at the Office of Historic Preservation concurred with SWCA's findings, including the eligibility for listing on the NRHP as a historic district under Criteria A and C with a period of significance from 1906-1960.

In addition to the Draft EIR/EIS's failure to identify the presence of a previously recorded eligible historic district in the direct and indirect APEs, the analysis in this section also fails to address the Project's potential impacts to contributing structures built near environmental resources associated with the district. Construction and maintenance related disturbances could inadvertently affect contributing historic structures associated with the district, a potentially significant impact. The Draft EIR/EIS failed to identify and address this potentially significant impact.

In addition, as described in the DPR forms prepared by SWCA, the direct APE includes the historically significant Lapis Siding, a single- and double-track rail siding that was constructed circa 1906 to connect the Lapis Sand Mining Plant with the former Southern Pacific Monterey Branch to the east. From its eastern terminus at the eastern boundary of the Lapis Sand Mining Plant, the segment consists of two parallel metal rail lines that merge into one line at a rail switch approximately 135 feet to the west. The segment continues along a general northwesterly course for approximately 285 feet before it becomes covered by sand and dirt. Since its decommission in the late 1980s, the recorded segment has been overgrown by vegetation and partially buried, and as a result no ballast or ties were visible at the time of SWCA's evaluation. Historic topographic maps indicate that the Lapis Siding extended much further west and north than was observed during the course of the 2014 survey and additional segments of the Lapis Siding are visible along the eastern side of the Sorting Plant in current aerial images. Archival research conducted by SWCA was unable to determine if the rails, ties, and/or any associated infrastructure of the larger rail siding were removed. Because of the constantly shifting sand dunes, there is potential that other intact segments may be buried underneath the changing landscape.

Marina-123 cont.

Trenching and construction of the Source Water Pipeline in the area between the visible portion of the Lapis Siding and the Sorting Plant has the potential to damage or destroy buried portions of the resource that remains. The Draft EIR/EIS failed to identify or address this potentially significant impact.

The failure to identify and address potential impacts to the Lapis Sand Mining Plant Historic District, a known historic district eligible for listing in the NRHP, renders the analysis in this section inadequate. The Draft EIR/EIS fails to disclose the presence of this historical resource within the direct and indirect APEs for the Project – a substantial omission, as disclosure would result in a new significant environmental impact. The omission also constitutes significant new information that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the Project and feasible ways to mitigate or avoid such effects. The Draft EIR/EIS failed to determine whether or not the Lapis Siding extends through the area proposed for trenching for construction of the Source Water Pipeline and fails to provide any evidence that construction of the proposed Project would have no impact on historical resources or historical properties associated with implementation of the proposed Project. The Draft EIR/EIS is invalid and must be recirculated once these issues have been properly addressed.

<u>CHAPTER 4.16 – AGRICULTURAL RESOURCES</u>

Marina-124

This section addresses impacts and mitigation measures for agricultural resources.

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Section 4.16.1.1 Farmland Mapping and Monitoring Program

Table 4.16-1 shows agricultural conversion between 2010 and 2012; this information is over five years old. The CDC's 2012 to 2014 conversion information should be utilized. The most recent information should be used, particularly in light of recent constraints to agriculture, including the extreme drought conditions that have occurred since 2012 and the constraints to agricultural pumping and groundwater. The more recent conversion data reflects a loss of 146 acres of Prime Farmland in Monterey County between 2012 and 2014; therefore, conversion of Prime Farmland is an issue in the County.

Marina-124 cont.

Section 4.16.4

The Draft EIR/EIS states that agricultural crop production and livestock grazing is the largest industry in Monterey County, and that over 80 percent of the total land designated for agriculture in the County is used for grazing. The conversion of grazing lands in the County, particularly the cumulative conversion as reflected in the FMMP agricultural conversion data (a loss of 2,307 acres between 2010 and 2012, and a loss of 739 acres between 2012 and 2014) should indicate a potentially significant impact to this important County resource. The Draft EIR/EIS fails to provide support for the conclusion that the conversion of grazing land would not be a potentially significant impact under CEQA and why it does not deserve consideration in the Draft EIR/EIS. Although not specifically identified as a threshold under Appendix G of the CEQA Guidelines, given the significance of the resource in Monterey County, the level of impact should be evaluated and the public should be provided an opportunity to comment on the proposed conversion of grazing lands. The Draft EIR/EIS should also account for impacts associated with the gradual conversion of undeveloped, grazing, and/or agricultural lands that historically have provided a buffer from more urbanized uses within the City of Marina and surrounding areas.

Marina-125

Section 4.16.5.1 and 4.16.5.2

These sections fail to identify and analyze the potential for significant impacts associated with changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural uses as a result of Project operation. As described in other sections of this document, operation of the Project could result in increased seawater intrusion, damaging groundwater resources upon which regional agricultural uses rely. The Project could also result in the illegal pumping of groundwater from the Salinas Valley Groundwater Basin, which would deplete the groundwater available for agricultural uses in the Project area. Any adverse effect of the Project on groundwater quality or quantity could disrupt agricultural activities and/or result in the permanent conversion of farmland to non-agricultural uses as a result of Project operation.

The potential for these impacts to occur must be discussed in this section. The scope of this section is inappropriately narrow throughout the analysis, in that it only includes areas within the direct area of disturbance and adjacent parcels. Adverse impacts to groundwater

Marina-126

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quantity and quality, as described in these comments, could potentially result in substantially farther-reaching impacts on agricultural uses in the Project area. Marina-126 cont.

Section 4.16.4.2 MPWSP Desalination Plant

This section fails to discuss the potential indirect constraints to agricultural development and use of the remainder of this site for agricultural production as a result of Project construction and operation. Although prime farmland in the northern portion of the site would not be directly impacted, conversion of the parcel to an industrial use could limit and/or prevent any future agricultural uses within prime farmland. Indirect impacts on the future use of this agricultural resource should be evaluated in the Draft EIR/EIS and all feasible mitigation to reduce potential impacts should be identified. This analysis should be recirculated so the public can comment on the potential for fallowing large areas of prime farmland as a result of Project implementation. Marina-127

Impact 4.16.3 MPWSP Desalination Plant

This section relies on the fact that the desalination plant site has been idle for five or more years, yet no information is provided as to why the land was fallowed or whether historically it supported viable agricultural production. The site supports prime farmland – land that has the best combination of physical and chemical characteristics for long-term crop production. Therefore, the site is clearly suitable for agricultural uses. The Draft EIR/EIS should clearly describe the site's agricultural history and provide an explanation for why the site is no longer used for agricultural production. For example, it is currently unclear whether CalAm purchased the site 5 years ago and let it go fallow in order to assert there would be no impact on on-site agricultural uses. This would clearly be an improper baseline upon which to measure the significance of impacts on agricultural resources at the desalination site. If the site has been historically used for active agricultural production, but was fallowed 5 years ago because of the drought or some other constraint, this information should be disclosed. Marina-128

Without any information on the reason the site is idle, the Draft EIR/EIS cannot rely on the fact that it is idle to support a conclusion that no impact on agricultural uses would occur. If the site is idle because of constraints to agricultural use, the Draft EIR/EIS should clearly document and disclose those constraints that make agricultural use of the area infeasible. If the site was not fallowed as a result of constraints, the Draft EIR/EIS should assume the site is viable for agricultural uses and identify a potentially significant impact associated with conversion of valuable agricultural soils to industrial/public facility uses. All feasible mitigation should be identified to reduce the potentially significant impact and the Draft EIR/EIS should be recirculated to provide the public an opportunity to comment on the Project's potential effects on this resource.

CHAPTER 4.18 – ENERGY CONSERVATION

This section addresses the description, impacts and mitigation measures in the energy conservation subject area.

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Impact 4.18-2

The Project Description states that the Project would recover energy from the brine stream using pressure-exchange technology, which would lower overall energy consumption during the RO process. However, the Project is still expected to result in a substantial increase in electrical power demand (net increase of 51,698 MWh per year, an over 450 percent increase in CalAm's total energy demand in its Monterey District Service Area). Beyond the pressure-exchange technologies included in the proposed RO process for energy recovery, it does not appear that other energy conservation technologies have been included in the Project Description or considered as feasible mitigation. The Project Description states that CalAm may eventually use renewable energy sources to power the MPWSP Desalination Plant and briefly discusses the consideration of pursuing a landfill-gas-to-energy option. Although included, the possibility of pursuing the landfill-gas-to-energy option is a moot point as it is not considered in this Draft EIR/EIS, not a requirement of project mitigation, and any necessary interconnection improvements would require additional environmental review.

This impact discussion concluded that the impact was less than significant because the use of energy for operation of the Project is necessary to provide a reliable supply of water to meet existing demand for the Monterey District, and concluded that no mitigation was necessary. This conclusion is unwarranted for two reasons. First, as described in our comments on chapters 2.1 to 2.5 herein, the use of this amount of energy for operation of the Project is not necessary to provide a reliable supply of water to meet existing demand for the Monterey District. Second, the Draft EIR/EIS is inadequate in that it fails to evaluate whether the Project's net increase in energy demand itself is unnecessary, wasteful, or inefficient, especially when all feasible energy conservation mitigation options are not being employed. "Under CEQA, an EIR is 'fatally defective' when it fails 'to include a detailed statement setting forth the mitigation measures proposed to reduce wasteful, inefficient, and unnecessary consumption of energy.'" *Cal. Clean Energy Comm. v. City of Woodland*, 225 Cal. App. 4th at 209. Therefore, the substantial increase in electrical power demand (net increase of 51,698 MWh per year) and lack of inclusion of all feasible energy conservation technologies/measures (beyond pressure exchange technology) could constitute a potentially significant impact and require additional mitigation. Marina-129

Pursuant to Appendix B Local Action of the California Air Resources Board 2017 Scoping Plan (January 2017), the following construction and operation mitigation measures should be considered for inclusion by individual projects under CEQA, and implemented if feasible. The Draft EIR/EIS should include an explanation as to why these measures were not evaluated as potential mitigation to avoid or reduce unnecessary consumption of energy and/or why they are not applicable/feasible for the Project:

Construction

1. Enforce idling time restrictions for construction vehicles.
2. Require construction vehicles to operate with the highest tier engines commercially available.

3. Divert and recycle construction and demolition waste, and use locally-sourced building materials with a high recycled material content to the greatest extent feasible.
4. Minimize tree removal, and mitigate indirect GHG emissions increases that occur due to vegetation removal, loss of sequestration, and soil disturbance.
5. Utilize existing grid power for electric energy rather than operating temporary gasoline/diesel powered generators.
6. Increase use of electric and renewable fuel powered construction equipment and require renewable diesel fuel where commercially available.
7. Require diesel equipment fleets to be lower emitting than any current emission standard.

Operation

1. Comply with lead agency's standards for mitigating transportation impacts under SB 743.
2. Require on-site EV charging capabilities for parking spaces serving the Project to meet jurisdiction-wide EV proliferation goals.
3. Allow for new construction to install fewer on-site parking spaces than required by local municipal building code, if appropriate.
4. Dedicate on-site parking for shared vehicles.
5. Provide adequate, safe, convenient, and secure on-site bicycle parking and storage in multi-family residential projects and in non-residential projects.
6. Provide on- and off-site safety improvements for bike, pedestrian, and transit connections, and/or implement relevant improvements identified in an applicable bicycle and/or pedestrian master plan.
7. Require on-site renewable energy generation.
8. Prohibit wood-burning fireplaces in new development, and require replacement of wood-burning fireplaces for renovations over a certain size developments.
9. Require cool roofs and "cool parking" that promotes cool surface treatment for new parking facilities as well as existing surface lots undergoing resurfacing.
10. Require solar-ready roofs.
11. Require organic collection in new developments.
12. Require low-water landscaping in new developments. Require water efficient landscape maintenance to conserve water and reduce landscape waste.
13. Achieve Zero Net Energy performance targets prior to dates required by CALGreen.
14. Require new construction, including municipal building construction, to achieve third-party green building certifications, such as the GreenPoint Rated program or the LEED rating system.
15. Require the design of bike lanes to connect to the regional bicycle network.
16. Expand urban forestry and green infrastructure in new land development.
17. Require preferential parking spaces for park and ride to incentivize carpooling, vanpooling, commuter bus, electric vehicles, and rail service use.
18. Require a transportation management plan for specific plans which establishes a numeric target for non-SOV travel and overall VMT.

Marina-129 cont.

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19. Develop a rideshare program targeting commuters to major employment centers.
20. Require the design of bus stops/shelters/express lanes in new developments to promote the usage of mass-transit.
21. Require gas outlets in residential backyards for use with outdoor cooking appliances such as gas barbeques if natural gas service is available.
22. Require the installation of electrical outlets on the exterior walls of both the front and back of residences to promote the use of electric landscape maintenance equipment.
23. Require the design of the electric boxes in new residential unit garages to promote electric vehicle usage.
24. Require electric vehicle charging station (Conductive/inductive) and signage for non-residential developments.
25. Provide electric outlets to promote the use of electric landscape maintenance equipment to the extent feasible on parks and public/quasi-public lands.
26. Require each residential unit to be "solar ready," including installing the appropriate hardware and proper structural engineering.
27. Require the installation of energy conserving appliances such as on-demand tank-less water heaters and whole-house fans.
28. Require each residential and commercial building to equip buildings with energy efficient AC units and heating systems with programmable thermostats/timers.
29. Require large-scale residential developments and commercial buildings to report energy use, and set specific targets for per-capita energy use.
30. Require each residential and commercial building to utilize low flow water fixtures such as low flow toilets and faucets.
31. Require the use of energy-efficient lighting for all street, parking, and area lighting.
32. Require the landscaping design for parking lots to utilize tree cover.
33. Incorporate water retention in the design of parking lots and landscaping.
34. Require the development project to propose an off-site mitigation project which should generate carbon credits equivalent to the anticipated GHG emission reductions. This would be implemented via an approved protocol for carbon credits from California Air Pollution Control Officers Association (CAPCOA), the California Air Resources Board, or other similar entities determined acceptable by the local air district.
35. Require the Project to purchase carbon credits from the CAPCOA GHG Reduction Exchange Program, American Carbon Registry (ACR), Climate Action Reserve (CAR) or other similar carbon credit registry determined to be acceptable by the local air district.
36. Encourage the applicant to consider generating or purchasing local and California-only carbon credits as the preferred mechanism to implement its offsite mitigation measure for GHG emissions and that will facilitate the State's efforts in achieving the GHG emission reduction goal.

Marina-129 cont.

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Impact 4.18-3

Impact 4.18-3 states that, based on PG&E's preliminary review of the proposed Project's maximum electrical demand, PG&E has indicated that it has adequate capacity and infrastructure to support the proposed Project. PG&E, 2016c. "PG&E, 2016c" refers to a personal communication between Jose Saldana, Pacific Gas and Electric Group Project Manager with Distribution Services, and Matt Fagundes, Environmental Science Associates Energy Analyst, on September 9, 2016. This statement is vague and uncertain. Due to the very high energy demands of the desalination process, the capacity of PG&E to service the Project should be confirmed and supported by substantial evidence. The EIR/EIS must clarify if a service agreement or will-serve letter has been issued by PG&E to satisfy the proposed Project's maximum demand for electrical power. Marina-130

Impact 4.18-C Cumulative Impacts

Impact 4.18-C states that "During project operation, various energy conservation measures would be implemented (see section 4.18.4) as part of the proposed project to reduce energy waste, ensuring that operational impacts associated with energy use would not be unnecessary, wasteful, or inefficient." Section 4.18.4.2 refers to the aforementioned pressure exchange technologies that would be implemented to recover energy in the RO system, and asserts that the Project would supplement these technologies in the MPWSP Desalination Plant. Building support systems would comply with Title 24 Building Energy Efficiency Standards. This impact discussion concludes that, based on the technologies proposed to be employed, compliance with Title 24 Building Energy Efficiency Standards, and indication by PG&E via personal communication that adequate capacity and infrastructure would be available to support the Project, that cumulative operational impacts would be less than significant. Marina-131

Although the Building Code addresses energy savings for components of new commercial construction, compliance with the Building Code does not, by itself, constitute an adequate assessment of mitigation measures that can be implemented to address the energy impacts during construction and operation of the project. *Cal. Clean Energy Comm. v. City of Woodland*, 225 Cal. App. 4th at 209.

Based on the Project's substantial increase in net energy demand, the lack of inclusion of all feasible energy conservation measures (as listed under Impact 4.18-2 above) identified in Appendix B Local Action of the California Air Resources Board 2017 Scoping Plan (January 2017), and reliance on compliance with Title 24 Building Energy Efficiency Standards, the Draft EIR/EIS inadequately analyzed potential impacts related to energy consumption, contrary to the requirements of CEQA and NEPA. This section should be revised to (1) accurately reflect the potential for a significant project-specific and cumulative impact associated with unnecessary energy consumption; (2) include all feasible energy conservation mitigation options into the Project; (3) provide substantial evidence to support any finding that any mitigation options are not feasible for this Project; and (4) provide a conclusion as to whether or not the potentially

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significant impact is sufficiently mitigated or significant and unavoidable. This substantial new information and analysis must be recirculated for additional public review and comment. Marina-131 cont.

CHAPTER 4.20 – SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Both NEPA and CEQA contain strong requirements for the assessment of environmental justice and socioeconomic impacts. Since they address these subjects in slightly different ways, we will discuss them separately below. As described below, the Draft EIR/EIS fails to sufficiently assess or mitigate for socioeconomic and environmental justice impacts.

NEPA requires that in an EIS, federal agencies analyze the disproportionately high adverse impacts of a project on minority and low-income populations. NEPA defines project "effects" to include "economic, social, or health [impacts], whether direct, indirect, or cumulative." 40 C.F.R. § 1508.8. In 1994, President Clinton issued Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Order, as described on the NOAA Fisheries website, "requires each federal agency to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low income populations." In 2011, a large group of federal agencies, including the Department of Commerce (the parent agency of MBNMS), signed a Memorandum of Understanding to implement this policy at each signatory agency.

Marina-132

In 1997, the President's Council on Environmental Quality issued an important guidance document that has governed NEPA environmental justice analyses ever since. *Environmental Justice: Guidance Under the National Policy Ac*t (1997). According to the Guidance:

- A federal agency must consider the "multiple, or cumulative [environmental justice] effects, even if certain effects are not within the control or subject to the discretion of the agency proposing the action."

- The agency must "recognize the interrelated cultural, social, occupational, historical or economic factors that may amplify the natural and physical environmental effects of the proposed agency action."

- The federal agency must "analyze how environmental and health effects are distributed within the affected community" and the agency is encouraged to display data visually through a GIS for effective visualization of the distribution of effects.

- The federal agency must utilize an identified disproportionately high and adverse environmental impact "as a factor in determining the environmentally preferable alternative."

- The federal agency "should elicit the views of the affected populations on measures to mitigate a disproportionately high and adverse human health or

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> environmental effect" on a minority population and "carefully consider community views in developing and implementing mitigation strategies."

The Draft EIR/EIS fails to meet these NEPA requirements in multiple respects. It is undisputed, as stated on page 4.20-6 of the Draft EIR/EIS, that Marina qualifies as a minority community.

First, the Draft EIR/EIS fails to properly analyze the environmental justice impacts on the Marina community. It trivializes the impacts at the outset by stating only that Marina "could be" affected by construction activities (page 4.20.1). It then reaches the incorrect conclusion that "no disproportionately high and adverse" impact from facility siting, operation or construction of the Project would occur in any minority community, including Marina. In making this finding, the document fails to establish appropriate threshold standards and fails to sufficiently evaluate the Project's multiple and cumulative impacts in a wide variety of areas.

In fact, Marina is burdened with a major share of the short and long-term environmental impacts of the Project without receiving any corresponding benefit. The Project's slant wells would be sited in Marina's sensitive coastal habitat and would likely accelerate coastal erosion on Marina's beaches. A large number of source water, desalinated water, and return water pipelines would be constructed in Marina. The hypersaline brine discharge will occur through a pipe from Marina's coastline and deposit effluent just offshore of Marina. Most significantly, the groundwater basin that is currently the sole source of Marina's water could be significantly adversely impacted by the Project. In fact, rather than being a "no disproportionate impact" situation as represented by the Draft EIR/EIS, this is a classic example of a minority community being saddled with a wide range of severe environmental impacts from the siting and operation of a Project with all of the benefits going to distant communities.

Marina-132 cont.

The Draft EIR/EIS contains a series of legal errors that have led to this deficient analysis. First, the agencies have not established any credible criteria to determine whether a "disproportionately high and adverse" impact is occurring. Second, the Draft EIR/EIS has misanalyzed the environmental impacts in a variety of ways. Some impacts the Draft EIR/EIS discounted entirely, as in the case of its conclusion that Project groundwater impacts in the City of Marina are less than significant because the City's groundwater is located seaward of the seawater intrusion line (see chapter 4.4 comments herein). It simply ignored other impacts. Third, due to its conclusion that no such significant impacts exist, it failed to adopt any mitigation measures. Fourth, it failed to analyze cumulative impacts in the environmental justice context.

The Draft EIR/EIS magnified these problems by taking a segmented approach to evaluating these impacts. It inexplicably parceled out an analysis of the environmental justice implications of impacts into 19 other sections rather than making a complete analysis in section 4.20. As a result, it never analyzed the composite and cumulative impacts of all of the environmental impacts on the City of Marina. By taking this segmented approach, it never asked or answered the question "What are the high and disproportionate total impacts of the Project on the City?" Had it done a proper analysis, it would have determined that Marina is bearing a disproportionate brunt of the environmental impacts now and indefinitely into the future, particularly in regard to the potential depletion and contamination of its water supply, the potential destruction of its coastal ecosystem, and the traffic, noise and aesthetic impacts. Marina-132 cont.

It is clear that environmental justice analysis in the Draft EIR/EIS fails to meet any of the applicable NEPA requirements explained above. First, MBNMS cannot turn a blind eye to the environmental impacts of the land-based impacts of the Project, including the potential depletion and degradation of Marina's groundwater supply, which the Draft EIR/EIS improperly dismisses without evaluation under the assumption that the water CalAm is proposing to pump is unsuitable for municipal or domestic use (while also maintaining this water is an appropriate water source for the municipal and domestic uses proposed to be served by the Project). CEQA's Guidance specifies that it must take into account impacts outside its immediate permitting jurisdiction. Second, the segmented analysis in the Draft EIR/EIS fails to analyze the multiple and cumulative "interrelated" impacts of the Project on Marina. Third, the Draft EIR makes no attempt to identify or quantify spatially the Project impacts on Marina or the other two minority populations – rather, it hides those impacts by blurring them across all communities. Fourth, the Draft EIR/EIS does not take environmental justice impacts into account in selecting the environmentally superior/preferable alternative and fails to adopt a single mitigation measure to reduce their impacts. Marina-133

In addition, the Draft EIR/EIS also fails to consider the potential socioeconomic impacts the Project may have on the City. The City currently has a secure affordable water source. As discussed in the comments above, the Project could exacerbate seawater intrusion and other water quality impacts in the groundwater aquifers underlying the City of Marina, thereby resulting in potentially higher costs to treat the City's groundwater or forcing the City to look for a more expensive alternative source of water. The Draft EIR/EIS must consider the economic impacts on the City related to the cost of increased treatment and the potential costs for finding replacement water. Since the Draft EIR/EIS fails to consider the complexity of groundwater conditions seaward of the "seawater/freshwater interface" in the 180/400 Foot Aquifers (which is neither factually appropriate nor a true measure of all potential groundwater quality impacts), the Draft EIR/EIS has failed to specifically consider the potential groundwater impacts to areas of the aquifer specifically underlying the City of Marina. These impacts must be fully analyzed, and the potential additional socioeconomic effects on the City must be disclosed. Marina-134

In addition to the failure of the Draft EIR/EIS to accurately identify the high proportion of potential environmental and socioeconomic burdens that would be imposed on Marina as a result of the Project, the City feels that this Project is just one of a string of projects proposed by other jurisdictions on the Monterey Peninsula that impose a disproportionate environmental burden on the community of Marina, including the Monterey Regional Water Pollution Control Agency's facilities (including its wastewater treatment plant), the proposed advanced treatment plant for Pure Water Monterey, the Monterey Peninsula Regional Waste Management District's facilities (including its regional landfill and authorized composting operations), methane and other greenhouse gases from livestock ranching adjacent to Marina residential areas, and emissions from drift of pesticides, fertilizers, and other soil amendments from agricultural Marina-135

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operations adjacent to or proximate to City of Marina residential areas. These cumulative impacts matter a great deal to residents of and visitors to Marina for health and environmental justice reasons. There are currently frequent complaints from this City's residents of offensive odors apparently coming from north of the City and this is but one example of existing conditions from existing or planned future facilities affecting the City's environment.

The Draft EIR/EIS should describe current conditions of potential nuisances, impactful uses in areas immediately surrounding the City, and unhealthy odors and emissions proximate to the City in the context of environmental justice. The Draft EIR/EIS should disclose the total emission of existing and planned facilities (such as those listed above), and include their individual totals, their cumulative total, and relevant numeric emission standards/metrics/thresholds in an additional table such as a new Table 4.20-7. These emissions should be compared to other areas of the County and other cities on the Monterey Peninsula to meaningfully compare emissions that the City of Marina is subjected to with emissions other areas of the County, particularly those that would benefit from the MPWSP, are subjected to. Marina-135 cont.

No relevant numeric emission standards/metrics/thresholds are listed in section 4.20 including Table 4.20-6. The Draft EIR/EIS should include a column or columns in Table 4.20-6 for relevant numeric standards/metrics/thresholds.

The City is concerned that the City's discretionary approval authority over actions proposed within the City's limits has been and will be undermined. This has resulted in development within the City limits that (1) provides absolutely no benefit to the community of Marina, (2) has the potential to severely impact Marina resources, and (3) community members have repeatedly and overwhelmingly objected to.

The Project represents a large industrial use with the potential to result in severe irreversible impacts to the City, particularly in regards to potential depletion and contamination of its water supply, the destruction of its coastal ecosystem, and the traffic and noise impacts of the Project, which provides no benefit to the community of Marina. The City residents would be forced to bear a disproportionate brunt of the environmental impacts of the Project now and indefinitely into the future. Marina-136

The City wants the lead agencies, as well as the California Coastal Commission, to consider and protect their coastal and groundwater resources with the same level of scrutiny as is enforced on other communities and has been enforced for proposed developments within the City in the past. The City should not be the preferred location for all of the largest industrial uses in Monterey County. Environmental justice issues should require the municipalities and jurisdictions that would benefit from the Project also bear the environmental burden of the Project, including through siting of the proposed slant wells outside of the City's aquifers and coastal areas.

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CHAPTER 5.0 – ALTERNATIVES SCREENING AND ANALYSIS

A. Key Legal Requirements

The analysis of alternatives is one of the key components of an environmental review document under both CEQA and NEPA. Indeed, the alternatives and mitigation sections are "[t]he core of an EIR." *Citizens of Goleta Valley v. Bd. of Supervisors*, 52 Cal. 3d 553, 564 (1990). The CEQA Guidelines provide that the EIR must "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, ..." CEQA Guidelines § 15126.6(a). Although alternatives should be designed to meet most project objectives, it is not required that an alternative meet all of them. *See, e.g., Mira Mar Mobile Comty. v. City of Oceanside*, 119 Cal. App. 4th 477, 489 (2004) ("alternatives need not satisfy all project objections, they must merely meet 'most' of them"); *Habitat & Watershed Caretakers v. City of Santa Cruz*, 213 Cal. App. 4th 1277, 1304 (2013) (a "limited water" alternative project "could not be eliminated from consideration solely because it would impede to some extent the attainment of the project's objectives").

The California Supreme court has emphasized the importance of a legally adequate alternatives analysis:

> An EIR's discussion of alternatives must contain analysis sufficient to allow informed decision making. [Citation.] [¶] ... [¶] ... Without meaningful analysis of alternatives in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process.... 'To facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions or opinions.' [Citations.] An EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.

Laurel Heights Improvement Assn., 47 Cal.3d at 404-05.

NEPA and its implementing regulations also require the development and discussion of alternatives. 40 U.S.C. §§ 4332(2)(C)(iii) and(2)(E); 40 C.F.R. § 1502.10(e). In fact, NEPA requires an exceptionally robust discussion of alternatives, which the regulations describe as "the heart of the environmental impact statement." 40 C.F.R. § 1502.14. Among other things, the regulations prescribe that the document "[r]igorously explore and objectively evaluate all reasonable alternatives" and that this discussion include "reasonable alternatives not within the jurisdiction of the lead agency." *Id*.

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B. The Draft EIR/EIS's Failures To Adequately State Project Objectives/Need Or To Adequately Analyze Project Environmental Impacts Fatally Undermine The Alternatives Analysis.

The adequacy of an EIR/EIS alternatives analysis is critically dependent upon a proper statement of project objectives (CEQA) and purpose and need (NEPA), a complete and stable description of the project, an adequate analysis of project impacts, and a full slate of feasible mitigation measures. If any of these components is missing, it is not possible to complete a legally adequate alternatives analysis. Unfortunately, for all of the reasons set forth in other sections of these comments, these legal predicates are missing, which fundamentally impairs the entire alternatives analysis. We will specifically address two examples of these inadequacies below.

1. Project Objectives/Purpose and Need – Water Demand

As set forth in Marina's comments on chapters 2.1-2.5 and 3 herein, the water "demand" for the Project is stated to be 10,750 afy, which is a number that is not supported by substantial evidence and which the CPUC and MBNMS have not properly scrutinized and modified as required by CEQA and NEPA. Although the list of Project Objectives in chapter 1 does not explicitly state this "need" number, it is apparently incorporated from the "water demand" analysis in chapters 2.1 to 2.5 and carried forward into the alternatives analysis. As described above, CalAm's true existing "need" from all water sources is no more than 9,545 afy and the other identified water "needs" are for a few possible future needs plus over 2,000 afy of water for unspecified "other uses." Since CalAm will receive up to 6,244 afy of water from other identified sources each year (even with all of the anticipated Carmel River and Seaside Basin restrictions), its true water "need" from the Project is in the range of 3,000 afy to meet existing demand. Marina-137

As described in the next section, this flawed water demand/need analysis has resulted in an across-the-board elimination of any Project alternative that does not result in a total Project water production number of 10,750 afy. Although the 6.4 mgd desalination plant alternatives in Alternatives 5a and 5b would produce less desalinated water, they are only considered in the context of another 3,500 afy of water from the GWR Project. These two smaller plant alternatives are not being considered without the GWR Project because they do not meet CalAm's asserted "need" for a total of 10,750 afy of water. Thus, the deficient project objectives/need statement has improperly foreclosed consideration of any Project alternative that produces less water.

2. Groundwater Resource Impacts

Another example of how a legally inadequate prior analysis of an issue undermines the alternatives analysis relates to the Project's groundwater impacts. For all of the reasons in Marina's comments to chapter 4.4 herein, the Draft EIR/EIS analysis of Project impacts to the groundwater aquifers are legally inadequate and the resulting conclusion that they are "less than Marina-138

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significant" is not supported by substantial evidence in the record. In fact, it appears that there is a high risk of significant impacts to groundwater supply, groundwater quality and groundwater storage as a result of the Project, particularly in the aquifer areas underlying Marina. Thus, these impacts should have been identified as significant and comparatively evaluated across all alternatives.

The critical problem that inevitably occurs in the Draft EIR/EIS when this failure to recognize the significance of the Project's groundwater impacts is carried through to the alternatives analysis is that any discussion of groundwater resource impacts is dropped out of the comparison of alternatives. Thus, alternatives which would have demonstrably less impacts on Marina's groundwater (such as the Potrero Road and ocean water intake alternatives) are not recognized for this advantage – rather, they are incorrectly categorized as having the same "less than significant impact" to groundwater resources that the Project supposedly would. It is remarkable that one of the Project's most significant environmental impacts is thus neutralized and of no consequence in the alternatives selection process.

Marina-138 cont.

C. The Draft EIR/EIS's Screening Of Alternatives Is Fatally Flawed.

The Draft EIR/EIS fully evaluates only six alternatives (treating Alternatives 5a and 5b as separate alternatives) to the Project plus the No Project Alternative. The screening and evaluation process that led to these alternatives is described in chapters 5.2 and 5.3.

The alternative screening process followed in the Draft EIR/EIS basically involved two types of reviews. First, in section 5.2, certain previously identified projects (such as the Coastal Water Project and the MCWRA Interlake Tunnel and Water Supply Project) were rejected on a variety of grounds. Second, in section 5.3, the Draft EIR/EIS utilized a "development, screening and evaluation process" to identify other alternatives. However, for reasons that are not explained, this selection process had an unreasonably narrow scope: it focused only on options for the source water "intake" component. The Appendices that contain this analysis (I1 and I2) only examined these component options and one option of siting the desalination plant on another property.

Marina-139

1. The Draft EIR/EIS Is Legally Inadequate For Failing To Include A Smaller Project Alternative.

There are many critical deficiencies in this analysis that improperly screened out several alternatives that should have been evaluated, three of which we will discuss here. First and foremost, there is *no* Project alternative (including Alternatives 5a and 5b) which constitutes a Project with a smaller total water "demand" target that aligns with the actual Project water needs. No screening of any kind occurred with regard to a smaller Project that would dramatically lower the type and intensity of the Project's environmental impacts. Instead, the Draft EIR/EIS rejected at the outset the only Project alternative that would produce less than 10,750 afy (the "Pure Water Monterey Groundwater Replenishment Project") because it would only produce

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3,500 afy of water, which is supposedly "about 6,250 afy short" of meeting the Project's supposed need of 10,750 afy of water. Draft EIR/EIS at 5.2-6.

The failure of the Draft EIR/EIS to consider any alternative standalone Project that would generate less than 10,750 afy of water is a critical deficiency in the alternatives analysis, particularly given the wide range of potentially very significant impacts to the groundwater aquifers and sensitive coastal ecosystem caused by such a large Project. The CEQA and NEPA case law is clear that only "most," not "all," of a Project's objectives (CEQA or NEPA) need to be met by an alternative. For example, a court invalidated an EIR alternatives analysis under CEQA because the public agency failed to evaluate any "limited water" alternative because it did not meet the primary project objective of high-density housing – the court ruled that this alternative should have been included because it was a feasible alternative that would avoid some of the Project's significant environmental effects. *Habitat &Watershed Caretakers*, 213 Cal. App. 4th at 1303-04. Similarly, a federal court invalidated a NEPA alternatives analysis for a private landfill project in California because an unduly limited "purpose and need" statement (which the court criticized because the federal agency allowed the private interests to define most of the scope of the proposed project) improperly restricted the scope of the alternatives that were considered in the EIS. *Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1061 (9th Cir. 2010).

Therefore, the failure of the Draft EIR/EIS to include any alternative that would not meet the 10,750 afy water demand request from CalAm (which is not even a figure adequately supported or even identified in the Project Objectives) incorrectly and unreasonably limited the scope of the alternatives analyzed, thereby undermining the legal adequacy of the alternatives analysis.

Marina-140 cont.

2. The Intake Option Analysis Omitted Key Technology Considerations.

A second major deficiency in the screening process involved the factors used in the selection of the intake options. The options analysis did not consider a full range of factors because it excluded any consideration of reliability and past success rate (if any) of the intake technology chosen, as discussed in our comments for chapter 3 herein. This complete failure to take into account these fundamental technology considerations – which have played an important role in desalination plant intake analyses conducted for many other California projects – unreasonably skewed the selection of alternatives in favor of the proposed slant well intake option.

Marina-141

3. No Alternatives Were Selected To Avoid Or Lessen Significant And Unavoidable Impacts.

A third major deficiency in the screening process relates to the failure to propose alternatives to avoid or lessen significant and unavoidable environmental impacts. The CEQA Guidelines specify: "Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code § 21002.1), the

Marina-142

discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." CEQA Guidelines § 15126.6(b). There is no evidence here that the alternatives chosen are designed to avoid or lessen such impacts.

The Project would result in significant and unavoidable impacts related to air quality and greenhouse gas emissions, and potentially significant impacts related to energy conservation, yet none of the alternatives evaluated in section 5 would reduce impacts associated with these issue areas. Despite the fact that one primary Project objective is to "Minimize energy requirements and greenhouse gas emissions per unit of water delivered" (page 5.1-5), anticipated impacts to air quality, greenhouse gas emissions and energy conservation are either similar or increased compared to the proposed Project for every alternative evaluated in section 5. An alternative should have been developed to reduce impacts related to these impacts. For example, the Landfill-Gas-to-Energy Option (section 4.18.4.3) was not explored further as a potential Alternative project component for consideration by the lead agencies. Instead, it was only briefly discussed as a possibility in section 4.18 and identified as requiring separate environmental review.

Marina-142 cont.

D. The Description Of The Projects Evaluated In Detail Is Legally Deficient.

Chapter 5.4 of the Draft EIR/EIS discusses each of the seven final alternatives (including the No Project Alternative) that it decided to carry through to this level of analysis. Each individual discussion contains a section entitled "Ability to Meet Project Objectives." Several of these alternatives are stated flatly to not meet the Project need for water because they do not meet CalAm's request for a Project that generates 10,750 afy of water. These conclusions are reached for the No Action Alternative (page 5.4-10), the Potrero Road slant well alternative (page 5.4-15) and the reduced size alternatives (5a and 5b) standing on their own (page 5.4-57). However, as explained above, these analyses are inadequate because they are based on a legally deficient statement of Project objectives and needs.

Marina-143

E. The Alternatives Impact Analyses Are Legally Inadequate.

Section 5.5 of the Draft EIR/EIS attempts to compare the seven alternatives to the Project across each category of environmental impact discussed earlier in the document. However, most of these comparative analyses cannot be done properly because of the inadequacies in the underlying environmental impact discussions. For example, our comments on chapter 4.15 demonstrate that the Project will potentially cause a significant impact to historic resources. The Draft EIR/EIS failed to identify these historic resources and wrongly concluded that no such impact will occur. This deficiency is carried through into this alternatives comparison because the Draft EIR/EIS wrongly concludes that other alternatives which have no impacts on such resources have the same lack of impact as the Project and are therefore equivalent on this parameter. These same types of deficiencies are present in many of the analyses, rendering any meaningful comparison impossible.

Marina-144

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One comparative impact discussion bears particular attention. The comparison of alternatives across the groundwater resource parameter are entirely inaccurate because of the range of deficiencies identified in our comments to chapter 4.4. For example, since the Draft EIR/EIS incorrectly concludes, without substantial support in the record, that the Project's potential impacts to groundwater quality and exacerbation of seawater intrusion are supposedly "less than significant" (page 5.5-83), it incorrectly takes the position that Project alternatives that clearly do not pose any risk to groundwater quality or seawater intrusion impacts, including all the open water intake options, are the same as the Project on this parameter because they too will have a less than significant impact on groundwater resources. This approach improperly eliminates any analysis of the relative impacts of the alternative projects on the groundwater aquifers. Marina-144 cont.

F. The Selection Of The Environmentally Superior/Preferred Alternative Is Legally Inadequate Due To The Accumulated Deficiencies In The Project Description, Impact Analyses, Mitigation Measures And Selection Of Alternatives.

The selection of the environmentally superior alternative (or preferred alternative under NEPA) is based on a comparison of the alternatives based on all the factors discussed above. Where, as here, the Project objectives/needs and individual impact analyses are inadequate, the selection of an environmentally superior alternative cannot be made. For these reasons, the critical deficiencies in the prior analyses makes it impossible to make such a selection and the one made here is legally inadequate.

Nonetheless, chapter 5.6 of the Draft EIR/EIS concludes that Alternative 5a, which includes a 6.4 mgd desalination plant with slant wells at the CEMEX site in Marina, and if and only if combined with 3,500 afy from the GWR project on certain conditions, is the environmentally superior alternative. It is explicitly stated not to be the environmentally superior alternative as a standalone project because it would not generate the total water demand sought by CalAm (page 5.6-7). Marina-145

This selection of the environmentally superior alternative is notable for its brevity (only two pages of text). The discussion, which incorporates some of the analyses in prior sections, appears primarily based on which alternatives can produce a total of 9.6 mgd of water. It also substantially downgrades any open ocean intake alternative, such as the open water intake alternative at Moss Landing, because they supposedly will cause "permitting complexities and delay" due to the permits required. However, this new "permit complexity and delay" comparison factor is inconsistent with its approach to the Draft EIR/EIS's analysis of the Project, which faces substantial permitting complexities and delays because the Project lacks any water rights and its planned water extraction is directly prohibited by laws, an ordinance and an annexation agreement. The failure to evaluate all alternatives on a level playing field with regard to permitting complexities and delays further undermines this analysis.

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The comparative impact analysis for the Potrero Road Alternative (Alternative 1) is particularly deficient. This alternative involves installing the subsurface slant wells at the Potrero Road site and running the source water pipeline from that location to the desalination plant. In the discussion of the impacts caused by each alternative (page 5.6-5), this alternative is stated to have "significant and unavoidable impacts" because it supposedly captures groundwater that would flow into Elkhorn Slough. However, this conclusion is not supported by substantial evidence. The prior impact discussion on which it is based (page 5.5-86) states only that slant well pumping at this location "may" draw in groundwater that could recharge the Slough, but then adds: "However, quantification of such an effect is not feasible within the context of the model given the location of Elkhorn Slough relative to the northern boundary of the NMGWM." Marina-146

In short, the groundwater model used for assessing groundwater impacts was unable to make any analysis of whether slant wells at Potrero Road would cause the speculative impacts to Elkhorn Slough. These impacts have no scientific basis and the initial conclusion was they "may" have such an effect, but no verification was attempted or made. Unfortunately, this "may have an impact" conclusion then was improperly translated in the alternative comparison section to be that it "would result in significant and unavoidable impacts." In fact, this "finding," which was the primary reason why Alternative 1 was not chosen as the environmentally superior alternative, lacks substantial evidence in the record and fatally undermines this comparison of alternatives.

It appears that several of the alternatives that are identified – possibly including the Potrero Road alternative and the ocean intake alternatives – would in fact be an environmentally superior alternative if a full and legally adequate set of environmental impact analyses had been prepared. Moreover, if Project alternatives that produced less than 9.6 mgd of water had been evaluated, there is no doubt that they would be environmentally superior to the current designated environmentally superior option because of the lessened size and scope of their environmental impacts. However, these potential alternatives were eliminated based on the agencies' failure to properly scrutinize CalAm's inadequately supported request for a project that generates 10,750 afy of water. Marina-147

In sum, the selection of the environmentally superior alternative (CEQA) and preferred alternative (NEPA) is invalid because the necessary factual and legal analyses that underpin the selection criteria and comparison are legally inadequate. This alternatives analysis must be completely redone and recirculated for public comment in a new Draft EIR/EIS that addresses all of these deficiencies.

CHAPTER 6.0 – OTHER CONSIDERATIONS

This section addresses the description, impacts and mitigation measures relating to the Project's growth-inducing impacts.

Section 6.1

The reader should refer to comments on sections 4.10 (Air Quality), 4.11 (Greenhouse Gas Emissions), and 4.18 (Energy Conservation) regarding impact conclusions and mitigation measures. Marina-148

Section 6.3 Growth-Inducing Impacts

The reader should refer to comments on Sections 2.1 to 2.5. As stated in those comments, the need for the Project appears to be vastly overstated. It is disingenuous to claim that the need for the project is 10,750 afy but the potential for growth inducement is limited to the availability of only an additional supply of 2,005 afy to be provided by the Project. This apparent discrepancy should be resolved. Marina-149

In addition, in the event CalAm ever stops its illegal pumping on the Carmel River and the Seaside Basin, there would potentially be more water supplies available from those currently overdrafted sources for legal users that could further induce growth in Monterey County. The Draft EIR/EIS fails to address these potential growth-inducing impacts and other impacts related to the surplus of water to be supplied to CalAm through implementation of the Project. Marina-150

Section 6.3.6 Secondary Effects of Growth

This section fails to include a discussion pertaining to the potential substantial increase in wastewater generated by indirect growth inducement (residential development enabled by elimination of water restrictions) and need for new or expanded wastewater collection and treatment facilities and associated secondary effects. The capacity of existing infrastructure should be identified and evaluated against the anticipated project-generated demands. Any constraints or impacts should be clearly identified. Marina-151

Table J2-1

This section lacks introductory information that is needed to explain what this information is intended to show. Table J2-1 appears to merely show the impacts of growth as identified in EIRs and MNDs for previously prepared General Plans in the Project area. This table and this Appendix do not provide a project-specific analysis of the secondary effects of growth that would result from implementation of the Project. These impacts must be adequately addressed on a project-specific basis. Referring to the EIRs and MNDs of previously adopted General Plans is inadequate unless it can be shown and supported by substantial evidence that the effects of growth in those General Plans assumes the availability of water supplies that the MPWSP would make available. Otherwise, the MPWSP would further remove a constraint to growth and result in substantially more severe growth inducement and secondary effects of growth than identified in the previous EIRs and MNDs. These issues must be fully disclosed in the Draft EIR/EIS. Marina-152

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Further information is needed in this section to describe why some impact determinations in Table J2-1 reflect two levels of significance (i.e., LS/U). The table also fails to reflect the level of significance after implementation of all feasible mitigation measures. Marina-152 cont.

Impacts on Carmel River

The Draft EIR fails to identify changes that would occur as a result of CalAm's reduced pumping on the Carmel River. Would river flows increase? Would riparian areas and habitat adjacent to the River be impacted? Would downstream areas be affected by increased capacity of the River? Would infrastructure be removed from the Carmel River? What would that entail? What would the environmental effects of decommissioning these existing components be? Marina-153

CONCLUSION

The City of Marina appreciates the opportunity to provide these comments regarding the Draft EIR/EIS for the Project. Please contact the City, its consultants or Farella if you have any questions.

Very truly yours,

Paul P. Spaulding, III

Paul P. "Skip" Spaulding, III

PPS:jla

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Appendix 1

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MEMORANDUM

ROBERT H. ABRAMS No. 931 CERTIFIED HYDROGEOLOGIST PROFESSIONAL GEOLOGIST STATE OF CALIFORNIA

Date: March 27, 2017

Prepared By: Robert H. Abrams, PhD, PG, CHg

Reviewed By: Jan Jacobson and Michael Tietze, PG, CEG, CHg

Subject: Comments on behalf of the City of Marina regarding the Draft EIR/EIS Monterey Peninsula Water Supply Project, Monterey County, California

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Jacobson James & Associates (JJ&A) has prepared this memorandum to provide technical comments on behalf of the City of Marina regarding the California American Water Company (CalAm) Monterey Peninsula Water Supply Project (MPWSP or Project) Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS), issued on January 13, 2017 by the California Public Utilities Commission and the Monterey Bay National Marine Sanctuary. All comments herein are professional opinions of JJ&A regarding material contained within or relevant to the Draft EIR/EIS.

1.0 INTRODUCTION

The proposed MPWSP includes a desalination plant with ten subsurface, seaward-facing slant wells to produce raw feedwater for the plant (Figure 1). These slant wells would pump up to 24.1 million gallons per day (MGD) of subsurface water from beneath the Monterey Bay coastline. The wells are proposed to be located on the CEMEX sand-mining property in Marina, California. The Draft EIR/EIS assumes that the plant feedwater will consist primarily of seawater that infiltrates through the seabed offshore from the CEMEX property. A test slant well is currently operating on this property. Alternative 5a, which has been designated the California Environmental Quality Act (CEQA) environmentally superior alternative and National Environmental Policy Act (NEPA) preferred alternative, would use seven slant wells on the CEMEX sand-mining property to pump up to 15.5 MGD of subsurface feedwater from beneath the Monterey Bay coastline.

To prepare these comments, JJ&A reviewed the project description and portions of the Draft EIR/EIS relating to groundwater resources, published peer-reviewed scientific research focused on the application of geophysical techniques to evaluate subsurface conditions in and around the Project area, and a video transcript of a presentation to the Marina City Council by geophysics professor Rosemary Knight.[1] JJ&A finds the evaluation of potential impacts to groundwater resources, water

[1] Presented at Marina City Council meeting, February 7, 2017 (https://sites.google.com/site/ampmediacenter/amp-programming/marina-video-on-demand-1).

quality, and water supplies in the Draft EIR/EIS to be incomplete from a technical perspective, leading to the conclusion that potential adverse impacts to groundwater supplies in the City of Marina have not been adequately evaluated. In our opinion, the technical deficiencies identified herein should be addressed and a revised Draft EIR/EIS prepared before certification by the CPUC and MBNMS.

1.1 Comment Organization and Overview

A primary concern for stakeholders in the MPWSP area is the effect of proposed Project pumping on existing and future seawater intrusion in the groundwater aquifers that provide water to the citizens of Marina and others, who rely exclusively or primarily on groundwater for their water supplies. Surface water resources in the region are fully allocated and scarce for all municipal, agricultural, industrial, and domestic water uses; therefore, protection of groundwater resources is imperative. The environmental analysis in the Draft EIR/EIS did not adequately assess the possibility of adverse impacts to groundwater quality and the City of Marina's drinking water supply from exacerbated seawater intrusion and other effects caused by the proposed MPWSP pumping.

JJ&A's findings and conclusions may be grouped into the following five comment areas:

1. Recent and ongoing geophysical investigations in the project vicinity related to seawater intrusion, although briefly mentioned in the Draft EIR/EIS, were not considered in the impact analysis. These studies provide substantive data that are necessary to adequately understand potential water quality impacts to drinking water supplies. As such the Draft EIR/EIS evaluation of potential impacts to groundwater quality and supplies is incomplete and inadequate.
2. Ongoing seawater intrusion control efforts in the area could have a significant effect on the feedwater source area for the proposed slant wells. As a result, a much greater percentage of feedwater may be extracted from inland areas of the local aquifers than has been assumed. The potential for this to occur was not considered in the Draft EIR/EIS.
3. Potential impacts to the 900-Foot Aquifer, a primary water source for the City of Marina, were not evaluated or discussed.
4. Alignments of proposed slant well casings appear to be mostly within the city limits of Marina and not substantially beneath the seafloor, as was assumed in the evaluation included in the Draft EIR/EIS.
5. The groundwater modeling effort conducted for the Draft EIR/EIS is too simplistic and insufficiently designed to adequately evaluate the potential impacts of feedwater pumping on water quality in the 180-Foot, 400-Foot, and 900-Foot aquifers. In addition, the approach used does not consider cumulative impacts and is insufficient for their evaluation.

These comment areas are discussed in detail in Section 2 of this memorandum.

1.2 Background

Using designations defined by the Monterey County Water Resources Agency (MCWRA), the proposed MPWSP is located in the Pressure Subarea of the Salinas Valley Groundwater Basin (SVGB) (Figure 1).[2] Using California Department of Water Resources (DWR) designations, the MPWSP area is located in the 180/400-Foot Aquifer Subbasin of the SVGB.[3] Wells operated by Marina Coast Water District (MCWD) that supply drinking water to the City of Marina are located in the Monterey Subbasin designated by DWR, which is located within the boundary of the Pressure Subarea of the SVGB designated by MCWRA (Figure 1). The MCWD wells are screened in the 180-Foot, 400-Foot, and 900-Foot aquifers.

1.2.1 Local Hydrogeology

A regionally extensive series of clay layers known as the Salinas Valley Aquitard (SVA) is present in the shallow subsurface within the Pressure Subarea of the SVGB. Above the SVA a zone of generally poor-quality groundwater occurs in the shallow or Dune Sand Aquifer. The 180-Foot Aquifer underlies the SVA. Where the SVA is absent, such as in the immediate area of the test slant well and the proposed Project slant wells, the Dune Sand Aquifer directly overlies the 180-Foot Aquifer and 180-Foot Equivalent Aquifer (180-FTE Aquifer).[4]

DWR characterizes the 180-Foot Aquifer as a confined aquifer within the 180/400 Foot Aquifer Subbasin. However, a recent report prepared for the MCWRA characterizes groundwater in this aquifer as predominantly confined, except where the overlying SVA is absent.[5] The Draft EIR/EIS states that the Dune Sand Aquifer and the 180-FTE Aquifer are unconfined at the CEMEX site, because there are no extensive overlying low-permeability clay units at this location. This means that in the MPWSP area, the Dune Sand Aquifer and the 180-FTE Aquifer are likely in direct hydraulic communication.

The 180-Foot Aquifer is separated from the underlying 400-Foot Aquifer by a zone of discontinuous aquifers and aquitards.[3] The primary aquitard separating the 180-Foot Aquifer and 400-Foot Aquifer is a clay layer known as the 180/400-Foot Aquitard, which varies in composition, depth, and thickness (typically 50 to 100 feet thick), and is absent in some areas.[5] The 400-Foot Aquifer, which on average is 200-feet thick,[3] is generally considered to be semi-confined to confined. Where the 180/400-Foot Aquitard is thin or absent, the 180-Foot Aquifer and 400-Foot Aquifer are in direct hydraulic communication.

Variability in the thickness and quality of the 180/400-Foot Aquitard and the existence of possible gaps in the aquitard have been noted. For example, two small "holes" in the aquitard, one under the Salinas River near Blanco and another under the old Salinas River bed near the coast have been documented. Other gaps in the 180/400-Foot Aquitard have been noted near the mouth of the Salinas River and near Fort Ord, as well as several areas between Castroville and the coast, where the aquitard is thin or

[2] http://www.mcwra.co.monterey.ca.us/groundwater_level_monitoring/groundwater_level_monitoring_overview.php
[3] http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/3-04.01.pdf
[4] The 180-Foot Equivalent Aquifer is stratigraphically equivalent and hydraulically connected to the 180-Foot Aquifer, and has similar hydraulic properties, although it is depositionally different than 180-Foot Aquifer.
[5] http://www.mcwra.co.monterey.ca.us/hydrogeologic_reports/documents/State_of_the_SRGBasin_Jan16_2015.pdf

absent.[5] If the SVA is also absent in these same areas, the 400-Foot Aquifer would be unconfined in those areas and in hydraulic communication with the Dune Sand Aquifer. The Draft EIR/EIS states that the 180/400-Foot Aquitard is present beneath the CEMEX site, but also states that the 400-Foot Aquifer at the CEMEX site is within the unconfined Aromas Sand, suggesting that the three uppermost aquifers in this area behave essentially as a single aquifer system.

The 900-Foot Aquifer is present in the lower Salinas Valley. A clay aquitard separates this aquifer from the overlying 400-Foot Aquifer. The 900-Foot Aquifer consists of a thick sequence of alternating layers of sand-gravel mixtures and clays, rather than a distinct aquifer and aquitard.[3] The 900-Foot Aquifer is reported to be confined.

1.2.2 Seawater Intrusion and the Potential for Adverse Impacts

Seawater intrusion has been well-documented in Monterey County since at least the 1940s.[6] For example, the Seaside Subbasin is adjudicated due to overdraft and the threat of seawater intrusion. Various entities, including the MCWRA and its predecessor agency, have studied and evaluated the extent of seawater intrusion and proposed or constructed projects with the goal of limiting, halting, or reversing movement of seawater intrusion further inland.[7]

The extent of seawater intrusion in the 180-Foot and 400-Foot aquifers has been monitored by MCWRA for many years, by measuring various groundwater quality parameters at a designated set of monitoring and other wells. The measurements at these wells are point values, which are used to develop two-dimensional concentration contour maps to assess the lateral extent of seawater intrusion in the principal aquifers by interpolating between these point values. MCWRA publishes maps every two years, showing the position of the seawater intrusion front based on the location of the interpolated 500 mg/L chloride concentration contour line (Figures 2 and 3). These maps show the location of the seawater intrusion front beginning in 1944 in the 180-Foot Aquifer and 1959 in the 400-Foot Aquifer. The most recent maps available at this time show the position of the seawater intrusion front through 2013, based on data from the designated wells. The 2013 data indicate that the seawater intrusion fronts are in approximately the same locations they were in 2011; indicating that seawater intrusion did not advance further inland between 2011 and 2013.

Groundwater quality monitoring at wells provides valuable information about the two-dimensional extent of seawater intrusion in the principal aquifers through time, but must be supported by an adequate understanding of the actual seawater migration pathways in three dimensions to adequately inform aquifer and groundwater resource management decisions and impact analyses. As discussed later in this memorandum, the MCWRA seawater intrusion maps alone do not provide a clear understanding of the actual three-dimensional distribution of groundwater degraded by seawater intrusion, or of the lateral and vertical seawater migration pathways.

[6] http://www.mcwra.co.monterey.ca.us/seawater_intrusion_monitoring/seawater_intrusion_monitoring.php
[7] See for example, http://www.mcwra.co.monterey.ca.us/salinas_river_diversion_fac/salinas_river_diversion_fac.php, http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_I/salinas_valley_water_project_I.php, http://www.mcwra.co.monterey.ca.us/salinas_valley_water_project_II/salinas_valley_water_project_II_overview.php.

The analysis in the Draft EIR/EIS relies on the MCWRA maps alone, and does not consider data in the third dimension (i.e., variability with depth within and between principal aquifers) from other existing sources that would allow the threat to groundwater wells to be evaluated more adequately. Assessment of the probability of water quality degradation and adverse impacts to the City of Marina's drinking water supply and other groundwater users should be conducted using all of the substantive data available, and by developing models capable of addressing the range of possible future impacts, rather than simplistic interpolations based on monitoring data alone. Marina-JJ&A-01

Figures 2 and 3 show the locations of wells operated by MCWD that supply drinking water to the City of Marina relative to the documented seawater intrusion fronts. Known gaps in the confining clay layers above and between the 180-Foot and 400-Foot Aquifers, and the fact that the clay layers are absent in some areas potentially leave these water-supply wells vulnerable to seawater intrusion from both vertical and horizontal migration of seawater-intruded groundwater. It should be noted it is not clearly known at this time if vertical pathways exist for groundwater flow from the 400-Foot Aquifer to the 900-Foot Aquifer.

Marina-JJ&A-02

The groundwater resources impact analysis in the Draft EIR/EIS is primarily focused on changes in groundwater levels, or drawdown, caused by proposed Project pumping. Discussion of the potential impacts resulting from exacerbated seawater intrusion is limited in the Draft EIR/EIS, and these impacts are evaluated only in terms of the potential for MPWSP feedwater pumping to change the rate of horizontal inland migration of the seawater intrusion front (as defined by 500 mg/L chloride concentration) based on a simplistic assessment of lateral groundwater flow within the principal aquifers alone. Vertical groundwater flow that will likely be induced between the aquifers by the MPWSP was not adequately evaluated, leading to an incomplete understanding of potential adverse impacts to groundwater quality and wells. In our opinion, it is important to evaluate the potential migration of seawater intrusion that could be caused by MPWSP pumping, and the impact these events could have on groundwater wells in the City of Marina.

2.0 DISCUSSION OF COMMENT AREAS

Section 2 of this memorandum provides detailed discussions of the five comment areas identified by JJ&A, which led to our conclusion that the Draft EIR/EIS does not adequately evaluate the potential for adverse impacts to groundwater resources and supply wells in the City of Marina.

2.1 The Importance and Relevance of Local Geophysical Investigations

Marina-JJ&A-03

Geophysical methods are widely recognized as useful tools to fill critical data gaps between point values when a three-dimensional perspective is required. Addressing these data gaps and developing a more complete conceptual understanding of three-dimensional groundwater flow is a crucial and valuable complement to the seawater-intrusion monitoring data collected at wells in Monterey County, for the purpose of informing groundwater management decisions and impact analyses. Such geophysical surveys are typically validated by utilizing groundwater quality parameters collected in the field at point locations. Stanford University Professor of Geophysics Rosemary Knight and colleagues, as well as many other researchers, have reported extensively on the use of electrical resistivity tomography (ERT) and other geophysical methods to characterize seawater intrusion in the subsurface.[8] Much of this research has been conducted along the Monterey Bay coastline in Monterey and Santa Cruz counties, near the MPWSP area.

Section 4.4 of the Draft EIR/EIS mentions briefly the use of geophysics and ERT along the coastline of Monterey Bay near the CEMEX site. Page 4.4-31 of the Draft EIR/EIS states that:

> *"Professor Knight's initial survey was conducted along a 4-mile segment parallel to the beach between the cities of Seaside and Marina. The study found that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of 500 feet in four area groundwater wells."*

Marina-JJ&A-03

As noted above, field data are used for validation purposes, so correlation of the geophysical results with measured values is expected. No other discussion is provided in the Draft EIR/EIS. This brief statement fails to recognize the key importance of recent ERT analyses to inform the impact analysis conducted for the Draft EIR/EIS, and ignores the principal conclusions of those studies. There is no mention in the Draft EIR/EIS that work by Professor Knight's group has added considerable value, advancing the characterization of aquifers, aquitards, and seawater intrusion along the Monterey Bay coastline, by assessing the subsurface *between and beyond* monitoring wells both laterally and vertically. Furthermore, the 4-mile segment mentioned in the Draft EIR/EIS was a precursor to a much larger study that was occurring before and during the preparation of the Draft EIR/EIS. Both of these studies revealed details of the distribution of subsurface seawater impacts that cannot be characterized by a monitoring well network, as described below. The results of these geophysical investigations have greatly improved the characterization of local hydrogeology and seawater intrusion and should have been integral parts of the evaluations conducted for the Draft EIR/EIS.

2.1.1 Existing Geophysical Investigations in the MPWSP Area

Marina-JJ&A-04

Pidlisecky et al. (2016) present results of ERT imaging over a 7-kilometer (4.3 miles) profile of the Monterey Bay coastline, which extended to a depth of approximately 150 meters (490 feet) (Figure 4). The color-coded plot of electrical resistivity across this area in Panel (a) of Figure 5 shows clearly the different resistivities associated with salt water (red) and fresh water (blue) in the principal aquifers. When combined with lithologic interpretations shown on Panels (b) and (c), the resistivity results delineate the aquifers, aquitards, and horizontal and vertical extents and migration pathways of

[8] See, for example, the following peer-reviewed scientific papers and references cited therein:

Goebel, Pidlisecky, and Knight, 2017. Resistivity imaging reveals complex pattern of saltwater intrusion along Monterey coast. Journal of Hydrology (in press).

Herckenrath, Odlum, Nenna, Knight, Aukem, and Bauer-Gottwein, 2013. Calibrating a salt water intrusion model with time-domain electromagnetic data. Groundwater, Vol. 51, No. 3.

Mills, Hoekstra, Blohm, and Evans, 1988. Time domain electromagnetic soundings for mapping sea-water intrusion in Monterey County, California. Ground Water, Vol. 26, No. 6, p. 771-782.

Nenna, Herckenrath, Knight, Odlum, and McPhee, 2013. Case history – Application and evaluation of electromagnetic methods for imaging saltwater intrusion in coastal aquifers: Seaside Groundwater Basin, California. Geophysics, Vol. 78, No.2, p. B77-B87.

Pidlisecky, Moran, Hansen, and Knight, 2016. Electrical resistivity imaging of seawater intrusion into the Monterey Bay aquifer system. Groundwater, Vol. 54, No. 2, p. 255-261.

seawater intrusion along this section of the Monterey County subsurface. The ERT results provide a vertical cross-sectional image of seawater intrusion and migration in the 180-Foot and 400-Foot aquifers at this location.

Two principal conclusions of this work are that the subsurface geology is more highly variable and spatially heterogeneous than was previously understood, including the aquitards between and overlying the aquifers, and that the distribution of seawater intrusion in these aquifers is also highly variable horizontally and vertically. There are numerous locations where pathways exist for migration of seawater and seawater-impacted groundwater from shallower to deeper levels of the aquifer system, as well as locations where such pathways do not exist and fresh water is present at depth. Pidlisecky et al. (2016) note the constrained nature of the salt water layer on the southern end of the profile suggests the presence of a thin clay aquitard, which impedes downward migration of salt water from the shallow aquifer in that area. On Figure 5, Panel (b) shows the interpreted location of this thin clay aquitard. Moreover, the pathways and deeper occurrence of salt water at other locations exist in part because aquitards are not present at all locations, and downward vertical flow and transport of degraded groundwater has apparently occurred.

Marina-JJ&A-04

This interpretation is corroborated by information in the Draft EIR/EIS that was not considered in the water quality impact analysis. Figure 4.4-3 of the Draft EIR/EIS shows the presence of significant downward vertical hydraulic gradients observed at four monitoring wells in the MPWSP area on September 10, 2015. Because the SVA is largely absent in this area, downward flow of degraded groundwater between the Dune Sand Aquifer and the 180-Foot Aquifer must be occurring. As shown on Figure 4.4-3 of the Draft EIR/EIS, the presence of the 180/400-Foot Aquitard in most of this area is speculative, and it was noted elsewhere in the Draft EIR/EIS that the 400-Foot Aquifer is unconfined in the MPWSP area, indicating that the 180/400-Foot Aquitard and SVA are absent. Thus, downward flow of seawater-intruded groundwater from the 180-Foot Aquifer to the 400-Foot Aquifer is likely to continue and could be exacerbated by the MPWSP.

Goebel et al. (2017) extend the work of Pidlisecky et al. (2016) to greater depths (280 meters, or 920 feet), and a significantly longer profile that extends 40 kilometers (25 miles) across three groundwater basins (i.e., the Santa Cruz Mid-County, Pajaro Valley, and Salinas Valley groundwater basins) spanning Santa Cruz and Monterey Counties. This additional study was not considered in the Draft EIR/EIS. The findings of this study were also the subject of the presentation noted above, given by Prof. Knight to the Marina City Council on February 7, 2017, and presented in other local venues prior to this date. Several sections of this extended profile were shown during the presentation, which illustrated similar patterns observed in the earlier work, except that these profiles show imaging of salt water intrusion at depths of 920 feet, i.e., significantly deeper than the 180-Foot and 400-Foot aquifers. As with Pidlisecky et al. (2016), the profiles in Goebel et al. (2017) show clearly where pathways exist for potential downward migration of seawater and seawater-impacted groundwater from shallower to deeper levels of the aquifer system, as well as locations where such pathways do not exist and fresh water is present at depth.

The resistivity image in Goebel et al. (2017) that covers the same region as the profile in Pidlisecky et al. (2016) indicates a vertical flow barrier deeper in the section that has prevented the downward flow of the higher-salinity water (Goebel et al., 2017). Importantly, this vertical flow barrier is not regionally extensive, thus downward vertical flow of seawater-intruded groundwater from shallower to deeper levels of the aquifer system appears to occur and could be exacerbated by project pumping. The presence of salt water down to depths of 920 feet can be seen on the profiles presented to the Marina City Council by Dr. Knight.

Dr. Knight noted during her February 7, 2017 presentation to Marina City Council that her research team was prevented from crossing the CEMEX property for purposes of conducting ERT measurements, which is where the test slant well is located and is also the site of all proposed Project slant wells. As a result, there is a noticeable data gap at one of the locations where such information is likely to be needed the most.

Marina-JJ&A-04

2.1.2 Near-Future Geophysical Investigations in the MPWSP Area

The existing ERT profiles discussed above give vertical profiles of seawater intrusion for specific locations in the groundwater aquifers (i.e., along the Monterey Bay coastline); however, Dr. Knight and her colleagues are undertaking a new ERT study that will give three-dimensional images of seawater intrusion across a wide area in and around the City of Marina and the MPWSP area. This work is scheduled to occur in May 2017, using the SkyTEM methodology.[9]

These new data will provide valuable insight into the hydrogeological heterogeneity and extent/distribution of seawater in the immediate MPWSP area. Moreover, the new data will reduce the uncertainty associated with the current characterization of the subsurface, and will facilitate a more adequate evaluation of the likelihood of adverse impacts from the proposed MPWSP feedwater pumping to groundwater wells that supply drinking water to the City of Marina. Dr. Knight's upcoming project is planned to include detailed groundwater modeling that accounts for hydraulic parameter uncertainty evaluations.

Marina-JJ&A-05

2.2 Effects of Seawater Intrusion Control Efforts on MPWSP Feedwater Source Areas

The transient North Marina Groundwater Model (NMGWM) was used for the Draft EIR/EIS to evaluate the drawdown impacts caused by proposed MPWSP feedwater pumping. As part of the groundwater modeling effort described in Appendix E2 of the Draft EIR/EIS, a capture-zone, or feedwater source-area, analysis for the proposed MPWSP slant wells was conducted using particle tracking, a steady-state version of the NMGWM, and three different average values for the regional background hydraulic gradient. These average gradients were artificially imposed on the groundwater flow model.[10] Each of these three hydraulic gradients were oriented in the same direction and assumed that the regional groundwater flow direction in the MPWSP area is from the subsea portions of the Dune Sand Aquifer

Marina-JJ&A-06

[9] http://skytem.com/geophysical-surveys/

[10] As explained in Appendix E2 of the Draft EIR/EIS, the hydraulic gradients were artificially imposed because in the superposition model used for the forecast scenarios, the initial water levels and boundary conditions were set to zero. Consequently there was no regional background hydraulic gradient in the simulations.

and the 180-Foot Aquifer toward the inland portions of these aquifers, i.e., landward gradients. Under these conditions, feedwater for the desalination plant would largely be drawn from the subsea portions of the aquifers beneath Monterey Bay. However, it is important to note that concerted and successful efforts have been underway for many years, led by the MCWRA and its predecessor agency, to increase groundwater levels in the inland, seawater-intruded areas of the SVGB to slow, halt, or reverse seawater intrusion.[7] If these mitigation efforts continue to be successful, as will likely be required under the Sustainable Groundwater Management Act (SGMA), the magnitude of the landward hydraulic gradient will decrease as inland groundwater levels increase, thus the shape of the capture zone and extent of the source area for the proposed slant wells will change substantially. Marina-JJ&A-06

A hypothetical capture zone in the presence of a landward regional hydraulic gradient is shown conceptually on Figure 6a (i.e., conceptual in the sense that it is not drawn to scale and not calculated based on specific pumping rates). The capture zone depicted on Figure 6a is an idealized version of the capture zones shown on Figure 5-6 of Appendix E2 of the Draft EIR/EIS. Current groundwater conditions in the SVGB are such that the capture zone for the proposed slant wells would be conceptually similar to Figure 6a, and the source area for the slant wells would predominantly be the subsea portions of the aquifers. This hydraulic gradient direction occurs because inland groundwater elevations are currently below sea level in a substantial portion of the SVGB.

Two conceptual illustrations of possible future changes to the slant-well capture-zones are shown on Figures 6b and 6c. For purposes of understanding the three conceptual illustrations on Figure 6, the only difference between the three is the direction of the regional hydraulic gradient. Furthermore, the illustrated changes in gradient direction from Figure 6a to Figure 6b and Figure 6c are caused only by increases in inland groundwater elevations. Figure 6c shows the orientation of a hypothetical slant-well capture-zone that would occur if inland groundwater levels were to increase above sea level. Any and all changes to inland groundwater elevations would alter the geometry of the source area for the proposed slant wells. Thus, there are an infinite number of capture-zone geometries that could occur between the end-members illustrated in Figures 6a and 6c. Figure 6b shows an intermediate hypothetical case that would occur if inland groundwater elevations increase to exactly sea level. Thus, the continued success of ongoing seawater-intrusion mitigation projects could potentially strand the MPWSP desalination plant from its source of seawater. Marina-JJ&A-07

Possible future groundwater conditions such as those described above were not evaluated or discussed in Appendix E2 of the Draft EIR/EIS, even though the goal of MCWRA's ongoing seawater-intrusion control efforts is to increase inland groundwater levels, and such conditions may be considered to be reasonably foreseeable. As such, the Draft EIR/EIS failed to consider that a more substantial fraction of freshwater resources may be captured during feedwater pumping than has been assumed.

2.3 Insufficient Evaluation of the 900-Foot Aquifer

Discussion of the 900-Foot Aquifer is limited in the Draft EIR/EIS. The lack of discussion implies to the reader that potential impacts or harm to the 900-Foot Aquifer from proposed MPWSP feedwater pumping were assumed to be negligible; however, this is not clearly stated. The 900-Foot Aquifer is a Marina-JJ&A-08

significant water resource for the City of Marina and others in the area. Therefore, discussion of the potential implications of the MPWSP project on this resource should be an integral part of the overall evaluation and should be discussed in detail. Marina-JJ&A-08

The groundwater modeling evaluations conducted for the Draft EIR/EIS do not address potential impacts to the 900-Foot Aquifer from proposed MPWSP pumping. First, the higher-resolution CEMEX area model described in the April 2015 Draft EIR (DEIR) for the MPWSP did not extend deeper than the 400-Foot Aquifer, and in any case was not included for evaluation purposes in the Draft EIR/EIS. The NMGWM described in both the April 2015 DEIR and the current Draft EIR/EIS does not evaluate the 900-Foot Aquifer beyond a cursory level. For instance, aquifer parameters in model layers 5 through 8 (which are used to represent the 400-Foot Aquifer, the 900-Foot Aquifer, and overlying aquitards) are treated as single zones. Gradational hydraulic conductivity values were used for model layers 5 and 6, but there is no explanation of how the gradational patterns were determined. Hydraulic conductivity in model layers 7 and 8 were assigned single values and the spatial distribution of hydraulic conductivity was considered to be homogeneous, even though all available data indicate that the entire thickness of the aquifer system in the MPWSP area is extremely heterogeneous. Marina-JJ&A-09

Other deficiencies in the evaluation of the 900-Foot Aquifer include the following:

- The potential impacts of downward vertical flow from shallower seawater-contaminated aquifers (identified during the geophysical investigations discussed earlier in this memorandum) were not discussed or evaluated, despite clear evidence that vertical flow is known to occur in the MPWSP area (e.g., in Figures 4.2-3 and 4.4-3 of the Draft EIR/EIS).
- The discussion in the Draft EIR/EIS section on Groundwater Elevations and Flow Directions (Section 4.4.1.3) does not cover groundwater flow or response to pumping with respect to the 900-Foot Aquifer.
- The Direct and Indirect Effects section of the Draft EIR/EIS (Section 4.4.5) does not mention the 900-Foot Aquifer: Marina-JJ&A-10
    - Evaluation with regard to the effect of groundwater extraction from the shallow aquifers does not include analysis of the impact of changes to groundwater flow and water quality in the 900-Foot Aquifer;
    - There is no discussion of mitigation measures for potentially degrading or reducing the water supply in the 900-Foot Aquifer; and
    - Potential changes in groundwater flow in the 900-Foot Aquifer as a result of injection at the new Aquifer Storage and Recovery (ASR) wells were not discussed and no impact analysis was provided.

2.4 Alignments of Proposed Slant Wells Not Substantially Beneath the Seafloor

In the Draft EIR/EIS, the proposed MPWSP slant wells are described as being components of the seawater intake system for the desalination plant and as being beneath the seafloor of Monterey Bay, which implies that the slant wells will be extracting seawater. It should be noted, however, that the proposed alignments of the slant wells, as shown on Figure 3-3a of the Draft EIR/EIS, are under the Marina-JJ&A-11

beach and not the seafloor. The proposed slant wells would be completed in the Dune Sand Aquifer and the 180-FTE Aquifer, largely within the City Limits of the City of Marina.

The length of well casing that would extend offshore was estimated in the Draft EIR/EIS by plotting a projected year 2020 mean high water (MHW) line on a satellite-image map of the beach. The offshore portion was considered to be the portion of the well casing that would be seaward of this projected MHW line (see Table 3-2 and Figure 3-3a of the Draft EIR/EIS). The design details for the proposed slant wells were not included in the Draft EIR/EIS or the supporting publically-available documents.[11] However, Figure 3-3b of the Draft EIR/EIS gives a well length of 970 feet for nine of the proposed slant wells and 684 feet for the test slant well. The estimated offshore portion of the slant wells is based on climate change scenarios in which the high sea-level rise was predicted to be 8.1 centimeters (3.2 inches) by 2020 (see Table 3-2 of the Draft EIR/EIS). It is stated in the Draft EIR/EIS that the screened intervals of these wells will be less than the casing lengths given on Figure 3-3b of the Draft EIR/EIS. Nevertheless, these lengths can be used to estimate the percentage of well casing that would be seaward of the MHW line.

Table 3-2 of the Draft EIR/EIS provides additional factors that increase the length of well casings and portions of the wells considered to be seaward of the MHW line; however, the document does not explain how these factors were derived. It is not explained in the Draft EIR/EIS how the “envelope” length was determined, nor was the rationale for adding these lengths explained in enough detail to assess their validity. A second estimated length intended to account for erosion from a “100-year storm” was also added to the length of well casing that would be considered seaward of the MHW line. However, no explanation is given as to how or why the impact of a storm or erosion would permanently affect the position of the MHW line. Both of these added lengths act to show increased estimates in Table 3-2 of the Draft EIR/EIS of the length of well casing that would be seaward of the MHW line.

Marina-JJ&A-11

For illustration, JJ&A estimated the percentages of the proposed MPWSP slant well casings that would be seaward of the MHW line shown in the Draft EIR/EIS. For purposes of our analysis, we did not include the additional lengths estimated for the “envelope” or “100-year storm,” because the rationale for these additional casing lengths is not explained in the Draft EIR/EIS. The range of well-casing lengths seaward of the MHW line given in Table 3-2 of the Draft EIR/EIS is 0 to 278 feet. Based on the total length of the proposed well casings of 970 feet and the length of the test slant well casing of 684 feet (also given in Table 3-2 of the Draft EIR/EIS), the percentage of casing of individual wells seaward of the MHW line ranges from 0 percent to 29 percent, with a non-zero low of 7 percent and an average of 18 percent. Therefore, an average of 82 percent of the individual well casing lengths of the proposed MPWSP slant wells would be landward of the projected 2020 MHW line and in the City of Marina; i.e., not under the seafloor.

[11] On page 28 of Appendix E2 of the Draft EIR/EIS, it is stated in footnote 79 that Geosciences Support Services provided design details of the proposed slant wells and layout to the current groundwater modeling consultant in a written communication.

2.5 Groundwater Modeling Deficiencies

JJ&A finds six areas for which the groundwater modeling effort conducted for the Draft EIR/EIS, and reported in Appendix E2, is deficient for evaluating the potential for adverse impacts to existing groundwater users in the City of Marina from proposed MPWSP pumping. These deficiencies are due at least in part to the use of a legacy model (the NMGWM) that was not developed and constructed for this specific purpose, and that does not include newly available information regarding the heterogeneous and vertically-connected nature of the aquifer system.

The Draft EIR/EIS used a revised version of the same model that was used to evaluate the potential for impacts to existing groundwater users from proposed MPWSP in the previous DEIR. According to Appendix E2 of the April 2015 DEIR for the MPWSP,[12]

> *"The NMGWM was constructed by integrating the SVIGSM aquifer parameters, recharge and discharge terms, boundary conditions and predictive scenarios to ensure consistency between the two models. It has been used previously to evaluate several proposed projects in the region…"*

Marina-JJ&A-12

The SVIGSM (Salinas Valley Integrated Groundwater Surface Water Model) was developed for the MCWRA approximately 25 years ago using a modeling platform that is generally no longer used, and has been replaced by a more up-to-date platform that addresses several perceived deficiencies. For its time, and considering the available computing resources, it was a detailed model of Salinas Valley hydrology. However, it is important to recognize that by today's standards the SVIGSM is obsolete and is not capable of providing the level of analysis required of modern models. It is no longer used by the MCWRA, which is currently collaborating with the U.S. Geological Survey (USGS) on a new, modern model that is nearing completion (i.e., the Salinas Valley Integrated Hydrologic Model, or SVIHM).

The NMGWM is refined compared to the SVIGSM, however it was developed for a similar primary purpose: to evaluate the impact of water projects on water supply and groundwater storage at a regional scale.[13] For "water-supply models," the required level of detail is much less than models designed to evaluate project impacts that could degrade water quality, such as impacts due to exacerbated seawater intrusion. This is primarily because of the level of detail needed to achieve the modeling objectives for differing purposes. The tracking of particular parcels of water and inclusion of specific or possible migration pathways are generally not necessary for water-supply projects, because the modeling objectives are typically tailored to evaluate bulk volumetric water supply and the project-related changes to groundwater levels and storage.

Marina-JJ&A-13

Conversely, particular parcels of water must be tracked accurately to evaluate the water quality impacts due to project-related degradation of water quality. Such models must also simulate the appropriate processes as well as preferential migration/flow pathways in heterogeneous systems. In the case of the proposed MPWSP, the ability to simulate and evaluate potential adverse impacts caused by exacerbated

Marina-JJ&A-14

[12] http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/deir_toc.html
[13] See page 7 of Appendix E2 of the Draft EIR/EIS.

seawater intrusion requires inclusion of density-dependent flow and solute transport, neither of which are included in the NMGWM described in the Draft EIR/EIS. An additional requirement of a focused site-specific model is that it must provide sufficient spatial resolution. For a finite-difference model like the NMGWM, the model cell dimensions would need to be much smaller than 200 foot by 200 foot cells used in the NMGWM (e.g., cells on the order of 20 feet by 20 feet would be needed).

Water-supply models typically perform very well for calculating the response of water levels and changes in groundwater storage to pumping. As might be expected for a water-supply model of this type, which was used for the Draft EIR/EIS, it is stated in Appendix E2 that the NMGWM performance assessment was conducted for the purpose of supporting the calculation of water-level changes in response to slant well pumping, and not for evaluating the potential adverse impacts from exacerbated seawater intrusion.

The six areas for which the NMGWM was found to be deficient are discussed in detail in the following subsections.

Marina-JJ&A-14

2.5.1 Modeling Objectives

Modeling objectives succinctly define the purpose of a modeling effort, so that detailed characterization can be focused on those parts of the model that most control outcomes related to the stated purposes of the model. Although not stated clearly in the Draft EIR/EIS, the modeling objectives for the revised NMGWM are implied in Appendix E2 to be (1) delineate the area where drawdown is 1-foot or greater in response to proposed MPWSP pumping, (2) determine the source area(s) from where feedwater for the proposed MPWSP desalination plant would be extracted, and (3) determine if proposed MPWSP pumping would exacerbate seawater intrusion in the SVGB. As such, specific evaluation of potential groundwater quality degradation in the City of Marina resulting from the MPWSP does not appear to have been an objective of the modeling study.

JJ&A's review of Appendix E2 and other portions of the Draft EIR/EIS indicate these modeling objectives are insufficiently defined or incompletely addressed. Thus, the potential for adverse impacts to wells in the City of Marina from the proposed MPWSP has not been adequately evaluated by the modeling studies in the Draft EIR/EIS.

Marina-JJ&A-15

2.5.1.1 Modeling Objective 1

The first modeling objective essentially defines the area where Project drawdown effects will occur (the Area of Project Effects or APE) that will be further evaluated to determine their significance based on the predicted drawdown within the area. To achieve the first modeling objective (delineating the area where drawdown is 1-foot or greater in response to proposed MPWSP pumping), a "superposition" version of the NMGWM was utilized. Importantly, the superposition technique used analyzed *only* the effects of proposed MPWSP pumping, without considering cumulative pumping in the area or the numerous other stresses on groundwater that have occurred and will continue to occur in the SVGB. The modeling methodology may be adequate to define the APE and to evaluate interference drawdown impacts to existing wells in the area, but it is not sufficiently refined to be useful for evaluating the

Marina-JJ&A-16

potential for water quality impacts to water supplies from proposed MPWSP feedwater pumping within the defined area. In addition, the approach is not useful for informing the analysis of cumulative impacts. Marina-JJ&A-16

Proposed MPWSP pumping will never be the only stress on the aquifers in the vicinity of the Project. It is the cumulative combination of all the groundwater stresses in the SVGB that will have impacts on the DWR-designated medium-priority Monterey Subbasin and the critically overdrafted 180/400-Foot Aquifer Subbasin. Without consideration of these other stresses, such as seasonal trends, municipal and agricultural pumping, and droughts, the cumulative impact of proposed MPWSP pumping on groundwater levels that will control the migration of degraded groundwater in the Project vicinity cannot be determined accurately. For example, the totality of current stresses might be manageable at the basin level, but the addition of MPWSP pumping could potentially cause the new state of stresses to be unmanageable and to induce migration of seawater or degraded groundwater to new areas. Furthermore, the hydrogeological conceptual model used for the NMGWM is not defined with enough precision to support determining the potential for adverse water quality impacts to groundwater in the City of Marina, especially considering newly available information regarding the heterogeneous and vertically connected nature of the aquifer system. Finally, the 180/400-Foot Subbasin is designated as being in a state of critical overdraft, which means that adverse impacts are occurring to which the project would make a cumulatively considerable contribution unless mitigated or accepted. Marina-JJ&A-17

2.5.1.2 Modeling Objective 2

The second modeling objective, determine the source area(s) where feedwater for the proposed MPWSP desalination plant would be extracted, examines only one possible scenario and ignores other planned and reasonably foreseeable changes (as described above in Section 2.2). This single scenario is based on current regional groundwater flow patterns, in which the natural, pre-development seaward groundwater flow direction has been reversed due to pumping, which has led to extensive inland seawater intrusion in the SVGB. Current groundwater conditions cause the primary source area for the proposed MPWSP wells to be the subsea portions of area aquifers. However, efforts to control seawater intrusion are based on actions intended to cause inland groundwater levels to increase. If mitigation efforts continue to be successful and inland groundwater levels increase, the source area for the proposed MPWSP wells will be modified concomitantly and will include an increasing amount of water from inland areas. If the natural regional groundwater flow direction is restored, the primary source area for the proposed MPWSP wells will be from the inland areas, not from the subsea portions of the aquifers. Thus, this modeling objective was incompletely addressed. Marina-JJ&A-18

2.5.1.3 Modeling Objective 3

The third modeling objective, determine if proposed MPWSP pumping would exacerbate seawater intrusion in the SVGB, cannot be adequately evaluated with the NMGWM (see Section 1.2.2 above). The NMGWM does not have the capability to simulate density-dependent subsurface flow and does not include solute transport, which are two of the governing processes for groundwater flow and water-quality impacts in seawater-intruded aquifers. Furthermore, the NMGWM does not sufficiently Marina-JJ&A-19

characterize the degree of aquifer heterogeneity or the actual distribution of seawater-intruded groundwater. This modeling objective was incompletely addressed. Marina-JJ&A-19

2.5.2 Model Construction and Revisions

Most of the groundwater modeling analysis reported in Appendix E2 of the Draft EIR/EIS is focused on updating and revising the previous version of the NMGWM,[14] which as noted above appears to have been originally developed as a water-supply model for other purposes. MODFLOW-2000 was utilized in the revised version of the NMGWM used for the Draft EIR/EIS. Among the many modifications and revisions was the inclusion of the Fort Ord Salinas Valley Aquitard (FO-SVA). Appendix E2 states that the FO-SVA and a transition zone west of the FO-SVA were added as new hydraulic conductivity zones to Layer 3 of the NMGWM. These two new zones are shown in map view on Figures 3.4a and 3.4b of the Draft EIR/EIS. One or both of these zones should be identifiable on Figures 3.2b, 3.2c, or 3.2f of the Draft EIR/EIS, which are vertical cross-sections through the NMGWM, but they are not shown. Marina-JJ&A-20

Appendix E2 of the Draft EIR/EIS states that MODFLOW has limitations for simulating steep vertical gradients, which occur in the MPWSP area and are important for evaluating the potential for groundwater degradation in the City of Marina as a result of the Project. JJ&A is unaware of any inherent inability of MODFLOW to simulate steep vertical gradients. Such difficulties can, however, arise in models that use a quasi-three-dimensional approach[15] (which is not the case for the NMWGM), or models with an insufficient number of model layers. It should be noted that the number of model layers in the NMGWM was not refined. Marina-JJ&A-21

With these deficiencies in model construction, especially in light of the newly available information regarding the heterogeneous and vertically-connected nature of the aquifer system, the model used for impact evaluation in the Draft EIR/EIS cannot adequately support the evaluation of potential adverse impacts to existing groundwater users in the City of Marina. The potential or probability for adverse impacts cannot be effectively evaluated with the NMGWM in its current form. Marina-JJ&A-22

2.5.3 Subsurface Seawater Flow and Intrusion

Seawater is denser than fresh water, which imparts a significant downward vertical gradient and driving force for the movement of seawater and brackish groundwater in aquifer systems that are intruded by seawater in shallower levels, such as in the MPWSP area. For the modeling effort described in Appendix E2 of the Draft EIR/EIS, the effects of variable water density were assumed to be negligible. This may be a correct assumption for simulating drawdown and groundwater storage changes due to MPWSP pumping. It is unlikely to be true for evaluating the potential exacerbation of seawater intrusion, especially if the exacerbation is due to vertical flow of seawater and degraded groundwater from shallower to deeper levels of the aquifer system in the MPWSP vicinity. Marina-JJ&A-23

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[14] The previous version of the NMGWM is not discussed in detail in this memorandum. A detailed review of this previous version was conducted by Lawrence Berkeley Laboratory and is reported in Appendix E1 of the Draft EIR/EIS. A report on the development and application of the previous version of the NMGWM was included in Appendix E2 of the April 2015 Draft EIR for the MPWSP (http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/deir_toc.html).

[15] In the quasi-three-dimensional approach, aquitards are not included as individual model layers as a simplifying assumption. This is common in water-supply models.

Vertical migration of seawater-intruded groundwater is known to occur from the 180-Foot Aquifer to the 400-Foot Aquifer.[16] Downward vertical gradients in the MPWSP area are due to existing groundwater pumping and the density difference between seawater and fresh water. Because pumping in the 900-Foot Aquifer to date has not been as widespread or extensive as in the 400-Foot Aquifer, it is not known if significant vertical migration of seawater-intruded groundwater has occurred or will occur to the 900-Foot Aquifer from the 180-Foot or 400-Foot aquifers.

Although there are no well data currently available that indicate seawater intrusion in the 900-Foot Aquifer, the ERT data in Goebel et al. (2017) indicate that in many areas of the Monterey Bay coastline, salt water is present to at least a depth of 920 feet. Proposed MPWSP pumping could redistribute seawater-intruded groundwater in and around the City of Marina in unpredictable ways, due to heterogeneity in the spatial distribution of seawater-intruded groundwater and hydraulic conductivity (as discussed in Section 2.1 above). Marina-JJ&A-24

Deficiencies in the parameterization of hydraulic conductivity and the lack density-dependent groundwater flow and solute transport prevent the NMGWM from supporting adequate assessment of the potential adverse impacts to existing groundwater users in the City of Marina from MPWSP pumping. Further details with regard to hydraulic conductivity parameterization are discussed below in Section 2.5.4.

2.5.4 Parameterization, Model Calibration, Performance Assessment, and Uncertainty Analysis

Parameterization refers to the manner in which aquifer parameters in a model, particularly hydraulic conductivity, are assigned to individual model cells. The simplest method is the homogenous case, in which the same value of hydraulic conductivity is assigned to all model cells. In recognition of geologic variability and to make parameterization more realistic, models are often divided into parameter zones, in which each zone is assigned a single, different hydraulic conductivity. More sophisticated parameterization methods use statistical approaches to assign spatially variable parameter distributions to model cells. Such methods can be applied to an entire model domain defined as a single zone, or different parameter distributions can be assigned to each of multiple zones within a model domain, in which the zones generally represent different geologic or hydrogeologic units. Marina-JJ&A-25

The NMGWM was constructed using the zoned approach in model layers 2 through 4, in which single values of aquifer parameters were assigned to individual zones within each layer.[17] In model layers 5 and 6, zones were not used and the spatial distribution of hydraulic conductivity was defined to be variable across each layer, but the method that was used to determine the spatial distribution is not described. The bottom two layers, which include the 900-Foot Aquifer, were assigned single values for each entire layer. As noted above, this type of model construction may be adequate for a "water-supply" model, but it does not support adequate assessment of the potential adverse impacts to existing groundwater users in the City of Marina from MPWSP pumping.

[16] Kennedy/Jenks Consultants, 2004. Hydrostratigraphic analysis of the northern Salinas Valley. Prepared for the Monterey County Water Resources Agency by Kennedy/Jenks Consultants, dated May 14, 2004.
[17] Model layer 1 was used only to simulate the influence of Monterey Bay.

After initial parameter values are assigned to model cells, model performance is typically evaluated using several statistical criteria that compare simulated values to observed values of model variables such as groundwater levels. Parameter values are then updated during model calibration in an effort to improve model performance by minimizing residual differences, i.e., minimizing the differences between simulated and observed values. Detailed procedures for calibrating groundwater flow models can be found in several references.[18] Briefly, recommended procedures include conducting a parameter sensitivity analysis, trial-and-error (manual) adjustment of calibration parameters, automated parameter estimation to improve initial calibration, and conducting an uncertainty analysis. Marina-JJ&A-25

Performance of the NMGWM was assessed in Appendix E2 of the Draft EIR/EIS, but there is minimal discussion of how or if model performance was improved (i.e., if the model was calibrated), or if such improvements were attempted, after the initial assignment of hydraulic conductivity values to the model cells. Appendix E2 lacks discussions of a model calibration procedure that was conducted after a parameter sensitivity analysis, prior to simulating the forecast scenarios. Marina-JJ&A-26

A large suite of model runs were conducted to evaluate a variety of slant-well pumping and return-water scenarios. Parameter sensitivities for the NMGWM were calculated for horizontal and vertical hydraulic conductivity values. The uncertainty related to these parameters was evaluated by varying the ratio of horizontal to vertical hydraulic conductivity in additional forecast scenario model runs, to evaluate the impact of different values on the model-calculated cone of depression caused by simulated slant well pumping. Automated parameter estimation and the associated uncertainty analysis were not discussed in Appendix E2, relative to minimizing simulation residuals, prior to conducting forecast scenarios. Data uncertainty, hydrogeological conceptual model uncertainty, and uncertainty related to choice of parameterization methods were also not discussed.[19] Marina-JJ&A-27

Because the NMGWM model was originally developed for other purposes, our opinion is that the parameterization is too simplified to fully evaluate the potential or probability of adverse impacts to groundwater users in the City of Marina from proposed MPWSP pumping. This opinion is especially relevant in light of the newly available information regarding the heterogeneous, vertically-connected nature of the aquifer system, the presence of significant downward vertical hydraulic gradients, and the Marina-JJ&A-28

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[18] See for example:

ASTM, 2008. Standard Guide for Calibrating a Ground-Water Flow Model Application. American Society for Testing Materials International (ASTM), Designation D 5981 – 96 (Reapproved 2008).

Faunt, C.C., ed., 2009. Groundwater Availability of the Central Valley Aquifer, California. U.S. Geological Survey Professional Paper 1766, 225 p.

Hanson, R.T., Schmid, W., Faunt, C.C., Lear, J., and Lockwood, B., 2014. Integrated Hydrologic Model of Pajaro Valley, Santa Cruz and Monterey Counties, California. U.S. Geological Survey Scientific Investigations Report 2014–5111, 166 p.

Hill, M.C. and Tiedeman, C.R., 2007. Effective Groundwater Model Calibration, with Analysis of Data, Sensitivities, and Uncertainty. John Wiley and Sons, Inc., Hoboken, NJ, 455 p.

Phillips, S.P., Rewis, D.L., and Traum, J.A., 2015. Hydrologic model of the Modesto Region, California, 1960–2004: U.S. Geological Survey Scientific Investigations Report, 2015–5045, 69 p.

[19] Deficiencies such as these were also noted in: Abrams, 2015. Groundwater Model Review, CPUC Monterey Peninsula Water Supply Project DEIR. Technical Memorandum prepared for the City of Marina by Robert H. Abrams, Consulting Hydrogeologist, dated June 29, 2015.

potential for exacerbated seawater intrusion. In addition, insufficient information is provided regarding the model calibration process to understand the reliability or uncertainty of the analysis. Marina-JJ&A-28

2.5.5 Superposition Approach

As stated in Appendix E2 of the Draft EIR/EIS, because of known "problems with specified initial water levels and boundary conditions" and the "complex nature of simulating recharge and discharge processes in the Salinas Valley Groundwater Basin," the theory of superposition was used in an attempt to remove the impact of these model deficiencies. A superposition version of the NMGWM was implemented by setting the boundary and initial conditions to fixed groundwater elevations of zero. However, it should be noted that model performance is a function of boundary and initial conditions, as well as aquifer parameters. Changing any of these model components changes the model performance. Because of the manner in which the superposition approach was used in the NMGWM to simulate the model forecast scenarios, the model deficiencies identified by the authors of Appendix E2 remain in the model and thus the true model performance on which the forecast scenarios are based is actually unknown. Marina-JJ&A-29

The success of superposition modeling in estimating drawdown is dependent on using the correct hydrogeological conceptual model, and performing calibration to the extent needed to support the modeling objectives. As discussed above, the NMGWM was not designed at a scale appropriate to evaluate the potential or probability of adverse water quality impacts to groundwater users in the City of Marina resulting from MPWSP pumping. In addition, the superposition approach cannot be used to evaluate the impact of possible exacerbated seawater intrusion. Furthermore, as noted in Section 2.5.1.1 above, the superposition approach cannot evaluate the cumulative drawdown impacts that are inherent in the highly developed SVGB.

2.5.6 Boundary and Initial Conditions

The NMGWM deficiencies identified by the authors of Appendix E2 of the Draft EIR/EIS and noted above are attributed to the SVIGSM, particularly for errors related to initial and boundary conditions. Errors such as these should have been corrected before the NMGWM was used to evaluate the potential or probability of adverse impacts to groundwater users in the City of Marina from MPWSP pumping. Without correcting these errors, the results of NMGWM forecast scenarios for evaluating the impacts of MPWSP pumping are unreliable and cannot be depended upon to predict future impacts. Marina-JJ&A-30

As noted above, the MCWRA and the USGS have nearly completed a new basin-wide model, SVIHM (developed with MODFLOW-OWHM), to replace the SVIGSM. Marina-JJ&A-31

This model has far more capabilities than the outdated SVIGSM.[20] One of these capabilities is the ease with which local-scale “child” models with increased spatial resolution can be developed within the regional-scale basin “parent” model using the local-grid refinement technique (LGR). LGR is a more robust method of applying boundary and initial conditions to child models than the procedure used to apply SVIGSM boundary and initial conditions to the NMGWM. LGR allows the stresses simulated in the child model to feedback to the parent model, which allows dynamic adjustment of the boundary conditions at the boundaries between the parent and child models. Furthermore, MODFLOW-OWHM is designed to use the MODFLOW Seawater Intrusion Package, in addition to being able to interface with solute transport models.

Marina-
JJ&A-31

3.0 SUMMARY AND CONCLUSIONS

It is the opinion of JJ&A that the Draft EIR/EIS is incomplete from a technical perspective and that the potential impacts to groundwater users in the City of Marina from the proposed MPWSP have not been adequately evaluated. In addition, the cumulative impacts of the project with existing pumping and reasonably foreseeable changes have not been adequately evaluated, especially in the critically overdrafted 180/400-Foot Aquifer Subbasin, where any contribution to existing adverse impacts would be cumulatively considerable. The technical deficiencies identified herein should be addressed and a revised Draft EIR/EIS prepared before certification by the CPUC and MBNMS. These revisions should be undertaken with consideration of all of the substantive available evidence, appropriate modeling techniques, and reasonably foreseeable future groundwater conditions so that the full suite of potential adverse impacts to groundwater resources and water supplies can be evaluated, including exacerbated seawater intrusion and impacts to the 900-Foot Aquifer.

[20] Bakker, Mark, Schaars, Frans, Hughes, J.D., Langevin, C.D., and Dausman, A.M., 2013, Documentation of the seawater intrusion (SWI2) package for MODFLOW: U.S. Geological Survey Techniques and Methods, book 6, chap. A46, 47 p.

Hanson, R.T., Boyce, S.E., Schmid, Wolfgang, Hughes, J.D., Mehl, S.M., Leake, S.A., Maddock, Thomas, III, and Niswonger, R.G., 2014, One-Water Hydrologic Flow Model (MODFLOW-OWHM): U.S. Geological Survey Techniques and Methods 6–A51, 120 p.

Mehl, S.W. and Hill, M.C., 2005. MODFLOW-2005, the U.S. Geological Survey Modular Ground-Water Model – Documentation of Shared Node Local Grid Refinement (LGR) and the Boundary Flow and Head (BFH) Package. U.S. Geological Survey Techniques and Methods 6-A12, 68 p.

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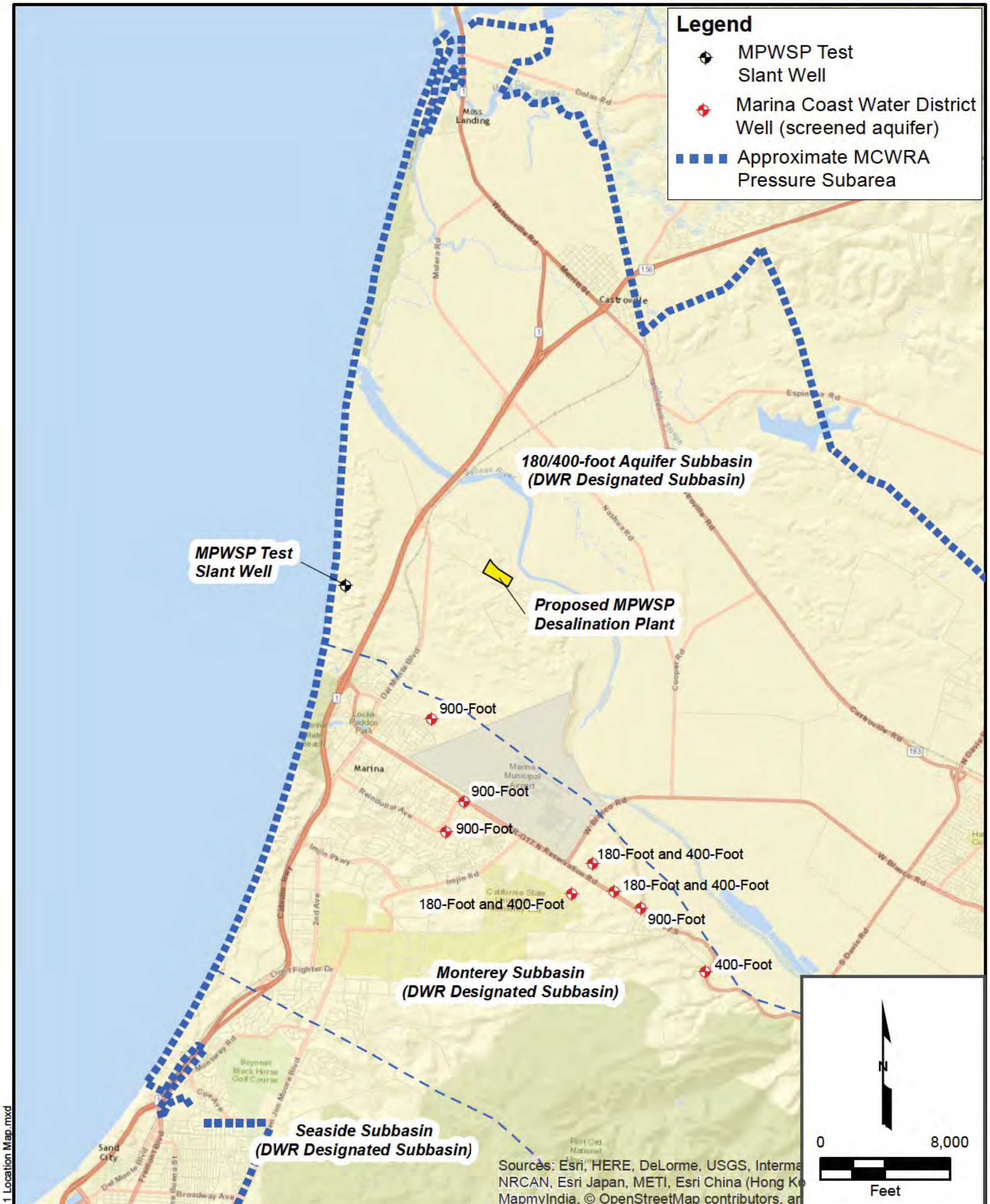

JACOBSON | JAMES & associates, inc	TITLE: **Location Map**	DATE: 3/23/17
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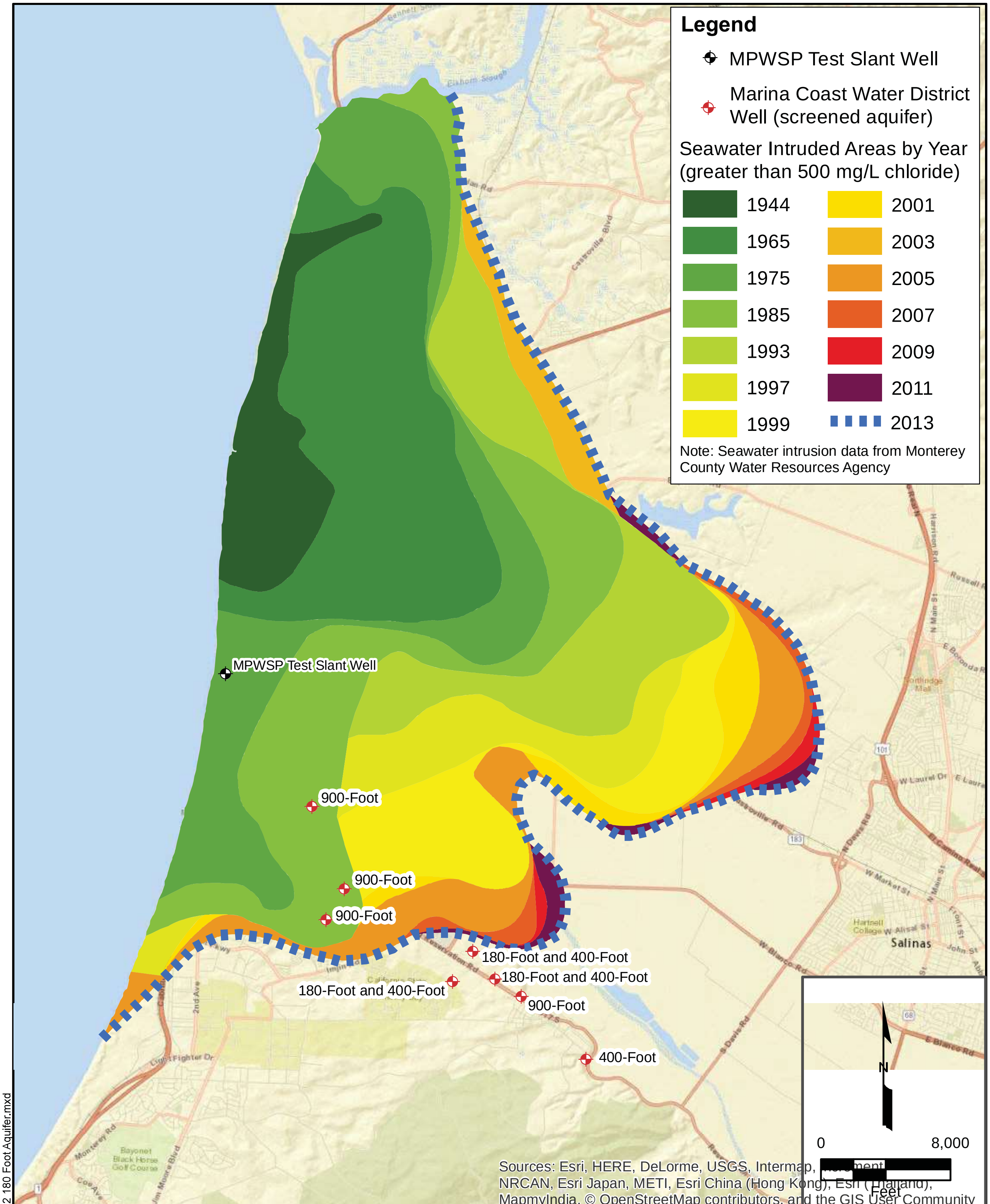
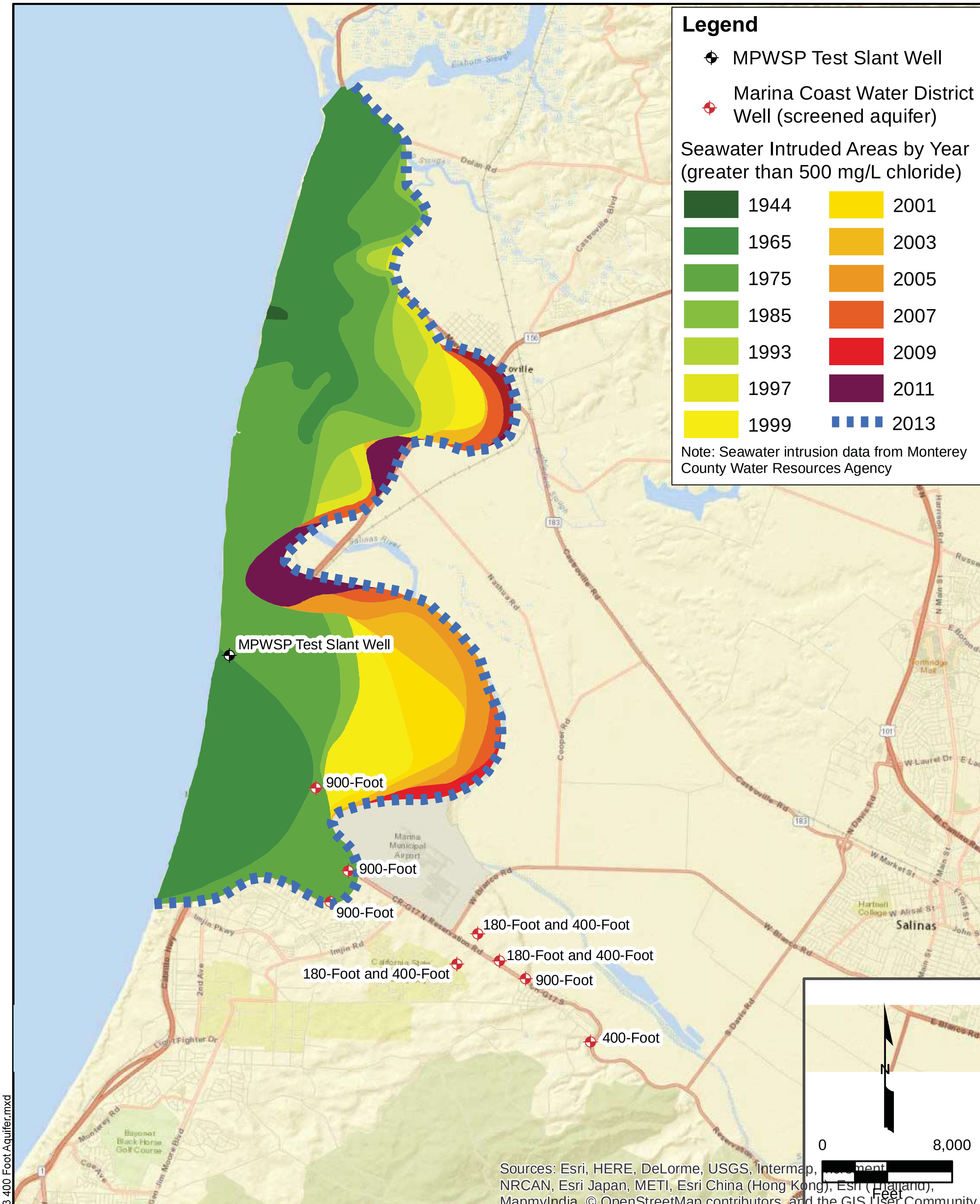
Path: J:\GIS\City of Marina\Figure 1 Location Map.mxd



Path: J:\GIS\City of Marina\Figure 2 180 Foot Aquifer.mxd

JACOBSON | JAMES & associates, inc	TITLE: ***Extent of Seawater Intrusion in the 180-Foot Aquifer***	DATE: 3/23/17
	LOCATION: City of Marina Comments on MPWSP Draft EIR/EIS Monterey County, California	FIGURE: **2**



JACOBSON | JAMES
& associates, inc

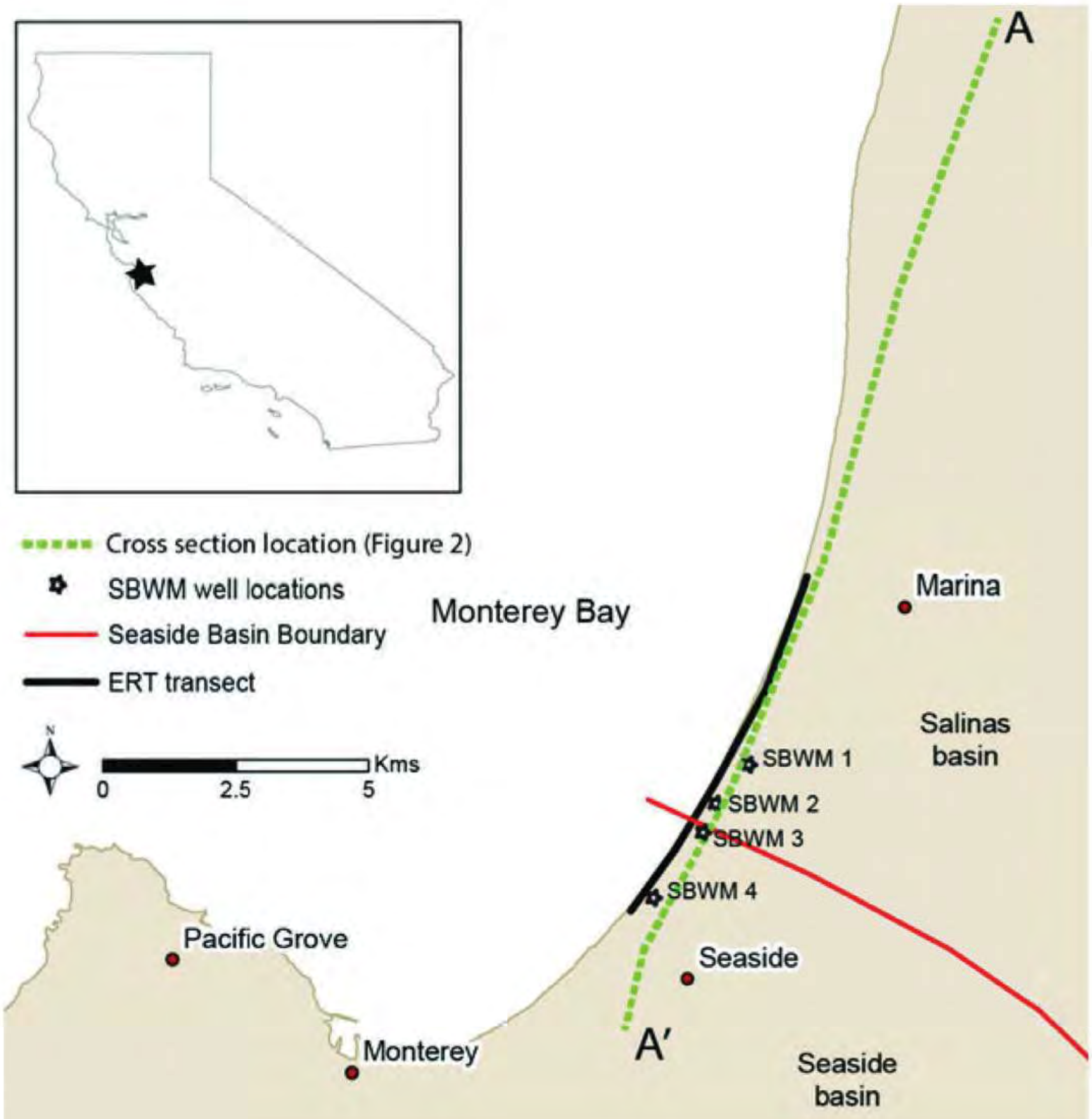
TITLE:
Extent of Seawater Intrusion in the 400-Foot Aquifer

DATE: 3/23/17

LOCATION:
City of Marina
Comments on MPWSP Draft EIR/EIS
Monterey County, California

FIGURE: **3**

Path: J:\GIS\City of Marina\Figure 3 400 Foot Aquifer.mxd



Notes:
ERT = Electrical Resistivity Tomography
Source: Pidlisecky, Moran, Hansen, and Knight, 2016. Electrical resistivity imaging of seawater intrusion into the Monterey Bay aquifer system. Groundwater, Vol. 54, No. 2, p. 255-261

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JACOBSON | JAMES & associates, inc	TITLE: ***Location of 4.3-Mile ERT Profile***	DATE: 3/23/17
	LOCATION: *City of Marina* *Comments on MPWSP Draft EIR/EIS* *Monterey County, California*	FIGURE: 4

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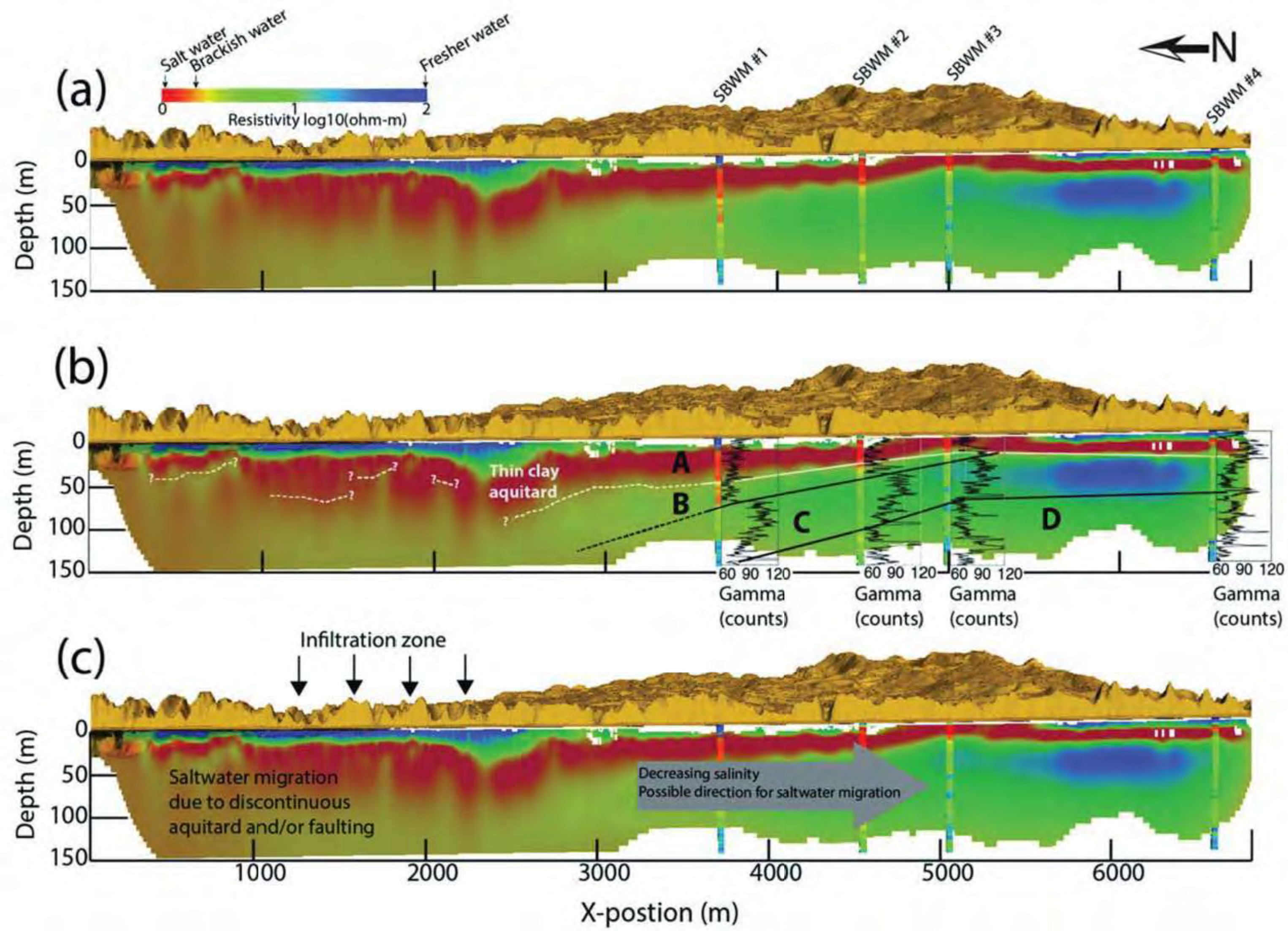

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ERT = Electrical Resistivity Tomography
Source: Pidlisecky, Moran, Hansen, and Knight, 2016. Electrical resistivity imaging of seawater intrusion into the Monterey Bay aquifer system. Groundwater, Vol. 54, No. 2, p. 255-261

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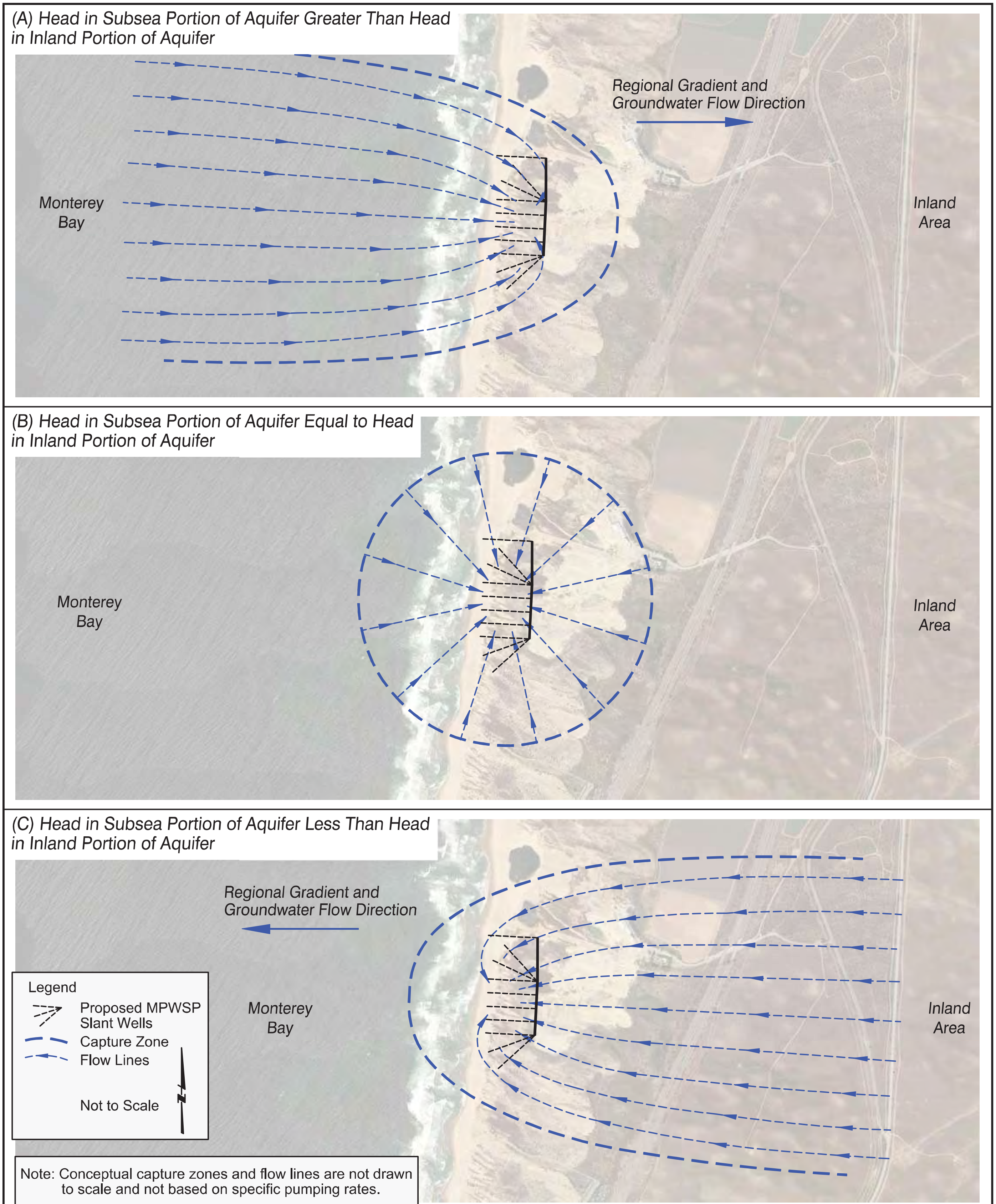
City of Marina
Comments on MPWSP Draft EIR/EIS
Monterey County, California

PROJECT NO.	DATE	DRAWN BY	APPROVED BY
COM-001/01	3/23/17	ML	BA

FIGURE 5
ERT Results and Interpretation along the Profile shown on Figure 4



JACOBSON | JAMES
& associates, inc

TITLE:
Conceptual Capture Zones for Different Regional Gradients

DATE:
3/23/17

LOCATION:
City of Marina
Comments on MPWSP Draft EIR/EIS
Monterey County, California

FIGURE:
6

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MARINA COAST WATER DISTRICT

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March 29, 2017

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CPUC/MBNMS
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San Francisco, CA 94108
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Re: CalAm Monterey Peninsula Water Supply Project - Marina Coast Water District's Comments on the Draft Environmental Impact Report/ Environmental Impact Statement, Prepared for California Public Utilities Commission and Monterey Bay National Marine Sanctuary, January 2017 (SCH No. 2006101004)

Dear CPUC/MBNMS:

Thank you for the opportunity to comment on the Monterey Peninsula Water Supply Project ("MPWSP" or "project") proposed by the California-American Water Company ("CalAm" or "Applicant") in Application ("A.") 12-04-019 before the California Public Utilities Commission (the "Commission" or the "CPUC") and the associated Draft Environmental Impact Report/Environmental Impact Statement ("DEIR/EIS" or "Draft EIR/EIS") issued by the CPUC as lead agency under the California Environmental Quality Act ("CEQA") and the Monterey Bay National Marine Sanctuary (the "Sanctuary" or the "MBNMS") as the lead agency under the National Environmental Protection Act ("NEPA") on January 13, 2017.

The purpose of this letter is twofold.

First, this letter provides the comments of the Marina Coast Water District ("MCWD") on the background, legal framework, and practical necessity of the proposed MPWSP in relation to the anticipated significant environmental impacts of the project and proposed mitigation. As explained in detail herein, the proposed project is legally infeasible because it is either inconsistent with or would violate numerous federal, state, regional, and

MCWD-1

local laws and regulations, including but not limited to: (1) California laws applicable to groundwater, including the Sustainable Groundwater Management Act and Monterey County Water Resources Agency Act; (2) the Federal and California endangered species acts; (3) the California Coastal Act; (4) the City of Marina's Local Coastal Plans (LCP); and (5) Monterey County Code of Ordinances section 10.72.030(B). Most critically, CalAm has no water rights in the project area and cannot obtain the water rights needed to operate the project. MCWD-1 cont.

Moreover, the proposed project is massively oversized, especially in light of the approved Pure Water Monterey Groundwater Replenishment Project ("GWR"), which is included as a component of Alternatives 5a and 5b. As explained below, even Alternative 5a (the purportedly environmentally superior/preferred alternative), provides substantially more water than is needed to meet <u>all the project objectives</u>. However, because the DEIR/EIS fails to consider alternatives to the 6.4 MGD desalination plant that would meet most or all of the project objectives and reduce the project's significant impacts, neither the public nor decisionmakers can comment on potentially feasible alternatives to the MPWSP in light of the approved GWR project. By only proposing alternatives to the originally proposed 9.6 MGD desalination plant (which assumed the GWR project would not happen), the DEIR/EIS sets up a strawman alternatives analysis that fails to meet the requirements of CEQA or NEPA as discussed below. MCWD-2

<u>Second</u>, this letter provides MCWD's comments on the adequacy of the DEIR/EIS under CEQA (Public Resources Code § 21000 et seq.), the CEQA Guidelines (Cal. Code Regs., tit. l4, § 15000 et seq.), NEPA (42 U.S.C. §4321 et seq.) and its implementing regulations (40 CFR Parts 1500-1508). As explained herein, the DEIR/EIS does not meet the minimum standards of adequacy under CEQA or NEPA.

The EIR is "the heart of CEQA." (Guidelines, § 15003, subd. (a); *Laurel Heights Improvement Assn. v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 392 ("*Laurel Heights I*").) It "is an 'environmental "alarm bell" whose purpose it is to alert the public and its responsible officials to environmental changes ***before*** they have reached ecological points of no return.' [Citations.]" (*Laurel Heights I*, *supra*, 47 Cal.3d at p. 392, emphasis added.) "Because the EIR must be certified or rejected by public officials, it is a document of accountability" that ensures "the public will know the basis on which its responsible officials either approve or reject environmentally significant action." (*Ibid.*) Where, as here, the environmental review document does not fully and accurately inform decision-makers, and the public, of the environmental consequences of proposed actions or independently evaluate potentially feasible alternatives that would reduce the project's environmental impacts, the document does not satisfy the basic goals of CEQA. (See Pub. Resources Code, § 21061 ["The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect that a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; **and to indicate alternatives to such a project**."], emphasis added.) MCWD-3

Similar to the requirements for EIRs under CEQA, under NEPA "the purpose of the EIS requirement is to ensure that 'to the fullest extent possible' agency decisionmakers have before them and take into proper account a complete analysis of the project's environmental impact." (*City of Davis v. Coleman* (1975) 521 F.2d 661, 673 [quoting *Calvert Cliffs' Coordinating Committee v. United States Atomic Energy Comm.* (D.C. Cir. 1971) 449 F.2d 1109, 1114].) The backbone of NEPA includes "a broad national commitment to protecting and promoting environmental quality." (*Robertson v. Methow Valley Citizens Council* (1989) 490 U.S. 332, 348 (*"Robertson"*); see 42 U.S.C., § 4331.) As such, NEPA requires an agency to prepare an EIS when it proposes "major federal actions significantly affecting the quality of the environment." (42 U.S.C., § 4332, subd. (C); *Robertson, supra,* 490 U.S. at p. 348.) In doing so, the agency must take a "hard look" at environmental consequences of the proposed action. (*Robertson, supra,* 490 U.S. at p. 349.) In this way, NEPA insures that a federal agency has fully contemplated the environmental effects of its action, and "to insure that the public has sufficient information to challenge the agency." (*Robertson, supra,* 490 U.S. at p. 349.)

As discussed in detail below and in the attached technical comments from Hopkins Groundwater Consultants, Inc. ("HGC Comments" – Exhibit # 1), GeoHydros, LLC ("GeoHydros Comments" – Exhibit # 2), Erler & Kalinowski, Inc. ("EKI Comments") – Exhibit # 3), and Intake Works LLC ("Intake Works Comments" – Exhibit # 4), the DEIR/EIS is replete with serious flaws. The DEIR/EIS does not provide an adequate description of the entire project, the environmental setting, or the project's potential impacts, nor does it consider feasible alternatives that would reduce the project's significant environmental impacts. Instead, the DEIR/EIS provides an incomplete project description, a misleading picture of the environmental setting/baseline, and a misleading and unsupported view of the project's potential impacts that would lead any reader to believe the project's environmental impacts are largely benign.

MCWD-3
cont.

For example, the DEIR/EIS leads readers to incorrectly believe the project is designed to pump only seawater, and that while the project "could" incidentally pump a small amount of groundwater, any incidentally pumped groundwater would come from aquifers that are contaminated by seawater and are incapable of supporting beneficial uses. As explained herein, not only is this picture not supported by substantial evidence, but it conflicts with available information that the DEIR/EIS preparers had in their possession but failed to disclose. As a result, the DEIR/EIS fails to provide the necessary evidence or analysis to support its conclusions that the project's direct, indirect, and cumulative groundwater impacts would be less than significant. Moreover, the CPUC and Sanctuary have failed to disclose critical information required by CEQA and NEPA that would allow the public and public agencies to even comment on many of the DEIR/EIS's assumptions, analyses, and conclusions. Therefore, the DEIR/EIS does not meet public disclosure requirements and it does not act as an environmental alarm bell as required by CEQA or take the "hard look" required by NEPA. Consequently, the CPUC and MBNMS will need to prepare and recirculate a revised DEIR/EIS before making any decisions to approve or deny the MPWSP.

In addition, the DEIR/EIS fails to consider a reasonable range of alternatives that could meet most of the project objectives. Instead, the DEIR/EIS only considers alternatives to CalAm's originally proposed 9.6 MGD desalination plant, which as explained below is massively oversized, especially following the approval of the GWR project and based on a fair assessment of CalAm's own reported supply and demand data. Importantly, there are at least several potentially feasible alternatives that could meet most of the project objectives with the implementation of the approved GWR project that were not considered in the DEIR/EIS. That said, MCWD notes that it cannot support a reduced-sized desalination plant (with GWR[1]) that pumps water from the Marina Subarea[2] of the Salinas Valley Groundwater Basin ("SVGB") absent adequate assurance based on sound science and the most current available data that the Marina Subarea and MCWD's existing vested rights to extract and use SVGB water for the current and future needs of its own service area, will not be harmed by the project. As explained below, the DEIR/EIS falls far short of providing these assurances. MCWD-3 cont.

MCWD's comments provided herein are informed by its in-house and outside experts as well as its understanding of the obligations of: (a) the Commission to act in protection of the public interest in the exercise of its unique and broad authority to regulate privately-owned public utilities in California; and (b) the Sanctuary to protect the coastal ecosystem and cultural resources of the Monterey Bay National Marine Sanctuary. We note that the Commission is required by law, as a fundamental component of its public interest balancing and project approval process, to consider fully the proposed project's "influence on the environment." (Public Utilities Code § 1002(a)(4).) Given these mandates, MCWD does not understand why the CPUC or Sanctuary are considering the originally proposed 9.6 MGD desalination plant in the DEIR/EIS in light of the CalAm's commitment in the MPWSP Settlement Agreement, dated July 31, 2013, and the approval of the GWR project.

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[1] / MCWD has supported and continues to support GWR Project proposed by the Monterey Regional Water Pollution Control Agency ("MRWPCA") and approved in October 2015.

[2] / The "Marina Subarea" is used in these comments to refer to the combination of (1) that portion of the 180/400 Foot Aquifer Subbasin of the SVGB located south of the Salinas River plus (2) the northwest portion of the Monterey Subbasin that would be impacted by the proposed slant well pumping on the CEMEX property. While the Marina Subarea is not a formally DWR-recognized subarea, it contains highly complex hydrogeological conditions that are very different from the portion of the 180/400 Foot Aquifer Subbasin north of the Salinas River as explained herein. The Marina Subarea is the coastal subarea of the overdrafted SVGB and is the area that would be directly impacted by the proposed project feed water pumping of 27,000 AFY. The Monterey County Water Resources Agency has defined the "Pressure Area" as a combination of the DWR-designated 180/400 Foot Aquifer Subbasin and the former Seaside Area and Corral De Tierra Subbasins (now the new Seaside and Monterey Subbasins). The Pressure Area is not a formally DWR-recognized subarea either, but that term is used throughout the DEIR/EIS as noted below. MCWD-4

I. BACKGROUND, LEGAL FRAMEWORK AND NECESSITY OF MPWSP.

The CPUC and MBNMS are familiar with the historical background of the water supply shortage that has long plagued CalAm's Monterey district, as well as prolonged efforts of numerous stakeholders to solve the problem. (*See, e.g.*, D.10-12-016, pp. 18-30, and orders of the State Water Resources Control Board and Assembly Bill ("AB") 1182 (Stats. 1998, ch. 797) cited therein.) The project, in essence, is intended to cure the significant, ongoing environmental harm to the Carmel River basin that has resulted from CalAm's illegal diversions of Carmel River water. This background is further complicated by the California Legislature's enactment of the landmark Sustainable Groundwater Management Act ("SGMA"), effective January 1, 2015, which effectively vests the protection of groundwater resources in local authorities under their existing and new SGMA police powers. Potential climate-change-related sea level rise must also inform the Commission's and MBNMS's environmental review and ultimate decisions. Here, the Commission must balance its obligation to ensure that CalAm's ratepayers continue to receive convenient and necessary water service against its obligation to comply with CEQA's mandates, carry out the Legislature's mandate to it in AB 1182 to resolve the physical problems presented by CalAm's illegal diversions of Carmel River water, and address the State Water Resources Control Board's orders reducing CalAm's sources of Carmel River Basin water (as the Commission previously acknowledged in D.10-12-016) – all within the sustainable limits of the local groundwater supply, under the SGMA. On the other hand, the MBNMS must evaluate whether it should authorize a prohibited use (16 U.S.C.A. § 1436) under the Sanctuary's Management Plan (http://montereybay.noaa.gov/intro/mp/fmp/02coastal_dev_mp.pdf), which provides that MBNMS should consider public versus private ownership among other factors, and its Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/050610desal.pdf, which provide that desalination plants should only be approved when other economically and environmentally preferable alternative water sources are infeasible and should be sized not to induce growth within the coastal areas. As discussed below, the project—as proposed—is not consistent with the obligations of the CPUC or the Sanctuary.

MCWD-5

MCWD-6

Formed by a citizens group in 1958, MCWD is a County Water District organized and operating under section 3000 of the California Water Code servicing residents, businesses and organizations throughout Marina and the Ord Community. The District supplies water to over 8,250 water connections, maintains and operates 105 miles of pipeline, 8 reservoirs, 5 booster pump stations and 8 wells. It is also responsible for maintaining the service area's sewer collection system, which includes 20 lift stations and 110 miles of pipeline. MCWD, as the sole provider of municipal water service for over 33,000 residents in the Marina/Ord community, has a vested interest in the integrity and thoroughness of the Commission's environmental review for the proposed MPWSP in order to protect its own ratepayers. The need for careful scrutiny of the proposed project, alternatives and

MCWD-7

cumulative impacts is particularly grave in this situation in which the Applicant proposes that the Commission approve a project designed to offset CalAm's illegal diversions from the Carmel River by pumping groundwater from the 180/400 Foot Aquifer Subbasin, which is designated by the State of California as a Critically Overdrafted Basin, and by adversely impacting groundwater conditions within the Marina Subbasin, which is MCWD's groundwater source. Of note, the entire SVGB, including the aquifers underling the Marina Subarea, lie outside of CalAm's public utility service area on the Monterey Peninsula. While CalAm's public utility service area would receive the benefit of convenient and necessary water service to be provided by the MPWSP, its source of water would be from the Marina Subarea, which since MCWD's founding is the only source of water supplies it has used to serve its ratepayers. MCWD-7 cont.

More than six years ago, the Applicant, MCWD and others sought and received the Commission's approval for the Regional Desalination Project, a project that was similar in many practical respects to the proposed project. (*See* D.10-12-016.) However, CalAm determined that it would not pursue the Regional Desalination Project, and the Commission permitted CalAm to change course and pursue the MPWSP instead. (D.12-07-008.) [3] The Commission should bear in mind in its environmental review process that the project it approved in 2010 was also *different* from the proposed MPWSP in several key respects related to environmental impacts: MCWD-8

- *Water rights* (addressed for the MPWSP in DEIR/EIS Chapter 2) for withdrawal of any groundwater component of source water were present in sufficient quantity to ensure project feasibility for the Regional Desalination Project (subject to test well results, *see, e.g.*, D.10-12-016 at Findings of Fact 83, 163-164, 169-170 and at pp. 84-85 of Appendix B thereto [CEQA Findings of Fact and Statement of Overriding Considerations]), due to MCWD's participation in the project. MCWD's vested rights to pump groundwater from the SVGB (discussed in MCWD's comments on DEIR/EIS Chapter 2, below), as well as MCWD's ability to offset the amount of project source water that was SVGB groundwater by a pumping offset (i.e., a commensurate reduction in its own lawful pumping from the basin) was then assumed to ensure that the project would not adversely affect the basin or impair the existing MCWD-9

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[3] / Section 5.2 of the DEIR/EIS states without an explanation that the Regional Desalination Project was not evaluated in detail as an alternative because it is "incapable of meeting most of the basic project objectives or purpose and need as currently defined," (DEIR/EIS, p. 5.2-1 and 5.2-2.) MCWD disagrees with this unsupported conclusion as discussed in MCWD's comments below. Indeed, a smaller Regional Desalination Project configuration using horizontal directional drilling would appear to meet the project objectives and purpose and need. Moreover, it is quite feasible today with Marina Coast's participation, provided that the project would also remain physically feasible within the confines of the SGMA and the greatly-expanded availability of data concerning the state of the aquifers in the Marina Subarea, which data was not used in the DEIR/EIS. MCWD-10

rights of other users of SVGB groundwater. (See CalAm Coastal Water Project Final EIR, p. 6.2-16 ("The Regional desalination plant would be operated such that … the plant would deliver desalinated water to the MCWD service area within the SVGB in an amount equal to the volume of SVGB-groundwater…."].) The pumping offset by MCWD, a vested holder of water rights in the SVGB, also helped to ensure that the Monterey County Water Resources Agency Act's ("Agency Act") prohibition of the exportation of SVGB groundwater outside the basin would not be violated. (See *ibid.* ["that portion of the potable product water that originated as groundwater rather than seawater would be used on lands overlying the SVGB …].) As discussed below, the one-to-one return ratio was assumed prior to any test well results and new groundwater data indicating that a greater ratio would be needed to offset all direct, indirect, and cumulative impacts to the Marina Subarea from the proposed slant well pumping if vertical or slant wells (as opposed to horizontal wells) were used as the intake technology. MCWD-9 cont.

- *Basin return and the non-export* groundwater component of source water, and thus compliance with the non-exportation provision of the Agency Act (addressed for the MPWSP in DEIR/EIS § 2.5.1 and 2.6), was assured by providing for MCWD's allocation of product water from the desalination plant in at least an amount equal to the amount of groundwater withdrawn from the basin as part of the project's source water. (See CalAm Coastal Water Project Final EIR, p. 6.2-16.) As discussed below, more recent groundwater data indicates that a greater return water ratio would likely be required if vertical or slant wells (as opposed to horizontal wells) were used as the intake technology. MCWD-11
- *Vertical wells* (not evaluated in DEIR/EIS, see Appendix I1, at p. I1-4) and possible slant wells, which involve unproven technology, were to be utilized for testing and considered for intake rather than slant wells only. Indeed, vertical wells were the project proponents' preferred option for source water wells. Thus, the reliability of modeling and operation projections, including the assessment of potential environmental impacts, would generally be more certain and readily ascertainable for the more commonly-used vertical well scenarios, as opposed to the greater difficulty of arriving at reliable modeling and operation projections for comparatively new and largely untested slant well technology. MCWD-12
- *Well testing and comprehensive groundwater modeling* (addressed for the MPWSP in DEIR/EIS Chapters 2 and 4.4) for the Regional Desalination Project was to commence after Commission approval of the project (D.10-12-016 at Findings of Fact 83, 163-164, 169-170 and at pp. 84-85 of Appendix B thereto) with the participation of public agencies, including MCWD and the Monterey County Water Resources Agency ("MCWRA"), and provided for further Commission action in the event that test results did not confirm pre-approval assumptions. This approach ensured that the testing process would be transparent and that there would be flexibility in the future direction of the project, should test results not bear out the projections relied upon for environmental review and approval. Here, the test well process for the MPWSP is MCWD-13

proceeding *prior* to Commission approval and under a California Coastal Commission process that MCWD contends is flawed and inadequately informed, which the District is contesting elsewhere.[4] MCWD is concerned that transparency and flexibility are being frustrated rather than fostered due to the failure to utilize complete, current and accurate data in the DEIR/EIS and its modeling, as discussed below in detail. For the MPWSP, the test well results were not used to model the project's groundwater impacts disclosed in the DEIR/EIS. (*See* DEIR/EIS, p. 2-35.) As discussed below, the DEIR/EIS abandoned any attempt to model the project's potential impacts in favor of a simplified superposition model that does not evaluate the amount of groundwater that will be pumped from the Marina Subarea or evaluate the project's cumulative impacts. Moreover, there will be no further opportunity for public review and comment on testing and groundwater modeling or any requirement for disclosure of testing and groundwater modeling results or for changes in project configuration following project approval by the Commission. Nor will there be any way to promptly assess whether the project is causing greater impacts than evaluated or anticipated in the DEIR/EIS. Thus, any further MPWSP evaluation, testing, and modeling for groundwater impacts would proceed in a regulatory vacuum and would be shielded from full public scrutiny in violation of CEQA and the Public Utilities Code. MCWD-13 cont.

Finally, perhaps the most important difference in circumstances between the MPWSP and the Regional Desalination Project is the recent enactment of the SGMA. MCWD will discuss the importance of this change in the legal framework as it bears on environmental review in greater detail below. MCWD-14

MCWD does not dispute that additional water supplies are needed to serve the Monterey Peninsula in the face of the mandatory reductions imposed by the State Water Board's orders WR 95-10 and WR 2009-0060. However, even the MPWSP's reduced size alternatives (Alternatives 5a and 5b) provide vastly more water than required to meet the nine primary project objective (Executive Summary, p. ES-3). As explained below, MCWD has analyzed CalAm's 2022 water supply sources and demand in accordance with the nine primary project objectives. Based on this analysis, an additional 1,305 acre-feet per year ("AFY") would provide CalAm with a Reserve Margin of 10%. There are one or more Alternate Water Sources that could be implemented to meet this demand without the high cost, high environmental impacts, high energy use, and high greenhouse gas emissions of the proposed MPWSP. MCWD-15

[4] / Attached as Exhibit "5" are the Parties' briefs on the merits in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. CV180839. As explained in the attached briefs the Coastal Commission failed to consider alternatives to slant wells in approving the MPWSP test slant well.

In light of this reality, MCWD cautions the Commission that in considering whether the currently proposed MPWSP is the project that best serves the public convenience and necessity, and in conducting its environmental review process for the MPWSP **and feasible alternatives** as CEQA and the Public Utilities Code demand, the Commission and Sanctuary take care not to view the Applicant's proposed project through so narrow a prism as to abnegate its fundamental public interest responsibilities. The Commission is required to weigh the environmental impact of the proposed project as a "relevant factor" on equal footing with other "relevant factors" affecting its public convenience and necessity determination. (*Northern California Power Agency v. Public Utilities Com.* (1971) 5 Cal.3d 370.) MCWD-15 cont.

II. PROCEDURAL MATTERS

A. Independent Judgment

As explained in the Introduction to the DEIR/EIS, before considering an approval of the MPWSP or its alternatives, the Commission must "certify" the final EIR. According to the CEQA Guidelines, "certification" consists of three separate steps. The Commission must conclude, first, that the document "has been completed in compliance with CEQA"; second, that the Commission has reviewed and considered the information within the EIR prior to approving the project; and third, that "the final EIR *reflects the [Commission]'s independent judgment and analysis*." (CEQA Guidelines, § 15090, subd. (a); see also Pub. Resources Code, § 21082.1, subd. (c)(3) [lead agency must make finding that the document reflects the agency's independent judgment].) While the courts will uphold an EIR that is not prepared directly by the lead agency if substantial evidence demonstrates that the lead agency has independently reviewed the EIR and exercised its independent judgment over the document, the courts will not permit lead agencies merely to "rubber stamp" analyses prepared by the project applicant or others without independently reviewing the analysis and the evidence in support of the analysis. (See *People v. County of Kern* (1976) 62 Cal.App.3d 761, 775.) MCWD-16

Here, it does not appear the CPUC exercised its independent judgment over the groundwater modeling that provided the basis for the CPUC's groundwater consultant's superposition modeling relied on in the DEIR/EIS to support its conclusion regarding the MPWSP's potential groundwater impacts. Based on the Public Records Act and data request responses we have received to date,[5] the HWG, including Geoscience, were intimately involved in the decisions regarding the modeling and selection of alternatives for consideration in the DEIR/EIS. This involvement appears to have significantly prejudiced the DEIR/EIS's analysis and conclusions of the MWPSP's potential groundwater impacts and the selection of potentially feasible alternatives that were evaluated in the DEIR/EIS. As

[5] / Attached as Exhibit 6 is a list of all the Public Records Act and data requests responses we have received to date, together with full copies on electronic media of all the documents produced. MCWD understands that additional documents may be produced following the comment deadline.

explained below and in the attached GeoHydros Comments, the DEIR/EIS modeling is unreliable, contrived, and does not evaluate the project's potential groundwater impacts in any meaningful way. Similarly, the DEIR/EIS' rejection of alternative intake technologies for consideration in the DEIR/EIS is not supported by the evidence, as explained below and in the attached Intake Works Comments, and appears to have been improperly influenced (if not decided) by the HWG.

As the CPUC is aware the four members of the HWG are paid by and represent parties with interests in the approval of the proposed project. Mr. Feeney and Mr. Durbin represent agricultural interests (Salinas Valley Water Coalition and Monterey County Farm Bureau). Their clients have an interest in the success of the project because they are likely to receive substantial increases in water supplies under several variations of the MPWSP. Mr. Leffler is CalAm's representative.

Most importantly, while Geoscience (Mr. Williams) was initially the designated and served as the CPUC representative on the HWG, during that time they also has a contract with CalAm and RBF Consulting, Inc. ("RBF" nka Michael Baker International) for the design, as well as supervision of construction and monitoring of the project's slant test well.[6] As the CPUC is aware, it was discovered after the 2015 release of the original Draft EIR for the MPWSP that Mr. Williams owns patents for slant well technology that may be used for the project. (See http://www.montereyherald.com/environment-and-nature/20150620/key-desal-project-hydrologists-slant-well-patents-questioned; see also July 14, 2015 ALJ Ruling and July 15, 2015 errata, A.12-04-019.) Regardless of whether Mr. Williams will receive any direct financial benefits from the project (which should unquestionably be disclosed) over and above the money he receives from CalAm through his consulting contracts, this creates another potential conflict of interest. Thus, while all four members of the HWG are experienced hydrologists, their clients' interests (and possibly their personal interests) may color their analysis. The Commission subsequently indicated that it would treat the work of Mr. Williams and his firm, Geoscience Support Services, Inc., as having been performed on behalf of CalAm rather than the Commission. Nonetheless, Mr. Williams and his firm remained involved in preparation of the 2017 DEIR/EIS, including groundwater modeling and underlying assumptions. (See, e.g., DEIR/EIS Executive Summary, Environmental Setting at sections 4.2 and 4.4, Appendix C3.) Despite the Commission's statements, Mr. Williams' dual advisory-advocacy role in the same proceeding raises an inference that his

MCWD-16 cont.

[6] / Mr. Williams also testified on behalf of CalAm in Santa Cruz Superior Court proceedings relating to the potential impacts of project's slant test well. (See excerpts of testimony attached as Exhibit "7" from *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. Case No. CV180839.) During his testimony, Mr. Williams testified that he was 100 percent confident that pumping had stabilized in the slant test well after three to five days. (*Ibid.*, p. 202-203.) Later monitoring modeling has shown the test well still has not stabilized, over a year after long term-pumping commenced. Martin Feeney also provided several declarations on CalAm's behalf in those proceedings.

views and opinions may be accorded undue weight in the Commission's environmental review and decision-making processes. Therefore, to ensure the objectivity of the MPWSP's modeling and the adequacy of the EIR, and to allow the Commission to exercise the required "independent judgment," MCWD requests the Commission obtain a peer review from a recognized independent hydrologist that does not represent clients with interests in the success of the MPWSP or alternatives.

Moreover, if Mr. Williams has a financial interest in the project, has served as a consultant for both the Commission as the adjudicatory decision-maker and CalAm as the primary advocacy project proponent, and has served as a leading participant in generating the input of the HWG in both capacities, the question arises whether such status renders the Commission's work on the groundwater and modeling aspects of the DEIR/EIS and the input of the HWG subject to an impermissible conflict of interest. (See *Morongo Band of Mission Indians v. California State Water Resources Control Bd.* (2009) 45 Cal.4th 731.) The Commission and the DEIR/EIS fail adequately to investigate, explore, address and resolve such conflict of interest issues.

MCWD-16 cont.

In conclusion, given the importance of the hydrogeological modeling on the project's overall feasibility and the DEIR/EIS's reliance on the modeling to evaluate that project's potential impacts to the over-drafted Marina subarea (discussed in Part III below) and alternatives, MCWD requests the Commission, at minimum, have Lawrence Berkeley independently review the hydrostratigraphy, assumptions, and calibration of Geoscience/HWG's updated modeling that was used in the DEIR/EIS and Hydrofocus's superposition model as they did for the modeling used in the original Draft EIR. An independent expert should also be identified to evaluate potentially feasible alternatives.

B. Unlawful "Parallel Track" used for examining the environmental impacts

MCWD believes the Commission is utilizing an unlawful "parallel track" methodology by examining the environmental impacts of the project in a CEQA process while examining other public interest factors under the closer scrutiny of a separate Certificate of Public Convenience and Necessity ("CPCN") hearing process so as to deprive the parties of an evidentiary hearing on some, but not all, key relevant factors bearing on the public interest. The Commission's approach in this instance has operated to impair, rather than foster, the public disclosure and transparency that is required under CEQA, as well as the fair balancing of all relevant factors, including "influence on the environment," that is required by the Public Utilities Code. (*Northern California Power Agency v. Public Utilities Com.* (1971) 5 Cal.3d 370; Public Utilities Code § 1002(a)(4).)

MCWD-17

III. <u>THE DEIR/EIS IS FUNDAMENTALLY FLAWED AND MUST BE RECIRCULATED</u>

MCWD-18

MCWD provides following, specific comments on the DEIR/EIS. These comments are based on MCWD's review of the DEIR/EIS, documents contained in the CPUC's files, other public records, MCWD's independent investigation of this matter, its expertise in developing projects like the MPWSP proposed here, and the attached HGC Comments (Exhibit # 1), GeoHydros Comments (Exhibit # 2), EKI Comments (Exhibit # 3), and Intake Works Comments (Exhibit # 4). Based on its fifty-plus years of experience in providing water service in this area, as well as its prior role in the abandoned Regional Desalination Project, MCWD is uniquely qualified to comment on the DEIR/EIS. (See *Consolidated Irrigation District v. City of Selma* (2012) 204 Cal.App.4th 187, 206 [Water District's operations provided it with expertise in groundwater for purposes of commenting on a project's potential environmental impacts on water supplies].) The CPUC must respond separately to each environmental issue raised in this letter and those raised in HGC, GeoHydros, EKI, and Intake Works Comments on the adequacy of the DEIR/EIS and its Appendices (specifically groundwater modeling) in the Final EIR/EIS responses to comments (CEQA Guidelines, § 15088) as must the Sanctuary under NEPA. MCWD-18 cont.

A. THE DEIR/EIS'S DISCUSSION OF WATER DEMAND, SUPPLIES, AND WATER RIGHTS IS INADEQUATE AND MISLEADS THE PUBLIC.

DWR Bulletin 118, which was issued in 1980, officially divided up the SVGB into eight different subbasins. Pursuant to SGMA, DWR conducted a Basin Boundary Modification process, which finalized new SVGB Subbasin boundaries in October 2016. Those basin boundaries were incorporated into the Bulletin 118 Interim Update 2016. The SVGB Subbasins are now designated as follows: 180/400 Foot Aquifer, East Side Aquifer, Forebay Aquifer, Upper Valley Aquifer, Paso Robles (60% located in San Luis Obispo County), Seaside, Langley, and Monterey. It is generally agreed that subbasin boundaries were drawn using a fat Crayola and not a sharp pointed pen. These are the official subbasins within the SVGB. All eight subbasins are classified by DWR as being either a high- or medium-priority subbasin subject to the Sustainable Groundwater Management Act discussed below. In January 2016, DWR classified the 180/400 Foot Aquifer Subbasin and the Paso Robles Subbasin as Critically Overdrafted Basins, which means that each of the two subbasin must adopt a SGMA-compliant groundwater sustainability plan or coordinated plans by January 31, 2020, or be subject to a State Water Resources Control Board enforcement intervention. All other subbasins have until January 31, 2022. The basin boundary modification resulted in the size of the Seaside Subbasin being reduced to only include lands within the adjudicated Seaside Groundwater Basin, which is managed by the court-supervised Seaside Basin Watermaster and is essentially exempt from SGMA. CalAm is a member of the Watermaster Board. The former northern portion of the Seaside Area Subbasin and the balance of the former Corral de Tierra Subbasin were merged by DWR into the new Monterey Subbasin. The relationship between MCWD's service areas and the 180/400 Foot Aquifer Subbasin, Monterey Subbasin, and Seaside Subbasin is shown on Exhibit 8 [Map of Service area in relationship to the 180/400, Monterey, and Seaside Subbasins]. (See also EKI Comments, Figure 1.) MCWD-19

The Monterey County Water Resources Agency ("MCWRA") has combined the 180/400 Foot Aquifer Subbasin and the former Seaside Area and Corral De Tierra Subbasins into the so-called "Pressure Subarea." (See e.g., Brown and Caldwell's "State of the Salinas

River Groundwater Basin", dated January 16, 2015, which is included in the DEIR/EIS's list of references.) The CPUC and the public should be aware that reports or studies referring to the Pressure Subarea include substantially more land than within just the Marina Subarea.

MCWD-19 cont.

CalAm had Geoscience prepare a North Marina Groundwater Model; the geographic area covered by the model is shown on Figure 15 in DEIR/EIS Appendix E2. As indicated in Footnote 1, for purposes of these comments, we have identified the Marina Subarea as the area that would be impacted by the proposed MPWSP slant well pumping.

1. ***Major Failure of DEIR/EIS to Perform an Integrated Total Water System Analysis of CalAm's System With and Without the Proposed MPWSP.***

The DEIR/EIS blanketly accepts without independent review or any in-depth analysis CalAm's representations each of CalAm's existing and proposed non-MPWSP water supply sources and fails to examine how each of those water supply sources are currently operated to meet CalAm's existing actual demands (i.e., CalAm's 2016 baseline operations) versus how each of those water supply sources could be operated and optimized to meet the nine primary project objectives.

Operating a water utility has similarities to operating an electric utility in that both have to have water supply or electric generation resources available to meet base, peak, and intermediate demands and both have transmission, sub-transmission, and distribution pipelines or electric lines to deliver the water or electricity from the various water supply or electric generation resources to the ultimate customer. A "base" resource is available, around the clock, every day. A "peaking" resource is available during periods of maximum water or electric usage, which will vary by climatic region, such as afternoons on hot summer days in Sacramento. An "immediate" resource is any remaining resource, which is available above base but below peaking. MCWD-20

Lacking any adequate explanation in the DEIR/EIS, MCWD would surmise that today CalAm uses its Carmel River water as its base resource and peaks with its withdrawals from the Seaside Groundwater Basin (native groundwater plus ASR recoveries). That is a very simple resource mix compared to what will occur in 2022, especially without the MPWSP being constructed.

a. ***CalAm's Monterey District Reserve Margin Requirements.***

Electric utilities are required to have existing electricity generation capacity reserves that serve as a buffer for unplanned demand fluctuations due to sudden increases in demand or power plant emergency outages and to analyze the probabilities that a system emergency may occur. A reserve margin is a measure of the amount of electricity imports and in-state generation capacity available over average peak demand conditions. Reserve margins are measured at two levels: planning (month-ahead to 10 years) and operating (real-time). MCWD-21

Except for CalAm Primary Project Objective #4 for this DEIR/EIS, which states, "Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers," the DEIR/EIS has no discussion of any reserve margin requirements for CalAm's Monterey District. Objective #4 is only a type of planning or month-ahead reserve margin requirement. MCWD would note that the margin requirement is only to meet the peak month demand of <u>existing</u> customers, not of projected customers in 2022. <u>For purposes of these comments, MCWD is assuming a Monterey District reserve margin requirement of ten percent (10%)</u>. MCWD-21 cont.

b. ***By 2022, CalAm Will Have a Completely Different Water Supply Mix Even Without the MPWSP.***

The DEIR/EIS fails to consider in its analysis that by 2022, especially without the MPWSP, CalAm will have dramatically shifted from being a Carmel River surface water-centric water system to a Seaside Groundwater Basin-centric system.

Pursuant to SWRCB Order WR 2016-0016, Cal Am is authorized to divert up to 8,310 AFY from the Carmel River through December 31, 2021. That represents 89.5% of its 2016 actual demand of 9,285 AF. Come January 1, 2022, CalAm's legal Carmel River diversions drops to 3,376 AFY or only 36.4% of CalAm's actual 2016 water demand. However, once the GWR Project is operational, the Adjudicated Seaside Basin becomes a comingled pool of native groundwater, Carmel River ASR water, and GWR advanced treated water through both direct injection and in-lieu groundwater recharge. Then 63.6% of CalAm's 2016 demand would be met with Seaside Basin water resources. In-lieu groundwater recharge occurs when advanced treated or recycled water is consumptively used within the Adjudicated Seaside Basin instead of potable water thereby preserving native Seaside Basin groundwater. MCWD-22

This substantial increase in the amount of imported water into the Seaside Basin could significantly improve the groundwater conditions within the Basin thereby allowing for additional pumping by CalAm. The DEIR/EIS does not provided any hydrogeological analysis of the synergistic benefits of all of this out-of-Seaside-Basin water being imported into the Basin.

The DEIR/EIS does not discuss how CalAm could operate its then-available water supply sources in 2022. Instead, the DEIR/EIS basically assumes that CalAm could not meet the DEIR/EIS projected manipulated demand (and not CalAm's actual 2016 demand, which is Primary Project Objective #4) without constructing at least a 6.4 MGD MPWSP. That assumption is false.

CalAm asserts that a minimum 6.4 MGD desalination plant with source water intakes on the CEMEX property coupled with the GWR Project are vitally needed to address the SWRCB's Cease and Desist Order curtailing CalAm's illegal diversions on the Carmel River. While the SWRCB in its Order WR 2016-0016 addressed in part the interrelationship of the elements of CalAm's Total Water Portfolio, no significant total-water-portfolio-type analysis is contained in the DEIR/EIS. It is essential that the DEIR/EIS closely examine CalAm's existing and proposed elements in its Total Water Portfolio, including how those existing and proposed source elements would interact and be integrated by 2022, and their relationship to meeting the nine Primary Project Objectives.

CalAm has not produced for public review a computer model of its existing water supply sources and demands as they vary by water year type and by month and how it will change come 2022. It is essential that the DEIR/EIS provide such a computer model to allow the CPUC, the public and other decisionmakers to meaningfully evaluate CalAm's water needs and potential alternatives to the MPWSP.

MCWD-22 cont.

While the Carmel River Legal Limit of 3,376 AFY has been determined by the SWRCB in Order 95-10 and confirmed in Order WR 2016-0016, the DEIR/EIS without significant analysis blanketly accepts CalAm's claims as to the water available from each of CalAm's existing and future non-MPWSP water sources and fails to examine how CalAm's non-MPWSP water sources should be synergistically integrated to maximize their ability to meet the nine Primary Project Objectives. Again, come 2022, CalAm's water system will make a dramatic shift to a Seaside Basin groundwater dependent system, which includes native Seaside Basin groundwater, injected GWR water, injected Carmel River ASR water, and as CalAm proposes an additional 2,100 AFY of injected MPWSP desalinated water. Yet the DEIR/EIS has failed to disclose or perform a month-by-month analysis of how each of CalAm's water supply sources can be utilized in 2022 to optimize the use of each water source both with and without the MPWSP. As discussed below, such an analysis would show that only an additional 1,305 AFY of new water supplies are needed to meet all nine Primary Project Objectives and that the MPWSP is not needed to meet those objectives.

i. CalAm's Actual 2016 Demand of 9,285 AF.

Table 2-2, Existing Demand 2006-2015, in Section 2.3.1, page 2-10, shows a 10-year average (2006-2015) of 12,351 AF. Table 2-2, Other Demand Assumptions, page 2-12, shows an "Existing Service Area Demand" of 12,270 AF. The actual 2016 existing demand was 9,285 AF[7], or only 75.7% of 12,270 AF. However, system demand has consistently decreased over the past decade. (See https://www.watersupplyproject.org/system-delivery.) The decrease in demand is apparently due to ratepayer conservation, as well as improvements in system losses due to leaks. (See SWRCB Order 2016-0016, p. 2.) These demand reductions are likely to be permanent, as discussed below.

MCWD-23

The DEIR/EIS' use of 12,270 AFY in its analysis when 9,285 AFY is the actual 2016 demand number is an example of the DEIR/EIS padding the numbers by 2,985 AFY, or 32% more, to justify a larger capacity desalination plant.

[7] / http://www.watersupplyproject.org/system-delivery.

ii. CalAm's Representations as to Its Water Supply.

In Order WR 2016-0016, the SWRCB amended in part Order 2009-0060, the Carmel River Cease and Desist Order by granting CalAm a time extension until December 31, 2021, to terminate all unlawful diversions from the Carmel River. On and after January 1, 2022, CalAm may only divert 3,376 AFY under Order WR 2016-0016 although CalAm and MPWMD jointly will continue to have the right pursuant to SWRCB-issued water right permits 20808A and 20808C to divert up to an additional 5,326 AFY of excess flows for ASR Phases 1 and 2 with an estimated average annual yield of 1,920 AFY.

In Table 2-4, CALAM Monterey District Water Supplies with Proposed MPWSP, page 2-18, CalAm is said to have the following water supply available during the period when CalAm is replenishing/repaying the Seaside Groundwater Basin with a 6.4 MGD Desalination and the GWR Project:

CalAm's Claimed NO MPWSP Water Sources When GWR becomes operational and on January 1, 2022	Acre Feet per Year
Carmel River Legal Limit	3,376
Sand City Desalination Plant	94
Aquifer Storage & Recover (ASR) Project Phases 1 and 2	1,300
Groundwater Replenishment (GWR) Project	3,500
Seaside Basin Adjudicated Groundwater Supply	774
Total No MPWSP Water Supply	9,044

With an actual 2016 existing demand of 9,285 AF, the above 9,044 AF total is only 241 AF or 2.6% short without considering any additional available water supply from Sand City's 300 AFY desalination plant, ASR, GWR, and the Seaside Basin. Such additional available water supply sources are discussed below.

Note that in Section 5.4.2.1, the DEIR/EIS claims that the "total long-term supply under the No Project Alternative would be 6,380 afy," which excludes all GWR water. If the 3,700 AFY GWR water is added to the 6,380 AFY, the total becomes 10,080 AFY. MCWD-24

iii. Sections 2.2.2.2 and 2.2.4, Seaside Groundwater Basin.

A substantial majority of the lands in the Seaside Basin are within MCWD's Ord Community service area, not within CalAm's service area. MCWD provides potable water and will soon be providing recycled water to the Ord Community within the Seaside Basin. CalAm has major production wells within the Seaside Basin but most of CalAm's Monterey MCWD-25

District customers are outside of the Seaside Basin so CalAm is a net exporter of native Seaside Basin groundwater. The DEIR/EIS ignores these facts. The fastest growing area within Monterey County is within MCWD's Ord Community service area as part of the economic redevelopment of the former Fort Ord, which places even more emphasis on MCWD's need to protect its potable water supply.

As explained above, come 2022, CalAm's water supply portfolio will shift from a Carmel River-centric system to a Seaside Basin-centric system. Once the GWR Project is operational, the Adjudicated Seaside Basin becomes a comingled pool of native groundwater, Carmel River ASR water, and GWR advanced treated water through both direct injection and in-lieu groundwater recharge. This substantial increase in the amount of imported water into the Basin could significantly improve the groundwater conditions within the Basin thereby allowing for additional pumping by CalAm. However, the DEIR/EIS does not provided any hydrogeological analysis of the synergistic benefits of all of this out-of-Seaside-Basin water being imported into the Basin. MCWD-25 cont.

The DEIR/EIS also fails to analyze and describe how ASR water, GWR water, and MPWSP water will be imported into and exported out of the Seaside Basin by month and how correspondingly the pipeline conveyance system will be operated to accommodate the water flow. For example, during January, Carmel River ASR would enter the 30-inch MCWD-CalAm joint pipeline from the South through the 36-inch Monterey Pipeline at the same time MPWSP product water through a 36-inch pipeline and recovered GWR water will enter the MCWD-CalAm joint pipeline from the North. Since water cannot move both north and south at the same time in the MCWD-CalAm joint pipeline, does CalAm intend to not send water from the North while Carmel River ASR water is moving North for injection into the Seaside Basin or, if not and the water coming from the North will block the Carmel River ASR water coming from the South, will CalAm not then be effectively sending the Carmel River water directly to its Monterey customers and not north for injection? MCWD-26

In addition, CalAm is proposing to construct new ASR wells 5 and 6. The new ASR wells are not to inject and recover Carmel River water but to inject and recover 2,100 AFY of MPWSP desalinated water. The 2,100 AFY that would be injected each year into the Seaside Basin means (1) that CalAm could pump at least 1,474 AFY from the Seaside Basin or (2) that instead of taking 25 years to repay the Watermaster at 700 AFY, it would only take about 8 years. As more importantly discussed below, however, CalAm has not shown this additional 2,100 AFY of desalinated water is needed to meet the nine Primary Project Objectives and the MPWSP may be downsized accordingly. MCWD-27

Proposed Transfer of 700 AFY of MCWD's GWR Project Water Entitlement to Seaside Basin Watermaster Instead of 700 AFY of MPWSP Desalinated Water. Section 2.4.2, page 2-17, states that CalAm and the Seaside Groundwater Basin Watermaster have agreed for CalAm to pay back at the rate of 700 AFY for 25 years the volume of groundwater CalAm has pumped in excess of its adjudicated right at the rate of 700 AFY for MCWD-28

25 years. CalAm is assuming that the entire 700 AFY would come from the MPWSP plant and has accordingly increased the capacity of the MPWSP plant by 700 AFY, which will result in substantial capital and annual operating and maintenance costs for that added capacity. The DEIR/EIS fails to consider any other options, such as the following.

MCWD is entitled to 1,427 AFY of the output of the GWR Project for use by MCWD's customers within the Seaside Basin portion of MCWD's Ord Community service area, which includes the City of Seaside's Bayonet and Blackhorse Golf Courses. This is in addition to up to 3,700 AFY of GWR water, which will be sold to CalAm. A more practical and cost-effective alternative to building the additional 700 AFY of MPWSP plant capacity would be for CalAm to pay the Watermaster to purchase 700 AFY of MCWD's GWR water for use by MCWD's customers within MCWD's Ord Community service area within the Adjudicated Seaside Basin. This would result in a substantial saving for CalAm's customers by avoiding the need to pay for 700 AFY of desalination plant capacity that is not needed.

This more practical and cost-effective option is based upon representations contained at pages 20 and 21 of the Watermaster's May 23, 2016 Status Report to the Monterey County Superior Court prepared by Attorney Russell M. McGlothlin. Section G of the 2016 Court filing discusses "Potential Request for Relief from the 2018-2021 Triennial Rampdown." The basis for the potential rampdown postponement request is an April 2010 Land Transfer and Water Service Agreement between MCWD and the City of Seaside wherein MCWD agreed to supply the City with 2,500 AF total of potable groundwater for the City's same two golf courses. Section 1.11 of the MCWD-Seaside Agreement states, "This program would result in an 'in-lieu' replenishment of the Seaside Bain (sic) by virtue of suspending the production from the Seaside Basin for gold course irrigation." The golf courses are within that portion of MCWD's Ord Community service area within the Adjudicated Seaside Basin. Delivery of Salinas Valley groundwater to portions of the former Fort Ord is expressly exempt from the MCWRA Agency Act's groundwater export prohibition. Mr. McGlothlin stated in the 2016 Status Report that had MCWD sold the 2,500 AF directly to the Watermaster that would have constituted a direct replenishment supply for the Basin's benefit upon which a rampdown could be postponed. The Watermaster's March 2, 2017 Case Management Statement to the Court at pages 20 and 21 specifically references the above 2016 representations to the Court. Here, MCWD is proposing that GWR Project recycled water be used in lieu of potable groundwater for the golf courses and for other customers' non-potable water uses.

MCWD-28 cont.

Sand City Desalination Plant: At the time of the SWRCB's October 20, 2009 Carmel River Cease and Desist Order WR 2009-0060, Sand City was constructing a 300 AFY capacity desalination plant. The Order at page 41 stated,

> Of the 300 afy, 94 afy will be used to replace water being diverted from the Carmel River by CalAm for existing water use within Sand City; thus, once the plant becomes operational the

MCWD-29

> city should no longer receive water illegally diverted from the Carmel River. The balance of the plant's production, 206 afy, is for future growth. **Pending the need for the remaining 206 afy, CalAm may use the water to meet the needs of its customers. (Emphasis added.)**

CalAm operates the Plant. While 206 acre feet of the plant's 300 AFY capacity is reserved exclusively for future Sand City development, that development will occur slowly over time as only in-fill and redevelopment opportunities remain because the city is geographically very small and is hemmed in by existing development. Without the Sand City plant, CalAm as the Sand City residents' water provider would be required to provide water for any new development after December 31, 2021. Presumably the 206 AFY is currently available for CalAm's use outside of Sand City yet the DEIR/EIS provides no analysis in Section 2.4.4, page 2-19, as to the projected availability of that 206 AFY in 2022 and beyond. However, Section 5.4.2.3, page 5.4-7, states, "Continued use of approximately 230 afy provided by Sand City's existing desalination plant (*same as proposed project*)." Therefore, MCWD will use 230 AFY as the amount of water available to CalAm from the Sand City plant.

MCWD-29 cont.

<u>ASR Project Phases 1 and 2:</u> SWRCB-issued water right permits 20808A and 20808C jointly to CalAm and the MPWMD with an authorized Carmel River diversion of up to 5,326 AFY between December and May of each year for ASR Phases 1 (ASR Wells 1 and 2) and 2 (ASR Wells 3 and 4) with an estimated average annual yield of 1,920 to 1,970 AFY.

MPWMD on its website on "Aquifer Storage & Recovery" reports an average yield for Phase 1 of "about 920 AFY" and for Phase 2 of "approximately 1,050 AFY", for a total of 1,970 AFY.[8] The difference between MPWMD's total annual yield amount of 1,970 AFY and Table 2-4's amount of 1,300 AFY is 670 AFY.

MCWD-30

After December 31, 2021, CalAm is required to reduce its Carmel River by 4,934 AFY or over 59% from 8,310 AFY to 3,376 AFY. The DEIR/EIS fails to provide any analysis of the amount of additional water and the increased frequency of Carmel River water availability for ASR when that diversion reduction occurs. In addition, at the July 19, 2016 SWRCB hearing on what became Order WR 2016-0016, Rob MacLean stated that the new CalAm pipelines to be constructed would provide an additional 1,000 AFY conveyance capacity for Carmel River ASR water. It appears that CalAm has performed an analysis of the increased availability of ASR water come January 1, 2022, but has not shared that analysis with either the CPUC or the public. For purposes of these comments, the SWRCB's lower estimated annual yield of 1,920 AFY annual yield will be used. The DEIR/EIS should explain why it

[8] / See http://wwvv.mpwmd.net/water-supply/aquifer-storage-recovery/.

does not use 1,920 AFY for CalAm's future ASR water supply, especially for 2022 and beyond. MCWD-30 cont.

GWR Project Supply: The CPUC has approved a water purchase agreement wherein CalAm would purchase 3,500 AFY of GWR Project supply. MRWPCA has also reserved the right to an additional 200 AFY or a total of 3,700 AFY. The additional element of the GWR Project is that MCWD is entitled to an additional 1,427 AFY of advanced treated water to serve MCWD's Ord Community service area. The Board of Directors of the Fort Ord Reuse Authority (FORA) by Resolution 07-10, adopted on June 8, 2007, allocated the 1,427 AFY to its member jurisdictions served by MCWD, including specifically 453 AFY to the City of Seaside, 280 AFY to the City of Del Rey Oaks, and 134 AFY to Monterey County for use within that portion of MCWD's Ord Community service area within the Adjudicated Seaside Basin. The City of Seaside, including its two golf courses, and the City of Del Rey Oaks are within the Adjudicated Seaside Basin and their 733 AFY combined allocation would result in additional in-lieu groundwater recharge benefits for the Adjudicated Seaside Basin, which fact is totally ignored in the DEIR/EIS. (See Exhibit 8, [Reference Map of MCWD Service Area in Relation to the Adjudicated Seaside Groundwater Basin].)

Phase 1 of the GWR Project provides for the 3,700 AFY to MRWPCA and 600 AFY of the 1,427 AFY to MCWD. Phase 2 of the GWR Project will increase the Advance Water Treatment Plant capacity by up to an additional 827 AFY to provide the balance of the 1,427 AFY for MCWD's Ord Community service area. This DEIR/EIS should examine (1) CalAm paying the Seaside Watermaster to purchase from MCWD 700 AFY of GWR Project Water for use within the Basin by MCWD's customers in satisfaction of CalAm's obligation to repay the Seaside Watermaster 700 AFY for 25 years and (2) transferring additional Phase 1 and 2 advance treated water from MCWD to MPWMD for use by CalAm to the extent not needed by MCWD's Ord Community customers. MCWD-31

The GWR Product Water Conveyance Facilities (pipeline), which will convey the advance treated water from the new treatment plant to MCWD's Ord Community service area and then onto the new GWR injection facilities, will have sufficient capacity to convey more than 5,127 AFY. It should be noted that MCWD's peak use of the Advance Water Treatment plant and the pipeline will be during the summer months so a much greater portion of the treatment plant capacity and the conveyance capacity of the pipeline will be available during the other months to treat and convey water to the GWR injection facilities. Pursuant to the April 2016 Pure Water Delivery and Supply Project Agreement between MRWPCA and MCWD, the pipeline is to be designed, constructed, owned, and operated by MCWD. That Agreement also authorizes MRWPCA to produce an additional 200 AFY of purified recycled water for the GWR Project injection, or an annual total of 3,700 AFY.

iv. The NO MPWSP Option:

For both the SWRCB proceedings and for this DEIR/EIS, MCWD has analyzed the available information, especially those not considered in this DEIR/EIS, and concludes that the proposed MPWSP does not need to be built. The NO MPWSP Option is based upon the following water sources discussed above, which should be available to CalAm when the GWR Project becomes operational and on January 1, 2022:

CalAm's NO MPWSP Water Sources When GWR becomes operational and on January 1, 2022	**Acre Feet per Year**
Carmel River Legal Limit	3,376
Seaside Basin Adjudicated Groundwater Supply[9]	1,474
Sand City Desalination Plant	230
Aquifer Storage & Recover (ASR) Project Phases 1 and 2	1,920
Groundwater Replenishment (GWR) Project	3,700
Total No MPWSP Water Supply	**10,700**

As shown by Scenario A and B of MCWD's Total Water Portfolio analysis, by 2022, CalAm can achieve both (a) 100% compliance with the SWRCB Cease and Desist Order and (b) have an adequate water supply without the MPWSP. (See also the discussion of No Project Alternative in Part III.D below.)

MCWD-32

c. ***CalAm's Total Water Portfolio Options for Meeting the Nine Primary Project Objectives.***

i. Scenario A: Using the Actual CalAm 2016 Water Demand of 9,285 AFY for Comparison Purposes and in accordance with Primary Project Objective #4.

The following is a comparison of CalAm's Total Water Portfolio with the MPWSP as discussed above with the DEIR/EIS's representation of CalAm's Water Supplies using a proposed 6.4 MGD MPWSP and the GWR Project shown in Column 3 of Table 2-4, page 2-18:

MCWD-33

[9] / Assumes that CalAm meets its 700 AFY payback obligation to the Seaside Watermaster by paying the cost of 700 AFY of advanced treated water allocated for use within that portion of MCWD's Ord Community service area within the Adjudicated Seaside Basin.

CalAm Water Sources	No MPWSP Option	CalAm Water Sources from Table 2-4, Col. 3
Carmel River Legal Limit	3,376	3,376
Seaside Basin Groundwater Supply[10]	1,474	774
Sand City Desalination Plant	230	94
Aquifer Storage & Recover (ASR) Project Phases 1 and 2	1,920	1,300
Groundwater Replenishment (GWR) Project	3,700	3,500
6.4 MGD Desalination Plant	NA	7,167
Total No MPWSP Water Supply	10,700	16,211
2016 Actual Demand	9,285	9,285
Excess over 2016 Actual Demand	1,415	6,926
Percent of Water Supply in Excess of 2016 Actual Demand	**15.2%**	**74.6%**

MCWD-33 cont.

Another way of analyzing CalAm's Total Water Portfolio in relationship to the non-MPWSP option is through the following Scenario A spreadsheet analysis based upon the following:

- Total Water Portfolio analysis assuming MCWD's numbers for the Seaside Basin Adjudicated Groundwater Supply, Sand City Desalination Plant, ASR Phases 1 and 2, and GWR Project
- Meeting CalAm Project Objectives 1, 2, 3, 4, 5, 8, and 9, including 100% compliance with the SWRCB Carmel River Cease and Desist Order.
- Objective 4 states, "Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers," i.e., 2016 customers. (Executive Summary, p. ES-3) Limiting the Objective to "the peak month demand of existing [2016] customers" makes the project not growth

MCWD-34

[10] / Assumes that CalAm meets its 700 AFY payback obligation to the Seaside Watermaster by paying the cost of 700 AFY of advanced treated water allocated for use within that portion of MCWD's Ord Community service area within the Adjudicated Seaside Basin.

inducing and satisfies the Sanctuary's Management Plan requirement that if other economically and environmentally preferable alternative water sources are infeasible, then any new desalination plant should be sized not to induce growth within the coastal areas.

- CalAm's 2016 system deliveries of 9,285 AF as the baseline.
- Proving a Reserve Margin Percentage of at least 10%.

Under Scenario A, MCWD examined four different Total Water Portfolio options, which could be in place by January 1, 2022, with 100% Cease & Desist Order compliance — NO MPWSP, Alternate Water Sources (Alt Water), 6.4 MGD Desal, and 9.6 MGD Desal — in relationship to CalAm's actual 2016 water deliveries. The "NO MPWSP" option assumes that CalAm's MPWSP is not constructed. The "6.4 MGD Desal," and "9.6 MGD Desal" options assumes that CalAm would construct a desalination plant (location of source wells are not assumed to be the CEMEX property or that slant wells would be used) with those respective treatment capacities as discussed in the DEIR/EIS. The DEIR/EIS assumes that a 6.4 MGD plant would produce 7,167 AFY even though CalAm represented in its March 14, 2016 Amended Application to the CPUC that the 6.4 MGD plant would produce 6,252 AFY. Consequently, MCWD assumed a 24/7/365 operating scheme for the desalination plant options. MCWD-34 cont.

The Scenario A results are as follows:

	No MPWSP	6.4 MGD Desal	9.6 MGD Desal
Total Supply	10,700	17,867	21,450
2016 Demand[11]	9,285	9,285	9,285
Water Supply Reserve Margin	1,415	8,582	12,165
Reserve Margin Percentage (10% assumed needed)	**15.2%**	**92.4%**	**131.0%**

Scenario A meets seven of the nine primary or fundamental objectives of the proposed MPWSP without the need to construct the MPWSP. As demonstrated above, Scenario A without the MPWSP will develop water supplies for the CalAm Monterey District service area to replace CalAm's illegal Carmel River diversions (#1), will reduce pumping from the Seaside Groundwater Basin (#2), will pay back the Seaside Groundwater Basin (#3), will develop a reliable water supply for CalAm's Monterey District service area, accounting for the peak monthly demand of existing customers (#4), and develop a reliable water supply that meets fire flow requirements for public safety MCWD-35

[11] / Primary Project Objective #4 specifies demand of existing (2016) customer demand. See also III.A.1.b.i below. Does not include any return water demand as alternatives exist that would not require any return water.

(#5). Because the MPWSP desalination plant would not be built, a major new large energy use would be eliminated with a corresponding substantial reduction in greenhouse gas emissions per unit of water delivered (#8). In addition, without the MPWSP, substantial project costs would be eliminated with the resulting beneficial effect for water rates (#9). MCWD-35 cont.

ii. Scenario B: Using 2016 Demand, Pebble Beach Water Entitlements, Legal Lots of Record, and 25% of Hospitality Industry Rebound, a Total of 10,915 AFY, for Comparison Purposes.

The differences from the above Scenario A analysis and from the Table 2-3, page 2-12, CalAm demand assumptions are as follows:

- For the "Existing Service Area Demand," the actual 2016 demand of 9,285 AF was used. CalAm Project Objective 4 states, "Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers," i.e., 2016 customers.
- The DEIR/EIS "Pebble Beach Water Entitlements" of 325 AF was used.
- The DEIR/EIS "Legal Lots of Record" of 1,180 AF was used.
- Only 25% of the DEIR/EIS's 500 AF for the "Hospitality Industry Rebound Economic Recover," or 125 AF, was used because in Section 2.3.3.2, pages 2-13 to 2-14, the DEIR/EIS admits that "the region's economy has largely recovered" and that some of the 500 AFY would be available for other uses but fails to identify what those other uses would be and whether that would result in duplicating a CalAm demand. That means that most of the 500 AFY is not needed. Table 2-2 shows a significant progressive <u>reduction</u> in CalAm customers' water as the economy was "recovering." Therefore, MCWD has determined that only 125 AFY, and not 500 AFY, is needed to meet any further Hospitality Industry Rebound to meet Primary Project Objective #7. MCWD has experienced a similar significant progressive reduction in MCWD customers' water use and that has and is occurring even as the number of MCWD's customers continues to grow. Governor Brown has declared, "water conservation must be a part of everyday life."[12] CalAm and MCWD customers have answered that call and implemented water conservation measures in their everyday lives and they will continue to do so. MCWD-36
- Meets all nine Primary Project Objectives, including 100% compliance with the SWRCB Carmel River Cease and Desist Order and with Objective 7 being met as recalculated above.

[12] / http://www.npr.org/sections/thetwo-way/2016/05/09/477392158/california-governor-makes-some-water-restrictions-permanent

- Under the NO MPWSP Option, the comparison assumes that an additional 1,305 AFY of water would be available as discussed below under Alternative Water Sources.
- Proving a Reserve Margin Percentage of at least 10%.

The Scenario B results are as follows:

	No MPWSP	6.4 MGD Desal	9.6 MGD Desal
Total Water Supply Available	12,005	17,867	21,450
2016 Demand + PB + LOR + 50% of HI Rebound	10,915	10,915	10,915
Water Supply Reserve Margin	1,090	6,827	11,040
Reserve Margin Percentage (10% assumed needed)	**10.0%**	**61.8%**	**94.3%**

MCWD-36 cont.

Scenario B meets all nine primary or fundamental objectives of the proposed MPWSP without the need to construct the MPWSP. As demonstrated above, Scenario B will develop water supplies for the CalAm Monterey District service area to replace CalAm's illegal Carmel River diversions (#1), will reduce pumping from the Seaside Groundwater Basin (#2), will pay back the Seaside Groundwater Basin (#3), will develop a reliable water supply for CalAm's Monterey District service area, accounting for the peak monthly demand of existing customers (#4), and develop a reliable water supply that meets fire flow requirements for public safety (#5). Provide sufficient water supplies to serve existing vacant legal lots of record (#6), and accommodate tourism demand under the already "largely recovered" economic conditions (#7). Because the MPWSP desalination plant would not be built, a major new large energy use would be eliminated with a corresponding substantial reduction in greenhouse gas emissions per unit of water delivered (#8). In addition, without the MPWSP, substantial project costs would be eliminated with the resulting beneficial effect for water rates (#9).

MCWD-37

iii. Scenario A and B Conclusions:

The Scenario A analysis with accompanying spreadsheet and bar graph (Exhibit 10) shows that the MPWSP is not needed to meet CalAm's actual 2016 water demand, and to provide CalAm with a Water Supply Reserve of 1,415 AFY or a Reserve Margin of 15.2%. Scenario A would meet seven (1, 2, 3, 4, 5, 8, and 9) of the nine primary or fundamental objectives of the proposed MPWSP without the need to construct the MPWSP.

The Scenario B analysis with accompanying spreadsheet and bar graph (Exhibit 11) shows that even if CalAm's actual 2016 water demand is increased by Pebble Beach

MCWD-38

Entitlements, Legal Lots of Record, and 25% of the claimed Hospitality Industry Rebound demand, and provide CalAm with a 10% Reserve Margin, that combined demand could be met with an additional 1,305 AFY of water from other sources, which are discussed below under Alternate Water Sources (Alt Water). Scenario B would meet all nine primary or fundamental objectives of the proposed MPWSP without the need to construct the MPWSP. MCWD-38 cont.

d. ***What CalAm has Done to Increase Water Demand by 54% over the 2016 Actual Demand. CalAm's Existing Customers Should Not be Required to Pay for that Significant Water Supply Cost Increase.***

In Table 2-3, page 2-12, the DEIR/EIS assumes that CalAm's "Existing Service Area Demand" is 12,270 AFY based upon 2010 demands and not the actual 2016 demand of 9,285 AFY as required by Primary Project Objective #4. In other words, the DEIR/EIS assumes an "Existing Service Area Demand," which is 2,985 AFY or over 32% more than the actual existing demand. Table 2-3 then goes on to add an additional 2,005 AFY for Pebble Beach Water Entitlements, Hospitality Industry Rebound Economic Recovery, and Legal Lots of Record. In the Section 2.3.3.2 discussion of Hospitality Industry Rebound, pages 2-13 to 2-14, the DEIR/EIS admits that "the region's economy has largely recovered" and that some of the 500 AFY would be available for other uses. CalAm's actual 2016 water demand was 9,285 AF. The DEIR/EIS' new total water demand is 14,275 AFY, or 4,990 AFY more, which is a 54% increase over the actual 2016 water demand. It should be noted that providing service for Pebble Beach Water Entitlements, Hospitality Industry Rebound Economic Recovery, and Legal Lots of Record are *not* within the scope of objectives listed for the operative Project Description that is on file with the Commission, where the primary stated objective is compliance with SWRCB Order 95-10. (Mar. 14, 2016 Amended Appl., Ex. H.) These further objectives have been added by CalAm, as reflected in the DEIR/EIS project description. (Executive Summary, p. ES-3; see pp. 2-10 through 2-15.) MCWD-39

The DEIR/EIS fails to explain why CalAm's existing customers should be required (1) to pay a 54% increase in water supply in excess of those existing customers' actual demand or (2) to pay for a desalination plant that will act as a very expensive insurance policy. This is the typical investor-owned utility solution to foster a perceived water supply shortage that it then proposes to solve by building the biggest, shiniest new water supply project at the existing customers' expense and at the expense of the environment – bigger is not better here. MCWD-40

e. ***The DEIR/EIS Shows that the Proposed 6.4 MGD MPWSP is Not Needed and that a 6.4 MGD Plant is Substantially Oversized even with CalAm's Expanded Project Objectives.***

As discussed above, a MPWSP of any size is not needed to meet the current system demand. Under Scenario A, 6,475 AFY, or 5.78 MGD, of the 6.4 MGD MPWSP plant capacity is not needed to meet seven of the expanded DEIR/EIS Primary Project Objectives. Under Scenario B, 4,845 AFY, or 4.33 MGD, of the 6.4 MGD MPWSP plant capacity is not needed to meet all nine of the expanded DEIR/EIS Primary Project Objectives. MCWD-41

First, as discussed in MCWD's comments A.1.b.i above, the actual 2016 existing demand was 9,285 AF versus Table 2-2, page 2-12 of the DEIR/EIS shows an "Existing Service Area Demand of 12,270 AF. Under Scenario A, that would represent a 2,985 AFY increase over the actual existing demand. Under Scenario B, that would represent a 1,355 AFY increase over the Scenario B demand of 10,915 AFY. Therefore, under Scenario A, there would be 2,985 AFY of overcapacity and, under Scenario B, there would be a 1,355 AFY of overcapacity.

Second, as discussed in DEIR/EIS Section 2.4.3 on page 2-19 and in Section 3.2.4, page 3-43, CalAm is proposing to construct new ASR Wells 5 and 6. However, the new ASR wells are not to inject and recover Carmel River water but to inject and recover 2,100 AFY of MPWSP desalinated water. The DEIR/EIS has not provided any justification as to why 2,100 AFY more water needs to be injected into the Seaside Basin. For example, the DEIR/EIS does not justify this 2,100 AFY desalinated water as payback water to the Seaside Watermaster. Therefore, the MPWSP plant capacity to produce this 2,100 AFY is totally unnecessary.

Third, as discussed above under Seaside Basin Groundwater Supply, DEIR/EIS Section 2.4.2, page 2-17, states that CalAm and the Seaside Groundwater Basin Watermaster have agreed for CalAm to pay back the volume of groundwater CalAm has pumped in excess of its adjudicated right at the rate of 700 AFY for 25 years. CalAm is assuming that the 700 AFY would come from the MPWSP plant and has increased the capacity of the MPWSP plant by 700 AFY for that purpose. The DEIR/EIS fails to consider any other options and as explained above, a more practical and cost-effective option would be for CalAm to pay the Watermaster to purchase 700 AFY of MCWD's share of GWR Project advanced treated water for use by MCWD's customers within MCWD's Ord Community service area within the Adjudicated Seaside Basin. Based upon the cost of GWR Project water under the CPUC-approved Water Sales Agreement, purchasing this additional GWR Project water would be at a substantial savings to the equivalent amount of MPWSP desalinated water. This would further reduce the need for MPWSP plant capacity by an additional 700 AFY.

MCWD-41 cont.

Fourth, DEIR/EIS Section 2.5.1, pages 2-22 to 2-23, discusses CalAm's Salinas Valley Groundwater Basin Return Water obligation to mitigate for pumping SVGB groundwater if the proposed slant well technology and CEMEX well locations are used. Section 2.5.1 states that the proposed "Settlement Agreement on MPWSP Desalination Plant Return Water" would require CalAm to return 690 AFY if the 6.4 MGD plant is built. The DEIR/EIS does not determine how much return water would actually be needed, but apparently decided to use 690 AFY without a sound scientific basis. An amount greater than 690 AFY is likely as discussed below. As also discussed below, another fatal flaw of the DEIR/EIS is the blatant assumption that returning one AF of desalinated water anywhere in the SVGB, especially north of the Salinas River, could be adequate mitigation for direct, indirect, and cumulative impacts from slant well pumping at the CEMEX property under environmental, groundwater, and SGMA law. While one reading of the Agency Act may support a one-to-one return ratio, the DEIR/EIS does not discuss anywhere whether a one-to-one return ratio is adequate to mitigate for environmental, groundwater, and SGMA direct, indirect, and cumulative impacts from slant well pumping at the CEMEX property. As discussed in MCWD's comments on Project Alternatives, use of proven Horizontal Wells technology would eliminate the need to provide any return water.

Overcapacity Items	Scenario A AFY	Scenario B AFY
Eliminating Excess Demand in DEIR/EIS' "Existing Service Area Demand of 12,270 AF versus Scenario A or Scenario B Demand	2,985	1,355
Eliminating proposed new ASR Wells 5 and 6 and the need 2,100 AFY of MPWSP product water to inject	2,100	2,100
Elimination of repayment to Seaside Watermaster by instead purchasing 700 AFY of GWR water for use within the Adjudicated Basin	700	700
Elimination of Return Water Obligation	690	690
Total Amount of MPWSP Overcapacity	6,475	4,845
Overcapacity Converted into MGD =	5.78 MGD	4.33 MGD
6.4 MGD MPWSP Capacity Remaining	0.62 MGD 694 AFY	2.07 MGD 2,318 AFY

MCWD-41 cont.

In summary, using the DEIR/EIS' own information, 5.78 MGD of a 6.4 MGD MPWSP plant is not needed to meet seven of the Primary Project Objectives and 4.33 MGD is not needed to meet all nine Primary Project Objectives.

f. ***Alternative Water Sources (Alt Water).***

The DEIR/EIS states that no viable alternatives have been identified that would supply water without a desalination plant being included and dismisses all non-desalination plant alternative water sources with the exception of the GWR Project. (DEIR/EIS, pp. 5.2-1 through 5.2-6.) This conclusion, however, is not supported by the record as discussed above. Under the Scenario A analysis above, MCWD has shown that CalAm does not need a desalination plant of any size to meet 2016 demand going forward and to meet Primary Project Objectives 1, 2, 3, 4, 5, 8, and 9. Under the Scenario B analysis above, MCWD has shown that CalAm would only need approximately 1,305 AFY more from Alternate Water Sources to meet all nine Primary Project Objectives.

MCWD-42

Moreover, as a result of the drought, stormwater capture is the new "low hanging fruit" for additional water supplies. January and February 2017 have demonstrated the availability and viability of Salinas River water for stormwater capture projects; however,

MCWD-43

stormwater flows exist in the Salinas River during other than wet water years. The following two excess river flow capture projects would utilize excess flows in the Salinas River and should be analyzed in the DEIR/EIS as they could provide additional assurances that CalAm could obtain sufficient supplies without building the MPWSP desalination plant.

iv. Salinas River Excess Flow Capture – Groundwater Recharge Project.

As a result of the drought, stormwater or excess flow capture is the new "low hanging fruit" for additional water supplies. January and February 2017 have demonstrated the availability and viability of Salinas River water for excess flow capture projects; however, excess flows exist in the Salinas River during other than wet water years. The following two excess river flow capture projects would utilize excess flows in the Salinas River and should be analyzed in the DEIR/EIS as they could provide additional assurances that CalAm could obtain sufficient supplies without the proposed MPWSP desalination plant.

MCWD agrees that the primary purpose of the Salinas Valley Water Project should be to provide groundwater recharge for the Salinas Valley Groundwater Basin. However, during many water years, there are substantial Salinas River flows to Monterey Bay in excess of SVGB groundwater recharge and Salinas River environmental flow needs. For example, because of the substantial magnitude and occurrence of those flows, MCWRA is proposing the construction of an Interlake Tunnel that would divert water from Nacimiento Reservoir to San Antonio Reservoir – water that would otherwise have been spilled at Nacimiento Dam. While the Interlake Tunnel Project will result in storing more stormwater runoff, a new Salinas River diversion and conveyance system is being proposed to convey that water to a new groundwater recharge area near the City of Salinas. However, MCWRA's Salinas River Diversion Facility (the "rubber dam") is an already permitted diversion facility located near Marina at the MRWPCA's regional tertiary treatment plant and the site of the to-be-constructed GWR Advance Treated Water plant. The MCWRA has existing unexercised SWRCB-issued water rights that could be modified to accommodate additional river diversions at the rubber dam for groundwater recharge. For example, a recharge project could divert some 10,000 to 20,000 AF when there are excess flows in the river. Required bypass flows for the protection of Salinas River steelhead would be at minimum levels during the months of November through March when diversions for this project would normally occur. There are at least four potential uses or combination of uses for this water: MCWD-43 cont.

1. If a blend of river water and tertiary treated water could be treated at MRWPCA's Advance Water Treatment plant, then a portion of this water could be incorporated into the GWR Project for use by CalAm's Monterey District. MCWRA's Agency Act only prohibits the export of Salinas Valley Groundwater Basin groundwater, not Salinas River water.
2. If Salinas River water could be treated in a desalination plant, then a portion of the river water could be treated at a new desalination plant thereby reducing source water pumping.

3. A portion of the excess river water could be conveyed north of the Salinas River to the Castroville area for groundwater recharge. The river water would be treated (e.g., filtered and chlorinated) to the extent necessary. Despite the many years that the Castroville Seawater Intrusion Project (CSIP) has been in operation, the Castroville Community Service District continues to experience significant groundwater supply problems. A significant cause of the groundwater problem is the pumping depression that has developed to the east of CCSD in the northern portion of the City of Salinas caused by over-pumping in the East Side Subbasin, which causes groundwater underneath the CCSD to flow east instead of naturally flowing west to Monterey Bay. See DEIR/EIS Figure 4.4-6.
4. A portion of the excess river water should remain south of the Salinas River in the Marina area for seawater intrusion protection and groundwater recharge. See Exhibit #3 to these Comments, Erler & Kalinowski, Inc., Memorandum dated 22 March 2017, Section 4.2, Impacts of MPWSP on MCWD's Ability to Implement Groundwater Recharge Augmentation at Armstrong Ranch.

MCWD-43 cont.

Because the 180/400 Foot Aquifer Subbasin of the SVGB is classified as a Critically Overdrafted subbasin, i.2, i.3, and i.4 above should be mandatory projects under the Groundwater Sustainability Plan for the 180/400 Foot Aquifer Subbasin.

MCWD is proposing that the Salinas River Excess Flow Capture/Groundwater Recharge Project be implemented and utilized by CalAm by capturing from 3,000 to 4,000 AF in excess river flow years to supply on the average 1,000 AFY as either additional GWR source water (i.1) and/or direct desalination plant source water (i.2).

v. Additional GWR Project Water and ASR water.

Additional GWR Water. As discussed above under "GWR Project Supply," MCWD is entitled to 1,427 AFY of GWR water and MCWD is proposing that CalAm pay the Seaside Watermaster to purchase from MCWD 700 AFY of MCWD's GWR water for use within the Seaside Subbasin by MCWD's Ord Community customers in satisfaction of CalAm's obligation to repay the Seaside Watermaster 700 AFY for 25 years. To the extent that the remaining 727 AFY of GWR water is not needed by MCWD's Ord Community customers, a portion of that 727 AFY could be sold to CalAm.

MCWD-44

MCWD understands Salinas Valley agriculture's concerns over reductions of their recycled water for the Castroville Seawater Intrusion Project (CSIP) as a result of the GWR Project. MCWD suggests that the above Salinas River Stormwater Capture/Groundwater Recharge Project could provide direct groundwater recharge benefits that would combat seawater intrusion, allow more agricultural pumping, and help recover the Castroville area groundwater. For example, would 4,000 AF of groundwater recharge with stormwater capture occurring one-third of the water years be sufficient to offset an additional 1,000 AFY of GWR water going to CalAm?

MCWD-45

Additional ASR Water. As discussed above under "ASR Project Phases 1 and 2," after December 31, 2021, CalAm is required to reduce its Carmel River by 4,934 AFY or over 59% from 8,310 AFY to 3,376 AFY. The DEIR/EIS fails to provide any analysis of the amount of additional water and the increased frequency of Carmel River water availability for ASR when that diversion reduction occurs. In addition, at the July 19, 2016 SWRCB hearing on what became Order WR 2016-0016, Rob MacLean stated that the new CalAm pipelines to be constructed would provide an additional 1,000 AFY conveyance capacity for Carmel River ASR water. It appears that CalAm has performed an analysis of the increased availability of ASR water come January 1, 2022, but has not shared that information with either the CPUC or the public. MCWD-46

vi. Salinas River Excess Flow Capture — Salinas River Water Treatment Plant.

This is not necessarily low hanging fruit but MCWD has already performed a preliminary analysis of the feasibility of diverting Salinas River water in excess of existing agricultural uses and steelhead needs to meet potable water demands. The project would utilize excess water under MCWRA's water right licenses and permits and could utilize the rubber dam or wells along the Salinas River as CalAm does along the Carmel River. River water would not be available in all water years, but for a 5,000 AFY water treatment plant, 1,000 AFY could be used to meet potable water demands within MCWD's Ord Community and the remaining 4,000 AFY could be made available to CalAm's Monterey District and to Castroville Community Services District for direct use and/or for groundwater recharge. MCWD-47

vii. Small Desalination Plant.

MCWD has proposed constructing its own 3,000 AFY (2.7 MGD) desalination plant, which is generally discussed in the DEIR/EIS on pages 4.4-89 to 4.4-90. Pursuant to the Regional Urban Water Augmentation Program (RUWAP), MCWD is obligated to provide an additional 2,400 AFY of augmentation water needed for the redevelopment of Fort Ord. MCWD has secured 1,427 AFY of that from the GWR Project. The remaining 973 AFY could be provided by a 3,000 AFY desalination plant to be owned by MCWD. MCWD's ownership of the plant would comply with the Monterey County ordinance requiring 100% ownership of desalination plants in the county. (See Monterey County Code of Ordinances, section 10.72.030(B).) The balance of 2,027 AFY (1.8 MGD) could be sold to CalAm for its Monterey Peninsula customers. Any MCWD desalination plant would likely use horizontal or vertical wells and not slant wells. MCWD-48

viii. Alternate Water Sources Conclusion.

The DEIR/EIS just focuses on a 6.4 MGD and 9.6 MDG MPWSP desalination plant. The DEIR/EIS failed to do a 2022 Total Water System analysis for CalAm's Monterey District thereby failing to determine the actual water supply and water demand situation needed to meet all nine Primary Project Objectives because, as MCWD has shown, even a 6.4 MGD desalination plant would produce an excess amount of water making actual demand irrelevant. Because of that, alternate water sources were not analyzed because no additional water sources were needed with a 6.4 MGD plant. As MCWD has shown, only MCWD-49

1,305 AFY of alternate water sources are needed to meet all nine Primary Project Objectives without the need to construct the MPWSP. The Excess Flow Capture/Groundwater Recharge Project could provide a significant amount of additional GWR water and groundwater recharge to combat seawater intrusion, especially north of the Salinas River. Additional GWR water and ASR water should also be available to provide the additional 1,305 AFY. MCWD-49 cont.

2. ***The DEIR/EIS's discussion of Plant Capacity vastly underestimates the amount of water that would need to be returned to the SVGB.***

The adequacy of the DEIR/EIS's discussion of plant capacity is critical to determining the amount of groundwater that must be returned to the SVGB from the MPWSP's source wells given CalAm's lack of water rights. It is also critical for determining whether the project actually has capacity to return the large amount of groundwater it must return to the Marina Subarea. The DEIR/EIS, however, fails to provide any discussion or support for bracketing the return water percentage between 0% to 12%. As discussed in the attached HGC Comments, it is likely that the return water obligation would be more than 12%, especially in the initial years of operation. (See HGC Comments, pp. 9-10.) Even the NMGWM2016 calibrated model, which likely underestimates the slant wells production of groundwater, predicts up to 22% of groundwater will be produced from the Dune Sand Aquifer and another 3.5% of groundwater will be produced from the 180-FTE Aquifer during the initial time step. (*Ibid.*) Moreover, this does not account for the amount of return water that may be needed to mitigate groundwater impacts in the Marina Subarea. MCWD-50

Therefore, the DEIR/EIS must be revised to disclose the potential maximum amount of groundwater that must be returned, especially in the early years, of the project to determine whether the presently proposed slant well intakes are actually feasible. Importantly, other subsurface intakes that the DEIR/EIS fails to analyze would like reduce (Ranney Wells) or eliminate (Horizontal Wells) the need for any return water. In addition, both the no project alternative and GWR project would not require any return water component. Therefore, the revised DEIR/EIS should not assume the return water component is part of CalAm's demand in assessing potentially feasible alternatives, as discussed further below.

3. ***The DEIR/EIS's discussion of Water Rights Is Misleading, Ignores Established Legal Precedent, and Fails to Demonstrate the Project is Legally Feasible.***

Any discussion of the applicability of CEQA/NEPA law, groundwater law, and the Sustainable Groundwater Management Act (SGMA) to the proposed MPWSP is very fact dependent. As discussed in MCWD's comments, the DEIR/EIS analysis in Section 4.4, Groundwater Resources, is fatally flawed, being based upon inaccurate data and modeling, and not fully analyzing the direct, indirect, and cumulative adverse impacts of MPWSP's withdrawal of groundwater from the Marina Subarea. MCWD will fully discuss those matters in its comments on Section 4.4. The following discussion provides MCWD's MCWD-51 comment on the Section 2.6 discussion as to (1) the DEIR/EIS' theoretical understanding of the law and (2) the law as applied to the facts as ascertained by MCWD. MCWD-51 cont.

a. ***The DEIR/EIS' Discussion of CPUC's Role.***

In the introduction to Section 2.6, the DEIR/EIS makes the following statements:

(1) "The CPUC is not the arbiter of whether CalAm possesses water rights for the project and nothing in this EIR/EIS should be construed as the CPUC's opinion regarding such rights,"

(2) "except to the extent that the CPUC must determine whether there is a sufficient degree of likelihood that CalAm will possess rights to water that would supply the desalination plant such that the proposed project can be deemed to be feasible."

(3) "The SVGB is not an adjudicated groundwater basin, so use of the groundwater in the Basin is not subject to existing court decree, written agreements or oversight by an impartial Watermaster."

(4) Three "relevant types of groundwater rights" are:
"(1) overlying rights whereby those who own land atop the Basin may make reasonable use of groundwater on such land; (2) prescriptive rights whereby a water user has acquired another's rights to use water via an open, adverse and sustained use [for at least five years] under a claim of right that such user would otherwise not be entitled to; and (3) appropriative rights whereby the groundwater may be used outside the Basin or for municipal purposes. **While CalAm owns 46 acres of land (the proposed desalination plant location) overlying the Basin, that land would not support sufficient water for the project and would not enable CalAm to use the water beyond the property that it owns.** CalAm has no prescriptive groundwater rights in the Basin. Thus, CalAm would take any Basin water for the project via appropriative rights, which are junior to existing appropriations and to overlying users." (Emphasis added.) MCWD-52

(5) "If the proposed project is approved and any dispute arises as to whether or not CalAm possesses legal water rights, such dispute likely would be resolved through court action."

(6) "[I]f CalAm did not possess legal rights to use the feedwater for the MPWSP desalination plant, then the desalination plant simply could not operate and the project would not go forward. That is why water rights factors in as a key project feasibility issue."

As to Statements (1) and (2), the DEIR/EIS is correct that the CPUC has no legal authority or jurisdiction to determine whether or not CalAm will have the necessary water MCWD-53 rights for the proposed project. However, the DEIR/EIS fails to explain the precise meaning of "a sufficient degree of likelihood," the standard to be allegedly applied by the CPUC, the legal authority for that statement, and examples of where the CPUC has applied that same standard in other proceedings. MCWD-53 cont.

Given Statements (1) and (5) and the SWRCB's statement that CalAm would have the burden of proof to demonstrate that it will have adequate water rights for the project, the burden at the CPUC must be on CalAm to show by a preponderance of the evidence that it has adequate water rights for the project. The burden of proof is not on the public or pubic agencies like MCWD to show that CalAm does not have adequate water rights. MCWD-54

Statement (3) fails to recognize that the extraction of groundwater from the CEMEX property is governed by a written agreement, i.e., the 1996 Annexation Agreement discussed in DEIR/EIS Section 2.6.4. MCWD strongly disagrees with the DEIR/EIS interpretation of that agreement as explained below. In addition, the actual extraction of groundwater occurs on the CEMEX property and not on the proposed desalination plant location. For the same reason that the DEIR/EIS admits in Statement (4) that CalAm has no right to export groundwater beyond the proposed desalination plant location, CalAm has no right to export groundwater beyond the CEMEX property. MCWD-55

As to Statement (4), so-called developed water is not an appropriative right but <u>a separate right to use and export the amount of actual net new water developed</u>. CalAm is not appropriating native groundwater but developing new water. Being so limited, CalAm would not gain legal status as an "appropriator" vis-à-vis other appropriators of native groundwater within the SVGB. MCWD agrees with the Statement (4) principle, as applied to the CEMEX property, that CalAm would not be able to use any groundwater extracted from the CEMEX property beyond the boundaries of that property. MCWD-56

As to Statement (6), the available data shows that groundwater, which meets Basin Plan standards for beneficial uses, within the aquifers that will be impacted by the proposed slant wells at the CEMEX site and that there are foreseeable direct, indirect, and cumulative adverse impacts to those beneficial conditions as result of groundwater extractions by the proposed 6.4 MGD or 9.6 MGD desalination plants uses (as discussed in comments to Section 4.4). Therefore, CalAm cannot acquire water rights to the groundwater that would be extracted by the proposed slant wells and the MPWSP cannot go forward as proposed. MCWD-57

b. ***Section 2.6.1, State Water Resources Control Board Report.***

CalAm is proposing to pump the source water for the MPWSP from that portion of 180/400 Foot Aquifer Subbasin of the SVGB located south of the Salinas River. MCWD's Central Marina and Ord Community water service areas are within portions of three Subbasins: the newly designated Monterey Subbasin, the Adjudicated Seaside Basin, and the 180/400 Foot Aquifer Subbasin. MCWD's production wells are located along the northwestern boundary of the Monterey Subbasin and pump from the groundwater aquifers MCWD-58 that are within both the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin. A MCWD production well is located approximately 1.6 miles from the CEMEX property. (See Exhibit 8 [Map of MCWD Service area].) MCWD-58 cont.

MCWD agrees that no groundwater right or other water right are needed to extract 100% seawater from Monterey Bay so long as there are no direct, indirect or cumulative impacts to any existing groundwater condition. A basic and essential problem is that the currently proposed length and location of the proposed slants wells will not extend into Monterey Bay as originally proposed by CalAm but will in fact extract groundwater from the 180/400 Foot Aquifer Subbasin with impacts to the adjoining groundwater aquifers. The DEIR/EIS itself admits that it cannot with any certainty determine the percentage of groundwater to be extracted but models up to 12%. However, as discussed below and in the attached HGC and GeoHydros comments, the total annual amount of groundwater water pumped from the proposed slant wells is likely to be significantly higher than 12% at least during the initial years of operation. MCWD-59

As the DEIR/EIS admits, CalAm has no existing overlying, appropriative or prescriptive groundwater right or claim of right to pump groundwater from the 180/400 Foot Aquifer Subbasin. The SWRCB issued its Final Review of California American Water Company's Monterey Peninsula Water Supply Project more than 3 ½ years ago, on July 31, 2013 (Final Review).

In the Legal Conclusions section of the Executive Summary to the Final Review, page ii, the SWRCB stated:

> To appropriate groundwater from the [Salinas Valley Groundwater] Basin, the burden is on CalAm to show their project will not cause injury to other users. Key factors will be: (1) how much fresh water CalAm extracts as a proportion of the total pumped amount, (to determine the amount of water, that after treatment, could be considered desalinated seawater available for export as developed water); (2) whether pumping affects the water table level in existing users' wells; (3) whether pumping affects seawater intrusion within the Basin; (4) how CalAm returns any fresh water it extracts to the Basin to prevent injury to others; and (5) how groundwater rights might be affected in the future if the proportion of fresh and seawater changes in the larger Basin area or the immediate area around CalAm's wells.

MCWD-60

The SWRCB stated, "because groundwater in the Basin is in a condition of overdraft, the only way to show there is surplus water available for export to non-overlying parcels is for a user to develop a new water source" and "[t]he only water that would be available for export is a new supply, or developed water." (Final Review at 35 and 40.)

The SWRCB's Final Review had to speak in general terms because, as the SWRCB itself admitted, the SWRCB lacked the necessary on-site technical information needed to make a legal determination. While emphasizing the need for accurate on-site technical information, the entire Final Review is founded on the misplaced acceptance for legal analysis purposes of CalAm's and now the DEIR/EIS' inaccurate representation of the conditions of the 180/400 Foot Aquifer Subbasin in the vicinity of the CEMEX property. For example, the SWRCB accepted CalAm's allegation that "the seawater intrusion front extends approximately 5 miles landward from the proposed [CEMEX] well locations" (Final Review at 45-46) and that consequently, almost all water pumped will be brackish water and not "fresh water" and that "[t]here is expected to be minimal impact to fresh water sources at start-up and for the first several years of operation as water will certainly be sourced from the intruded portion of the aquifer." (Final Review at 44.) The SWRCB also incorrectly assumes that "it is unlikely that Basin conditions would improve independent of MPWSP operations." (Final Review at 43.) As discussed in our comments on Section 4.4 below and in the attached HGC, EKI and GeoHydros comments, the assumptions have been shown to be wrong. MCWD-60 cont.

The SWRCB's Definition of "Fresh Water" is Not in Compliance with the SWRCB's own Sources of Drinking Water Policy and Federal and State Law

The SWRCB Final Report states at footnote 40: "Brackish water in this report is defined as groundwater within the seawater intrusion zone that contains chloride levels greater than 500 ppm. Water with chloride concentrations less than 500 mg/L is considered fresh water."

What the SWRCB Final Report completely fails to do is address SWRCB's own Resolution No. 88-63, Adoption of Policy Entitled "Sources of Drinking Water." Resolution No. 88-63 is incorporated by reference into the existing 2011 Water Quality Control Plan for the Central Coastal Basin, which is applicable to the proposed project. (See DEIR/EIS, pp. 4.10-37 to 4-10-38.) The Basin Plan may be found at http://www.waterboards.ca.gov/rwqcb3/publications_forms/publications/basin_plan/docs/basin_plan_2011.pdf. Resolution No. 88-63 is Appendix A-9 of the Basin Plan. Resolution No. 88-63 sets forth the following policy regarding surface and ground water within the project area: MCWD-61

> All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of:
>
> 1. Surface and ground waters where:

> a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or
> b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
> c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

MCWD-61 cont.

In addition, the SWRCB Final Report completely fails to address the Marina Subarea as an underground source of drinking water. The U.S. Environmental Protection Agency ("USEPA") defines "Underground source of drinking water (USDW)" at 40 CFR 144.3 to mean:

> An aquifer or its portion:
> (a)(1) Which supplies any public water system; or
> (2) Which contains a sufficient quantity of ground water to supply a public water system; and
> (i) Currently supplies drinking water for human consumption; or
> (ii) Contains fewer than 10,000 mg/l total dissolved solids; and
> (b) Which is not an exempted aquifer.

The Marina Subarea supplies MCWD's public water system and currently contains a sufficient quantity of groundwater to supply that system with drinking water for human consumption and contains fewer than 10,000 mg/l TDS. Therefore, the Subarea meets the requirements of an aquifer under part 144.3(a) and it is not an exempted aquifer as defined at 40 CFR 146.4.

Water Code Section 10780, et seq., is the Groundwater Quality Monitoring Act of 2001. Section 10783(a) states, "The Legislature finds and declares that protecting the state's groundwater for beneficial use, particularly sources and potential sources of drinking water, is of paramount concern." Section 10783(g)(2) specifically cites to the above USEPA's definition and states, "an Underground Source of Drinking Water as containing less than 10,000 milligrams per liter total dissolved solids in groundwater." In its June 23, 2015 revised draft Model Criteria for Groundwater Monitoring in Areas of Oil and Gas Well Stimulation, the SWRCB classifies this Underground Source of Drinking Water as "Protected water."

MCWD-62

The DEIR/EIS's water rights discussion is founded upon the SWRCB Final Report. Yet the SWRCB Final Report fails to even discuss its own Resolution No. 88-63, which would prevent Cal Am from claiming as new "developed water" for municipal or domestic water supply purposes any feed water to the extent that source water did not exceed 3,000 mg/L TDS. In addition, the SWRCB Final Report fails to discuss the affected groundwater

MCWD-63

subarea as an "underground source of drinking water" containing less than 10,000 mg/l TDS as specified under both Federal and State law. The DEIR/EIS fails to discuss these very important legal parameters and, therefore, the DEIR/EIS must be revised to address both of those parameters and re-circulated for comment. MCWD-63 cont.

As discussed below and in other parts of MCWD's comments, the SWRCB Final Review and DEIR/EIS factual assumptions about the groundwater conditions within the Marina Subarea are incorrect. The proposed slant well pumping at the CEMEX site would result in near term and long-term direct, indirect, and cumulative injury to legal users of the groundwater and to groundwater conditions within the Marina Subarea. MCWD-64

c. ***Section 2.6.2, Project Water Rights.***

The entire DEIR/EIS Section 2.6.2 discussion is based upon the incorrect premise on page 2-32 that "The geographic areas from which the project supply wells could draw water inland of the sea are indeed intruded by seawater" and the additional statement on page 2-37 that "The entirety of the geographical area of the Basin that would be affected by the project contains brackish water rather than fresh water." As discussed above, the entire SWRCB Final Report's legal analysis is founded on the misplaced acceptance of these same CalAm's misrepresentations as to the conditions of the 180/400 Foot Aquifer Subbasin south of the Salinas River. The DEIR/EIS then misrepresents the SWRCB's Final Report by claiming that the Final Report provides the definitive description of the conditions of the 180/400 Foot Aquifer Subbasin in the vicinity of the CEMEX property. As explained in MCWD's comments on Section 4.4, the proposed MPWSP pumping will cause direct, indirect, and cumulative adverse impacts to groundwater conditions. Consequently, CalAm cannot acquire adequate water rights to extract groundwater at the CEMEX site for the MPWSP desalination plant, thereby rendering the project infeasible, at least with the current slant well intake configuration at the CEMEX property. MCWD-65

d. ***Section 2.6.3, Effect of Monterey County Water Resources Agency Act.***

> A primary purpose of the Agency Act was to give to the MCWRA the power: to increase, and prevent the waste or diminution of the water supply in the Agency, including the control of groundwater extractions as required to prevent or deter the loss of usable groundwater through intrusion of seawater and the replacement of groundwater so controlled through the development and distribution of a substitute surface supply ***and to prohibit groundwater exportations from the Salinas River Groundwater Basin***. [Agency Act, Section 52-8, emphasis added.]

MCWD-66

The economic development of the SVGB is based upon a balance between a predominantly agricultural economy and urban development. Therefore, to achieve this balance, the MCWRA has developed a number of groundwater stabilization and conservation projects (e.g., CSIP) to restore the Basin and prevent seawater intrusion as directed by the Agency Act. As the DEIR/EIS recognizes, to meet the Agency Act's directives, MCWRA also adopted Ordinance 3709, "prohibiting groundwater extraction within the northern Salinas Valley between the depths of 0 mean sea level and -250 mean sea level." (DEIR/EIS, p. 2-46.) MCWRA's efforts, as well as the efforts of other SVGB users (including MCWD) to restore the Basin and prevent seawater intrusion, have resulted in improved water levels and water quality within the SVGB, particularly in the areas near the project site, as demonstrated by the slant test well's monitoring. (See e.g., attached HGC comments, p. 57.)

The DEIR/EIS's perfunctory discussion of the Agency Act, however, misrepresents the location of the MPWSP source well screens in an effort to suggest the Agency Act and Ordinance 3709 may not apply to prohibit the MPWSP proposed export of the project's treated water. Specifically, the DEIR/EIS misleadingly block quotes the SWRCB report as follows:

> … As currently proposed, the project would use slanted wells and have screened intervals located seaward of the beach. Although the project would serve areas within the territory of the MPWSP, the points of diversion for these proposed wells may be located outside the territory of MCWRA as defined by the Agency Act.

MCWD-66 cont.

(DEIR/EIS, p. 2-46, emphasis added.) While the DEIR/EIS does not state what description of the project the SWRCB reviewed, the majority of the MPWSP's proposed slant well's screens are clearly not beneath the ocean floor. (See DEIR/EIS, Figure 3-3b (not to scale).) In fact, at least one of the slant wells (as designed) does not even extend beneath the ocean floor. (*Ibid*.) Plus, the DEIR/EIS acknowledges that it will be required to return the "freshwater portion of the brackish source water that originated from the inland aquifer" that would be pumped by the proposed project. (DEIR/EIS, p. 4.4-49.) Thus, it does not appear there is any question that the well and the well screens are within the jurisdiction of the County and the proposed extractions of groundwater at the CEMEX site for export out of the SVGB is prohibited by the Agency Act. Given the critical importance of this issue, the DEIR/EIS must be re-circulated to disclose to the public and public agencies whether the well screens are located within the jurisdiction of the County.

Without attempting to resolve this issue, the DEIR/EIS suggests it does not matter, stating the SWRCB (while acknowledging that it is not the body charged with interpreting the Agency Act) "opines that the project would appear consistent with the Agency Act and the Ordinance given that the project would return to the Basin ***any quantity of fresh water withdrawn from the Basin***." (DEIR/EIS, p. 2-40, emphasis added.) The DEIR/EIS then concludes without any analysis that it appears at least preliminarily reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance. (*Ibid.*) However, in reaching this conclusion, the DEIR/EIS mischaracterizes both the SWRCB's advisory opinion and Ordinance 3709. First, as explained above, the SWRCB's entire Final Review is founded on the misplaced acceptance for legal analysis purposes of CalAm's and now the DEIR/EIS' inaccurate representation of the conditions of the 180/400 Foot Aquifer Subbasin in the vicinity of the CEMEX property and the incorrect assumption that a one-to-one return ratio applies. Second, by extracting groundwater that may be beneficially used in accordance with State and Federal law discussed above, the slant wells will cause seawater to contaminate other beneficial use groundwater, which also must be prevented or completely mitigated. Third, the SWRCB Report uses the phrase "incidentally extracted usable groundwater," not "fresh water withdrawn," in reaching its opinion. These are not interchangeable terms. The DEIR/EIS must define and use the Federal and State law definitions of beneficial use groundwater as discussed above in its analysis. As discussed below, it does not appear the MPWSP is feasible if CalAm is required to return all "incidentally extracted usable groundwater" as the SWRCB opined would be required for the project to be consistent with Agency Act and Ordinance 3709. Focusing on extractions also fails to address the requirement to prevent or mitigate reductions in groundwater quality due to the slant wells causing seawater to contaminate beneficial use groundwater. Fourth, the Agency Act and Ordinance 3709 do not differentiate between "usable groundwater" and groundwater. As discussed below and in the attached HGC comments, removing so-called "unusable groundwater" from this area will likely result in the aquifers in the Marina Subarea becoming more saline, which will make "useable" groundwater further inland "unusable" – and increase seawater intrusion. Therefore, the Agency Act and Ordinance 3709 are not unreasonable restrictions given the purpose of the Agency Act. The DEIR/EIS must be revised and re-circulated to address this issue. MCWD-66 cont.

Moreover, the DEIR/EIS incorrectly assumes that compliance with the Agency Act constitutes compliance with groundwater law and it does not. Compliance with the Agency Act also does not constitute compliance with CEQA, NEPA, or the SGMA. As the SWRCB stated in its Legal Conclusions in the Executive Summary to the Final Report, CalAm has the burden to show that the MPWSP will not cause injury to other users and to existing groundwater conditions. Included in CalAm's burden of proof is to show that the method by which CalAm extract and returns any fresh water it extracts will prevent injury to others and prevent injury to existing groundwater conditions <u>in the vicinity of the CEMEX property</u>. As MCWD's Section 4.4 comments show, "returning" desalinated water to north of the Salinas River does not in any way prevent injury to others or prevent injury to existing groundwater conditions in the vicinity of the CEMEX property. MCWD-67

What CalAm and the DEIR/EIS are arguing is that even though a person does not have a groundwater right, the person can obtain a groundwater right to extract groundwater from Point X so long as I "return" the same amount of water to Point Y, which is located some eight miles away and across a major river. During our lifetimes, no molecule of water deposited at Point Y will ever appear at Point X given existing groundwater gradients, which causes groundwater in Castroville to flow east and not west to Monterey Bay. No technical or legal authority is cited in support of the proposed North of Salinas River Return Water scheme would fully mitigate for direct, indirect, and cumulative adverse impacts of the slant well pumping at the CEMEX property.

e. ***Section 2.6.4, Effect of Annexation Agreement.***

In Section 2.6.4, the DEIR/EIS incorrectly states that the 500 AFY pumping limitation on the property does not presently apply and that it would not apply until formal annexation. The DEIR/EIS must be revised to correct this inaccuracy, which bears upon the feasibility of the project. The 1996 Annexation Agreement was entered into for the express purposes of groundwater protection and reduction of seawater intrusion. The 1996 Annexation Agreement limits groundwater pumping of non-potable water on the CEMEX property to a total amount of not more than 500 AFY; all of which groundwater can only to be used on the CEMEX property. The owner of the CEMEX property at that time, Lonestar, agreed to limit its then-existing overlying groundwater rights in exchange for other consideration in the agreement and that limitation took effect upon signing of the Annexation Agreement in 1996.

The 1996 Annexation Agreement established “a contractual process for the exercise of regulatory authority by the MCWRA under Water Code App. Section 52-22, and the MCWD under Water Code section 31048.” (MCWRA Negative Declaration re: Annexation of Marina Area Lands to Zones 2/2A, dated February 21, 1996, at p. 4.) The purpose of the 1996 Annexation Agreement was to “establish a groundwater mitigation framework for the lands to be annexed, and will provide money from the Marina area for the MCWRA’s Basin Management Plan and for Zones 2 and 2A, for management protection of the groundwater resource in the Salinas River Groundwater Basin and to reduce seawater intrusion.” (Purpose section, Attachment B-1 to Initial Study for Marina Lands Annexation.) The 1996 Annexation Agreement (Sec. 5.9) required MCWD to pay a $2,849,410 fee to MCWRA less a credit of $400,000 based on a 1990 agreement and the similar credit given to the Army. Standby charges and assessments were then levied and collected by the MCWRA on an annual basis. MCWD-68

Attachment B-1 to Initial Study for Marina Lands Annexation stated the following:

> GROUNDWATER PUMPING LIMITS
> Pumping Limits. MCWD currently pumps about 2,200 afy, and Lonestar pumps about 500 afy. Under the Agreement and Framework, the present MCWD service area would be limited to an additional 820 afy of potable groundwater, and would otherwise be subject to the same pumping regulations and restrictions by MCWRA as the area within the City of Salinas. Non-agricultural use of Basin groundwater on the Armstrong Ranch would be limited to 920 afy, 20 afy when the Agreement and Framework becomes effective, an additional 150 afy upon annexation, and additional increments of 150 afy every two years thereafter. Groundwater underlying approximately 730 acres of the Armstrong Ranch would be limited to agricultural use, except that 20 afy could be used for potable uses, and water

from that area could also be used at the regional treatment plant. Lonestar would limit its pumping to its current use of 500 afy.
* * *
MCWRA POLICY CONSIDERATIONS.
a. Effect of the annexation on the overall water supply of the Salinas Valley. All lands being annexed currently overlie the Salinas River Groundwater Basin, and all currently use water from the Basin. Annexation on the terms and conditions of the proposed Annexation Agreement and Mitigation Framework ("Agreement and Framework") will result in limiting the pumping of groundwater from the Basin to less than the amounts which the Marina Coast Water District, RMC Lonestar, and the J.G. Armstrong Family claim the right to pump and use for beneficial use, potentially decreasing ultimate water use from the Basin and demand on the overall water supply of the Basin. The Agreement and Framework also would establish a planning framework which could lead to better management and use of reclaimed wastewater and the encouragement of alternative supplies such as desalinated seawater, which would enhance the overall water supply of the Basin.

b. Effect on increase or decrease of seawater intrusion. Although the annexation will not have a physical impact on seawater intrusion, annexation on the terms and conditions of the Agreement and Framework will establish contractual guidelines and limits for potable and reclaimed water use that should result in no increased seawater intrusion and enhance the MCWRA's ability to mitigate existing seawater intrusion.

c. Effect on overdraft of the Salinas Valley. Marina Coast Water District currently draws most of its water from the deep (900') aquifer, which has not been shown to be in an overdrafted condition and has not been shown to contribute to the overdraft of the shallower aquifers. Lonestar and Armstrong either are already pumping or have the capability to pump from the shallower aquifers. While the annexation will not physically impact overdraft, pumping limits for the annexed Marina Area lands from the deep and the shallower aquifers will limit overdraft of water resources in the Salinas Valley, and a management framework for reclaimed water will help to mitigate overdrafting in the Salinas Valley.

d. Amount of water presently pumped from the aquifer of the Salinas Valley. MCWD has present operational capacity to pump about 6,000 afy, has an approved Urban Water Management Plan and an approved Urban Water Shortage

MCWD-68 cont.

Contingency Plan to pump 3,020 afy of potable water, and presently pumps about 2,200 afy of potable water, including some potable water for the Armstrong Ranch. Lonestar presently pumps about 500 afy. A new, agricultural well of unknown capacity recently has been drilled on the Armstrong Ranch, and is expected to be operational before the MCWRA's Board of Supervisors acts on the proposed annexation.

e. Quality of the water made available. Annexation will not change the quality of water available either from or to the annexed lands. Lands served by MCWD currently have both potable and nonpotable water available from and to those lands. The Lonestar property currently pumps and uses water that is considered nonpotable from the shallower aquifers, and has the ability to drill a well into the deep aquifer to obtain potable water. Groundwater underlying the Armstrong Ranch is potable. Both potable and nonpotable water might be transported to the Marina Area lands from elsewhere in the Basin whether or not the proposed annexation occurs.

f. Amount of additional groundwater to be used by the annexed area. Annexation will not provide additional groundwater to the annexed area, because the Marina area already overlies the Basin. The net projected change in groundwater pumping for the Marina Area by the year 2010, assuming full implementation of the Agreement and Framework, is about 115 afy. This is based on limits on increased pumping in the annexed area of 1,740 acre-feet/year (afy), and decreased groundwater use of 300 afy in the annexed area from desalination and 1,325 afy in adjacent agricultural areas from reclaimed water management. MCWD-68 cont.

g. Water supplies for future growth. Annexation will not change water supplies available for future growth. The Agreement and Framework will provide contractual limits on the use of potable water supplies available from the Basin for future growth. The Agreement and Framework also encourages proactive management of the deep aquifer. Reclaimed water supplies may be managed differently if the Agreement and Framework becomes effective. Non-Basin, potable water supplies are not affected by the annexation or the Agreement and Framework. Agricultural water supply within the area to be annexed is not affected by the annexation.

Thus, the Initial Study shows that the prescribed pumping limits/groundwater allocations for the annexed Marina Area lands from the deep and the shallower aquifers were intended to (1) limit and avoid increasing seawater intrusion, (2) enhance the MCWRA's ability to mitigate existing seawater intrusion, (3) not physically impact overdraft, and (4) help limit the overdraft of water resources in the Salinas Valley.

While Section 7.3 of the 1996 Annexation Agreement provides that the Lonestar Property's annexation to Zones 2 and 2A would not take effect until the Lonestar Property has been approved for annexation to the Zones, the 1996 Annexation Agreement itself, including the 500 AFY limitation on pumping on the Lonestar property, took effect in 1996 upon execution of all of the parties. (1996 Annexation Agreement, Section 2.9, p. 2.) More importantly, the then Lonestar property already had an overlying groundwater right, i.e., a right to pump groundwater from the Lonestar property for use on the Lonestar property. Section 7.4.5 limited Lonestar's purpose of use to non-potable industrial or agricultural use. Lonestar agreed that "All groundwater withdrawn from the Basin by Lonestar may be used only within the Basin." (Section 7.1, p. 17.) Section 7.2 states, "Commencing on the effective date of this Agreement and Framework, Lonestar shall limit withdrawal and use of groundwater from the Basin to Lonestar's historical use of 500 afy of groundwater." Lonestar did not need to sign the Annexation Agreement to pump 500 AFY for non-potable water uses since it already had that overlying right, but it agreed to that limitation in consideration of the right to obtain potable water from MCWD for future urban development on the property on terms set forth in the agreement and to limit seawater intrusion. Lonestar's overlying right does not provide any benefit to CalAm's proposed extraction and then export of the groundwater off the CEMEX property (property it does not own) and out of the Basin.

MCWD-68 cont.

Even if one were to accept the DEIR/EIS' incorrect conclusion that the Annexation Agreement only applies if and when the CEMEX property is actually annexed to MCWD, groundwater law (as opposed to the Agency Act) prevents the export of the groundwater underlying the CEMEX property from the CEMEX property. The DEIR/EIS itself admits on page 2-30 that CalAm has no right to export groundwater beyond the proposed desalination plant location, and for the same reason, CalAm has no right to export groundwater beyond the CEMEX property where the slant wells would actually be located.

MCWD-69

The DEIR/EIS on page 2-42 additionally proposes that "CalAm could conceivably construct and employ an injection well on the CEMEX property to return 500 afy to that property such that the MPWSP would have a net-zero effect on groundwater from the CEMEX land and conceivably could operate regardless of whether the 500 afy groundwater withdrawal limitation were imposed at some point in the future." Interestingly, the DEIR/EIS admits that in order to "have a net-zero effect on groundwater from the CEMEX land," CalAm needs to inject the return water directly at the CEMEX property. This directly contradicts the DEIR/EIS' support for the Return Water Agreement and supports MCWD's position that providing "return" water to north of the Salinas River will not mitigate for the direct adverse impacts to groundwater from the CEMEX property.

MCWD-70

The DEIR/EIS must be revised to correct this inaccuracy, which bears upon the feasibility of the project.

Moreover, as explained in the HGC Comments, there is no evidence to support the conclusion that returning 500 afy to the CEMEX property would ensure that no more than 500 afy groundwater was withdrawn from the project as limited by the Annexation Agreement. In fact, the evidence indicates substantially more groundwater would need to be injected to demonstrate consistency with the agreement. (See HGC Comments, p. 31.)

MCWD-70 cont.

In short, CalAm does not and will not have sufficient groundwater rights or developed water rights for the proposed MPWSP, and the DEIR/EIS fails to explain this aspect of the water rights framework that governs the Marina Subarea of the SVGB. The DEIR/EIS must be revised to reflect the full scope of the water rights framework that governs the proposed project site and that framework's impact on the feasibility of the project.

MCWD-71

f. ***The DEIR/EIS Provides No Scientific Proof or Analysis in Support of its One-to-One Ratio, which Would Not Mitigate for All Direct, Indirect, and Cumulative Impacts from Slant Well Pumping on the CEMEX Property.***

The DEIR/EIS incorrectly and inexcusably assumes without any scientific proof or analysis that a one-to-one return water ratio would be sufficient to fully mitigate for the source well pumping on the CEMEX property, i.e., for every one AF of good groundwater extracted, it must only be replaced with one AF of desalinated water. DEIR/EIS' one-to-one return water ratio appears to be upon the incorrect assumption that the Agency Act only requires a one-to-one return ration and that compliance with the Agency Act constitutes compliance with groundwater law and it does not. Again, compliance with the Agency Act also does not constitute compliance with CEQA, NEPA, or the SGMA.

Slant well pumping on the CEMEX property draws seawater, brackish water, and groundwater adequate for beneficial uses to the slant wells. The CEMEX property pumping will also draw seawater into beneficial use groundwater areas thereby directly degrading the groundwater into brackish water. The slant well pumping has direct, indirect, and cumulative adverse water quality and water quantity impacts within the groundwater aquifers, as explained in MCWD's comments on Section 4.4. The one-to-one ratio does not adequately mitigate for all of these impacts being based solely upon direct extraction of beneficial use groundwater. Therefore, the use of a one-to-one return ratio by the DEIR/EIS is a fatal flaw.

MCWD-72

g. ***The Sustainable Groundwater Management Act (SGMA).***

The DEIR/EIS Section 2.6 inexplicitly fails to discuss SGMA and that law's applicability to the proposed project. SGMA became effective January 1, 2015. SGMA grants local public agencies the authorities to manage groundwater in a sustainable manner and authorizes state intervention, primarily by the SWRCB when local public agencies fail to take required actions by the deadlines set forth in SGMA. SGMA Water Code Section

MCWD-73

10720.5(b) states, "***Nothing in [SGMA], or in any groundwater management plan adopted pursuant to [SGMA], determines or alters*** surface water rights or ***groundwater rights under common law*** or any provision of law that determines or grants surface water rights." Section 10720.5(c) states that water rights may be determined in a groundwater adjudication action pursuant to Code of Civil Procedure Sections 830, et seq. SGMA applies to the proposed project and the application of SGMA's standards and requirements are separate and apart, although related, to any groundwater rights analysis. The DEIR/EIS must include a SGMA analysis.

MCWD-73 cont.

The California Department of Water Resources had previously classified the 180/400 Foot Aquifer Subbasin as a high-priority subbasin and in January 2016, the Subbasin was designated as a Critically Overdrafted Basin.[13] Both the MPWSP's slant wells and desalination plant are located within the 180/400 Foot Aquifer Subbasin. Because of the Critically Overdrafted Basin classification, the 180/400 Foot Aquifer Subbasin is required to adopt a State-approved groundwater sustainability plan (GS Plan) or coordinated GS Plans by January 31, 2020.[14] The GS Plan must include measurable objectives and milestones in increments of five years to achieve sustainability within 20 years of the GS Plan adoption, which would be no later than January 31, 2040, in the case of the 180/400 Foot Aquifer Subbasin.[15]

The terms "sustainability goal," "sustainable groundwater management," "sustainable yield," and "undesirable results" are defined in Water Code Section 10721. They require that the applicable groundwater sustainability agency (GSA) or agencies within the Subbasin adopt and implement a GS Plan or coordinated GS Plans, which manages the use of groundwater within the Subbasin in a manner that can be maintained during the 20-year time horizon without causing any undesirable results. "Undesirable results" applicable to the proposed MPWSP include (1) Chronic lowering of groundwater levels, (2) Significant and unreasonable reduction of groundwater storage through, for example, causing seawater to displace or contaminate existing groundwater thereby reducing available groundwater storage, (3) Significant and unreasonable seawater intrusion, and (4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supply and including the migration of seawater into portions of aquifers currently occupied with groundwater. The SGMA baseline conditions date is January 1, 2015.[16]

MCWD-74

MCWD's comments on DEIR/EIS Section 4.4, Groundwater Resources, show (1) that there are existing good groundwater conditions in the vicinity of the CEMEX property not recognized in Section 4.4 and (2) that the proposed 6.4 MGD and 9.6 MGD

[13] / http://www.water.ca.gov/groundwater/sgm/pdfs/COD_BasinsTable.pdf
[14] / Water Code §§ 10720.7(a), 10735.2(a)(2), 10735.2(a)(3).
[15] / Water Code § 10727.2(b)(1).
[16] / Water Code § 19727.2(b)(4).

desalination plants will cause or increase all four undesirable results between January 1, 2015, and January 31, 2040. For example, approval of the MPWSP with slant well pumping on the CEMEX property that increases seawater intrusion and decreases good groundwater conditions in the 180/400 Foot Aquifer Subbasin south of the Salinas River, would be in violation of SGMA.

MCWD-74 cont.

The proposed MPWSP is intended to be a long-term project with an operating life well beyond the requirement of achieving the required sustainability goal by January 31, 2040, for the 180/400 Foot Aquifer Subbasin. <u>The DEIR/EIS' failure to analyze the proposed project's impacts against SGMA's standards and requirements especially relating to how the proposed project will create or increase undesirable results from January 1, 2015, through January 31, 2040, when the 180/400 Foot Aquifer Subbasin is required to achieve its sustainability goal, is another fatal flaw of the DEIR/EIS.</u>

* * *

In summary, CalAm cannot obtain any overlying, appropriative, or prescriptive groundwater rights for the proposed project's feed water whether at the proposed site or anywhere overlying the Marina Subarea utilizing the proposed slant well technology and proposed MPWSP source well locations. The DEIR/EIS would fashion a No-Injury Developed Water Export Right based upon a definition of "fresh water," which is not in accordance with the SWRCB's own Source of Drinking Water Policy and not in accordance with Federal and State law. The CPUC must apply the legal parameters in both (1) the SWRCB's own Source of Drinking Water Policy, which is applicable to the proposed project under the Central Coast RWQCB Basin Plan (DEIR/EIS at 4.10-37), and (2) the Underground Source of Drinking Water as defined in Federal and State law, to calculate the amount of "Protected Water" contained in the feed water that the project would pump. Using the same legal parameters, the CPUC would also need to determine to what extent the slant well pumping would cause seawater to contaminate Protected Water.

MCWD-75

CalAm then has the burden to prove that in creating any new developed water, (1) the proposed MPWSP source well pumping will cause no injury to any legal user of the groundwater within the Marina Subarea, (2) will cause no injury to pre-January 1, 2015 baseline groundwater conditions in the Marina Subarea, including, but not limited to, reductions in the availability and quantity of protected groundwater, reductions in groundwater quality, and increases in seawater intrusion, and (3) will not cause any SGMA undesirable results so as to prevent the 180/400 Foot Aquifer Subbasin from achieving groundwater sustainability by 2040. The DEIR/EIS must be revised to acknowledge these circumstances and their impact on project feasibility.

MCWD-76

Finally, the DEIR/EIS should address the Monterey County Code of Ordinances section 10.72.030(B) and the issues surrounding private ownership of desalination plants. We would also point out that the California Coastal Commission ("CCC") report entitled

MCWD-77

Seawater Desalination and the California Coastal Act (CCC, 2004) cited in the DEIR/EIS, addresses Coastal Act public resources policies related to desalination, including policies relating to public versus private ownership of desalination facilities in Chapter 4. As many of these policies relate to environmental impacts (e.g. public trust doctrine and ecosystem preservation) this issue should be addressed in the revised DEIR/EIS. Notable, the Sanctuary's Management Plan, discussed below, provides that MBNMS should consider public versus private ownership. MCWD-77 cont.

B. THE PROJECT DESCRIPTION INCLUDED IN THE DEIR/EIS IS DEFICIENT UNDER CEQA.

An accurate, stable and finite project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity. (*See San Joaquin Raptor Rescue Center v. County Of Merced* (2007) 149 Cal.App.4th 645, 655 (*Raptor*); *McQueen v. Board of Directors of the Midpeninsula* (1988) 202 Cal.App.3d 1136, 1143; *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193 (*County of Inyo*) [an accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR].) The DEIR/EIS's description of the project omits critical information needed to evaluate the potential impacts of the project, including but not limited to the intended life or length of project, decommissioning of slant wells after their useful life, potential need to construct additional slant wells over the life of the project, and the amount of return water that would be required for the project. These failures require that the DEIR/EIS be revised and re-circulated. MCWD-78

First, the DEIR/EIS's project description fails to adequately disclose the temporal length of the project. While MCWD understands that CalAm is requesting permission to operate the MPWSP through 2060, by failing to disclose this information to the public, it is impossible for the public to understand and comment on the potential long term impacts of the project. The Final EIR/EIS must disclose the length of the project and identify whether all impacts were evaluated based on the proposed 40+ year project life. MCWD-79

Second, the DEIR/EIS states that the project proposes to convert the slant test well to a permanent well, but fails to address the *requirement* of the California Coastal Commission ("CCC") that the slant well be decommissioned. (DEIR/EIS, p. 3-2.) Rather, the DEIR/EIS states: "Construction of the test slant well and operation of the pilot program was covered under separate environmental review… and it is not part of the proposed project being evaluated in this EIR/EIS.…." If the DEIR/EIS is attempting to tier off of CCC's analysis in its CEQA-equivalent document,[17] the DEIR/EIS must expressly state so in the EIR and follow CEQA's tiering requirements. Regardless, the DEIR/EIS must presume the slant test MCWD-80

[17] / The DEIR/EIS's statement that the City of Marina completed tis CEQA review in November 2014 is misleading. As CalAm and the DEIR/EIS preparers are aware, the City never completed its CEQA review for the test well, but determined it needed to conduct additional environmental review before considering approval of test well.

well will be decommissioned as required in assessing the project's impacts given the CCC's prior environmental review did evaluate alternative locations for the test well and the acknowledgement the test well is located in an Environmentally Sensitive Habitat Area (ESHA) and within the coastal retreat area. The DEIR/EIS and the CPUC should also require CalAm to account for and return all of the groundwater pumped by the test well as all such groundwater has and will be wasted to the ocean as it is part of the larger project. MCWD-80 cont. MCWD-81

Third, the Project Description states the slant wells would require maintenance every 5 years, but fails to discuss decommissioning the wells after their useful life or the need to construct replacement wells during the life of the project. (Compare DEIR/EIS, p. 3-57 to 4.2-70 [operational life of the slant production wells anticipated to be 20 to 25 years).) Given that slant wells are an unproven technology[18] and results from the only existing slant well at the Doheny Beach, in Dana Point, CA (see Geoscience, Inc. 2012, Aquifer Pumping Test Analysis and Evaluation of Specific Capacity and Well Efficiency Relationships SL-1 Test Slant Well Doheny Beach, Dana Point, California Prepared for: Municipal Water District of Orange County September 7, 2012 , available at http://www.mwdoc.com/filesgallery/SL_1_Step_Test_Comp._FINAL_TM_Geoscience_12_09_2012.pdf), the DEIR/EIS must disclose, evaluate, and propose mitigation to address how slant wells will be decommissioned after their useful life and how the MPWSP will obtain the required source water over the 40 plus year project when none of the slant wells are anticipated to operate for the full life of the desalination plant. MCWD-82

Finally, the Project Description fails to disclose the amount of source water that the MPWSP would be required to return to the SVGB. In discussing the Castroville Pipeline, the DEIR/EIS states: MCWD-83

> The 4.5-mile-long, 12-inch-diameter Castroville Pipeline would convey desalinated Salinas Valley return water from the MPWSP Desalination Plant to the CSIP distribution system and the CCSD Well #3. As described in Chapter 2, Water Demand, Supplies and Water Rights, the portion of the water drawn from the subsurface slant wells that is determined to be groundwater originating from the Salinas Valley Groundwater Basin, would be delivered to CCSD as desalinated water in lieu of CCSD pumping an equivalent amount of groundwater. Under the proposed project, the first 800 afy would go to the CCSD and the remaining water would go to the CSIP.

[18] / Notably, as discussed in Part VIII below, HWG member Mr. Feeney recently participated in another panel for the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014 available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf.). That panel concluded that slant wells were unproven technology and infeasible. (See *id.*, pp. 37, 56, 64.)

(DEIR/EIS, p. 3-35, emphasis added.) However, as discussed further below, the DEIR/EIS models the possibility of returning 0%, 3%, 6% and 12% pumped water, but never estimates the amount of return water that will be required. Importantly, the amount of groundwater that would likely need to be returned to the SVGB would be significantly higher than 12 % at least in the initial period of project operation – potentially 30% or more. As discussed in our comments below, even this higher estimate is based on DEIR/EIS unreliable modeling and assumptions that fail to address impacts to the Dune Sand Aquifer. (See comments below on Section 4.4 [Groundwater Resources] and HGC comments, p. 59.) MCWD-83 cont.

Moreover, the DEIR/EIS fails to disclose to the public how the amount of water that would need to be returned to the Marina Subarea would be calculated and by whom. MCWD requests the DEIR/EIS include a detailed explanation of how the calculation would be done (the methodology to be used), whether any portion of the calculation would be subject to CalAm's discretion, and whether and by whom CalAm's calculation would be reviewed, including any judicial review required. In turn, this calculation must be included as a condition of approval or mitigation. MCWD-84

Given these omissions, the DEIR/EIS must be revised and recirculated. "[O]nly through an accurate view of the project may the public and interested parties and public agencies balance the proposed project's benefits against its environmental cost, consider appropriate mitigation measures, assess the advantages of terminating the proposal and properly weigh other alternatives…." (*City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1454.) Without this information it is impossible for the public or public agencies to provide meaningful comments on the DEIR/EIS's review of potential impacts and proposed mitigation and alternatives. MCWD-85

C. THE DEIR/EIS'S ENVIRONMENTAL ANALYSIS IS INADEQUATE.

1. Preliminary Statement Regarding Groundwater Analysis and Need to Recirculate Revised DEIR/EIS.

Based on MCWD's participation in the Regional Desalination Project and its more recent involvement in the environmental review process and litigation relating to CalAm's slant test well for the MPWSP, MCWD is intimately familiar with the public's long-standing concerns relating to the project's potential groundwater impacts to the SVGB. While all of this history is relevant to understanding the project, we do not have the time or the voluminous space necessary to fully recount it all here. However, we do provide a summary of recent events that should be part of the record and that demonstrate the lack of substantial evidence supporting the DEIR/EIS's groundwater analysis. MCWD-86

SWRCB's Advisory Opinion Determined the Need for the Slant Test Well to Accurately Characterize the Baseline and Potential Impacts to SVGB. The SWRCB's advisory opinion determined that the following actions to support the conclusion of no harm: MCWD-87

> Studies are needed to determine the extent of the Dune Sand Aquifer, the water quality and quantity of the Dune Sand Aquifer, the extent and thickness of the SVA and the extent of the 180-Foot Aquifer.

(DEIR, p. 4.4-53.) As discussed in the HGC comments, studies to date have not determined the extent or water quality in the Dune Sand Aquifer, which renders the DEIR/EIS's analysis and modeling grossly inadequate. (HGC Comments, p. 2.)

> The DEIR/EIS further acknowledges that the SWRCB required:
>
> "The effects of the MPWSP on the Basin [i.e., the SVGB] need to be evaluated. Specifically, a series of test boring/wells would be needed to assess the hydrogeologic conditions at the site. ***<u>Aquifer testing also would be needed to establish accurate baseline conditions</u> and determine the pumping effects on both the Dune Sand Aquifer and the underlying 180-Foot Aquifer.*** Aquifer tests should mimic proposed pumping rates."
>
> "Updated groundwater modeling will be needed to evaluate future impacts from the MPWSP. Specifically, modeling scenarios will need to be run to predict changes in groundwater levels, groundwater flow direction, and changes in the extent and boundary of the seawater intrusion front. **Additional studies also will be necessary to determine how any extracted fresh water is replaced, whether through re-injection wells, percolation basins, or through existing recharge programs.** It may also be necessary to survey the existing groundwater users in the affected area. The studies will form the basis for a plan that avoids injury to other groundwater users and protects beneficial uses in the Basin. **To ensure that this modeling provides the best assessment of the potential effects of the MPWSP, it is important that any new information gathered during the initial phases of the groundwater investigation be incorporated into the groundwater modeling studies as well as all available information including current activities that could influence the groundwater quality in the Basin."**

(DEIR/EIS, p. 4.4-53, emphasis added.) As noted in below and in the HGC and GeoHydros Comments, the DEIR/EIS's superposition model cannot and does not model groundwater flow direction or the changes in the extent and boundary of the seawater intrusion. A dual density model is required to meet the SWRCB requirements. (See e.g., HGC Comments, p. 34 and GeoHydros Comments, p. 9.)

MCWD-87 cont.

<u>Testimony from HWG's and CPUC's Representatives during Slant Test Well Environmental Review at City of Marina Led the City and Public to Believe Test Well Data Was Necessary and Would be Used in the DEIR/EIS to Evaluate the MPWSP's Groundwater Impacts</u>. CalAm sought approval from the City of Marina to construct the

MCWD-88

slant test well ostensibly for the purpose of satisfying the SWRCB's requirements of assessing the feasibility of MPWSP's slant wells and compiling baseline information for the project's modeling and environmental review. As part of this process the HWG and CPUC representatives stressed the importance of the test well to validate the MPWSP's modeling so the EIR could accurately assess the MPWSP's potential groundwater impacts. Martin Feeney of the HWG testified:

> **The test well is essential for being able to get the data that allows us to validate the models so that we can actually predict the impacts that go into the EIR.** We're at the point now where you can wave your arms about the geology, but we need some real data. We need to stress the system with the test well and to figure out how the system actually reacts so we can answer the questions about water rights, impacts, all those things come out of the actual testing of the test well and looking at the impacts in the monitoring wells that we're putting in around it to see how the whole system reacts. ***This is about a test well that helps us define the actual response of a system to the pumping so that we can accurately look at the impacts.***
>
> … What is the impact to the basin? You know, what is the impact to existing users? You know, I'm being paid by the farm -- farmers because they are concerned. It's about the impacts to the basin. So we got together, and that's the point is to figure out when you test this well, can it be done without impacts? Can it be done that it only takes seawater? That's the purpose of this. It's a feasibility study.
>
> ***My personal -- my personal opinion is this is a little dicey. It may not work.*** Other people have a different opinion. They think it's going to work fine. That's fine. We're to the point now where it's just opinion among a bunch of qualified experts. We need to actually drill this thing and stress it. That's the point.
>
> **So we get the monitoring wells, we get around the pumping well on all sides, we will be able to see what the draw-down effects are, and to be able to build a better groundwater model so that the full-scale project, should it be moved forward, <u>that the modeling that's in the EIR, the full EIR, can accurately model the impacts of the full-scale project</u>. We can't build a model to look at the full-scale project until we know what the aquifer parameters are, the transmissivity, the storativity, and what the boundary condition does to the well draw-down.** That's the deal.

(City of Marina transcript, pp. 110-111, 295-297, emphasis added.)

MCWD-88 cont.

Eric Zigas, the CPUC's environmental consultant, also testified about the importance of the test well to inform the EIR's analysis:

> And the Hydrogeology Work Group, you just heard Martin tell you, they struggled with concepts and understanding, and they've come to what I think is a common understanding of how the basin works.
>
> … ***But uncertainly really is a -- makes for risky decisions***, and risk can be reduced by gaining knowledge, and the knowledge you can gain from the test well will benefit not only CalAm, it will benefit every basin user.
>
> ***… We will also be able to tell you with certainly what the impacts are associated with their wells, but we will only (sic) be able to model it without the well. We won't have real data. Okay?***
>
> So I do encourage you to learn more about your basin, be better informed. ***When we come back in a year with CalAm's application for the Coastal Development Permit, that conversation should be more informed. It should be informed by data and information, and that information will be obtained through this test well. Reduce your risk.*** Go ahead and learn the knowledge. Learn more about your basin.

(City of Marina transcript, pp. 111-118, emphasis added.)

Given the HWG's and the CPUC's representatives' testimony that the slant test well data was needed to accurately model the impacts in the MPWSP EIR, please explain why it is worth taking the risk to approve the project without the using the TSW data in the project's modeling. Please also explain why after all the efforts to construct the test well and obtain monitoring data, the DEIR/EIR only uses a simplified superposition model that precludes prediction of measurable groundwater elevations associated with the proposed pumping and impacts on water quality, which would provide the only means for stakeholders to validate the model predictions and potential project impacts. (See HGC Comments, p. 34; GeoHydos Comments, p. 9.)

MCWD-88 cont.

<u>Slant Test Well Review at the Coastal Commission</u>. When the City determined that an EIR was required before it could consider granting CalAm's Coastal Development Permit (CDP) application for the slant test well, CalAm chose not to work with the City and appealed the City's denial without prejudice to the California Coastal Commission (CCC). As the DEIR/EIS recognizes, the CCC approved CDPs for the MPWSP's slant test well at the CEMEX site in November of 2014. The CCC issued the approvals over MCWD's (and others) objections that approval of the slant test well was premature because it improperly segmented the test well from the whole of the MPWSP, failed to analyze and mitigate the test well's potential impacts to the SVGB, failed to consider feasible alternatives, and

MCWD-89

usurped the City of Marina's land-use authority, among other defects. (See merits briefs in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. CV180839, attached as Exhibit "5".) When the CCC approved the slant test well, the CCC overrode the slant test well's significant and unavoidable impacts to ESHA (CCC findings, pp. 3 and 66, attached as Exhibit "9") and the project's inconsistency with the City of Marina's LCP (*id.*, pp. 38, 59, and 62) based on express findings that included the necessity of the slant test well to assess the feasibility, environmental setting, and design of the MPWSP, stating:

> **… pumping and water quality testing to be conducted during the slant well test is necessary to inform the design of a potential full-scale facility. Other actions, such as drilling additional boreholes or conducting additional modeling, would not be sufficient to characterize the site and its potential to provide source water."**

MCWD-89 cont.

(Id., p. 60, emphasis added.) When MCWD sought injunctive relief in its lawsuit to enjoin construction and operations of the slant test well, the CCC, SWRCB, and CalAm argued any delays to the slant well were against the public interest because the information from the slant test well was necessary to inform the MPWSP's feasibility and environmental review.

In light of the statements from the CCC, SWRCB, and CalAm regarding the necessity of the slant test well to inform the CPUC's environmental review, please explain why has the DEIR/EIS used modeling the fully utilizing the information from the operations of the test well? Does the CPUC and Sanctuary disagree with the CCC's and SWRCB's conclusions that detailed analysis of all information from the full term of operations of the slant test well is necessary and relevant to determine the baseline environmental setting and assess the potential impacts for the MPWSP?

2. The DEIR/EIS's Discussion of Groundwater Impacts Does Not Comply with CEQA.

The DEIR/EIS's analysis of groundwater impacts is grossly inadequate as explained below and in the attached HGC Comments (Exhibit # 1), GeoHydros Comments (Exhibit # 2), and EKI Comments (Exhibit # 3).[19] Specifically, the DEIR/EIS baseline description of the Marina Subarea is misleading and conflicts with the best available information; the DEIR/EIS fails to disclose the MPWSP's inconsistencies with applicable laws and regulations; the analysis of groundwater impacts is based on unreliable modeling rather than substantial evidence; and cursory treatment of cumulative impacts does not comply with CEQA or NEPA. These error must be addressed in a revised DEIR/EIS prior the CPUC or Sanctuary's

MCWD-90

[19] / These experts' comments must be responded to separately. While MCWD incorporates by reference these comments into this letter, they are not fully repeated here.

h. ***The baseline description of the Marina Subarea is misleading and conflicts with the best available information;***

CEQA requires an EIR to "delineate environmental conditions prevailing absent the project, defining a 'baseline' against which predicted effects can be described and quantified." (*Neighbors for Smart Rail v. Exposition Metro Line Construction Auth.* (2013) 57 Cal.4th 439, 447.) The baseline is normally the "existing conditions" in the vicinity of the project "as they exist at the time the [NOP] is published." (*Id.* at p. 448.) "Knowledge of the regional setting is critical to the assessment of environmental impacts." (Guidelines, § 15125, subd. (c).) Thus, CEQA Guidelines section 15125 provides that an EIR "must include a description of the physical environmental conditions in the vicinity of the project . . . from both a local and *regional* perspective." (*Id.* at subd. (a), emphasis added.) Furthermore, "[s]pecial emphasis should be placed on environmental resources that are rare or unique to that region and *would be affected by the project*." (*Ibid*, emphasis added.)

MCWD-91

An EIR's description of a project's environmental setting plays a critical role in all of the subsequent parts of the EIR because it provides "the baseline physical conditions by which a Lead Agency determines whether an impact is significant." (Guidelines, § 15125, subd. (a).) Longstanding case law upholds this fundamental principle by recognizing that "[a]n EIR must focus on impacts to the *existing environment*, not hypothetical situations." (*County of Amador* v. *El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 955, emphasis added.)

"If the description of the environmental setting of the project site and surrounding area is inaccurate, incomplete or misleading, the EIR does not comply with CEQA." (*Cadiz Land Co. v. Rail Cycle* (2000) 83 Cal.App.4th 74, 87 (*Cadiz*).) Here, as is explained below, the EIR's "description and consideration" of the regional setting "is so incomplete and misleading that it fails to meet the standard set forth in . . . Guidelines section 15125." (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 723.)

Here, the DEIR/EIS fails to comply with the fundamental CEQA baseline disclosure requirements for the following reasons and those included in the HGC comments.

(1) The DEIR/EIS fails to provide an accurate and complete description of the Dune Sand Aquifer in the project area and further inland to the extent the aquifer could be impacted by the project as required by CEQA. Instead the DEIR/EIS presents a misleading picture of the aquifer implying groundwater in the Dune Sand Aquifer has no value or uses, stating: "most of the water in the Dune Sand Aquifer has been intruded by seawater due to proximity with the ocean and seawater intrusion and is considered saline to brackish. (See DEIR/EIS, p. p. 4.4-8 [citing 13 year-old study], emphasis added.) As described in the attached HGC comments and EKI Comments, the Dune Sand Aquifer contains potable, freshwater less than a mile from the project site and extends miles inland. These comments further explain how the Dune Sand

MCWD-92

Aquifer plays an important role in recharging the underlying aquifers and preventing seawater intrusion. MCWD-92 cont.

(2) The DEIR/EIS fails to provide an accurate and complete description of the 180-Foot Equivalent Aquifer in the project area and further inland to the extent the aquifer could be impacted by the project as required by CEQA. Instead the DEIR/EIS presents a misleading picture of the aquifer stating it is unconfined and implying groundwater in the 180-foot Aquifer is controlled by seawater at the site and miles inland, stating: "At the CEMEX site, the Dune Sand Aquifer and the 180-Foot Equivalent Aquifer are unconfined, as there are no extensive overlying low permeability clay units.… Based on the recent groundwater testing data discussed in the Groundwater Quality subsection below, the quality of water in the 180-FTE Aquifer is directly influenced by seawater; this influence extends for miles inland, as discussed below in the Seawater Intrusion section." (See DEIR/EIS, p. 4.4-11 [citing without reference to undisclosed recent groundwater testing data].) As described in the attached HGC comments the 180-foot aquifer contains is potable, freshwater less than a mile from the project site. Those comments further explain how the modeling for the project, and thus the DEIR/EIS, assumed the 180-foot aquifer was unconfined despite available information demonstrating otherwise. In fact, the HWG, admitted the 180-foot aquifer is at least semi-confined in the project area. (See HGW Memo, dated June 22, 2015, attached as Exhibit "1".) This error is not insignificant; in fact, this error alone requires re-circulation of the DEIR/EIS with updated modeling. (See HGC comments, p. 36 [describing how change in confinement will dramatically impact modeling – extending the zone of influence/drawdown much further than was modeled and disclosed in the DEIR/EIS].) MCWD-93

(3) The DEIR/EIS fails to provide an accurate and complete description of the 400-Foot Aquifer, stating it "is directly influenced by seawater," which extends for miles inland. (See DEIR/EIS, p. 4.4-11 [citing without reference to undisclosed recent groundwater testing data].) As described in the attached HGC comments [400-foot aquifer contains potable, freshwater less than a mile from the project site]. (See e.g., HGC comments, pp. 57.) MCWD-94

(4) The DEIR/EIS fails to provide an accurate and complete description of groundwater flows and flow direction in the project area. The DEIR/EIS incorrectly suggests that groundwater monitoring from north of the Salinas River shows flows and flow direction in the project area (DEIR/EIS, 4.4-14 - 4.4-16, citing Figures 4.4-5 and 4.4-6.) The cited figures, however, do not cover the project area. (See DEIR/EIS Figures 4.4-5 and 4.4-6.) The DEIR/EIS qualifies this statement for the Dune Sand Aquifer suggesting that while flows in the Dune Sand Aquifer are not known "based on the aquifer depth and geologic structure, it is reasonable to expect that they would be tidally controlled with little to no net horizontal flow in any particular direction." (DEIR/EIS, 4.4-14.) Again, this is inaccurate. As explained in the attached HGC comments, groundwater data show that flows in the Dune Sand Aquifer flow towards MCWD-95

the ocean and thus are protective of seawater intrusion. (See e.g., HGC comments, p. 70; see Figure 6 attached to same.) MCWD-95 cont.

(5) The DEIR/EIS fails to provide an accurate and complete description of seawater intrusion in the project area and the area impacted. Instead, the DEIR/EIS misleads the public into believing all groundwater in the Marina Subarea, in fact the entire SVGB to Salinas, is seawater intruded and has no beneficial uses stating:

> Figures 4.4-10 and 4.4-11 illustrate the seawater intrusion areas as of 2013 within the 180-Foot and 400-Foot Aquifers, respectively (MCWRA, 2015)
>
> … The 2013 estimates of seawater intrusion within the 180-Foot and 400-Foot Aquifers indicate that seawater has intruded to a maximum of approximately 8 miles and 3.5 miles inland, respectively, inferred from chloride concentrations greater than 500 mg/L. The seawater intrusion has resulted in the degradation of groundwater supplies, requiring urban and agricultural supply wells within the affected area to be abandoned or destroyed (MCWRA, 2001).

MCWD-96

(DEIR/EIS, pp. 4.4-28 and 4.4-31.) As explained in the attached HGC Comments and EKI Comments, Figures 4.4-10 and 4.4-11 are inconsistent with monitoring data that shows that numerous wells with area shown to be seawater intruded, in fact, are not. (See also HGC comments, Figures 1-4 attached to same.) Moreover, the HWG itself has acknowledged the lack of data to support the MCWRA inferences. An accurate map of seawater intrusion, particularly within the area affected by the MPWSP's proposed slant wells is needed to understand the project's impacts. In addition, the DEIR/EIS's suggestion that where monitoring and production wells exceed 500 mg/L, there are no beneficial uses for this water must be revised. (See e.g., HGC comments, pp. 56-57.)

(6) The DEIR/EIS references the CCC's Special Condition 11 requiring the HWG to establish baseline water and TDS levels before the test well could commence operations does not save the DEIR/EIS either. The DEIR/EIS provides a hyperlink to the HWG's Technical Memorandum stating it "established baseline water and TDS levels" in the project area. (DEIR/EIS, p. 4.4-42.) The HWG's Technical Memorandum, however, does not establish baseline water or TDS levels in the project area, much less the required baseline levels for Monitoring Well No. 4 (MW-4) and three other monitoring wells within 2,000 feet of the test well as required by Special Condition 11. (See HWG's Technical Memorandum, p. 14.) Rather, the memorandum includes a cursory discussion of water levels at some of the monitoring wells over a period of weeks (id., pp. 11-12) and then provides a section entitled "Recommended Monitoring of Baseline and TDS Levels," which suggests a method for evaluating impacts without actually establishing baseline water levels. (Id., p. 14.) Specifically, the Technical Memorandum states that in order to determine impacts to water levels at MW-4: MCWD-97

> If ground water levels at MW-4 show a continuing downward trend but prior to reaching the threshold prescribed by CDP Condition 11, the test slant well will be voluntarily shut off. If the test slant well is the cause of the downward trend in groundwater levels at MW-4, then groundwater levels will show a recovering trend. If the groundwater levels do not recover, then this is indicative of regional and climatic impacts. The data will be reviewed by the HWG for confirmation and the test slant well will resume pumping. If the ground water levels continue to decline after start up, then the data indicative of impacts other the slant well will be submitted to the Coastal Commission Executive Director, prior to reaching the threshold.

(HWG's Technical Memorandum, p. 14.)

MCWD-97 cont.

Did the DEIR/EIS rely on the Technical Memorandum's methodology for assessing impacts to groundwater levels from the MPWSP slant wells in lieu of establishing baseline water levels?

Please explain how the baseline water levels in the Technical Memorandum were used to refine the groundwater models and inform the analysis of the proposed project.

Please identify the baseline water levels in the Dune Sand, 180-FTE, and 400-FTE Aquifers that were used to evaluate the project's potential groundwater impacts (e.g., with the DEIR/EIS's projected drawdown contours).

Similarly, the HWG's Technical Memorandum does not provide TDS levels in the project area, at MW-4, or at the other monitoring well locations. Instead the memo provides three different methods for conducting TDS sampling and states:

MCWD-98

> Each method prescribed above will be compared with the data collected by that method to determine whether TDS concentrations remain within acceptable levels or show an increasing trend. Seasonal changes in TDS may result from potential seasonal changes in ground water levels aside from changes potentially induced by groundwater extraction from the test slant well. Changes in TDS will also be compared to changes in groundwater levels to evaluate whether TDS changes represent seasonal water quality change in the underlying aquifers.
>
> If two of the three methods used indicate a rising trend in the MW-4 series monitoring wells, the data will be submitted to the HWG for review prior to reaching the threshold prescribed by

> CDP Condition. The HWG will evaluate the data to determine whether rising TDS, should it occur, is a result of TSW pumping or from some other cause.

(See HWG's Technical Memorandum, p. 14-15.)

Did the DEIR/EIS rely on the Technical Memorandum's methodology for assessing impacts to water quality from the MPWSP slant wells in lieu of establishing baseline water quality levels?

Please explain how the baseline water quality levels in the Technical Memorandum were used to refine the groundwater models and inform the analysis of the proposed project.

Please identify the baseline TDS/chloride levels in the Dune Sand, 180-FTE, and 400-FTE Aquifers that were used to evaluate the project's potential groundwater impacts (e.g., with the DEIR/EIS's projected drawdown contours). MCWD-98 cont.

The DEIR/EIS's omissions and misleading statements regarding water levels and water quality in the project area, particularly the Marina Subarea, obscure the project's potentially significant impacts to groundwater. As noted above, the SWRCB found that studies, including aquifer testing, are needed to determine the extent of the Dune Sand Aquifer and to establish accurate baseline conditions. This is also a fundamental CEQA requirement. (See *Cadiz, supra*, 83 Cal.App.4th 74, 86, [holding EIR was not in compliance with CEQA because the EIR does not discuss the volume of the aquifer groundwater, particularly potable water, which is a valuable and relatively scarce resource in the region].)

As the Court explained in *Cadiz*: "Despite the [Project] EIR's enormity and the length of time devoted to preparing it, the EIR is not in compliance with subdivision (c) of CEQA Guidelines section 15125 because the EIR does not discuss the volume of the aquifer groundwater, particularly potable water, which is a valuable and relatively scarce resource in the region. The EIR does not provide a sufficient description of the environmental setting or adequate information for the public and governmental agencies to evaluate whether the [Project] presents a significant adverse impact on the groundwater contained in the aquifer. In order to weigh and evaluate the risk of groundwater contamination, the volume of water subject to contamination is required… In turn, an informed decision cannot be made as to whether it is worth taking the risk of subjecting a valuable water source to contamination." (83 Cal.App.4th at p. 92.) The same is true here. The DEIR has not, but must, disclose the volume of the groundwater in the Dune Sand, 180-FTE, and 400-FTE and Deep Aquifers, particularly potable water, that may be impacted by the MPWSP over the life of the project. MCWD-99

Save our Peninsula Committee v. Monterey County Board of Supervisors (2001) 87 Cal.App.4th 99, 121-122 is also on point. In that case, the court explained that CEQA requires "preparers of [an] EIR [to] conduct the investigation and obtain documentation to support a determination of pre-existing conditions" because "the impacts of the project must be measured against the 'real conditions on the ground.'" There, the developer of a proposed residential subdivision on ranch lands had pumped a significant amount of water in the years right before the start of environmental review, presumably in an effort to establish that water use in existing baseline conditions was already high. The court concluded that "this treatment of baseline water use violated the basic principles of CEQA" because "some of these figures, although generated from recent pumping on the property, did not reflect water actually used for irrigating the property." (*Id.* at pp. 120-121.) The EIR was defective for the further reason that the EIR did not provide a clear, consistent description of historic groundwater use, and thus left the public to guess at the baseline conditions against which the project's impacts were measured.

MCWD-99 cont.

In sum, the DEIR/EIS does not provide an accurate and complete description of existing groundwater conditions and groundwater beneficial uses in the area. Therefore, the DEIR/EIS must be revised and re-circulated to disclose (1) how much groundwater is in the Dune Sand, 180-FTE, and 400-FTE and Deep Aquifers, particularly potable water, that may be impacted by the MPWSP over the life of the project; (2) the baseline water levels in the Dune Sand, 180-FTE, and 400-FTE and Deep Aquifers, in the project area and the areas that will or could be affected by the project; and (3) the water quality in the Dune Sand, 180-FTE, and 400-FTE and Deep Aquifers (percentage that is seawater, brackish, or fresh), that may be impacted by the MPWSP over the life of the project. The DEIR/EIS should also address the importance of the Dune Sand Aquifer as a recharge source for lower aquifers in this part of the Basin (e.g., 180-foot aquifer) and its beneficial use as a protective layer against seawater intrusion. Absent this information, the public and decisionmakers are misled into believing groundwater in the Dune Sand Aquifer has no value or beneficial uses. As a result of the EIR's inadequate description of baseline conditions, the DEIR/EIS fails to fully evaluate impacts to consider potential impacts to the overdrafted Marina Subarea.

i. ***The DEIR/EIS fails to disclose the MPWSP's inconsistencies with applicable State, regional, and local laws and regulations.***

The DEIR/EIS states that Table 4.4-7 describes the state, regional, and local land use plans, policies, and regulations pertaining to groundwater that are relevant to the MPWSP and an analysis of project consistency with such plans, policies, and regulations. The Table, however, does not include any consistency determinations with the regulations described in the Regulatory Section of this Chapter, including the Central Coast RWQCB Basin Plan, the Agency Act, and MCWRA Ordinance 3709. As discussed above in our comments Water Rights, the MPWSP would violate both the Agency Act and Ordinance 3709. This must be disclosed in the Table. The DEIR/EIS should also discuss how the CPUC can approve the project in light of the fact it would violate the Agency Act and MCWRA Ordinance 3709.

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While the DEIR/EIS fails to disclose whether the project would violate the Central Coast RWQCB Basin Plan's water quality objectives, it fails even to mention the project's consistency with Resolution No. 88-63, incorporated by reference into the existing 2011 Water Quality Control Plan for the Central Coastal Basin. (See DEIR/EIS, p. 4.4-32, 4.4-34 and 35.) As noted in our comment on the Water Rights Chapter, Resolution No. 88-63 is Appendix A-9 of the Basin Plan, and is applicable to the proposed project. Resolution No. 88-63 sets forth the following policy regarding surface and ground water within the project area and protects "groundwater considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of:

> 1. Surface and ground waters where:
> a. **The total dissolved solids (TDS) exceed 3,000 mg/L** (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or
> b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
> c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day."

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(Emphasis added.) The DEIR/EIS, however, suggests that only the ASR Wells for the project are required only to be consistent with the Basin Plan's groundwater quality objectives, suggesting any groundwater extractions that impact groundwater quality and groundwater that currently does not meet drinking water standards does not have value and cannot be significantly impacted. This is inaccurate. The DEIR/EIS must discuss the amount of water within the project area that is suitable, or potentially suitable, for municipal or domestic water supply and how the project will impact these supplies. Without this information, it is impossible for the public and decisionmakers to understand whether the project, as proposed, would violate the Basin Plan.

j. *The Analysis of Groundwater Impacts Is Based on Unreliable Modeling Rather than Substantial Evidence*

On Pages 4.4-39 through 4.4-52, the DEIR/EIS describes the investigation of groundwater conditions and modeling, and provide the following assessment of the "Limitations of Groundwater Models" at Page 4.4-44:

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> Groundwater models simulate aquifer conditions based on a specific set of data that describes parameters such the subsurface characteristics, groundwater flow, and land use. The more robust the data set, the more capable the model will be to accurately simulate subsurface conditions. Most groundwater models use conservative input parameters so that the output overstates the

> actual aquifer response. Nevertheless, groundwater models are mathematical-based computer programs that rely on input parameters and, consequently, there is a degree of uncertainty. However, the models used to analyze the proposed project have been used previously and have benefited from input data derived from site-specific subsurface information. Given that, and given the fact that these models were calibrated with known data, the level of degree of uncertainty for this analysis is considered tolerable.

As discussed in GeoHydros and HGC comments, the level of degree of uncertainty in the DEIR/EIS's modeling is intolerable given the DEIR/EIS's failure to adequately investigate baseline conditions in the Marina Subarea and to utilize the best available information. The DEIR/EIS decision to abandon all the prior modeling efforts and use the superposition model renders the DEIR/EIS's groundwater analysis fatally defective. First, it the superposition model does not fix or improve the problems with the DEIR/EIS's modeling or its reliability. (See HGC Comments, p. 4; GeoHydros, p. 5.) Rather, it is an improper attempt to mask those problems. (*Ibid.*) Moreover, as explained in the GeoHydros Comment, the superposition modeling is inappropriate here because: MCWD-102 cont.

- it precludes the identification of source water of the MPWSP slant wells, which is a key issue with the application;
- it precludes prediction of measurable groundwater elevations associated with the proposed MPWSP slant wells pumping, which would provide the only means for stakeholders to validate the model predictions and potential project impacts;
- it is unnecessary because it provides no benefit in terms of reliability over the use of the calibrated version of the model for impact assessment, would identify source water of the MPWSP slant wells and predict of measurable groundwater elevations associated with the proposed MPWSP slant wells pumping; and
- it not reliable here to simulate cones of depression in the aquifers created by the proposed MPWSP pumping.

Without addressing the limitations of the superposition model, on Page 4.4-68 the DEIR/EIS concludes:

> **Conclusion of Impact Analysis - Depletion of Groundwater Supply from the SVGB**
> The proposed project would not deplete groundwater supplies; it would extract primarily seawater and a smaller volume of brackish inland groundwater from a localized area with only minor localized groundwater drawdown. The area influenced by the MPWSP groundwater pumping is within a zone that is degraded by seawater intrusion and therefore unusable for potable water supply due to its high salinity. When desalinated

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> water is returned to the basin as part of the MPWSP, groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD, and adjacent areas would improve as water levels increase as a result of in-lieu groundwater recharge. 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. The effects of return water on the basin water levels are discussed below and shown on Figures 4.4-14 through 4.4-16. If the proposed project did not return any water, localized depressed groundwater levels would persist in the three affected aquifers throughout the life of the project. However, the area affected by groundwater pumping would remain localized and the proposed project would continue to extract only brackish, degraded groundwater from the coast and, to a lesser extent, the inland portion of the aquifer. Based on the conclusions of this analysis, this impact would be less than significant.

MCWD-103 cont.

As addressed in the HGC comments, EKI Comments and GeoHydros Comments, the DEIR/EIS's impact conclusion is not supported by substantial evidence. The DEIR/EIS's modeling must be updated to accurately quantify the amount of groundwater that will be pumped and required to be returned to the basin. The modified modeling must also take into account the semi-confined condition of the 180-FTE Aquifer and the elevated head conditions in the semi-perched Dune Sand Aquifer. As noted in the HGC comments, the DEIR/EIS's conclusion does not recognize existing conditions that have developed since cessation of coastal pumping, including protective water levels in the Dune Sand Aquifer along the coast. In addition, Groundwater production should be calculated to include the 3,000 mg/l beneficial use standard provided in the WQCP. The method of groundwater return to the basin must also be specifically indicated and analyzed to determine the effectiveness of its mitigation for the project's groundwater impacts on the Marina Subarea. In additional, the DEIR/EIS must be revised to include a mandatory mitigation measure that requires adequate monitoring to detect changes to groundwater levels and quality in the Marin Subarea. The mitigation must also include a meaningful performance standard to ensure impact to the Marina Subarea remains less than significant. The current Applicant Proposed measure does not satisfy these fundamental CEQA requirements.

Finally, the DEIR/EIS's conclusion that the project impacts to Groundwater Quality is less than significant, as mitigated, is inadequate and must be updated based on new modeling results. As discussed in HGC's comments, EKI Comments. and GeoHydros Comments, the DEIR/EIS impact conclusions relating to groundwater quality are fundamentally flawed and based on modeling incapable of addressing impacts to water quality. In addition, the DEIR/EIS failure to consider the level of confinement in the Marina Subarea, particularly in

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the areas near existing groundwater remediation systems, renders the DEIR/EIS impact conclusion unsupportable.

Nor does the Mitigation Measure Mitigation Measure 4.4-4 mitigate away this failure. Mitigation cannot be deferred until after project approval except under very limited circumstances. CEQA permits deferral of mitigation only when: (1) an EIR contains criteria or performance standards to govern future actions; (2) practical considerations preclude the development of earlier measures; and (3) the lead agency has assurances that the future mitigation will be both “feasible and efficacious.” (*Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 95 (*CBE v. City of Richmond*). Mitigation Measure Mitigation Measure 4.4-does not meet these standards. First, it is unclear by whom and when the required “determination be made regarding the possibility that the project pumping could affect the extent of the plumes.” (DEIR/EIS, p. 4.4-89.) Second, the mitigation states that “In the event that the analysis concludes that the proposed slant wells may affect the extent of the OU1 TCE A-Aquifer Plume and the two OUCTP plumes, then the project applicant shall contact and work with the U.S. Army to address the potential impact by reimbursing the Army for the additional costs to expand the existing treatment systems to include remediating areas where the slant wells have migrated the contamination to previously remediated areas.” (Ibid.) Thus, the mitigation is improperly left completely in the discretion of CalAm in violation of CEQA. MCWD-104 cont.

In summary, the DEIR/EIS’s inadequate investigation and disclose of baseline conditions in the Marina Subarea and flaws in its modeling, make it impossible for the public or CPUC to make an informed decision on the project’s potential groundwater impacts. As discussed in the HGC Comments, EKI Comments and GeoHydros Comments, the MPWSP will cause significant adverse impacts to groundwater supplies and water quality in the Marina Subarea that must be disclosed in a revised DEIR/EIS. After those impacts are disclosed, the DEIR/EIS must adopt all feasible mitigation or an alternative that would reduce these impacts to a less than significant level. MCWD-105

k. ***The DEIR/EIS’s cursory treatment of cumulative impacts does not comply with CEQA or NEPA.***

The DEIR/EIS concludes using a simple list approach the Project’s cumulative groundwater impacts are less than significant stating: MCWD-106

> Because the MPWSP combined with the possible RUWAP desalination element would not result in a significant adverse cumulative impact and may have beneficial consequences, and the Salinas Valley Water Project Phase II and the Interlake Tunnel would have beneficial effects, the cumulative effect of these four possible projects on groundwater resources would be less than significant. Therefore, the proposed project would not

> have a cumulatively considerable contribution to a significant cumulative impact during operations (less than significant).

(DEIR/EIS, p. Page 4.4-90.) The DEIR/EIS's approach to assessing cumulative groundwater impacts is inconsistent with both CEQA and NEPA requirements.

An EIR must analyze cumulative impacts because "the full environmental impact of a proposed project cannot be gauged in a vacuum." (*Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 114 ("*CBE v. Resources Agency*").) The CEQA Guidelines define cumulative impacts as "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects." (Guidelines, § 15355, subd. (b).) Thus, impacts that are "individually minor" may be "collectively significant." (*Ibid.*)

CEQA requires a lead agency to undertake a two-step cumulative impacts analysis. First, the agency must consider whether the combined effects from the proposed project and other projects would be cumulatively significant. Second, the agency must then consider whether the "proposed project's incremental effects are cumulatively considerable." (*CBE v. Resources Agency, supra*, 103 Cal.App.4th at p. 120; Pub. Resources Code, § 21083, subd. (b)(2); Guidelines, §§ 15355, subd. (b), 15064, subd. (h)(1).) This two-part analysis reflects the legal and empirical reality that "the greater the existing environmental problems are, the lower the threshold should be for treating a project's contribution to cumulative impacts as significant." (*CBE v. Resources Agency*, *supra*, Cal.App.4th at p. 120.) Cursory statements of an agency's conclusions are inadequate under CEQA. (*Laurel Heights II*, *supra*, 6 Cal.4th at p. 1124.) The DEIR/EIS's analysis of cumulative impacts to the SVGB violates these CEQA principles in several important ways as discussed below. MCWD-106 cont.

Similarly, NEPA requires the agency to consider whether "the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment." (40 C.F.R. § 1508.27, subd. (b)(7).) The Council on Environmental Quality (CEQ) NEPA regulations define "cumulative impact" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 C.F.R. § 1508.7.)

The Ninth Circuit frequently cites a NEPA handbook prepared by CEQ—*Considering Cumulative Effects Under the National Environmental Policy Act* [20] (*Considering Cumulative Effects*)—when discussing the adequacy of the cumulative impact analysis in an EIS. (See, e.g., *Kern v. U.S. Bureau of Land Management,* 284 F.3d 1062 (9th Cir. 2002);

[20] / https://ceq.doe.gov/publications/cumulative_effects.html

Te–Moak Tribe of W. Shoshone of Nev. v. U.S. Dep't of Interior, 608 F.3d 592 (9th Cir. 2010); *Northern Plains Resource Council, Inc. v. Surface Transp. Bd*. (9th Cir. 2011) 668 F.3d 1067.) As explained in that document, a cumulative effects analysis should involve a three step process: (1) scoping; (2) describing the affected environment; and (3) determining the environmental consequences. (*Considering Cumulative Effects,* p. 10.) Regarding the description of the affected environment in a cumulative effects analyses, the document explains that a reasonable forecast of future conditions is critical:

> The concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process. The no-action alternative is an effective construct for this purpose, but its characterization is often inadequate for analyzing cumulative effect. Much of the environment has been greatly modified by human activities, and most resources, ecosystems, and human communities are in the process of change as a result of cumulative effects. The analyst must determine the realistic potential for the resource to sustain itself in the future and whether the proposed action will affect this potential; therefore**, the baseline condition of the resource of concern should include a description of how conditions have changed over time and how they are likely to change in the future without the proposed action.**

(*Considering Cumulative Effects,* p. 41, emphasis added.)

MCWD-106 cont.

The CEQ guidance also emphasizes that compiling data on stress factors pertaining to each resource or ecosystem is a critical step in describing the affected environment. (*Id*. at p. 27.) For instance, the handbook explains that while describing the affected environment, "the agency should pay special attention to common natural resource issues that arise as a result of cumulative effects." As an example of such stressors, the handbook cites "aquifer depletion or salt water intrusion following the overdraft of groundwater from numerous uncoordinated uses." (*Id.* at p. 25.) "The goal of characterizing stresses is to determine whether the resources, ecosystems, and human communities of concern are approaching conditions where additional stresses will have an important cumulative effect." (*Id*. p. 29.)

Although "a cumulative effects analysis necessarily involves assumptions and uncertainties," the analysis "must be supported by the best data we have or are able to collect." (*Considering Cumulative Effects,* p. 3; *Oregon Natural Resources Council Fund v. Brong* 492 F.3d 1120, 1134 (9th Cir. 2007) ["cumulative effects analysis requires an agency to predict future conditions"].) "NEPA requires that an EIS engage in reasonable forecasting. Because speculation is ... implicit in NEPA, [courts will] reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." (*Northern Plains Resource Council, Inc. v. Surface Transp. Bd*. (9th Cir. 2011) 668 F.3d 1067, 1079 [also noting that "reasonably foreseeable future actions need to be considered [in a cumulative impact analysis] even if they are not specific proposals."].) Thus, although an agency may explain specific projections with reference to uncertainty in its cumulative impact analysis, "it may not rely on a statement of uncertainty to avoid . . . the requisite analysis." (*Oregon Natural Resources Council Fund v. Brong*, 492 F.3d 1120, 1134 (9th Cir. 2005).)

The DEIR/EIS fails to meet both CEQA and NEPA requirements for the following reasons.

First, the DEIR/EIS's analysis of cumulative impacts fails to account for how groundwater conditions have changed over time and how they are likely to change in the future without the project. In fact, the DEIR/EIS acknowledges its modeling "only solves for the groundwater changes due solely to the proposed project." It goes on to expressly state:

> These changes are independent of the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. By using superposition, the actual effects of only the proposed project can be isolated from the combined effects of all other basin activity. For example, when the NMGWM reports a 1-foot drawdown in a well, it is understood that the one foot of drawdown would be the effect on the basin of the proposed project only. That well may experience greater drawdown due to other stresses, such as drought or other nearby pumping wells, or may experience increases in water levels due to reduced regional pumping or an extremely wet year. But the proposed project's contribution to that drawdown in the well would remain only 1-foot. Superposition is described in Appendix E2, Section 5.2.

MCWD-106 cont.

(DEIR/EIS, p. 4.4-47 and 4.4-49.) The DEIR/EIS suggests this limited approach to figuratively assessing the project's potential cumulative impacts to groundwater is permissible because baseline conditions reflect the contributions of past actions on groundwater resources within the geographic scope. As explained in the attached HGC Comments, this approach ignores that groundwater conditions have changed over time under baseline conditions and will continue to change in the future from other stressors. As noted above, the DEIR/EIS acknowledges this possibility. The fact that the modeling exists and has been run for the project (but the results not disclosed) and that it address these additional stressors is inexplicable. Even if the DEIR/EIS preparers believe this modeling provides flawed results, the information must be disclosed (with an explanation regarding the flawed results) so the public can comment on the information and the decision makers can take it into account.

Second, the DEIR/EIS's cumulative impacts analysis for groundwater supply impacts improperly relies on its discussion in Impact 4.4-3 that groundwater levels would be expected to decrease by 5 or more feet within approximately 1 mile of the MPWSP subsurface slant wells as basis for considering which projects to include in its analysis of cumulative impacts on groundwater supply. Based on this incorrect assumption (see comments on Impact 4.4-3 above), the DEIR/EIS then limits its discussion of cumulative impacts to the Salinas Valley Water Project Phase II (No. 1), the RUWAP Desalination Element (No. 31), and the Slant Test Well Project (No. 47) on the basis that these projects are the only other projects that would overlap with the project's presumed drawdown footprint. It then, without disclosing potential combined drawdown effects of these projects on existing wells, states because these three projects would not result in any net decrease to groundwater within the SVGB there would be no potential cumulative groundwater impacts and adopts the same less than significant conclusion reached for Impact 4.4-3. (DEIR/EIS, pp. DEIR/EIS, pp. 5-22 to 5-24.) This approach is inadequate and must be revised to address the following deficiencies.

- The DEIR/EIS fails to address how the project would impact the SVGB, particularly the Marina Subarea of the SVGB, overdraft conditions and state law requirements for the Groundwater Sustainability Plan that must be adopted to address this issue. (See Chapter 2.0 comments above). It is reasonably foreseeable that at least one Groundwater Sustainability Plan will be adopted that regulates groundwater extractions within the project area. Therefore, the DEIR/EIS must be revised to address and mitigate the project's potential adverse impacts on such a Plan's ability to achieve groundwater sustainability within the project area. (See *Friends of the Eel River*, *supra*, 108 Cal.App.4th at p. 872 [EIR failed to comply with CEQA because its cumulative impacts analysis did not consider potential curtailment of water supplies that could result from regulatory proceedings, which result in "an underestimation of the Agency's ability to meet customer demands without negative environmental consequences."].) MCWD-106 cont.

- The DEIR/EIS also fails to discuss how the project could adversely impact environmental gains realized by ongoing water conservation projects in the area.

- The DEIR/EIS also fails to address how increased water use from many of the regional projects will affect groundwater supplies. The DEIR/EIS incorrectly assumes that only past, present and future "water supply projects" within the radius of influence of the project will impact the SVGB and Marina Subarea. (Guidelines, § 15130, subd. (b) (3).) As explained in the attached technical HGC and EKI Comments, the DEIR/EIS's analysis of cumulative impacts is woefully inadequate in this respect.

- The project fails to look at the cumulative impacts of the MPWSP's test well on groundwater supplies, groundwater quality, and impacts to biological resources. The CCC's approval of the slant well excluded any analysis of the potential long-term impacts of the slant well based on its conclusion is would be decommissioned after 2 years. The DEIR/EIS must be revised to include this analysis, unless the slant test well will be decommissioned as provided for in the CCC approval.

Finally, the cumulative impacts analysis must be revised to consider reasonably foreseeable projects that will be necessary under the SGMA. See discussion of no project alternative (DEIR/EIS, p. 5.5-84 ["Existing, ongoing regional groundwater pumping would continue throughout the Salinas Valley, as would efforts to develop a sustainable groundwater management plan."]). As a result of these failures, the DEIR/EIS does not accurately consider whether the project's impacts to the SVGB are cumulatively considerable. Instead of following CEQA's mandate, the DEIR/EIS here portrays a fundamental misunderstanding of the statute. The document assumes that if the project's impacts related to groundwater are less than significant (which they are not), then the impacts could not be cumulatively considerable. (DEIR/EIS, p. 5-24.) This approach turns cumulative analysis on its head and is a plain violation of CEQA. An EIR may not conclude that a project will not contribute to cumulative impacts simply because it has a less than significant impact on a project level. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720-21.)

MCWD-106 cont.

Therefore, the DEIR/EIS's cumulative analysis must be revised and re-circulated because it was reasonable and practical for the DEIR/EIS to analyze the omitted "past, present, and probable future projects producing related or cumulative impacts," and "their exclusion prevented the severity and significance of the cumulative impacts from being accurately reflected." (Guidelines, § 15130, subd. (b)(1)(A); 124 Cal.App.4th at p. 1215.) The DEIR/EIS's cumulative analysis must also be revised based on updated modeling that does not ignore the best available information regarding groundwater conditions in the project area.

3. *The DEIR/EIS's Analysis of Terrestrial Biological Resources is Inadequate.*

As emphasized by the California Supreme Court, "CEQA broadly defines the relevant geographical environment as 'the area which will be affected by a proposed project.'" (*Muzzy Ranch Co. v. Solano County Airport Land Use Comm.* (2007) 41 Cal.4th 372, 387 (*Muzzy Ranch*), quoting Pub. Resources Code, § 21060.5 ["Environment" means "the physical conditions which exist within the area which will be affected by a proposed project"].) In *Muzzy Ranch*, the Supreme Court flatly rejected the "suggestion that agencies have no obligation under CEQA to consider geographically distant environmental impacts of their activities." (*Id*. at p. 388.) Rather, an EIR must analyze and disclose all potential impacts, both direct and indirect, and cover the entire area where those impacts may occur.

MCWD-107

Here, as explained in the DEIR/EIS, the "study area" for potential impacts to terrestrial biological resources is limited to a 50-foot buffer around the project features. The DEIR/EIS, however, fails to explain why impacts to biological resources would cease at this arbitrary line. At a minimum, the DEIR/EIS must explain and document the screening analysis or other methodology used to develop the study area wherein all potential impacts of the project would be captured. That simply did not occur; the DEIR/EIS fails to comply with CEQA's informational disclosure requirements by not identifying any methodology or providing any explanation for the unduly narrow study area.

In fact, the evidence shows that the study area under in the DEIR/EIS is far too narrow to account for all of the project's potential impacts to terrestrial biological resources. For instance, as demonstrated from the figures showing the "biological study area," the study area boundaries slice right through dune and other coastal habitat. But the DEIR/EIS fails to explain why impacts would only occur on one side of this arbitrary line but not the other. Indeed, it is only logical that entire connected habitat areas would be affected by the project.

MCWD-107 cont.

Moreover, despite acknowledging that the project would result in a substantial lowering of groundwater levels and increased salinity levels in the project area, the DEIR/EIS fails to disclose or evaluate how that drawdown or increased salinity could impact biological resources that depend on groundwater. Indeed, the DEIR/EIS acknowledges that the area of drawdown and increased salinity would span for several miles—much further than the 50-foot study area. There is simply no justification for excluding this entire area from the analysis. It is well recognized that changes in groundwater levels can adversely affect overlying habitat, and groundwater-dependent ecosystems in particular.[21] For instance, as explained in an a series of articles by researchers from Stanford University, California is home to a diverse and widespread number of groundwater-dependent species and ecosystems, which can be significantly impacted by even minor changes in groundwater levels. (See Stanford Woods Institute for the Environment, Understanding California's Groundwater, 2014.) [22] The articles note that impacts of pumping groundwater on ecosystems can be most intense in coastal counties (generally surrounding the existing effects of municipal and agricultural pumping) and that these types of impacts should be analyzed and mitigated under CEQA and NEPA. (*Id.*) To reduce potential impacts, the authors recommend that "if there is potential to adversely affect groundwater-dependent ecosystems, comprehensive monitoring conditions on projects should be linked to clear and specific remedial management actions, like cease-to-pump rules based on quantified ecological triggers." (*Id.*) The DEIR/EIS, however, fails to analyze, or even mention, these types of impacts.

MCWD-108

[21] / See, e.g., The Nature Conservancy, California's Groundwater Dependent Ecosystems, http://www.groundwatercalifornia.org/; Jeannette Howard and Matt Merrifield (2010) Mapping Groundwater Dependent Ecosystems in California, http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0011249.

[22] / Articles are available at: http://waterinthewest.stanford.edu/groundwater/
http://waterinthewest.stanford.edu/groundwater/overdraft/
http://waterinthewest.stanford.edu/groundwater/conflicts/index.html

Further, the DEIR/EIS acknowledges that there are numerous areas identified as "Potentially USACE, RWQCB, and/or CDFW Jurisdictional" waters. But most of these areas, including wetlands, fall outside of the DEIR/EIS's study area boundaries. As explained above, wetlands and similar ecosystems frequently depend on, and are often interconnected with groundwater, particularly when, as here, the groundwater table is close to the surface. The Sanctuary's *Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary* (NOAA, 2010) state that "implementation of subsurface intakes should not cause saltwater intrusion to aquifers ***or adversely affect coastal wetlands that may be connected to the same aquifer being used by the intake***." Nonetheless, the DEIR/EIS makes no attempt to evaluate these potential impacts. As result, the DEIR/EIS fails as an informational document by failing to analyze and mitigate potential impacts to these areas from a lower groundwater table and increased salinity. The CPUC cannot hide behind its failure to gather relevant data. (See *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1378 ["an agency [will] not be allowed to hide behind its own failure to gather relevant data . . . . CEQA places the burden of environmental investigation on government rather than the public."].) And, as explained below, it is insufficient under CEQA to rely on separate regulatory programs or future permitting requirements to justify the failure to analyze and disclose all of the project's potential impacts. (See, e.g., *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 280-281.) MCWD-109

In short, the analysis in the DEIR/EIS must encompass a study area that is supported by substantial evidence and that is adequately explained and justified in the DEIR/EIS. By limiting the biological resources to an arbitrary 50-foot buffer area, the DEIR/EIS fails to meet CEQA's basic requirement of analyzing and mitigating all of the project's potential direct, indirect, and cumulative environmental impacts to biological resources. MCWD-110

l. ***Mitigation Measures for Impacts to Biological Resources Are Inadequate***

The DEIR/EIS's mitigation for impacts to biological resources fails to comply with CEQA's basic requirements for mitigation in several ways. First, the biological resources section is riddled with improperly deferred mitigation. To comply with CEQA, formulation of mitigation cannot be deferred until after project approval except under very limited circumstances. (CEQA Guidelines, § 15126.4, subd. (A)(1)(b).) "Impermissible deferral of mitigation measures occurs when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR." (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 280-281.) CEQA permits deferral of mitigation only when: (1) an EIR contains criteria or performance standards to govern future actions; (2) practical considerations preclude the development of earlier measures; and (3) the lead agency has assurances that the future mitigation will be both "feasible and efficacious." (*CBE v. City of Richmond, supra*, 184 Cal.App.4th at p. 95; see also *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645,669-71 (*Raptor*) [county improperly deferred mitigation when it allowed a land management plan for special status vernal pool species to be developed with the CDFW and MCWD-111

USFWS after certification of EIR]; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1396 [conditioning a permit on "recommendations of a report that had yet to be performed" constituted improper deferral of mitigation].) "Fundamentally, the development of mitigation measures, as envisioned by CEQA, is not meant to be a bilateral negotiation between a project proponent and the lead agency after project approval; but rather, an open process that also involves other interested agencies and the public." (*CBE v. City of Richmond, supra,* 184 Cal.App.4th at p. 93.) Here, many mitigation measures are improperly deferred and the mitigation measures frequently call for the development of future plans or reports, without either setting performance standards or demonstrating how the impact can be mitigated in the manner described in the EIR. MCWD-111 cont.

Second, the mitigation measures are tarnished with impermissible qualifying language for implementation of the measures such as "to the extent practicable" or "where feasible," which renders the measures totally unenforceable. CEQA requires more. "A public agency shall provide that measures to mitigate or avoid significant effects on the environment are fully enforceable. . ." (CEQA Guidelines, § 15126.4, subd. (a)(2); see also *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 444.) MCWD-112

Third, the DEIR/EIS cannot rely on future coordination with other agencies with jurisdiction over biological resources or a requisite future permitting process as enforceable mitigation. (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 280-281.) Similarly, an agency cannot simply rely on future agency consultation or compliance with regulations to support a less than significant conclusion. (*Ibid*.) This is because there is usually no assurance that granting of permits or compliance with regulation will ensure that impacts are mitigated to a less than significant level. For example, just because the USFWS issues an incidental take permit does not mean the project will not have a significant impact on species. In fact, it means the project will likely have adverse impacts on species, but the agency will permit those impacts to occur. MCWD-113

Fourth, the analysis is defective because it fails to explain how the mitigation measures will mitigate the impacts to a less than significant level. Instead, the DEIR/EIS merely states that an impact may be significant generally, then lists some mitigation measures, and then concludes, without explanation or evidentiary support, that the mitigation measures will reduce the impacts to a less than significant level. In other words, the DEIR/EIS improperly assumes that mitigation will be implemented, will be effective, and will mitigate impacts to a less than significant level. This is not appropriate under CEQA. An EIR must include "sufficient information and analysis to enable the public to discern the analytic route the agency traveled from evidence to action." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1397; see also *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645 [improper to assume that mitigation will be implemented as part of the project].) As explained by the California Supreme Court, "[t]o facilitate CEQA's informational role, the [CEQA document] must MCWD-114 contain facts and analysis, not just the agency's bare conclusions or opinions. . . . [It] must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 404.) The absence of this analysis here renders the DEIR/EIS inadequate as an informational document. MCWD-114 cont.

These problems are pervasive throughout the mitigation measures in this section of the DEIR/EIS. Below are several specific examples.

- Mitigation Measure 4.6-1a. Mitigation Measure 4.6-1a requires CalAm retain a biologist to oversee compliance with the avoidance and minimization measures for special status species and sensitive habitats and document certain activities. This measure does little, if anything, to ensure that the mitigation measures are properly implemented and effective. First, rather than allowing CalAm to retain a biologist at its discretion as the measure permits, the CPUC should select a neutral and independent biologist to serve as the Lead Biologist. This would remove any bias, either actual or perceived, on the part of the biologist because the biologist would not be contracted to CalAm. Further, all reports and documentation (including documentation of violations of the measures and compliance reports) must be made available to the public for review and comment on the MPSWP website. Making this information publicly available is the only way to ensure that the measures are being implemented properly and are effective. This is especially true for the monthly summary monitoring reports, which are intended to document the effectiveness and practicality of the prescribed measures and may recommend modifications to the measures. Moreover, language in this measure suggesting that the "prescribed" mitigation measures might not be practical or of effective, raises serious doubts regarding whether the CPUC has fully evaluated whether the proposed mitigation measures are feasible and will be effective *before* project approval, as CEQA requires. MCWD-115

- **Mitigation Measure 4.6-1c**. Mitigation Measure 4.6-1c is rife with language allowing improper deferral and precatory language that severely diminishes the likely effectiveness of the measure. As a consequence, the DEIR/EIS cannot rely on the measure to reduce impacts to a less than significant level. For instance, Mitigation Measure 4.6-1c, subpart (1), requires construction areas to be delineated prior to construction and prohibits construction-related disturbance outside the boundaries only when approved by the Lead Biologist. This is improper deferral. Without any performance standards describing when the Lead Biologist can approve construction-related activities outside of the delineated area, this measure is meaningless. The measure must include performance standards that establish objective criteria for determining when project activities could occur outside the delineated boundary. The measure MCWD-116 should at least require that the additional area be evaluated and delineated before construction activities can occur to avoid impacts. Mitigation Measure 4.6-1c, subpart (5), states that "standard" best management practices ("BMP") shall be employed and provides two examples. To comply with CEQA, however, the measure must state what specific BMPs will be required and include firm language to ensure that the mitigation will be binding and enforceable. MCWD-116 cont.

- Mitigation Measure 4.6-1d. Mitigation Measure 4.6-1d allows construction to occur at the slant well heads and along the segment of the Source Water Pipeline located west of the CEMEX processing plant during the snowy plover breeding season if approved by USFWS. The measure does not include any enforceable criteria or means by which impacts to plover might be avoided or reduced to a less than significant level. The measure must explain under what circumstances the USFWS might approve such activities and why allowing those activities during the breeding season would not impact snowy plover. This measure is especially troubling because the DEIR/EIS recognizes that any construction activities occurring during plover breeding season could affect the species. There is ample evidence showing that any construction activities during snowy plover nesting and breeding season will adversely affect the species. (See e.g., CCC Staff Report[23].) Further, the measure states that if work cannot be completed during the non-nesting season, a qualified biologist must conduct preconstruction surveys to determine if snowy plover nests are present within 300 feet. But there are no measures to implement if snowy plover nests are discovered. Instead, the measure states that the biologist must consult with USFWS to determine any additional measures that should be implemented. This is improper deferral of mitigation. Compounding this error, there are no performance standards that will ensure impacts to snowy plover will not occur. And there is no reason that enforceable mitigation measures cannot be developed now. During non-nesting season, the measure only requires a biologist to "inform CalAm of wintering plover activity" so they can make construction decisions that avoid or minimize disturbance to plovers. This measure too lacks any performance standard to ensure that impacts to plover will be less than significant. Even if an impacts is "minimized," that does not mean that significant impacts will not occur. The measure also states that temporarily impacted habitat must be "restored," but there is no standard for what type or amount of "restoration" would be sufficient to mitigate the impact. Instead, the determination is improperly MCWD-117

[23] CCC Staff Report, November 12, 2014, available at https://documents.coastal.ca.gov/reports/2014/11/W14a-s-11-2014.pdf and CCC Staff Report, October 5, 2015 available at https://documents.coastal.ca.gov/reports/2015/10/Tu15a-10-2015.pdf

deferred to a yet-to-be-prepared Habitat Mitigation and Monitoring Plan. There is no reason that the plan cannot be developed now, before impacts occur, as required by CEQA. And the measure allows CalAm to contribute funds to either a mitigation bank or to an existing restoration program "in lieu" of undertaking restoration actions. But there is no explanation why paying funds would reduce the physical impact to snowy plover and its habitat to a less than significant level. MCWD-117 cont.

- Mitigation Measure 4.6-1e. Mitigation Measure 4.6-1e is riddled with the qualifier "if feasible" which removes any teeth from the measure. If the measure is ultimately determined to be not feasible, it does not need to be implemented. The problem is that the impact conclusion relies on the mitigation measure to reduce the impact to a less than significant level. But since there is no guarantee that the mitigation measure will be implemented and will be effective given the "if feasible" language, it is not appropriate to rely on the measure to support the conclusion. Unless the DEIR/EIS provides firm and enforceable mitigation measures the impact should be found significant and unavoidable. This comment applies to all mitigation measures in this DEIR/EIS that include similar qualifying language. Subpart (2) includes additional flaws. It states that if avoidance is not feasible, additional measures "to be determined" will be implemented. This measure constitutes improper deferral of mitigation. The measures should be identified now and should be imposed as a requirement. Subpart (3) is problematic because it acknowledges the take of protected plant species may occur. If anything, the probability of take and the need for an incidental take permit indicate that a significant impact will occur, even if the take is allowed under the permit. This comment applies for all mitigation measures that acknowledge that a take may occur or that an incidental take permit may be required. Subpart (5) is even worse. It states that compensation in the form of land purchase or restoration "shall be provided to the level acceptable to the resource agencies" and will be determined on a "case-by-case basis." This is deferral of mitigation personified. There is no reason that the minimum level of compensation cannot be established now. The measure must include the minimum level of compensation that would be necessary to mitigate the impact to a less than significant level. Further the measure should include a monitoring program with success criteria to ensure that the compensatory mitigation will actually mitigate the loss of special-status plants. In fact, the very agency that is charged with protecting California's plant and wildlife species—the California Department of Fish and Wildlife (CDFW)—has determined that Mitigation Measure 4.6-1e is not adequate to mitigate impacts to special-status plants. (See CDFW Comments, Julie A. Vance, Feb. 27, 2017.) Among other flaws, DFW explained that reintroduction of sensitive plant species that may be impacted by the project is not recommended for species with sensitive habitats found in the project area and that there is no evidence that the identified MCWD-118 measures will be successful. (*Id*.) DFW concluded that because there is no information in the DEIR/EIS regarding the success of relocation and relocation of sensitive plants, and because that type of mitigation is generally not successful or recommended for various reasons, the primary measure relied on in the DEIR/EIS is not sufficient to mitigate impact to less than significant. (*Id*.) MCWD-118 cont.

- Mitigation Measure 4.6-1f. Like many other mitigation measures in this section, Mitigation Measure 4.6-1f, only requires that construction activities avoid impacts where feasible. As noted above, this makes the mitigation measure unenforceable and the DEIR/EIS cannot rely on it to support the conclusion that the impact is less than significant. The measure attempts to remedy this problem by including additional requirements if it is not feasible to avoid impacts during construction, but the additional requirements are also not proper mitigation. First, the mitigation is improperly deferred because it only requires the biologist to create a relocation plan after the project has already been approved. By deferring development of the plan, including the scope of the survey area and identification of appropriate relocation sites, it is impossible to determine whether the mitigation will be feasible or will be effective. And again, requiring approval of the plan by USFWS does not save the measure. Further, although subpart (5) includes what appears to be an attempt at the type of performance standard necessary for deferred mitigation (e.g., a minimum compensatory ratio of 2:1), the standard is negated entirely by the language allowing an alternate compensatory ratio as "otherwise negotiated with USFWS." The measure must state a firm and specific ratio and explain why that ratio is sufficient to mitigate the impact. This cannot be left up in the air in the DEIR/EIS and then decided at a later date after the project has been approved, even if the ultimate determination is made by USFWS. MCWD-119
- Mitigation Measure 4.6-1g. Mitigation Measure 4.6-1g is improperly deferred because it only requires that a plan for relocation be developed after project approval. There is no reason the relocation plan cannot be developed now before the project is approved. There is similarly no reason why relocation sites cannot be identified and surveyed before project approval to determine if relocation is even feasible. Further, because there is no evidence that relocation is feasible, the DEIR/EIS cannot rely on this mitigation measure to support the conclusion that impacts would be less than significant. Finally, it is unclear whether a biologist would be authorized to perform the required analysis or relocation based on a Scientific Collecting Permit issued by CDFW, since the analysis and relocation is not for scientific study. MCWD-120
- Mitigation Measure 4.6-1h. Mitigation Measure 4.6-1h also constitutes improper deferral of mitigation by requiring plans to be developed after project approval and, like other mitigation measure in this section, is marred by qualifying language such as "if feasible." Further, subpart (5) is MCWD-121

unenforceable because it allows ground-disturbing activities to occur "if otherwise authorized by CDFW." Whether another agency might authorize impacts to occur has no bearing on whether the impact is significant. Further, the mitigation specifies a "buffer distance" to be established based on the "level of disturbance." But the measure is silent as to how the level of disturbance might be determined, why the distances were selected, and how they would reduce impacts to less than significant levels. Subpart (6) is similarly deficient because there are no objective criteria to establish the "level of disturbance" and no explanation why the different buffers would be adequate to mitigate impacts. Subpart (7) is wholly unenforceable because it only includes a recommendation, rather than a requirement, that burrowing owls be excluded from burrows. The measure must use firm language (i.e. "shall") to ensure the mitigation is adopted and enforced. Subpart (8) is inadequate because there is no explanation why the measure would reduce the impact below the significance threshold. It simply requires site monitoring to avoid take. Take is not the threshold of significance for this impact. Even if no "take" occurs, there may still be a significant impact to the species. MCWD-121 cont.

- Mitigation Measure 4.6-1i. Mitigation Measure 4.6-1i suffers several flaws. First, it constitutes improper deferral of mitigation by requiring post-approval plans for mitigation. Second, the measure does not require any pre-construction surveys or avoidance measures for construction activities that would be completed entirely during the non-nesting season, but there is no explanation why construction-related impacts would not occur during that time. MCWD-122
- Mitigation Measure 4.6-1j. Mitigation Measure 4.6-1j is improperly deferred because it allows "suitable buffers" to be determined after the project has been approved (subpart (5)(b)). As explained above, the buffer must be established now and included as specific performance criteria. Further, there needs to be an explanation why the buffer was selected and how it will actually reduce the impact to a less than significant level. Further, the measure should include compensation for any temporary or permanent loss of habitat. MCWD-123
- Mitigation Measure 4.6-1k. Mitigation Measure 4.6-1k is similarly inadequate because it requires the biologist to establish a "suitable buffer area" to avoid impact to woodrat nests (subpart (3)). There is no indication what might be considered a suitable buffer or why the buffer might minimize impacts. Further, subpart (4) is improper because it only requires relocation "to the extent feasible," which removes all enforceability from the measure. The measure then states that if relocation cannot be avoided within the peak breeding season, the lead agency shall contact CDFW for further guidance and CDFW's recommendation will be implemented. This is textbook deferral of mitigation and is prohibited under CEQA. There is no evidence that relocation MCWD-124

is feasible and there are no performance standards included in the mitigation that would ensure impacts are avoided. MCWD-124 cont.

- Mitigation Measure 4.6-1l. Mitigation Measure 4.6-1l states that bat roosts that begin during construction are presumed to be unaffected, and no buffer would be necessary. This statement defies logic and is not supported by any evidence. There are a variety of construction activities that would affect bats in different ways; just because bats may roost during some construction activities does not mean they would be unaffected by other activities. Further, the mitigation prohibits the take of "species," but as explained above, take is not the threshold of significance. Even if there is no take, there still may be significant impacts. MCWD-125

- Mitigation Measure 4.6-1m. Mitigation Measure 4.6-1m requires that facilities shall be sited and construction activities planned to avoid impacts on native stands of Monterey pine, but only "to the extent feasible." Although the mitigation includes additional mitigation if avoidance is not feasible, the success of that mitigation relies on the creation of a plan that details the monitoring requirements and success criteria. These are exactly the type of performance criteria that must be established before project approval if deferral of mitigation is to be permitted. The monitoring requirements and success criteria must be established and explained now to ensure that impacts will not occur. MCWD-126

- Mitigation Measure 4.6-1n. Mitigation Measure 4.6-1n requires CalAm to develop a plan for mitigation after project approval. This too is textbook deferral of mitigation. As explained above, an agency may defer the formulation of mitigation only if, among other requirements, the mitigation includes specific performance criteria that will ensure impacts are minimized. Mitigation Measure 4.6-1n, however, explicitly allows, in fact requires, the post approval plan to include "performance standards by which successful completion of mitigation can be assessed and insured." This is exactly what CEQA prohibits. There is no reason that the mitigation plans cannot be developed now, including the requisite "monitoring plans and schedule" or the "reporting requirements and schedule," for example. Further, the measure allows for compensatory mitigation lieu of active restoration without any explanation why this is feasible or would reduce impacts below the identified significance thresholds. This problem is exacerbated by the fact that numerous mitigation measures reference and rely on Mitigation Measure 4.6-1n to ensure impacts will be less than significant. All of those mitigation measures are therefore inadequate as well. MCWD-127

- Mitigation Measure 4.6-1o. Mitigation Measure 4.6-1o is improperly deferred because it because it allows the relocation plan to be developed after project approval, including the identification of relocation sites. There are no MCWD-128 performance standards to ensure that relocation is successful and, because relocation sites have not been identified, there is no evidence that the mitigation is feasible. Further, the mitigation allows red-legged frogs and tiger salamanders to be relocated according to the improperly deferred relocation plan only if authorized by USFWS and CDFW. There is no assurance that those agencies will authorize relocation of the species and, in any event, it is unlikely they will authorize relocation in all instances. Indeed, CDFW has already commented that the mitigation measures for impact to the California tiger salamander are inadequate and questioned whether the mitigation would be in compliance with Fish and Game Code and the California Endangered Species Act (CESA). (See CDFW Comments, Julie A. Vance, Feb. 27, 2017.) Therefore, the DEIR/EIS cannot rely on this mitigation measure to support the conclusion that impacts will be less than significant. This impact, like many others in this section, should be significant and unavoidable. MCWD-128 cont.

- Mitigation Measure 4.6-1q. Mitigation Measure 4.6-1q is improperly deferred because it only requires a plan to be developed after project approval. The measure acknowledges that a frac-out may occur at the project site, which would cause a significant impact, and only after that occurs would CalAm be required to "consult with" the staffs of the relevant agencies "regarding appropriate incident-specific actions to be undertaken." Again, there are no performance standards or any assurance that this measure would reduce this impact to less than significant. MCWD-129

m. ***The Analysis and Mitigation for Construction-Related Impacts to Habitats, Including Environmentally Sensitive Habitat Areas (ESHAs), are Inadequate***

Under Impact 4.6-2, the DEIR/EIS claims that various habitat areas, including central dune scrub at the subsurface slant well site and beach adjacent to the site, central dune scrub along the Transition Main Alignment, and other habitat areas that will be effected by project components, *may* be considered primary and secondary habitat under the City of Marina Local Coastal Land Use Plan, and *may* be considered ESHA by the CCC. This is a major understatement that renders the DEIR/EIS inadequate as an informational document. These areas include both primary and secondary habitat under the City's Local Coastal Land Use Plan (LCLUP) and is designated as ESHA by the CCC. (These areas have already been established and delineated by the City and the CCC. The DEIR/EIS must disclose all areas designated as primary or secondary habitat by the City or as ESHA by the CCC and fully explain how the project would affect those habitat areas. MCWD-130

Further, as part of the project, CalAm intends to convert the temporary test well at the CEMEX site into a production well for the MPWSP. This slant well is located in ESHA. (See e.g., CCC Staff Report.) But the DEIR/EIS ignores this fact and fails to analyze the long-term impacts to ESHA and snowy plover habitat when the slant well is converted into a production well, as proposed. Instead the DEIR/EIS defers the consideration of these impacts by suggesting these issues will be worked out during the Coastal Development MCWD-131

Permit (CDP) application process. (DEIR/EIS, pp. 4.6-70; 4.6-207.) This is improper deferral of analysis and mitigation under CEQA. Simply stating that the mitigation measures will reduce impacts by "ensuring the project conforms to ESHA policies (including local coastal plan policies)" does not cure this defect. As explained elsewhere, the DEIR/EIS acknowledges that the project will be inconsistent with ESHA policies, including local coastal plan policies. Even if the CPUC or the CCC ultimately decide to override these policies, and are able to make the findings required to do so, that does not mean that significant impacts to ESHA would not occur. Indeed, as acknowledged elsewhere in the DEIR/EIS, the Staff Report for the temporary test well (which will be converted to a production well) found impacts to ESHA and snowy plover habitat to be significant and unavoidable. (DEIR/EIS, p. 6.4-224.) That section of the DEIR/EIS also acknowledges that project facilities "would be inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats," and concludes that this would be "a significant and unavoidable impact." (DEIR/EIS, p. 6.4-224.) Thus, the DEIR/EIS itself is internally inconsistent on this issue.

Moreover, by ignoring the fact that the test slant well (and proposed production well) is already sited in ESHA, the DEIR/EIS overlooks major land use implications. One major oversight in the DEIR/EIS is the fact that the Coastal Act prohibits development in ESHA if there are feasible alternative locations available. (See Pub. Resources Code, § 30260; see also Pub. Resources Code, § 30240, subd. (a) ["Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas."].) Because the DEIR/EIS identifies feasible alternatives sites for the slant wells (see DEIR/EIS Chapter 7, Alternatives), the existing slant well must be decommissioned and relocated if slant wells are approved at the CEMEX site. But this is not explained or evaluated in the DEIR/EIS.

MCWD-131 cont.

The discussion regarding conflicts with numerous policies in the City of Marina's LCLUP is also inadequate. Although numerous conflicts are acknowledged (See, e.g., DEIR/EIS, p. 4.6-219, 4.6-260), there is no explanation of whether they are indicative of environmental impacts or how the conflicts will be resolved. Instead the text refers to the discussion under the various impacts, which are entirely conclusory and inadequate as described above.

Further, the DEIR/EIS fails entirely to explain why these impacts would be rendered less than significant after the mitigation. Indeed, for the reasons explained above, the conclusion is unsupportable and is inconsistent with other impact conclusions in the DEIR/EIS, as noted above. Like many impacts in this section, this impact should be identified as significant and unavoidable.

The mitigation measures proposed under Impact 4.6-2 do not cure these problems. And those mitigation measures are also inadequate for additional reasons. The reasons most of the mitigation measure are inadequate or improper are explained above. The few additional measures included for this Impact 4.6-2 fare no better than the others, and raise a host of additional problems.

- Mitigation Measure 4.6-2a. Mitigation Measure 4.6-2a requires consultation with local agencies and the CCC regarding ESHAs. As noted above, various project elements are proposed in areas already designated as ESHA by the CCC. The DEIR/EIS, therefore, is required to disclose the amount of ESHA that could be disturbed by project activities and the full extent of the potential impacts. This analysis cannot be deferred until after the CPUC approves the project, or be punted to the CCC for later consideration. Moreover, even if the CCC approves a CDP for the project, that does not mean that significant impacts to ESHA will not occur. It would just mean that the CCC decided to make the findings necessary to site the project in ESHA *despite the project's significant impacts*. Even with mitigation proposed in the DEIR/EIS, the impacts to ESHA must be considered significant and unavoidable.

- Mitigation Measure 4.6-2b. Mitigation Measure 4.6-2b only requires the construction contractor(s) to implement the identified avoidance and minimization measures "to the extent feasible." As explained above, this qualifying language renders the measure wholly unenforceable and inadequate under CEQA. Further, the measure requires restoration and compensation in accordance with Mitigation Measure 4.6-1n, which is improper deferral of mitigation, as explained above. There is also no evidence that this mitigation measure is feasible and no explanation why it would be effective. Furthermore, as explained in *Bolsa Chica Land Trust v. Superior Court* (1999) 71 Cal.App.4th 493, 507, impacts to ESHA cannot be mitigated through compensatory mitigation: "the language of section 30240 does not permit a process by which the habitat values of an ESHA can be isolated and then recreated in another location. Rather, a literal reading of the statute protects the area of an ESHA from uses that threaten the habitat values, which exist in the ESHA. Importantly, while the obvious goal of section 30240 is to protect habitat values, the express terms of the statute do not provide that protection by treating those values as intangibles which can be moved from place to place to suit the needs of development. Rather, the terms of the statute protect habitat values by placing strict limits on the uses which may occur in an ESHA and by carefully controlling the manner uses in the area around the ESHA are developed." The mitigation for impacts to ESHA and snowy plover habitat should be revised and the impact conclusion should be changed to significant and unavoidable.

MCWD-131 cont.

Finally, as explained previously, the mitigation measures for impacts to special-status bird species is grossly inadequate. CDFW agrees. (See CDFW Comments, Julie A. Vance, Feb. 27, 2017.) Because there is no evidence that the mitigation measures will be effective and no explanation how they will avoid or reduce the impact to a less than significant level,

MCWD-132

the DEIR/EIS cannot rely on the measures to support the conclusion that impacts will be less than significant. MCWD-132 cont.

n. ***The Analysis and Mitigation for Construction-Related Impacts to Wetlands and Other Jurisdictional Waters is Inadequate***

The DEIR/EIS's analysis of impacts to federal wetlands, federal other waters, and/or waters of the state during construction, suffers numerous flaws. Foremost, as explained above, the DEIR/EIS fails to analyze impacts to all of the wetlands and other jurisdictional waters that could be affected by the project. Although the DEIR/EIS identifies numerous areas that likely constitute jurisdictional waters under the state and federal definitions in close proximity to many project components, the DEIR/EIS fails to analyze impacts to those areas because they are located outside the arbitrary 50-foot study area. There is no explanation or evidentiary support for why the wetlands or other waters beyond 50-foot line would not be affected during construction or operation of the project. MCWD-133

Further, the mitigation included under Impact 4.6-3 suffers the same problems identified above for the other measures in this section of the DEIR/EIS. Most notably, the mitigation is improperly deferred and there is no explanation of why the mitigation is feasible and will be effective. Accordingly, the conclusion that impacts will be mitigated to a less than significant level is not supported by substantial evidence.

- Mitigation Measure 4.6-3. Mitigation Measure 4.6-3 calls for a wetland delineation to be conducted after project approval to determine the extent of jurisdictional waters that will be affected by the project. Because wetlands were not delineated prior to or concurrently with the preparation of the DEIR/EIS, the analysis of potential impacts is perfunctory. There is no way the reader or the CPUC can comprehend the full and accurate extent of potential impacts. Further, the mitigation measure states that compensation shall include the preparation of a Wetland Mitigation and Monitoring Plan (WMMP) to be prepared after project approval. The WMMP will include baseline information, monitoring methods and schedule, and "performance and success criteria." Problems with this measure abound. First, establishing the baseline is the first step in the analysis and cannot be deferred under any circumstance. Second, performance and success criteria must be included as part of the measure itself, if deferral of mitigation is to be permitted. Simply put, this measure does not comply with CEQA's most basic requirements. MCWD-134

o. ***The Discussion of Operation-Related Impacts and Mitigation Measures Are Inadequate.***

The DEIR/EIS states that any disturbance associated with pipeline repairs cannot be determined and therefore is not analyzed at all in the DEIR/EIS. (DEIR/EIS, p. 4.6-234.) CEQA, however, requires analysis of all components of the project and potential impacts that are reasonably foreseeable. Because CEQA is interpreted to afford the fullest possible MCWD-135 protection of the environment (*Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 259), this is a low bar. As acknowledged in the DEIR/EIS, at least some level of repair work is reasonably foreseeable. Therefore, the DEIR/EIS must at least disclose in general terms the type of repair work that is expected and the potential for environmental impacts. MCWD-135 cont.

Impact 4.6-6 states that noise or disturbance from maintenance activities could directly or indirectly impact wintering plovers. (DEIR/EIS, p. 4.6-235.) But there is no analysis of what potential impacts might occur. Instead the DEIR/EIS attempts to justify the lack of analysis by suggesting impacts would be only short-term and temporary. But CEQA requires analysis of all potential environmental impacts including those that are only short-term or temporary. There must be a full discussion of impacts to snowy plover from maintenance and operations of the project. MCWD-136

Impact 4.6-6 also acknowledges that, over the life of the project, "migratory waterfowl could become sick or die from use of the brine storage basin, a significant impact." (DEIR/EIS, p. 4.6-237.) But the mitigation relied on to mitigate this impact only provides that bird deterrents "should" be utilized at the Brine Storage Basin, the type of bird deterrent "should" be determined by the lead biologist, and "should" be modified if the bird deterrents are either not sufficient at deterring birds from the Brine Storage Basin or pose a risk to wildlife. Because there is no mandatory language in the measure, it is entirely unenforceable. For that reason alone, the DEIR/EIS cannot rely on the mitigation measure to reduce the impact to less than significant. Moreover, the only evidence cited to support the measure is a single sentence stating that "bird deterrent measures (such as use of a falconer, bird whistles, and fine ropes placed over the pond) are used at the adjacent MRWPCA Regional Wastewater Treatment Plant to successfully deter most birds from their ponds," without explaining what "most" birds means. (DEIR/EIS, p. 4.6-237.) Thus, the DEIR/EIS acknowledges that the project will cause an unquantified number of birds to die, but because deterrent devices implemented for another project (similar to those recommended but not required here) successfully deterred most birds (ostensibly meaning more than half), the impact is considered less than significant. This explanation is entirely inadequate under CEQA. What amount of dead birds does the DEIR/EIS consider to be a significant impact? MCWD-137

The DEIR/EIS also fails to disclose impacts to wildlife species that would result from erosion control measures. Notably, as explained in comments from CDFW, the use of certain types of erosion-control methods would likely cause impacts to several species, including reptile and amphibian deaths. This potential impact is ignored entirely. The DEIR/EIS must analyze these potential impacts and require mitigation measures to ensure that the impacts are avoided or reduced. MCWD-138

Moreover, the DEIR/EIS fails to address whether impacts would occur to special status plants and other species that depend on groundwater. Indeed, the DEIR/EIS fails to address any impacts to groundwater-dependent ecosystems despite acknowledging that the project would result in substantial drawdown of groundwater levels and an increase in MCWD-139 salinity levels. These types of changes would obviously have an impact on overlying habitat and species. But these potential impacts are ignored entirely in the DEIR/EIS. MCWD-139 cont.

To address impacts that are identified as significant, the DEIR/EIS relies on many of the same mitigation measures that are fatally defective for the numerous reasons described above. The additional mitigation in this section suffers many of the same problems. There is no explanation why the mitigation measures are feasible or how they will be effective and how they will mitigate the impact to a less than significant level. Again it is not sufficient to acknowledge a significant impact will occur, then list a number of mitigation measures, and then baldly assert that the mitigation will reduce the impacts to a less than significant level. The DEIR/EIS must explain why the selected mitigation measures will work and the conclusion must be supported by substantial evidence. This critical component of the CEQA analysis is missing from every impact discussion in this section.

MCWD-140

Impact 4.6-6 and Impact 4.6-7, in particular, rely on the same mitigation measures that are inadequate for the reasons described above. Like the other impacts in this section, there is no supporting evidence at all and no explanation regarding how the mitigation will work and why the impacts will be reduced to a less than significant level. This is a plain violation of CEQA and renders the DEIR/EIS inadequate as an informational document.

p. ***The Analysis and Mitigation for Operations-Related Impacts to Wetlands and Other Jurisdictional Waters is Inadequate.***

Impact 4.6-8 purports to analyze adverse effects on federal wetlands, federal other waters, and/or waters of the state during project operations. But the discussion only addresses impacts related to ground disturbance and maintenance activities. There is zero discussion regarding how the ongoing operation of the facilities (i.e., pumping groundwater) will impact wetlands and other jurisdictional waters overlying the groundwater aquifers. The notion that the significant drawdown caused by the project in the groundwater aquifers underlying, and likely hydrologically connected to, the wetlands and other jurisdiction waters would have no impact defies logic. As noted above, by lowering the groundwater table and increasing salinity levels, the project would likely impact those wetlands and other waters. Yet the DEIR/EIS is silent on this potential impact.

MCWD-141

This failure further demonstrates that the 50-foot study area is arbitrary and fails to account for all of the project's potential environmental impacts, as described above. Despite the fact that the DEIR/EIS identifies numerous areas that are potential wetlands or other jurisdictional waters in close proximity to the project, the DEIR/EIS does not analyze potential impacts because the features are beyond the 50-foot line. Even if the 50-foot study area could be justified for surface impacts (as explained above, it cannot) the underground (i.e. groundwater) impacts undeniably extend much further. Indeed, the maps in the DEIR/EIS show that the groundwater levels would decline by substantial amounts over the span of several miles—not just within the 50-foot study area. But there is no discussion regarding how changes in groundwater levels, or increases in salinity levels, could affect overlying wetlands or other groundwater-dependent ecosystems. The DEIR/EIS must be revised to analyze these potential impacts and identify feasible mitigation measures that will reduce the impacts.

Moreover, as with other impacts in this section, the DEIR/EIS relies on mitigation measures that are woefully inadequate to support the conclusion that these impacts would be less than significant with mitigation. The reasons that these mitigation measures are inadequate are described above. Notably, the measure constitute improper deferral of mitigation, lack enforceable standards, and improperly rely on other agencies' regulatory programs without any explanation how the mitigation measures will reduce the impacts to a level of insignificance. MCWD-141 cont.

q. ***The Discussion Regarding Consistency with an Adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or Other Approved Habitat Conservation Plan is Inadequate.***

As explained in the DEIR/EIS, the preparation of an HCP for the former Fort Ord military base, which will supersede the current Fort Ord Habitat Management Plan, was already underway when the DEIR/EIS was published and was expected to be complete in late 2016. (Draft EIR, p. 4.6-252.) Because the HCP was not yet adopted, the DEIR/EIS claimed that the requirements and mitigation measures cannot be known at this time. (*Id*.) Even if that was true then, the information is available now or should be before project approval is considered. Therefore, the Final EIR must analyze whether the project is consistent with the HCP for the former Fort Ord military base. MCWD-142

This impact also relies on the same mitigation measures that are inadequate for numerous reasons described above. Mitigation Measure 4.6-8 fares no better. The mitigation requires only that CalAm implement certain vague measures, "unless otherwise negotiated between CalAm and FORA." As explained previously, CEQA does not allow for project proponents to "negotiate" mitigation measures after project approval. (*CBE v. City of Richmond, supra*, 184 Cal.App.4th at p. 93 ["Fundamentally, the development of mitigation measures, as envisioned by CEQA, is not meant to be a bilateral negotiation between a project proponent and the lead agency after project approval"].) Instead the measures must be fully enforceable at the time the project is approved and must identify specific performance criteria that ensure the impact will be less than significant. Mitigation Measure 4.6-8 does neither.

r. ***The Discussion of Cumulative Impacts is Inadequate.***

The cumulative impacts analysis is a mass of flaws. Foremost, the DEIR/EIS improperly relies on the significance conclusions for project-specific impacts to conclude that the cumulative impacts would not be cumulatively considerable. This approach has been rejected by the courts time and again. (See, e.g., *CBE v. Resources Agency* (2002) 103 Cal.App.4th 98,120; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 721.) Just because a project does not cause a significant impact by itself, does not mean MCWD-143 that the project contribution to a cumulatively significant impact is not cumulatively considerable. Indeed, as recognized in the CEQA Guidelines, a project's incremental effects may be cumulatively considerable even when its individual effects are limited. (CEQA Guidelines, §§ 15130, 15064, subd. (h)(1), 15355, subd. (b).) (*Ibid*.; see also *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th 1059, 1072 ["Under CEQA, a project having no significant effect on the environment when considered by itself may nonetheless have such an impact when considered in conjunction with-or cumulatively to-other past, existing or planned environmental influences. (CEQA Guidelines §§ 15130, subd. (a), 15064, subd. (h)(1))."].) But, here, the DEIR/EIS states that because certain project-specific impacts are mitigated to a less than significant level, the project's impact is not cumulatively considerable. This does not comply with CEQA's cumulative impact requirements.

For other cumulative impacts, the DEIR/EIS concludes that the project's contribution to a cumulative significant impact would not be cumulatively considerable because the project's contribution to the impact would be relatively small. For instance, the DEIR/EIS concludes that the project's contribution to cumulative impacts on wetlands or other waters would not be cumulatively considerable because, after mitigation, the MPWSP's residual effects "would be temporary and limited to a small percentage of wetlands habitat in the geographic scope of analysis." (DEIR/EIS, p. 4.6-260.) The courts have routinely rejected this type of "ratio" or "drop-in-the-bucket" methodology. (See *CBE v. Resources Agency* (2002) 103 Cal.App.4th 98,120; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 721.) Under this reasoning, each cumulative project could individually gobble-up only a small percentage of the available wetlands until all of the wetlands are gone, but none of the projects' impact would be considered cumulatively considerable. This is impermissible under CEQA.

MCWD-143 cont.

Moreover, even if the methodology used in the DEIR/EIS was appropriate under CEQA, the cumulative impacts analysis is tainted by the DEIR/EIS's failure to adequately fully analyze and disclose all of the project-specific impacts on terrestrial biological resources, as explained above. And the cumulative impacts analysis relies on the same mitigation measures that, as already explained, are inadequate under CEQA. The EIR also fails to consider how the habitat restoration required under the CEMEX reclamation plan will be affected by the project. In fact the DEIR/EIS fails disclose or acknowledge the existence of the reclamation plan and associated revegetation plan for the CEMEX site, which requires restoration or slopes and successful revegetation in the areas that will be affected by the project. (See RMC Lonestar, Reclamation Plan, Lapis Plant, City of Marina, County of Monterey: dated August, 1989; revised October 22, 1988 (Items Nos. 22, 27 and 29) and April 10, 1991 (Items Nos. 20, 22, 27 and 28); see also Burleson Consulting, Inc., 2016, 2016 Annual Revegetation Report, Lapis Sand Plant, Marina California, report prepared for CEMEX by Burleson Consulting, Inc., dated December 2016). Notably, no active mining is occurring in the area where the slant wells are proposed and "significant portions of the dune slopes previously mined in the southern portion of the property are considered to have met

MCWD-144

reclamation requirements." (see 2016 SMARA Mine Inspection Lapis Sand Plant, CA MINE ID No. 91-27-0006, City of Marina, California, December 9, 2016, available at ftp://ftp.consrv.ca.gov/pub/smgb/February-08-2017/19%20RBM%2002082017-12B-1%20Lapis%20Plant%20(91-27-0006).pdf.) The DEIR/EIS must be updated to disclose how the project will impact reclamation and revegetation requirements for the CEMEX site. MCWD-144 cont.

Finally, the cumulative impacts analysis is woefully light on information. Although the discussion notes that cumulative impacts may occur, there is no quantification of impacts or other information or data that would allow the reader or the CPUC to understand the extent of those impacts. As explained previously, conclusory statements without explanation and evidentiary support do not suffice. MCWD-145

4. *The DEIR/EIS's Discussion of Coastal Erosion Impacts is Inadequate*

The DEIR/EIS reveals that there is a likelihood coastal retreat could migrate the beach inland such that the subsurface slant well casings, concrete well head vaults, electrical panels, and certain sections of conveyance pipelines would become located on the beach within the project lifetime. (DEIR/EIS, pp. 4.2-48 through 4.2-52; 4.2-68 through 4.2-69.) The DEIR/EIS further acknowledges that the exposure of the project components to wave action, storm events, and rip embayments could alter the existing natural beach dynamics and the coastal environment, resulting in an increase in beach erosion and/or an interruption in the sand supply to other beaches along the Monterey Bay. The DEIR/EIS, however, fails to adequately analyze the potential for such impacts and fails to include adequate mitigation or alternatives to minimize or avoid those impacts.

The DEIR/EIS states the coastal retreat study (ESA, 2014 – Appendix C-2) anticipated that the subsurface slant wells in the CEMEX active mining area could become located on the beach within the project lifetime. It further states coastal retreat study assumes a worst case scenario for planning purposes; the actual amount or rate of coastal retreat could be less. (DEIR/EIS, pp. 4.2-69.) While perhaps this was accurate in 2014, the failure to update this study based more recent information violates the CEQA and NEPA. For example, we understand the annual erosion rate of 2014 at the CEMEX coastline nearly doubled from 220,000 to 380,000 cubic feet in 2016. Does the DEIR/EIS account for this? Moreover, the public cannot determine what annual erosion rate was used in the DEIR/EIS. What annual erosion rate was used in the DEIR/EIS and Appendix C-2? Is the 15 feet of scour that was observed around the exposed section of the outfall during the winter storm surge in early March 2016 that exposed the buried slant test well connection to the MRWPCA ocean outfall pipe (see DEIR/EIS, p. 4.2-22) consistent with the 2014 coastal retreat study projections? In addition, the DEIR/EIS's failure to use available computer-aided modeling as identified in Appendix C-2 is inconsistent with CEQA and NEPA's requirements. MCWD-146

Figures 4.2-7 and 4.2-8 appear inaccurate and may mislead the public and decision makers. Is the current test well head 30 feet in elevation from the intertidal zone as shown in MCWD-147

Figures 4.2-7? Does Figure 4.2-8 (which claims to be a representative image) representative of all each slant well location and the slant well that would most likely be impacted by coastal retreat? MCWD-147 cont.

The DEIR/EIS states the final design locations for the slant wells were relocated approximately 400 feet further inland from the originally proposed locations to the locations shown on Figures 4.2-7, 4.2-8, and 3-3. (DEIR/EIS, p. 4.2-69.) Therefore, the DEIR/EIS concludes the proposed slant wells would not be exposed during the operational life of the slant production wells (anticipated to be 20 to 25 years) and would not contribute to further coastal erosion or changes in the beach environment. The use of the 20- to 25-year operational life for the slant wells to evaluate this impact is not consistent with the other sections of the DEIR/EIS, which never mention the potential for the slant wells being deconstructed (with the exception of the existing test well) or reconstructed over the 40 year life of the project. This inconsistency must be addressed in the revised DEIR/EIS. MCWD-148

The DEIR/EIS states that the anticipated future presence of the test slant well on the beach due to coastal retreat would result in a significant impact, but that Mitigation Measure 4.2-9 (Slant Well Abandonment Plan) would reduce the impact to a less-than-significant level by requiring CalAm to monitor coastal retreat rates and initiate well decommissioning before the beach migrates inland to the location of the subsurface slant wells. (DEIR/EIS, pp. 4.2-71 through 4.2-72.) This conclusion is not supported by the DEIR/EIS's discussion. Moreover, the mitigation measure does not meet CEQA's requirements.

First, the Mitigation Measure 4.2-9 impermissibly delegates to CalAm the responsibility for annual monitoring of the rate of coastal retreat relative to the slant wells at the CEMEX site and the discretion to determine when the slant wells and associated pipelines have 5 years before exposure. (DEIR/EIS, p. 4.2-72.) There is not oversight or public reporting requirement. This violates CEQA requirements that "[m]itigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments." (*Center for Biological Diversity v. California Dept. of Fish and Wildlife* (2015) 62 Cal.4th 204, 237 [citing Guidelines § 15126.4, subd. (a)(2)].) MCWD-149

Second, the mitigation measure states the sections of slant well casing and pipelines at risk of exposure shall be cut and removed to a depth of five feet below the 2060, 100-year lower profile envelope as determined by the 2014 Coastal Erosion Study (ESA, 2014) or as directed by any permit condition. (DEIR/EIS, p. 4.2-72.) This constitutes improper deferral of mitigation and fails to address that the Coastal Erosion Study concludes (albeit inadequately) that none of the slant wells casings or pipelines (with the exception of the test well) would be uncovered with the time period specified in the mitigation measure. Moreover, deconstruction of the test well and slant wells to a depth that they would not result in additional coastal erosion in the foreseeable future after the project is completed must also be addressed. What happens if the slant wells casings or pipelines are uncovered after 2060?

Finally, this high likelihood of exposure of the test well structures is enough reason to decommission the test well as required by the CCC in February 2018 or sooner. MCWD-149 cont.

5. The DEIR/EIS's Discussion of Land Use Impacts Fails to Disclose or Analyze the Numerous Land Use Conflicts

Under CEQA, an EIR must discuss any inconsistencies between a proposed project and applicable general plans, specific plans, and regional plans. (CEQA Guidelines, § 15125, subd. (d).) A project is consistent with a plan "if, considering all its aspects, it will further the objectives and policies of the . . . plan and not obstruct their obtainment." (*FUTURE v. Board of Supervisors* (1998) 62 Cal.App.4th 1332, 1336.) In *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App.4th 342, the court rejected the county's claim that a project was consistent with local plans because the EIR at issue did not "contain an adequate *discussion*" of local plan consistency. (*Id.* at p. 381, emphasis added.) The purpose of the required analysis is to identify any inconsistencies and to evaluate and consider ways to modify the project to avoid them. (*Orinda Assn. v. Board of Supervisors* (1986) 182 Cal.App.3d 1145, 1168-1169 [referencing EIR discussion of plan inconsistencies and mitigation measures to avoid them].)

Here, the DEIR/EIS's discussion regarding plan inconsistency and land use impacts does not satisfy CEQA. First, the land use section of the DEIR/EIS claims that all policies applicable to the project and relevant to land use are listed in Table 4.8-2. That is obviously not true. Table 4.8-2 includes only a tiny fraction of plans and policies that apply to the project. For example, in Section 4.4, Groundwater Resources, the DEIR/EIS notes that there are numerous state and local plans, policies, and laws that apply to the project. (DEIR/EIS, pp. 4.4-32 - 4.4-40.) But the Groundwater Resources section only includes a consistency determination for a few of these policies, and none are discussed in Section 4.8, despite the DEIR/EIS's promise that "a general overview of these policy documents is presented in Section 4.8, Land Use, Land Use Planning, and Recreation." (DEIR/EIS, p. 4.4-38.) MCWD-150

Worse yet, the land use section, including Table 4.8-2, does not even list all of the relevant plans and policies that were adopted specifically for the purpose of avoiding or mitigating an environmental effects – an identified threshold of significance for land use impacts. (DEIR/EIS, p. 4.8-34.) In fact, the table does not even include the policies and plans that are identified in other sections of the DEIR/EIS. For example, the Terrestrial Biological Resources section alone lists 30 pages of plans and policies related to protecting environmental resources and identifies copious inconsistencies or "potential inconsistencies." (DEIR/EIS, pp. 4.6-88 – 4.6-118 [Table 4.6-4].) Although numerous inconsistencies are identified, they are not analyzed or discussed anywhere in the DEIR/EIS. (See *Napa Citizens for Honest Government v. Napa County Board of Supervisors*, *supra*, 91 Cal.App.4th at p. 381 [EIR overturned because it did not include an adequate discussion regarding plan inconsistencies].) Instead, the DEIR/EIS simply lists the plans and policies and states in conclusory fashion that the proposed mitigation measures would bring the MPWSP into conformity with the plans and polices. (See, e.g., DEIR/EIS, pp. 4.6-162-164; 4.6-203-204;

4.6-219; 4.6-230; 4.6-232-233; 4.6-240-241; 4.6-245-246; 4.6-248-250.) There is no support for these conclusions and they are likely not accurate in most instances. Even if the DEIR/EIS could accurately conclude that an impact is less than significant after mitigation based on the thresholds of significance that does not mean the project would be consistent with all relevant plans and policies. For example, there are numerous local policies that prohibit development in protected habitat and ESHA, or otherwise seek to protect and conserve such habitat. (See DEIR/EIS, 4.6-88 – 4.6-118 [Table 4.6-4].) But the project is sited directly in ESHA and would adversely impact protected habitat. Given the project's inconsistency with the City of Marina's LCP and Coastal, it is remarkable those issues are not address in this Chapter. In fact, unless the City of Marina amends its LCP, it would appear the MPWSP cannot be approved. (Attached as Exhibit "5" are the Parties' briefs on the merits in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. CV180839.) The DEIR/EIS failure to address this fundamental issue requires recirculation. In any event, even if the consistency determination could be justified, CEQA requires a much better explanation regarding *how* the project would be consistent with the plans or policies. The conclusory statements in the DEIR/EIS do not suffice. MCWD-150 cont.

Further, because the land use section includes a threshold of significance that specifically states that a significant impact would occur the project would "conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect, all of the inconsistencies and "potential inconsistencies" identified in other sections of the DEIR/EIS must be discussed in the land use section and analyzed against this threshold. The required analysis will likely uncover numerous significant environmental impacts that are currently not disclosed, including some that are likely unavoidable. The DEIR/EIS must also discuss ways the inconsistencies can be avoided and whether any of the inconsistencies are indicative of any other environmental impacts. Because the updated analysis will require adding significant new information to the DEIR/EIS, the documents must be recirculated for public review and comment.

6. The DEIR/EIS's Discussion of Hazards and Hazardous Materials Is Inadequate.

The DEIR/EIS reveals that there is a high likelihood that hazardous materials are present in the soil and groundwater in the project area, which pose significant health risks to workers and the public. (DEIR/EIS, pp. 4.7-2 through 4.7-12; 4.7-28 through 4.7-30.) Given the nature of the project, and particularly the fact that it involves significant disruption of soil and groundwater in the area, the project is likely to have significant impacts regarding hazards and hazardous materials. The DEIR/EIS, however, fails to adequately analyze the potential for such impacts and fails to include adequate mitigation measures to minimize or avoid those impacts. MCWD-151

For Impact 4.7-2, for example, the DEIR/EIS explains that the potential for contaminated soil and groundwater to be released into the environment is considered significant and proposes two mitigation measures. Neither the discussion of the impact or the proposed mitigation is adequate.

Although the DEIR/EIS discloses that a potential impact could occur including "health and safety risks" to workers and the public, it fails to describe the type of health risks that are present or the severity of the impact. (DEIR/EIS, p. 4.7-28.) Nevertheless, the DEIR/EIS states that implementation of Mitigation Measure 4.7-2a and Mitigation Measure 4.7-2b would reduce the impact to a less-than-significant level. There is, however, zero explanation of how the mitigation measures will operate and how they will reduce the impact to a less-than-significant level.

Further, the measures merely call for the preparation of various plans after the project is approved, which constitutes improper deferral of mitigation. (See *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 280-281 ["impermissible deferral of mitigation measures occurs when an EIR puts off analysis or orders a report without either setting standards or demonstrating that the impact can be mitigated in the manner described in the EIR"].) Most glaringly, rather than including performance standards in the mitigation as CEQA requires, Mitigation 4.7-2b requires standards to be developed at some future time. For example, the measure states that "the plan must identify protocols for testing and disposal, identify the approved disposal site, and include written documentation that the disposal site will accept the waste." (DEIR/EIS, p. 4.7-30.) It also calls for the development of a groundwater dewatering and disposal plan that will "identify the locations at which groundwater dewatering is likely to be required, the method to analyze groundwater for hazardous materials, and appropriate treatment or disposal methods." (*Ibid.*) These are precisely the types of issues that must be resolved before the project is approved to demonstrate that the mitigation will be feasible and effective.

MCWD-151 cont.

The analysis under Impact 4.7-4 is similarly defective. The analysis simply states that hazardous materials storage and stormwater permitting requirements would ensure the risk of release of hazardous materials during construction would be low. There is no explanation how compliance with those requirements would reduce this particular impact to a less-than-significant level. Also, CEQA contains certain notice and consultation requirements for projects within a quarter-mile of a school site "that might reasonably be anticipated to emit hazardous air emissions, or that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code." (Pub. Resources Code, § 21151.4.) The DEIR/EIS does not discuss compliance with section 21151.4.

MCWD-152

Finally, the cumulative impacts analysis is also inadequate in that it relies on Mitigation Measures 4.7-2a and 4.7-2b to reduce the project's contribution to potential releases of or exposure to hazardous materials in soil or groundwater to a less-than-

MCWD-153

significant level. As set forth above, these measures improperly defer mitigation in violation of CEQA. MCWD-153 cont.

7. *The DEIR/EIS's Discussion of Greenhouse Gas Emissions is Inadequate.*

The DEIR/EIS's discussion of Greenhouse Gas Emissions (GHGs) is plagued by the inadequacies from Chapter 4.18, Energy Conservation, discussed below. Notably, the proposed mitigation does not satisfy CEQA.

The proposed mitigation in DEIR/EIS Section 4.11, Greenhouse Gas Emissions, is improperly deferred and inadequately discussed in violation of both CEQA and NEPA. All of the problems with Mitigation Measure 4.18-1, which is also relied on to mitigate GHG emissions, are described below under the discussion of the energy analysis.

CEQA permits deferral of mitigation only when: (1) an EIR contains criteria or performance standards to govern future actions; (2) practical considerations preclude the development of earlier measures; and (3) the lead agency has assurances that the future mitigation will be both "feasible and efficacious." (*Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70 ("*CBE v. City of Richmond*"); see also *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 669-71 [county improperly deferred mitigation when it allowed a land management plan for special status vernal pool species to be developed after certification of an EIR]; *Gentry v. City of Murietta* (1995) 36 Cal.App.4th 1359, 1396 [conditioning a permit on "recommendations of a report that had yet to be performed" constituted improper deferral of mitigation].) "A study conducted after approval of a project will inevitably have a diminished influence on decision-making. Even if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA." (*CBE v. City of Richmond, supra,* 184 Cal.App.4th at p. 92, quoting *Sundstrom, supra,* 202 Cal.App.3d at p. 307.) "Fundamentally, the development of mitigation measures as envisioned by CEQA, is not meant to be a bilateral negotiation between a project proponent and the lead agency after project approval; but rather, *an open process that also involves other interested agencies and the public*." (*Ibid.,* emphasis added.) MCWD-154

As an added consideration, NEPA requires that "an EIS contain a detailed discussion of possible mitigation measures." (*Robertson v. Methow Valley Citizens Council* (1989) 490 U.S. 332, 351.) "Mitigation must 'be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.'" (*Carmel-By-the-Sea v. U.S. Dept. of Transportation* (9th Cir. 1997) 123 F.3d 1142, 1154.) "A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA." (*Northwest Indian Cemetery Protective Assn. v. Peterson* (9th Cir. 1986) 795 F.2d 688, 697, *rev'd on other grounds, Lyng v. Northwest Indian Protective Assn.* (1988) 485 U.S. 439 ("*Northwest Indian Cemetery*").) A perfunctory description of mitigation measures is inconsistent with the "hard look" an agency is required to render under NEPA. (*Neighbors of Cuddy Mountain v. U.S. Forest Service* (9th Cir. 1998) 137 F.3d 1372, 1380-1381 ("*Cuddy Mountain*") [EIS inadequate where agency did not provide an estimate of effectiveness of a mitigation measure, nor provide a reasoned explanation as to why such an estimate was not possible].)

Mitigation Measure 4.18-1 violates these basic requirements for the reasons set forth below in comments related to Section 4.18, Energy Conservation.

Mitigation Measure 4.11-1, subsection (b) suffers from similar fatal flaws. The qualifier that CalAm need only make a "good faith effort" (see DEIR/EIS, p. 4-11.21) to obtain renewable energy for operations of the project makes the mitigation unenforceable and a far cry from what CEQA and NEPA require. (See 95 *CBE v. City of Richmond, supra*, 184 Cal.App.4th at p. 95; CEQ Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the effects of Climate Change in NEPA Reviews, p. 19 ["agencies should carefully evaluate the quality of [potential] mitigation to ensure it is additional, verifiable, durable, enforceable, and will be implemented].) The DEIR/EIS provides no definition of what constitutes "good faith," making it appear as though the term was included merely to give CalAm an easy out.

In January 2017, California Air Resources Board (CARB) released the Draft 2017 Climate Change Scoping Plan Update—which identifies the overall strategy to reduce GHG emissions by 40 percent below 1990 levels by 2030. With respect to the water sector, the plan identifies reduction of energy intensity as the primary reduction strategy for the water sector. (2017 Scoping Plan Update, p. 126.) While the DEIR/EIS acknowledges that the vast majority of GHG emissions associated with long-term operation of the project would be due to the astronomical energy use in the desalination process, Mitigation 4.11-1 is hardly adequate to ensure any reduction in the project's electricity consumption. MCWD-154 cont.

The suggestion that CalAm is actually required to do anything under this mitigation measure is misleading. Rather, it amounts to a bald attempt to avoid performing all feasible mitigation measures. Moreover, as noted below, CEQA and Appendix F require that a discussion and analysis of renewable energy options must be included in the EIR. But instead, the DEIR/EIS defers this analysis and allows CalAm to proceed without implementing any feasible renewable energy options even though such options would reduce GHG emissions and conserve energy.

Worse yet, there are readily available mitigation measures that would reduce this significant and unavoidable impact (potentially even to a less-than-significant level). For example, GHG emissions associated with the project could be reduced by purchasing carbon offsets. Yet, the DEIR/EIS summarily dismisses the use of carbon offsets—concluding that the indirect GHG emissions are associated with electricity generation by fossil fuel plants, which are already subject to CARB's cap-and-trade program. However, under the cap-and-trade program carbon offsets are limited to eight percent of a covered entity's compliance obligation per compliance period. (Cal. Code Regs. tit. 17, § 95856, subd. (h)(A).) Mitigation for the project's GHG emissions should not rest solely on outside programs and regulations.

At a minimum, the CPUC should require CalAm to purchase carbon offsets sufficient to reduce the GHG emissions to a "net zero" level (i.e., sufficient to fully offset the emissions of the project). Carbon offsets are feasible and are frequently used to offset GHG emissions for projects, including desalination projects. (See *North Coast Rivers Alliance v. Marin Municipal Water District Bd. of Directors* (2013) 216 Cal.App.4th 614, 653 [in approving a desalination plant project, "the District's Board adopted a policy requiring offsets for all project-related GHG emissions"].) Further supporting the feasibility of carbon offsets, the analysis in the 2017 Draft Scoping Plan Update finds that cap-and-trade is the lowest cost, most policy efficient approach, and provides certainty that the 2030 goals will be met, even if other measures fall short. (2017 Draft Scoping Plan Update, pp. 69-72.) It should also be noted that the MBNMS Guidelines for Desalination Plants states that "Applicants should also identify measures available to reduce electricity use and related emissions (e.g., energy efficient pumps, low resistance pipes, ***use of sustainable electricity sources***, etc.) ***and to mitigate for all remaining emissions (e.g., purchase of offsets and/or credits that are consistent with the policies and guidelines of the California Global Warming Solutions Act of 2006 (AB 32), etc.***)." (see p. 7, emphasis added, available at http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/050610desal.pdf) MCWD-154 cont.

It is important to emphasize that simply because the DEIR/EIS concludes that all GHG emissions impacts are significant and unavoidable does not absolve the CPUC or Sanctuary of its obligation under CEQA to mitigate potential environmental impacts to the fullest extent feasible. In other words, finding GHG emissions significant and unavoidable cannot save the DEIR/EIS from its inadequacies. (See e.g., *California Clean Energy Committee v. City of Woodland* (2014) 225 Cal.App.4th 173 ("*California Clean Energy Committee*") [mitigation measure in EIR requiring further study of potential urban decay impacts was improper, despite EIR's conclusion that the impact was significant and unavoidable].) The DEIR/EIS must be revised to include fully enforceable mitigation measures that are supported by substantial evidence.

8. The DEIR/EIS's Discussion of Public Services and Utilities Is Inadequate.

The DEIR/EIS discussion of Public Utilities fails to discuss the MPWSP's potential impacts on MCWD's service area and water supplies, including the Regional Urban Water Augmentation Project ("RUWAP") Desalination Element. As addressed above, updated modeling based on the best available information is needed to ensure the MPWSP will not impact MCWD's wells, which serve as the sole source of supply for the Marina/Ord Community. The DEIR/EIS also needs to address here, or at minimum in the cumulative impacts analysis, how the MPWSP would affect the salinity levels of the proposed source wells for the RUWAP Desalination Element, either in this section or in its cumulative impacts analysis. The discussion must disclose whether increased salinity levels at the proposed RUWAP source well locations due to the MPWSP would require MCWD to install additional infrastructure for the treatment of source water or increase energy requirements (as well as the associated air quality/GHG emissions and impacts associated with any increased energy requirements). MCWD-155

The DEIR/EIS should also confirm that MRWPCA's ocean outfall has capacity to handle both MPWSP discharges and MCWD's vested rights to the facility, including discharges from the RUWAP Desalination Element, as well as MRWPCA's ordinary use. To the extent MCWD's ability to use the outfall would be affected or additional requirements would be imposed on MCWD, this information should be disclosed in the revised and re-circulated DEIR/EIS. MCWD-156

Finally, under the DEIR, MCWD's 30" pipeline in General Jim Moore Blvd. has been made a critical component of the MPWSP delivery system. The New 36" Transmission Main from the MPWSP desalination plant terminates into MCWD's pipeline. From there, the water is carried through MCWD's water system, and then back to the Cal Am system to deliver its water to its proposed Terminal Reservoir and to the Monterey Peninsula. This is not clearly described nor discussed in the DEIR/EIS and is shown as a pipeline "gap" between the proposed Terminal Reservoir and the end of the New Transmission Main in many of the Figures in the DEIR/EIS. The DEIR/EIS does not address the capacity limitations in MCWD's pipeline that may be exceeded by adding additional water from the MPWSP to flow through this pipeline in addition to the capacity needed by MCWD to serve the South Ord portion of its Ord Community service area when those areas develop and the capacity needed by MRWPCA to convey GWR water.

Further, the DEIR/EIS does not explain how MCWD's pipeline is to be operated with the new supply to allow it to adequately serve both CalAm's and MCWD's water systems. MCWD-157
MCWD currently allows Cal Am to use the pipeline for Carmel River water injection into the Seaside Basin (Phase 1 and Phase 2 ASR) under an Agreement between the two parties (2007 Wheeling Agreement). However, subject to operational studies, the pipeline may not be able to be used simultaneously to convey (1) MCWD's water south to meet service area demands, (2) Carmel River water north for ASR injection, (3) GWR water south to the Peninsula, (4) extracted ASR water south to the Peninsula, and (5) direct distribution of CalAm's desalination water south to the Peninsula. For example, during January, how will the MCWD pipeline be operated if Carmel River is available to convey north in the MCWD pipeline for ASR injection while at the same time CalAm wants to convey GWR water and desalination water south in the same pipeline? There are significant complexities to overcome in operating the pipeline in this manner, which may cause the need for additional booster pumps, reservoirs, a completely separate pipeline to convey all or some of the desal water, and/or a reduction in pipeline life through intensified use, all of which have not been adequately addressed in the DEIR/EIS. This is another example of the failure of the DEIR/EIS to perform an integrated total water system analysis of CalAm's system.

In order to explore whether MCWD's pipeline can accommodate both MCWD's needs and CalAm's needs, the DEIR/EIS must provide CalAm's average, max day, and peak hour demands for the use of the pipeline and a projected use of the pipeline broken down for each calendar month of the year, including proposed injection and extraction into and from the Seaside basin, for both the 9.6 MGD plant and the 6.4 MGD plant. MCWD-157 cont.

Additionally, MCWD identified significant conflicts between the planned MPWSP New Transmission Main and the existing/planned MCWD utilities in Light Fighter Drive and General Jim Moore Blvd. From DEIR/EIS figures 3-8 and 3-9, the MPWSP Transmission Main conflicts with the existing and planned MCWD facilities and possibly conflicts with other utilities as well (e.g. PG&E). The DEIR/EIS does not adequately address the conflicts in the alignment of the utilities and how those are to be mitigated. MCWD-158

9. The DEIR/EIS's Discussion of Energy Consumption and Mitigation is Inadequate.

The DEIR/EIS's discussion of energy conservation and proposed mitigation in Section 4.18, Energy Conservation, is inadequate under CEQA and NEPA.

CEQA Guidelines Appendix F provides that the "[p]otentially significant energy implications of a project shall be considered in an EIR." As recently explained in *California Clean Energy Committee*, *supra*, 225 Cal.App.4th at p. 203, "an EIR is 'fatally defective' when it fails to include a detailed statement setting forth the mitigation measures proposed to reduce wasteful, inefficient, and unnecessary consumption of energy." The court in that case was emphatic that the provisions set forth in Appendix F are mandatory, and failure to include the items listed under Appendix F, Section II (EIR Content) renders an EIR inadequate. (*Id*., at pp. 209-213.) The energy discussion in the DEIR/EIS does not address all of the items in Appendix F and is inadequate in numerous other respects. MCWD-159

s. ***The DEIR/EIS fails to analyze renewable energy options.***

In direct contravention of Appendix F and the court's holding in *California Clean Energy Committee*, *supra*, 225 Cal.App.4th 173, the DEIR/EIS fails to analyze renewable energy options. The introduction to Appendix F states that its goals include "increasing reliance on renewable energy sources." (CEQA Guidelines, Appendix F, § I, subd. 3.) Appendix F further states that "[m]itigation measures may include: [¶] … [¶] 4. Alternate fuels (particularly renewable ones) or energy systems." (*Id*., § II, subd. D.4.) The DEIR/EIS barely pays lip service to a single option for renewable energy—the Landfill-Gas-to-Energy Option. (DEIR/EIS, p. 4.18-13.) Despite the fact that it would substantially reduce energy consumption, the DEIR/EIS provides no analysis of this option. (*Ibid*.) Instead, the DEIR/EIS states that "[i]mplementation of this option and the construction of associated interconnected improvements would require separate environmental review and are not evaluated in this EIR/EIS." (*Ibid*.) MCWD-160

This is not appropriate. To comply with CEQA, this feasible renewable energy option is required to be included and analyzed in the DEIR/EIS, and discussed as mitigation in accordance with Appendix F. (See also *California Clean Energy Committee*, *supra*, 225 Cal.App.4th at p. 213 [holding EIR "failed to comply with the requirements of Appendix F to the Guidelines by not discussing or analyzing renewable energy options"]; *Id*. at p. 213, ["the requirement to adopt energy impact mitigation measures 'is substantive and not procedural in nature and was enacted for the purpose of requiring the lead agencies to focus upon the energy problem in the preparation of the final EIR.' [Citation.]"].)

Moreover, any future review and approval of this project component in a separate environmental document would, as contemplated in the DEIR/EIS, constitute improper piecemealing under CEQA. CEQA requires that all project components and all reasonably foreseeable project activities must be analyzed together in a single EIR. (See *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 396; CEQA Guidelines, § 15378, subd. (a) [the term "project" under CEQA is defined as the "whole of an action"].) Similarly, federal regulations implementing NEPA prohibit the "segmentation" of environmental analysis by mandating that "[p]roposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement." (40 C.F.R., § 1502(a).) Therefore, the feasible option that would mitigate energy impacts must be analyzed now as part of the DEIR/EIS. MCWD-160 cont.

t. ***The DEIR/EIS ignores indirect energy consumption associated with construction of the Project.***

The DEIR/EIS completely ignores the massive amount of electricity and energy that would be indirectly consumed during construction of the project. To skirt the disclosure of indirect energy consumption and to avoid any analysis, the DEIR/EIS states that the amount of electricity and indirect energy consumption that would be associated with the project is unknown and cannot be estimated, but is not expected to be substantial. (DEIR, p. 4.18-14.) This is inconsistent with the previous statement in the DEIR/EIS that "indirect energy use typically represents three-quarters of the total construction energy consumed, while direct energy use represents about one-quarter." (*Ibid*.) In other words, based on that statement, it is reasonable to assume that at least three times the amount of energy use disclosed and analyzed in the DEIR/EIS would be consumed by activities that, although indirect, are attributable to the project. But the DEIR/EIS fails to even attempt to quantify the amount of electricity and indirect energy consumption or discuss ways to reduce the consumption. Without full disclosure of energy consumption and a complete analysis, it is impossible for the reader (and the decisionmakers) to understand the full construction impacts of the project, as they relate to energy. MCWD-161

u. ***The analysis of energy consumption during Project operations is conclusory and not supported by substantial evidence.***

As an initial matter, the DEIR/EIS fails to provide adequate explanation to support the assumptions upon which the project's energy consumption is based. The DEIR/EIS states that CalAm's operational electrical power demand for the proposed project is estimated to be approximately 63,164 MWh per year, which would result in a net increase in CalAm's annual electrical power demand for water production of approximately 51,698 MWh per year. (DEIR, p. 4.18-16.) But there is no explanation how the 63,164 MWh per year figure was derived—making it impossible for the reader to assess the veracity of that number. The MCWD-162 document cited to support this number ("CalAm 2016") provides little help.[24] The document is a one page table that provides very little by way of explanation for how the energy demand was calculated. In fact, the amount of energy consumption for the MPWSP Desalination Plant appears to be based entirely on an email from CDM Smith, the contents of which are not described in the EIR itself[25] (CalAm 2016). This table also provides zero information regarding the project's energy peak demands, costs, fluctuations in energy use due to intake salinity and water temperature, power supply availability in the Monterey region during peak periods, or electric line upgrade requirements. Please explain how these numbers changed so dramatically from prior estimates. MCWD-162 cont.

Furthermore, the analysis of energy consumption during project operations (Impact 4.18-2) is conclusory and unsupported by substantial evidence. After disclosing the energy consumption during operations would be astronomical (63,164 MWh of electricity and 26,000 gallons of fuel annually), the DEIR/EIS provides very little discussion regarding how energy use could be reduced. There is no discussion as to the effectiveness of the energy efficient design elements, which are proposed to be incorporated into the project. Nor is there any discussion of accessing available sustainable electricity sources. Instead, the discussion purports to justify the enormous energy consumption on the basis that the project will help CalAm provide water to its customers.

That is not the purpose of energy analysis (or an EIR for that matter). If the CPUC determines that the project's benefits outweigh its significant impacts, and that determination is supported by substantial evidence, it can make such findings in a statement of overriding considerations if and when it approves the project. (See CEQA Guidelines, § 15093.) But that does not excuse the CPUC from proposing mitigation that could reduce significant energy impacts. MCWD-163

Notably, the DEIR/EIS itself mentions at least one feasible way to mitigate this impact—implementation of the Landfill-Gas-to-Energy Option, which would provide an alternative source of power for the project. But the DEIR/EIS does not consider this mitigation measure or any others. The Section 4.11, Greenhouse Gas Emissions, of the DEIR/EIS even acknowledges, although without much elaboration, that "there may be

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[24] / In any event, the data relied on to support this determination must be presented and explained in the draft EIR itself, and not buried in an incompressible report that is merely cited by the DEIR/EIS. (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 422 ("*Vineyard*") ["The data in an EIR must not only be sufficient in quantity, it must be presented in a manner calculated to adequately inform the public and decision makers, who may not be previously familiar with the details of the project. Information 'scattered here and there in EIR appendices or a report 'buried in an appendix,' is not a substitute for 'a good faith reasoned analysis.' [Citations.]"].)

[25] / It is impossible to verify the numerical figures set forth in the DEIR/EIS for the MWSP Desalination Plant, itself.

additional feasible energy reducing features available to reduce the electrical consumption associated with the project." (DEIR/EIS, p. 4.11-22.) MCWD-163 cont.

v. ***The DEIR/EIS improperly defers mitigation for Impact 4.18-1.***

Mitigation Measure 4.18-1 is improper and cannot support a less-than-significant impact determination. This measure constitutes improper deferral of mitigation because it merely requires CalAm to prepare a plan that will identify mitigation measures *after* project approval. (DEIR/EIS, p. 4.18-15.) A fundamental requirement of CEQA is that the formulation of mitigation cannot be deferred until after project approval except in limited circumstances, as set forth above. Mitigation Measure 4.18-1 provides no performance criteria; there is no explanation (or reason) why mitigation cannot be developed now; and there is no assurance the mitigation will be both feasible and efficacious. In fact, the measure only requires the yet-to-be determined mitigation measures "where feasible" or "to the maximum extent feasible." (DEIR/EIS, p. 4.18-15.) Thus, in addition to being improperly deferred, the measure has absolutely no teeth. There is no support for the conclusion that the mitigation measures would reduce the impact to a less-than-significant level.

Mitigation Measure 4.18-1 also falls far short of federal standards, which are set forth in the above, in that there is an utter lack of discussion or quantification of the estimated effectiveness of energy efficiency measures with respect to construction impacts. The DEIR/EIS instead merely provides the conclusory statement that with mitigation (the substance of which is to be determined at a later date), the significant energy impact would somehow be reduced to a less-than-significant level. This cursory and unsupported discussion does not satisfy NEPA requirements. (See *Northwest Indian Cemetery, supra,* 795 F.2d, at p. 697; *Cuddy Mountain, supra*, 137 F.3d at pp. 1380-1381.) MCWD-164

Moreover, there are numerous additional mitigation measures that would reduce this impact that are both feasible and widely accepted, but are not considered in the DEIR/EIS. For example, the CPUC could require that CalAm use only the most efficient off-road equipment and vehicles to reduce the amount of fuel consumed by project activities or include other mechanisms to ensure greater fuel efficiency for equipment and vehicles. Further, as explained in CEQA Guidelines, Appendix F, "the discussion should explain why certain measures were incorporated into the project and why other measures were dismissed." (§ II, subd. D.1.) The DEIR/EIS fails to do this.

w. ***The DEIR/EIS fails to adequately address transportation energy impacts.***

Appendix F states that the environmental impacts subject to the EIR process include "[t]he project's projected transportation energy use requirements and its overall use of efficient transportation alternatives. (§ II, subd. C.6.) Here the project would result in an additional 60 commuter vehicle trips per day. (DEIR/EIS, p. 4.18-16.) Yet, the DEIR/EIS concludes that the energy impacts from operation of the project would be less than significant—and therefore fails to consider mitigation for transportation energy impacts. (See *California Clean Energy Committee*, *supra*, 225 Cal.App.4th at p. 210 [EIR analysis MCWD-165 deficient where it did not assess or consider mitigation for transportation energy impacts of the project].) The CPUC should consider mitigation measures that would reduce the amount of fuel consumption from vehicle trips such as a ride-share or electric vehicle program or offer alternative modes of transportation if the amount of trips required cannot be reduced by other means. (See CEQA Guidelines, Appendix F, § C.6 [discussion must include the project's "overall use of efficient transportation alternatives"].) MCWD-165 cont.

x. ***The DEIR/EIS conclusion as to Impact 4.18-3 is unsupported by substantial evidence.***

The conclusion under Impact 4.18-3 that the project would not constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations is conclusory and not supported by substantial evidence. There is no discussion of peak or base period electrical demand or any other facts or evidence in the DEIR/EIS to support the conclusion that impacts would be less than significant.

For example, just based upon the statement that the proposed project would result in a net increase of electrical demand of 51,698 MWh per year, would mean that if you assume that the project is in constant 24/7 electrical use, the new electric generating capacity required to supply that new energy demand would be 5.90 Mwh per hour or 141.6 Mwh per day. The actual peak energy demands could be higher and coincide with the existing peak energy demands for this area, which would result in even greater environmental impacts. MCWD-166

Given that Moss Landing is PG&E's transmission hub for this area, it would not be unreasonable to assume that this additional energy use would be supplied at times during peak periods from the Moss Landing Power Plant, resulting in increases in power plant cooling water demands from Monterey Bay and increased amounts of air pollutants generated by burning GHG-intensive fuel in this very region.

The DEIR/EIS lacks area-specific analysis of whether the PG&E sub-transmission electric lines from Moss Landing to the proposed project site are sufficient to meet this new electricity demand or whether those lines will need to be upgraded resulting in additional indirect project impacts.

In fact, the conclusion appears to be based entirely on a personal communication with PG&E via email, the contents of which are not described in the EIR itself. This total lack of a specific discussion as to the new significant electric generation and sub-transmission requirements and their impacts on the environment in a DEIR/EIS by the CPUC—which directly regulates PG&E—is highly unusual and emphasizes the sweeping inadequacy of the DEIR/EIS's discussion on energy impacts. The facts and evidence that support the conclusions must be included in the DEIR/EIS itself so the public and decisionmakers can readily evaluate the information and determine whether the conclusions are accurate. (See e.g., *Vineyard, supra,* 40 Cal.4th at p. 422.)

y. ***The DEIR/EIS's discussion of cumulative impacts related to energy conservation is inadequate.***

An EIR must discuss cumulative impacts when they are significant and the project's incremental contribution is "cumulatively considerable." (CEQA Guidelines, § 15130, subd. (a). A project's incremental contribution is cumulatively considerable if "the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (CEQA Guidelines, § 15065, subd. (a)(3).) The DEIR/EIS plainly fails to comply with CEQA with respect to the cumulative energy impacts of the project.

The DEIR/EIS incorrectly relies on Mitigation Measure 4.18-1 to conclude that project construction would not have a cumulatively considerable contribution to a significant cumulative impact on the availability of fuel sources. As set forth above, Mitigation Measure 4.18-1 improperly defers mitigation and cannot serve as the basis of support for such a conclusion. MCWD-167

Additionally, statements regarding the cumulative impacts of project operation on energy conservation are conclusory and unsupported by substantial evidence. The DEIR/EIS acknowledges that many of the other cumulative projects would be high demand users and that upgrades to the existing distribution system may be required. (DEIR/EIS, pp. 4.18-18 through 4.18-19.) Yet, without any further explanation, the DEIR/EIS simply concludes that the project would not have a cumulatively considerable contribution associated with energy use. (See CEQA Guidelines, § 15130, subd. (a)(2) [If a lead agency concludes that a cumulative impact is not significant, the EIR must provide a brief explanation of the basis of the finding and identify the facts and analysis supporting it]; *Klamath-Siskiyou Wildlands Center v. U.S. Bureau of Land Management* (9th Cir. 2004) 387 F.3d 989, 993 ["proper consideration of the cumulative impacts of a project requires some quantified or detailed information; … [g]eneral statements about the possible effects and some risk do not constitute the hard look absent a justification regarding why more definitive information could not be provided" (internal quotations omitted)].) The cumulative impacts discussion related to energy conservation falls short of both CEQA and NEPA standards.

D. THE DEIR/EIS FAILS TO INCLUDE A REASONABLE RANGE OF POTENTIALLY FEASIBLE ALTERNATIVES AND THE ALTERNATIVES ANALYSIS IS NOT SUPPORTED BY SUBSTANTIAL EVIDENCE.

As the DEIR/EIS acknowledges CEQA requires an EIR to "describe a range of reasonable alternatives to the project … which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects … and evaluate the comparative merits of the alternatives." (Guidelines, §§ 15126.6, subd. (a), 15002, subd. (a)(3); see also 42 U.S.C. 4332(C)(iii) [NEPA requiring same].) The DEIR/EIS, however, fails to meet this fundamental requirement. MCWD-168

The fundamental problem with the DEIR/EIS's alternatives analysis is that it only considers alternatives to CalAm's originally proposed 9.6 MGD desalination plant that is no longer necessary in light the approval of the GWR project. Confusingly, the DEIR/EIS states that "the GWR Project would not be relevant in the context of the proposed project *or any alternative that includes a 9.6 mgd desalination plant* built and operated by CalAm (i.e., Alternatives 1 and 2) because, if the GWR project is implemented, CalAm would not need to construct a 9.6 mgd desalination plant (the proposed project); instead, it would construct the 6.4 mgd plant as described in Alternatives 5a and 5b." (DEIR/EIS, pp. 5.2-6 and 5.2-7.) Inexplicably, the DEIR/EIS, however, ignores the reality that GWR Project has been approved and evaluates the comparatives merits of alternatives to the originally proposed 9.6 MGD desalination plant.[26] In doing so the DEIR/EIS sets up a strawman analysis and concludes the 6.4 MGD plant with GWR is the environmentally superior alternative. The DEIR/EIS, however, fails to consider alternatives to the 6.4 MGD plant (with GWR) that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant impacts.[27] As discussed below, the DEIR/EIS only considers alternatives that would meet all (rather than most) of the Primary Project Objectives and with either a 6.4 MGD or 9.6 MGD plant provide vastly more water supplies than are necessary. It does not consider alternatives that could feasibly attain most of the Primary Project Objectives (with the GWR Project and without either the 6.4 MGD or 9.6 MGD plant), but would avoid or substantially lessen any of the significant effects. As a result, not only does the DEIR/EIS fail to consider a reasonable range of alternatives, it also fails to meet the EIR's major function "to ensure that ***all reasonable alternatives to proposed projects are thoroughly assessed by the responsible official***." (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 400 [emphasis added].**)** MCWD-168 cont.

10. Comments on Alternatives Not Evaluated in Detail MCWD-170

An "EIR 'is required to make an in-depth discussion of those alternatives identified as at least *potentially feasible*.' [Citation.]" (*Preservation Action Council v. City of San Jose* (2006) 141 Cal.App.4th 1336, 1354, italics added.) "While the lead agency may ultimately determine that the potentially feasible alternatives are not actually feasible due to other considerations, the actual infeasibility of a potential alternative does not preclude the

[26] / In fact, the originally proposed 9.6 MGD desalination plant is no longer feasible given CalAm commitment to the GWR project under the July 30, 2013 Settlement Agreement on Plant Size, etc., wherein it agreed to pursue the 6.4 MGD plant with implementation of GWR. (Sett. Agr., p. 4 at § 3(c).) The CPUC approved CalAm's entry into an agreement to purchase GWR water from MRWPCA in D.16-09-021.

[27] / The DEIR/EIS's identification of the project's significant environmental impacts in the Alternatives chapter (Section 5.1.1.2) must be revised to the extent additional significant and unavoidable impacts are identified in the revised DEIR/EIS. As explained in the comments above and the expert comments attached to this letter, the proposed project will result in significant and unavoidable impacts to the SVGB among others. MCWD-169

inclusion of that alternative among the reasonable range of alternatives." (*Watsonville Pilots Assn. v. City of Watsonville* (2010) 183 Cal.App.4th 1059, 1087.)

The DEIR/EIS states that the alternatives listed in Section 5.2 and Appendix I1 were either "considered and rejected in earlier environmental review documents because the projects were determined to be politically, legally, economically, or technically infeasible" or "are concepts that were speculative or technically or economically infeasible." (DEIR/EIS, p. 5.2-7.) When an agency uses the scoping process to narrow the range of potential alternatives to be analyzed in detail in an EIR, the EIR must describe the facts and rationale by which rejected alternatives were deemed infeasible. (*Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376, 404–405 ["An EIR's discussion of alternatives must contain analysis sufficient to allow informed decision making"; CEQA Guidelines, § 15126.6, subd. (c).) Here, the DEIR/EIS erroneously excludes several *potentially* feasible alternatives that could feasibly attain most of the basic objectives of the project and would avoid or substantially lessen the proposed project's significant impacts without any factual basis. In fact, as discussed below, the rationale for excluding several alternatives is demonstrably false. Therefore, the DEIR/EIS must be revised and recirculated so the public, responsible public agencies, and decisionmakers can consider and comment on these potentially feasible alternatives. MCWD-170 cont.

z. ***Comments on Alternatives Rejected and Not Mentioned in DEIR/EIS***

ix. ***The use of Horizontal Wells for MPWSP intakes is potentially feasible and would eliminate or reduce several of the project's significant and unavoidable environmental impacts.***

The DEIR/EIS dismisses the feasibility of horizontal wells without adequately describing the technology, its advantages over the project's proposed slant wells intakes, or its appropriateness for the Monterey Bay coastal environment. (See Intake Works Comments, p. 7.) Instead, the DEIR/EIS summarily rejects horizontal (or "HDD") wells as a potentially feasible alternative intake technology in Appendix I1, stating: "Horizontal wells are not evaluated further for the following reasons: (1) the amount of pipeline that would be pushed under the sea floor (upwards of 2,500 feet) would be challenging in terms of construction time, physical limitations and the disposal of drilling sludge (and consequently much more expensive than other options); (2) installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis, and; (3) HDD would not avoid or minimize any of the impacts associated with the proposed action." (Appendix I1, p I1-5) There is no evidence or citations to evidence that provide support for any of these conclusions. As explained below and in the attached Intake Works Comments, all three conclusions are inaccurate. MCWD-171

Horizontal wells could be constructed faster than the proposed MPWSP slant wells, have fewer physical limitations, and are potentially less expensive than the proposed slant wells.

Contrary to the DEIR/EIS's conclusion in Appendix I1 that HDD would be challenging in terms of construction time, the construction time for developing Horizontal Wells would likely be considerable shorter than the construction time needed to develop the MPWSP's proposed slant wells. As described in the attached Intake Works Comments, eight horizontal wells were drilled using one HDD drilling rig in approximately four (4) months along the Spanish Mediterranean Coast. Moreover, unlike the proposed slant wells, additional HDD drilling rigs could be used to ensure all required horizontal wells could be drilled within a timeframe that would avoid Snowy Plover breeding season. Additionally, unlike slant wells, HDD wells can curve to avoid unfavorable subsurface conditions. Finally, contrary the DEIR/EIS's suggestion the disposal of drilling sludge would be similar to, or less of an issue, than for the MPWSP's proposed slant wells. (See Intake Works Comments, p. 8.)

Importantly, Horizontal Wells can extend much further than the 2,500-foot mentioned in the Appendix I1 description of Horizontal Wells. (See Intake Works Comments, pp. 11-12.) As a result, the well heads can be located further from the beach than the MPWSP's proposed slant wells to avoid ESHA.

Thus, there is no support for the DEIR/EIS rejecting Horizontal Wells on this basis.

MCWD-171 cont.

Horizontal wells, unlike slant wells, have been employed successfully as a desalinization intake.

The DEIR/EIS states, without any supporting citations, that installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis. (Appendix I1, p I1-5.) Initially, this rationale provides no basis for rejecting Horizontal Wells here, whether the proposed intake technology has never been demonstrated successfully. As discussed below, the only operation slant well designed to extract ocean water, other the MPWSP test slant well (which has been started and stopped on countless occasions over its short duration), is Dana Point that under recent longer term testing dramatically declined in efficiency. Even if this was a potential basis for rejecting Horizontal Wells, the DEIR/EIS's conclusion is unsupportable. Artificial gravel-pack filters have been installed and are successfully operating around horizontal well screens within the range of depositional environments in and around the Monterey Bay area that would be encountered at potential sites for horizontal wells. Moreover, artificial filter packs have not been required when utilizing the Neodren® technology in horizontal wells. (See Intake Works Comments, pp. 13-14.)

Thus, there is no support for the DEIR/EIS rejecting Horizontal Wells on this basis.

Horizontal wells would avoid or minimize many of the significant impacts associated with the proposed project and would reduce the amount of source water needed for the MPWSP.

The DEIR/EIS's conclusion that HDD would not avoid or minimize any of the impacts associated with the proposed action is untenable, and appears to demonstrate a significant lack of independent judgment on the part of the DEIR/EIS preparers. (See discussion in Part II.A, above). While HDD could potentially be employed at numerous locations along the Monterey Coast, including but not limited to locations within CalAm's service area, it has the potential to avoid many of the projects' significant impacts at both locations identified in the DEIR/EIS.

For example, if horizontal wells were properly designed at or near the CEMEX site, they would likely avoid or reduce many of the proposed project's significant impacts:

1. Because Horizontal Wells can extend thousands of feet more than the proposed slant wells, they could be located further onshore and outside of ESHA, which would avoid the proposed project's impacts to endangered species as wells as the project's inconsistencies with the City of Marina's LCP and Coastal Act. (See Intake Works Comments, pp. 11-12, 14.)
2. Because Horizontal Wells can extend thousands of feet more than the proposed slant wells and at a curve, they can actually be screened underneath the ocean floor to avoid drawing in groundwater from the SVGB basin, which would avoid the project's impacts to groundwater levels and quality. This in turn would avoid potential significant impacts groundwater dependent ecosystems that the DEIR/EIS fails to evaluate. (See Intake Works Comments, pp. 14.)
3. Because Horizontal Wells could avoid drawing in groundwater from the SVGB there would be no need to return water to the SVGB, which would reduce all the impacts associated with return water pipeline. (See Intake Works Comments, p. 14.)
4. Because Horizontal Wells could avoid the need for any return water to the SVGB, they would reduce the amount of supply water and desalinated water needed for the MPWSP, which would reduce energy impacts and GHG emissions. (See Intake Works Comments, p. 14.)

MCWD-171 cont.

Similarly, if horizontal wells were properly designed at or near the Potrero Road site they would likely avoid or reduce many of the potentially significant impacts identified at this location:

- Because Horizontal Wells can extend thousands of feet more than the proposed slant wells, they can actually be screened underneath the ocean floor to avoid drawing in groundwater from the SVGB basin, which would avoid drawdown impacts to groundwater basin water levels and therefore would eliminate any potential impacts to Elkhorn Slough (which the DEIR/EIS speculates may be significant). (See Intake Works Comments, p. 14.)

- Similar to the CEMEX site, Horizontal Wells would not take in groundwater from SVGB there would be no return water obligation, which would reduce all impacts associated with return water pipeline. (See Intake Works Comments, p. 14.)
- Similar to the CEMEX site, Horizontal Wells could avoid the need for any return water to the SVGB, they would reduce the amount of supply water and desalinated water needed for the MPWSP, which would reduce energy impacts and GHG emissions. (See Intake Works Comments, p. 14.)

Moreover, additional locations closer to or in CalAm's service area may be feasible, which in turn could substantially reduce the length of the pipelines proposed for the project and impacts associated with those pipelines. (See Intake Works Comments, p. 14.)

Finally, the DEIR/EIS's suggestion that Horizontal Wells may be more expensive is impossible to evaluate given the information provided in the DEIR/EIS. While drilling the Horizontal Wells could be more expensive than the proposed slant wells, such a comparison does not address the potential cost savings from water and pipeline savings. Moreover, potential alternatives cannot be excluded from consideration because it 'would impede to some degree the attainment of the project objectives, or would be more costly.'" (*Preservation Action Council*, *supra*, (2006) 141 Cal.App.4th at p. 1354; CEQA Guidelines, § 15126.6, subd. (b); *Habitat and Watershed Caretakers*, *supra*, 213 Cal.App.4th at pp. 1303-1304; *Goleta I*, supra, 197 Cal.App.3d at pp. 1180–1183.) Similarly, the fact that CalAm has constructed a slant test well at the CEMEX site does not make slant wells more viable than Horizontal Wells. This is especially true given the Coastal Commission's failed to consider alternative technologies prior to approving the test slant well.[28] As discussed below, if CalAm desires to test a Horizontal Well before considering this alternative, CalAm has sufficient water supplies with GWR to evaluate this technology prior to seeking approval of the MPWSP. MCWD-171 cont.

In summary, Horizontal Wells are, at minimum, potentially feasible and would avoid or substantially lessen many of the proposed project's significant environmental impacts. Therefore, the DEIR/EIS's alternatives analysis must be revised and recirculated to evaluate Horizontal Wells to comply with CEQA and NEPA. This analysis should consider the number of Horizontal Wells necessary to meet most of the project objectives (including the reduction in supply needed for the proposed slant wells return water) rather than the amount

[28] / CalAm and the Coastal Commission have argued the test well is not part of the MPWSP and will not prejudice the environmental review or consideration of alternatives for the larger MPWSP. (Attached as Exhibit "5" are the Parties' briefs on the merits in MCWD v. California Coastal Commission, Santa Cruz Superior Court Case No. CV180839.)

of feedwater required for the proposed 9.6 MGD desalination plant that provides an oversupply of water. MCWD-171 cont.

x. Vertical wells

The DEIR/EIS's rejection of vertical wells for the alleged reason that the number of "vertical wells that would be needed to provide a reliable source water flow to the desalination plant is considered infeasible, both from a construction and operational perspective and in terms of economic, legal (permitting) and environmental factors" is again not supported by any facts. (DEIR/EIS Appendix I1, p. I1-4 and I1-5.) As noted above, a potential alternative cannot be excluded from consideration because it 'would impede to some degree the attainment of the project objectives, or would be more costly.'" (*Preservation Action Council*, *supra*, (2006) 141 Cal.App.4th at p. 1354; CEQA Guidelines, § 15126.6, subd. (b); *Habitat and Watershed Caretakers*, *supra*, 213 Cal.App.4th at pp. 1303-1304; *Goleta I*, supra, 197 Cal.App.3d at pp. 1180–1183.) Moreover, given the CPUC approved vertical wells as part of the Regional Project, the argument that this alternative source is not potentially feasible actually conflicts with the record. As noted above, there is no reason why the legal permitting factors would be more onerous than for the slant wells proposed by the MPWSP. In fact, the fact vertical wells can be construct outside ESHA and other environmentally sensitive habitat likely makes permitting vertical wells more feasible. The DEIR/EIS suggestion that undisclosed environmental factors make vertical wells infeasible without any analysis cannot be supported under CEQA. MCWD-172

Finally, the DEIR/EIS only considers vertical wells without GWR and, therefore, improperly estimates that at least 24 vertical wells would be required. As discussed above, the DEIR/EIS must address whether the use of vertical wells (with GWR) could meet most of the project objectives, rather than the amount of feedwater required for the proposed 9.6 MGD desalination plant that provides an oversupply of water. As noted in the attached Intake Works Comments, using vertical wells with pre-engineered, so called "packaged" desalination systems, could result in avoiding or substantially lessening the proposed project's significant impacts and may be more economical because package solutions are available for desalination plants that are up to 5 MGD. (See Intake Works Comments, pp. 4-5.)

xi. Infiltration Galleries

The DEIR/EIS's rejection of infiltration galleries without analysis is similarly not supported by substantial evidence and would appear to conflict with available data on the feasibility of this option provided in the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014, available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf. That report concluded that infiltration galleries were the only potentially feasible options for subsurface intakes for the proposed Poseidon Water Desalination Facility, which proposes producing 50 MCWD-173

Million Gallons per Day (MGD) of potable water, five times as much as the current project. The CCC's Report notes that:

> ***A key aspect of a beach gallery system is that it underlies the surf zone of the beach, fully or in part. This means that the active infiltration face of the filter is continuously cleaned by the mechanical energy of the breaking waves and is therefore self-cleaning*** (Maliva and Missimer, 2010). ***Also, the location within the intertidal zone allows the gallery to be continuously recharged with no impact on the inland shallow aquifer system. The vertical flow of water from the sea assures that the inorganic chemistry is not significantly altered over time***… The gallery system is unaffected by variations in the deeper groundwater, which could be fresh or brackish in nature at the shoreline. The uppermost natural sand layer is the primary treatment zone within the filter and will likely allow the removal of all algae and a high percentage of bacteria and naturally occurring organic compounds (e.g., natural organic matter). The long-term data collected at the seabed gallery in Japan shows that the SDI was reduced below two, which is at the approximate level produced by conventional SWRO pretreatment systems (Shimokawa, 2012).
>
> ***The beach gallery would reduce or eliminate the impingement and entrainment of marine fauna. Also, upon completion of construction, the gallery would be located below the surface and could not be observed by beach users***

MCWD-173 cont.

(Id. at p. 40, emphasis added.)

The DEIR/EIS's determination that infiltration galleries result in permanent disturbance to habitat does not appear to be consistent with the CCC's report. (*Ibid*.; see also *id*., Figure 3.6 on p. 41.) Unlike the Fukuora location (on the semi-protected coast of the Sea of Genkai), it may be possible to limit the amount of excavation and lay out sections of filter pipe on the sandy seabed and allow natural forces to bury the system at the CEMEX site. The sandy bottom biological community is adapted to moving sands, which could reduce potential significant impacts. In addition, contrary to the DEIR/EIS's suggestion the sediment or filtration bed is unlikely to need much maintenance work given the turbulent forces near the seafloor would keep the upper most layer of the filter bed active. See Intake Works Comments, pp. 5-6.)

Notably, as with Horizontal Wells, infiltration galleries would eliminate impacts to the SVGB, which would eliminate the need for return water and the proposed return pipeline thereby avoiding those impacts as discussed above. As infiltration galleries are at least potentially feasible and would eliminate the project's significant impacts to the SVGB, including the Marina Subarea, the alternative must actually be discussed in the DEIR/EIS before the CPUC can determine it is not feasible due to environmental impacts. Again, the size of the infiltration gallery should be based on need to meet most of the project objectives (including the reduction in supply needed for the proposed slant wells return water) rather than the amount of feedwater required for the proposed 9.6 MGD desalination plant that is provides an oversupply of water

MCWD-173 cont.

xii. EIR/EIS Fails to acknowledge, disclose, analyze the uncertainty regarding the long-term operational efficiencies of slant wells

Finally, the DEIR/EIS's discussion of slant wells ignore the fact that slant wells are unproven technology. As addressed in the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California:

> Only one slant well has been successfully constructed to date, although a major installation to provide 20 MGD of feedwater capacity is under consideration in the Monterey Bay area [this project]. The successfully completed well is at Dana Point. When it was built and tested in 2006, it was test pumped at 2000 gpm and displayed a well efficiency of 95%. ***Recent longer term testing of the completed test well in 2012 documents the reduction in well efficiency from the original value of 95% in 2006 to 52% in 2012*** (GeoScience 2012). ***Given this observed reduction in efficiency over a short period, the long-term performance of the technology has yet to be confirmed.***
> … Slant wells completed in the Talbert aquifer would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw. Recent public comments have suggested that pumping seawards of the Talbert Salinity Barrier could have beneficial impacts in managing seawater intrusion. In the Panel's opinion, however, this benefit is too uncertain to overcome the ISTAP conclusion about the fatal flaw of this technology as applied to the proposed Huntington Beach site. ***The advantage of having a subsea completion is largely lost in confined aquifers.*** The performance risk is considered medium, as the dual-rotary drilling method used to construct the wells is a long-established technology, but ***there is very little data on the long-term reliability of the wells. Maintainability is also a critical unknown issue.***
> … Slant wells tapping the Talbert aquifer would interfere with the management of the salinity barrier and the management of the freshwater basin, and further, would likely have geochemical issues with the water produced from the aquifer (e.g., oxidation states of mixing waters).

MCWD-174

(CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014, pp. 37, 56, 64, available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf, emphasis added.)

In addition, the DEIR/EIS's failure to disclose and discuss the reduced efficiency of the Dana Point slant well is surprising given CPUC's representative on the HWG authored the report on this decline. (See GeoScience's Aquifer Pumping Test Analysis and Evaluation of Specific Capacity and Well Efficiency Relationships SL-1 Test Slant Well, Doheny Beach, Dana Point, California, dated September 7, 2012, available at http://www.mwdoc.com/filesgallery/SL_1_Step_Test_Comp._FINAL_TM_Geoscience_12_09_2012.pdf.) Notably, information from data responses and public records act requests reveal that Mr. Williams and Geoscience were involved in the selection process for alternatives despite the potential conflict of interests identified above. The DEIR/EIS's failure to disclose and address the findings in both reports require recirculation so the public can is aware of the project's risks and can comment on them. The risk that the project may not succeed is not born solely by the applicant, or CalAm ratepayers, here. MCWD-174 cont.

As explained in the Intake Works and HGC Comments, while the efficiency problems from the Dana Point may not manifest themselves at the CEMEX site, there is a considerable risk they could based on the previous study and unproven track record for this technology. Therefore, the DEIR/EIS must discuss mitigation in the event there is a considerable drop in efficiency as it would likely eliminate the MPWSP's ability to provide return water. Specifically, the DEIR/EIS must evaluate the how many slant wells will likely need to be replaced over foreseeable life of the project, where the replacement wells would be located, and the potential impacts of replacing the slant wells. The DEIR/EIS must also evaluate potential alternatives to slant wells if efficiency drops to the point that alternative feed water sources are required.

aa. ***Comments on Alternatives Rejected and Not Evaluated in Detail in DEIR/EIS***

Section 5.2.1 states that is summarizes the previous proposals and projects, and the environmental documentation prepared for them (as relevant), and discusses why each of these alternatives is not addressed in detail in this EIR/EIS. The DEIR/EIS further states that no viable alternatives have been identified that would supply water without a desalination plant being included. This conclusion, however, is improperly based on the assumption that any feasible alternative must meet all of the project's objectives. As discussed in Part I of these comments and below, at minimum the Coastal Water Project/Regional Project remains potentially feasible. The DEIR/EIS, however, must evaluate whether the other alternatives in this section could meet most of the project objectives, including the already approved GWR as a component or on stand-alone basis. MCWD-175

xiii. i. The Coastal Water Project/Regional Desalination Project Remains Potentially Feasible.

First, the DEIR/EIS' suggestion that Coastal Water Project/Regional Desalination Project (or "Regional Project") approved by the CPUC in 2010 is "no longer feasible for economic, social and legal reasons" is not supported by facts. The DEIR/EIS fails to provide any explanation or facts supporting its assertion that the Regional Project is not feasible. "A MCWD-176 potential alternative should not be excluded from consideration merely because it 'would impede to some degree the attainment of the project objectives, or would be more costly.'" (*Preservation Action Council v. City of San Jose* (2006) 141 Cal.App.4th 1336, 1354; CEQA Guidelines, § 15126.6, subd. (b); *Habitat and Watershed Caretakers v. City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1303-1304.) As explained in *Citizens of Goleta Valley v. Board of Supervisors* (1988) 197 Cal.App.3d 1167, 1180–1183 (*Goleta I*) assertions that a particular alternative is economically infeasible simply because it would be more expensive or less profitable to the private applicant are not adequate. "In the absence of comparative data and analysis, no meaningful conclusions regarding the feasibility of the alternative could have been reached." (*Id.* at pp. 1180–1181.) The Court of Appeal added that:

> The fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with the project.

(*Ibid.*) Because the DEIR/EIS fails support its conclusion that the Regional Project is infeasible and rejects it out of hand, additional analysis is required before the CPUC may approve the project. (Pub. Resources Code, § 21002; *Sierra Club v. Gilroy City Council* (1990) 220 Cal.App.3d 30, 31.) Similarly there is no discussion, and MCWD is unaware of any reasons why the Regional Project is infeasible. The fact that CalAm would like to proceed with MPWSP without the involvement of MCWD or another public agency, does not render such alternatives infeasible. (See *Save Round Valley Alliance v. County of Inyo* (2007) 157 Cal.App.4th 1437, 1462 [An agency may not simply accept the project proponent's assertions about an alternative; rather, the agency "must independently participate, review, analyze and discuss the alternatives in good faith"], quoting *Kings Cnty. Farm Bureau v. City of Hanford*, 221 Cal.App.3d 692, 736 (1990).) MCWD is willing to work through any issues relating to Regional Project. The fact that CalAm would prefer to go it alone does not make the Regional Project infeasible.

MCWD-176 cont.

Notably, the Regional Project configuration approved in 2010 with Marina Coast's participation is likely more feasible than the currently proposed project for the reasons explained in Part I above, including:

- The Regional Project addresses CalAm's lack of water rights that likely make the MPWSP infeasible.
- The Regional Project addresses the MPWSP's inability to comply with the Agency Act, which likely makes the MPWSP infeasible.
- The Regional Project's approval of vertical wells addressed high risks associated with slant wells that could make the MPWSP infeasible.

- The Regional Project Well included testing and comprehensive groundwater modeling to ensure groundwater impacts remained less-than significant unlike the MPWSP.
- The Regional Project, unlike the MPWSP, satisfies the Monterey County Desal Ordinance, which requires public ownership of desalination plants constructed within the County.

MCWD-176 cont.

In sum, it is likely the Regional Project remains feasible provided that the project would be within the confines of the SGMA and the greatly-expanded availability of data concerning the state of the basin and pertinent sub-basin, as well as current drought and climate-change related conditions. Again, it is certainly more feasible the project, as proposed.

xiv. The GWR Project Meets Most of the Project Objectives.

The DEIR/EIS states that the "GWR Project is not considered in this DEIR/EIS as a stand-alone alternative to the MPWSP because it would not provide enough water to meet the basic project objectives of the MPWSP; ***it would be about 6,250 afy short***." (DEIR/EIS, p. 5.2-6.) Again, this conclusion is improperly based on the assumption that feasible alternatives must meet all the project objectives as incorrectly construed by the DEIR/EIS. For example, Primary Project Objective #4 states, "Develop a reliable water supply for the CalAm's Monterey District service area, accounting for the peak month demand of existing customers." "Existing customers' demand is reflected in the 2016 actual demand of 9,285 AF, not the 2016 demand plus the future water needed to meet Pebble Beach water entitlements, legal lots of record, and the hospitality industry rebound. As discussed above, in Part III.A.1 of these comments and below, it appears GWR Project, which would include additional sources of water not currently projected to be used for Phases 1 and 2, would meet most of the Primary Project Objectives under Scenario A and Scenario B, if not all of the Primary Project Objectives. The DEIR/EIS, however, fails to disclose this fact.

MCWD-177

Rather, the DEIR/EIS states the GWR Project is included in the No Project/No Action alternative and "would not be relevant in the context of the proposed project or any alternative that includes a 9.6 mgd desalination plant built and operated by CalAm," because CalAm would instead construct the 6.4 MGD plant, which would have production capacity substantially in excess of any demand in 2022 and beyond. (DEIR/EIS, pp. 5.2-6 and 5.2-7.) Why does the DEIR/EIS assume that the GWR Project under the No Project/No Action alternative, but fail to consider it in evaluating the feasibility of alternatives that do not include slant well intakes.

bb. ***Comments on Alternatives Intake Options not carried forward for analysis in the DEIR/EIS***

MCWD-178

DEIR/EIS Section 5.3.3.11 states that Intake Option 11 (Ranney Wells in Seaside/Sand City) was not carried forward in the alternatives analysis stating:

> As described in Appendix I2, Intake Option 11 would involve the installation of three Ranney wells at two sites in the former Fort Ord coastal area in Seaside and Sand City. However, the former ***Fort Ord Wastewater Treatment Plant site and former Stillwell Hall sites faced political challenges*** …

(DEIR/EIS, p. 5.3-17, emphasis added.) The DEIR/EIS rejection of this alternative on the grounds it would could face political challenges is not grounds to reject this alternative under CEQA. Notably, the CEMEX site faces major political challenges also. Unlike the CEMEX site, however, the Seaside/Sand City Intake Option draw water from within CalAm's service area. So the affected municipalities and residents would at least ostensibly receive benefits from the project, unlike the citizens of Marina. In sum, potential political challenges is not grounds for failing to consider this alternative that would likely reduce the project's significant impacts. Therefore, the revised DEIR/EIS must include this alternative.

Even more egregious, the DEIR/EIS decision not to include Ranney Wells at the CEMEX site based on speculation that this option would have similar impacts to the MPWSP's proposed slant wells and is not supported. As discussed in the attached Intake Works Comments (see pp. 14-15), the DEIR/EIS's analysis makes several incorrect assumptions about the technology and fails to provide meaningful analysis of this option. Most critically, the DEIR/EIS description of the option proposes to construct the Ranney Wells so they would extract groundwater from the deeper aquifers. If the Ranney Wells were properly designed to tap the shallow marine aquifer, this alternative would likely significantly reduce the project's groundwater impacts (and potentially other impacts). Given the DEIR/EIS concludes that Ranney Wells at the CEMEX site are at least potentially feasible, the DEIR/EIS must be revised to evaluate whether they would potentially reduce the project's significant impacts at the CEMEX site. As explained in the attached Intake Works Comments, available information indicates they could, if properly designed. Given the project's significant groundwater impacts to the Marina Subarea, including the 180-foot aquifer, the DEIR/EIS must evaluate Ranney Wells at the CEMEX site to meet its obligation under CEQA and NEPA. MCWD-178 cont.

11. Comments on Analysis of CEQA Alternatives (Section 5.4).

cc. ***Comments on the No Project Alternative***

Initially, the DEIR/EIS discussion of the no project alternatives fails to address what is reasonably expected to occur in the foreseeable future at the CEMEX project site (i.e., any reclamation that would occur, decommissioning of test well, restoration of ESHA, etc.) if the project if is not approved. Instead, the DEIR/EIS only discusses the effect that the No Project Alternative would have on water supplies and impacts associated with those supplies. The DEIR/EIS's summary on water supplies appears to ring a false alarm stating: MCWD-179

> Impacts related to a No Project Alternative could result in severely supply-constrained conditions in CalAm's Monterey

> District. Existing conservation programs would continue to be implemented and new conservation and rationing measures would be required in an attempt to balance out the severe supply shortfall following Carmel River diversion curtailments under the Revised CDO in 2018 through 2021. Given the limited water supplies, it is assumed this alternative would trigger Stage 3, Conservation Rates, and very possibly Stage 4, Rationing Measures, of the Monterey Peninsula Water Conservation and Rationing Plan.

(DEIR/EIS, p. 5.4-10.) The DEIR/EIS then states the No Project Alternative with the (already approved) GWR Project:

> The GWR Project, when constructed, would provide 3,500 of potable supply for the CalAm service area. ***With the GWR Project supply, total supplies available to CalAm at the end of the Revised CDO extension period would total about 9,880 afy, which is about*** 81 percent of 2010 demand and approximately ***89 percent of estimated demand after implementation of foreseeable demand management and offset programs and other planned projects described in Section 5.4.2.3.*** Although this volume of supply would be much closer to the existing demand, the No Project Alternative in combination with the GWR Project would fail to meet most project objectives. While this scenario would achieve compliance with the Revised CDO and the Seaside Groundwater Basin Adjudication, even in combination with the GWR Project, the No Project Alternative would not provide supply to allow for replenishment of water that CalAm previously pumped from the Seaside Basin in excess of CalAm's adjudicated right; would not provide water supply reliability; and would not provide supply for Pebble Beach water entitlement-holders, for the development of vacant legal lots of record, or supply to meet demand resulting from economic recovery and rebound of the hospitality industry. In addition to failing to provide sufficient supply to meet the average annual demand assumed in MPWSP planning, the No Project Alternative combined with a GWR Project water purchase agreement would not provide sufficient supply flexibility to meet most peak demands

MCWD-179 cont.

(DEIR/EIS, p. 5.4-11, emphasis added.) Despite the fact that even by CalAm's own estimation (without independent modeling verification) that the No Project alternative with the GWR would meet 89 percent of its 2010 demand and exceed its 2016 demand of 9,285

AFY, the DEIR/EIS remarkably did not revise its conclusion that the no project alternative would likely trigger Stage 4, Rationing Measures, of the Monterey Peninsula Water Conservation and Rationing Plan. What is the rationale for not revising the conclusion?

The DEIR/EIS also appears to miscalculate the amount of water that would be available under the No Project Alternative with GWR. As discussed in Part III.A.1 above, if the 3,700 AFY GWR water is added to the 6,380 AFY identified in the No Project Alternative (on p. 5.4-9), the total becomes 10,080 AFY, not 9,880 AFY. Why does the DEIR/EIS use 9,880 AFY as that total amount water available? If this was a mathematical error, and assuming 10,080 AFY provides 795 AFY more than CalAm's 2016 demand of 9,285 AFY, what is the basis for concluding the No Project Alternative with GWR does not meet most of the project objectives? Assuming all the non-water supply objectives (i.e., Primary Objectives 8 and 9, and CalAm's secondary objective can be met by an alternative), what is the minimum amount of water supplies are needed to meet most of the project objectives? This number must be disclosed and its method of calculation for the public and decisionmakers to evaluate the potential feasibility of alternatives, including the No Project Alternative. MCWD-179 cont.

dd. ***Comments on the Alternative 1 – Slant Wells at Potrero Road***

Regarding Alternative 1, the DEIR/EIS states:

> Alternative 1 would contain the same elements as the proposed project and would produce the same volume of product water. However, because of the hydrogeology of the Potrero Road area, Alternative 1 would draw a greater volume of water from the Salinas Valley Groundwater Basin than the proposed project. In the event the Salinas Valley Return Water obligation is determined to be 12 percent (the highest return value simulated), Alternative 1 would meet the need for replacement supplies and meeting peak month demand, but limited supply would be available for other uses, including accommodating tourism demand under recovered economic conditions. Alternative 1 would not provide sufficient supplies to serve existing vacant legal lots of record and would therefore, not meet the project objective/need for water, some of which was to support limited growth (e.g., Objective 6).. MCWD-180

(DEIR/EIS, p. 5.4-15.) How does the DEIR/EIS determine that Alternative 1 would not provide sufficient supplies to meet Objective 6? How much water would Alternative 1 produce? How much water does the DEIR/EIS estimate would be needed to meet Salinas Valley Return Water obligations? How was this estimate calculated? What assumptions were used in the calculation?

After determining Alternative 1 would result in a reduced impact conclusion on groundwater quality compared to the proposed project, the DEIR/EIS states:

> Unlike the proposed project, groundwater modeling (see Appendix E2) indicates pumping from the slant wells at Potrero Road would result in a cone of depression in the underlying groundwater aquifers that would draw or divert water from Elkhorn Slough. This drawdown impact is discussed in Section 5.5.4, Groundwater Resources, and presented in Figure 5.5-2. ***The modeling cannot predict the amount of water diverted from Elkhorn Slough although it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes.*** This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, ***Alternative 1 would result in an increased impact conclusion on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.***

MCWD-180 cont.

(DEIR/EIS, pp. 5.5-114, emphasis added; see also 5.5-128 [reaching same conclusion as to Alternative 5A].) As explained in the HGC Comments, this conclusion is based on the NMGWM^{2016} model, which is poorly calibrated and does not reliably predict potential drawdown, especially for the Potrero Road site, which the modeling uses untested and not substantiated vertical hydraulic conductivity values that are 2 orders of magnitude less than the CEMEX site. As explained in HGC's comment, the assessment of the impact of surface water losses from Elkhorn Slough due to pumping is general and compared to annual conditions that don't consider low-flow or no-flow conditions resulting from seasonal or climatic dry periods. (HGC Comments, p. 61, 78.) Thus, without improved modeling, it impossible for the DEIR/EIS to assess whether this this impact is significant and therefore, what the environmentally superior alternative is.

While MCWD does not fault the DEIR/EIS for conservatively determining this impact is significant due to the lack reliable modeling information, MCWD notes this this conservative conclusion is inconsistent with the DEIR/EIS's conclusion regarding the potential impacts to the Salinas River and the Tembladero Slough. However, the fact that the DEIR/EIS's modeling cannot predict the amount of water diverted from Elkhorn Slough and conservatively assumes operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes does not excuse the DEIR/EIS from qualitatively evaluating the potential impacts. What are the potential impacts to aquatic habitat in Elkhorn Slough that could result from Alternative 1 and Alternative 5A? Without this information is impossible to determine whether any potential impacts could be mitigated. Moreover, these potential impacts must compared with the projects potential impacts to groundwater dependent ecosystems (that are not evaluated in the DEIR/EIS) and ESHA so the public and decisionmakers can weigh the environmental consequences of these alternatives with those of the proposed project. MCWD-180 cont.

12. *Comments on Environmentally Superior Alternative/Preferred Alternative (Section 5.6.)*

MCWD-181

The DEIR/EIS discussion of the Environmentally Superior Alternative/Preferred Alternative states:

> While CalAm is seeking approval of the 9.6 mgd project (proposed project), CalAm proposes to move forward with a 6.4 mgd desalination plant (Alternative 5a and 5b) if the GWR project is successfully implemented to help meet the SWRCB's CDO. In case the GWR project faces hurdles that would impair its ability to supply the additional 3.2 mgd of water for CalAm's customers in a timely manner, CalAm also seeks contingency approval for the 9.6 mgd desalination plant.

(DEIR/EIS, p. 5.6-2) The DEIR/EIS's decision to speculate that approved GWR project may not be fully implemented, without any explanation as why, in order to provide CalAm with an apparent contingency plan (which could allow CalAm abandon the GWR Project like the Regional Project for purely financial reasons) fatally undermines the DEIR/EIS's Alternatives Analysis and the CEQA and NEPA processes. As noted above, using this dual-track approach is inconsistent with CEQA and NEPA and this sets up a strawman alternative that ignores the fact the GWR Project is approved and moving forward.

Based on the DEIR/EIS's decision to compare all the alternatives to the vastly oversized and unnecessary 9.6 MGD project originally proposed by CalAm (prior to the approval of GWR), the DEIR/EIS determines that Alternative 5a paired with the GWR project, is the environmentally superior/environmentally preferred alternative. (DEIR/EIS, p. 5.6-7.) This conclusion, however, is fundamentally flawed because the DEIR/EIS fails to evaluate multiple potentially feasible alternatives that would eliminate or reduce the project significant and unavoidable impacts. As explained above, both Horizontal Wells and Ranney Wells are potentially feasible alternatives that would eliminate or reduce the project's significant and unavoidable impacts. MCWD-182

Setting aside these errors, the DEIR/EIS's conclusion that Alternative 5b (Reduced Desal with Slant Wells at Potrero Road) is environmentally inferior to Alternative 1A appears indefensible. The DEIR/EIS acknowledges that Alternative 5b would have similar but reduced groundwater level impacts at Elkhorn Slough in the Dune Sands aquifer. But concludes that "Although it would avoid impacts on marine and terrestrial biological resources at the proposed CEMEX site, the impacts on Elkhorn Slough biological resources were determined to be of greater magnitude. Therefore, Alternative 5b would not offer overall environmental advantages over the proposed project or Alternative 5a." The MCWD-183

DEIR/EIS provides no explanation for its determination that Alternative 5b's potential impacts on Elkhorn Slough biological resources are of greater magnitude than avoid Alternative 5b's impacts on marine and terrestrial biological resources at the proposed CEMEX site. As noted above, there is explanation in the DEIR/EIS of the Alternative 5b's potential impacts on Elkhorn Slough biological resources. Again, with any explanation, it is impossible for the public or decisionmakers to comment on or evaluate the DEIR/EIS's conclusion. MCWD-183 cont.

Finally, based on its comments above, MCWD offers the following comments regarding alternatives that must be considered in a revised DEIR/EIS, given the project significant impacts on the Marina Subarea, CalAm lack of water rights, and the Agency Act's prohibition of exports from the SVGB, before the CPCU or Sanctuary can determine the Environmentally Superior Alternative/Preferred Alternative.

- Horizontal Wells at CEMEX site. (See Intake Works Comments, p. 20.)
- Horizontal Wells at the Potrero site and/or other sites closer to CalAm's service area. (See Intake Works Comments, p. 20.)
- Ranney wells at CEMEX and Potrero Road sites. (See Intake Works Comments, p. 20.)
- Ranney wells at sites along Carmel Beach or other suitable locations closer to CalAm's service area. (See Intake Works Comments, p. 16.)
- In addition, the DEIR/EIS must consider alternative locations for a permanent wells on CEMEX site other than the slant well site. The CCC has determined that the existing slant test well is located in "primary habitat" (CCC Findings (analysis limited to temporary impacts to ESHA) – and MPWSP propose to make this location permanent. As this is inconsistent with City of Marina's LCP, the current test well location cannot be permitted by the City of Marina without an amendment to the City's LCP. Moreover, even under the CCC's current findings relating to the test well, a slant well at this location can only be approved if there are not feasible alternative locations on the CEMEX site. (*Ibid.*) Given the DEIR/EIS's suggestion the other proposed slant well locations are not within primary habitat – removal of the test well to one of these locations is required. MCWD-184

In sum, the DEIR/EIS must be revised and recirculated to consider these alternatives. As explained in *Citizens of Goleta Valley v. Board of Supervisors* (1988) 197 Cal.App.3d 1167, 1180–1183 (*Goleta I*) assertions that a particular alternative is economically infeasible simply because it would be more expensive or less profitable to the private applicant are not adequate. "In the absence of comparative data and analysis, no meaningful conclusions Because the DEIR/EIS fails to provide substantial evidence supporting a finding of infeasibility for any suggested alternatives above and rejects them out of hand, additional analysis is required before the CPUC or Sanctuary can consider approval of the project.

(Pub. Resources Code, § 21002; *Sierra Club v. Gilroy City Council* (1990) 220 Cal.App.3d 30, 31.) MCWD-184 cont.

Given these serious flaws in the DEIR/EIS analysis, the only Alternatives that MCWD can support is a test well for any of the above alternatives. This assumes any approved test well's impacts will adequately mitigated, unlike the CEMEX slant well, to ensure no harm to the SVGB. We further note that the Potrero Road site appears to be a superior site for subsurface seawater intake facilities for the reasons explained in the HGC Comments. Therefore, MCWD requests CPUC move forward with a test well alternative at the Potrero Road site. MCWD-185

E. Other Considerations.

13. Comments on Growth-Inducing Impacts (Section 6.3)

As explained in above in Part III.A.1, the proposed project provides substantially more water than is needed to meet the peak month demand of existing 2016 customers. Contrary to the DEIR/EIS's conclusion CalAm's requested contingency approval for the 9.6 MDG desalination plant would likely induce growth within the coastal areas substantially in manner that would be inconsistent with Sanctuary's Management Plan requirements. Unless the DEIR/EIS is revised to either eliminate the 9.6 MDG desalination plant from consideration, this section of the DEIR/EIS must be revised to evaluate the possibility of both the 6 MDG desalination plant and the GWR Project (potentially without CalAm's participation). Moreover, this Section must be revised based an independently reviewed assessment (preferably a computer model of its existing water supply sources and demands as they vary by water year type and by month and how it will change come 2022) of CalAm's future water supplies and demands. MCWD-186

14. Project Consistency with Monterey Bay National Marine Sanctuary Desalination Guidelines (Section 6.4)

The DEIR/EIS states the project is consistent with Sanctuary Desalination Guideline that "The implementation of subsurface intakes ***should not cause saltwater intrusion to aquifers or adversely affect coastal wetlands that may be connected to the same aquifer*** being used by the intake, and the intake proposal must address the likelihood of increased coastal erosion in the future." (Compare Monterey Bay National Marine Sanctuary Desalination Guidelines, p. 6 to DEIR, p. 6-48.) As discussed, above the DEIR/EIS modeling cannot and does not evaluate the project's potential to cause saltwater intrusion to aquifers or adversely affect coastal wetlands that may be connected to the same aquifer. Moreover, as explained in the attached HGC and EKI Comments, the project by design will cause seawater intrusion to Marina Subarea aquifers and adversely affect coastal wetlands that may be connected to the Marina Subarea. Therefore, this DEIR/EIS must be revised to disclose the project is not consistent with the Guideline. MCWD-187 This Section should also be revised to consider the issue surrounding public versus private ownership based on the Sanctuary's MCWD-188

Management Plan. It should also address the project's consistency with the NOAA Guideline: "Desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project." (Monterey Bay National Marine Sanctuary Desalination Guidelines, p. 4.) Given these policies, MCWD fails to understand why the DEIR/EIS is only considering CalAm's go-it-alone approach or open water intakes. MCWD-188 cont.

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MCWD requests that The Figure 5.1 from appendix E2 be revised to show the areas impacted on a topographical map or other map were locations or landmarks are visible. The current figure does not allow the public to understand the extent of potential impacts. MCWD-189

F. Recirculation of the Revised DEIR/EIS with Project or Programmatic Analysis of MPWSP Source Water Is Required.

State CEQA Guidelines Section 15088.5 provides for recirculation of an EIR prior to certification when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review but before certification. The term "information" can include changes in the project or environmental setting as well as additional data or other information. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement.

The number one concern of MCWD and many other interested parties has been whether and to what extent the MPWSP will impact existing groundwater resources in the SVGB and Marina Subarea. As explained above, the DEIR/EIS groundwater analysis is fundamental flawed and fails to disclose adequate information regarding the Marina Subarea aquifer that will be impacted by the proposed MPWSP slant wells. This violates CEQA fundamental principles. *Cadiz Land Co., Inc., supra*, is on point. In that case the petitioner's comments on a draft EIR and a supplement to the draft EIR, including the consultant's report, proved that the EIR could have included an estimate of the groundwater volume in the aquifer. According to the court, upon receipt of these comments, "the County should have revised the EIR to include such information, along with a discussion of the estimated date of depletion of the aquifer water." (83 Cal.App.4th at p. 95.) Acknowledging that the county's decisionmakers considered this information before approving the project, the court nevertheless held that the consultant's report constituted "significant new information" within the meaning of Public Resources Code section 21092.1, and that "the EIR should have been revised and recirculated for purposes of informing the public and governmental agencies of the volume of groundwater at risk and to allow the public and governmental agencies to respond to such information." (*Ibid*.) As in *Cadiz*, recirculation is required here. MCWD-190

IV. CONCLUSION.

MCWD requests the DEIR/EIS be revised as detailed in the comments above. Due to the significant nature of the revisions that will be required, MCWD believes that the DEIR/EIS is plainly deficient. After the Commission and Sanctuary make the recommended revisions, the DEIR/EIS must be re-circulated for further comment.

In addition, due to the seeming infeasibility of the proposed project based on both legal and physical considerations related to likely significant adverse impacts on the groundwater environment, MCWD recommends that the Commission and CalAm consider the full range of feasible alternative configurations and feasible alternatives (including the no project alternative) that are not presently or sufficiently addressed in the DEIR/EIS.

MCWD-191

CalAm and other project proponents have been using the "Cliff" argument to scare people into supporting the MPWSP. The argument is that if Cal-Am does not get a 9.6 MGD desalination plant built by 2021, then come January 1, 2022, when the final diversion reduction under the Carmel River Cease and Desist Order kicks in, there will be severe rationing. The DEIR/EIS's no project alternative analysis improperly adopts this scare technique. As MCWD has explained to the State Water Resources Control Board and explained above—there is no cliff. As MCWD has shown, Scenario A meets seven of nine Primary Project Objectives without the need to construct the MPWSP. Consequently, there is additional time to properly evaluate feasible alternatives, including intake technologies and locations, which would result in significantly less impacts to the environment and groundwater and lower capital costs by properly sizing the project. In fact, given the proposed project's risks and significant impacts, this evaluation is required for all the reasons explained above.

Sincerely,

Keith Van Der Maaten

Marina Coast Water District
General Manager

EXHIBIT LIST

Marina Coast Water District's
Comments on the 2017 DEIR/DEIS for the MPWSP
California Public Utilities Commission proceeding A.12-04-019

1. HGW Comments; Hopkins resume
2. GeoHydros Comments; Kincaid and Day CV; GeoHydros SOQ
3. EKI Comments
4. IntakeWorks Comments; Jones CV
5. Parties' briefs on the merits in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. CV180839
6. Inventory of transmitted flash drive folders – containing
   Public Records Act responses received to date from the Commission and
   Data request responses in A.12-04-019 received to date from the Applicant
7. Excerpts of testimony of Dennis Williams in *MCWD v. California Coastal Commission*, Santa Cruz Superior Court Case No. Case No.: CV180839
8. Map of Marina Coast Service area in relationship to the 180/400, Monterey, and Seaside Subbasins
9. Coastal Commission findings
10. Scenario A Water Portfolio analysis
11. Scenario B Water Portfolio analysis

HOPKINS
GROUNDWATER
CONSULTANTS, INC.
THE WATER RESOURCE SPECIALISTS

March 29, 2017
Project No. 15-004-01

Marina Coast Water District
11 Reservation Road
Marina, California 93933

Attention: Mr. Keith Van Der Maaten
General Manager

Subject: 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.

Dear Mr. Keith Van Der Maaten:

As requested, Hopkins Groundwater Consultants, Inc. (HGC) has reviewed the hydrogeology-related and alternatives portions of the Cal-Am Monterey Peninsula Water Supply Project (MPWSP or the "project") Draft Environmental Impact Report/ Environmental Impact Statement (DEIR/EIS) prepared for the California Public Utilities Commission, dated January 2017, and is providing these comments for Marina Coast Water District's (MCWD) consideration and use. In preparing these comments, we have reviewed the relevant portions of: (1) the DEIR/EIS; (2) the DEIR/EIS appendices; (3) references cited in the DEIR/EIS and DEIR/EIS appendices; (4) the calibrated model developed for the MPWSP and the application of the superposition model scenario constructed to evaluate the project; (5) the documents provided to HGC in response to MCWD's data and public records act requests that were made available before March 27, 2017; and (6) publicly available information referenced at the end of our comments.[1]

Preliminary Statement on DEIR/EIS's Analysis of MPWSP's Hydrogeological Analysis.

The DEIR/EIS frames the MPWSP and the project area hydrogeology in a manner that would lead anyone to believe the MPWSP can cause no harm and will ultimately be of benefit to the entire Salinas Valley Groundwater Basin (SVGB) as well as all groundwater users in the project area. In painting this picture, however, the DEIR/EIS mischaracterizes the project and the complex hydrogeological conditions in the project area by incorrectly suggesting, without any supporting evidence in many cases, that:

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[1] / As you are aware, our review of the DEIR/EIS was hampered by the extensive delays in receiving requested information relied on in the DEIR/EIS's groundwater analysis and modeling. In addition, we still have not received some of the information we requested through MCWD's data and public records act requests that would further inform our comments and analysis.

1. The intake system will induce seawater flow vertically through the ocean floor by using facilities that extend beyond the coastline at sufficiently shallow depths to virtually eliminate the production of groundwater from the overdrafted SVGB, and in particular the Marina Subarea[2]. As explained in Comment Nos. 2, 6, 9, 11, 14, 22, and 23 below, this assertion is not accurate.
2. The shallow aquifers along the coastline around the CEMEX site are fully intruded by seawater and the groundwater in the project area of SVGB consists almost entirely of highly saline seawater that extends up to 8 miles inland. As explained in Comment Nos. 3, 7, 9, 15, 16, 17, 19, 20, 21, 22, 24, 29, 33, 36, and 37 below, this characterization ignores contrary information, is a gross misrepresentation of the aquifers in the Marina Subarea, and is simply not accurate.
3. The groundwater gradient (flow) in all aquifer zones produced by the project is onshore (inland or away from the coast) in the entire area that is potentially impacted by the MPWSP and efforts to abate seawater intrusion (prohibition of groundwater production in coastal areas of SVGB Pressure Area, etc.) have had little to no effect on restoring coastal conditions and are not expected to over the entire life of the project. As explained in Comment Nos. 2, 3, 6, 11, 15, 16, 19, 23, 26, and 37 below, this is also not accurate.
4. Historical studies are sufficiently complete and comprehensive in nature to document conditions in the vicinity of the project using existing wells (or without wells) and that baseline conditions inland of the project area, within the area the model shows will become completely intruded by seawater, do not need to be investigated prior to designing the project and modeling its impacts. As explained in Comment Nos. 3, 7, 9, 15, 16, 17, 18, 19, 20, 22, 24, 26, 27, 28, 29, 30, 33, 34, 36, 37, 38, 39, 42, and 43 below, this is not accurate.

[2] / The "Marina Subarea" is used in these comments to refer to the combination of (1) that portion of the 180/400 Foot Aquifer Subbasin of the SVGB located south of the Salinas River plus (2) the northwest portion of the Monterey Subbasin that would be impacted by the proposed slant well pumping on the CEMEX property. While the Marina Subarea is not a formally DWR-recognized subarea, it contains highly complex hydrogeological conditions that are very different from the portion of the 180/400 Foot Aquifer Subbasin north of the Salinas River as explained herein. The Marina Subarea is the coastal subarea of the overdrafted SVGB and is the area that would be directly impacted by the proposed project feed water pumping of 27,000 AFY. The Monterey County Water Resources Agency has defined the "Pressure Area" as a combination of the DWR-designated 180/400 Foot Aquifer Subbasin and the former Seaside Area and Corral De Tierra Subbasins (now the new Seaside and Monterey Subbasins). The Pressure Area is not a formally DWR-recognized subarea either, but that term is used throughout the DEIR/EIS.

5. The limited exploration and testing to date sufficiently validates the assumptions in the DEIR/EIS's groundwater model(s) used to simulate impacts of the proposed project and additional modeling based on actual conditions identified through recent fieldwork and laboratory testing is not necessary to disclosure of the project's potential groundwater impacts or evaluate of project alternatives. As explained in Comment Nos. 2, 4, 5, 6, 15, 18, 25, 26, 27, 28, 29, 31, 32, 33, 38, and 39 below, this is not accurate.
6. The DEIR/EIS's superposition model is reliable and demonstrates that the project's potential impacts on groundwater levels and groundwater quality in the Marina Subarea will be less than significant. As explained in Comment Nos. 4, 5, 8, 15, 25, 26, 27, 28, 30, 31, 32, 35, 37, and 39 below, this is not accurate.
7. Mitigation of the project's impacts can be accomplished through multiple methods and means. As explained in Comment Nos. 1, 4, 6, 8, 9, 10, 11, 12, 13, 21, 22, 23, 24, 25, 29, 30, 34, 35, 36, and 40 below, this is not accurate.

With these factors and hydrogeological conditions in mind, HGC has reviewed pertinent sections of the DEIR/EIS, calibrated model and superposition model numerical files that were made publicly available, numerous historical reports, and the baseline hydrogeological data that have been generated prior to February 2017 near the CEMEX site and south of the Salinas River (and is still being generated at the time of this review), and we offer the following comments for your consideration. Following our detailed comments on the DEIR/EIS, we also provide a summary of our conclusions and recommendations at end of the document.

Prior to turning to our specific comments, we note that our review of the documentation of the groundwater models that were constructed to simulate surface water and groundwater in the SVGB indicates there is a fundamental problem with the modeling utilized for the DEIR/EIS. Namely, the calibrated North Marina Groundwater Model (NMGWM^{2016}) was abandoned and replaced with the inferior superposition model because of technical problems. While not explained in the DEIR/EIS, based on our review, the problems appear to originate with the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) where all wells used to calibrate the model are located north of the Salinas River outside of the Marina Subarea/project area (LSCE, 2015).[3] The problems, however, carry over to the NMGWM^{2016} and CEMEX Model (CM), which were used to create the DEIR/EIS's superposition model as explained below.

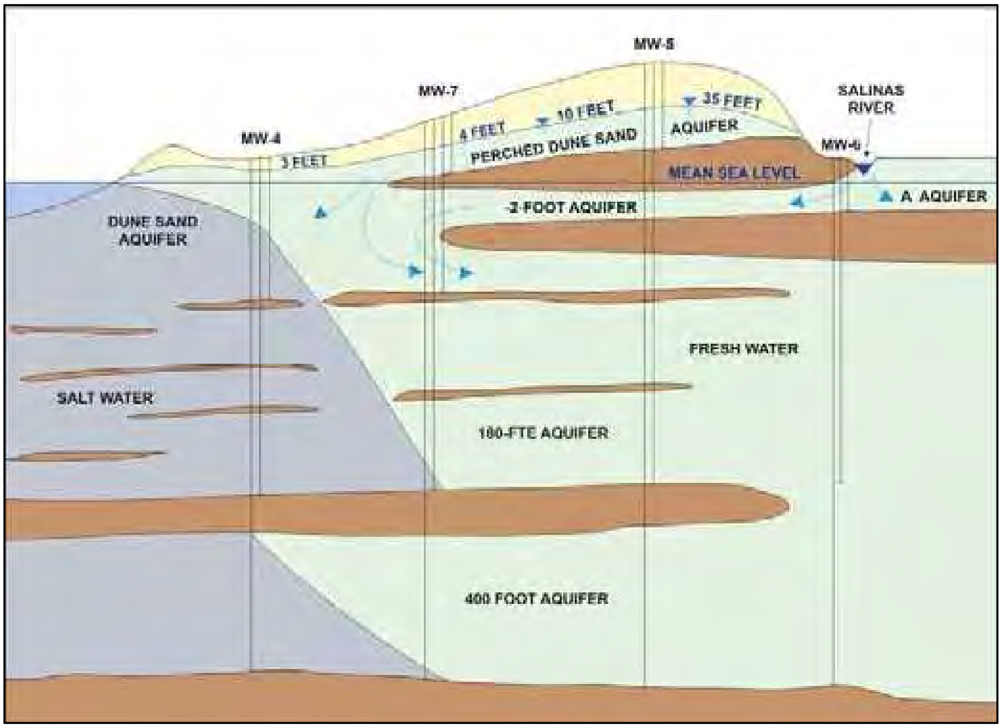
[3] / The Marina Subarea/project area as defined by available studies (KJC, 2004, Geoscience, 2014) as being separated from the main portion of the Pressure Area north of the Salinas River by a geologic facies change (the depositional environment) creating differences in the strata that formed as the 180-Foot Aquifer and 180-Foot Equivalent Aquifer (180-FTE), and the shallower Dune Sand and A-Aquifer zones.

The NMGWM^{2016} domain covers the coastal area northwest of Salinas and uses input from the SVIGSM for its simulations. The NMGWM^{2016}, however, largely uses wells north of the Salinas River as target wells for model calibration while incorporating only a few wells from the Fort Ord area south of the river along with abbreviated data sets from the TSW monitoring wells. The results of the NMGWM^{2016} simulations were used as input to the CM, which has a domain that covers a smaller area centered around the CEMEX active mining area and was used to simulate effects of production proposed for the TSW project. The NMGWM^{2016} was then initially used to evaluate the effects of the proposed MPWSP, but later abandoned because of the inability to complete satisfactory model calibration in the Dune Sand and 180-FTE Aquifers south of the river.

It appears the NMGWM^{2016} modeling was abandoned due to the difficulty with model calibration in the modelers attempts to add hydrogeologic information that was not included in the SVIGSM. This additional information generated by the pre-project studies indicates a semi-perched groundwater condition within the Dune Sand Aquifer that is also documented by other studies. This condition is of particular importance because it has resulted in Dune Sand Aquifer groundwater elevations in the Fort Ord area of 70 to 90 feet above mean sea level (amsl) (Ahtna, 2015), which decline to approximately 35 feet amsl at MW-5S. The presence and effects of this perched layer of fresh water was attempted to be incorporated in the NMGWM^{2016}, but was unsuccessful. The wells located south of the Salinas River in the project area that were used for calibration to compare simulated results with observed groundwater level elevations produced model error in the Dune Sand Aquifer (model layer 2) on the order of 30%. Consequently, there was not a high level of confidence in the accuracy of model predictions in the project area. Nonetheless, the hydraulic conductivity values used unsuccessfully in the NMGWM^{2016} were subsequently used to create the superposition model. As a result, the superposition model uses all the aquifer parameters of the poorly calibrated NMGWM^{2016} and assigns new boundary conditions and starting heads of zero. This maneuver, however, does not fix or improve the problems with the DEIR/EIS's modeling or its reliability. In fact, instead of improving on the poorly calibrated model, the maneuver removes all other stresses and recharge conditions in the basin and fails to address the project's impacts on the beneficial groundwater conditions that have developed in the Marina Subarea. Not only does this make the DEIR/EIS's assessment of groundwater even more unreliable, as a result the DEIR/EIS is incapable and therefore fails to evaluate the project's impacts on semi-perched groundwater conditions within the Dune Sand Aquifer and the semi-confined -2-Foot Dune Sand Aquifer conditions. This failure is fatal to the DEIR/EIS's ability to reliably analyze the project's potential groundwater impacts.

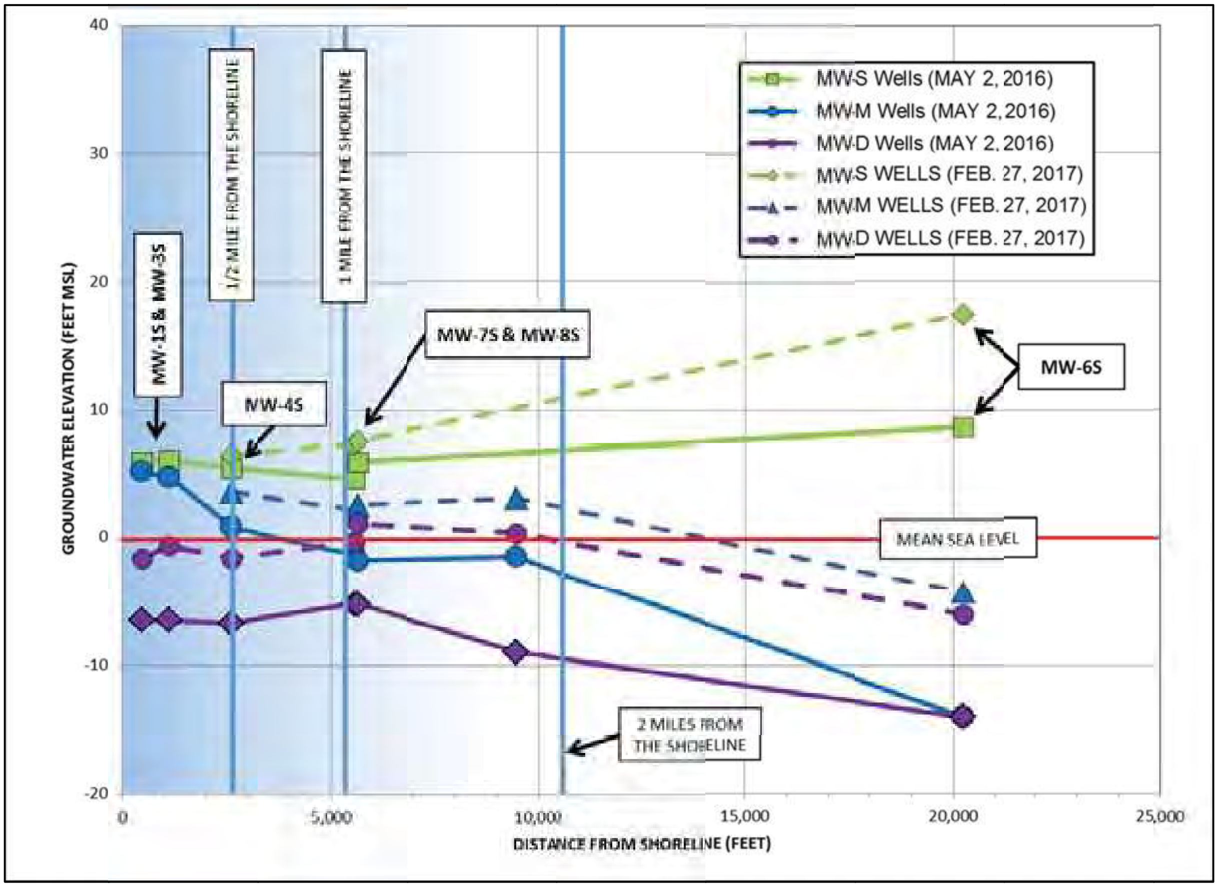
As discussed in detail below, the pre-project studies indicate that MW-1S, MW-3S, MW-4S, and MW-7S likely are connected to the Dune Sand Aquifer zone recognized as the -2-Foot Aquifer that is identified beneath the County landfill site (Geoscience, 2016). The elevation and thickness of this zone indicates it likely has a hydraulic continuity to the A-Aquifer zone in the main portion of the SVGB located north of the river. The concept demonstrated by these data is further illustrated on Diagram 1 – Conceptual Hydrogeology of Marina Subarea along with the perched Dune Sand Aquifer condition.

Diagram 1 – Conceptual Hydrogeology of Marina Subarea



Also discussed below, recent data obtained regarding the gradient beneath the landfill (near MW-5) shows recharge from the river that creates a groundwater gradient toward the coastline. Importantly, this is consistent with the elevated heads in MW-6S where it also receives recharge from the river. Diagram 2 – Water Level Elevation and Shoreline Proximity compares available data that were collected just prior to restarting the long term pumping test on May 2, 2016, and the high water level conditions observed on February 27, 2017. This diagram shows the wells that are constructed in the Dune Sand Aquifer zone that is equivalent to the -2-Foot Aquifer zone along with MW-6S, which is in the A Aquifer zone (Geoscience, 2016). As shown by these data, there is a groundwater gradient that moves water from the river area of recharge toward the coastline in the Marina Subarea of the SVGB. Monitoring Well MW-5S data with water levels in excess of 35 feet amsl were not included in Diagram 2 because it is now recognized to be screened in a semi-perched dune sand layer on top of the aquitard layer identified as the Fort Ord Salinas Valley Aquitard (FO-SVA). The FO-SVA layer overlies the -2-Foot Aquifer/Dune Sand Aquifer, which is reportedly 30 to 40 feet thick and rests on the Salinas Valley Aquitard near the river in the Marina Subarea northeast of the project site (Geoscience, 2016).

Diagram 2 – Water Level Elevation and Shoreline Proximity



The significance of this condition south of the Salinas River is illustrated by Diagram 3 – Particle Tracking With No Background Gradient, and Diagram 4 – Particle Tracking With 8-Foot Gradient Across Model Domain. The DEIR/EIS, however, does not recognize this condition due to the poor model calibration.

Turning back to the modeling used in the DEIR/EIS, the NMGWM^{2016} was constructed with a landward gradient in the 180-Foot Aquifer and does not simulate the -2-Foot-Aquifer beneath the confining layer that underlies the perched portion of the Dune Sand Aquifer. Initial head conditions create a constant landward flow of seawater beneath the perched layer. The particle tracking results during operation of wells for the MPWSP were not presented for either the calibrated NMGWM^{2016} or the superposition model, however particle movement would be similar to Diagram 3, which has a flat gradient prior to pumping, like the superposition model. As shown in Diagram 4, an 8-foot gradient across the entire model toward the coastline results in a different flow pattern and the capture of groundwater that is flowing toward the shoreline like the groundwater in the semi-perched Dune Sand Aquifer above the confining layer and groundwater in the -2-Foot Dune Sand Aquifer below the confining layer (see Diagram 2).

Diagram 3 – Particle Tracking With No Background Gradient

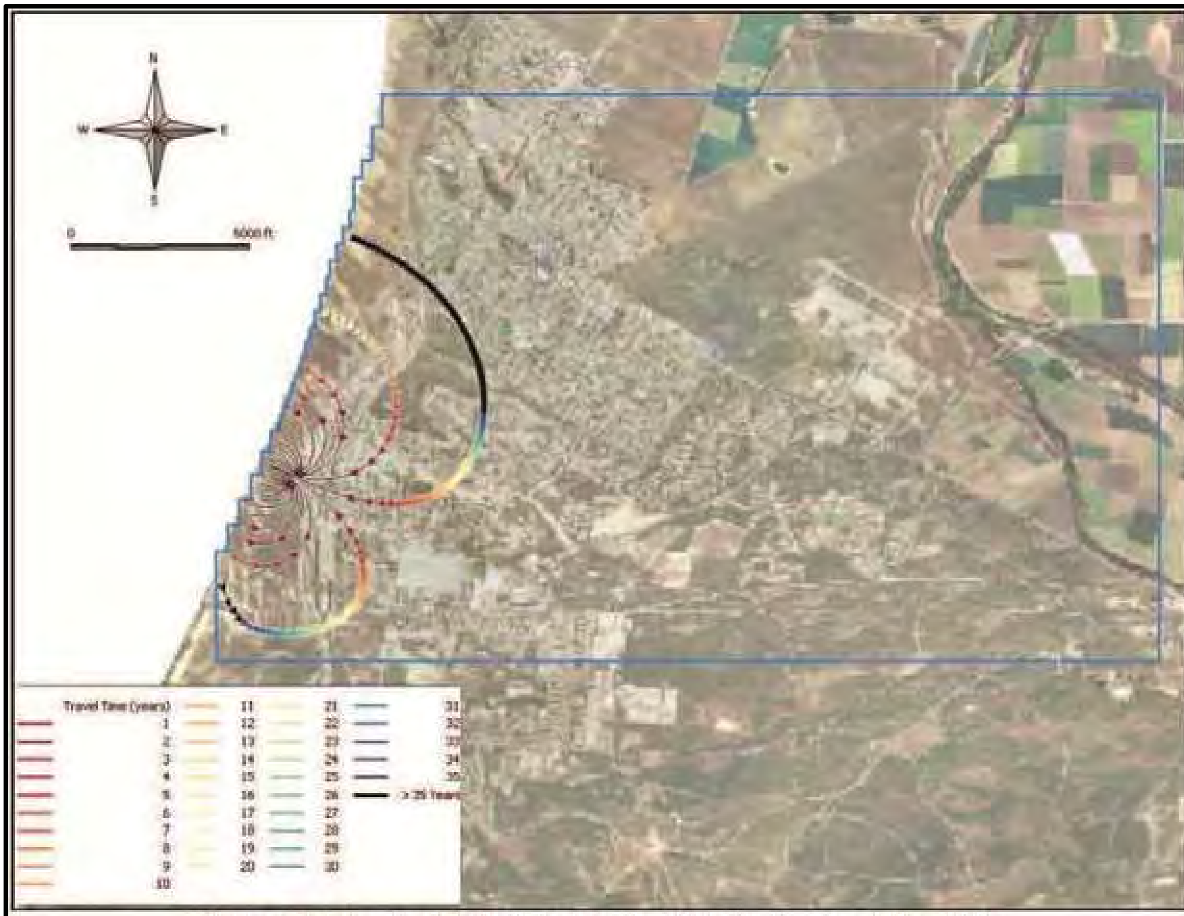


Figure 7: Simulated Capture Zone – No Background Gradient

FROM (HYDROMETRICS, 2006)

Again, this failure is fatal to the DEIR/EIS's ability to reliably analyze the project's potential groundwater impacts. Given the potential magnitude of the increased groundwater production, the impacts to the SVGB, in particular the Marina Subarea, the project's potential impact on the Marina Subarea are very likely grossly understated by the superposition model. Therefore, a well calibrated model is needed to quantify the project's potential impacts with a reasonable scientific basis. Specifically, a model that utilizes all the recharge and discharge components included in the older SVIGSM, and constructed with a level of detail reflecting our present understanding and knowledge of the hydrogeological system in the Marina Subarea is needed. Moreover, because seawater is an issue, a dual density model should be used to allow calculation of the head differences between the ocean water offshore and onshore, and freshwater in the aquifer zones inland and to allow prediction of water quality changes and the concentrations of feedwater that would be produced by the proposed project.

Diagram 4 - Particle Tracking With
8-Foot Gradient Across Model Domain

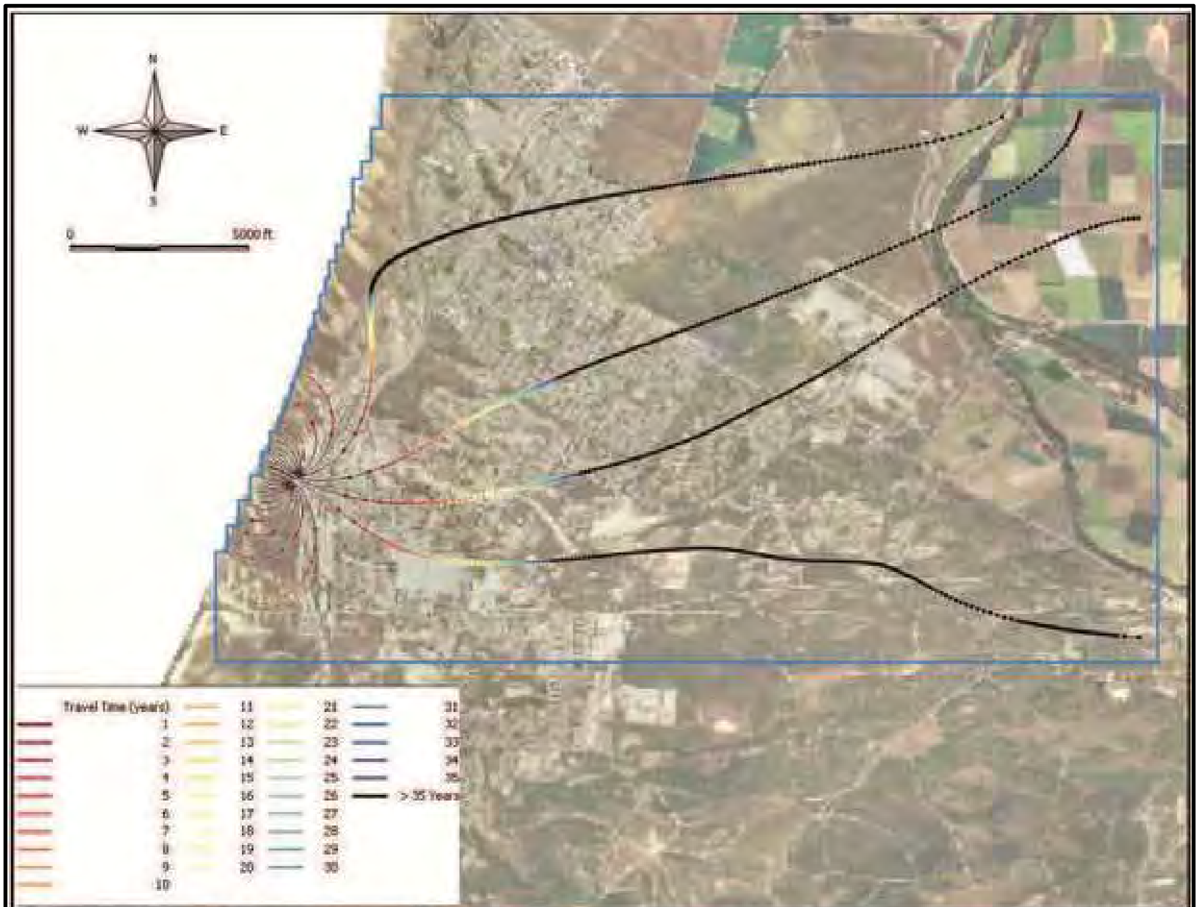


Figure 8: Simulated Capture Zone – Westward Background Gradient

FROM (HYDROMETRICS, 2006)

With this understanding of perched groundwater conditions within the Dune Sand Aquifer in the Marina Subarea and with the fundamental flaws in the DEIR/EIS's modeling, we offer the following specific comments on the DER/EIS. To simplify the presentation of our comments and assist your review of these pertinent issues, we have excerpted or summarized the sections of the DEIR/EIS that we address and subsequently provide our comments or concerns of the hydrogeological issues that are crucial to understanding the potential project impacts. Please note that while we have selected certain sections of the DEIR/EIS to comment upon, our comments apply to similar statements that are repeated in other sections of the DEIR/EIS.

Comments on DEIR/EIS Chapter 2 (Water Demand, Supplies, and Water Rights).

DEIR/EIS's water rights discussion fails to estimate the amount of return water required for the project and may have insufficient supply to meet all return water requirements:

On **Page 2-22 of the DEIR/EIS** states:

> MPWSP source water would include some brackish groundwater from the SVGB. As part of the proposed project, CalAm would return to the SVGB a volume of desalinated product water equal to the amount of SVGB groundwater included in the source water. While CalAm's SVGB return water obligation will be based on the amount of fresh water in the source water, in order to consider the effect of the return water for this EIR/EIS, groundwater modeling simulated scenarios with return water obligations representing 0, 3, 6, and 12 percent of the source water (see Section 4.4, Groundwater Resources). The amount of SVGB groundwater included in the source water is expected to decrease over time (CalAm et al., 2016b).

Then on **Page 2-35 of the DEIR/EIS** states:

> CalAm proposes as part of the MPWSP to return to the Basin (in the manner further described below) the fresh water portion of the brackish source water. In other words, although the groundwater modeling indicates that the Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water, the MPWSP would return to the Basin desalinated product water in the amount of the fresh water molecules that make up the withdrawn brackish Basin water. In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water.

HGC Comment No. 1:

The DEIR/EIS fails to disclose the amount of return water that would be necessary to replace the groundwater drawn from the SVGB as proposed in the Project Description.[4] Nor does the DEIR/EIS provide any discussion or information to support bracketing the return water percentage between 0% to 12%. In fact, it is likely that the return water obligation would be more than 12%, especially in the initial years of operation. Even the NMGWM^{2016} calibrated model, which likely underestimates the slant wells production of groundwater as discussed in

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[4] / As discussed below and in Comment No. 4 below, the return water proposal in the DEIR/EIS does not address the amount return water that is needed to mitigate the project's cumulative impacts on groundwater quality that would be required to comply with the SWRCB's report, the SGMA, and CEQA.

Comment No. 5 below, predicts up to 22% of groundwater will be produced from the Dune Sand Aquifer and another 3.5% of groundwater will be produced from the 180-FTE Aquifer during the initial time step.[5]

While it is not stated exactly how the range of 0 to 12 percent estimates were determined in the DEIR/EIS, an analysis of the salinity of the feedwater using ocean water with a total dissolved solids (TDS) concentration of 33,500 milligrams per liter (mg/l) and groundwater with an average TDS concentration of 440 mg/l can yield an estimate. Using these values and the laboratory test results obtained during the MPWSP's Test Slant Well (TSW) production period and included in the water quality report to the Hydrogeologic Working Group (HWG) (Geoscience, 2015p, Table 2), the TSW produced water with an average TDS concentration of 25,033 mg/l and was comprised of 25.6 percent groundwater and 74.4 percent ocean water.

Over the initial period of the long-term pumping test, the TDS concentration had reached approximately 29,100 mg/l prior to cessation of the test in early June 2015. Subsequent laboratory test results indicate that on December 12, 2016, and January 19, 2017 the TDS concentration had reached approximately 30,200 mg/l and 31,700 mg/l, respectively. Using these values along with the average February 2017 value of 29,900 mg/l, we can estimate a range of return water quantities by considering the groundwater component produced if a groundwater TDS concentration of 1,000 mg/l (State Drinking Water secondary standard) or 3,000 mg/l (Regional Water Quality Control Board [RWQCB] Water Quality Control Plan (WQCP) for the Central Coast Basin, water quality defined for beneficial uses) were used compared to the reported 440 mg/l average groundwater TDS concentration. Table 1 – Feedwater Composition Based on TDS Concentrations shows a comparison of the results using these values.

As shown, approximately 13.3 to 14.4 percent of the feedwater was groundwater when pumping was initiated. While higher salinity feedwater was produced by the TSW in December 2016 and January 2017, the concentration declined by February 2017 where approximately 11 to 12 percent of the groundwater produced would need to be returned. As explained below (see Comment No. 33), the water quality bias of the TSW to be more saline than other comparable

[5] / Modeling summarized in Appendix E1 of the **April 30, 2015 MPWSP Draft EIR** (Geoscience, 2014a, Figure 20) indicates that the initial groundwater production would be much greater during the initial production period (50 to 40 percent during the first year) and would decrease over a 4-year period to an estimated 4 percent after 4 years of production. Our review of the NMGWM^{2016} calibrated model results indicates that initially over 25 percent of the production will come from groundwater and that after 5 years, the component predicted to come from the SVGB is approximately 10 percent. The NMGWM^{2016} calibrated model, like the prior modeling, likely underestimates the slant wells production of groundwater (See Comment Nos. 3 and 9 below) and should not be considered to represent maximum amount of groundwater that may need to be returned to comply with the Agency Act.

wells located away from the CEMEX operations is a result of the dredge pond location and the salt water discharges that occur inland of the TSW location.

Notably, if a greater percentage of groundwater is produced than presently estimated by the DEIR/EIS, which is likely, or if usable groundwater salinity increases, the annual amount of return water to the SVGB would increase accordingly. The higher return water volumes required during the initial production period when a greater component of groundwater is pumped is not addressed in the DEIR/EIS. Please note that our comment here should not be interpreted to suggest the return of all groundwater to the SVGB as proposed MPWSP's return water proposal would mitigate the project's impacts to the Marina Subarea. The inadequacy of the DEIR/EIS's analysis of the MPWSP's return water proposal and DEIR/EIS's failure to mitigate the project's cumulative impacts on groundwater is discussed in HGC Comment No. 4.

Table 1 – Feedwater Composition Based on TDS Concentrations

OCEAN WATER SALINITY (MG/L)	GROUNDWATER SALINITY (MG/L)	FEEDWATER SALINITY (MG/L)	GROUNDWATER PERCENTAGE	OCEAN WATER PERCENTAGE
33,500	440	29,085	13.3	86.7
33,500	1,000	29,085	13.5	86.5
33,500	3,000	29,085	14.4	85.6
33,500	440	30,200	10.0	90.0
33,500	1,000	30,200	10.2	89.8
33,500	3,000	30,200	10.8	89.2
33,500	440	31,700	5.4	94.6
33,500	1,000	31,700	5.5	94.5
33,500	3,000	31,700	5.9	94.1
33,500	440	29,900	10.9	89.1
33,500	1,000	29,900	11.1	88.9
33,500	3,000	29,900	11.8	88.2

Finally, the DEIR/EIS cites to the settlement agreement regarding return water as support for the assumption that the amount of SVGB groundwater included in the source water is expected to decrease over time. This assumption appears to be based on the belief that the project's cumulative impacts will make the entire Marina Subarea hypersaline and therefore less groundwater will be available to pump. Under the proposed return water agreement and project description, the greater the project's cumulative impacts to the Marina Subarea water quality, the less mitigation Cal-Am is required to provide. Not only is this inconsistent mitigation requirements under the California Environmental Quality Act (CEQA), it ignores the Sustainable Groundwater Management Act's (SGMA) mandates as discussed below. As shown in Diagram 4, when efforts under SGMA increase inland groundwater levels to further abate seawater intrusion, a greater amount of groundwater will be captured by the slant well intake system.

DEIR/EIS's water rights discussion presents misleading picture of where slant wells will draw water:

One such example is on **Page 2-30,** where the DEIR/EIS states, "The proposed project (MPSWP) and Alternative 5a are designed to take supply water from the ocean via underground slant wells that draw water from the earth underneath the ocean … b***ecause the project supply wells could draw some water from the Basin***, concerns have been expressed as to whether CalAm does or will hold legal rights to use the water that would be taken by the slant wells, treated at the desalination plant and supplied to CalAm customers located outside the Basin." (emphasis added)

HGC Comment No. 2:

The above statements are likely to mislead the public and the Commissioners. While it may be accurate to state that the proposed slant wells will pump most of the water from underneath the ocean, to state that the project supply wells "could draw some water from the Basin," using the term "could" inaccurately suggests there is some doubt that groundwater would be drawn from the SVGB.

While the amount of groundwater that would be drawn from the SVGB cannot be accurately determined based on available information or DEIR/EIS modeling to date, there is no question a substantial amount of groundwater will be drawn from the SVGB – and based on currently available information, a much greater quantity than indicated in the DEIR/EIS as discussed in Comment No. 1 and explained later in these comments.

DEIR/EIS's water rights discussion inaccurately suggests the MPWSP will create "developed water" because all the aquifers in the Marina Subarea of the SVGB are contaminated by seawater and will not support beneficial uses; this conflicts with available data from the TSW's monitoring wells:

Specifically, **Pages 2-32 and 33** of the DEIR/EIS state:

> Essentially, if the extraction of otherwise unusable Basin groundwater will not harm lawful water users and any fresh water extracted can be returned to the Basin without injury to existing legal water users, then CalAm would have rights to the portion of feedwater that comes from the Basin because the MPWSP product water that contains such Basin water would be "developed water."

Developed water is water that was not previously available to other legal users and that is added to the supply by the developer through artificial means as a new water source. "The key principle of developed water is if no lawful water user is injured, the effort of an individual to capture water that would otherwise be unused should be legally recognized." Report at 37. Due to long-term seawater intrusion (where the seawater has moved inland) in the Basin, large areas of the Basin groundwater are impaired as to drinking and agricultural uses. The geographic areas from which the project supply wells could draw water inland of the sea are indeed intruded by seawater. (See Section 4.4, Groundwater Resources) "Since this groundwater is reportedly impaired, it is unlikely that this water is, or will be put to beneficial use." Report at 15. In fact, in response to concerns over seawater intrusion and historic overdraft in the Basin, the County adopted Ordinance No. 3709, which precludes the installation of new groundwater wells and prohibits groundwater pumping between mean sea level and 250 feet below mean sea level in certain areas.

HGC Comment No. 3:

Contrary to the DEIR/EIS suggestion, "developed water" is not being created by the MPWSP, but is already there because of the restriction on pumping from Monterey County adopted Ordinance No. 3709 (and conservation efforts in the area) and it would otherwise be available to existing overliers and appropriators if it were not for the Ordinance restrictions. As shown in Table 2 – Groundwater Composition Based on TDS Concentrations – the salinity of groundwater in the Marina Subarea affected by the project is not largely intruded by seawater as claimed in the DEIR/EIS. Using the TDS concentration of 33,500 mg/l for ocean water and the TDS concentration of native groundwater 440 mg/l,[6] we analyzed the composition of the local groundwater in the aquifer zones that will be produced by the MPWSP slant wells by using the following equation:

$$\mathbf{OWP = (GS-IS) / (OWS - IS) \times 100.}$$

OWP = Ocean Water Percentage, (%)
GS = Groundwater Salinity, (mg/l)
IS = Inland Water Salinity (TDS = 440 mg/l)
OWS = Ocean Water Salinity (TDS = 33,500 mg/l)

[6] / Our use of 440 mg/l here is based upon the TDS concentration provided by Geoscience as the SVGB average concentration. It should not be used to infer that groundwater that exceeds 440 mg/l has no beneficial uses. As discussed in Comment No. 21, the DEIR/EIS assumption that groundwater that exceeds 500 mg/l has no beneficial uses is wrong and inconsistent with the Basin Plan.

The analysis of available data shows that the percentage of ocean water decreases significantly within a short distance from the coastline. It also shows that within the area affected by the project, the groundwater is not the salinity of seawater as claimed in above passage – or intruded for up to 8 miles inland as stated in the DEIR/EIS on page 4.4-31. A visual presentation of these data is shown in Diagram 5 – Percent Groundwater and Ocean Water with Distance from the Shoreline.

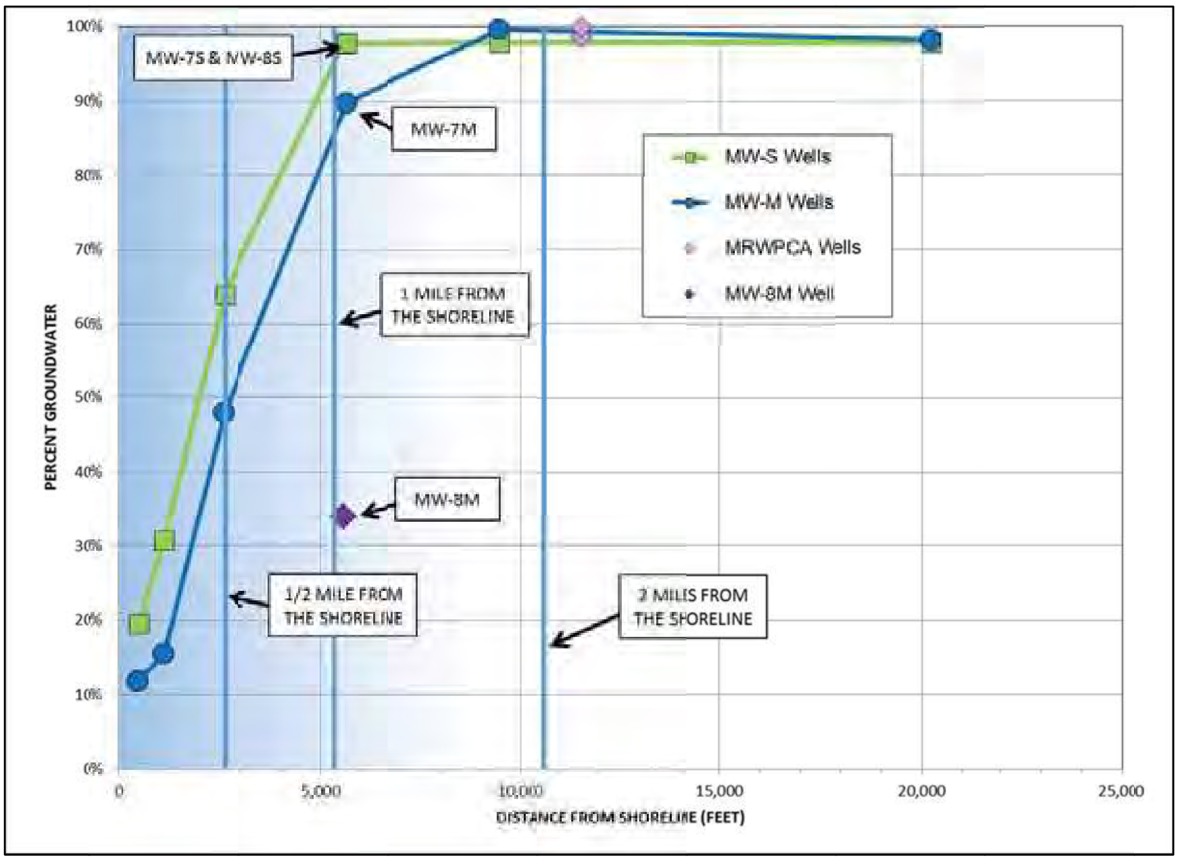
Table 2 – Groundwater Composition Based on TDS Concentrations

GROUND-WATER SAMPLE LOCATION	OCEAN WATER SALINITY/TDS (MG/L)	GROUND-WATER SALINITY/TDS (MG/L)[1]	GROUND-WATER SAMPLE SALINITY/TDS (MG/L)	PERCENT GROUND-WATER	PERCENT OCEAN WATER	DISTANCE FROM THE COASTLINE (FEET)
DUNE SAND AQUIFER OR A-AQUIFER						
MW-1S	33,500	440	27,050[2]	19.5 %	80.5 %	480
MW-3S	33,500	440	23,350[2]	30.7 %	69.3 %	1,100
MW-4S	33,500	440	12,350[2]	64.0 %	36.0 %	2,590
MW-5S	33,500	440	1,141[2]	97.9 %	2.1 %	9,450
MW-6S	33,500	440	608	99.5 %	0.5 %	20,240
180-FOOT AQUIFER						
MW-1M	33,500	440	29,600[2]	11.8 %	88.2 %	465
MW-3M	33,500	440	28,400[2]	15.4 %	84.6 %	1,102
MW-4M	33,500	440	17,700[2]	47.8 %	52.2 %	2,580
MW-5M	33,500	440	558[2]	99.6 %	0.4 %	9,462
MW-6M	33,500	440	966	98.4 %	1.6 %	20,240
400-FOOT AQUIFER						
MRWPCA NO. 1	33,500	440	890[3]	98.6 %	1.4 %	11,530
MRWPCA NO. 2	33,500	440	350[4]	100.3 %	-0.3[4]	11,530

1 – AVERAGE INLAND WATER SALINITY FROM (GEOSCIENCE, 2015a)
2 – AVERAGED FROM DATA IN (GEOSCIENCE, 2015p) TABLE 2
3 – DATA FROM (GEOSCIENCE, 2015p) FIGURE 3-5
4 – WATER QUALITY BETTER THAN INLAND WATER SALINITY

Figure 1 – Average Chloride Concentrations, Dune Sand and 180-Foot Aquifer (attached to these comments) shows the location of the wells being monitored for the TSW project. As shown, the chloride concentrations in the 180-Foot Aquifer decrease from 9,664 mg/l in MW-4M to 105 mg/l in MW-5M, which is in the middle of the reported zone of seawater intrusion that is defined by a chloride concentration of 500 mg/l (B&C, 2015). Figure 2 – Average Total Dissolved Solids Concentrations, Dune Sand and 180-Foot Aquifer (attached to these comments) shows this same trend in the average TDS values obtained from available laboratory data (Geoscience, 2015p) and unpublished data provided by the CPUC in response to an MCWD data request, which we understand MCWD will include with its comments.

Diagram 5 – Percent Groundwater and Ocean Water with Distance from the Shoreline



The Monterey Regional Water Pollution Control Agency (MRWPCA) well locations are indicated on Figures 1, and 2, for reference, however, available data are provided on Figure 3 – MRWPCA Wells in 400-Foot Aquifer (attached to these comments), which shows the delineation of the seawater intrusion front(s) estimated by previous study (B&C, 2015) for water quality in the 400-Foot Aquifer at the MRWPCA site. As shown on Figure 3, the MRWPCA Wells are within the seawater intruded portion of the SVGB but have a fresh water quality.

To assist in reviewing the chemical character of the fresh water contained in the 180-FTE and Dune Sand Aquifers Figures 4 - and 5 – Stiff Diagrams Dune Sand and A Aquifer, and 180-Foot Aquifer (attached to these comments), respectively, visually show the dominant cations and anions for available groundwater data. As shown in Figure 4, monitoring wells MW-5S, MW-6S, MW-7S, and MW-8S have a distinctly different chemistry than the cluster of wells located at the CEMEX site. First, there are a number of overlying land uses in that area including agricultural, waste disposal, composting, and sewage treatment that commonly contribute salts and nutrients to groundwater. For instance, MW-5S has a water surface of approximately 35 feet above sea level. It is not possible for seawater intrusion to flow uphill to this location. The chemical character of MW-5S groundwater is a calcium chloride with a nitrate concentration of approximately 235 mg/l (nitrate as NO_3). Seawater does not have a high concentration of nitrate, which clearly shows this freshwater source has received about 25% of its existing dissolved mineralogy as a nutrient from overlying land uses. Both MW-7S and MW-8S have high nitrate concentrations of 198 mg/l and 123 mg/l, respectively, which appear to be flowing from the semi-perched water source at MW-5S and dilute on its way westward. Both MW-7S and MW-7M have a calcium chloride chemical character consistent with recharge from the semi-perched layer and not seawater with a sodium chloride chemical character.

These data appear to indicate that cessation of pumping along the coast in combination with natural recharge mechanisms, only now being discussed, has resulted in favorable groundwater conditions that appear to be protecting the shallow aquifers in an area of the SVGB located inland of the project and south (or in the vicinity) of the Salinas River. The DEIR/EIS does not acknowledge these water quality data as significant and insists that the groundwater is impaired to an extent that it is unlikely that this water is suitable for, or can be put to beneficial use. Available data do not support the DEIR/EIS's conclusion and in fact indicate additional study of existing conditions should be conducted to further understand sources of groundwater recharge and its movement within the aquifers of the Marina Subarea of the SVGB Pressure Area.

DEIR/EIS's water rights discussion incorrectly assumes that the proposed return water agreement or other alternatives will mitigate the project's groundwater impacts in the Marina Subarea as required by the State Water Resources Control Board's (SWRCB's) advisory opinion and CEQA:

On **Page 2-34 and 35**, the DEIR/EIS quotes the SWRCB report stating:

> Cal-Am could use one of several possible options to replace any fresh water it extracts from the Basin. Cal-Am could return the water to the aquifer through injection wells, percolation basins, or through the CSIP. Cal-Am would need to determine which of these methods would be the most feasible, and would in fact, ensure no

> harm to existing legal users. The feasibility analysis would depend on site-specific geologic conditions at reinjection well locations and at the percolation areas. These studies need to be described and supported in detail before Cal-Am can claim an appropriative right to export surplus developed water from the Basin.

Report at 39. The Report emphasizes more than once that any injection wells or percolation basins for the purpose of returning fresh water to the Basin would need to be located where the underlying aquifer does not contain degraded water so as to avoid a waste of beneficial water.

> In summary, to appropriate groundwater from the Basin, the burden is on Cal-Am to show no injury to other users. Key factors will be the following: (1) how much fresh water Cal-Am is extracting as a proportion of the total pumped amount and how much desalinated water is thus available for export as developed water; (2) whether pumping affects the water table level in existing users' wells and whether Cal-Am can avoid injury that would otherwise result from any lowering of water levels through monetary compensation or paying for upgraded wells; (3) whether pumping affects water quality to users' wells within the capture zone and whether Cal-Am can avoid or compensate for water quality impacts; (4) how Cal-Am should return any fresh water it extracts to the Basin to prevent injury to others; and (5) how groundwater rights might be affected in the future if the proportion of fresh and seawater changes, both in the larger Basin area and the immediate area around Cal-Am's wells.

Report at 46. The Report concluded that further data were needed in order to apply the facts and evidence to the criteria set forth in the Report for determining CalAm's water rights. The Report noted that information was needed pertaining to the depth of the project supply slant wells, the hydrogeologic conditions of the site and the area, updated modeling to evaluate the impacts of the project, aquifer testing, and studies to help determine how extracted fresh water would be replaced. Most of these studies and activities have been undertaken and the results are described and reflected in Section 4.4, Groundwater Resources. CalAm has supplied details about its proposed supply wells and return water proposal. Test borings have helped to characterize the hydrogeologic framework within which the project would operate. Groundwater modeling has been conducted. CalAm also obtained approval to construct a test well on the CEMEX site. That well is in place (and core samples taken during the drilling of the well confirmed the assumptions about hydrogeologic conditions) and test pumping is occurring. Test slant well pumping and monitoring data was used to refine the aquifer properties

> represented in the revised version of the groundwater model to test the model's reliability for simulating drawdown from slant well pumping. Once the test well results are complete, the modeling will be verified and will be re-run as warranted. Thus, the full panoply of evidence concerning the project's relationship to groundwater (and thus water rights) may continue to evolve and be refined throughout the CPUC proceeding. This preliminary analysis of water rights is based upon detailed and extensive groundwater aquifer characterization and groundwater modeling that has been undertaken by the EIR/EIS preparers to assess the effects of the project on Basin groundwater users.

HGC Comment No. 4:

The DEIR/EIS incorrectly assumes the "Settlement Agreement on MPWSP Desalination Plant Return Water," will mitigate all the project's groundwater impacts. The proposal, however, would return groundwater to the SVGB and provide benefit to well operators located north of the Salinas River, which is outside of the area that will experience the greatest impact from the project (i.e. Marina Subarea) which is located south of the river. See HGC Comments 9 and 10 for further discussion.

Regional data available for model construction south of the Salinas River in the vicinity of the CEMEX site are limited. The initial field work and aquifer testing conducted for the TSW project has provided hydrogeological data indicating conditions that were not anticipated during construction of the model (i.e., 180-FTE Aquifer semi-confinement, mounded water in the Dune Sand Aquifer, a portion of the Dune Sand Aquifer being confined along the river, freshwater present in the 180-FTE Aquifer at MW-5, etc.). The Lawrence Berkeley National Laboratories Peer Review contained in DEIR/EIS as Appendix E1 reviewed the hydrogeologic conditions incorporated and omitted from NMGWM ^{2015} and indicated on page 26 that,

> "In this case, the input of areal recharge to the 180-FTE at the edge of the FO-SVA will not increase in response to extractions, and so the area of capture zone in the 180-FTE aquifer will increase. Consequently the distribution of water level drawdowns due to the proposed extraction will be different than those predicted by the model. The portion of the total volume of water extracted that is from beneath the onshore is also likely to be different."

To proceed with any level of confidence with the water rights analysis and the amount of return water that will be required of the project, it is imperative that aquifer test results from the TSW and monitoring well information be used along with historical data available from Fort Ord Wells and the landfill monitoring wells to update and calibrate the NMGWM^{2016} in order to simulate MPWSP impacts. Incorporation of these data will require successful model modification and recalibration of the area south of the river to an acceptable standard. The failure to achieve successful modification and calibration is reportedly why the calibrated model (NMGWM^{2016}) was abandoned and the superposition model approach adopted. Without successful model revision and recalibration based on the newly acquired data, it will be impossible for experts, much less the public, to understand the potential impacts of the TSW and the MPWSP production as explained in our comments.

DEIR/EIS's water rights discussion of potential harm fails to provide any estimate of groundwater pumped from slant wells and thus cannot assess the feasibility of the project or potential impacts to the groundwater basin or potential harm to users:

On **Page 2-35**, the DEIR/EIS states:

> The extensive groundwater modeling conducted for this EIR/EIS and discussed in detail in the Groundwater Resources section and in Appendix E2 is different from that conducted for the 2015 Draft EIR on the MPWSP. As explained in Chapter 4.4, Groundwater Resources, the modeling is specifically targeted to isolating the change in groundwater levels that would be generated by the MPWSP. **This modeling, however, cannot project the amount of Basin water that is expected to be drawn into the supply wells** [emphasis added]. Due to decades of seawater intrusion in the area, any Basin water extracted by the supply wells would be brackish water, which is a combination of ocean water and water that originated from the inland aquifers of the Basin. CalAm proposes as part of the MPWSP to return to the Basin (in the manner further described below) the fresh water portion of the brackish source water. In other words, although the groundwater modeling indicates that the **Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water** [emphasis added], the MPWSP would return to the Basin desalinated product water in the amount of the fresh water molecules that make up the withdrawn brackish Basin water. In that the quantity of such fresh water component of the supply water is not currently known, the modeling and the EIR/EIS analysis assess a range of return water between 0 and 12 percent of the source water.
>
> The concept of significant effect under CEQA is not necessarily synonymous with harm or injury to water rights holders. In other words, physical change caused by the project might not rise to the level of a significant environmental impact under CEQA, but could still cause some harm or injury to a Basin water user (for instance, if the cost to a Basin water rights holder of withdrawing water were to rise even though the environment would not suffer significant impacts). Here, though, the Groundwater Resources section of this EIR/EIS strives to and does in fact effectively and meaningfully analyze two of the three precise concepts of "harm" or "injury" set forth in the Report. **These two criteria are reduction in the availability of fresh water and reduction of water quality** [emphasis added]. In addition, the analysis in the Groundwater Resources section (based upon the groundwater modeling) provides an answer to the third concept of injury

> set forth in the Report, that of a reduction in groundwater levels that requires users to spend additional funds to extract water.

HGC Comment No. 5:

This section appropriately states that "This modeling, however, cannot project the amount of Basin water that is expected to be drawn into the supply wells." Then it concludes "Due to decades of seawater intrusion in the area, any Basin water extracted by the supply wells would be brackish water." This statement is contradicted by the freshwater quality observed in wells constructed and/or sampled for the observation of test slant well pumping. The blanket statement of seawater intrusion in the area ignores the conditions that have protected this specific section of coastline in the Marina Subarea and result in fresh water located in both the Dune Sand and 180-FTE Aquifers. When fresh quality groundwater is drawn from these inland areas and mixed with seawater produced by the MPWSP, a brackish source water at the project intake facilities will be the result.

Groundwater modeling conducted using the NMGWM^{2016} or the superposition model does not indicate that the "Basin water that could be withdrawn by the supply wells would be brackish and thus not fresh, potable water…". Neither of these models are a dual density model that can track and predict water quality changes. The MPWSP brackish source water is a result of mixing seawater and fresh potable groundwater drawn into the slant well facilities from the SVGB. It is only a matter of inference to conclude that the contamination of the freshwater with seawater will result in a brackish water supply, even without the modeling capabilities.

The analysis conducted for the DEIR/EIS cannot and does not effectively or meaningfully analyze the reduction in the availability of fresh water or reduction of water quality as stated in the above passage. Rather, because the models constructed for the DEIR/EIS are not capable of this analysis, the DEIR/EIS's discussion of these issues amounts to pure speculation. Importantly, the DEIR/EIS conclusions are not consistent with the limited data that is available, which indicate a substantial area of fresh water that is contained in the 180-FTE and Dune Sand Aquifers directly inland of the CEMEX site. As this groundwater is removed by the project and replaced with seawater, the project will effectively reduce fresh water in the Marina Subarea for the duration of the project and the induced concentrated flow of seawater will reduce the water quality and render the area unsuitable for freshwater projects for the foreseeable future.

DEIR/EIS's water rights discussion conclusion that the MPWSP will not significantly impact groundwater resources is not supported by the MPWSP modeling to date or other evidence:

On **Page 2-36**, the DEIR/EIS after addressing the significance thresholds further goes on to state:

> Applying the thresholds stated above, the analysis concludes that the MPWSP would not result in a significant impact to groundwater resources. It would not reduce, or affect at all, the availability of fresh water (only brackish water from the Basin is projected to be drawn into the MPWSP supply); would not lower groundwater levels in the Basin so as to affect the water supply of any

groundwater users or substantially deplete aquifer volume; and would not alter or reduce groundwater quality.

HGC Comment No. 6:

The DEIR/EIS's conclusions are not supported by the information presented in the DEIR/EIS or any other evidence and must be revised.

First, the suggestion that the project "would not affect at all" the availability of fresh water because only brackish water is projected to be drawn into the MPWSP supply is misleading and conflicts with other sections of the DEIR/EIS. As discussed in Comment No. 5 above, the DEIR/EIS's speculation that only brackish water would be extracted by the project's slant wells is not supported by the models used to analyze the project impacts. It would appear beyond dispute that the project will replace freshwater and slightly brackish water with highly saline seawater and, therefore, alter and reduce the groundwater quality. Nor is this impact limited to the upper aquifers in the Marina area, the water budget obtained from our independent operation of the calibrated $NMGWM^{2016}$ shows that the project will effectively cause up to 235 acre-feet per year to seep upward out of the 900 Foot-Deep Aquifer. This quantity could be significant on a cumulative basis and could adversely affect the main source of groundwater presently used by the MCWD - the deep aquifer. Therefore, the DEIR/EIS must be revised based on reliable modeling to disclose that the project will reduce the availability of fresh water in the Marina Subarea, including the Deep 900-Foot Aquifer.

Second, the DEIR/EIS's statement that the project would not lower groundwater levels in the SVGM so as to affect the water supply of any groundwater users or substantially deplete aquifer volume is similarly unsupportable. The DEIR/EIS incorrectly assumes that unless the project is directly/solely responsible for causing water levels in an existing well to drop below the wells' screened intervals, the project would not substantially deplete aquifer volume. Despite the fact that it is undisputed that the project will deplete aquifer volumes, the DEIR/EIS fails to consider what amount of depletion would constitute a substantial impact. As explained further below, assuming that lowering groundwater levels in the Marina Subarea would not substantially deplete aquifer volume unless an existing well goes dry is not a meaningful analysis, especially in this portion of the SVGB where pumping is restricted to support basin water level recovery.

Third, the DEIR/EIS's statement that the project would not alter or reduce groundwater quality is demonstrably false. The project, by design, will significantly reduce groundwater quality within the Marina Subarea. Moreover, this statement fails to consider how dropping groundwater heads along the coast has the potential to significantly induce greater seawater intrusion and interfere with future Sustainable Groundwater Management Agency activities.

DEIR/EIS's water rights discussion conclusion that the SVGB and Basin users will not be harmed fails to consider the project's water quality impacts on the Marina Subarea:

On **Page 2-36 and 37**, the DEIR/EIS states:

> Due to the long-degraded condition of water in the Basin within the radius of influence (the area within which the project could affect groundwater levels), there are few active wells that could potentially be affected by the project. As discussed in detail in the Section 4.4, Groundwater Resources, there are only three active supply wells with well screens across the Dune Sand Aquifer or 180-Foot Equivalent Aquifer within the area where the project may cause groundwater levels to decrease by more than 1 foot but no more than 5 feet.3 These three wells are located at the Monterey Peninsula Landfill and are used for dust control. Given that the well pumps and the screens are set at least tens of feet below the existing groundwater level, a decrease in the levels of less than 5 feet would not cause injury to this overlying user. There are four active wells with well screens in the 400-Foot Aquifer. These include the South Well on the CEMEX property, a well on land owned by Ag Land Trust that is used to supply water for dust control, and two private wells with unknown owners. Due to the brackish to saline quality of the groundwater within the 400-Foot Aquifer, these wells would not be expected to supply drinking water. The Groundwater Resources section concludes as to all active wells that a water level decline between 1 and 5 feet would not expose well screens, cause damage, or reduce yield in the groundwater supply wells that could be influenced by the MPWSP. All in all, the project was determined not to result in a significant impact in terms of groundwater supplies either quantitatively or qualitatively. Thus, it appears reasonable to conclude that the MPWSP would not result in harm or injury to the water rights of legal users of water in the Basin in terms of fresh water supply or water quality, two of the Report's three injury criteria relative to the development of legal water rights.

HGC Comment No. 7:

As noted above, this is not a meaningful analysis of the project's potential to substantially deplete aquifer volumes or impact current water users within the Marina Subarea. More importantly, it does not assess or analyze the project's potential cumulative water quality impacts on existing users, in and outside the potential drawdown area, or reasonably foreseeable groundwater projects that may be conducted under the SGMA. These projects include, but are not limited to, the use of the MCWD's Armstrong Ranch property for storage and recovery of river diversions.

DEIR/EIS's water rights discussion conclusion that the SVGB and Basin users will not be harmed fails to consider the project's water quality impacts on the Marina Subarea water rights holders:

On **Page 2-37**, the DEIR/EIS states:

> Turning to the third of the three injury criteria set forth in the Report – increased pumping costs – as noted above, the water levels in seven potentially active wells could drop by somewhere between 1 and 5 feet, thus requiring marginally more

energy to extract the water from those wells. As a physical solution to ensure that those well owners continue to enjoy the same measure of water rights as they do prior to MPWSP implementation and thus are not injured, CalAm could compensate the well owners for any increased pumping costs causally tied to the MPWSP. Assuming that CalAm were to compensate the owner of these wells for any increased pumping costs sustained due to the MPWSP, the slant wells' operation would not cause injury under the Report's third injury criteria.

Furthermore, CalAm has proposed a mitigation measure (set forth in Section 4.4, Groundwater Resources as Mitigation Measure 4.4-3) to further ensure that Basin groundwater users are not injured. Working with the Monterey County Water Resources Agency, CalAm would fund the installation of monitoring wells to expand the County's network of groundwater monitoring wells so as to be better able to monitor on an on-going basis the effect of the project slant wells on groundwater within the radius of influence. If the monitoring efforts were to demonstrate that the project were affecting any existing neighboring active wells, CalAm would coordinate with the affected well owner and take both interim and long-term steps to avoid harm (possibly including improving well efficiency, providing a replacement water supply and/or compensating the well owner for increased costs).

In light of the foregoing, it seems reasonable to conclude that the MPWSP would not cause harm or injury to Basin water rights holders such that CalAm would possess the right to withdraw water from the Basin to produce "developed water" for beneficial use and under the physical solution doctrine.

HGC Comment No. 8:

Groundwater Resources Mitigation Measure 4.4-3, which is voluntary and appears unenforceable, fails to ensure the project will not result in significant groundwater impacts to the Marina Subarea or its groundwater users. Given the DEIR/EIS's use of the superposition model, which fails to evaluate potential future cumulative conditions, it would be impossible for anyone to assess whether impacts to a well are directly tied to the MPWSP. As well, the use of this model cannot determine the impact of the project on future basin management efforts planned to improve the groundwater conditions in the SVGB.

Again, the DEIR/EIS does not assess or analyze the project's potential water quality impacts on existing users, in and outside the potential drawdown area, or with any reasonably foreseeable groundwater projects under the SGMA.

<u>DEIR/EIS's water rights discussion estimates regarding feedwater composition are not supported by evidence and conflict with the SWRCB RWQCB WQCP:</u>

On **Pages 2-37 and 38**, the DEIR/EIS states:

> The entirety of the geographical area of the Basin that would be affected by the project contains brackish water rather than fresh water. Based on the groundwater modeling and as discussed in the Groundwater Resources section, while the project may actually improve the Basin's seawater intrusion issue by slowing the seawater interface line from advancing more inland, the project is not forecasted to draw any fresh water through the MPWSP source water supply wells over the life of the project. If indeed no fresh water is withdrawn by the project, then no physical solution in the form of return to the Basin of fresh water (or other off-setting mechanism to alleviate the harm) would be required in order for CalAm to secure and maintain water rights for the project feedwater. If the water in the Basin were to become fresher in the future such that the MPWSP supply wells were drawing fresh water from the Basin, then a physical solution (such as the proposed return component of the project, discussed below) would be needed in order for CalAm to maintain rights to the Basin water for the project.
>
> In any event, the proposed project does include a return water component. CalAm proposes to return to the Basin the percentage of supply water that is determined to have originated from the inland aquifers of the Basin, i.e., the fresh water component of the water that is extracted by the slant wells as if the brackish water could be segregated between its ocean (seawater) and inland (fresh water) elements. Not only would this plan further ensure that there is no injury to Basin groundwater users, but the Basin and its groundwater users could be benefitted by the return of fresh water to the seawater-intruded Basin.

<u>HGC Comment No. 9</u>:

First, data developed for the TSW project indicate that the blanket statement "The entirety of the geographical area of the Basin that would be affected by the project contains brackish water rather than fresh water" is false as discussed above. Wells MW-5, MW-6, MW-7, and MW-8 shallow and middle wells are located within the geographical area that would be affected by the project and the measured TDS concentrations for samples from the Dune Sand Aquifer wells ranges from approximately 608 to 1,237 mg/l and is considered fresh water under the Basin Plan. Table 3 – Dune Sand and 180-FTE Aquifers Water Quality Data summarizes the existing freshwater quality in these 4 shallow wells. Moreover, salts impacting these wells are derived from overlying land uses and not seawater intrusion. See HGC Comment No. 3. As well, the 180-FTE Aquifer zone was found to be saline at MW-8M, but brackish at MW-7M and fresh at MW-5M and MW-6M. These new data indicate the statement that the project "may actually improve the Basin's seawater intrusion issue" is not accurate for this area of the SVGB.

Other than the more coastal wells MW-7M and MW-8M, these wells do not contain chloride concentrations above the 500 mg/l indicator of seawater intrusion (see Table 3).

**Table 3 – Dune Sand and 180-FTE Aquifers
Water Quality Data**

WATER QUALITY SOURCE	SAMPLE DATES[1]	TDS (MG/L)	CHLORIDE (MG/L)	NITRATE-NO3 (MG/L)[3]
MW-5S	3/10/15 4/02/15	1,142	272	235
MW-5M	3/03/15 4/02/15	559	105	67
MW-6S	4/05/15	608	57	ND
MW-6M	4/04/15	966	167	ND
MW-7S	8/03/15	1,200	387	198
MW-7M	8/02/15	3,832	1,739	15
MW-8S	5/28/15 6/23/15	1,237	256	119
MW-8M	5/27/15 6/23/15	22,250	11,463	6

[1] – IF MORE THAN ONE SAMPLE DATE IS SHOWN SAMPLE RESULTS WERE AVERAGED

Second, the determination method for calculating brackish groundwater produced is not clearly identified in the DEIR/EIS. Brackish groundwater proximate to the CEMEX site has been identified through initial water quality testing of monitoring well samples for the TSW project. The results of a feedwater blend using these brackish groundwater data for comparison are presented in Table 4 – Feedwater Composition Based on Brackish Groundwater TDS Concentrations.

These estimates indicate the range of fresh and brackish groundwater percentages that would be required to be returned to the SVGB given present water quality conditions in shallow and middle aquifers at MW-4. Brackish groundwater samples proximate to the TSW indicates the average TDS concentration is between 12,350 and 17,700 mg/l. Based on these brackish groundwater concentrations and using the present average feedwater salinity (29,900 mg/l) previously estimated from the February 2017 samples (Geoscience, 2017), the amount of groundwater produced by the MPWSP from the SVGB would range between 4,596 and 6,152 afy (17 to 22.8 percent).

Table 4 – Feedwater Composition Based on Brackish Groundwater TDS Concentrations

WATER QUALITY SOURCE	OCEAN WATER SALINITY (MG/L)	GROUND-WATER SALINITY (MG/L)	FEED-WATER SALINITY (MG/L)[3]	GROUND-WATER (%)	OCEAN WATER (%)	ESTIMATED ANNUAL QUANTITY RETURNED (AFY)
BASIN AVE.	33,500	440[1]	29,900	10.9	89.1	2,943
WQCP	33,500	3,000	29,900	11.8	88.2	3,187
MW-4S	33,500	12,350[2]	29,900	17.0	83.0	4,596
MW-4M	33,500	17,700[2]	29,900	22.8	77.2	6,152
MW-5S	33,500	1,142	29,900	11.1	88.9	3,004
MW-5M	33,500	559	29,900	10.9	89.1	2,951
MW-6S	33,500	608	29,900	10.9	89.1	2,955
MW-6M	33,500	966	29,900	11.1	88.9	2,988
MW-7S	33,500	1,200	29,900	11.1	88.9	3,009
MW-7M	33,500	3,832	29,900	12.1	87.9	3,276

1 – AVERAGE INLAND WATER SALINITY FROM (GEOSCIENCE, 2015a)
2 – AVERAGED FROM DATA IN (GEOSCIENCE, 2015p) TABLE 2
3 – AVERAGED FROM TSW LABORATORY TESTS IN FEBRUARY 2017 (GEOSCIENCE, 2017)

For comparison, the present feedwater concentration would require 2,943 afy be returned to the SVGB as groundwater produced with an average TDS concentration of 440 mg/l. Using the RWQCB WQCP TDS concentration of 3,000 mg/l as usable groundwater indicates over 3,187 afy would need to be returned to the SVGB to mitigate groundwater pumped as a feedwater supply. These estimates ignore the salt water recharged to the aquifer inland of the TSW by the CEMEX operations.

Moreover, the project return water proposed would not ensure that there is no injury to SVGB groundwater users. While the return water proposal would likely increase groundwater levels in other areas of the SVGB around Castroville, it would not address potential harms to present and future legal users in the Marina Subarea.

<u>DEIR/EIS's assumption that the "Settlement Agreement on MPWSP Desalination Plant Return Water" will mitigate the project's groundwater impacts to the SVGB and the Marina Subarea is not supportable:</u>

On **Page 2-38 and 39**, the DEIR/EIS states:

CalAm has worked with other stake-holders to develop its current proposal for returning water to the Basin. The construct proposed was not an identified option at the time that the SWRCB Report was prepared and thus was not specifically addressed therein, but appears to advance the goals stated in the Report for returning water to the Basin. CalAm proposes to deliver fully desalinated water to end users for use in lieu of existing groundwater production from the SVGB.

The two points of delivery would be (i) to the Castroville Community Services District (CCSD) to supply water for municipal purposes (e.g., typical drinking, bathing, sewer, watering and other non-agricultural water uses) and (ii) to the Castroville Seawater Intrusion Project (CSIP) pond or directly into the reclaimed water CSIP pipe for use by the agricultural users that obtain water through CSIP. Under these return water locales, the clean desalinated water would be provided for municipal or agricultural use (respectively) in lieu of pumping Basin water in an amount equal to the quantity of return water. The return water would be supplied as follows:

1. At the start-up of the MPWSP, 175 acre feet of return water would be provided to CSIP.

2. Each year, 805 acre feet of return water will be provided to CCSD, even if the calculated amount of Basin water withdrawn by MPWSP is less than that amount.

3. To the extent that the calculated amount of Basin water withdrawn by MPWSP exceeds 805 acre feet, that excess amount will be provided to CSIP.

Water is expected to be returned between May and November of the same calendar year as it is withdrawn (see Chapter 3, operating table) such that the senior overlying and prescriptive users would not suffer harm from loss of water. As examined by the groundwater modeling and explained in the Groundwater Resources section, this proposed return water plan would improve groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD and adjacent areas because water levels would increase as a result of in-lieu groundwater recharge, and would benefit each of the aquifers by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas. Since this return option would essentially put the Basin in a "no net loss" position in terms of fresh water quantity and would benefit legal water users by providing fresh water for beneficial use in lieu of Basin pumping, it appears consistent with the Report and enhances the preliminary conclusion that CalAm would likely possess water rights for the project.

HGC Comment No. 10:

First, the 175-acre feet of return water would be provided to CSIP at the start-up of the MPWSP grossly underestimates the amount of groundwater that modeling shows will be pumped during the initial start-up period. See HGC Comment Nos. 1 and 5.

Second, the statement that the project would benefit each of the aquifers by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas is misleading. While the proposed return water agreement would likely increase groundwater levels in other areas, it would not reduce the area of influence within the Marina Subarea. Moreover, the DEIR/EIS suggestion that the project would benefit legal water users is only a half-truth as it fails to acknowledge that it does not address potential harms to present and future legal users in the Marina Subarea.

For this mitigation measure to be effective, the water user receiving the offset supply to reduce pumping must be located in the Marina Subarea of the SVGB affected by the project (i.e., south of the Salinas River). To avoid potential injury to the Marina Subarea, the DEIR/EIS should also analyze potential mitigation through injection well sites to ensure they will mitigate the projects impacts on the SVGB to a less-than significant level (i.e., no degradation of water quality in the Marina Subarea). We note that placing the wells in the wrong location could actually push groundwater impacted by seawater into aquifer areas that are currently fresh to slightly brackish in quality, but usable.

DEIR/EIS's discussion of the project's consistency with Monterey County Water Resources Agency (MCWRA) Agency Act is misleading and inaccurate.

On **Pages 2-39 and 40**, the DEIR/EIS states:

> … the State Water Resources Control Board Report, discussed in detail above, raises the question as to whether the Agency Act would apply to all of the proposed project groundwater extractions given the location of some screens of the slant wells outside the jurisdictional boundaries of the County:
>
> > The applicability of the Agency Act to the MPWSP is unclear. As currently proposed, the project would use slanted wells and have screened intervals located seaward of the beach. Although the project would serve areas within the territory of the MPWSP, the points of diversion for these proposed wells may be located outside the territory of MCWRA as defined by the Agency Act.
>
> Report at 39. The Agency Act's effect on project feasibility may be minimized by virtue of its application only to water drawn through well screens located within County jurisdiction.
>
> Assuming, however, that the Agency Act would apply to the entire project, the Report (while acknowledging that the SWRCB is not the body charged with interpreting the Agency Act) opines that the project would appear consistent with

the Agency Act and the Ordinance given that the project would return to the Basin any quantity of fresh water withdrawn from the Basin. The Report states:

> Based on the State Water Board's analysis, as reflected in the Report, the Project as proposed would return any incidentally extracted usable groundwater to the Basin. The only water that would be available for export is a new supply, or developed water. Accordingly, it does not appear that the Agency Act or the Ordinance operate to prohibit the Project. The State Water Board is not the agency responsible for interpreting the Agency Act or MRWCA's ordinances. It should be recognized, however, that to the extent the language of the Agency Act and ordinance permit, they should be interpreted consistent with policy of article X, section 2 of the California Constitution [declaring that the waters of the state shall be put to maximum beneficial use], including the physical solution doctrine . . .

Report at 40. Therefore, it appears at least preliminary reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance such that those laws would not impair project feasibility.

HGC Comment No. 11:

First, the DEIR/EIS presents inconsistent and misleading language regarding the location of the well screens. As the DEIR/EIS preparers are aware, the project's slant well locations have moved significantly landward when compared to the originally proposed project intake location evaluated by the SWRCB (see Figure 4, SWRCB, 2013). The conceptual location and design of the original slant well seawater intake system array is shown in Diagram 6 – Original Test Slant Well Design Evaluated by SWRCB. Contrary to this original design, the proposed slant well designs and locations disclosed in the DEIR/EIS indicate a majority of the well screen sections are now located landward of the shoreline. In addition, only the deepest portions of the well screens would potentially be located beneath the ocean floor with the shallower well screen intervals producing from the Dune Sand Aquifer and located onshore (see DEIR/EIS, Chapter 3, Figures 3-3a and 3-3b, and Table 3-2). Thus, the project does not appear to comply with the MCWRA Agency Act (also see details on, Geoscience, 2015a, Figures 47, 48, and 51 to 69) as the DEIR/EIS suggests. The DEIR/EIS must be revised to address consistency with the Agency Act based on the percentage of the well screens for each test well that has screened intervals located landward of the beach mean high water line to assess consistency with the MCWRA Agency Act. It is also not clear if the SWRCB would have arrived at the same conclusions if it had been reviewing the presently proposed intake design.

Diagram 6 – Original Test Slant Well Design Evaluated by SWRCB

Second, it is unclear as to what is considered "usable groundwater." To be consistent with the RWQCB WQCP, all water under 3,000 mg/l TDS would need to be returned (RWQCB, 2011). See HGC Comment No. 21.

Finally, we note that the Agency Act further empowers the MCWRA to prevent extraction of groundwater from particular areas of the SVGB if needed to protect groundwater supplies. As discussed in these comments, the project will adversely impact groundwater supplies. Therefore, the DEIR/EIS must address compliance with this mandate also.

DEIR/EIS's discussion of the project's consistency with the Annexation Agreement is not supported by the evidence.

On **Page 2-42**, the DEIR/EIS states:

> Moreover, even if annexation of the CEMEX property to MCWD's benefit assessment zones were to take place in the future, triggering the 500 afy groundwater withdrawal limitation, it appears that operation of the MPWSP could still be feasible. CalAm could conceivably construct and employ an injection well on the CEMEX property to return 500 afy to that property such that the MPWSP would have a net-zero effect on groundwater from the CEMEX land and conceivably could operate regardless of whether the 500 afy groundwater withdrawal limitation were imposed at some point in the future.

HGC Comment No. 12:

There is no evidence to support the conclusion that returning 500 afy to the CEMEX property would ensure that no more than 500 afy groundwater was withdrawn from the project as limited by the Annexation Agreement. In fact, the evidence indicates substantially more groundwater would need to be injected to demonstrate consistency with the agreement.

Comments on DEIR/EIS Chapter 3 (Project Description).

DEIR/EIS's project description inaccurately suggests the TSW's groundwater impacts were fully evaluated by the California Coastal Commission:

The DEIR/EIS at **Page 3-2** states:

> To inform the final design of the subsurface slant wells and the MPWSP Desalination Plant treatment system, and to collect geologic and hydrogeologic data needed for Federal, state, regional, and local permits for the full-scale project, CalAm built a test slant well at the same location as the seawater intake system for the proposed Project. CalAm currently is operating the test slant well as a pilot program to collect data. Construction of the test slant well and operation of the pilot program was covered under separate environmental review. The test slant well is permitted to operate until February 2018 and it is not part of the proposed Project being evaluated in this EIR/EIS. If the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well would be removed. However, if the proposed subsurface slant wells at CEMEX are ultimately approved as part of the proposed Project, CalAm would convert the test slant well into a permanent well and operate it as part of the seawater intake system. The conversion and long-term operation of the well has not been covered under previous approvals and is evaluated in this EIR/EIS as part of the proposed project.

HGC Comment No. 13:

I have previously provided comments on the California Coastal Commission's analysis of the TSW in the *MCWD v. California Coastal Commission* litigation. Please refer to my comments addressing the inadequacies in the Coastal Commission environmental review of the TSW. I further note the project should return the groundwater that has been pumped to date by the TSW as mitigation for the project's cumulative impacts to groundwater.

DEIR/EIS's project description inaccurately suggests all slant wells would extend offshore:

On **Pages 3-15 through 17**, the DEIR/EIS states:

> The nine new permanent slant wells would be approximately 900 to 1,000 feet long and drilled at approximately 14 degrees below horizontal to extend offshore

to a distance of 161 to 356 feet seaward of the MHW line (except #8, which would not extend past the MHW line) and to a depth of 190 to 210 feet beneath the seafloor. This means that although all construction activities and ground disturbance would occur above mean sea level and landward of the MHW line, the well casings would extend subsurface and seaward of the MHW line and below the seafloor within MBNMS. Each well would be screened for approximately 400 to 800 linear feet at depths corresponding to both the Dune Sand Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin. CalAm would operate eight wells at a time at approximately 2,100 gallons per minute (gpm) per well and maintain the other two wells on standby.

Table 3-2 presents the total length of each slant well extending seaward of the MHW line. Because the slant wells would be drilled at a 14-degree angle, the horizontal distance to which the wells would extend seaward of the MHW line would be slightly shorter than the length of the well casing. This is illustrated in Figure 3-3b, Illustrative Cross-Sectional View of Subsurface Slant Wells.

The 10 slant wells would be located at six sites along the back of the dunes: four sites (the test slant well site and three new sites) would each have one slant well, and two sites would have three slant wells (see Figure 3-3a). The well sites are numbered sequentially, with Site 1 being the northernmost site and Site 6 the southernmost site. The test slant well would be converted into a permanent well at Site 1. The nine new permanent wells would be drilled over a total distance of about 900 feet at Sites 2 through 6. The wellheads of the three new permanent wells at Site 2 would be located about 300 feet south of Site 1. Sites 3, 4, and 5 would be spaced approximately 250 feet apart and would have one slant well each. Site 6 would have three wells.

<u>HGC Comment No. 14</u>:

Again, we note that as designed, most of the slant well screen sections are not below the ocean floor and "seaward of the Mean High Water (MHW) line." See HGC Comment No. 11. We further note that the drilling technology utilized by the project has physical limitations. To the extent the drag (friction) on the drill casing exceeds the ability of the drill rig or the strength of the drill casing material being used, the length of the wellbore could be shortened and the well screen production sections would be that much more short of being offshore. In fact, it is our understanding the TSW is significantly shorter than designed due to drilling problems. The DEIR/EIS has not disclosed these problems or described how they will be resolved for new slant wells. If the seawater intake facilities were actually located at a shallow depth and a sufficient distance offshore, the problems with SVGB groundwater production would be mitigated.

Comments on DEIR/EIS Chapter 4.4 (Groundwater Resources).

DEIR/EIS's analysis of groundwater impacts fails to consider or disclose best available information in evaluating potential impacts to the SVGB and the Marina Subarea:

On **Page 4.4-4**, the DEIR/EIS states:

> This chapter's description of the groundwater system underlying the project area reflects the scientific community's current understanding of the subsurface geologic units and the depth and extent of the aquifers and aquitards …This comprehensive description of the groundwater system was developed through the collaborative efforts of recognized experts in Monterey Bay coastal geology and groundwater, as well as stakeholders in the groundwater use and management process who are familiar with this region. This body of expertise is the Hydrogeology Working Group (HWG), with members that represent the Salinas Valley Water Coalition, the Monterey County Farm Bureau, California American Water Company (CalAm); the CPUC/MBNMS CEQA/NEPA team members attend the meetings.[1] To identify the area's hydrology, the HWG relied on previous groundwater studies, published geologic maps, observation of well performance, water quality data, and findings from site-specific subsurface investigations and modeling. The data review and eventual formulation of an evidence- and science-based understanding of the local and regional hydrogeology required several years. So, to enable analysis of the impacts of the proposed project, this EIR/EIS presents the best information available for describing the hydrogeologic setting of the study area.
>
> [1] The HWG developed a collaborative plan of investigation to assess the hydrogeologic conditions in the project area. The draft work plan provided a phased approach to progressively investigate the hydrogeology and the potential effects of the project on aquifers from the use of subsurface slant wells for obtaining feedwater supply. The final work plan incorporated comments and recommendations by members of the HWG, and covered the investigative steps needed to evaluate the project impacts (Geoscience, 2013c). The final work plan became the hydrogeology investigation roadmap and resulted in the implementation of the fieldwork and modeling efforts described in the approach to analysis, Section 4.4.3.2.

HGC Comment No. 15:

As discussed herein, there are major holes in the project data set, analysis, and modeling. Initially, the TSW was installed along with the project monitoring wells during an extended drought period. Therefore, the conclusions reached from evaluation of these data are limited to these dry climatic conditions and cannot represent wet or average water year conditions within the Salinas Valley that affect the Marina Subarea. Recently during the 2016-2017 water year, abundant rainfall has ended the drought conditions and for the first time in the project 1 ½-year-baseline data set that is presently being established, the shallow monitoring wells MW-6S, MW-8S, and MW-9S show the result of significant recharge from the river (see Diagram 2). This recharge resulted in water level elevations ranging from approximately 7.5 feet amsl in MW-8S to 17.5 feet amsl in MW-6S. These observations show that the river recharges the Dune Sand Aquifer in the vicinity of the Marina Subarea. However, it is not clear if the high water levels were purely a result of excess river flows, or a result of inflation of the rubber dam located downstream of MW-6. This occurrence is not discussed in the DEIR/EIS, nor was it recognized or discussed in the TSW Long Term Monitoring Report No. 96 and HWG Monthly Monitoring Report No. 16 where it is plainly visible (see Geoscience, 2017, Figure 2-5). This additional recharge mechanism substantiates the inference that protective groundwater levels in the Marina Subarea are maintained under average climatic conditions and have prevented saltwater intrusion into the Dune Sand Aquifer. This condition has likely protected the 180-FTE Aquifer and preserved the freshwater condition observed in MW-5M and MW-6M. Without a data set from a sufficiently long baseline period, the analysis that forms the “evidence- and science-based understanding of the local and regional hydrogeology” is biased by the limited baseline period observed along with the conclusions that are derived from it.

Next, the field work plan discussed in footnote 1 developed by the HWG also included a monitoring well (MW-2) which was to be located away from the CEMEX site and parallel to the coastline. Because MW-2 was never drilled, data are not available to evaluate the shallow coastal conditions in the Dune Sand Aquifer at a location removed from the influence of the CEMEX operations. These plant operations routinely discharge seawater into the dune sands landward of the TSW. The saline water originates from the dredge pond operations and from up to 500 afy produced from the CEMEX wells that draw from the seawater intruded 400-Foot Aquifer. Without MW-2, the effect of the CEMEX discharges on the TSW water quality cannot be determined. This artificial saltwater influence is not evaluated and will not be present further south along the coast where the remaining intake wells will be located. See HGC Comment No. 33 and Diagram 7.

The difficulty with model calibration in the Dune Sand and 180-FTE Aquifers south of the river is believed to largely result from a lack of data that developed the understanding of the hydrogeology and the aquifers recharge mechanisms that were used by the United States Geological Survey (USGS) in the SVIGSM. When this was discovered, the DEIR/EIS modeling effort abandoned the poorly calibrated NMGWM and switched to the superposition model, which still used the same aquifer parameters. Any error that was in the poorly calibrated area of the NMGWM south of the Salinas River, was brought into the superposition model and subjected to a new set of model boundary conditions. As such, the use of the inferior superposition model approach cannot show cumulative effects. Also, because the model is not a dual density model, it cannot be used to show effects of the CEMEX operation on the water quality produced by the TSW and ultimately the water quality changes in the Marina Subarea aquifers.

In summary, the DEIR/EIS’s statement that its evaluation of groundwater impacts is based on an evidence- and science-based understanding of the local and regional hydrogeology and the best information available for describing the hydrogeologic setting of the study area, in fact, is not supportable. Importantly, the DEIR/EIS does not discuss how the project will affect protective groundwater levels necessary to abate seawater intrusion in the SVGB and subsequently affect future sustainable conditions as discussed above and further below.

DEIR/EIS's analysis of groundwater impacts misrepresents baseline conditions in the Dune Sand Aquifer:

On **Pages 4.4-6 through 4.4-8**, the DEIR/EIS states:

> The Older Dune Sand, referred to as the Dune Sand Aquifer, extends to 85 to 95 feet below the ground surface beneath the CEMEX site and is about 60 feet thick at the locations of the proposed slant wells. The shallow aquifer underlying the Moss Landing Area is referred to as the Perched A Aquifer and differs from the Dune Sand Aquifer in that it is underlain by a defined layer of less permeable, fine-grained sediments known as the Salinas Valley Aquitard. Water quality of the Perched A Aquifer and Dune Sand Aquifer is directly influenced and controlled by seawater. Because of the aquifer's proximity to the ocean, most of the water in the Dune Sand Aquifer has been intruded by seawater and is considered saline to brackish (Kennedy/Jenks, 2004). This influence decreases inland where the infiltration of precipitation and applied agricultural water has more of an influence. Figure 4.4-3 presents a west to east geologic cross section that illustrates the relationship of the aquifers and geologic units from the CEMEX area to east of Highway 1 and Del Monte Boulevard. The upper portions of the proposed slant wells at the CEMEX of the proposed slant wells at the CEMEX site would have well screens installed across them, and would draw water from these deposits.

HGC Comment No. 16:

Based on data provided by the TSW investigation, the DEIR/EIS's statement that "Dune Sand Aquifer is directly influenced and controlled by seawater" is inaccurate. More importantly, the DEIR/EIS fails to quantify the fresh water held in storage in the Dune Sand Aquifer between the Salinas River and Fort Ord. It also does not estimate the amount of recharge the aquifer receives annually and the direction of flow in the the Dune Sand Aquifer beneath the confining layer (-2-Foot Aquifer). Without this information, it is impossible for experts, much less the public, to understand the project's potential impacts.

In Table 4.4-1 on page 4.4-6, the DEIR/EIS states: "shallow groundwater is not expected within the elevated dune deposits, except in localized low-lying areas along the coastline." This conclusion fails to recognize the protective head that is provided by this layer of the Dune Sand Aquifer along the coastline and, therefore, further undermines the project's evaluation of potential impacts to the groundwater system. We further note that relying on broad statements about the occurrence of seawater intrusion from a 2004 study (KGC, 2004) that did not have the benefit of the data being generated by the TSW project is not scientifically supportable because it inappropriately ignores the data that has been developed for project analysis. The DEIR/EIS's conceptual description of seawater in the Dune Sand Aquifer, which is being inferred from "the aquifers proximity to the ocean" is then offset by the statement that "this influence decreases inland where the infiltration of precipitation and applied agricultural water has more of an influence" does not remedy this problem. Without any attempt to quantify the fresh water held in storage in the Dune Sand Aquifer between the Salinas River and Fort Ord, neither experts nor the public can assess the project's potential impacts as noted above. Also, see Comment No. 3.

DEIR/EIS's analysis of groundwater impacts ignores available information demonstrating 180-Foot Aquifer is not unconfined rendering its analysis and modeling inadequate:

On **Page 4.4-11**, the DEIR/EIS states:

> At the CEMEX site, the Dune Sand Aquifer and the 180-FTE Aquifer are unconfined, as there are no extensive overlying low-permeability clay units.
>
> The Terrace Deposits of the 180-FTE Aquifer are composed of former alluvial fan and river floodplain deposits, possibly with some marine terrace deposits that contain sand, silt, and gravel now buried under the coastal dunes. There is groundwater within the Terrace Deposits, which extend to 240 to 255 feet below the ground surface beneath the CEMEX site, and are about 135 feet thick at the proposed slant well locations, thinning seaward. Based on the recent groundwater testing data discussed in the Groundwater Quality subsection below, the quality of water in the 180-FTE Aquifer is directly influenced by seawater; this influence extends for miles inland, as discussed below in the Seawater Intrusion section. The lower portion of the proposed slant wells at the CEMEX site would have well screens installed across and would draw water from these deposits.

HGC Comment No. 17:

Initially the DEIR's statements that Dune Sand Aquifer and the 180-FTE Aquifer are unconfined at the CEMEX site appear to conflict with the previous acknowledgement that the 180-FTE is semi-confined (Geoscience, 2015r, page 5), which indicate that the originally unconfined nature of the aquifer and its communication with the overlying Dune Sand Aquifer is overstated. This is not insignificant as the higher degree of confinement in the 180-FTE Aquifer will likely result in a greater radius of influence and more drawdown at further distances than the DEIR/EIS model presently predicts. Moreover, the presence of an aquitard layer just inland of the project area is documented by other studies including (Harding ESE, 2001, Plates 1 through 6, and Ahtna, 2015).

The DEIR's statement that recent groundwater testing shows the quality of water in the 180-FTE Aquifer is directly influenced by seawater is misleading. As discussed in Comment No. 3, data obtained from the TSW phase of work indicate that the blanket concept that all groundwater in the 180-FTE Aquifer is saline for miles inland is inaccurate. (See also Figures 1, 2, and 5).

DEIR/EIS's analysis of groundwater impacts inaccurately describes groundwater flow in the Dune Sand Aquifer:

On **Page 4.4-14**, the DEIR/EIS states:

> The MCWRA conducts a groundwater monitoring program throughout the Salinas Valley that for the fall 2013 monitoring event included 61 wells in the 180-Foot Aquifer and 103 wells in the 400-Foot Aquifer (Brown and Caldwell, 2015). Water-level data collected from wells in the study area indicate that the direction of groundwater flow is from the ocean to inland, as shown on Figures 4.4-5 and 4.4-6.
>
> In the Pressure and East Side Areas, groundwater flows northwest from the upper reaches of the SVGB until it reaches the city of Salinas, at which point groundwater in both the 180-Foot and 400-Foot Aquifers flows towards a groundwater depression north of the city (MCWRA, 2014b). Along the coast, flow in both the 180-Foot and 400-Foot Aquifers is towards the east, or landward, and has resulted in seawater intrusion. At the proposed slant well locations, the Dune Sand and 180-FTE Aquifers along the coast are hydraulically connected to the Pacific Ocean, as verified by the saline chemistry of the groundwater samples collected from borings drilled along the coast. The groundwater flow patterns within the Dune Sand Aquifer are not known but, based on the aquifer depth and geologic structure, it is reasonable to expect that they would be tidally controlled, with little to no net horizontal flow in any particular direction.
>
> There is a groundwater divide along the north side of the SGB separating groundwater flow paths between the SGB and the SVGB in both the shallow and deep aquifers, as illustrated on Figures 4.4-7 and 4.4-8. The SGB has been divided into four subareas, with the northern two composing the Northern Subbasin and the southern two composing the Southern Subbasin. The proposed ASR injection/extraction wells would be located near the northern border of the Northern Subbasin. There is a groundwater depression in both the shallow and deep aquifers in the Northern Subbasin, resulting in some landward flow along the coast (HydroMetrics, 2015).

HGC Comment No. 18:

The DEIR/EIS's description of the groundwater flow pattern in the Dune Sand Aquifer is inaccurate and based on available data (Harding ESE, 2001, Ahtna, 2015) it likely affects the ability to calibrate the model in the area south of the river. The conceptual complexity of the groundwater flow in the project area is shown in Diagrams 1 and 2 above. Most critically, without using available information and filling data gaps, the DEIR/EIS's description of baseline coastal aquifer flow conditions makes it impossible to quantitatively analyze the project's potential impacts on water quality. As explained in Comment No. 3, the project inland monitoring wells discovered a significant amount of freshwater and brackish groundwater within the Marina Subarea of the project area of influence.

One such discovery was well MW-5S, which was constructed in the Dune Sand Aquifer that is perched on top of a regional clay layer. Adjacent the Salinas River at the Monterey Peninsula Landfill, this aquifer zone is designated as the 35-Foot Aquifer. This same Dune Sand Aquifer layer was also identified to the south in the Fort Ord cleanup site where it was designated as being perched/semi perched on top of the FO-SVA. Available groundwater elevation data from the Dune Sand Aquifer wells constructed for the TSW project were combined with data from the regional landfill, Fort Ord cleanup, and Beacon Gas Station cleanup sites to construct Figure 6 – Dune Sand Aquifer Groundwater Elevation Contour Map (attached to these comments). As shown, groundwater is flowing into the Marina Subarea on top of the FO-SVA layer from the area of aquifer recharge to the south. Data for the Dune Sand Aquifer used to construct this figure were obtained from readily available consultant reports and are shown in Figure 7 – Fort Ord Cleanup Site Groundwater Elevation Data, Figure 8 – Monterey Peninsula Landfill Groundwater Elevation Data, and Figure 9 – Beacon Gas Station Groundwater Elevation Data (attached to these comments). The most important aspect of these data is that perched groundwater is flowing toward the coast and infiltrating into the underlying -2-Foot Dune Sand Aquifer and the underlying semi-confined 180-FTE Aquifer. This source of recharge is unique to the Marina Subarea portion of the SVGB and is believed to contribute to protective groundwater conditions.

DEIR/EIS's investigation of the project area is inadequate to support the DEIR/EIS's groundwater impacts analysis:

On **Pages 4.4-21 and 22**, the DEIR/EIS states:

> CalAm commissioned a subsurface soil and groundwater investigation to further understand the existing subsurface geologic units, aquifers, and water quality of the proposed slant well locations on the CEMEX site. The investigation included the installation of nested monitoring wells and the test slant well, subsurface lithologic logging, soil and groundwater sample analysis, aquifer testing, and aquifer conditions modeling (Geoscience, 2013c, 2016a, 2016b). Figure 4.4-9 shows the locations of the nested monitoring wells. The nested wells have screen intervals to discretely sample the Dune Sand Aquifer, 180-FTE Aquifer, and the 400-Foot Aquifer depth intervals. The subsurface investigation provided information and data to better characterize the subsurface stratigraphy, aquifer conditions, how the aquifer responds to pumping, and groundwater chemistry at various depth intervals. Updated information on subsurface materials informed the design of the proposed slant wells, and data on groundwater flow characteristics and water chemistry facilitated further refinement of the groundwater models used to analyze project impacts.

The proposed slant wells would draw water from the Dune Sand Aquifer and the 180-FTE Aquifer from about 30 feet below msl to 200 feet below mean sea level (Geosciences, 2016b). As discussed above in Section 4.2, the Dune Sand Aquifer overlies the 180-FTE Aquifer with no aquitard /between the units. The test slant well is screened across both units and has been sampled on a weekly basis when operational. Table 4.4-4 summarizes water quality results from the May 19, 2016, sampling event. The table also provides the chemical composition of seawater; as the comparison shows, the water quality from the test slant well closely resembles the average seawater TDS concentration found along the central coast of California.

HGC Comment No. 19:

We note that the boreholes referenced by this discussion are all close to the ocean and not representative of background data at inland locations that will be affected by the MPWSP. These data show only near shoreline conditions. As shown by the water composition in MW-4 (see Table 2, Diagram 5 above, and Figure 1 attached to these comments), the water quality begins to change significantly within a short distance of the coastline. Also, there is no discussion about the CEMEX operations that discharge saline water inland of the TSW which serves to create a saline mound of groundwater and bias the produced TSW water quality. See HGC Comment No. 33.

Because there is a lack of discussion of the groundwater quality in SVGB Pressure Area south of the Salinas River, the discussion of borehole data improperly implies water quality is the same throughout the project area of influence. It is reasonable to assume that the water quality at the CEMEX site would be worse than quality further inland where recharge from the Dune Sand Aquifer is likely occurring along with recharge from the Salinas River. The interconnectivity of the -2-Foot Aquifer beneath the Monterey County Landfill and the shallow Dune Sand Aquifer screened by MW-1, MW-3, MW-4, MW-7, and MW-8 is indicated by the study (Geoscience, 2016). This aquifer is also recognized as being recharged by the Salinas River in this area of the Marina Subarea (Geoscience, 2016). The recent water level rise in MW-6, MW-8, and MW-9 (Geoscience, 2017, Figures 2-5, 2-7, and 2-8) when winter rains resulted in significant river flows shows the likely hydraulic connectivity between the river and these wells and that this inland freshwater recharge keeps the saline groundwater close to the coast in the Dune Sand Aquifer (see Diagrams 1, 2, 5 above, and Figure 1 attached).

DEIR/EIS's groundwater impacts analysis baseline description of seawater intrusion in the SVGB, particular the Marina Subarea, is misleading and conflicts with available information:

On **Page 4.4-28 through 4.4-32**, the DEIR/EIS states:

Figures 4.4-10 and 4.4-11 illustrate the seawater intrusion areas as of 2013 within the 180-Foot and 400-Foot Aquifers, respectively (MCWRA, 2015). Seawater intrusion occurs when ocean water enters fresh groundwater aquifers at the coast and migrates inland. The salty seawater combines with the fresh groundwater to create a mixture referred to as brackish. Brackish groundwater can contain Total Dissolved Solids (TDS) concentrations ranging from that of seawater (about 35,000 mg/L) down to 500 mg/L near the leading edge of the inland seawater intrusion front. Brackish water in the 180-foot aquifer near the proposed project ranges from about 5,000 mg/L to 29,000 mg/L. The California Secondary Drinking Water Standard was amended in 2006 to include a Maximum Recommended Level for TDS in drinking water of 250 mg/L (Cal. Code Regs., tit. 22, § 64449). The MCWRA define the leading edge of inland seawater intrusion as groundwater containing TDS at 500mg/L or more.

The current, standard practice for monitoring the inland advance of seawater intrusion involves TDS analysis of groundwater from a select group of monitoring wells that intersect the seawater-intruded aquifers. The TDS concentration data are used to identify the areas of the aquifer intruded by seawater and to plot the leading edge of the inland seawater intrusion front. The more groundwater wells available in the monitoring program, the better regional seawater intrusion is represented. Regular annual monitoring data can be used to estimate the rate at which seawater is migrating inland. The MCWRA has been conducting seawater intrusion monitoring for many years using several groundwater wells in the western end of the Salinas Valley.

Geophysics are giving researchers the opportunity to study seawater intrusion using high-resolution, regional scale imaging. The technique, sometimes referred to as Electrical Resistivity Tomography (ERT), can be used to differentiate salty water from fresh water hundreds of feet beneath the ground. Electrical resistivity imaging uses a series of sensors placed along a transect line on the ground surface. An electrical current is applied and the sensors measure the electrical resistance the current encounters as it travels at depth between the sensors. Salty water has a lower resistance than freshwater, due to the higher TDS. The high and low resistivity zones in the subsurface are displayed as a series of colors in a cross section that indicate areas of fresh water, brackish water and seawater. Over the past few years, Stanford environmental geophysics researcher Rosemary Knight has conducted a study to determine the viability of using electrical resistivity techniques to study seawater intrusion along the coast of the Monterey Bay. Professor Knight's initial survey was conducted along a 4-mile segment parallel to the beach between the cities of Seaside and Marina. The study found that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of 500 feet in four area groundwater wells.

Salinas Valley Groundwater Basin

…. The 2013 estimates of seawater intrusion within the 180-Foot and 400-Foot Aquifers indicate that seawater has intruded to a maximum of approximately 8 miles and 3.5 miles inland, respectively, as inferred from chloride concentrations greater than 500 mg/L. The seawater intrusion degraded groundwater supplies, requiring urban and agricultural supply wells within the affected area to be abandoned or destroyed (MCWRA, 2001). Increased degradation of coastal groundwater aquifers led to restrictions on drilling groundwater wells and extracting groundwater from areas affected by seawater intrusion, as discussed in Section 4.4.2, Regulatory Framework. Such restrictions are intended to reduce further inland migration of seawater and reduce the landward advance of the seawater/freshwater interface.

Seaside Groundwater Basin

Groundwater pumping from aquifers in the SGB has exceeded recharge and freshwater inflows that caused pumping depressions near the coast, as shown on the groundwater flow maps for both the shallow aquifer zone (see Figure 4.4-7) and the deep aquifer zone (see Figure 4.4-8) (HydroMetrics, 2015). In addition, seawater intrusion has occurred just north of the SGB in the adjacent 180/400 Foot Aquifer Subbasin of the SVGB, as discussed above. The boundary between these two basins is a groundwater divide that migrates in response to variations in natural recharge and pumping on either side of the divide. HydroMetrics noted increased chloride concentrations in two wells along the coast, although the concentrations have not yet exceeded drinking water standards. These conditions all suggest that the SGB could be vulnerable to seawater intrusion.

HGC Comment No. 20:

Data developed by the TSW project indicates the DEIR/EIS's baseline description is inaccurate. While effects of seawater intrusion are evident significant distances inland, the entire area between the seawater intrusion front defined by ongoing study (MCWRA, 2014) and the coastline where the MPWSP intake system is proposed is not all intruded by seawater. Since the cessation of pumping in restricted areas along the coast, the hydrologic balance in the groundwater system has changed. Additional field data must be obtained in the area directly affected by the project to define the pre-project baseline conditions that have developed over the last two decades (see attached Figures 1 and 2). As the DEIR/EIS recognizes, the more groundwater wells available in the monitoring program, the better regional seawater intrusion is represented. South of the Salinas River, the MCWRA program lacks sufficient monitoring wells within the Marina Subarea. Moreover, there is no monitoring or mapping for the Dune Sand Aquifer. The seawater intrusion section incorrectly states that "the MCWRA define the leading edge of inland **seawater intrusion as groundwater containing TDS at 500 mg/L or more**." [emphasis added] The MCWRA study tracks the concentration of chloride and defines seawater intrusion as groundwater containing 500 mg/l or more of chloride, not TDS. The discussion interjects a reference to the highest drinking water standard for TDS of 250 mg/l without mentioning that municipalities can serve a municipal drinking water supply that occasionally exceeds 1,000 mg/l TDS concentration. The discussion continues to indicate low TDS concentrations are used as the basis for seawater intrusion. This whole section is misleading and misinforms the public and the Commissioners.

This discussion is also in direct conflict with the groundwater quality objectives shown in Table 4.4-6 where the 180-Foot Aquifer objective is 1,500 mg/l TDS concentration. This does not indicate that the aquifer objective promotes a component of seawater intrusion as implied by the previous discussion.

DEIR/EIS's groundwater impacts analysis fails to address conflicts with the SWRCB's WQCP; MPWSP would likely violate WQCP's anti-degradation policy:

On **Page 4.4-35** , the DEIR/EIS states:

The RWQCB has established water quality objectives for selected groundwater resources; these objectives serve as a basis for evaluating water quality management in the basin. Specific water quality objectives have been defined for the 180-Foot Aquifer and 400-Foot Aquifer for the SVGB, as listed in Table 4.4-6 below.

TABLE 4.4-6 - GROUNDWATER QUALITY OBJECTIVES

AQUIFER	TDS	CHLORIDE	SULFATE	BORON	SODIUM	NITRATE AS NITROGEN
180-FOOT	1,500	250	600	0.5	250	1
400-FOOT	400	50	100	0.2	50	1

NOTES: All concentration are in milligrams per liter (mg/L) SOURCE: RWQCB, 2011b.

The Basin Plan would apply to the treated water to be injected into the proposed ASR injection/extraction wells because it could affect the quality and beneficial uses of the Basin's groundwater. Accordingly, these project elements would be subject to regular water quality monitoring by the RWQCB. This water quality monitoring would ensure that any deviation from the established objectives is identified and corrected pursuant to Basin Plan requirements.

HGC Comment No. 21:

The DEIR/EIS only addresses whether the project "operational discharges" of the MPWSP would be consistent with the provisions of the SWRCB Anti-Degradation Policy (Chapter 4.3) and the project's ASR injection wells. The DEIR/EIS must be revised to also address whether the extraction proposed by the project is consistent with the SWRCB's Anti-Degradation Policy. As discussed herein, it appears the project will violate the RWQCB WQCP objectives by degrading the water quality within the SVGB over a significant area. The model results indicate that areas of the Pressure Area that range from brackish to fresh will be degraded and will become hypersaline as a result of project pumping. Drawdown effectuated in the onshore portion of the aquifer system that is beyond the capture zone of the slant wells is a cumulative effect that will contribute to a greater onshore gradient and proportionally increase the rate of seawater intrusion into those portions of the SVGB.

This section of the DEIR/EIS also fails to discuss the regulatory guidance in the 2011 WQCP for the Central Coast Basin where Resolution No. 88-63 is incorporated by reference and applies to the proposed project. The WQCP may be found at http://www.waterboards.ca.gov/rwqcb3/publications_forms/publications/basin_plan/docs/basin_plan_2011.pdf, and Resolution No. 88-63 is Appendix A-9 of the WQCP. Resolution No. 88-63 sets forth the following policy regarding surface and ground water within the project area and indicates that all surface and ground waters of the State are considered suitable, or potentially suitable, for municipal or domestic water supply with the exception of:

a. The TDS exceeds 3,000 mg/l (5,000 µmhos/cm, electrical conductivity);

b. Contamination exists, that cannot reasonably be treated for domestic use;

c. The source is not sufficient to supply an average sustained yield of 200 gallons per day;

This indicates that based upon Resolution No. 88-63, the feedwater, which includes “developed water” that is not suitable or potentially suitable for municipal or domestic water supply purposes, is water that exceeds 3,000 mg/l TDS, in order to be eligible as “developed water.” The DEIR/EIS’s focus on the groundwater quality objectives and failure to discuss this standard does not sufficiently inform the public or the decision makers of the potential impacts of producing groundwater for the project that is potentially suitable for municipal or domestic uses either through treatment or blending. This reference indicates that at least the 3,000 mg/l TDS concentration should be utilized in determining the production of usable groundwater from the SVGB and not the inland average of 440 mg/l. It should also be recognized that MW-5S, MW-5M, MW-6S, MW-6M, MW-7S, MW-8S all contain groundwater that meets the WQCP objective of 1,500 mg/l TDS concentration. See HGC Comment Nos. 1, 3, and 10 to understand the significance of this issue.

<u>DEIR/EIS fails to address Sustainable Groundwater Management Act and the MPWSP likely conflicts with the Act:</u>

On **Page 4.4-37**, the DEIR/EIS states:

> Adopted in 2014, the Sustainable Groundwater Management Act (SGMA) provides local agencies the capability to customize groundwater sustainability plans to their regional economic and environmental needs. SGMA creates a framework for sustainable, local groundwater management in California. The DWR and the SWRCB are the lead state agencies responsible for developing regulations and reporting requirements necessary to carry out SGMA. DWR sets basin prioritization, basin boundaries, and develops regulations for groundwater sustainability. The SWRCB is responsible for fee schedules, data reporting, probationary designations and interim sustainability plans (DWR, 2016a). The

> State of California has designated the Salinas Valley as a priority basin and stakeholders have been working since 2015 to form a Groundwater Sustainability Agency for the Salinas Valley. The MPWMD applied to alter the boundaries of the Seaside/Corral de Tierra areas so they are similar to the adjudicated boundaries of the Seaside Basin. While the SGMA does not have a direct impact on the MPWSP, it is included here as it is new legislation affecting both the Salinas Valley Groundwater Basin and the boundaries of the adjudicated Seaside Basin. The proposed project would not adversely affect groundwater management in the Basin, because it would be extracting groundwater that is not presently being used as a potable or an irrigation supply. Rather, when considering seawater intrusion and water surface elevations in the 400-Foot Aquifer, the proposed project may have a positive contribution to the sustainable management of groundwater. Regarding the former, groundwater modeling shows that the proposed project would retard the advance and limit the ultimate inland extent of seawater intrusion. With respect to the latter, by returning in-lieu desalinated water to the CCSD, the proposed project would provide recharge benefits to groundwater levels in the 400-Foot Aquifer. For these reasons, the proposed project would not conflict with the SGMA.

HGC Comment No. 22:

The DEIR/EIS discussion of the MPWSP's consistency with the Sustainable Groundwater Management Act (SGMA), which became effective January 1, 2015, is grossly inadequate. The SGMA defines "basin" as either a subbasin or a basin. (Water Code, § 10721, subd. (b).) The California Department of Water Resources had previously classified the 180/400 Foot Aquifer Subbasin as a high-priority subbasin and in January 2016, the Subbasin was designated as a Critically Overdrafted Basin. (http://www.water.ca.gov/groundwater/sgm/pdfs/COD_BasinsTable.pdf) Both the MPWSP's slant wells and desalination plant are located within the 180/400 Foot Aquifer Subbasin.

Because of the Critically Overdrafted Basin classification, the 180/400 Foot Aquifer Subbasin is required to adopt a State-approved groundwater sustainability plan (GSP) or coordinated GSPs by January 31, 2020. The GSP must include measurable objectives and milestones in increments of five years to achieve sustainability within 20 years of the GSP adoption, which would be no later than January 31, 2040, in the case of the 180/400 Foot Aquifer Subbasin. Because of these existing conditions, it is false to state "the proposed project would not adversely affect groundwater management in the Basin, because it would be extracting groundwater that is not presently being used as a potable or an irrigation supply". Ultimately, the stakeholders forming the sustainable Groundwater Management Agency (GMA) will be responsible to deal with any adverse impacts that result from the project.

While the DEIR/EIS focuses on whether the MPWSP pumping will injure any legal user of the groundwater, it fails to address whether MPWSP pumping will further injure the overdrafted, seawater-intruded groundwater subbasin and prevent the subbasin from full groundwater sustainability within the Marina Subarea. (Water Code, § 10727.2, subd. (b)(1)). Given the MCWD's and other concerted efforts to address seawater intrusion and over-pumping, the DEIR/EIS's failure to address this issue should be considered a serious flaw.

The Marina Subarea of the SVGB must be included in an adopted groundwater sustainability plan due to its designation as a priority subbasin. The Act requires "the existence and implementation of one or more groundwater sustainability plans that achieve sustainable groundwater management by identifying and causing implementation of measures targeted to ensure that the applicable basin [or subbasin] is operated within its sustainable yield." (Water Code, § 10721, subd. (t).) The sustainability goal must be achieved in the subbasin or basin within 20 years of the implementation of the groundwater sustainability plan. (Water Code, § 10727.2, subd. (b).) **"Sustainable yield"** is defined as **"the maximum quantity of water,** calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, **that can be withdrawn annually from a groundwater supply without causing an undesirable result."** (Water Code, § 10721, subd. (v), emphasis added.) The DEIR/EIS does not address the MPWSP's potential impacts on sustainable yields in the Marina Subarea or the SVGB. Nor does it address reasonably foreseeable projects that must be proposed to bring the Marina Subarea of the SVGB into compliance with SGMA.

Instead, the DEIR/EIS assumes there is no benefit to the local development and use of the brackish or fresh quality groundwater contained within the coastal portion of the SVGB Pressure Area. It fails to consider the use of treatment or blending of this groundwater for future sustainable uses within the basin. The MPWSP as proposed, however, will remove freshwater and the brackish groundwater influenced by seawater and replace it with highly saline groundwater (pure seawater) by inducing seawater intrusion. The DEIR/EIS ignores the potential for local SVGB users to use the brackish groundwater supply as a beneficial use for sustainable basin management efforts and that seawater intrusion is identified as an undesirable result. It also fails to address how the MPWSP will impact potable water within the Marina Subarea as noted above and discussed below.

While the DEIR/EIS references the recent State of the Salinas River Groundwater Basin Report, dated January 16, 2015, from the Monterey County Water Resources Agency, the DEIR/EIS fails to discuss or heed its recommendation. The Report notes that based on the continued large storage declines in the East Side and Pressure Areas (and resulting groundwater head declines and seawater intrusion), the current distribution of groundwater extractions is not sustainable. Seawater intrusion can account for up to 18,000 afy of the total storage loss of 24,000 afy. Sustainable use of groundwater will only be achieved by aggressive and cooperative water resources planning to mitigate seawater intrusion and groundwater head declines. As the Salinas River Groundwater Basin Report concluded:

> The consequences of no-action under continued drought conditions will be the imminent advancement of seawater intrusion within the next few years and the continued decline of groundwater head. Both of these conditions would necessitate the drilling of deeper groundwater wells to produce the quantity and

> quality of water needed for consumptive use and irrigation. The installation of deeper wells may not be feasible in some areas because of lower groundwater yield and water quality in the Pressure Deep Aquifer. A more sustainable and long term management practice would encourage a Basin-wide redistribution and reduction of groundwater pumping, which would require cooperative and aggressive resource management. The unsustainability of the current distribution of groundwater extractions has long been recognized by various investigators, and Basin- wide redistribution and reduction of pumping have been recommended previously (e.g. DWR, 1946).

(Report at p. ES-12; see also p. 6-3.) Based on this conclusion, the Salinas River Groundwater Basin Report provided several options for reducing storage losses in the SVGB. One option was to reduce pumping in the Pressure and East Side to assist in mitigating some of the anticipated effects of the extended drought on groundwater storage and water quality. **The report noted that shifting of pumping to areas further away from the coast would also be helpful,** as long as it is shifted south of the current head trough in the East Side Subarea. **A second alternative was shifting of some pumping from the P-180 and P-400 Aquifers to the Pressure Deep Aquifer to reduce the storage deficit in the shallower aquifers.** The MPWSP's proposed slant wells are inconsistent with the Report's recommendations for addressing continued declining aquifer heads, water storage losses, and seawater intrusion in the Basin. The slant wells represent a significant increase in pumping from the Dune Sand Aquifer and 180-foot Aquifers in the Marina Subarea over existing conditions and will reverse the cumulative efforts of MCWD and others to shift production to other aquifer zones and reduce pumping in the 180-foot aquifer in order to reduce seawater intrusion. The DEIR/EIS also does not consider cumulative impacts on future plans to expand these groundwater management efforts.

Notably, the DEIR/EIS, also fails to discuss historical studies that have indicated there are 2 locations at the shoreline where seawater inflow preferentially follows the paths of greatest hydraulic conductance (least impedance to flow) when onshore gradients induce landward flow of groundwater (KJC, 2004, Page ES-15, Figure 3). The main pathway identified is located north of the Salinas River where the greatest amount of seawater has intruded into the heavily used portion of the Pressure Area. The second preferential pathway for flow is located south of Marina and allows seawater to flow into the aquifers beneath the Fort Ord Area. This area is south of the boundary defined as the Pressure Area by some studies, but within the Pressure Area defined by other studies. The CEMEX site lies midway between these 2 areas of preferential seawater intrusion and does not directly intercept either of these main areas of onshore flow. The potential impact of this condition, or the relocation of the project further north or south to better benefit the coastal conditions is not discussed in the DEIR/EIS.

As previously discussed, the project will contribute to the present overdraft of the SVGB and effectively induce the SGMA identified undesirable result of seawater intrusion. While the DEIR/EIS indicates the project would not conflict with the SGMA, the study does not mention groundwater dependent ecosystems and the potential undesirable result that may occur within the coastal dunes when water levels are lowered to levels below the root zones of groundwater dependent plants. The study also does not address how the replacement of a floating freshwater lens along the shoreline with seawater could potentially impact salt sensitive plants within the area of project influence.

In summary, the DEIR/EIS provides insufficient discussion of the effect and application of the most notable development in California water law in the past century, the enactment of the SGMA and the proposed slant wells are inconsistent with the Salinas River Groundwater Basin Report recommendations to shift pumping away from the coast and into deeper aquifers.

The DEIR/EIS's discussion of the project's consistency with MCWRA Agency Act and MCWRA Ordinance 3709 is misleading and inaccurate.

On **Page 4.4-38**, the DEIR/EIS states:

> As discussed more fully in Section 2.7, Water Rights, given the locations of the slant well screens beyond the jurisdictional boundaries of the County, it is not clear whether the Agency Act applies to the proposed project. However, as further discussed in that section, were the Agency Act to apply, it is preliminarily reasonable to conclude that the proposed project would be consistent. This is because the proposed project would return to the SVGB any incidentally extracted useable groundwater. The water available for export would be new supply, or developed water, not extracted from the SVGB.
>
> MCWRA Ordinance 3709 prohibits drilling into and pumping groundwater from the 180-Foot Aquifer within specific onshore areas, designated as Territories A and B (MCWRA, 1993). The proposed seawater intake system would be located at the westernmost edge of Territory B. Although the wells would be drilled within Territory B, the source water for the proposed project would be extracted from beneath the ocean floor, an area not located within the restrictive territories identified by Ordinance 3709. As with the Agency Act, it is not clear that the MCWRA Ordinance 3709 applies to the proposed project. However, for the same reasons presented above, if it were to apply, it is preliminarily reasonable to conclude that the proposed project would be consistent. This issue is discussed further in Section 2.7, Water Rights.

HGC Comment No. 23:

As noted above, the DEIR/EIS's statement that the locations of the slant well screens are "beyond the jurisdictional boundaries of the County" is inconsistent with the DEIR/EIS's project description. As addressed above in HGC Comment No. 12, only the deepest portions of the well screens would potentially be located at a depth of a couple hundred feet beneath the ocean floor with the shallower well screen intervals producing from the Dune Sand and 180-FTE Aquifers and located onshore and within the jurisdictional boundaries of the County. (see DEIR/EIS, Chapter 3, Figures 3-3a and 3-3b, and Table 3-2). The DEIR/EIS must be revised to address the percentage of the well screens for each test well that has screened intervals located landward of the beach to assess consistency with the MCWRA Agency Act.

Second, it is unclear as to what is considered "any incidentally extracted useable groundwater." As noted above, to be consistent with the RWQCB WQCP all water with TDS levels under 3,000 mg/l would need to be returned (RWQCB, 2011). See also HGC Comment No. 3, explaining that the MPWSP slant wells will likely extract significant amounts of groundwater from the Marina Subarea because the area is not completely filled with seawater.

As discussed above, many of the MPWSP's proposed slant wells will not actually extend beneath the ocean floor and a large section of the well screens that produce groundwater is onshore within the restrictive territory identified by Ordinance 3709. The well designs shown in the DEIR/EIS indicate the onshore sections of the well screens that will contribute groundwater to the slant well facilities and are not "beneath the ocean floor." The DEIR/EIS does not demonstrate through use of a territorial boundary map that the slant well configurations and designs are located outside Territory B and comply with the ordinance.

While the DEIR discusses the Agency Act and recognizes the provisions in Ordinance 3709, it has not demonstrated that operation of the proposed MPWSP well facilities as designed will not violate both regulations.

The DEIR/EIS's modeling relies on the Geosciences 2016 CEMEX Model Update, which makes a number of unsupported assumptions based on the lack of available data.

On **Page 4.4-42 and 4.4-43**, the DEIR/EIS states:

> CalAm installed the test slant well to further evaluate subsurface conditions and to test the response of the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer to pumping. The results have been used to refine the groundwater models and inform the analysis of the proposed project. The first phase of the test slant well investigation began with the construction of a 724-foot long test well drilled at an angle of 19 degrees below horizontal at the CEMEX site. Special Condition 11 of the Coastal Development Permit, "Protection of Nearby Wells," requires the MPWSP HWG to establish baseline water and TDS levels prior to commencing the long term pumping tests (Geoscience 2015b). The long-term pumping test began in mid-April 2015, and results are available at http://www.watersupplyproject.org/#!test-well/c1f1l.
>
> **Monitoring Wells Installation and Testing**
>
> To monitor the response of the aquifers to pumping from the test slant well and verify that the aquifers would respond as simulated by the groundwater modeling discussed below, CalAm installed a network of monitoring well clusters at the locations shown on Figure 4.4-9, along with a water level data logger in the pond that CEMEX uses to dredge sand (Geoscience, 2016b). The details of the

subsurface exploration including boring logs, well construction details, field screening tests results, and laboratory analytical results are presented in a report titled: Monterey Peninsula Water Supply Project, Hydrogeologic Investigation, Technical Memorandum (TM2) Monitoring Well Completion Report and CEMEX Model Update (Geosciences, 2016b). The Hydrogeological Working Group peer reviewed TM2 before the final document was released; that document is also discussed in Section 4.2, Geology, Soils, and Seismicity. Four of the monitoring well clusters are located west to east along the CEMEX access road, from near the proposed slant wells to near the CEMEX facility entrance. Monitoring well clusters were also installed at the proposed desalination plant site on Charles Benson Road, at the intersection of Lapis Road and Del Monte Road, and along West Blanco Road about 4 miles southeast of the CEMEX site. The clusters monitor water levels and chemistry in the Dune Sand, 180-FTE, and 400-Foot Aquifers. Groundwater elevation and water quality data developed from monitoring the cluster wells are presented in the impact analysis, below.

HGC Comment No. 24:

First, my comments and testimony in the *MCWD v. Coastal Commission* case addressed Technical Memorandum No. 1 that did not establish baseline conditions at MW-4 or any of the other required monitoring wells. Rather, the memorandum included a cursory discussion of water levels at some of the monitoring wells over a period of weeks (or a couple months depending on the date of their construction) and then provides a Section 7.0 entitled "Recommended Monitoring of Baseline and TDS Levels," which suggests a method for evaluating impacts without actually establishing baseline water levels. (See Geoscience 2015p, Technical Memorandum, p. 14.) There was no information regarding tidal, seasonal, or climatic variations in the memorandum. In fact, it was even unclear what was being considered as pre-pumping conditions.

With its predecessor (TM1), TM2 (Geoscience, 2016) provides information on all the wells constructed to date, and attempts to summarize baseline conditions, the TSW and monitoring wells were installed during a drought. The single season groundwater contour maps for the fall of 2015 inadequately show the coastal conditions in the Marina Subarea of the SVGB. Notable, until the spring of 2017, the river and its reservoir system have been stressed by reduced rainfall. Showing seasonal low water levels during an extended dry period does not sufficiently portray the dynamic system that has largely been undocumented. For instance, the entire record of MW-6S shows a relatively constant level for the A Aquifer with the seasonal variation of approximately 1 to 1.5 feet between April 2015 and December 2016. With the end of the drought, we see an entirely new dynamic. The water level in the fall of 2015 was 7.8 feet (see TM2, Figure 10) and only changed when storm flows resumed in the river. As winter rains filled reservoirs and caused tributary runoff, the Salinas River flows began to show a huge source of recharge to the A Aquifer zone. MW-6S rose from its steady trend approximately 10 feet resulting in shallow groundwater levels of over 17 feet amsl. The TSW project may be developing baseline data, but this source of recharge to the shallow A Aquifer, -2-Foot Aquifer, and Dune Sand Aquifer was not apparent in previous data. The 2015 fall season water level in MW-7S used for contouring was 3.9 feet amsl. The level was observed to rise to about 6 feet amsl after the winter rains of 2015, and it remained above 5.5 feet amsl throughout 2016. These are all protective water levels for the Dune Sand Aquifer. But now the coastal water levels are at approximately 8 feet amsl and rising. This protective head condition could only be speculated, prior to this year's observations and was based on the fresh water quality present in the aquifer instead of seawater. There were no baseline data available in this central area of the Marina Subarea prior to TSW project monitoring.

Furthermore, as actual field data are being developed, the adequacy of the originally proposed work plan for field investigations must be reviewed and revised. Recent findings indicate that Monitoring Well No. 2 should provide valuable information for understanding the changes in the hydrogeology that occur south of the CEMEX site where the intake wells are proposed and project impacts would occur. This monitoring well has not yet been constructed. Recent information indicates that the complexities of the hydrogeology in the Marina Subarea are not well understood and should be further investigated to fully define the potential MPWSP impacts.

The degree of uncertainty in the DEIR/EIS's groundwater modeling is intolerable due to its failure to utilize the best available information:

On **Pages 4.4-43 through 4.4-51,** the DEIR/EIS describes the investigation of groundwater conditions and modeling, and provides the following assessment of the "Limitations of Groundwater Models" at Page **4.4-44:**

> Groundwater models simulate aquifer conditions based on a specific set of data that describes parameters such the subsurface characteristics, groundwater flow, and land use. The more robust the data set, the more capable the model will be to accurately simulate subsurface conditions. Most groundwater models use conservative input parameters so that the output overstates the actual aquifer response. Nevertheless, groundwater models are mathematical-based computer programs that rely on input parameters and, consequently, there is a degree of uncertainty. However, the models used to analyze the proposed project have been used previously and have benefited from input data derived from site-specific subsurface information. Given that, and given the fact that these models were calibrated with known data, the level of degree of uncertainty for this analysis is considered tolerable.

On Page **4.4-47**, however, the DEIR/EIS further reveals it did not use the prior models:

> For this project, the NMGWM is converted to a superposition model and only solves for the groundwater changes due solely to the proposed project. These changes are independent of the effects from the other stresses on the basin such as

> seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. By using superposition, the actual effects of only the proposed project can be isolated from the combined effects of all other basin activity. For example, when the NMGWM reports a 1-foot drawdown in a well, it is understood that the one foot of drawdown would be the effect on the basin of the proposed project only. That well may experience greater drawdown due to other stresses, such as drought or other nearby pumping wells, or may experience increases in water levels due to reduced regional pumping or an extremely wet year. But the proposed project's contribution to that drawdown in the well would remain only 1-foot. Superposition is described in Appendix E2, Section 5.2.

Then on Page **4.4-49**, however, the DEIR/EIS further reveals it did not determine return water that would be required or address cumulative impacts (other than sea level rise):

> **Return Water Considerations**
>
> The MPWSP proposes to return a certain fraction of water (referred to here as return water) extracted by the slant wells to water users in SVGB as desalinated product water … The exact quantity of water to be returned annually would vary and would be determined each year using a mathematical formula. However, for groundwater modeling and impact analysis purposes in this EIR/EIS, it is estimated that somewhere between 0 and 12 percent of the source water withdrawn for the project would comprise water originating from the inland aquifers, and thus would be returned to the basin. The water would be returned to the SVGB through deliveries of up to 800 afy of desalinated product water to the Castroville Community Services District (CCSD). This water would be piped to the CCSD and the CSIP and provided to water customers instead of their pumping an equal amount from the ground. This method of returning water is referred to as in-lieu recharge because the delivered water would reduce the need to pump groundwater in corresponding quantities. The NMGWM accounts for the 0 to 12 percent range by simulating the aquifer response in the various scenarios with a 0, 3, 6, and 12 percent returned product water.
>
> **Model Period**
>
> The model period for the NMGWM is 63 years. The model scenarios are run over a set time period, beginning with the baseline conditions and extending out to a future point in time, typically set as the life span of a given project. Over this time period, land use, climate conditions, and, if located along the coast, sea level rise would be expected to change. ***However, as discussed above, superposition modeling does not account for other stresses on the basin except for the effects***

> ***on groundwater flow from projected sea level rise over the 63 years of modeled operations. (emphasis added)***

HGC Comment No. 25:

As discussed in HGC Comment No. 5, the level of degree of uncertainty in the DEIR/EIS's modeling is intolerable given its failure to utilize the best available information.

As previously discussed, ***the recalibrated NMGWM^{2016} was not successful*** at providing shallow groundwater responses to project pumping and in fact may be less representative of real world conditions than the predecessor model NMGWM^{2015}. The CEMEX model is too small to be used to project aquifer parameters across the NMGWM domain. The SVIGSM is inappropriately constructed in the project area and did not include boundary recharge into the Dune Sand Aquifer or the existence of the FO-SVA and cannot be used to feed realistic input into the NMGWM^{2016}. The unsuccessful calibration attempts prevented using data developed from the site specific study unless a new model was constructed. ***Instead and because of these failings, the effort to use a calibrated model was aborted and the superposition model was constructed.*** The superposition, however, uses the hydraulic conductivity values for aquifers in the Marina Subarea from the ***recalibrated NMGWM^{2016}***, which did not predict water levels within an acceptable error range, and therefore its results are similarly unreliable, if not worse. Moreover, while the superposition model can simulate drawdowns, it can't be used to evaluate the project's impacts on water quality or the project's potential cumulative impacts. It is also incapable of showing the water budget (from different sources) and boundary conditions dictate results by limiting drawdown effects. As a result, it cannot be used to estimate the amount of return water or evaluate whether the project is performing as expected in the future. Finally, the DEIR's reliance on the modeling to date to evaluate the project's potential impacts on groundwater in the Marina Subarea is not tolerable based on the DEIR/EIS's own evaluation criteria.

DEIR/EIS's analysis of potential impacts to the Salinas Valley Groundwater Basin is based on an inadequate investigation of baseline conditions in the Marina Subarea and fatally flawed modeling that does not utilize the best available information:

On **Page 4.4-57,** the DEIR/EIS provides the following threshold of significance for Impact 4.4-3:

> Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations. (Less than Significant)

HGC Comment No. 26:

Given the DEIR/EIS's inadequate investigation of baseline conditions in the Marina Subarea and flaws in its modeling, there is no way for the public or Commission to make an informed decision on the project's potential groundwater impacts for the reasons discussed in HGC Comment Nos. 5 and 25 above and further below. We note that the threshold includes "interfering substantially with groundwater recharge," which would include the interception of recharge before it reaches its area of replenishment and/or beneficial use. Notable, groundwater recharge can serve many purposes including replenishing groundwater being removed, diluting groundwater as it is flowing through an area, and/or maintaining a sufficient head to prevent the movement of poor quality water in an undesirable direction. As discussed above, the superposition groundwater model constructed and utilized to assess impacts in the DEIR/EIS is incapable of predicting the impact of the project on any of these groundwater recharge benefits. As a result, the DEIR/EIS's less than significant determination is speculation at best.

The DEIR/EIS's analysis of potential impacts to the Salinas Valley Groundwater Basin groundwater supply is based on an inadequate investigation of baseline conditions in the Marina Subarea and fatally flawed modeling that does not utilize the best available information:

On **Page 4.4-57,** the DEIR/EIS states:

> The first step in this analysis was to determine the pumping scenario that would have the most profound aquifer response surrounding the slant wells at the CEMEX site in order to conservatively judge potential impacts. Extracting groundwater from slant wells at the CEMEX site could cause an aquifer response up to 4 miles inland. Figure 4.4-13 shows the cone of depression with -1, -5, -10, and -20-foot drawdown contours and the extent of pumping influence in the 180-FTE Aquifer; these drawdowns would stabilize within five years after pumping begins, and would remain stable as long as the MPWSP is pumping. For purposes of this impact analysis, this model scenario assumes that no water would be returned to the SVGB and the sea level would be consistent with current levels. This scenario generates the most pronounced cone of depression with the largest area of influence because groundwater would not be returned to the basin, and because current sea level would not increase groundwater levels and gradients at the coast as it is expected to do in the next 63-years. This scenario is used to represent the maximum area of pumping influence. In other words, Figure 4.4-13 depicts the improbable worst case aquifer response from the proposed project.

HGC Comment No. 27:

The DEIR/EIS representation that Figure 4.4-13 depicts the improbable worst case aquifer response from the proposed project is simplistic and the discussion should actually clarify it is the worst case that the superposition model can simulate. This error is significant and results in the DEIR/EIS failing to evaluate potential impacts on future inland water quality degradation, on depletion of storage, on Groundwater-Dependent Ecosystems, and the project's consistency with the requirements under the SGMA.

The DEIR/EIS's analysis of potential impacts to the Salinas Valley Groundwater Basin groundwater supply is based on an inadequate investigation of baseline conditions in the Marina Subarea and fatally flawed modeling that does not utilize the best available information:

On **Page 4.4-57 through 4.4-59,** the DEIR/EIS states:

> The second step in this analysis was to use the drawdown contour map on Figure 4.4-13 to determine the area of influence and maximum drawdown caused by the slant well pumping. As shown by modeling results depicted on Figure 4.4-13 the center of the cone of depression and thus, the capture zone for the slant wells show that the majority of the groundwater drawn into the proposed MPWSP slant wells would originate in the aquifer zones located at and offshore of the coast and would be composed primarily of seawater. This is illustrated by the configuration of the cone of depression shown in Figure 4.4-13. The western extent of the cone of depression is just offshore and in close proximity to the slant wells where the drawdown is deepest and contours are steeper, indicating more flow to the slant wells and higher yield near the coast. At the coast, seawater entering the slant wells would have the shortest and least restricted pathway through the overlying sea floor deposits. The drawdown contours extend inland but at considerably shallower gradients, between -1 and -5 feet, indicating that the inland basin is less permeable, and that groundwater must flow through thicker sediments to reach the slant wells. This additional resistance to flow reduces the volume of water available to the slant wells and flattens the gradient. The cone of depression shown on Figure 4.4-13 illustrates that the majority of the water pumped at the slant wells would originate at the coast and just offshore, where the drawdown is most pronounced while a smaller volume of groundwater would be extracted from the inland portion of the 180-Foot Aquifer.

HGC Comment No. 28:

While the superposition model results can illustrate the concept of groundwater flow direction, it cannot quantify the amount of seawater or fresh groundwater that will be produced. The discussion about the apparent resistance to flow from the landward side of the project and that the inland basin is less permeable is merely an observation of the lower hydraulic conductivity values assigned in the model domain inland of the CEMEX site. As discussed above, hydraulic conductivity values assigned in the superposition model are based on the ***recalibrated NMGWM^{2016}*** model and therefore are not reliable.

<u>DEIR/EIS's analysis of potential impacts to the Salinas Valley Groundwater Basin groundwater supplies is based on an inadequate investigation of baseline conditions in the Marina Subarea and fatally flawed modeling that does not utilize the best available information:</u>

On **Page 4.4-59,** the DEIR/EIS states:

> The third step in this analysis was to assess the quality and current use of the groundwater that would be extracted by the slant wells. The MPWSP slant wells would not extract potable groundwater. The groundwater in the 180-foot Aquifer that is underlying the area influenced by the MPWSP pumping, up to about 4 miles inland, has been intruded with seawater for decades, and far exceeds the State Drinking Water Standard of 500 mg/L of total dissolved solids (TDS).23 The inland groundwater has been degraded by legacy and ongoing seawater intrusion and is not being produced for beneficial potable uses. Figure 4.4-10, above, shows the areas of groundwater in the 180-Foot Aquifer degraded by seawater intrusion over time. The CEMEX site and the area of influence from slant well pumping in the 180-FTE are well within the area degraded by historical sea water intrusion.
>
> Recent testing for TDS in groundwater within the area of influence of the proposed MPWSP slant well pumping verifies the degree of seawater intrusion. Water samples from Monitoring Well MW7M (180-FTE Aquifer) and MW-7D (400-Foot Aquifer), located just over a mile southeast from the proposed slant well location, contained TDS concentrations at 3,832 mg/L and 26,700 mg/L, respectively. Samples from Monitoring Well MW-8M and MW8D, located 1.5 miles to the northeast, had TDS concentrations of 24,000 mg/L and 583 mg/L, respectively. Monitoring Well MW-9S (Dune Sand Aquifer) and MW-9M (180-FTE Aquifer), located 2 miles to the northeast, had TDS concentrations of 3,204 mg/L and 29,000 mg/L, respectively. These data show that groundwater within the inland area of influence of the proposed MWSP slant wells is brackish with elevated TDS attributable to seawater intrusion; the groundwater in the Dune Sand, 180-FTE and 400-foot Aquifer is therefore unsuitable for potable supply.
>
> Current groundwater production in the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer, which are projected to exhibit a response to MPWSP slant well pumping, is limited to minor irrigation and dust control. There are no water supply wells pumping potable water. Most of the wells in this area are no longer active because of seawater intrusion. Furthermore, groundwater production is restricted within the seawater intruded coastal areas in the vicinity of the CEMEX site through MCWRA Ordinance 3709, which prohibits drilling wells and pumping groundwater from the 180-FTE Aquifer in order to protect groundwater resources. The slant wells at CEMEX and the area of pumping

influence east of CEMEX are within the jurisdictional boundary of Ordinance 3709.

HGC Comment No. 29:

First, while the statement that "the MPWSP slant wells would not extract potable groundwater" may be accurate, it is also misleading. While it is true that once the freshwater produced from the inland side of the intake wells is mixed with ocean water, it will no longer be "potable," the statement is misleading to the lay reader because it incorrectly suggests/implies that no potable groundwater would be drawn into the slant wells. Therefore, the DEIR/EIS should clarify this statement and recognize that the project's slant wells would extract both seawater and freshwater and/or brackish groundwater suitable for beneficial uses.

Second, the DEIR/EIS only discusses the groundwater that would be extracted from 180-FTE Aquifer and provides a broad sweeping statement that 180-FTE Aquifer: a) is seawater up to about 4 miles inland, b) has been intruded for decades, and c) far exceeds the State Drinking Water Standard of 500 mg/L Critically, the DEIR/EIS fails to address the Dune Sand Aquifer implying there is no beneficial uses for the water that the aquifer contains. As explained in HGC Comment No. 3, the water quality data developed by the project show fresh water within 2 miles of the coast in the 180-FTE and 400 Foot Aquifers (see Diagram 5 above). The Dune Sand Aquifer contains fresh water within 1 mile of the coast and is believed to be contributing to protective conditions in the underlying 180-FTE Aquifer through recharge along the coast (see attached Figures 1 and 4).

The statements regarding seawater intrusion into the 180-FTE Aquifer are only partially correct and thus misleading. The DEIR/EIS's statement that the 180-FTE Aquifer groundwater has been degraded (a relative term) by legacy and ongoing seawater intrusion is accurate, but the suggestions that it is completely intruded to about 4 miles inland is false. As previously explained, the TSW findings show that inland of the project location this aquifer has fresh water at MW-5 and MW-6 (see attached Figures 1 and 2).

The DEIR/EIS's claim that recent testing for TDS in groundwater within the area of influence of the proposed MPWSP slant well pumping verifies the degree of seawater intrusion but it shows significant amounts of brackish and fresh groundwater in areas where the aquifers where inferred to be completely filled with seawater (see attached Figures 4 and 5).

Finally, using the DEIR/EIS's statement that characterizes the groundwater in the 180-FTE Aquifer as far exceeding the State Drinking Water Standard of 500 mg/L, the DEIR/EIS improperly limits its analysis to whether the project will directly impact "potable" uses. The DEIR/EIS fails to address whether the project will have a direct, indirect, or cumulative impacts on all types of beneficial uses of groundwater in Marina Subarea aquifers. The DEIR/EIS is careful not to say "**all uses,**" it merely concludes that "groundwater in the Dune Sand, 180-FTE and 400-foot Aquifer is therefore unsuitable for potable supply", which again is extremely misleading. This approach implies that if groundwater is not suitable to meet the highest drinking water standards without blending or treatment, it has no beneficial use. This is distracting from the reason why decades of seawater intrusion (which is not a linear process) has not rendered the entire coastal area completely full of salt water and how recent management efforts have abated intrusion to its current position and slowed its rate of advancement.

Coastal farming has been impacted by saltwater intrusion for over 70 years and yet it continues to produce groundwater inland. Initially, dilution of minor seawater incursions with freshwater sources onshore could make the salinity of the groundwater supply tolerable. Dilution of legacy saline water along the coast and further inland is visible from both water quality measurements taken by the TSW program and by the lack of advancement of the 500 mg/l chloride front observed between 2011 and 2013. While greater management efforts are planned to further reduce pumping along the coastal portion of the SVGB, natural and artificial replenishment of freshwater to the coastal portion of the basin serves to dilute and make the originally unsuitable quality of groundwater acceptable for beneficial uses decades later and miles inland.

At the time of the TSW investigation, the groundwater within a half mile of the coast shows significant dilution in certain areas of certain aquifer zones (see Diagram 5 above) and within a mile of the coast, fresh water is present that could be used for irrigation of several types of crops and for potable consumption (with nitrate removal). The key issues are really that the TSW project findings are helping to develop our understanding of the natural groundwater recharge and flow conditions in the Marina Subarea and that management strategies are beginning to manifest visible beneficial results.

A better understanding of the present condition would be that the effects of seawater intrusion since 1944 extends significant distances inland, but the extent of intrusion varies along the coast (particularly in the Marina Subarea) and accurate maps of this intrusion do not currently exist. Notably, as shown by the TSW project data (Geoscience, 2015p, Table 2), and contrary to the implication of statements elsewhere in the DEIR/EIS, seawater does not occupy the 180-Foot/180 FTE Aquifer or the 400-Foot Aquifer between the CEMEX site and 8 miles inland or 3.5 miles inland, respectively (See HGC Comment No. 4, Table 2, Diagram 4 above, and Figures 1 through 5 attached to this letter). These statements and similar statements throughout the DEIR/EIS must be revised so the public and decision makers are not led to believe all the groundwater in the Marina Subarea is contaminated by seawater and that all management efforts have failed.

Furthermore, the concept that wells that are located within the radius of influence and screened in the 180-Foot and 400-Foot Aquifers have been brackish-to-saline for years, and are no longer serving irrigation or potable uses is also misleading given the well production prohibition zone along the coast has stopped well production in these affected aquifer zones. The prohibition of pumping along the coastal portion of the SVGB, including the Marina Subarea, as a management effort has almost entirely removed active wells in the Dune Sand Aquifer and the 180-Foot/180-FTE Aquifer from operation (except the CEMEX wells). As discussed above, this lack of pumping (and other conservation efforts) has resulted in restoring groundwater quality and improved protective heads from seawater intrusion in the Marina

Subarea even during the current extended drought period. The DEIR/EIS's discussion of the lack of facilities that would be directly impacted by the MPWSP's operational drawdown is not surprising nor particularly relevant to whether the MPWSP would result in adverse impacts to the Marina Subarea and the SVGB as a whole. The bigger question is whether the project would result in a "net deficit in aquifer volume" as it relates to long-term water quality impacts and basin management efforts, not drawdown impacts on proximal well facilities operations. For these reasons and those discussed above, the DEIR/EIS analysis of MPWPS potential to cause a "net deficit in aquifer volume" (loss of storage) as it relates to long-term water quality impacts and basin management efforts is woefully inadequate.

The DEIR/EIS's conclusion that the project impacts to Salinas Valley Groundwater Basin groundwater supplies is less than significant must be updated based on new modeling results that address cumulative impacts and disclose the amount groundwater supplies within the Marina Subarea that will be depleted:

On **Page 4.4-60**, the DEIR/EIS states:

> The proposed project would not deplete groundwater supplies; it would extract primarily seawater and a smaller volume of brackish inland groundwater from a localized area with only minor localized groundwater drawdown. The area influenced by the MPWSP groundwater pumping is within a zone that is degraded by seawater intrusion and therefore unusable for potable water supply due to its high salinity. When desalinated water is returned to the basin as part of the MPWSP, groundwater conditions in the 400-Foot Aquifer underlying the CSIP, CCSD, and adjacent areas would improve as water levels increase as a result of in-lieu groundwater recharge. 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. The effects of return water on the basin water levels are discussed below and shown on Figures 4.4-14 through 4.4-16. If the proposed project did not return any water, localized depressed groundwater levels would persist in the three affected aquifers throughout the life of the project. However, the area affected by groundwater pumping would remain localized and the proposed project would continue to extract only brackish, degraded groundwater from the coast and, to a lesser extent, the inland portion of the aquifer. Based on the conclusions of this analysis, this impact would be less than significant.

HGC Comment No. 30:

The statement that "The area influenced by the MPWSP groundwater pumping is within a zone that is degraded by seawater intrusion and therefore unusable for potable water supply due to its high salinity" assumes there is no way to pump brackish groundwater and clean it up for beneficial potable uses. This is false. As discussed above, the shallow aquifers in the coastal area are not presently pumped because of a management strategy that has been employed to abate seawater intrusion and not solely because it has a component of seawater present.

Again, the DEIR/EIS's statement that the "proposed project would not deplete groundwater supplies" is misleading to the public and the Commissioners. With only a month to review the ***recalibrated NMGWM***^{2016} and superposition model due to the CPUC's failure to make this information available until February 16, 2017, we have worked with GeoHydros to analyze groundwater depletion from the proposed production of 27,000 afy. Based on this review of ***recalibrated NMGWM***^{2016}, which likely understates the project's impacts as discussed above, the MPWSP would initially produce approximately 30 percent of its supply from groundwater. Again, if the model was properly calibrated, this number could be higher. Nonetheless, the water budget clearly shows the project will draw a substantial portion of groundwater during the initial year at minimum. Moreover, the water budget also show that project would significantly reduce groundwater storage within the Marina Subarea. The DEIR/EIS must be revised to disclose the amount of Marina Subarea groundwater supplies that would be depleted by the project. Without this information, it is impossible for the public and Commissioners to propose or evaluate potential mitigation measures. While the CPUC may determine that the impacts to groundwater supplies in the Marina Subarea are significant and unavoidable, it cannot approve the project without disclosing this condition and allowing public comment on this impact.

In addition, the DEIR/EIS's characterization of the project as creating only a "minor localized groundwater drawdown" is misleading and fails to acknowledge the magnitude of the groundwater extraction proposed. As designed, a single well would produce 2,100 gpm and the operation of 8 wells would total 16,800 gpm. That rate of groundwater extraction would fill an average size swimming pool in 1.5 to 2 minutes. Different than other municipal wells that cycle to meet day time demands and then rest at night, the MPWSP intake wells would pump constantly. Similarly, the suggestion that the project would only draw a small amount of brackish groundwater from the inland side of the project is significantly downplaying the quantity to be produced. Annually, the project production of groundwater would fill a 2,700-acre reservoir with water to a depth of 10 feet. After 10 years, the reservoir would be one hundred feet deep.

Finally, 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" does not address or mitigate impacts to the Marina Subarea aquifers directly impacted by the project.

Again, groundwater production should be calculated to include the 3,000 mg/l beneficial use standard provided in the WQCP. The amount of groundwater return to the basin needs to be specifically indicated and analyzed to determine the effectiveness of its implied mitigation of the potential project impacts.

<u>The DEIR/EIS's conclusion that the project impacts to the existing wells is less than significant must be updated based on new modeling results that address cumulative drawdown levels:</u>

On **Page 4.4-68**, the DEIR/EIS states:

> The nearby groundwater production wells affected by the change in groundwater levels are built in the Dune Sand Aquifer, 180-FTE Aquifer, or the 400-Foot Aquifer and thus have casings, pumps, and screens at depths considerably deeper than the depths at which MPWSP pumping could affect the water levels. A water level decline between 1 and 5 feet would not expose screens, cause damage, or reduce yield in the groundwater supply wells influenced by MPWSP pumping. Based on the modeled response of the 24.1-mgd extraction rate at the CEMEX site, the impact on nearby water supply wells would be less than significant.

<u>HGC Comment No. 31</u>:

As discussed above, the superposition model does not address cumulative drawdown and therefore does not address the project's potential to impact existing wells under cumulative conditions, which could include extended drought periods.

<u>The DEIR/EIS's conclusion that the impacts of the project on the surface water-groundwater interaction at the Salinas River and Tembladero Slough is inconsistent with the conclusions in the Alternatives Section regarding Elkhorn Slough:</u>

On **Page 4.4-70**, the DEIR/EIS states:

> The NMGWM can estimate the loss of groundwater outflow to a surface water feature such as the Salinas River. Based on the modeling, the estimated volume of groundwater removed from the river recharge system would be approximately 400 afy. A similar condition exists for Tembladero Slough, where the volume of groundwater removed by the slant well pumping from that system would be about 65 afy. The volume of water flowing to the ocean through the Salinas River in 2012 was about 250,000 afy, so the reduction of 400 afy is about 0.16 percent of the total flow. From a surface water supply standpoint, this magnitude of groundwater diversion from the Salinas River would be a minor, if not immeasurable, reduction in surface water supply. The same conclusion is applied to the Tembladero Slough, where the removal of 65 afy of groundwater discharge would not constitute a recognizable loss in supply for that system. The reduction of surface water attributable to slant well pumping is not a substantial reduction of water supply and thus this impact would be a less than significant impact.

On **Page 5.5-114**, the DEIR/EIS states:

> Unlike the proposed project, groundwater modeling (see Appendix E2) indicates pumping from the slant wells at Potrero Road would result in a cone of depression in the underlying groundwater aquifers that would draw or divert water from

> Elkhorn Slough. This drawdown impact is discussed in Section 5.5.4, Groundwater Resources, and presented in Figure 5.5-2. The modeling cannot predict the amount of water diverted from Elkhorn Slough although it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes. This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, Alternative 1 would result in an increased impact conclusion on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.

HGC Comment No. 32:

The assessment of the impact of surface water losses from these features due to the project pumping is general and compared to annual conditions that don't consider low-flow or no-flow conditions resulting from seasonal or climatic dry periods. This may be largely a result of the inadequacy of the NMGWM^{2016} prior to switching to use of the superposition model. In addition, the DEIR's conclusion regarding the potential impacts to the Salinas River and the Tembladero Slough are inconsistent with its treatment of Elkhorn Slough in the Alternatives Chapter.

The DEIR/EIS's discussion of the surface water-groundwater interaction at CEMEX fails to analyze or disclose how the TSW's impacts were effected by CEMEX operations making the revised modeling subject to untolerable uncertainty.

On **Page 4.4-70 through 4.4-72**, the DEIR/EIS states:

> The CEMEX facility has several ponds on its property. The largest pond, located to the north of the slant wells, is the source of the sand mined by CEMEX. The impact analysis of MPWSP pumping effects on recharge considered the largest pond to determine whether the proposed project would have an adverse impact on its recharge or on the current sand mining operations. A significant impact would occur if the proposed pumping at CEMEX reduced recharge to the Dune Sand Aquifer or interfered with or otherwise limited the ability of CEMEX to operate due to intolerable draw down in its main sand mining pond.
>
> **Pond Operation**
>
> The bottom of the large CEMEX dredge pond is assumed to be at about 10 to 20 feet below the surface water level in the pond (Geoscience, 2015b). The water level in the pond is in hydraulic connection with the ocean, receiving ocean water as seepage through the beach sand and occasional storm surges over the beach and into the pond. Winter storm surges push sand with very little silt or clay particles over the beach and into the largest pond, and the sand settles to the bottom of the pond. CEMEX then dredges the sand from the pond, sorts the sand

into different grain sizes depending on the desired end product, and washes the sand to remove residual salts from seawater. The wash water is routed to the smaller ponds located north and east of the location of the proposed slant wells, where the seawater seeps into the sand and migrates back to the ocean. The larger, deeper sand source pond is in an area composed entirely of sand. The water level in the largest pond is controlled by the ocean tides (Geoscience, 2015b). Occasionally, storm surges remove the sand barrier between the larger dredge pond and the ocean and the pond temporarily becomes a small bay, as occurred in March 2016. The smaller, shallower wash water ponds are fed entirely by the wash water and are not directly connected to either to the ocean or the underlying groundwater; wash water either evaporates or infiltrates into the shallow sand and migrates to the ocean.

A water level transducer was installed in the large dredge pond on the CEMEX property to monitor changes in water elevations. The most recent monitoring report indicates that the pond is tidally influenced (Geoscience, 2015a, b) due to the proximity of the pond to the ocean (within 200 feet). In addition, the pond water level monitoring indicates that the sand mining operations conducted on Monday through Friday also affect pond water levels. Pond water levels fluctuate and decrease during the week as sand and water is pumped out of the pond and then stabilize on Saturday and Sunday when the sand mining operations are closed.

Impact Analysis for CEMEX Dredging Pond Drawdown

This impact analysis is based on the analysis completed for the test slant well, which was completed in September 2014, and is also informed by data that was generated in April 2015 after a five-day constant discharge pump test of the test slant well.

In the September 2014 analysis, the localized CEMEX model was used to determine whether the dredge pond would be influenced by pumping at the proposed test well operating at 2,500 gallons per minute (gpm) (Geoscience, 2014a). The localized CEMEX model simulates the response of the Dune Sand Aquifer in its second, third, and fourth vertical layers. The depth of the large dredge pond falls within the second and part of the third model layer so the response in the dredge pond would be captured as a response in the upper portion of the Dune Sand Aquifer. The CEMEX model simulated the test well pumping for 8 months at 2,500 gpm. The results of the model run showed a drawdown at the dredge pond of about 1 foot. If a drawdown of 1 foot occurred for a pumping rate of 2,500 gpm from one well (the test slant well), there is a possibility that additional drawdown would occur in the pond during operation of the all of the proposed slant wells, which would operate at the combined pumping rate of 24.1 mgd or about 16,736 gpm. However, when compared to the daily tidal fluctuations in the dredge pond water levels of up to eight feet throughout the year, the decline in the water surface of any depth would be masked by the consistent recharge and tidal influence from the ocean.

On March 8, 2015, a water-level transducer was installed in the dredge pond, and it has been collecting data ever since. In April 2015, a five-day constant-discharge pumping test was conducted (Geoscience, 2015b). The transducer showed a series of cyclical fluctuations from March 8 through March 21, followed by relatively flat levels through April 2, followed by similar pattern of cyclical fluctuations at similar elevations through April 11. The cyclical fluctuations are due to a combination of tidal influence and the routine dredging of the pond for sand. The early March fluctuations, which occurred before the pumping test, and the early April fluctuations, which occurred during the pumping test, show a similar pattern at about the same water level, indicating that the water level in the dredge pond was not being influenced by the pumping of the test slant well. This also indicates that as the pond is dredged, the water levels quickly recover, with seawater seeping through the loose sand on the beach.

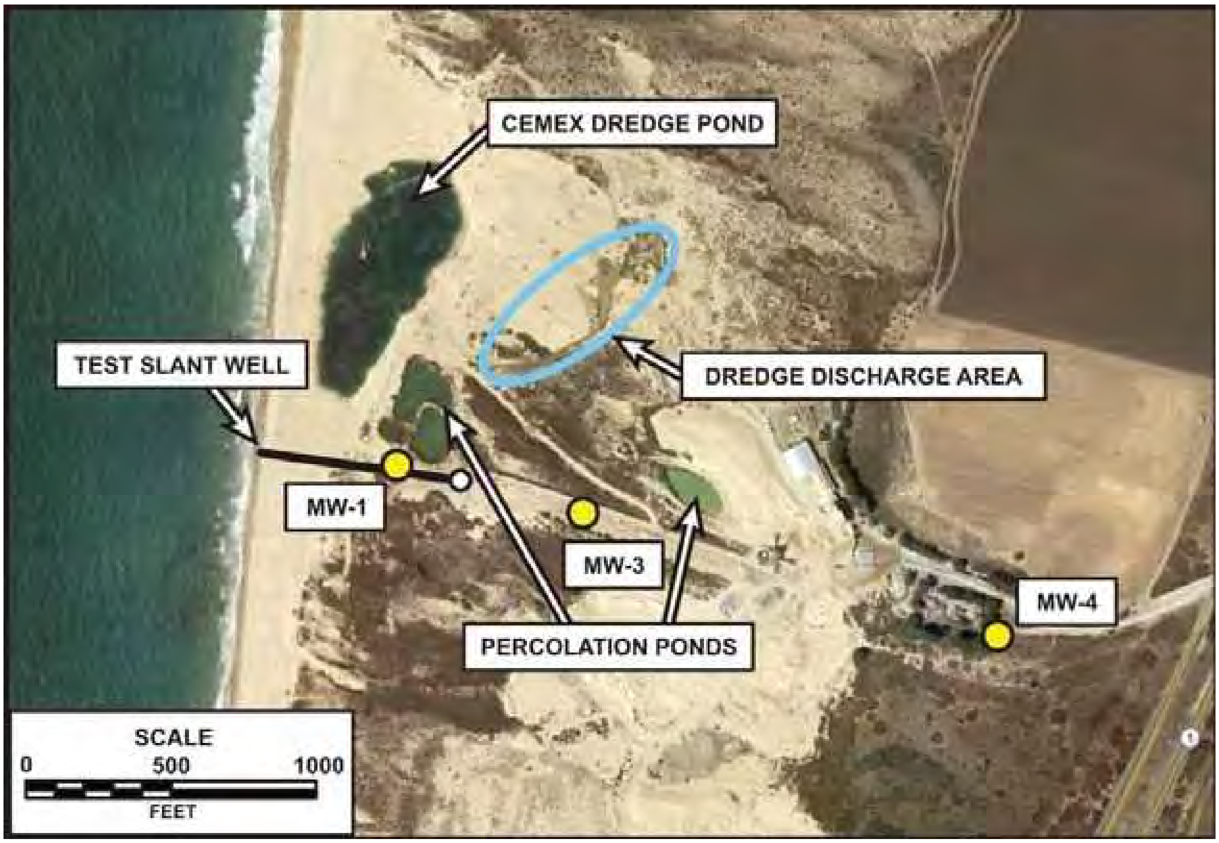
While pumping at the slant wells could elicit a drawdown response in the large dredge pond over periods of extended pumping, the magnitude of that response would not interfere with recharge to the Dune Sand Aquifer, nor would it inhibit sand mining operations by depleting available water supplies to the pond. This impact is less than significant.

HGC Comment No. 33:

While the project may not significantly impact CEMEX's dredge pond operations, the DEIR/EIS fails to disclose how CEMEX's operations affected the test slant well discharge water quality and whether they would have similar effects on the 9 additional slant wells proposed further south and away from the dredge pond, the dredge pond discharges, and wash water containment ponds infiltration. Notably, due to CEMEX operation, the measured values relevant to salinity (specific conductivity, TDS, and practical salinity units (PSU)) provided by the TSW laboratory results and field measurements are not representative of what is expected from the larger MPWSP source wells array. At the time the higher salinity water quality samples were taken, the CEMEX dredge pond, which is in close proximity to the test well and inland of the shoreline, was breached for a significant period of time and directly filled by ocean water. It is likely the significant increase in salinity readings in the TSW during and following this period of time. The result was a large surge of ocean water into the dredge pond area overlying the inland portion of the beach adjacent to the test well. This condition will not persist throughout the year and is not present at the other proposed MPWSP source well locations.

Additionally, the CEMEX plant operations have influenced shallow groundwater quality in this reach of the shoreline for decades. As shown on Diagram 7 – CEMEX Surface Water Features August 2013, the test slant well is located adjacent to numerous sources of saline water that are not present at other locations along the coast in particular where the other source water wells are proposed.

Diagram 7 – CEMEX Surface Water Features August 2013



These localized sources of salt water shown in Diagram 7 significantly influence the quality of the shallow groundwater that is observed in MW-1, MW-3, MW-4 and produced by the test slant well. The results in an overestimation of the seawater component flowing landward from the shoreline and an under estimation of the return water that will be required for mitigation.

The depletion of these landward sources of seawater is evident in the declining specific conductance trend for the TSW since November of 2016 (see Figure 3-12, Geoscience, 2017) and the overall decline in specific conductance trend in MW-4S since operation of TSW (see Figure 3-3, Geoscience, 2017).

Finally, I would note that this comment was provided to the CPUC in my testimony regarding the return water proposal, but the DEIR/EIS still does not address this issue.

<u>The DEIR/EIS's conclusion that Impact 4.4-3 is less than significant is not supported by the best available scientific evidence and must be updated based on new modeling:</u>

On **Page 4.4-73 through 4.4-74**, the DEIR/EIS concludes:

> The proposed project would extract mostly seawater and some brackish groundwater from a localized area; no fresh water supplies would be removed from the basin. When water is returned to the basin, groundwater conditions in the 400-Foot Aquifer underlying the CSIP and CCSD and adjacent areas would improve. Water levels in nearby wells may decline in the 180-FTE Aquifer between 1 and 5 feet, but that would not expose screens, cause damage, or reduce yield in the groundwater supply wells. Injection and extraction through the ASR well system would be managed so that the water provided from the desalination plant would not constitute a net change in storage. The reduction of surface water from the Salinas River attributable to slant well pumping would not be a substantial loss to water supply, nor would it constitute a substantial interference to surface water recharge. Pumping at the slant wells could cause drawdown in the large dredge pond over periods of extended pumping, but the magnitude of that response would not interfere with recharge. The MPWSP may slightly increase the area of impervious surface in the project area, but it would not reduce the potential for surface water to recharge the underlying aquifers. Impacts associated with changes to groundwater recharge during the operation of all project facilities would be less than significant.

<u>HGC Comment No. 34</u>:

As explained above, the DEIR/EIS's conclusion regarding Impact 4.4-3 are based on assumptions that conflict with the best available evidence and groundwater modeling that fails to assess cumulative conditions. The DEIR/EIS's conclusion that no fresh water supplies would be removed from the basin is not based on modeling capable of evaluating this criteria or other scientifically acceptable criteria. As a result the DEIR/EIS's conclusion the impact is less than significant is pure speculation. More importantly, it conflicts with available information regarding the groundwater conditions in the Marina Subarea and ignore the project's impacts on water quality.

<u>The DEIR/EIS's conclusion that Applicant Proposed Measure 4.4-3 is not necessary to avoid impacts to the groundwater aquifers in the Marina Subarea is unsupportable; the measure, however, is inadequate to ensure the project would not result in significant impact:</u>

On **Page 4.4-68**, the DEIR/EIS states:

> CalAm recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not contribute to lower groundwater levels in nearby wells within the SVGB. So, as part of the project, CalAm proposes to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease by one foot or more in the Dune Sand

Aquifer and the 180-FTE Aquifer. This constitutes an Applicant-Proposed mitigation measure that is presented and evaluated at the end of Impact 4.4-3.

On **Page 4.4-74 and 75**, the DEIR/EIS further provides:

The project applicant has proposed to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer and the 180-FTE Aquifer. ***This Applicant Proposed Measure is not required to reduce a potential impact to less than significant. [emphasis added]***

… Applicant Proposed Measure 4.4-3: Groundwater Monitoring and Avoidance of Well Damage.

Prior to the start of MPWSP construction, the project applicant, working with the MCWRA, shall fund and develop a groundwater monitoring and reporting program that expands the current regional groundwater monitoring network to include the area near the proposed slant wells. Once expanded, the program will monitor groundwater levels and water quality within the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer and the 180-FTE Aquifer and within at least one mile outside of the predicted radius of influence. The area of groundwater monitoring shall be determined by MCWRA and the MPWSP HWG. The elements of the groundwater monitoring program proposed under this measure are described below.

• Using a current survey of wells within the pumping influence of the slant wells, CalAm will offer to private and public well owners the opportunity to participate in a voluntary groundwater monitoring program to conduct groundwater elevation and quality monitoring. The voluntary groundwater monitoring program shall include retaining an independent hydrogeologist to evaluate the conditions and characteristics (e.g., well depth, well screen interval, pump depth and condition, and flow rate) of participating wells prior to the start of slant well pumping. Water elevation and quality monitoring shall begin following initial groundwater well assessment.

• Based on a review of the well network of voluntary well owners, CalAm will identify areas lacking adequate groundwater data and if deemed necessary, install new monitoring wells. These new wells would be in the 180-Foot Aquifer.

• Seven clusters of monitoring wells were recently completed on and near the CEMEX property. These well clusters monitor various depths within the Dune Sand Aquifer, the 180-Foot Aquifer, and the 400-Foot Aquifer and shall be included in the monitoring network.

• Using the groundwater data developed through the voluntary well monitoring program and data gathered at the new monitoring wells, ***CalAm will evaluate***

whether project pumping is causing a measurable and consistent drawdown of local groundwater levels in nearby wells that is distinguishable from seasonal groundwater level fluctuations. In the event that a consistent and measurable drawdown is identified, CalAm will determine if the observed degree of drawdown would damage or otherwise adversely affect active water supply wells. ***[emphasis added.]*** Adverse effects from lowered groundwater levels in existing active groundwater supply wells can include cavitation due to exposure of the well screen, water elevation declines that draw water below pump intakes, reduced well yields and pumping rates, and changes in groundwater quality indicating that project pumping is drawing lower quality water toward the well. Adverse effects would only occur in active wells; inactive wells would not be considered for mitigation.

• If it is determined that a nearby active groundwater well has been damaged or otherwise negatively affected by the project pumping of the slant wells, the project applicant shall coordinate with the well owner to arrange for an interim water supply and begin developing a mutually agreed upon course of action to repair or deepen the existing well, restore groundwater yield by improving well efficiency, provide long term replacement of water supply, or construct a new well.

Applicant Proposed Measure 4.4-3 would monitor changes in the groundwater surface elevations caused by the proposed pumping at the slant wells through a voluntary program and use of new groundwater monitoring wells. If it is determined that the project is causing groundwater levels to damage local active wells, this measure would ensure that active wells are repaired or replaced. Implementation of Applicant Proposed Mitigation Measure 4.4-3 is not necessary to address any significant project effect.

HGC Comment No. 35:

The fact that "CalAm recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not contribute to lower groundwater levels in nearby wells within the SVGB," but the CPUC and Monterey Bay National Marine Sanctuary (MBNMS) do not recognize the need for continued monitoring is troubling. As explained above, the DEIR/EIS's conclusion regarding Impact 4.4-3 are based on assumptions that conflict with the best available evidence and groundwater modeling that fails to assess cumulative conditions. The superposition model cannot assess water quality impacts or cumulative conditions. The DEIR/EIS itself acknowledges the "Limitations of Groundwater Models" at Page 4.4-44. As noted above, there are no borehole results or monitoring wells located in the project coastal area south of the test slant well or in the area between the project and Dune Sand Aquifer within the Fort Ord area. Thus, the DEIR/EIS's conclusion that additional monitoring is not required to ensure the project's impacts are less than significant is unsupportable.

Moreover, the Applicant Proposed Measure 4.4-3 even if adopted as mandatory mitigation would not reduce the project's potential groundwater impacts to a less-than-significant level. First, the measure fails to identify where additional monitoring wells will be located. In addition, leaving this decision to CalAm as well as the responsibility to evaluate whether project pumping is causing a measurable and consistent drawdown of local groundwater levels in nearby wells that is distinguishable from seasonal groundwater level fluctuations is problematic given CalAm's advocacy positions regarding the test slant well to date. Rather, another public agency with the expertise and jurisdiction to enforce the mitigation measure and be responsible for implementing the corrective action measures must be identified. The mitigation measure also needs to be expanded to ensure that the project does not directly, indirectly or cumulatively cause undesirable results as defined under the SGMA. It should also require a pumping curtailment or other measures to address the potential undesirable impacts that could result from the project. As discussed above, without modeling or other scientifically supported estimates of future groundwater levels and groundwater quality impacts, it will be impossible to determine whether the project pumping is causing a measurable or consistent drawdown in the affected aquifers.

<u>The DEIR/EIS's conclusion that the project impacts to groundwater quality within the slant well pumping area of influence is less than significant, is inadequate and must be updated based on new modeling results:</u>

On **Page 4.4-76**, the DEIR/EIS states:

> From the time the slant wells begin pumping, and throughout the life of the project, local groundwater quality around the slant wells and within the cone of depression could change from the brackish quality it is now to higher salinity groundwater. The degradation in water quality (measured as an increase in TDS) 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 be most detectable near the coast at the CEMEX site and less pronounced inland because seawater would enter the slant wells more readily closer to the Monterey Bay compared to farther east where a smaller fraction of brackish groundwater would be drawn from the inland portion of the aquifers.
>
> This impact analysis considers whether this projected degradation in localized water quality would constitute a significant impact. A significant impact would occur if the proposed project violated water quality standards or degraded a groundwater source such that it would interrupt or eliminate the available potable groundwater for other users in the basin. Groundwater in the Dune Sand and the 180-FTE Aquifers within the area projected to be affected by slant well pumping is not used for potable supply or irrigation. As stated in Impact 4.4-3, the use of

the current groundwater production in this area is limited to minor irrigation and dust control. There are no water supply wells pumping potable water, and most of the wells in this area are no longer active because of seawater intrusion. Furthermore, groundwater production is restricted in the vicinity of the CEMEX site through MCWRA Ordinance 3709, which prohibits drilling wells and pumping groundwater from the 180-FTE Aquifer in order to protect groundwater resources.

Based on current groundwater quality and the minimal groundwater use within the area affected by slant well pumping, the localized change in groundwater quality that could occur as a result of slant well pumping is not expected to violate water quality standards or interrupt or eliminate the potable or irrigation groundwater supply available to other basin users. Therefore, this impact is considered less than significant.

HGC Comment No. 36:

The DEIR/EIS limits its analysis to whether the project would violate water quality standards or degrade the groundwater source such that it would interrupt or eliminate "the available potable groundwater for other users in the basin." As noted above, the DEIR/EIS's assumption that any water that does not meet the most stringent potable water standards has no beneficial uses and can be degraded without causing any significant impact is inconsistent with the SWRCB Basin Plan and SWRCB Anti-Degradation Policy. Moreover, also explained above, the TSW monitoring results show there are significant areas of freshwater within within the cone of depression. Finally, we note that changing fresh quality and slightly brackish groundwater within the Marina Subarea to hypersaline water will impact the ability to meet the SGMA's mandates. The statement that "the ***localized change in groundwater quality that could occur (emphasis added)*** as a result of slant well pumping is not expected to violate water quality standards" is misleading and inaccurate. The suggestion that water quality changes could occur indicates that they also could not. The DEIR should identify under what scenarios the project would not change the water quality in the Marina Subarea. As discussed above, causing any area of the basin that is fresh in quality or slightly brackish to become hypersaline will violate the basin WQCP objectives of 1,500 mg/l TDS. Therefore, the DEIR/EIS must be revised to disclose this impact is significant. If feasible mitigation is not identified that would reduce this impact to a less than significant level, which may be the case, the DEIR/EIS must disclose the impact would remain significant and unavoidable AFTER all feasible mitigation is adopted.

The DEIR/EIS's conclusion that the project impacts to groundwater quality within the slant well pumping area of influence is less than significant, is inadequate and must be updated based on new modeling results:

On **Page 4.4-77**, the DEIR/EIS states:

As shown on Figures 4.4-10 and 4.4-11, the current location of the seawater/freshwater interface is about 8 miles inland in the 180-Foot Aquifer and

3.5 miles inland in the 400-Foot Aquifer. Once operational, the proposed slant wells would extract 24.1 mgd from the subsurface. A significant impact would occur if the proposed project caused the seawater/freshwater interface to migrate further inland, thereby exacerbating the seawater intrusion condition in the SVGB.

The effects on seawater intrusion were evaluated using the NMGWM with particle tracking (described in the Approach to Analysis section, above). Figure 4.4-17 shows the coastal seawater intrusion in the SVGB using the seawater/freshwater interface location estimated by the MCWRA and shown in Figures 4.4-10 and 4.4-11. Before running the model to simulate the 63 years of operation, individual water "particles" were placed along the leading edge of the mapped seawater intrusion front. Without the project, these particles are expected to continue to migrate inland with the movement of the seawater/freshwater interface. The NMGWM is a superposition model, meaning that modeled project effects are isolated from all other stresses in the basin, such as the effects from other groundwater pumpers, inland pressure gradients, injection systems, and recharge. In superposition, the NMGWM output is therefore the change attributable solely to the slant well pumping. Figure 4.4-17 depicts the resulting particle-tracking outputs, showing that a number of particles radiate away from the seawater/freshwater front back towards the coast. In Figure 4.4-17, some particle locations change substantially, whereas others do not. As to those that do change, the change in particle location shows where the seawater front would be after 63 years of MPWSP pumping if that was the only factor affecting groundwater movement in the basin (no recharge, no groundwater pumping, no pressure gradients, etc.). Therefore, Figure 4.4-17 illustrates the MPWSP's contribution to redirecting or reversing the inland advance of seawater intrusion. Because there are many stresses in the basin, the MPWSP project would not necessarily draw the leading edge of the seawater intrusion line back towards the coast to the extent shown by the particle-tracking output, but it does indicate that the MPWSP provides a benefit for the basin. Based on the particle-tracking results, the MPWSP would not exacerbate seawater intrusion, and groundwater extraction from the coast, as part of project operations, would be expected to retard future inland migration of the seawater/freshwater interface. The proposed project would facilitate the reduction of seawater intrusion in the long term, and the impacts of the proposed project are considered less than significant.

HGC Comment No. 37:

As noted above, the MCWRA maps used to justify the DEIR/EIS position are included with this response letter and include recent data from the TSW project that contradict the blanket statement that the freshwater/seawater interface is 8 miles inland (see attached Figures 1 through 5 and Diagram 5). Moreover, MCWRA does not have any maps for the extent of seawater intrusion into the Dune Sand Aquifer. In fact, the DEIR/EIS does not address or evaluate potential impact to the Dune Sand Aquifer. As discussed above, the Dune Sand Aquifer water elevations indicate it flows toward the ocean (see Diagram 2 above and Figure 6 attached). Therefore, the project's impact on lowering heads within the Dune Sand Aquifer will induce seawater intrusion where it presently does not exist. The DEIR/EIS's failure to analyze or disclose this impact lacks any support and conflicts with the best available information. Moreover, increasing seawater intrusion into the Dune Sand Aquifer will in turn likely increase seawater intrusion into the lower aquifers that currently are recharged by freshwater from the Dune Sand Aquifer. Therefore, the DEIR/EIS must be revised to disclose this impact is significant. If feasible mitigation is not identified that would reduce this impact to a less than significant level, which may be the case, the DEIR/EIS must disclose the impact would remain significant and unavoidable AFTER all feasible mitigation is adopted.

The DEIR/EIS's conclusion that the project impacts to groundwater quality associated with existing groundwater remediation systems is less than significant, as mitigated, is inadequate and must be updated based on new modeling results that address cumulative impacts:

On **Page 4.4-86**, the DEIR/EIS concludes:

Impact Conclusion Groundwater Quality

For the slant wells, the seawater/freshwater interface would migrate back toward the ocean, which would be a less-than-significant impact. For the slant wells, the potential impact of interference with existing remediation systems would be reduced to less than significant with the implementation of Mitigation Measure 4.4-4. For the ASR injection/extraction wells, the net addition of injection water is considered a less than significant impact. For the ASR injection/extraction wells, the potential impact of interference with existing remediation systems would be less than significant. The operation of all other project facilities would have no impact on groundwater quality.

Therefore, for the proposed project as a whole, the potential operations impacts would be less than significant with mitigation, relative to groundwater quality.

HGC Comment No. 38:

As discussed above, the presence of the FO-SVA and the groundwater gradient in the perched Dune Sand Aquifer control the present migration of contamination beneath the Fort Ord remediation site. As previously indicated, the project's increased production from the Dune Sand Aquifer could result in significantly more drawdown than previously anticipated which could accelerate or even change the direction of the contaminant plumes. This should be re-evaluated when the $NMGWM^{2016}$ is appropriately revised and calibrated or a new dual density model is constructed. Mitigation Measure 4.4-4 is problematic and unlikely to ensure the project's impacts are mitigated for the same reasons identified in my comments about Mitigation

Measure 4.4-3 – namely the mitigation is delegated to Cal-Am without any meaningful performance standards.

The DEIR/EIS's conclusion that the project cumulative groundwater impacts is less than significant is inadequate and must be updated based on new modeling results that includes cumulative impacts:

On **Page 4.4-90**, the DEIR/EIS concludes:

> Because the MPWSP combined with the possible RUWAP desalination element would not result in a significant adverse cumulative impact and may have beneficial consequences, and the Salinas Valley Water Project Phase II and the Interlake Tunnel would have beneficial effects, the cumulative effect of these four possible projects on groundwater resources would be less than significant. Therefore, the proposed project would not have a cumulatively considerable contribution to a significant cumulative impact during operations (less than significant).

HGC Comment No. 39:

The DEIR/EIS's analysis of cumulative impacts fails to account for how groundwater conditions have changed over time and how they are likely to change in the future without the project. In fact, the DEIR/EIS acknowledges its modeling "only solves for the groundwater changes due solely to the proposed project." It goes on to expressly state:

> These changes are independent of the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. By using superposition, the actual effects of only the proposed project can be isolated from the combined effects of all other basin activity. For example, when the NMGWM reports a 1-foot drawdown in a well, it is understood that the one foot of drawdown would be the effect on the basin of the proposed project only. That well may experience greater drawdown due to other stresses, such as drought or other nearby pumping wells, or may experience increases in water levels due to reduced regional pumping or an extremely wet year. But the proposed project's contribution to that drawdown in the well would remain only 1-foot. Superposition is described in Appendix E2, Section 5.2.

The DEIR/EIS suggests this limited approach to figuratively assessing the project's potential cumulative impacts to groundwater is permissible because baseline conditions reflect the contributions of past actions on groundwater resources within the geographic scope. This approach ignores that groundwater conditions have changed over time under baseline conditions and will continue to change in the future from other stressors. As noted above, the DEIR/EIS acknowledges this possibility. The fact that the modeling exists and has been run for the project (but the results not disclosed) and that it address these additional stressors is inexplicable. Even if the DEIR/EIS preparers believe this modeling provides flawed results, the information must be disclosed (with an explanation regarding the flawed results) so the public can comment on the information and the decision makers can take it into account.

Finally, the cumulative impacts analysis must be revised to consider reasonably foreseeable projects that will be necessary under the SGMA. See discussion of no project alternative (DEIR/EIS, p. 5.5-84 ["Existing, ongoing regional groundwater pumping would continue throughout the Salinas Valley, as would efforts to develop a sustainable groundwater management plan."]).

DEIR/EIS Chapter 7 (Alternatives).

DEIR's discussion of slant wells ignores the fact that slant wells are an unproven technology.

Other than the recently completed TSW, there is only one slant well that has been successfully constructed to date in Dana Point, California. As addressed in the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California:

> When it was built and tested in 2006, it was test pumped at 2,000 gpm and displayed a well efficiency of 95%. Recent longer term testing of the completed test well in 2012 documents the reduction in well efficiency from the original value of 95% in 2006 to 52% in 2012 (GeoScience, 2012). Given this observed reduction in efficiency over a short period, the long-term performance of the technology has yet to be confirmed.
>
> … Slant wells completed in the Talbert aquifer would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw. Recent public comments have suggested that pumping seawards of the Talbert Salinity Barrier could have beneficial impacts in managing seawater intrusion. In the Panel's opinion, however, this benefit is too uncertain to overcome the ISTAP conclusion about the fatal flaw of this technology as applied to the proposed Huntington Beach site. **The advantage of having a subsea completion is largely lost in confined aquifers *(emphasis added).*** The performance risk is considered medium, as the dual-rotary drilling method used to construct the wells is a long-established technology, but there is very little data on the long-term reliability of the wells. Maintainability is also a critical unknown issue.
>
> … Slant wells tapping the Talbert aquifer would interfere with the management of the salinity barrier and the management of the freshwater basin, and further, would likely have geochemical issues with the water produced from the aquifer (e.g., oxidation states of mixing waters).

(CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014, pp. 37, 56, 64, available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf.)

HGC Comment No. 40:

We were surprised the DEIR/EIS does not discuss the CCC's Report or efficiency issues raised in the report (although it is referenced on 5.3-57) given that Martin Feeney, a Hydrogeologic Working Group member, was one of the Report's authors and Geoscience was involved in the well construction and testing. While the efficiency problems from the Dana Point may not manifest themselves at the CEMEX site, there is a considerable risk that has been identified by previous study. Therefore, the DEIR/EIS should discuss mitigation in the event there is a considerable drop in efficiency as it would likely eliminate the MPWSP's ability to provide return water. Alternatively, this could be considered a fatal flaw for the project.

The Potrero Road site appears to be a superior site for subsurface seawater intake facilities. Given aquifer parameter estimations and hydraulic boundary condition assumptions made in the model, a test well at the Potrero Road site is necessary to determine the accuracy of the aquifer parameter estimations and assumptions.

The DEIR/EIS on **p. 5.4-15** states:

> Alternative 1 would contain the same elements as the proposed project and would produce the same volume of product water. However, because of the hydrogeology of the Potrero Road area, Alternative 1 would draw a greater volume of water from the Salinas Valley Groundwater Basin than the proposed project. In the event the Salinas Valley Return Water obligation is determined to be 12 percent (the highest return value simulated), Alternative 1 would meet the need for replacement supplies and meeting peak month demand, but limited supply would be available for other uses, including accommodating tourism demand under recovered economic conditions. Alternative 1 would not provide sufficient supplies to serve existing vacant legal lots of record and would therefore, not meet the project objective/need for water, some of which was to support limited growth (e.g., Objective 6).

The DEIR/EIS then further states on **p. 5.5-86 through 5.5-90**:

> **Effects on the Perched-A Aquifer**
>
> Slant well pumping at Potrero Road would create a cone of depression in the Perched-A Aquifer that would extend up to 5 miles inland, as shown in Figure 5.5-2.4 The extent of modeled drawdown in the Perched-A Aquifer is almost twice the inland distance modeled at CEMEX for the proposed project because: 1) the Perched-A Aquifer is not as thick as the Dune Sand Aquifer underlying the CEMEX site, and 2) the ocean water capture zone is restricted at Potrero Road to the Perched-A Aquifer (the wells would not also be screened in the 180/180-FTE

Aquifers) because the underlying Salinas Valley Aquitard separates the Perched-A Aquifer from the 180-Foot Aquifer. The 1-foot drawdown response would be similar in the Perched-A Aquifer with and without modeled return water scenarios (0, 3, 6, and 12 percent), because the resulting in-lieu recharge in the 400-Foot Aquifer would have a negligible effect on recharge in the Perched-A Aquifer. Modeling indicates that pumping under Alternative 1 would influence the Perched-A Aquifer north of Potrero Road and the cone of depression would encompass the mouth of the Elkhorn Slough and about 1 mile inland up the slough (a portion of which is within MBNMS). This effect is shown by the 1-foot drawdown contour lines on Figures 5.5-2 and 5.5-3 and these results suggest a direct or indirect effect of project pumping at Potrero Road on the surface water-groundwater interaction in the Elkhorn Slough. For example, the slant well pumping at Potrero Road could draw in groundwater that would otherwise flow to recharge the Slough, or draw surface water directly from the Slough that would not occur under the proposed project. However, quantification of such an effect is not feasible within the context of the model given the location of Elkhorn Slough relative to the northern boundary of the NMGWM.

Effects on the 180-Foot Aquifer

Figure 5.5-3 shows the effects on the 180-Foot Aquifer from slant well pumping for Alternative 1, for varying percentages of Salinas Valley return water (0, 3, 6 and 12 percent return water). The modeled aquifer response shows a cone of depression that extends a maximum of about 4 miles inland with 0 percent return water, and the maximum extent of the cone is reduced by about 2 miles with increased percentages of return water. The modeled drawdown in the 180-Foot Aquifer is not directly due to project pumping because the slant wells at Potrero Road would not be screened in the 180-Foot Aquifer; rather, the water lost through extraction from the Perched-A Aquifer that would have otherwise infiltrated to and recharged the 180-Foot Aquifer may have been interpreted by the model as drawdown due to pumping. Similar to the effects on the Perched-A Aquifer, the response from slant well pumping (1-foot contour line at 0 percent and 3 percent return water) extends north to partially encompass the mouth of the Elkhorn Slough, indicating a possible surface water-groundwater interaction with the Slough. However, quantification of such an effect is not feasible within the context of the model given the location of Elkhorn Slough relative to the northern boundary of the NMGWM.

Pumping Response on 400-Foot Aquifer

Figure 5.5-4 shows the effects of the slant well pumping at Potrero Road on the 400-Foot Aquifer. The 1-foot drawdown contour, representing 0 percent return water, shows the largest area of drawdown extending about 2 miles inland and offshore about 0.75 mile. The 1-foot drawdown contour with 3 percent return water extends inland only about 1.5 miles and offshore about 0.5 mile. There is also a localized groundwater level increase in Castroville with 3 percent return water. The 1-foot contour resulting from 6 percent return water shows a groundwater level rise in Castroville, as does the 12 percent return water contour that is almost 5 miles in diameter. The response from slant well pumping, as shown by the 1-foot drawdown contour at 0 percent and 3 percent return water, extends north to partially encompass the mouth of the Elkhorn Slough. Given the depth of the 400-Foot Aquifer and the presence of the Salinas Valley Aquitard, it is unlikely that there would be a direct surface water-groundwater interaction between the Elkhorn Slough and the 400-Foot Aquifer. The water lost through extraction from the Perched-A Aquifer that would have otherwise infiltrated to and recharged the 400-Foot Aquifer was likely interpreted by the model as drawdown in the 400-Foot Aquifer and given the location of Elkhorn Slough relative to the northern boundary of the NMGWM, quantification is not feasible within the context of the model.

Analysis and Conclusion of Operational Impacts

Pumping of slant wells at Potrero Road under Alternative 1 would extract mostly seawater and inland brackish water from an area where groundwater is not extracted for beneficial uses by others. There would be some degree of water level increase in areas of the 400-Foot Aquifer as a result of the Salinas Valley return water. No groundwater supply wells are currently pumping within the area of influence of the affected aquifers; therefore, Alternative 1 would have a reduced potential for impact on supply at nearby wells compared to the proposed project. However, like the proposed project, and would result in the same impact conclusion as the proposed project, less than significant. However, like the proposed project, Applicant-Proposed Mitigation Measure 4.4-3 (Groundwater Monitoring and Avoidance of Well Damage) would be implemented under Alternative 1, in recognition of the need to provide continued verification that project pumping from Alternative 1 would not impact groundwater levels in neighboring wells or contribute to seawater intrusion within the SVGB.

Regarding Water Quality Impacts, the DEIR/EIS states on p. **5.5-90**:

Similar to the proposed project, Alternative 1 would gradually and locally degrade groundwater quality from brackish to more saline as project pumping continues. However, this degradation would not violate water quality standards or interrupt or eliminate groundwater supply for other users. Groundwater modeling results show that Alternative 1 slant well pumping would hold back inland migration of the seawater intrusion front similar to the proposed project. However, because the effects of slant well pumping at Potrero Road would extend farther north than the proposed project, it would have a greater positive influence on the northern half of the seawater intrusion front compared to the proposed project.

> Unlike the proposed project, Alternative 1 groundwater extraction would occur too far north to interfere with groundwater remediation systems currently operating at the former Fort Ord Army base. Therefore, the Alternative 1 intake system would not interfere with active remediation systems or contaminant plumes, the impact would be decreased compared to the proposed project and Mitigation Measure 4.4-4 (Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes) would not have to be implemented. Like the proposed project, operation of the ASR system would have a less-than-significant impact related to groundwater quality.
>
> In summary, project pumping at Potrero Road, like the proposed project at CEMEX, would cause the brackish groundwater to locally turn more saline, but not in violation of water quality standards; it would hold back seawater intrusion similar to the proposed project but would have a greater positive effect on the northern portion of the intrusion front; and it would eliminate the potential interference with existing contaminant plumes and remediation systems at the former Fort Ord military base as a result of slant well operation, eliminating the need for mitigation. Therefore, Alternative 1 would result in a reduced impact conclusion on groundwater quality compared to the proposed project, less than significant.

Regarding operational impacts on marine biological resources, the DEIR/EIS states on p. **5.5-114**:

> Unlike the proposed project, groundwater modeling (see Appendix E2) indicates pumping from the slant wells at Potrero Road would result in a cone of depression in the underlying groundwater aquifers that would draw or divert water from Elkhorn Slough. This drawdown impact is discussed in Section 5.5.4, Groundwater Resources, and presented in Figure 5.5-2. The modeling cannot predict the amount of water diverted from Elkhorn Slough although it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes. This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, Alternative 1 would result in an increased impact conclusion on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.

<u>HGC Comment No. 41</u>:

Our review of the project field investigations study indicate that the Potrero Road site hydrogeology and aquifer property estimations were defined by 5 formation samples collected from a single borehole (Geoscience, 2014). The hydraulic conductivity values estimated from the grain-size analyses of those samples show a highly permeable aquifer that would yield water to well facilities with up to 3 times the performance of wells at the CEMEX site. Compared to the 6 boreholes drilled at the CEMEX site during the initial study, there are limited data from which to build a high level of confidence in the model input parameters and subsequent model results and DEIR/EIS conclusions about the viability of the Potrero Road site. Similarly, the NMGWM used substantial water level data from the 180-Foot Aquifer for model calibration, but no well data from the Dune Sand/A Aquifer zone that is the target for production by the Potrero Road alternative.

The vertical hydraulic conductivity used in the model (0.16 feet/day) at the Potrero Road site is not only untested and not substantiated by production test data, it is 2 orders of magnitude less than the CEMEX site estimate (15 feet/day). While the horizontal hydraulic conductivity value was estimated at 2 times greater than the modeled value at the CEMEX site, the reduced vertical hydraulic conductivity indicates a confined/semi-confined condition. The simulated impact of these aquifer parameter estimations results in a significant impedance to vertical flow from the ocean floor and a reduced amount of seawater infiltration estimated by the model. The greater horizontal hydraulic conductivity combined with reduced vertical flow results in a greater amount of groundwater production estimated. Should the actual aquifer conditions allow greater vertical flow from the ocean floor, the model simulations would indicate a significantly greater production of seawater and far lower production of groundwater.

The designs of slant well facilities at the Potrero Road site extend significantly further offshore with a majority of the well screen sections beneath the ocean floor (Geoscience, 2014, Figures 49, 50, and 68 to 84). The wells are significantly shallower in depth and located above SVA only in the Dune Sand/A Aquifer. This design and configuration would result in little impact on the 180-Foot Aquifer, below the SVA, and is closer to the ocean floor, which is better positioned for inducing seawater infiltration. Water quality test data indicate the salinity of the groundwater in the Dune Sand/A Aquifer at Potrero Road is virtually seawater (34,000 to 34,853 mg/l TDS).

Aside from the aquifer parameter estimations and hydraulic boundary condition assumptions made by the study, the Potrero Road site appears to be a superior site for subsurface seawater intake facilities. For this reason, we recommend the MPWSP construct a TSW at the Potrero Road Site to determine the accuracy of the aquifer hydraulic conductivity estimations that were derived from an empirical estimation method. If the assumed conditions that are simulated in the model are biased by the lack of data, the model results are overstating the groundwater that will be produced from the Dune Sand/A Aquifer zone and underestimating the amount of seawater that would be produced by an intake system at the Potrero Road site.

The DEIR/EIS should consider relocation of the MPWSP's subsurface intake wells either further north or south to better benefit the coastal conditions in the Pressure Area where seawater inflow preferentially follows the paths of greatest hydraulic conductance

HGC Comment No. 41:

Historical studies have indicated that there are 2 locations along the coastal portion of the Pressure Area where seawater inflow preferentially follows the paths of greatest hydraulic conductance (least impedance to flow) and where onshore gradients induce landward flow of groundwater (KJC, 2004, Page ES-15, Figure 3). The main pathway is located north of the Salinas River where the greatest amount of seawater has intruded into the heavily used portion of the Pressure Area. The second preferential pathway for flow is located south of Marina and allows seawater to flow into the aquifers beneath the Fort Ord Area. This area is south of the boundary defined as the Pressure Area by some studies, but within the Pressure Area defined by other studies. The CEMEX site lies midway between these 2 areas of preferential seawater intrusion and does not directly intercept either of these main areas of onshore flow. The potential impact of this condition, or the relocation of the project further north or south to better benefit the coastal conditions is not discussed in the DEIR/EIS.

DEIR/EIS Chapter 4.6 (Terrestrial Biological Resources).

On p. 4.6-3, the DEIR/EIS defines the area studied for potential impacts to terrestrial biological resources:

> Study area encompasses a 50-foot buffer around the project area. A 50-foot buffer around the project area was established as the survey area to ensure biological resources within the project area and immediate adjacent vicinity were assessed for potential direct and indirect project impacts.

HGC Comment No. 42:

The study area fails to account for potential operation impacts from the slant well drawdown and water quality impacts on groundwater-dependent ecosystems. The significant drawdown and changes to water quality have the potential to impact wetlands and other biological resources that rely on the groundwater resources within the project area of influence. The DEIR/EIS must be revised to disclose, analyze, and mitigate potential impacts on groundwater-dependent ecosystems within the operational area of influence. A cursory review of the Figure showing "Vegetation Communities and Potential Wetlands and Waters in the Terrestrial Biological Resources Study Area" shows resources both within and outside the areas evaluated by the study that are within the drawdown contours of the project and could be adversely impacted by the project's reduction of water levels and water quality. The SGMA defines adverse impacts to groundwater dependent ecosystems as an undesirable result and further supports the need for additional analysis that extends beyond construction related impacts.

Conclusion

Based on the findings of our review, HGC concludes that at a minimum the DEIR/EIS needs revision to include an adequate description of baseline conditions as they are presently being observed and the unique hydrogeology of the Marina Subarea portion of the SVGB. The DEIR/EIS must also utilize the information developed from the TSW field investigations and available from other studies in the Marina Subarea to refine and fully calibrate the NMGWM^{2016} or preferably construct a dual density model that would generate a reasonable level of confidence in the simulated effects of the MPWSP. Without this information, it is impossible to determine whether the project's significant impacts on groundwater levels (storage) and water quality can be mitigated to a less than significant level.

The revised DEIR/EIS must also provide analysis of alternatives that could satisfy the project's water demand requirements. That discussion must compare the impacts of each alternatives water intake sources (e.g. slant wells, Ranney collectors, beach infiltration galleries, horizontal directional drilling, etc.) with real data, not conjecture. Without a revised DEIR/EIS that provides this information, it is impossible to make an informed decision regarding the potential impacts of the project on the SVGB, particularly the aquifers in the Marina Subarea, and whether feasible alternatives to the project would reduce the project's significant impacts. We also conclude that if the seawater intake facilities were located a sufficient distance offshore beneath the ocean floor and effectively inducing seawater infiltration, the groundwater impacts from the MPWSP to the SVGB could be mitigated.

Sincerely,

HOPKINS GROUNDWATER CONSULTANTS, INC.

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Principal Hydrogeologist
Certified Engineering Geologist CEG 1800
Certified Hydrogeologist CHg 114

Attachments: Figure 1 - Average Chloride Concentrations Dune Sand and 180-Foot Aquifer
Figure 2 – Average Total Dissolved Solids Concentrations Dune Sand and 180-Foot Aquifer
Figure 3 – MRWPCA Wells in 400-Foot Aquifer
Figure 4 – Stiff Diagrams Dune Sand and A Aquifer
Figure 5 – Stiff Diagrams 180-Foot Aquifer
Figure 6 – Dune Sand Aquifer Groundwater Elevation Contour Map
Figure 7 – Fort Ord Cleanup Site Groundwater Elevation Data
Figure 8 – Monterey Peninsula Landfill Groundwater Elevation Data
Figure 9 – Beacon Gas Station Groundwater Elevation Data

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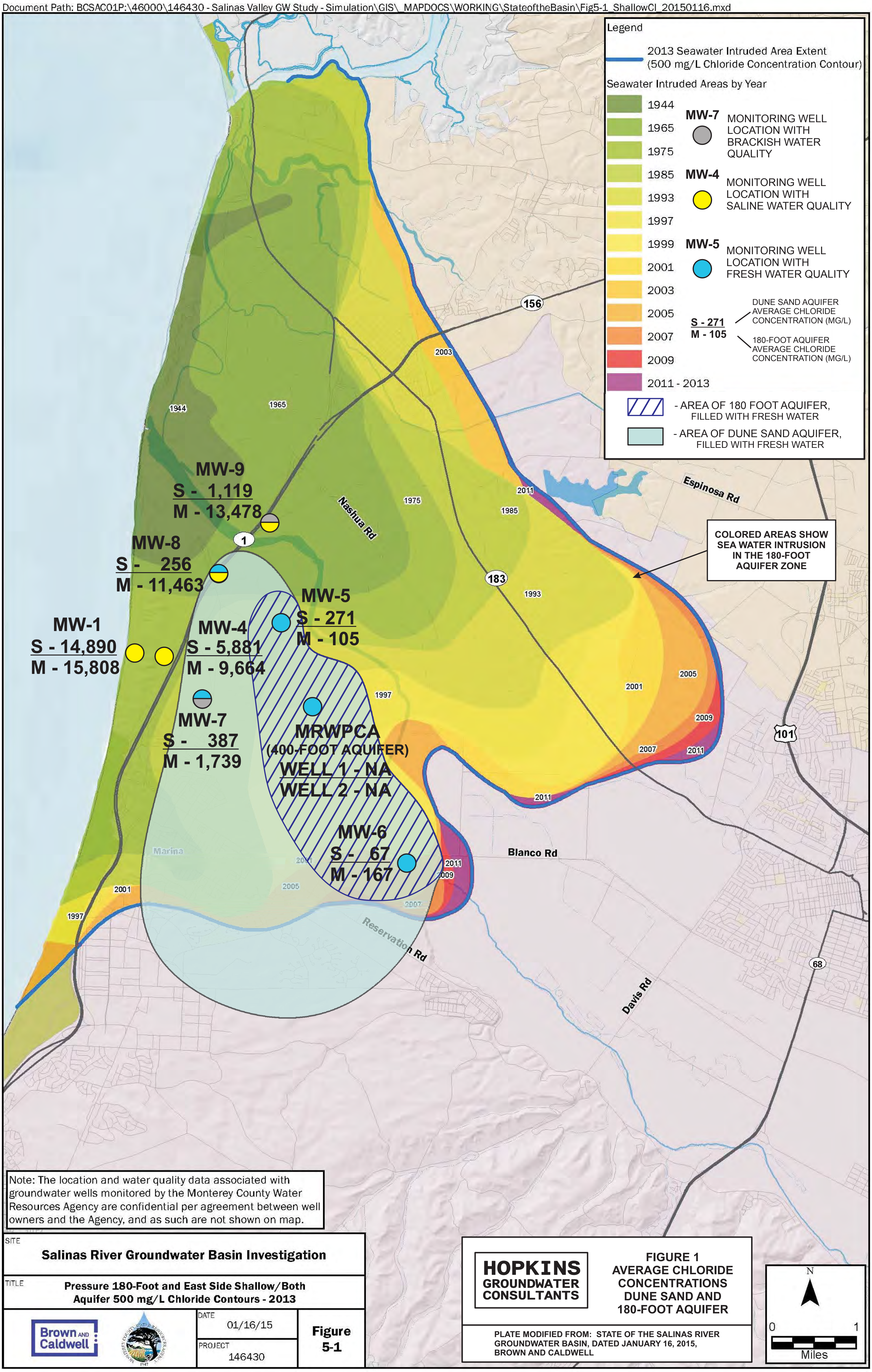
FIGURES



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Legend
2013 Seawater Intruded Area Extent (500 mg/L Chloride Concentration Contour)
Seawater Intruded Areas by Year
1944
1965
1975
1985
1993
1997
1999
2001
2003
2005
2007
2009
2011 - 2013
MW-7 MONITORING WELL LOCATION WITH BRACKISH WATER QUALITY
MW-4 MONITORING WELL LOCATION WITH SALINE WATER QUALITY
MW-5 MONITORING WELL LOCATION WITH FRESH WATER QUALITY
S - 271 DUNE SAND AQUIFER AVERAGE CHLORIDE CONCENTRATION (MG/L)
M - 105 180-FOOT AQUIFER AVERAGE CHLORIDE CONCENTRATION (MG/L)
- AREA OF 180 FOOT AQUIFER, FILLED WITH FRESH WATER
- AREA OF DUNE SAND AQUIFER, FILLED WITH FRESH WATER
COLORED AREAS SHOW SEA WATER INTRUSION IN THE 180-FOOT AQUIFER ZONE
MW-9 S - 1,119 M - 13,478
MW-8 S - 256 M - 11,463
MW-1 S - 14,890 M - 15,808
MW-4 S - 5,881 M - 9,664
MW-5 S - 271 M - 105
MW-7 S - 387 M - 1,739
MRWPCA (400-FOOT AQUIFER) WELL 1 - NA WELL 2 - NA
MW-6 S - 67 M - 167
Nashua Rd
Espinosa Rd
Blanco Rd
Reservation Rd
Davis Rd
Marina
156
183
1
101
68
Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.
SITE Salinas River Groundwater Basin Investigation
TITLE Pressure 180-Foot and East Side Shallow/Both Aquifer 500 mg/L Chloride Contours - 2013
DATE 01/16/15
PROJECT 146430
Figure 5-1
Brown AND Caldwell
HOPKINS GROUNDWATER CONSULTANTS
FIGURE 1 AVERAGE CHLORIDE CONCENTRATIONS DUNE SAND AND 180-FOOT AQUIFER
PLATE MODIFIED FROM: STATE OF THE SALINAS RIVER GROUNDWATER BASIN, DATED JANUARY 16, 2015, BROWN AND CALDWELL
N
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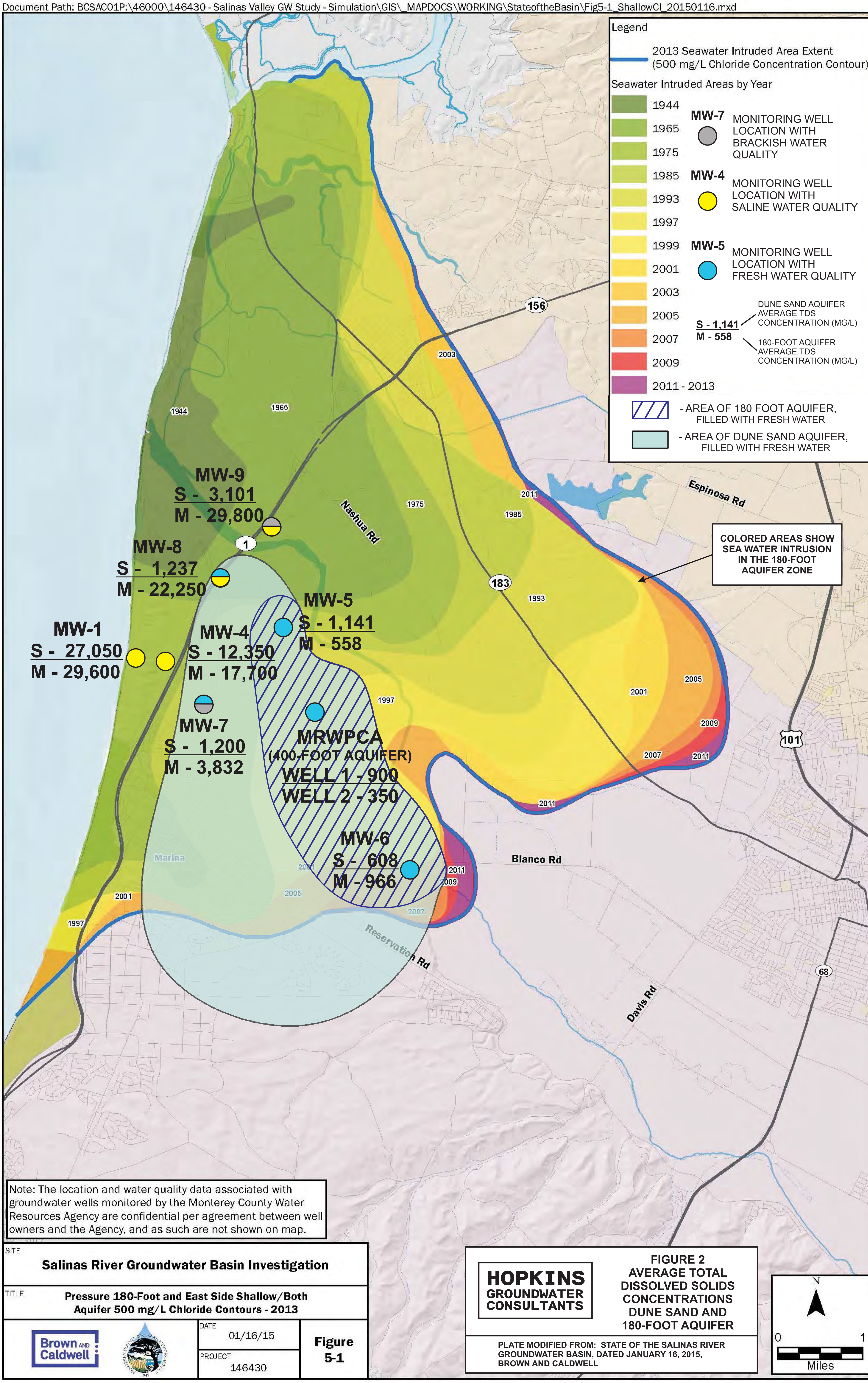

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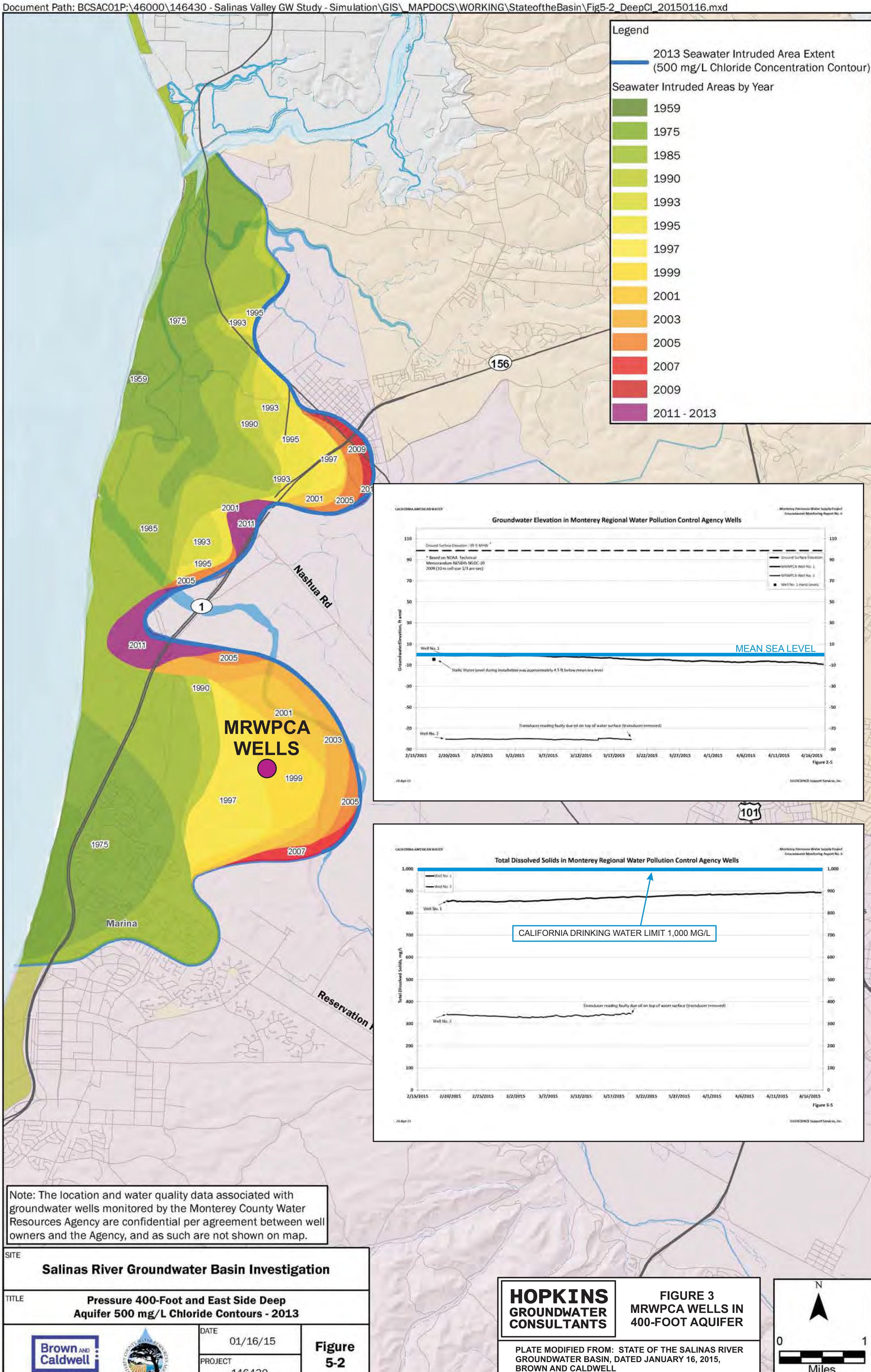

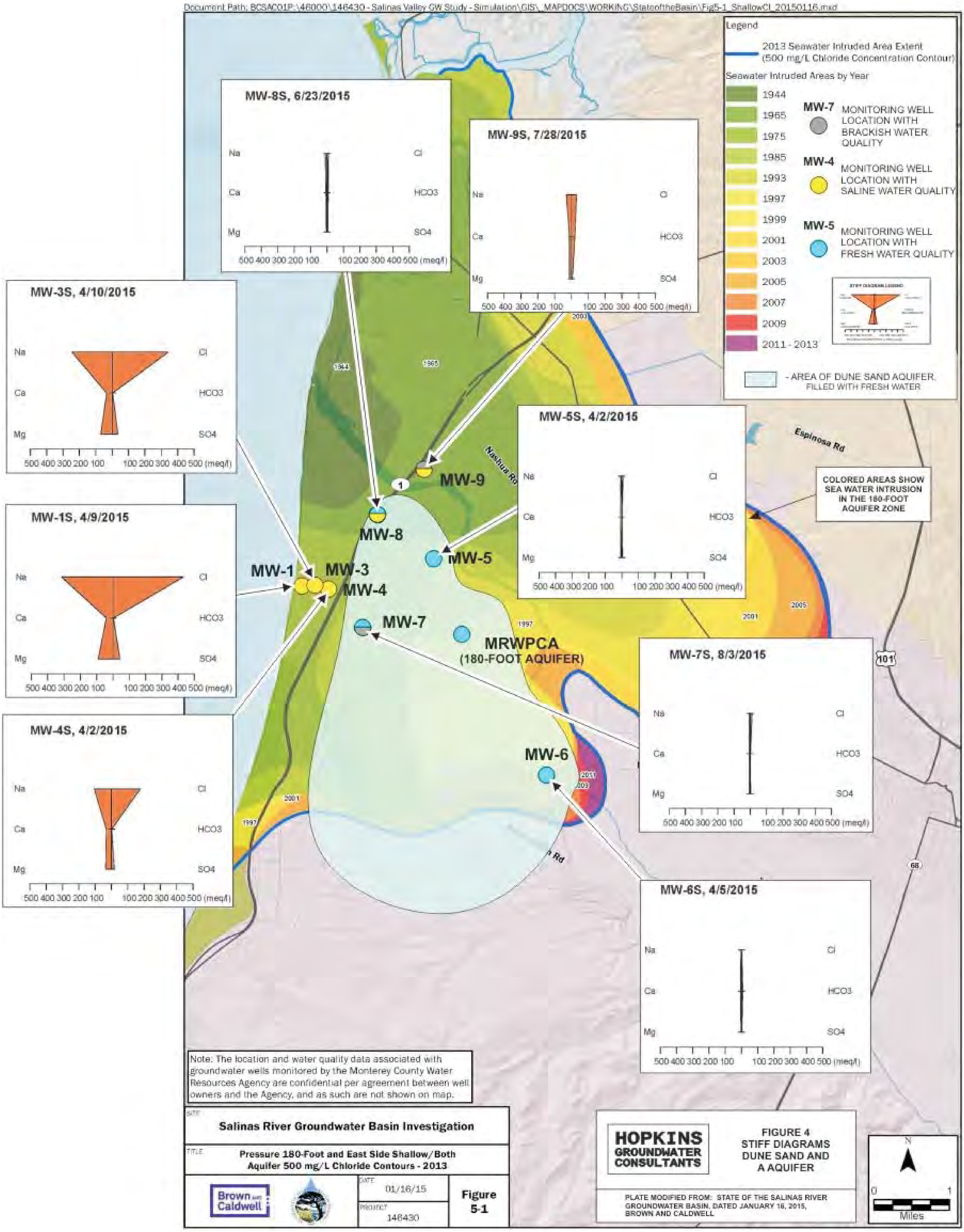
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Legend
2013 Seawater Intruded Area Extent (500 mg/L Chloride Concentration Contour)
Seawater Intruded Areas by Year
1944
1965
1975
1985
1993
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2001
2003
2005
2007
2009
2011 - 2013
MW-7 MONITORING WELL LOCATION WITH BRACKISH WATER QUALITY
MW-4 MONITORING WELL LOCATION WITH SALINE WATER QUALITY
MW-5 MONITORING WELL LOCATION WITH FRESH WATER QUALITY
- AREA OF DUNE SAND AQUIFER, FILLED WITH FRESH WATER
COLORED AREAS SHOW SEA WATER INTRUSION IN THE 180-FOOT AQUIFER ZONE
MW-8S, 6/23/2015
MW-9S, 7/28/2015
MW-3S, 4/10/2015
MW-1S, 4/9/2015
MW-4S, 4/2/2015
MW-5S, 4/2/2015
MW-7S, 8/3/2015
MW-6S, 4/5/2015
Na
Ca
Mg
Cl
HCO3
SO4
500 400 300 200 100 100 200 300 400 500 (meq/l)
MW-1
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MRWPCA
(180-FOOT AQUIFER)
Nashua Rd
Espinosa Rd
1
101
68
Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.
Salinas River Groundwater Basin Investigation
Pressure 180-Foot and East Side Shallow/Both Aquifer 500 mg/L Chloride Contours - 2013
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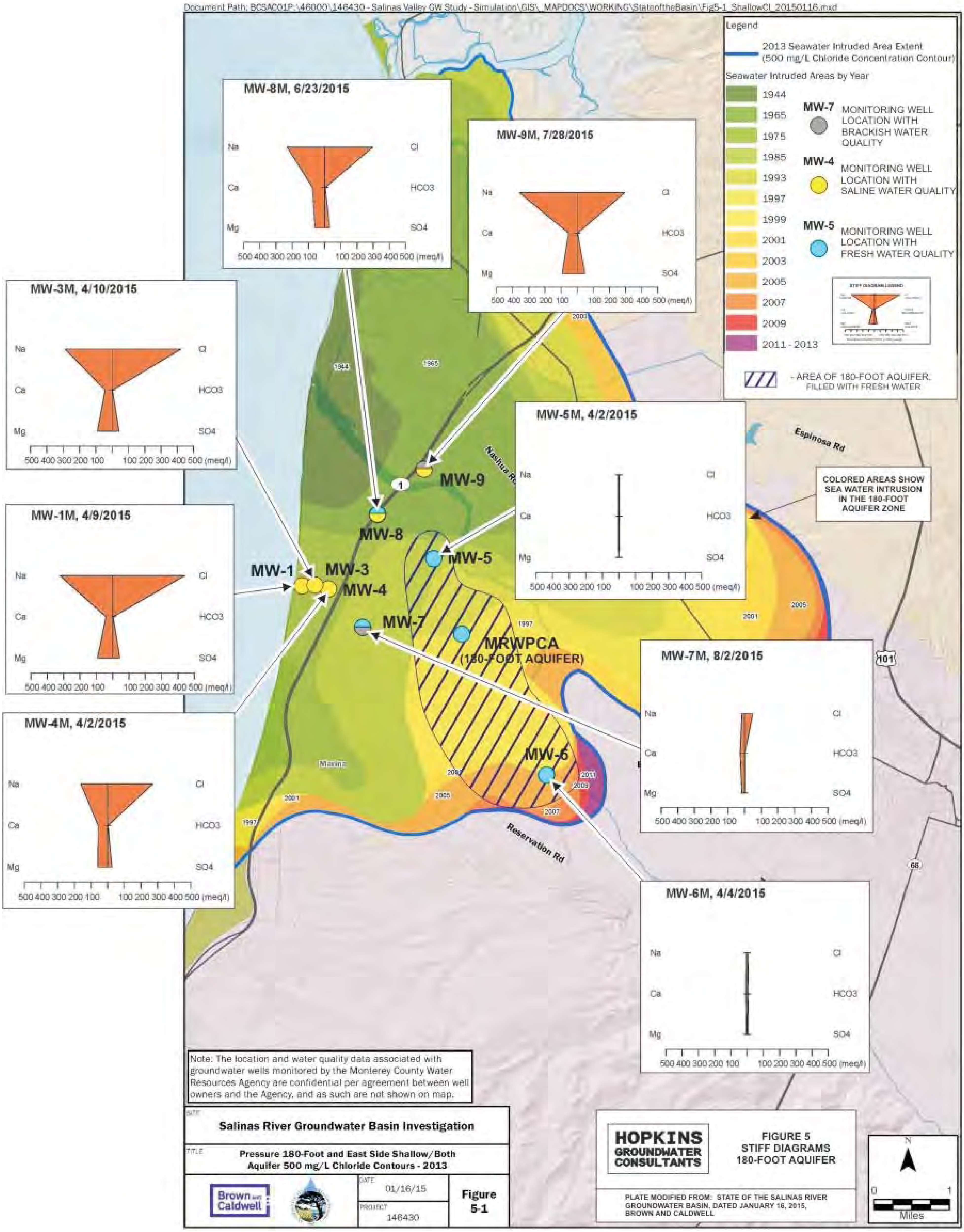
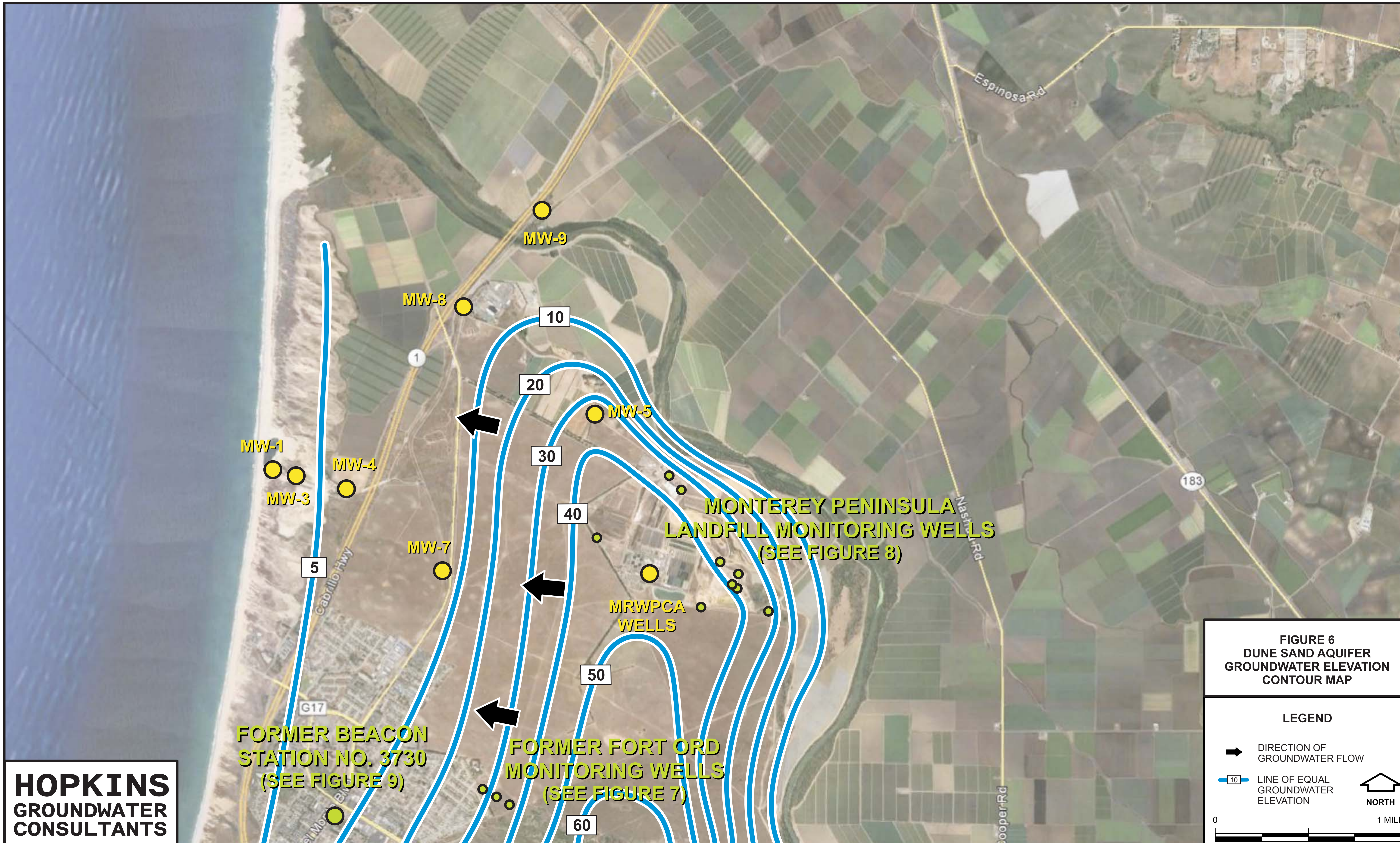
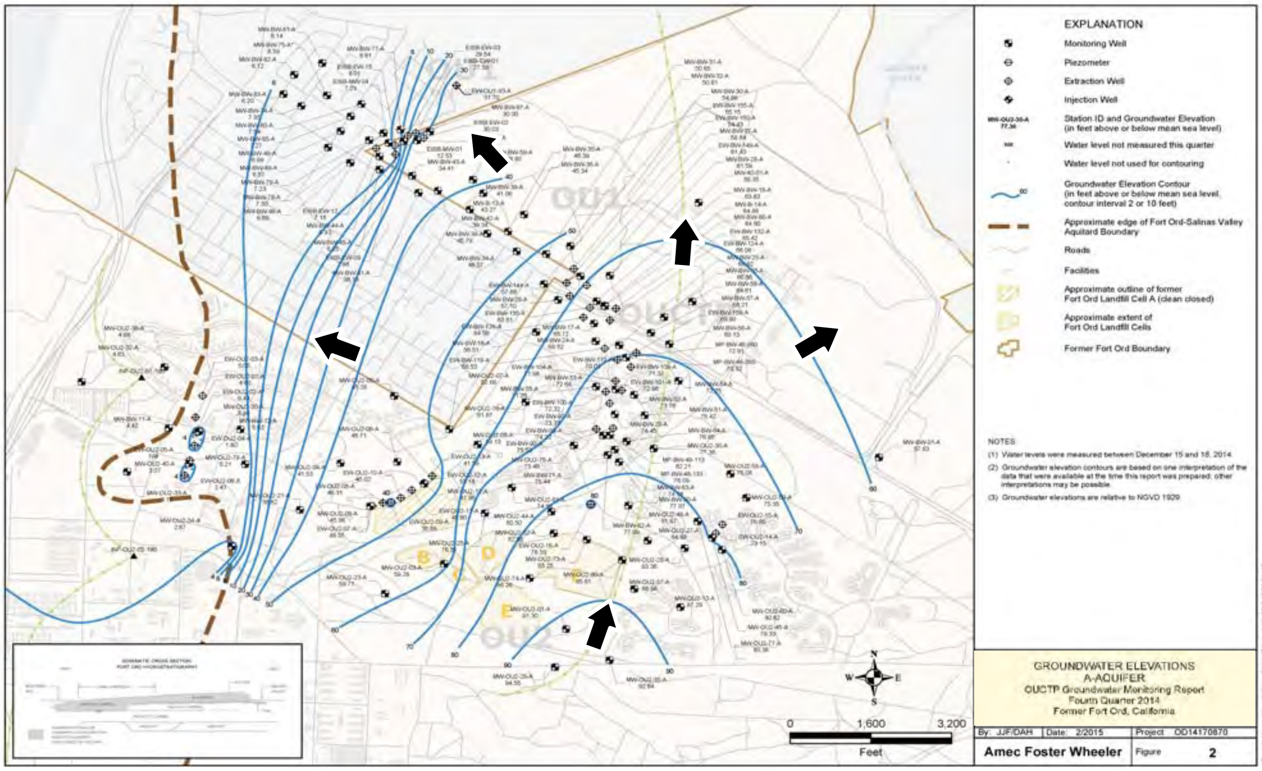
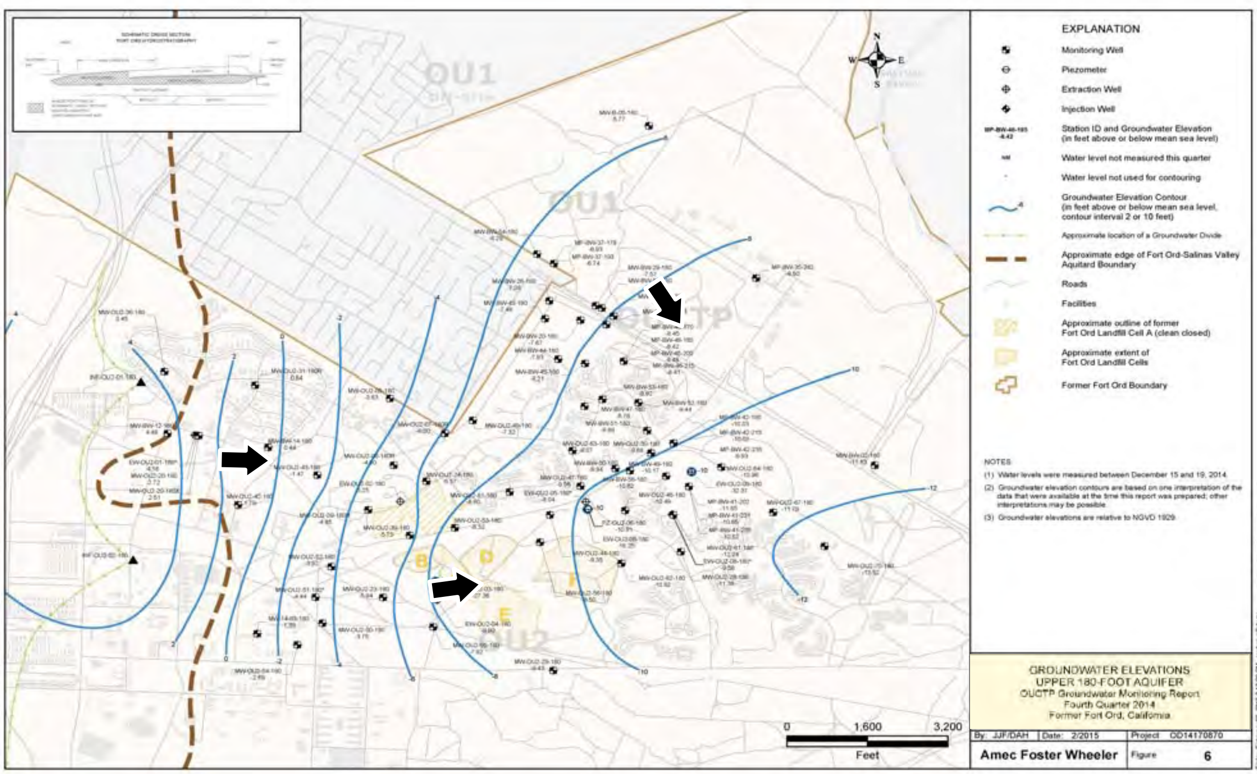
148430
Figure 5-1
HOPKINS GROUNDWATER CONSULTANTS
FIGURE 4
STIFF DIAGRAMS
DUNE SAND AND
A AQUIFER
PLATE MODIFIED FROM: STATE OF THE SALINAS RIVER GROUNDWATER BASIN, DATED JANUARY 16, 2015, BROWN AND CALDWELL
N
0
1
Miles


Document Path: BCSAC01P:\46000\146430 - Salinas Valley GW Study - Simulation\GIS_MAPDOCS\WORKING\StateoftheBasin\Fig5-1_ShallowCl_20150116.mxd
Legend
2013 Seawater Intruded Area Extent (500 mg/L Chloride Concentration Contour)
Seawater Intruded Areas by Year
1944
1965
1975
1985
1993
1997
1999
2001
2003
2005
2007
2009
2011 - 2013
MW-7 MONITORING WELL LOCATION WITH BRACKISH WATER QUALITY
MW-4 MONITORING WELL LOCATION WITH SALINE WATER QUALITY
MW-5 MONITORING WELL LOCATION WITH FRESH WATER QUALITY
- AREA OF 180-FOOT AQUIFER FILLED WITH FRESH WATER
COLORED AREAS SHOW SEA WATER INTRUSION IN THE 180-FOOT AQUIFER ZONE
MW-8M, 6/23/2015
MW-9M, 7/28/2015
MW-3M, 4/10/2015
MW-1M, 4/9/2015
MW-4M, 4/2/2015
MW-5M, 4/2/2015
MW-7M, 8/2/2015
MW-6M, 4/4/2015
Na
Ca
Mg
Cl
HCO3
SO4
500 400 300 200 100 100 200 300 400 500 (meq/l)
MW-1
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MRWPCA (180-FOOT AQUIFER)
Espinosa Rd
Nashua Rd
Reservation Rd
Marina
101
68
Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.
Salinas River Groundwater Basin Investigation
Pressure 180-Foot and East Side Shallow/Both Aquifer 500 mg/L Chloride Contours - 2013
Brown and Caldwell
DATE 01/16/15
PROJECT 148430
Figure 5-1
HOPKINS GROUNDWATER CONSULTANTS
FIGURE 5 STIFF DIAGRAMS 180-FOOT AQUIFER
PLATE MODIFIED FROM: STATE OF THE SALINAS RIVER GROUNDWATER BASIN, DATED JANUARY 16, 2015, BROWN AND CALDWELL
N
0 1
Miles



MW-9
MW-8
10
1
20
MW-5
MW-1
MW-4
MW-3
30
40
MONTEREY PENINSULA
LANDFILL MONITORING WELLS
(SEE FIGURE 8)
MW-7
5
Cabrillo Hwy
MRWPCA
WELLS
50
G17
FORMER BEACON
STATION NO. 3730
(SEE FIGURE 9)
FORMER FORT ORD
MONITORING WELLS
(SEE FIGURE 7)
60
Espinosa Rd
Nashua Rd
Cooper Rd
183
HOPKINS
GROUNDWATER
CONSULTANTS
FIGURE 6
DUNE SAND AQUIFER
GROUNDWATER ELEVATION
CONTOUR MAP
LEGEND
DIRECTION OF
GROUNDWATER FLOW
LINE OF EQUAL
GROUNDWATER
ELEVATION
NORTH
0
1 MILE





HOPKINS
GROUNDWATER
CONSULTANTS

FIGURE 7
FORT ORD CLEANUP SITE
GROUNDWATER ELEVATION DATA

NOTES:
1. Depths to Groundwater Measured 03/06/2014
2. Contours are Based on Limited Data and are Approximate
3. Horizontal Gradient 0.003 ft/ft to 0.006 ft/ft

RMC GEOSCIENCE
405 EAST D STREET, SUITE 112
PETALUMA, CA 94952
TEL: 415.699.8073
FAX: 707.765.1924

0 300 600
FEET

WATER QUALITY MONITORING REPORT
Monterey Peninsula Landfill
35 FT AQUIFER APPROX. CONTOURS OF EQUAL GROUNDWATER ELEVATION

DATE: 05/2014
FIGURE: 3

NOTES:
1. Depths to Groundwater Measured on 03/06/2014 Contours of Equal Groundwater Elevation are Based on Limited Data and are Approximate
2. Approximate Gradient Based on Contours is 0.001 ft/ft to 0.006 ft/ft

RMC GEOSCIENCE
405 EAST D STREET, SUITE 112
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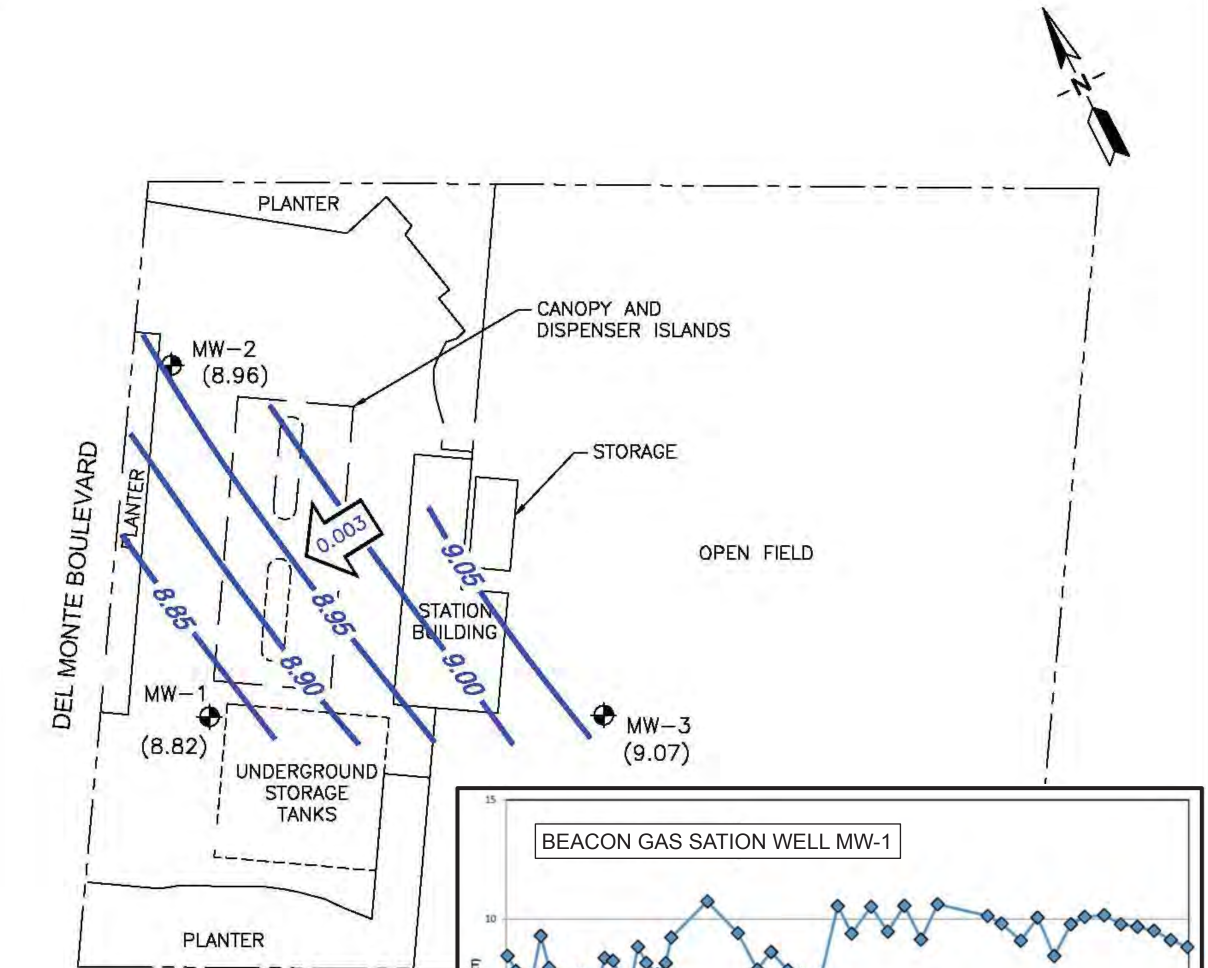
FAX: 707.765.1924

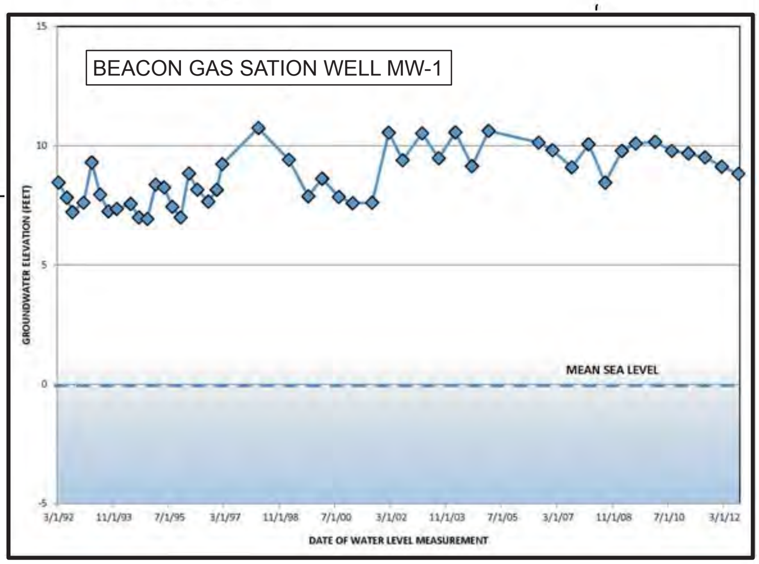
WATER QUALITY MONITORING REPORT
Monterey Peninsula Landfill
-2 FT AQUIFER APPROXIMATE CONTOURS OF EQUAL GROUNDWATER ELEVATION

DATE: 05/2014
FIGURE: 4

HOPKINS GROUNDWATER CONSULTANTS

FIGURE 8
MONTEREY PENINSULA LANDFILL
GROUNDWATER ELEVATION DATA





HOPKINS GROUNDWATER CONSULTANTS

FIGURE 9
BEACON GAS STATION
GROUNDWATER ELEVATION DATA

REF. 213_001\213.009.004 2SA12 figures.dwg
Base Map from Kadence Consultants, Inc.

PREPARED BY

TRINITY source group, inc.
Environmental Consultants
500 Chestnut Street, Suite 225
Santa Cruz, California 95060
v: 831.426.5600
f: 831.426.5602

GROUNDWATER ELEVATION CONTOUR MAP, AUGUST 14, 2012
Former Beacon Station No. 3730
3144 Del Monte Boulevard
Marina, California

PROJECT: 213.009.004

FIGURE: 2

GeoHydros LLC

March 27, 2017

Keith Van Der Maaten
General Manager
Marina Coast Water District

Subject: Review of the 2016 North Marina Groundwater Model

Dear Mr Van Der Maaten,

Please find attached our report summarizing our review and findings regarding the 2016 North Marina Groundwater Model.

In summary, we believe our report sufficiently demonstrates why the Draft EIR/EIS's conclusions regarding the MPWSP's groundwater impacts are not scientifically supportable and conflict with available information. Please note that given the problems with the model calibration identified above, we do not recommend additional scenario analysis using the 2016 NMGWM because it would not provide scientifically supportable results.

Please contact us is you have any questions or would like us to perform additional analyses. We have also attached our firm CV and individual CVs, as you requested.

Sincerely,

Todd R Kincaid, Ph.D.
President, Principal Hydrogeologist

Review of the 2016 Version of the North Marina Groundwater Model Marina Coast California

March 27, 2017

Reno Nevada *www.geohydros.com* *ph: 775.337.8803*

Prepared for:

Marina Coast Water District
11 Reservation Road
Marina, California 93933

Prepared by:

Todd R. Kincaid, Ph.D.
President / Principal Hydrogeologist

I, Kevin E. Day, P.G., no. 8034, have read and agree with the findings in this report titled *2016 Version of the North Marina Groundwater Model Marina Coast, California dated March 27, 2017* and do hereby certify that I currently hold an active professional geology license in the state of California. The report on the status of tasks, including the evaluation of the updated North Marina Groundwater Model prepared by Dr. Todd R. Kincaid of GeoHydros, LLC, has been reviewed by me and found to be in conformance with currently accepted geologic practices, pursuant to Title 16, Division 29 of the California Code of Regulations.

Kevin Day, P.G.

California License No. 8034

March 27, 2017

Date

PROFESSIONAL GEOLOGIST

Kevin
Day
No. 8034

STATE OF CALIFORNIA

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1 BACKGROUND

GeoHydros, LLC was contracted by the Marina Coast Water District to review the 2016 version of the North Marina Groundwater Model (NMGWM) with specific regard to the findings derived from that model and reported in Section 4.4[1] and Appendix E2[2] of the CalAm Monterey Peninsula Water Supply Project Draft EIR/EIS dated January 2017 and used as the basis for the determinations of impact from proposed slant well pumping near the city of Marina, California. Our work included a review of the documents listed above and the 2015 version of Appendix E2; and obtaining, running, and performing scenario analyses with the calibrated version of the 2016 NMGWM and the associated "superposition" models that were created from it for the 2016 EIR/EIS.

2 NMGWM

The 2016 NMGWM is a finite difference numerical groundwater flow model constructed with the MODFLOW groundwater modeling software[3] using a uniform grid of 200 x 200 foot cells. The model simulates flow from the Pacific Ocean into and through four aquifers separated by aquitards that inhibit but do not prevent vertical flow between the aquifers. The model is a modification of the 2015 version[4] to include and address more site specific hydrostratigraphic units, namely the Dune Sand Aquifer and the Salinas Valley aquitard, groundwater elevations in the vicinity of the proposed wells, and structural changes that favored the conceptualized flow from the Pacific Ocean into the aquifers[5].

Table 1. Hydrostratigraphic Units in the 2016 NMGWM

Layer	Type	Name
1	N/A	Ocean
2	Aquifer	Dune Sand Aquifer
3	Aquitard	Salinas Valley Aquitard
4	Aquifer	180-ft Aquifer
5	Aquitard	180/400-ft Aquitard
6	Aquifer	400-ft Aquifer
7	Aquitard	400/900-ft Aquitard
8	Aquifer	900-ft Aquifer

MCWD-GH-01

The model has been used directly or indirectly to predict the impacts to groundwater resources of various possible configurations of a proposed project to withdraw groundwater from the Dune Sand and 180-FT aquifers adjacent to the coast of the Pacific Ocean at the CEMEX site (Figure 1). Predictions stemming from the model include: 1) delineation of cones of depression in the Dune Sand, 180-FT, 400-FT, and 900-FT aquifers associated with different pumping, return flow, and sea level scenarios; 2) quantification of the sources of water that will supply the proposed extractions, namely the ocean versus groundwater; and 3) the effect of the proposed pumping scenarios on the transition zone between freshwater and salt water in the aquifers.

---

[1] *Groundwater Resources Section of the CalAm Monterey Peninsula Water Supply Project 2017 Draft EIR/EIS dated January 2017, ESA / 205335.01*
[2] *Appendix E2 of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.*
[3] *Harbaugh, A.W.; Banta, E.R.; Hill, M.C.; McDonald, M.G., 2000. MODFLOW-2000, the U.S. Geological Survey Modular Ground-Water Model -- User Guide to Modularization, Open File Report 00-92.*
[4] *Appendix E2 of the 2015 Draft EIR/EIS entitled: Monterey Peninsula Water Supply Project Groundwater Modeling and Analysis, April 17, 2015, prepared by GeoScience, Inc.*
[5] *Table 3.1, Appendix E2, Ibid*

The model domain encompasses a nearly square area rotated 16 degrees clockwise, approximately 13 miles northwest-southeast by 11.4 miles northeast-southwest, approximately 40% of which extends into the Pacific Ocean (Figure 1). The model boundaries are arbitrary and do not represent natural hydrologic divides therefore the model simulates flow across the external boundaries that cannot be verified from data. MCWD-GH-02

General head boundary conditions were assigned to the inland portions of the external model boundaries meaning that the groundwater elevations were inferred by the model from nearby wells or sources at some distance from the boundary. In these cells, flow across the boundaries was determined by the simulated hydraulic gradient and the specified hydraulic conductivities. Constant head boundary conditions were assigned to the outer boundaries of the offshore portions of the external model boundaries as well as all offshore cells in the uppermost model layer and a portion of the offshore cells in Layers 2-6 (Figures 2 and 3). The constant head boundary assignments differed from the 2015 version of the NMGWM in that the 2016 version prescribed equivalent freshwater heads to the offshore cells that account for the depth of the ocean water over the respective model layers and the density difference between saltwater and freshwater[6] whereas the 2015 version assigned constant heads only in layer 1 (ocean) and set the values to sea level[7]. Figures 4 and 5 show perspective cross-sections through the model domain that depict the effect of the equivalent freshwater head assignments in the ocean on the hydraulic gradient (slope) of the groundwater surfaces in the Dune Sand Aquifer (model layer 2) and the 180-FT Aquifer (model layer 4). MCWD-GH-03

By limiting the use of equivalent freshwater heads to the ocean side of the model layers, HydroFocus did not account for the effect of varying salinities in the groundwater inland from the coast and therefore over-predicted the west-east hydraulic gradient. This results in a failure to reasonably simulate saltwater intrusion as it appears was the intent. The appropriate way to simulate saltwater intrusion is with the use of a dual-density model such as could have been constructed with the SEAWAT or FEFLOW groundwater modeling software. In its present form, the NMGWM should not be used to infer how the proposed project or any other stresses would likely affect saltwater intrusion or the position of the saltwater/freshwater interface in any of the simulated aquifers. Use of a dual-density simulation software would also allow for model calibration to salinities observed in onshore wells. MCWD-GH-04

External head-dependent boundary conditions (aquifer water levels), pumping rates, recharge rates, and stream losses and gains were derived from the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM),[8] which is a considerably larger and coarser model encompassing the Salinas River watershed that does not simulate the added hydrostratigraphic units (Dune Sand Aquifer or Salinas Valley Aquitard). The interconnectivity between these two models is problematic because they simulate different conceptual hydrostratigraphic frameworks. In particular, the initial heads and boundary conditions pertaining to the Dune Sand Aquifer and Salinas Valley Aquitard are likely not appropriate resulting in a poor simulation of MCWD-GH-05

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[6] *Table 3.1, Appendix E2, of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.*
[7] *Appendix E2 of the 2015 Draft EIR/EIS entitled: Monterey Peninsula Water Supply Project Groundwater Modeling and Analysis, April 17, 2015, prepared by GeoScience, Inc.*
[8] *Montgomery Watson, 1997, "Salinas Valley Integrated Ground Water and Surface Model Update, Final Report," May 1997.*

groundwater levels and horizontal and vertical hydraulic gradients in these units. HydroFocus identified this problem as a likely source of the large calibration errors in the Dune Sand Aquifer monitoring wells. MCWD-GH-05 cont.

Due in part to the constant head boundary assignments and relationship to the SVIGSM, the design of the 2016 NMGWM yields implausible hydraulic conditions in all four of the simulated aquifers. Figures 6-9 depict the simulated groundwater surfaces for each of the four aquifers at the first and last timestep in the 32-year MCWD-GH-06 simulation period. Figure 6 reveals that the Dune Sand Aquifer is essentially not present at the first timestep and that there is little to no northward flow across the model boundary in the aquifer in the last timestep though the aquifer is reported to continue southward into the Fort Ord region. Appendix 1 provides groundwater surfaces exported after each year of the simulation period, which reveal that the Dune Sand Aquifer doesn't fully evolve until approximately year 20. Though fluctuations in recharge and pumping incorporated into the transient simulation contribute to the simulated variation through time, the difference between the hydrostratigraphic frameworks represented in the SVIGSM and the NMGWM is most likely the dominant cause. MCWD-GH-07

The simulated groundwater surface in the Dune Sand Aquifer is inconsistent with the majority of the surfaces simulated by the 2015 version of the model. Specifically, the 2015 version of the model depicted northward flow into the model domain in the Dune Sand Aquifer for multiple of the simulated scenarios, whereas the 2016 version represents the Dune Sand Aquifer as a mound that doesn't extend to the south, which differs from the conceptual model that reflects hydraulic continuity into the Fort Ord area. These differences indicate that the changes made in the 2016 version of the NMGWM also contributed to the problems with the Dune Sand Aquifer simulation and calibration. MCWD-GH-08

Figures 8-9 show nearly consistent west-to-east hydraulic gradients across the model domain in the 400-FT and 900-FT aquifers indicating that the ocean is the primary source of water flowing across the model. Based on these maps, we would infer that nearly all of the volume of these two aquifers throughout the model domain should be substantially impacted by saltwater intrusion. The occurrence and use of freshwater from these lower aquifers indicates that model is over-estimating the gradient and/or not adequately simulating the sources of fresh groundwater inflow to the aquifers within the model domain. MCWD-GH-09

The calibration criteria used to define model acceptability addressed only the difference between simulated and observed groundwater levels at the calibration wells wherein the definition of acceptable was achieving a root mean square error (RMSE) of 10% - 15% of the range in observed groundwater elevations within the model domain. This criteria was more permissive than the 10% value described in the 2015 version of the model documentation and the RMSE for the whole model increased from the 2015 version (10.5 feet)[9] to the 2016 version (12.4 feet)[10]. MCWD-GH-10

---

[9] *Figure 37, Appendix E2 of the 2015 Draft EIR/EIS entitled: Monterey Peninsula Water Supply Project Groundwater Modeling and Analysis, April 17, 2015, prepared by GeoScience, Inc.*
[10] *Figure 4.3a, Appendix E2 of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.*

Inspection of the calibration plots presented by HydroFocus[11] indicates that the range in groundwater elevations for all simulated aquifers is approximately 200 feet. For the individual aquifers, the ranges are approximately 100 feet, 50 feet, 110 feet, and 80 feet for the Dune Sand, 180-FT, 400-FT, and 900-FT aquifers respectively. The HydroFocus calibration criteria would therefore be 20-30 feet for the whole model, and 10-15 feet, 5-7.5 feet, 11-16.5 feet, and 8-12 feet for the Dune Sand, 180-FT, 400-FT, and 900-FT aquifers respectively. Within this context, the model fails the stated calibration test in the Dune Sand Aquifer (RMSE=30.2). Using the stricter 2015 version of the criteria, the model also fails the calibration test for the 180-FT Aquifer (RMSE=7.2) and the 900-FT Aquifer (RMSE=11.3). In general, we have inferred from the data and results available that the quality of the model calibration declined between the 2015 and the 2016 versions, which further indicates that the changes made during the 2016 revisions have resulted in diminished reliability and contribute to the calibration problems cited by HydroFocus and attributed to the SVIGSM. Moreover, guidelines for model calibration also include ensuring the appropriateness of the model boundary conditions, the conceptual model, and the initial conditions for transient models[12], all of which are problematic in the 2016 NMGWM. MCWD-GH-11

For the reasons described above, the NMGWM predictions of impacts to groundwater resources due to the proposed pumping are not reliable particularly in the Dune Sand Aquifer. The calibration problems in the Dune Sand Aquifer undermine confidence in the hydraulic conductivity assignments in Layer 2 and Layer 3 and therefore the predicted magnitude and spatial extent of the cones of depression in those layers. MCWD-GH-12 HydroFocus performed sensitivity analyses to address uncertainty with respect to hydraulic conductivity assignments by varying the ratio between horizontal and vertical hydraulic conductivity by a factor of five to create scenarios for higher and lower vertical anisotropy[13]. Their results indicate that a five-fold increase in horizontal hydraulic conductivity coupled with a five-fold decrease in vertical hydraulic conductivity can substantially increase the predicted size of the cone-of-depression, nearly doubling the size in the Dune Sand Aquifer. Their findings emphasize the importance of achieving better calibration in the Dune Sand Aquifer to the reliability of the impact predictions. MCWD-GH-13

The boundary conditions problems, particularly the southern boundary in Layer 2, prevents the simulation of inflow to the model domain from the southern boundary and undermines confidence in the predicted contributions to the proposed pumping from the Dune Sand Aquifer. MCWD-GH-14 Finally, the model cannot simulate saltwater intrusion nor the effect of pumping on the position of the transition zone between freshwater and salt water conditions in the aquifers due to the proposed pumping scenarios because it is not a dual-density model. The use of equivalent freshwater heads does not overcome this limitation. MCWD-GH-15

---

[11] Figures 4.3a – 4.3c, Appendix E2 of the 2017 Draft EIR/EIS, Ibid.
[12] Reilly, T.E. and Harbaugh, A.W., 2004. Guidelines for Evaluating Groundwater Flow Models, U.S. Geological Survey, Scientific Investigations Report 2004-5038.
[13] Section 6.0 & Figures 6.1-6.2, Appendix E2 of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.

3 SUPERPOSITION MODEL

Superposition modeling is a method used to simulate the effects of some specific and singular form of aquifer stress (including pumping) on groundwater levels that can be used only when the effects of the active aquifer stresses are related linearly, i.e. simply additive. The method is typically used when the totality of aquifer stresses is too complicated to be pragmatically simulated or when there is insufficient data to develop a comprehensive simulation. The superposition method does not add to the confidence in the predictions, it merely simplifies the process of rendering a prediction in exchange for reduced ability to evaluate the condition of the hydrologic system. Such conditions would include groundwater surface elevations, water budget impacts, and/or impacts to existing actions such as other pumping, groundwater/surface water exchange, or cross-boundary flows. MCWD-GH-16

In the case of the NMGWM, superposition models were generated for each pumping scenario by removing all other simulated stresses from the model and adjusting initial and boundary condition heads to 0.0 feet thereby providing a convenient datum for the simulation of cones of depression. In doing this, the models use the same distribution of horizontal and vertical hydraulic conductivities that were derived through model calibration and limited impacts assessments to a prediction of the cone-of-depression associated with each pumping scenario.

Though superposition modeling is a valid technique, it isn't necessary or appropriate for these evaluations because:

1) superposition modeling precludes evaluation of impacts to the water budget associated with the proposed pumping, i.e. defining the source of water to be extracted, which is a critical and central point of concern for stakeholders regarding the proposed project;
2) superposition modeling precludes prediction of measurable changes associated with the proposed pumping (i.e. predicted groundwater elevations and gradients), which would provide the only means for stakeholders to validate the model predictions and potential project impacts; MCWD-GH-17
3) a comprehensive numerical model that includes other active stresses had been developed and calibrated that could be used to render those assessments;
4) GeoScience had previously developed impact assessments using the calibrated model directly and thus the groundwork for repeating that process had presumably been laid; and
5) a comparison of the cones of depression predicted by the superposition model and those we developed using the calibrated version of the 2016 NMGWM reveal that the prescription of the 0.0 datum to initial and boundary heads constrained their size and thus likely under-estimates the spatial extent of drawdown associated with the proposed pumping (Figures 10-13).

4 EVALUATION OF POTENTIAL IMPACTS

Though the calibration and boundary condition problems described in Section 2 render predictions derived from the NMGWM unreliable particularly with respect to the Dune Sand Aquifer, we performed one of the scenario analyses using the calibrated NMGWM to expand on the depiction of potential impacts described in the Draft EIR/EIS. To do this, we modified the calibrated model to include the proposed pumping, ran the MCWD-GH-18 modified model, and compared the results to the calibrated version to evaluate and report impacts to groundwater surfaces and the water budget. We chose scenario DD1-44/56, which assumes a project pumping rate of 24.1 million gallons per day (mgd), no return flows, and 2012 sea level conditions[14].

The associated pumping assignments were copied from the wells file associated with the DD1-44/56 superposition model and inserted into the assignments into the wells file associated with the calibrated model. The model was then rerun to produce results that include the proposed project pumping. This approach effectively assumes that the proposed pumping described by the DD1-44/56 scenario began at the beginning of the transient simulation period wherein all other aquifer stresses remained identical to those prescribed for the calibrated scenario. Water budget and heads were then extracted and used in conjunction with the same output exported from the calibrated scenario as the basis for the impact assessments presented below. MCWD-GH-18 cont.

4.1 Impact to Groundwater Surfaces

Figures 14-17 depict the simulated groundwater surfaces for the Dune Sand, 180-FT, 400-FT, and 900-FT aquifers exported from the calibrated and DD1-44/56 scenarios after the final timestep in the calibrated model's simulation period. The maps show obvious cones of depression surrounding the proposed pumping wells at the CMEX Site but no obvious perturbations to the groundwater surfaces in the lower 400-FT and 900-FT aquifers. MCWD-GH-19

Figures 18-21 depict the simulated impacts to the groundwater surfaces (cones-of-depression) in the four aquifers after the first and last timestep in the calibrated model's simulation period that were created by subtracting the calibrated groundwater surface from the DD1-44/56 scenario surface for each aquifer and each timestep. The Dune Sand, 180-FT, and 400-FT aquifers all show obvious impacts that significantly expand over the course of the simulation period where as no impacts greater than or equal to 0.5 feet are predicted to occur in the lowest 900-FT Aquifer. For both the Dune Sand and 180-FT aquifers, reductions in the groundwater surface of more than 1 foot are predicted to extend for considerable distances (>3 miles) to the east, north, and south from the proposed wells and be slightly more extensive in the 180-FT aquifer than in the Dune Sand Aquifer. Reductions of between 0.5 and 1 foot are predicted to extend for more than 6 miles to the northeastern boundary of the Dune Sand Aquifer and more than 4 miles to the northeast in the 180-FT aquifer. Reductions in the groundwater surface of between 5 and 10 feet in both aquifers are predicted to occur to within ~1 mile of the wells (reaching across Cabrillo Highway). MCWD-GH-20

Appendix 2 provides simplified drawdown maps for each of the four aquifers computed for the last timestep in each year of the 32-year simulation period. These maps show that drawdown in the 180-FT, 400-FT, and 900-FT (shown in these figures as between 0.25 and 0.5 feet) aquifers is predicted to stabilize after approximately 5 years of continuous pumping meaning that the full impact to groundwater surface elevations can be expected to occur within five years after the beginning of pumping. Drawdown maps for the Dune Sand Aquifer reveal a substantially different response over time wherein the cone-of-depression is predicted to continue to expand over the course of ~25 years after the beginning of pumping. Most of the change

[14] *Scenarios_Matrix.xlsx, provided to GeoHydros from the applicant.*

however is isolated to the same teardrop-shaped region where the model must first create the aquifer due to its probable absence in the initial and boundary condition heads derived from the SVIGSM.

Drawdowns created under other of the proposed project scenarios would be proportionally different as defined by the magnitude of pumping and returns. The relative differences between the predictions for the Dune Sand and lower aquifers will however be similar because these are driven by the model configuration more so than the scenario characteristics such as the magnitude of the proposed pumping and/or proposed return flows.

MCWD-GH-20 cont.

4.2 Water Budget Impacts

One of the fundamental capabilities of the numerical groundwater flow model is the water budget analysis, which quantifies all flows into and out of the model through all of the source sink terms incorporated in the model design. The impact of any action or stress to the aquifer can then be evaluated in much the same way as drawdown maps are calculated, by running the water budget report for both the scenario being evaluated and the calibrated scenario and comparing the results. Tables 2 and 3 and Figures 22-24 provide summaries of the water budget analysis conducted from reports extracted and compared in the manner described above for five timesteps in the calibrated and DD1-44/56 scenarios of the 2016 NMGWM. Appendix 3 provides the water budget reports from which these analyses were derived.

MCWD-GH-21

Table 2. Summary of water budget analyses performed using reports generated from the calibrated and DD1-44/56 scenarios of the 2016 NMGWM.

	Changes to the Water Budget (CFD) after Specified Timesteps				
Source/Sink	TS-01	TS-YR01	TS-YR02	TS-YR10	TS-Final
Increased Inflow from Storage:	635,888	37,439	12,907	1,550	-1,220
Decreased Outflow to Storage:	283,852	33,804	11,785	246	19
Increased Ocean Inflow:	2,201,807	2,787,850	2,816,520	2,848,200	2,737,204
Decreased Ocean Outflow:	25,414	82,248	76,582	54,399	167,494
Increased Bndy Inflow:	47,136	163,713	179,681	136,078	183,288
Decreased Bndy Outflow:	30,142	116,688	124,231	181,237	135,005
Total	*3,224,240*	*3,221,741*	*3,221,706*	*3,221,710*	*3,221,790*
% of Proposed Extractions:	*100.1%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
	Source/Sink Contributions to the Proposed Extractions after Specified Timesteps				
Source/Sink	*TS-01*	*TS-YR01*	*TS-YR02*	*TS-YR10*	*TS-Final*
Increased Inflow from Storage:	*19.7%*	*1.2%*	*0.4%*	*0.0%*	*0.0%*
Decreased Outflow to Storage:	*8.8%*	*1.0%*	*0.4%*	*0.0%*	*0.0%*
Increased Ocean Inflow:	*68.3%*	*86.5%*	*87.4%*	*88.4%*	*85.0%*
Decreased Ocean Outflow:	*0.8%*	*2.6%*	*2.4%*	*1.7%*	*5.2%*
Increased Bndy Inflow:	*1.5%*	*5.1%*	*5.6%*	*4.2%*	*5.7%*
Decreased Bndy Outflow:	*0.9%*	*3.6%*	*3.9%*	*5.6%*	*4.2%*
Total	*100.1%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Table 3. Evolution of source water for the proposed extractions as defined by water budget reports exported from five timesteps of the calibrated and DD1-44/56 scenarios of the 2016 NMGWM.

Days after Start	Ocean	DSA	SVA	180-ft	400-ft	900-ft	*Total*	Total GW
30	69.1%	22.3%	4.2%	3.5%	0.6%	0.3%	*100%*	30.9%
365	89.0%	3.6%	0.1%	4.9%	1.6%	0.8%	*100%*	11.0%
730	89.7%	2.4%	0.0%	5.2%	1.8%	0.8%	*100%*	10.3%
3,650	90.0%	1.9%	0.0%	5.3%	1.9%	0.9%	*100%*	10.0%
11,680	90.0%	1.8%	0.0%	5.3%	1.9%	0.9%	*100%*	9.9%

The water budget data indicates that the proposed pumping will initially derive more than 30% of the water from groundwater, predominantly the Dune Sand Aquifer (>22%) and to a smaller extent the 180-FT, 400-FT, and 900-FT aquifers. The groundwater contribution is predicted to decline to approximately 10% within 1-2 years and stabilize at that level of contribution after approximately 5 years throughout the remainder of the 32-year simulation period. Approximately 2.8% of the proposed extractions is predicted to come from the deeper 400-Ft and 900-FT aquifers, which equates to approximately 756 acre-feet per year. This water will come from cross-boundary flows into the respective aquifers and then via upward flow into the overlying 180-FT and Dune Sand Aquifers. Increased cross-boundary flows indicate that the cones of depression created by the existing wells will expand into the adjacent areas outside of the NMGWM domain.

The magnitudes of the water budget impacts described above will differ proportionally with the pumping magnitudes and return flows defined by the different project scenarios. The percentages described in Table 3 will likely be similar owing to the linearity in the groundwater flow and drawdown calculations.

MCWD-GH-21 cont.

5 CONCLUSIONS

- The 2016 NMGWM is poorly calibrated in the Dune Sand Aquifer likely due to incongruity between the NMGWM and the SVIGSM and to the assignment of large constant head elevations offshore in the ocean, Dune Sand Aquifer, Salinas Valley Aquitard, 180-FT Aquifer, 180/400-FT Aquitard, and 400-FT Aquifers. MCWD-GH-22
- Using the stricter 2015 version of the calibration criteria (10% of observed head variation), the model fails calibration in the 180-FT Aquifer and the 900-FT Aquifer in addition to the Dune Sand Aquifer. In general, we have inferred from the data and results available that the quality of the model calibration declined between the 2015 and the 2016 versions, which indicates that the changes made during the 2016 revisions have resulted in diminished reliability. MCWD-GH-23
- The poor calibration in the Dune Sand Aquifer undermines confidence in the magnitude and distribution of the assigned horizontal and vertical conductivities, and thus the predicted impact to groundwater elevations and predicted percentage of aquifer water that will be extracted by the proposed project because both of these impacts are largely predicated on the magnitude and distribution of hydraulic conductivities. MCWD-GH-24
- The steep eastward hydraulic gradient from the ocean across the model domain in the 400-FT and 900-FT aquifers is improbable and inconsistent with the extraction of freshwater from these aquifers from within the model domain, and the groundwater surfaces simulated by all but the driest condition scenarios reported for the 2015 version of the NMGWM. MCWD-GH-25

- The 2016 NMGWM cannot simulate saltwater intrusion to any of the simulated aquifers nor can it be used to predict how the proposed pumping might affect the position of the transition zone between freshwater and saltwater conditions in the aquifers. MCWD-GH-26
- The use of equivalent freshwater heads does not provide any meaningful simulation of landward saltwater migration and their assignments likely contributes to the calibration problems. MCWD-GH-27
- A dual-density model should be constructed if saltwater intrusion and/or the impact of the proposed project on groundwater salinities is to be evaluated. MCWD-GH-28
- It is unlikely that the incongruity between the NMGWM and SVIGSM hydrostratigraphies can be overcome through model calibration owing to the degree to which initial and boundary heads in the NMGWM are dependent on SVIGSM output, and this limitation undermines confidence in NMGWM predictions. MCWD-GH-29
- Superposition modeling is inappropriate for this evaluation because:
    - it precludes the identification of source water contributions to the proposed extractions, which is a key issue with the application;
    - it precludes prediction of measurable groundwater elevations associated with the proposed pumping, which would provide the only means for stakeholders to validate the model predictions and potential project impacts;
    - it is unnecessary because it provides no benefit in terms of reliability over the use of the calibrated version of the model for impact assessment, which allows for the assessments described above; and
    - the prescription of the 0.0 datum to initial and boundary heads has been shown to constrain the spatial extent of the simulated cones of depression in the aquifers created by the proposed pumping.

  MCWD-GH-30
- Notwithstanding the limitations of the model described above, the model reveals potential impacts that were not fully described in the Draft EIR/EIS. The most relevant of these are:
    - the proposed pumping will initially derive more than 30% of the water from groundwater, predominantly the Dune Sand Aquifer (>22%) and to a smaller extent the 180-FT, 400-FT, and 900-FT aquifers.
    - Within 1-2 years, the groundwater contribution to the proposed extractions is predicted to decline to approximately 10% and stabilize at that level of contribution throughout the life of the proposed project.
    - A small but relevant portion of the proposed extraction (2.8% or 756 acre-feet for scenario DD1-44/56) is predicted to come from the deeper 400-Ft and 900-FT aquifers indicating that the proposed extractions will contribute to any overdraft problems in those aquifers.

  MCWD-GH-31
    - For both the Dune Sand and 180-FT aquifers reductions in the groundwater surface of more than 1 foot are predicted to extend for considerable distances (>3 miles) to the east, north, and south from the proposed wells within five years after the start of pumping under the DD1-44/56 scenario. MCWD-GH-32

- The predicted cone-of-depression will be slightly more extensive in the 180-FT aquifer than in the Dune Sand Aquifer.
- Reductions of between 0.5 and 1 foot are predicted to extend for more than 6 miles to the northeastern boundary of the Dune Sand Aquifer and more than 4 miles to the northeast in the 180-FT aquifer within five years of the start of pumping under the DD1-44/56 scenario.
- Reductions in the groundwater surface of between 5 and 10 feet in both aquifers are predicted to occur to within ~1 mile of the wells (reaching across Cabrillo Highway) within five years of the start of pumping under the DD1-44/56 scenario.

MCWD-GH-32 cont.

- The sensitivity analyses performed by HydroFocus with respect to hydraulic conductivity indicate that the predicted impacts could be substantially understated, which demonstrates the importance of achieving better calibration.

MCWD-GH-33

- Reconstructing the model using a dual-density program, extending the model boundaries to natural divides or to a sufficiently distant point that boundary effects on the predicted impacts of the proposed project are eliminated or marginalized, and calibrating the model to groundwater salinities as well as heads would substantially increase the reliability of the predicted impacts.

MCWD-GH-34

- Based on the findings presented in this report, we believe that the Draft EIR/EIS's conclusions regarding the MPWSP's groundwater impacts are not scientifically supportable and that they conflict with available information.
- Given the problems with the model calibration identified above, we do not recommend additional scenario analysis using the 2016 NMGWM because it would not provide scientifically supportable results.

MCWD-GH-35

6 FIGURES

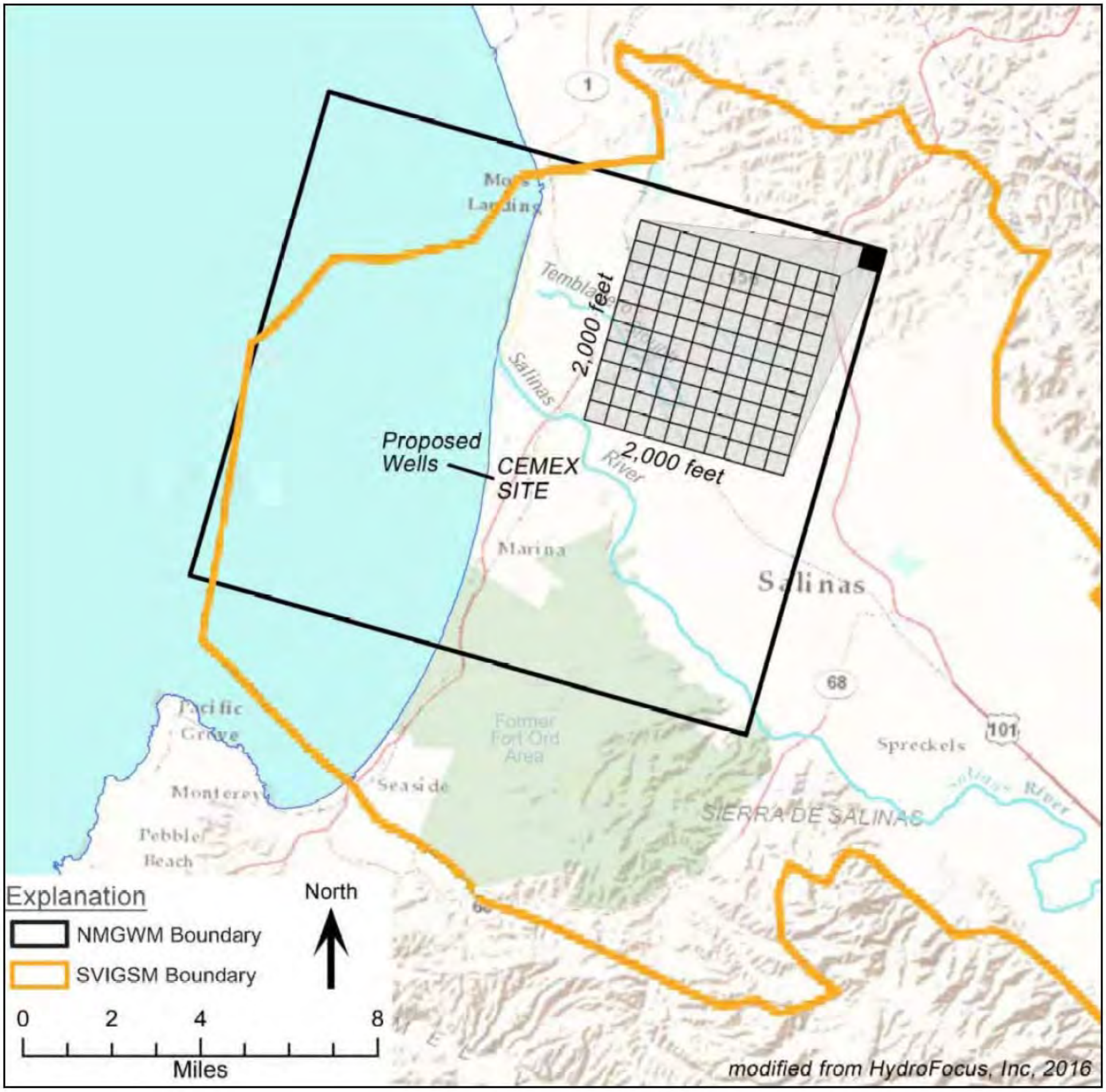


Figure 1.
Map showing the boundaries of the North Marina Groundwater Model and the Salinas Valley Integrated Groundwater Surface Water Model relative to the proposed wells.

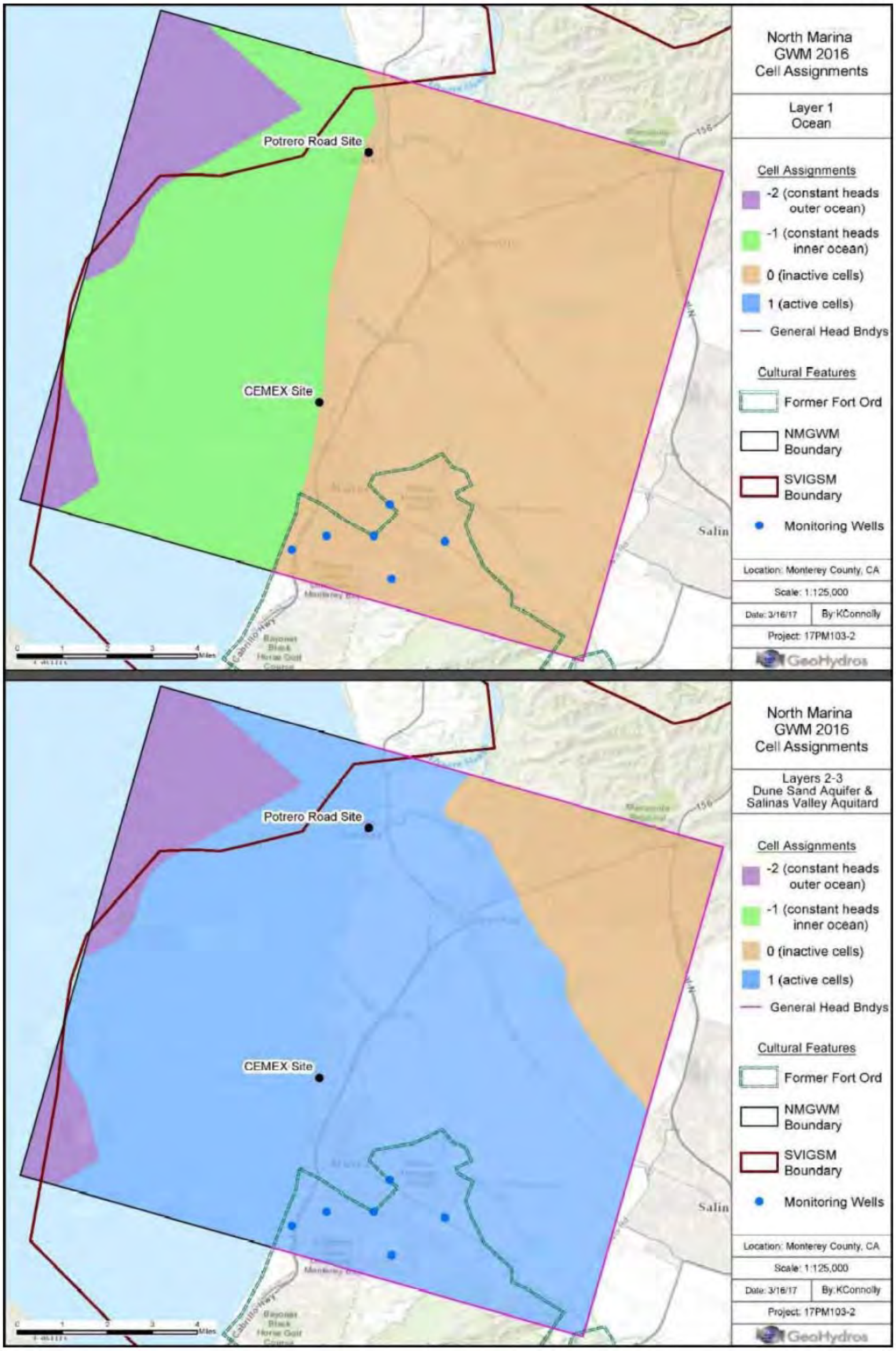


Figure 2.
NMGWM-2016 Cell Assignments & Boundary Conditions for Layer 1 (ocean - top) and Layers 2 & 3 (Dune Sand Aquifer & Salinas Valley Aquitard - bottom).

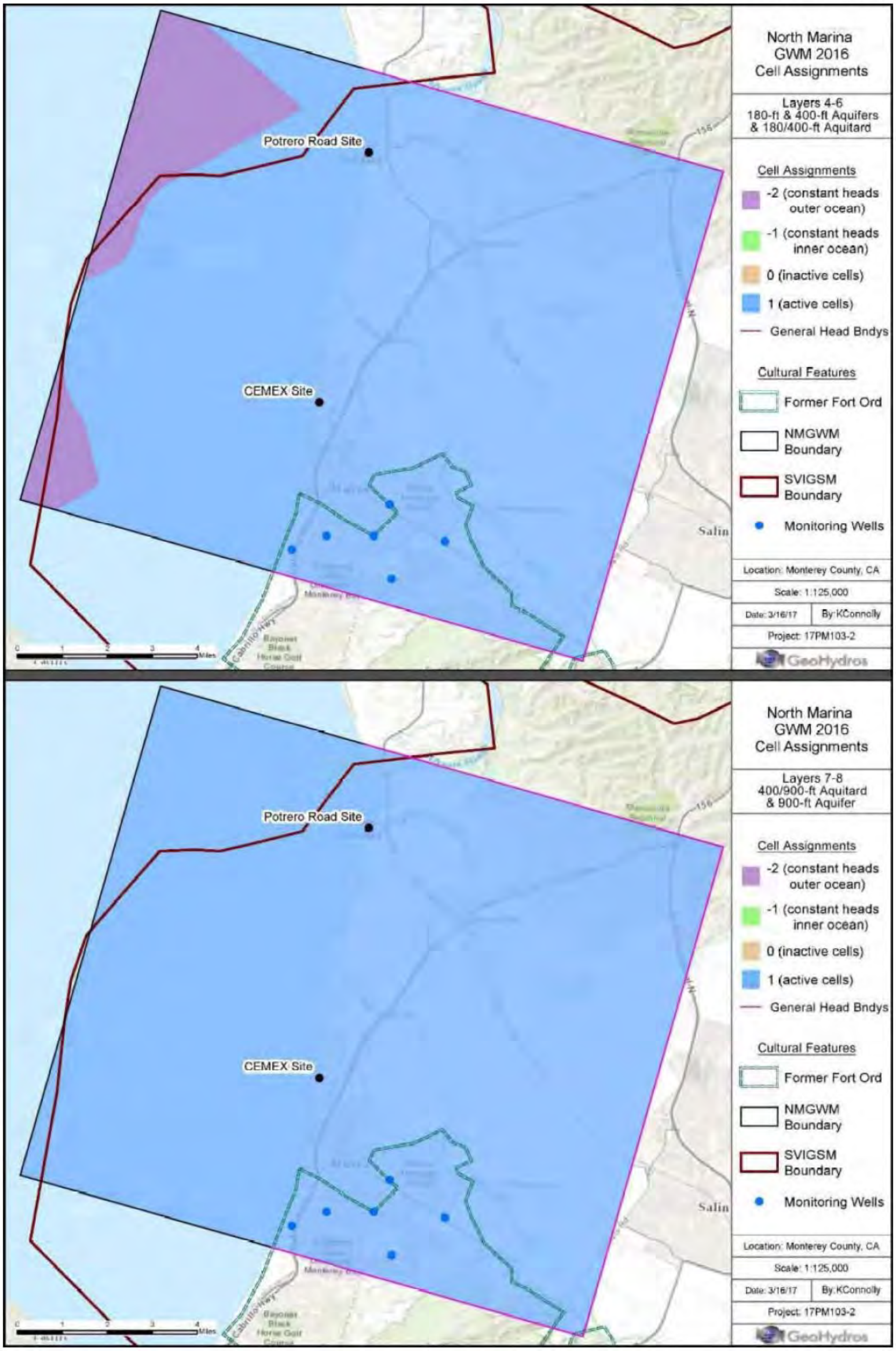


Figure 3.
NMGWM-2016 Cell Assignments & Boundary Conditions for Layers 4-6 (180-ft and 400-ft Aquifers & 180/400-ft Aquitard - top) and Layers 7 & 8 (400/900-ft Aquitard & 900-ft Aquifer - bottom).

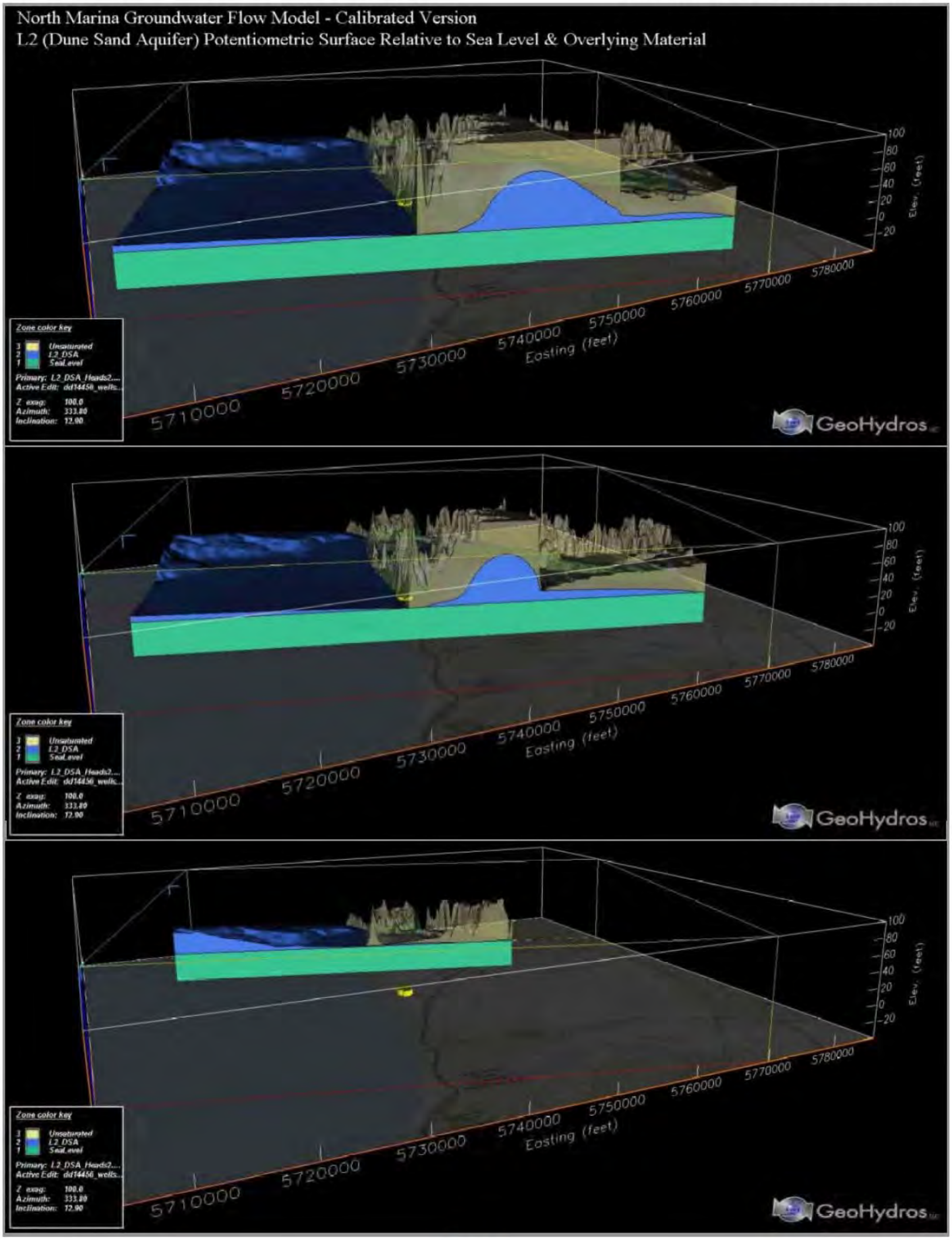


Figure 4.
Perspective west-east cross-sections through the 2016 NMGWM (calibrated scenario) showing the effect of equivalent freshwater head assignments in the Dune Sand Aquifer and the resulting groundwater surface relative to sea level and a cropped portion of the overlying material.

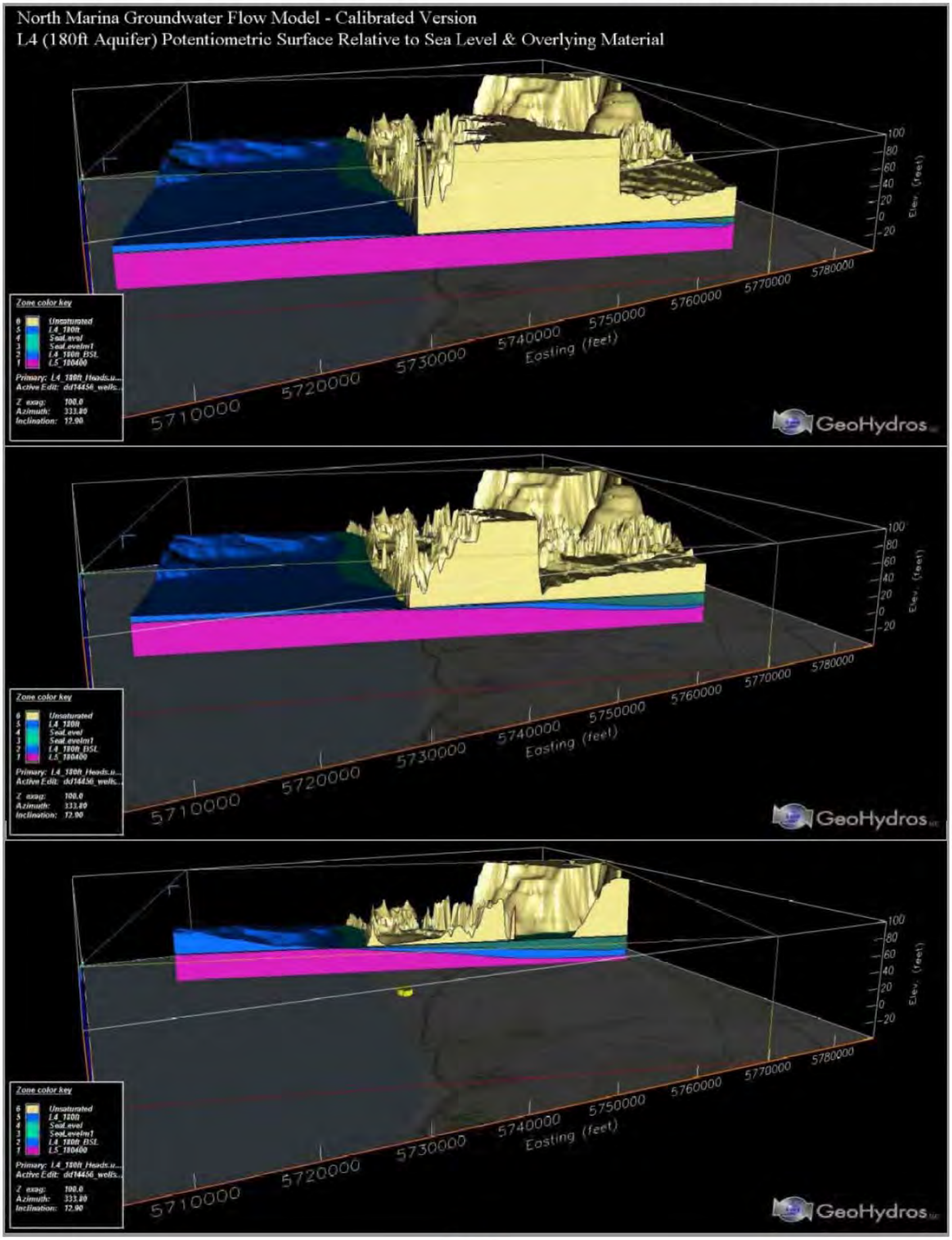


Figure 5.
Perspective west-east cross-sections through the 2016 NMGWM (calibrated scenario) showing the effect of equivalent freshwater head assignments in the 180-FT Aquifer and the resulting groundwater surface relative to sea level and a cropped portion of the overlying material.

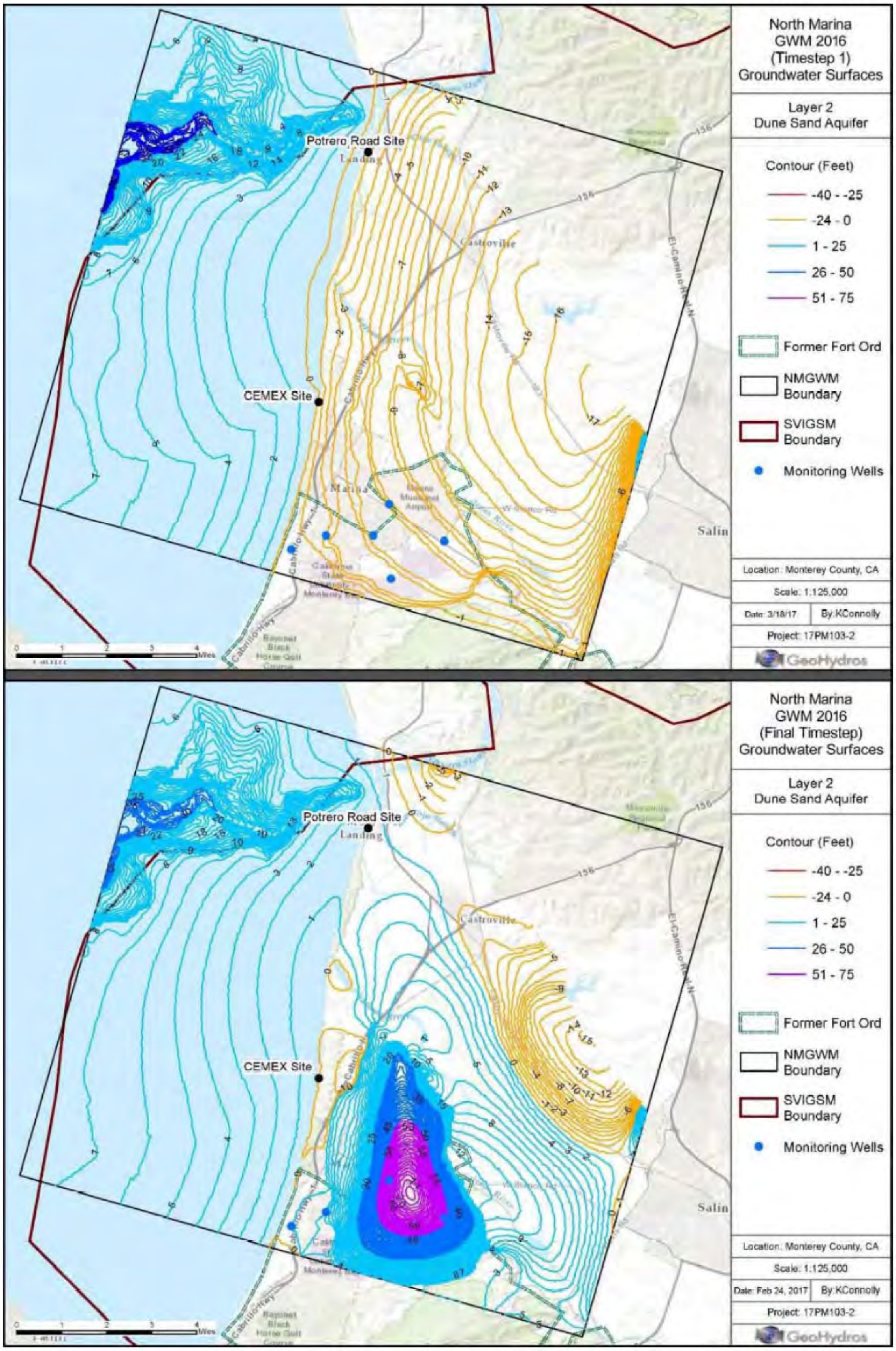


Figure 6.
Comparison of groundwater surfaces for the Dune Sand Aquifer simulated by the 2016 NMGWM at the first and last timesteps in the 32-year simulation period.

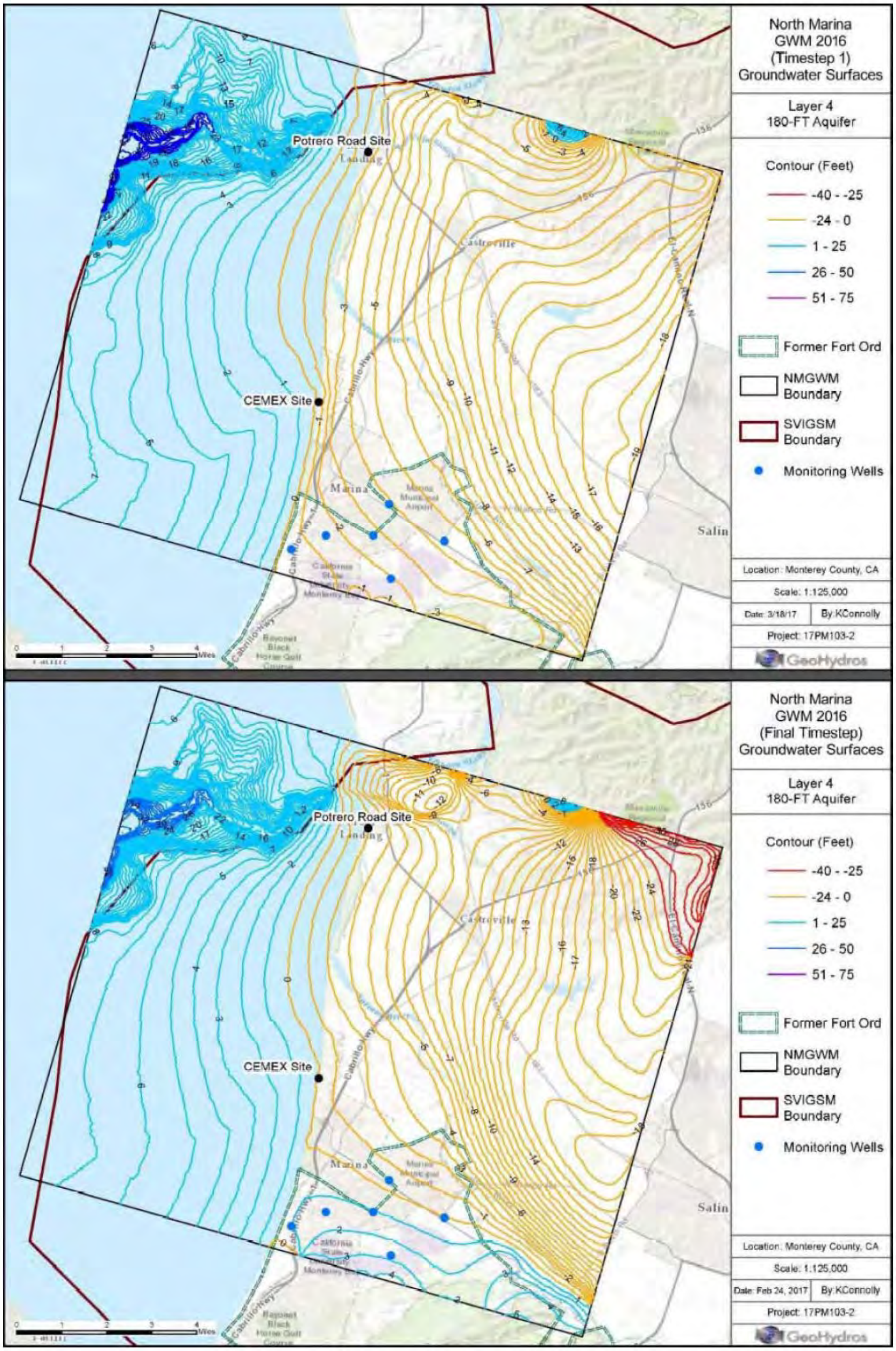


Figure 7.
Comparison of groundwater surfaces for the 180-FT Aquifer simulated by the 2016 NMGWM at the first and last timesteps in the 32-year simulation period.

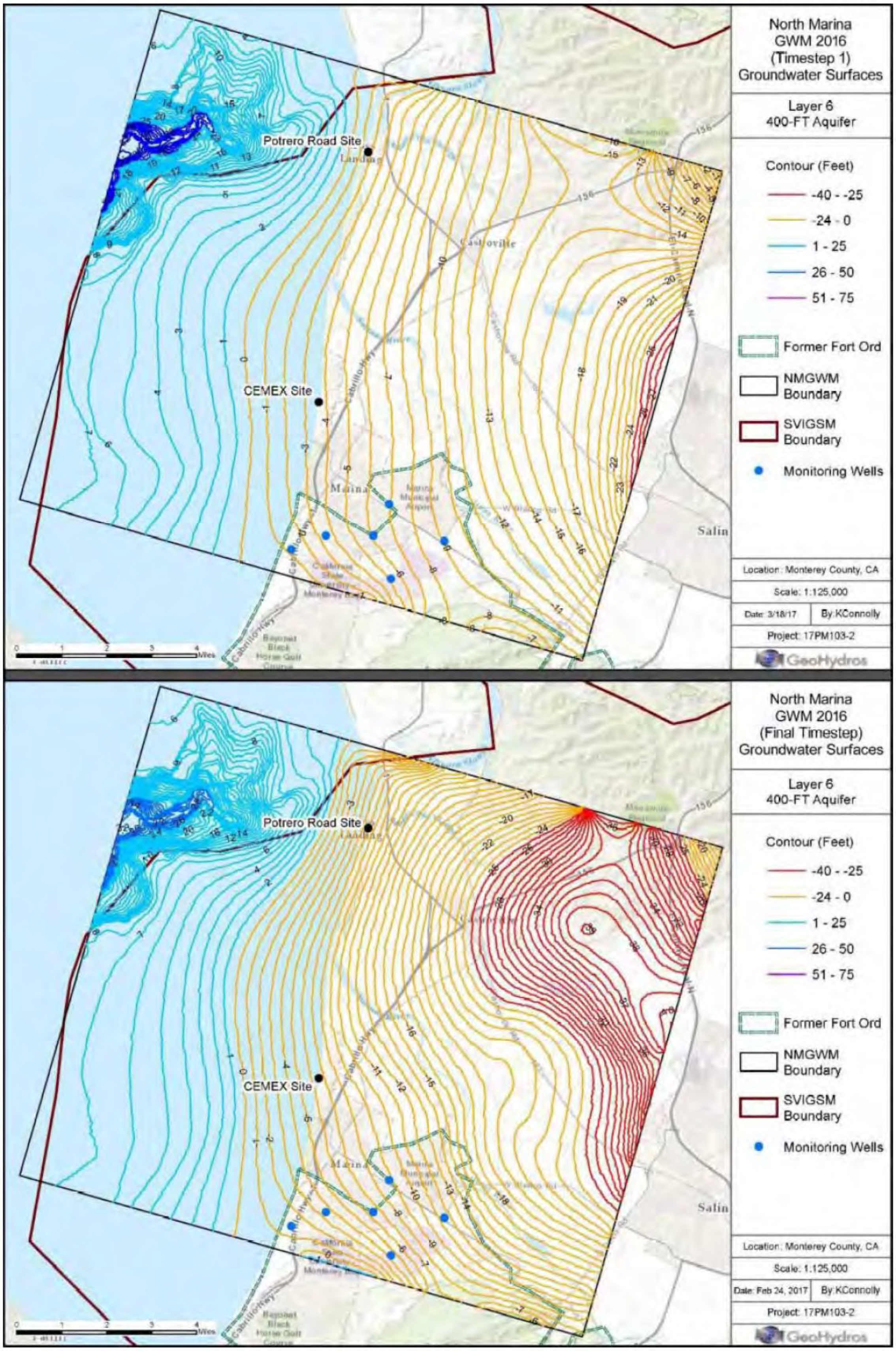


Figure 8.
Comparison of groundwater surfaces for the 400-FT Aquifer simulated by the 2016 NMGWM at the first and last timesteps in the 32-year simulation period.

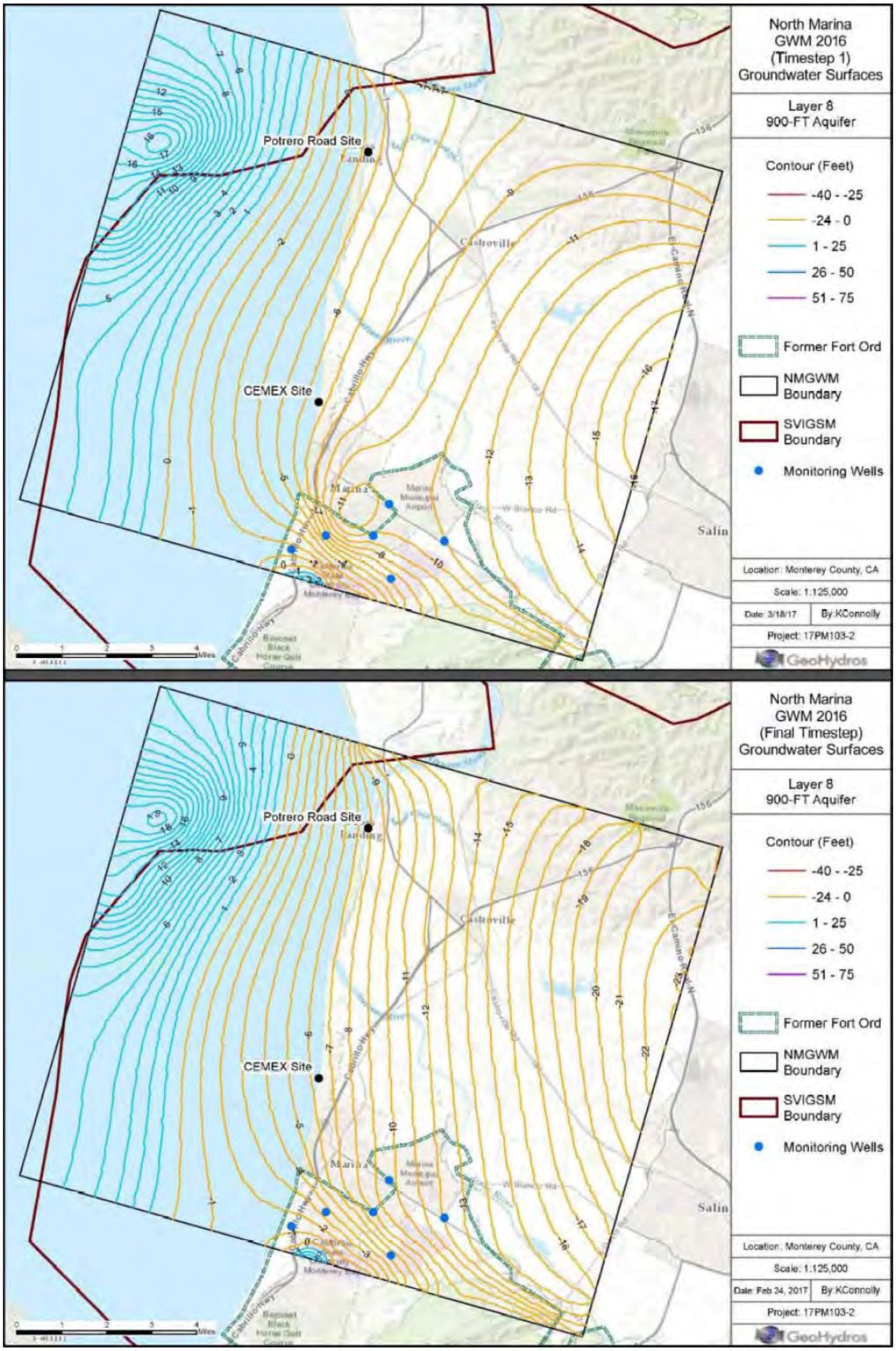


Figure 9.
Comparison of groundwater surfaces for the 900-FT Aquifer simulated by the 2016 NMGWM at the first and last timesteps in the 32-year simulation period.

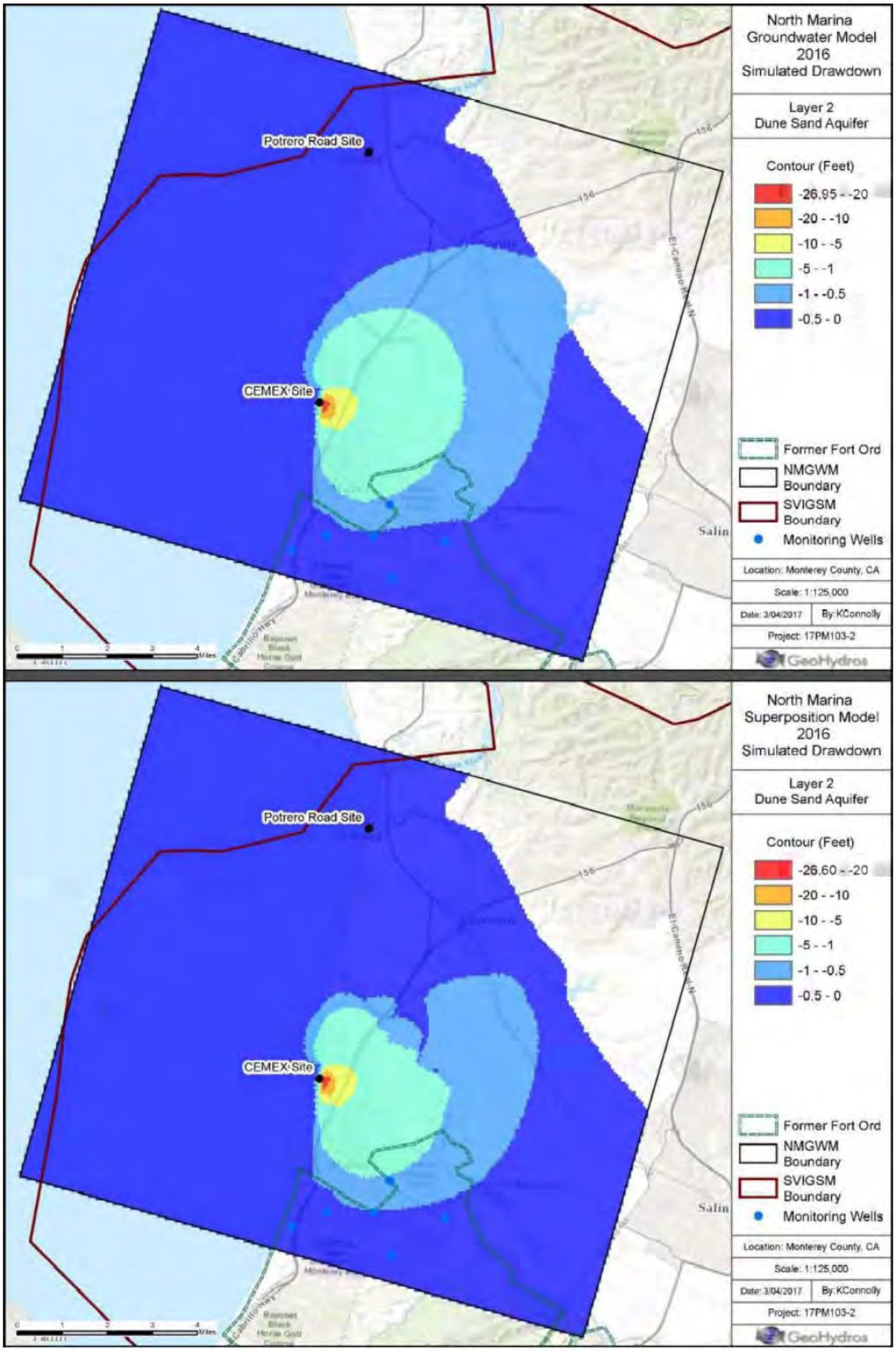


Figure 10.
Comparison of simulated drawdown in in the Dune Sand Aquifer (Layer 2) derived from the calibrated version of the 2016 version of the NMGWM (top) and the Superposition model (bottom).

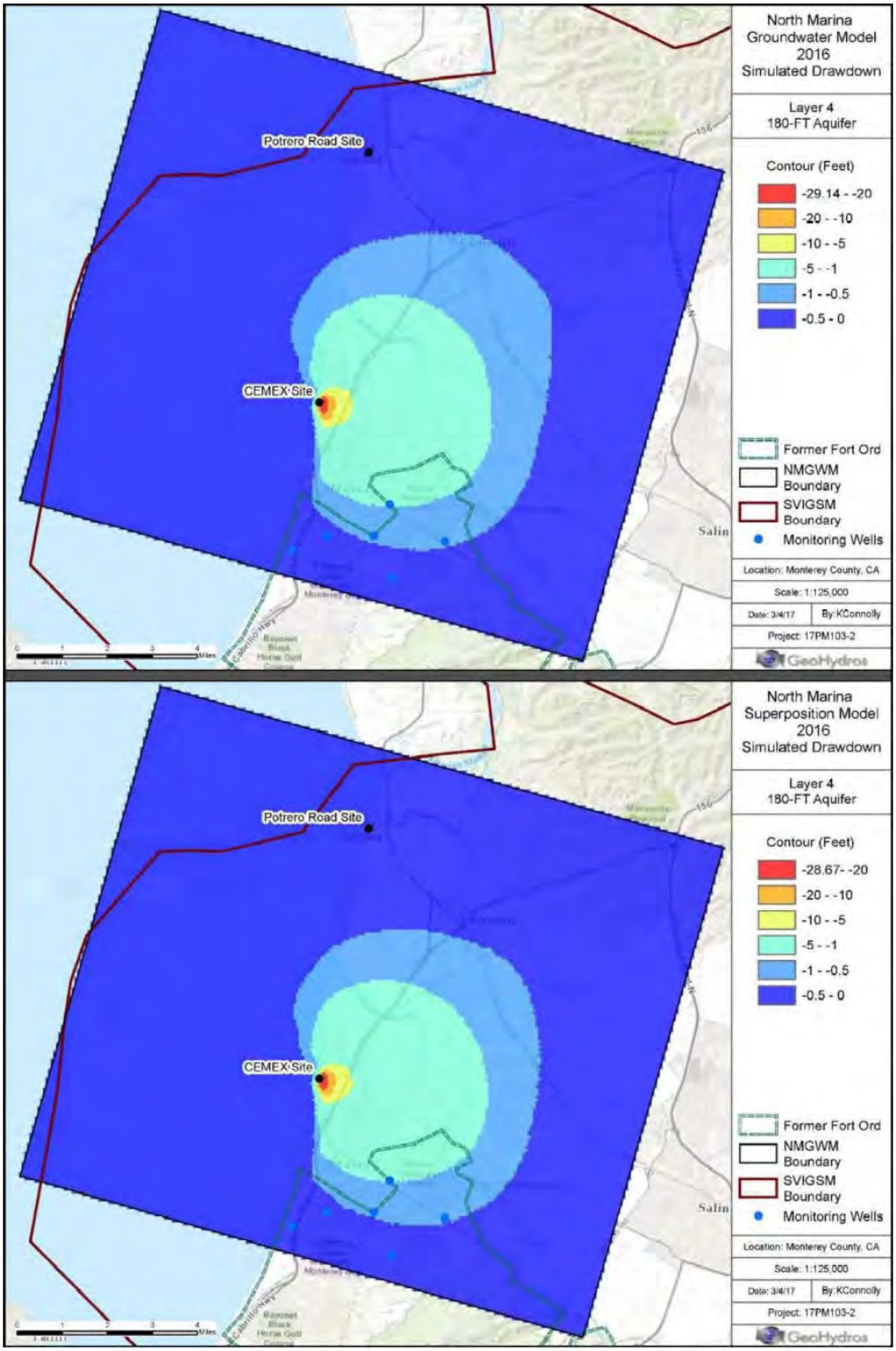


Figure 11.
Comparison of simulated drawdown in in the 180-FT Aquifer (Layer 4) derived from the calibrated version of the NMGWM-2016 (top) and the Superposition model (bottom).

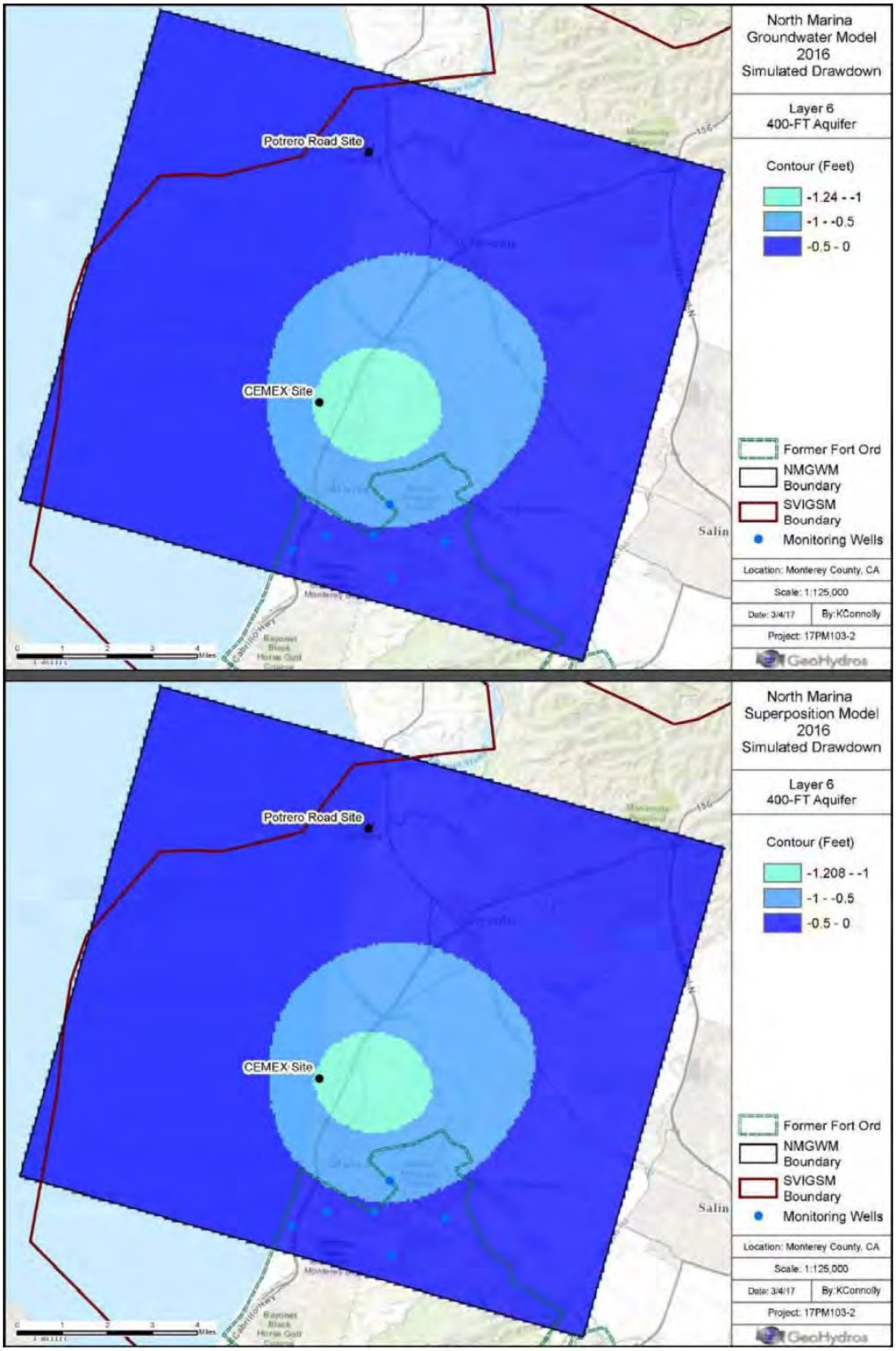


Figure 12.
Comparison of simulated drawdown in in the 400-FT Aquifer (Layer 6) derived from the calibrated version of the NMGWM-2016 (top) and the Superposition model (bottom).

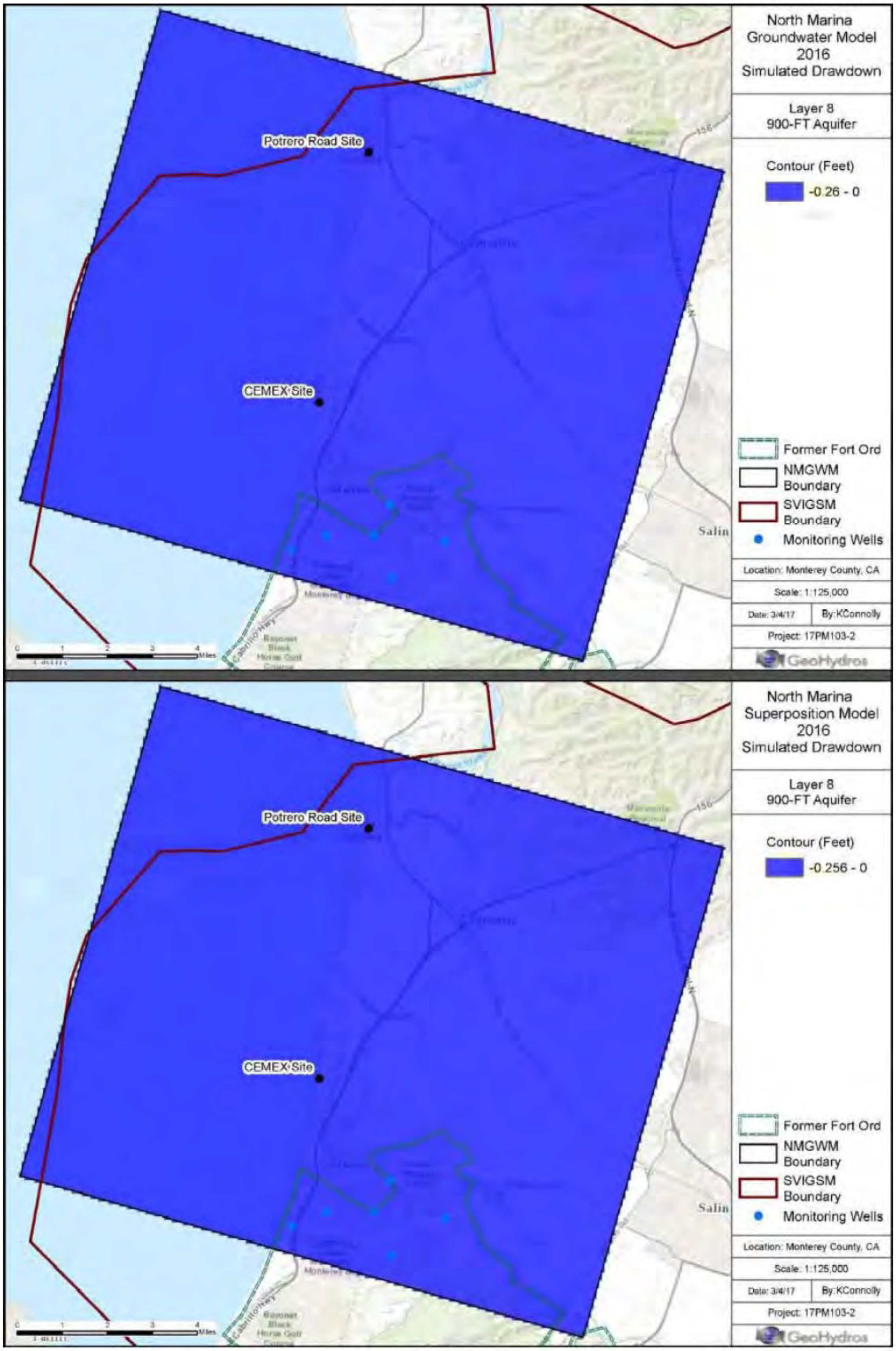


Figure 13.
Comparison of simulated drawdown in in the 900-FT Aquifer (Layer 8) derived from the calibrated version of the NMGWM-2016 (top) and the Superposition model (bottom).

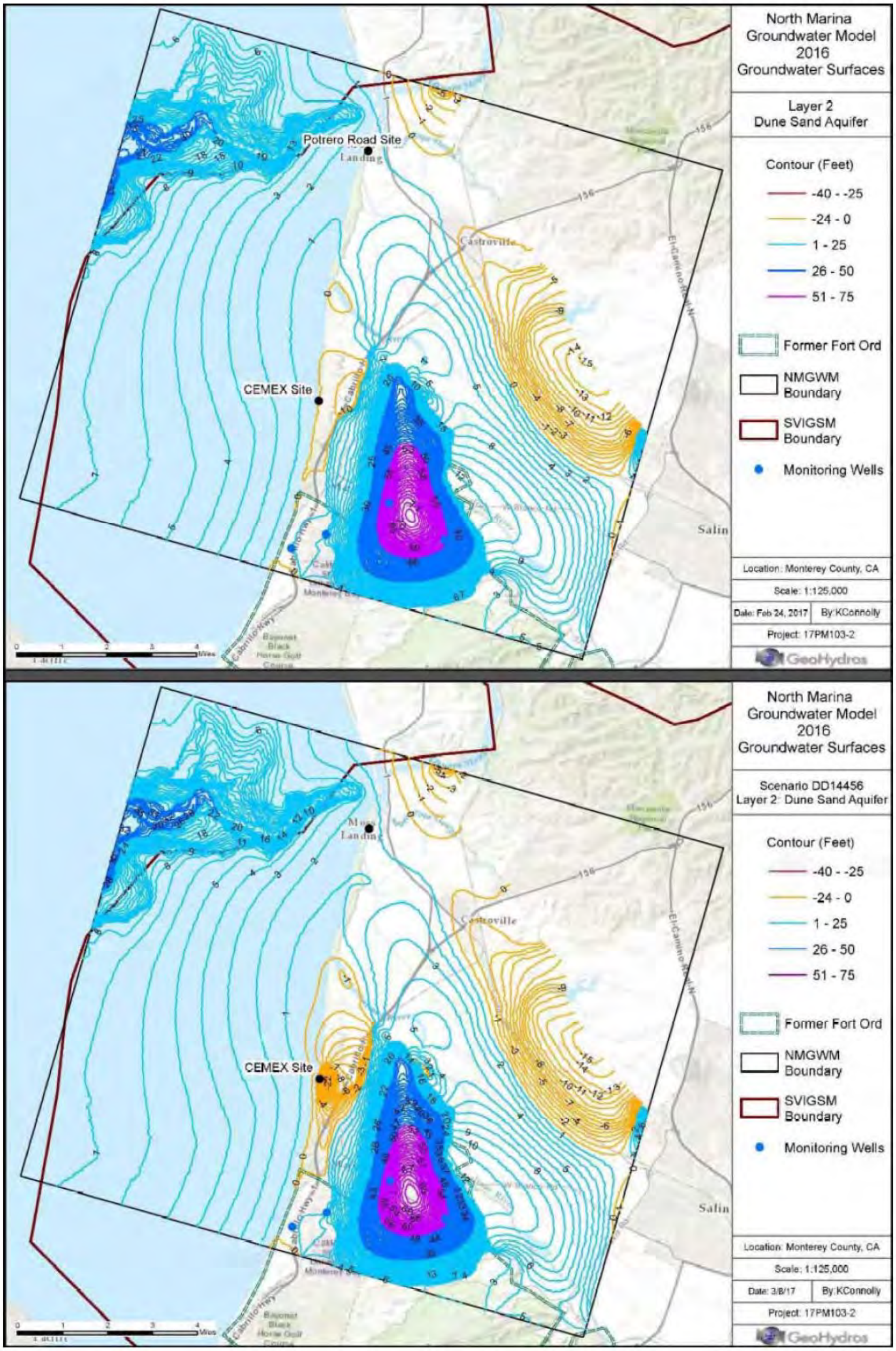


Figure 14. Simulated water table surface in the Dune Sand Aquifer (Layer 2) as portrayed by the calibrated version (top) and Scenario DD1-44/56 (bottom) showing mounding due to recharge in the Dune Sand Aquifer and equivalent fresh water heads assigned as constant values in the ocean resulting in a large eastward gradient across the model.

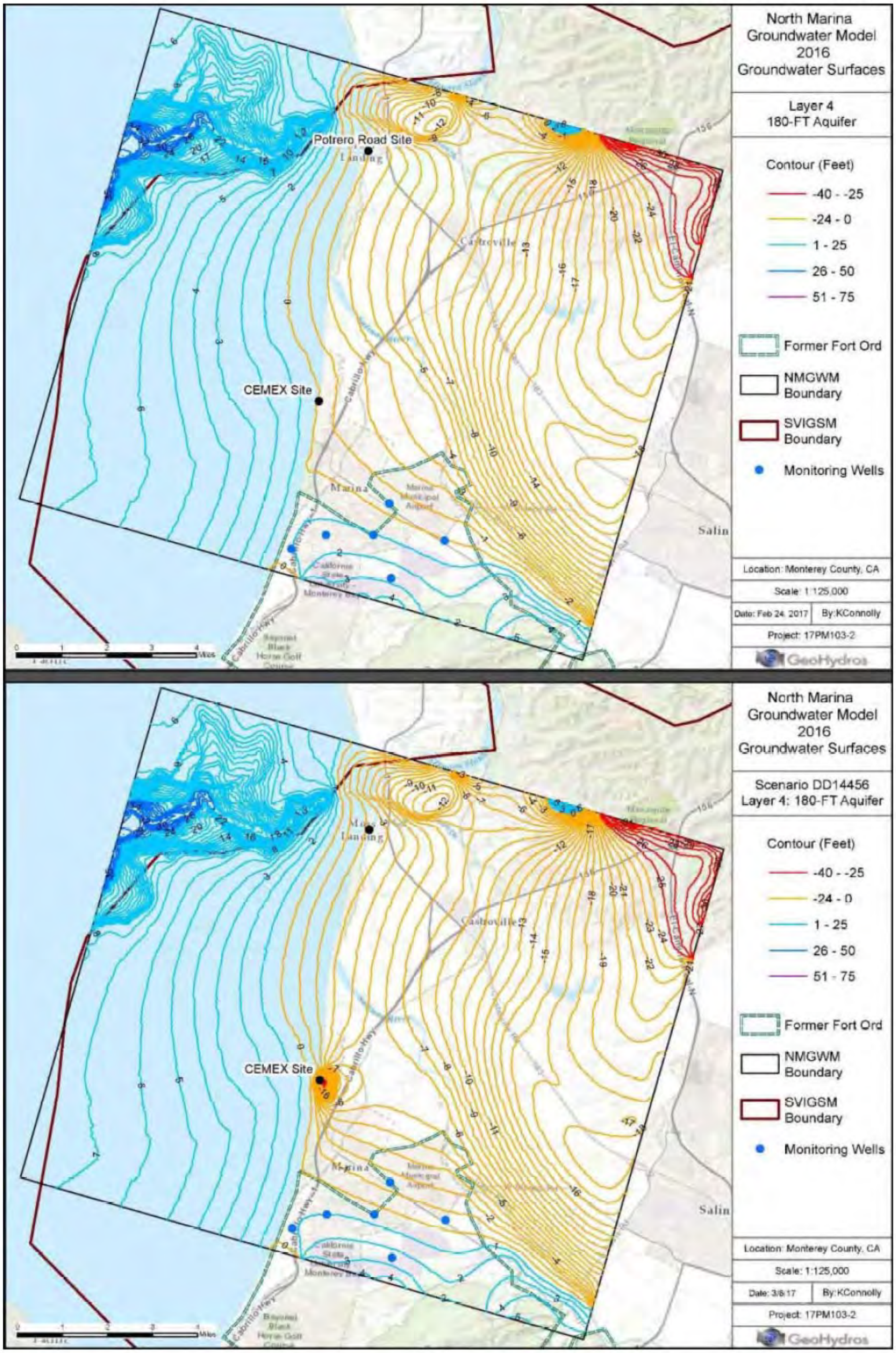


Figure 15. Simulated water table surface in the 180-ft Aquifer (Layer 4) as portrayed by the calibrated version (top) and Scenario DD1-44/56 (bottom) showing some mounding due to recharge in the Dune Sand Aquifer and equivalent fresh water heads assigned as constants in the ocean resulting in a large eastward gradient across the model.

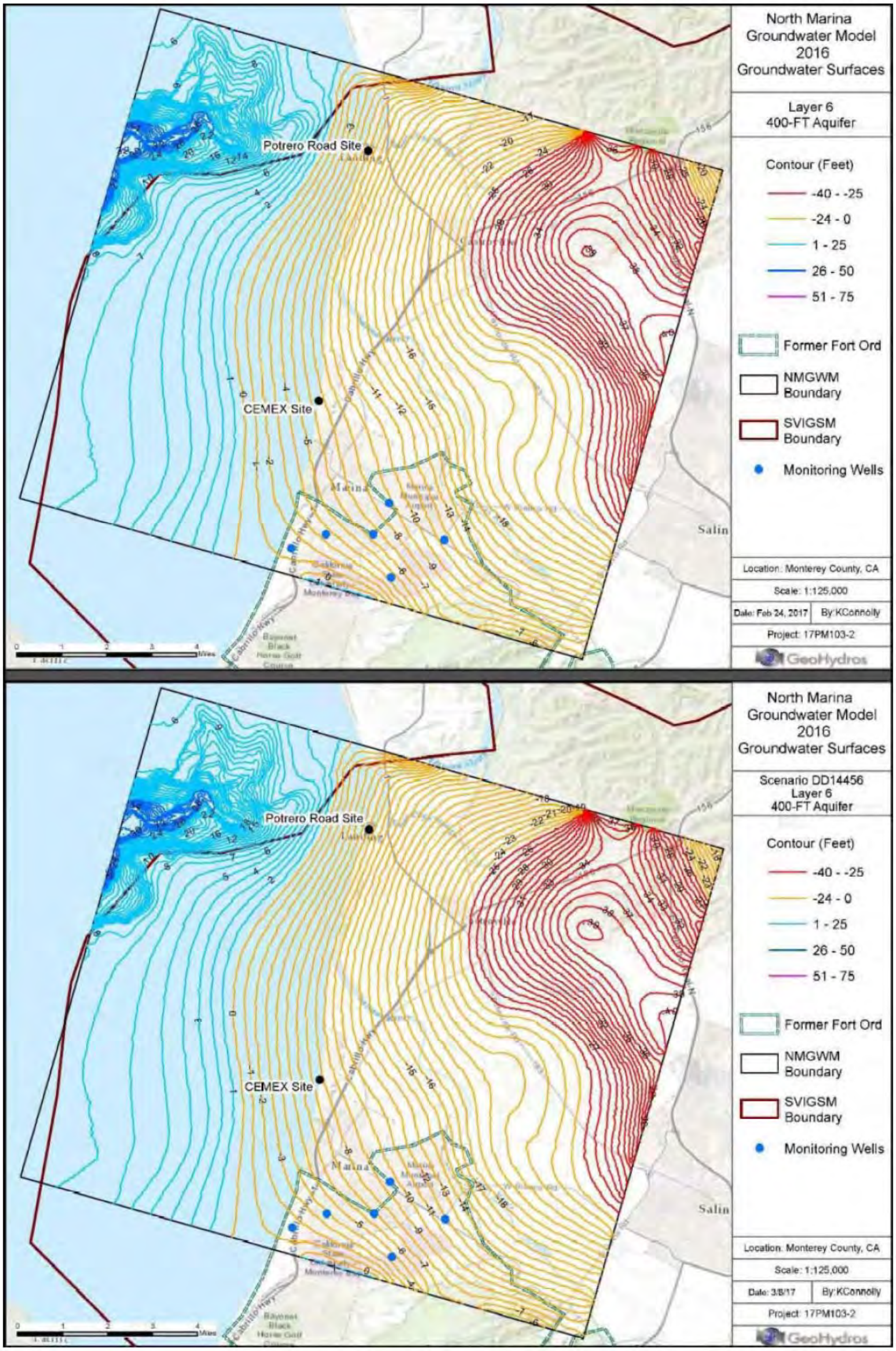
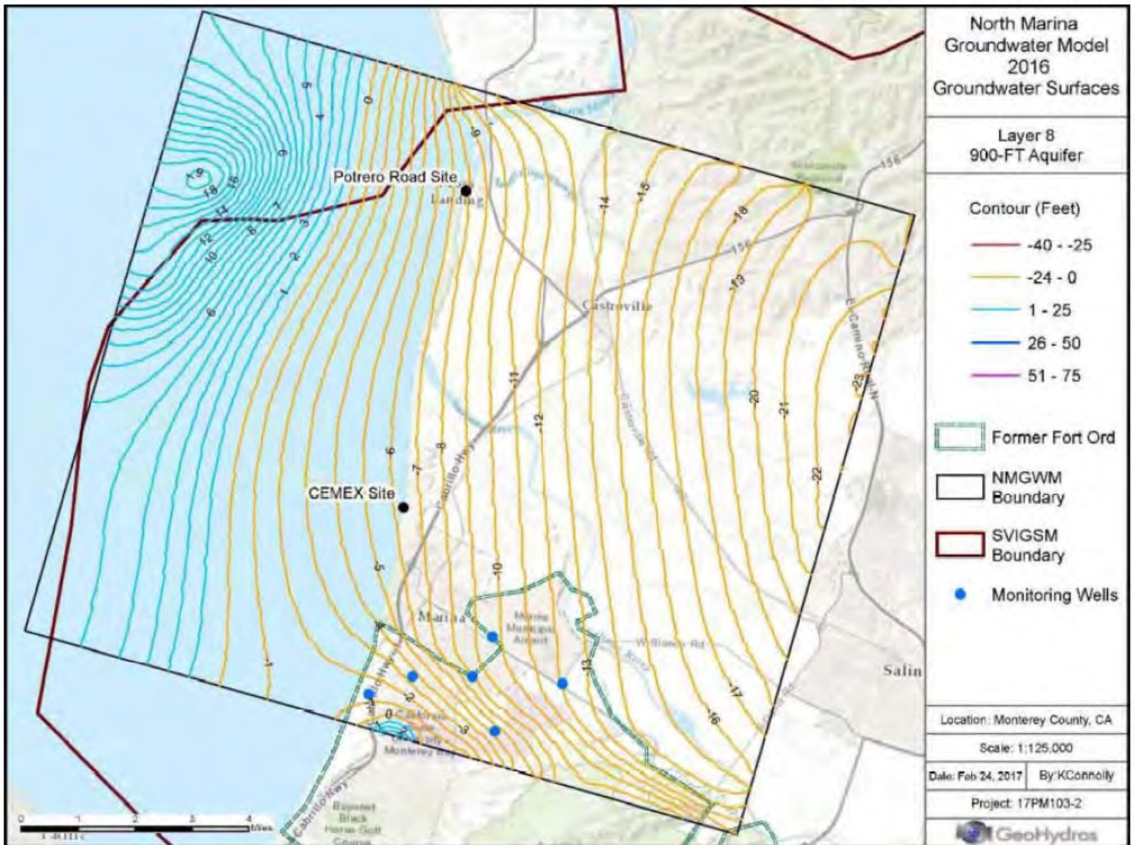


Figure 16. Simulated water table surface in the 400-ft Aquifer (Layer 6) as portrayed by the calibrated version (top) and Scenario DD1-44/56 (bottom) showing equiv. fresh water heads assigned as constants in the ocean resulting in the ocean being the primary source of water flow across the model.



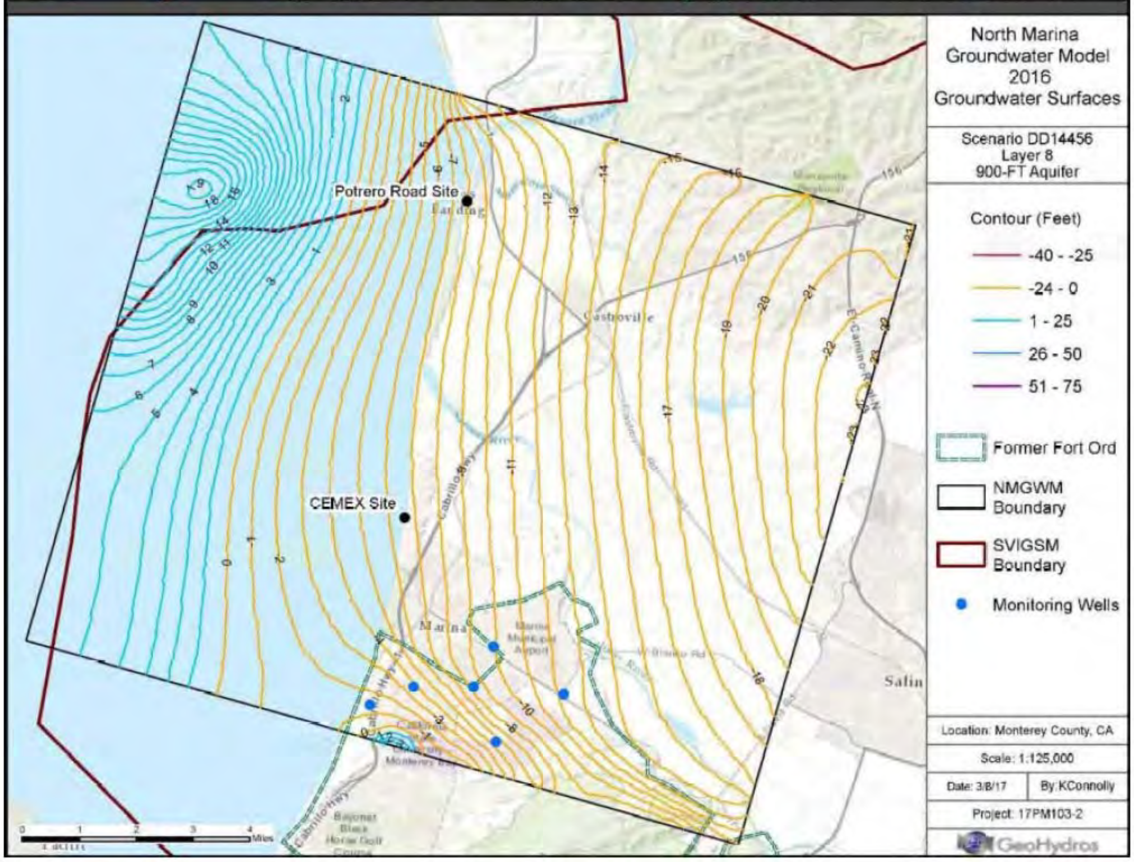


Figure 17. Simulated water table surface in the 900-ft Aquifer (Layer 8) as portrayed by the calibrated version (top) and Scenario DD1-44/56 (bottom) showing the effect of equiv. fresh water heads assigned in overlying layers in the ocean and that the ocean is the primary source of water flow across the model.

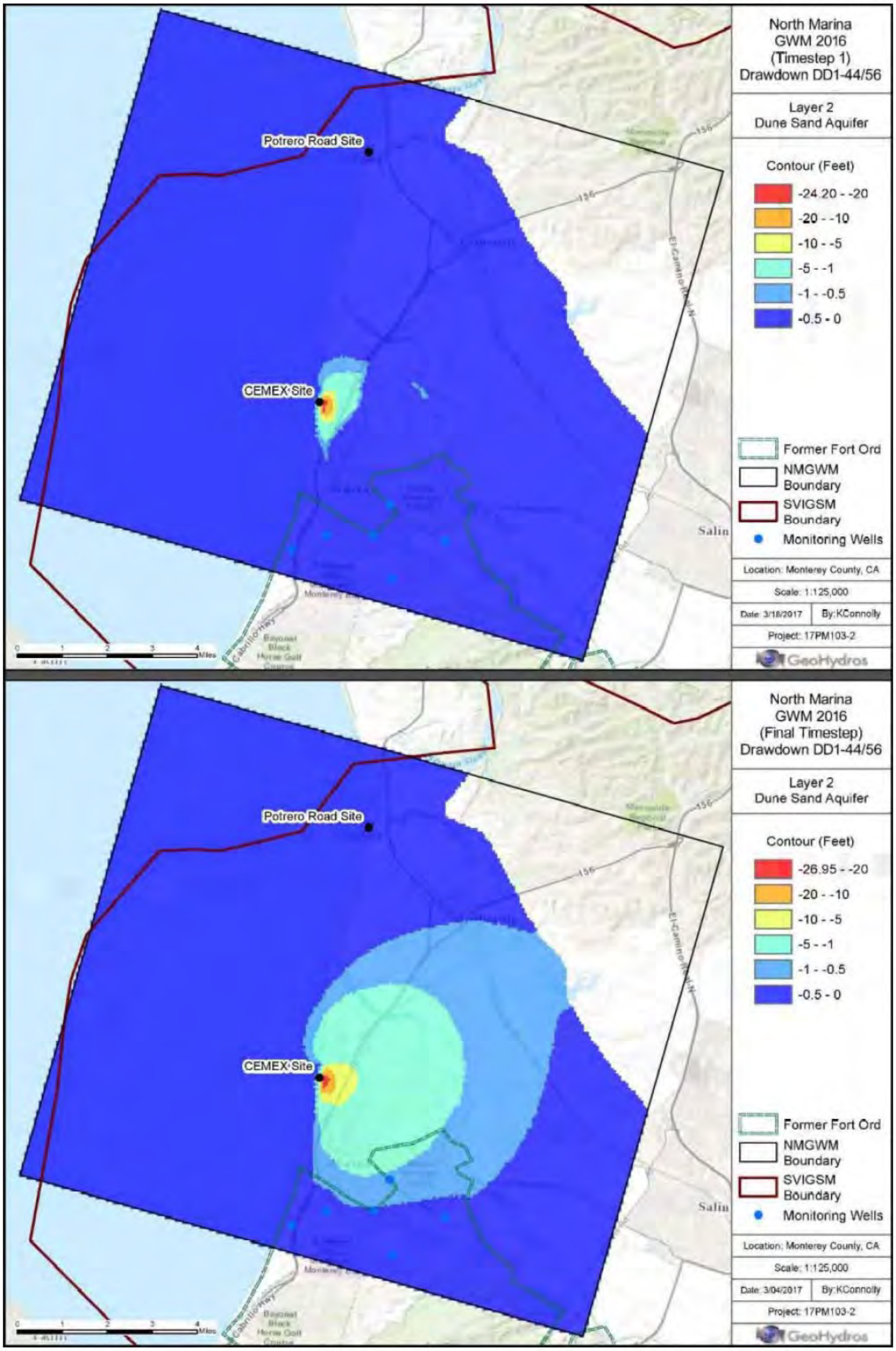


Figure 18.
Simulated drawdown in the Dune Sand Aquifer due to pumping as defined in scenario DD1-44/56 after the first and last timestep in the calibrated model's 32-year simulation period.

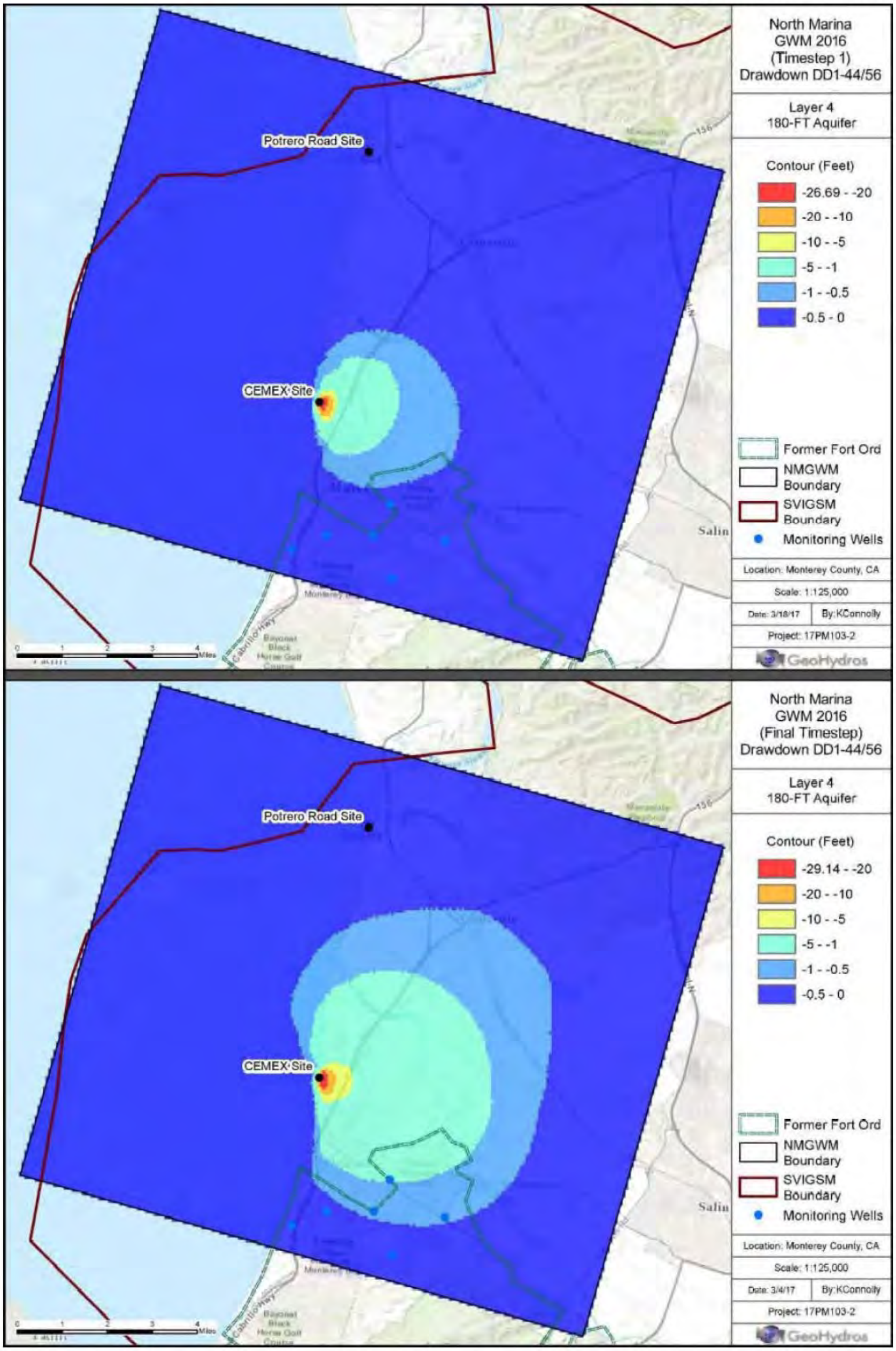


Figure 19.
Simulated drawdown in the 180-FT Aquifer due to pumping as defined in scenario DD1-44/56 after the first and last timestep in the calibrated model's 32-year simulation period.

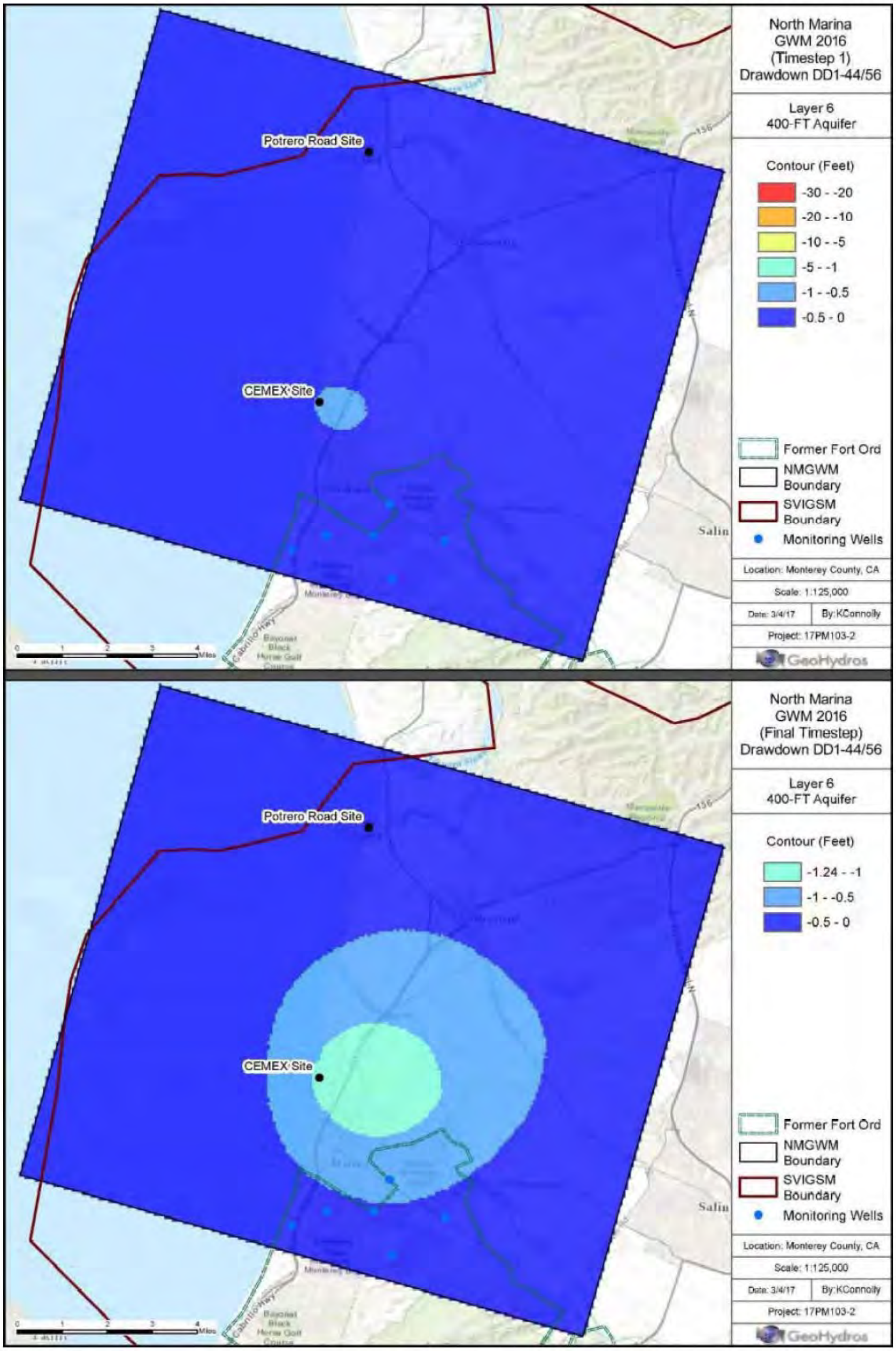


Figure 20.
Simulated drawdown in the 400-FT Aquifer due to pumping as defined in scenario DD1-44/56 after the first and last timestep in the calibrated model's 32-year simulation period.

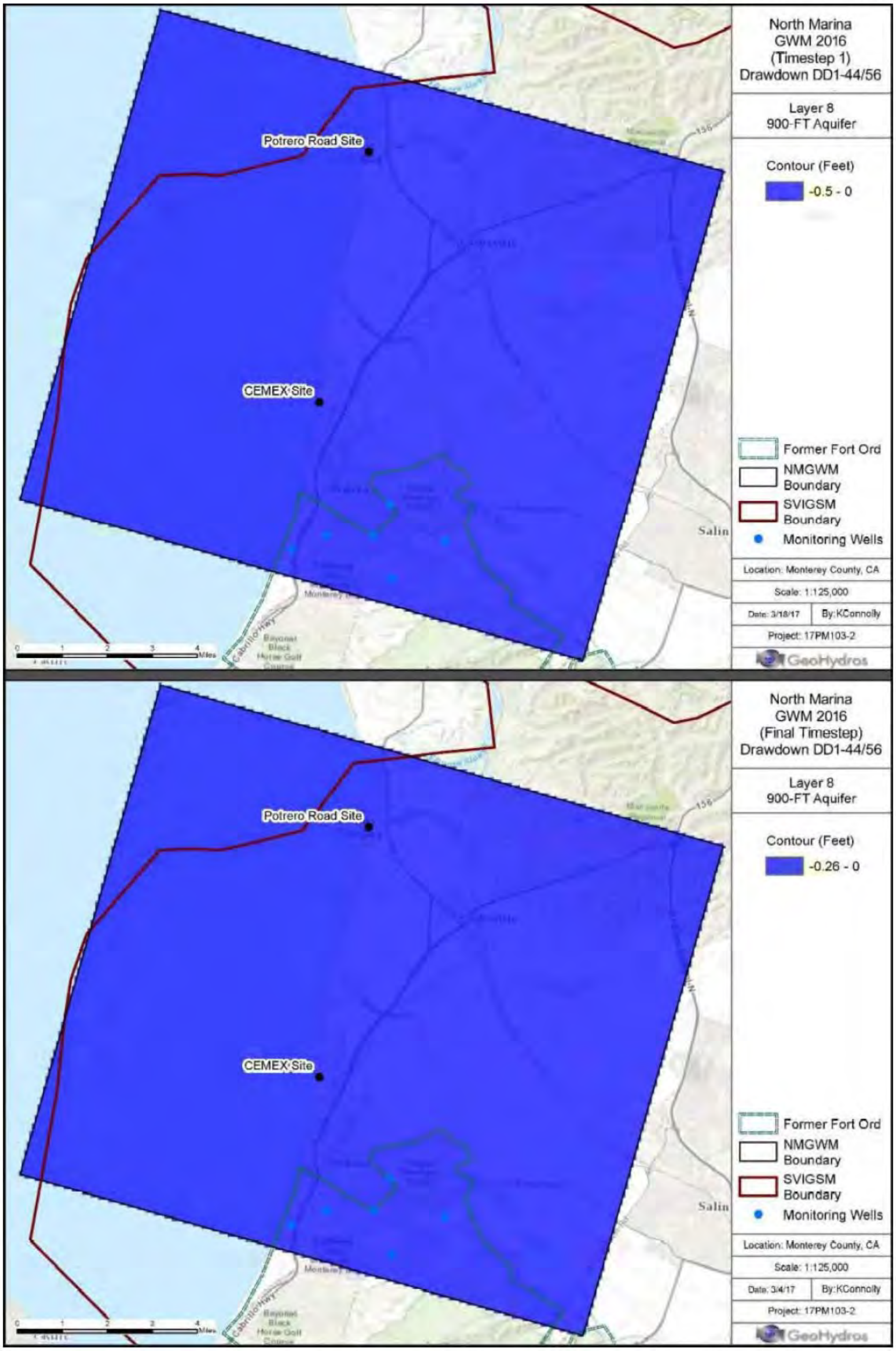


Figure 21.
Simulated drawdown in the 900-FT Aquifer due to pumping as defined in scenario DD1-44/56 after the first and last timestep in the calibrated model's 32-year simulation period.

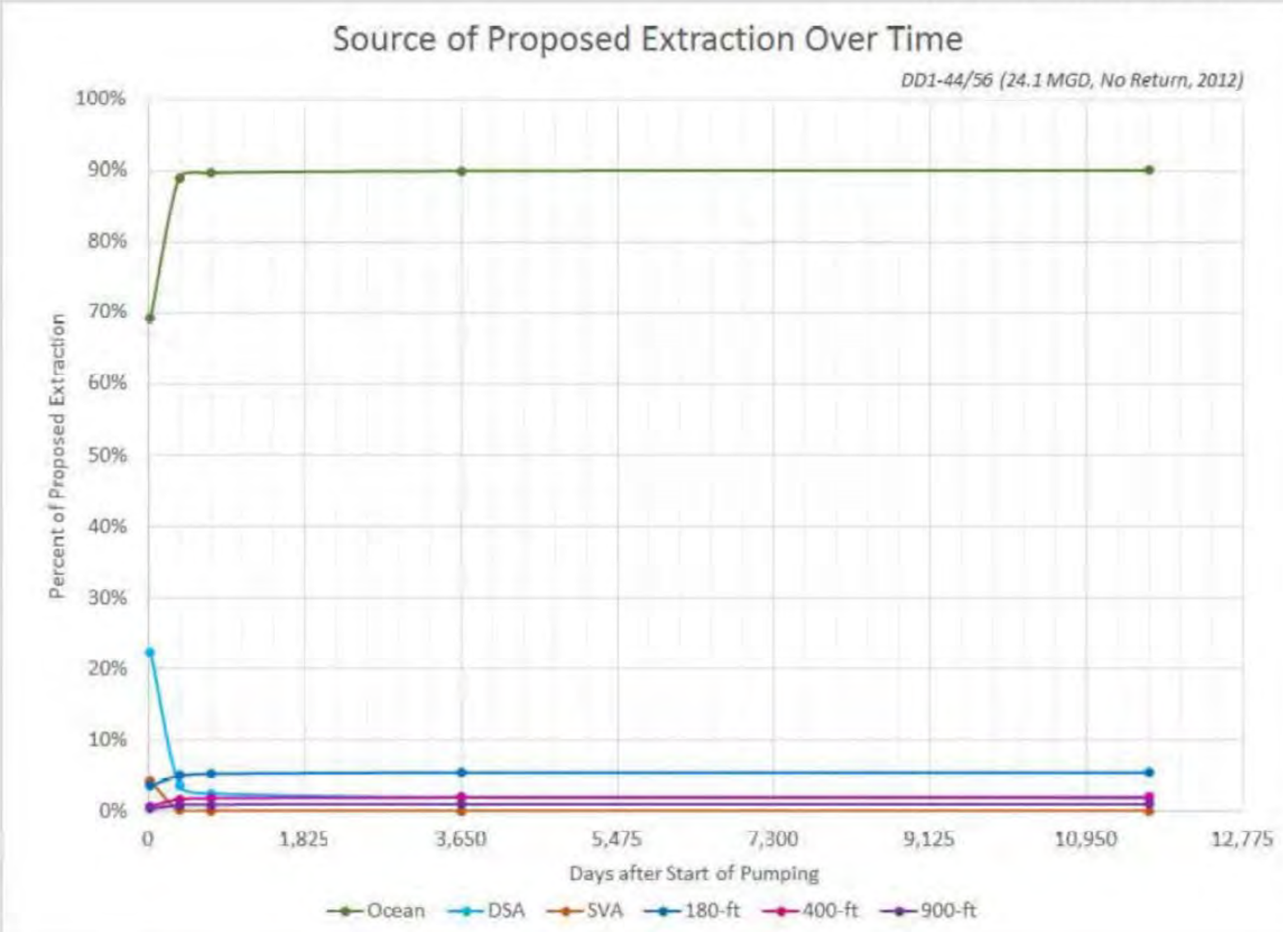


Figure 22.
Plot showing how the source of water to the proposed extractions is predicted to evolve over time.

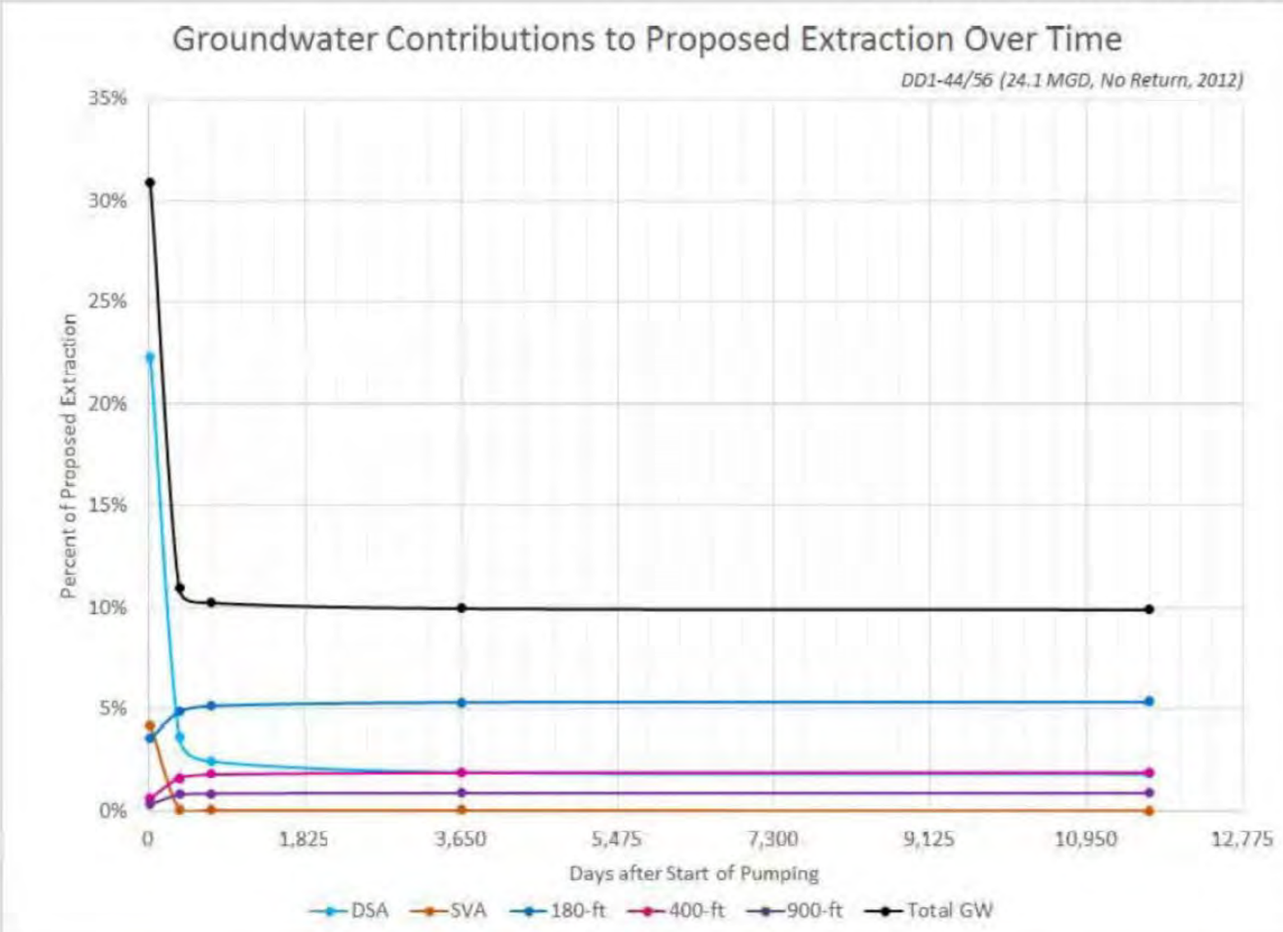


Figure 23.
Plot showing how the contribution from groundwater to the proposed wells is predicted to evolve over time.

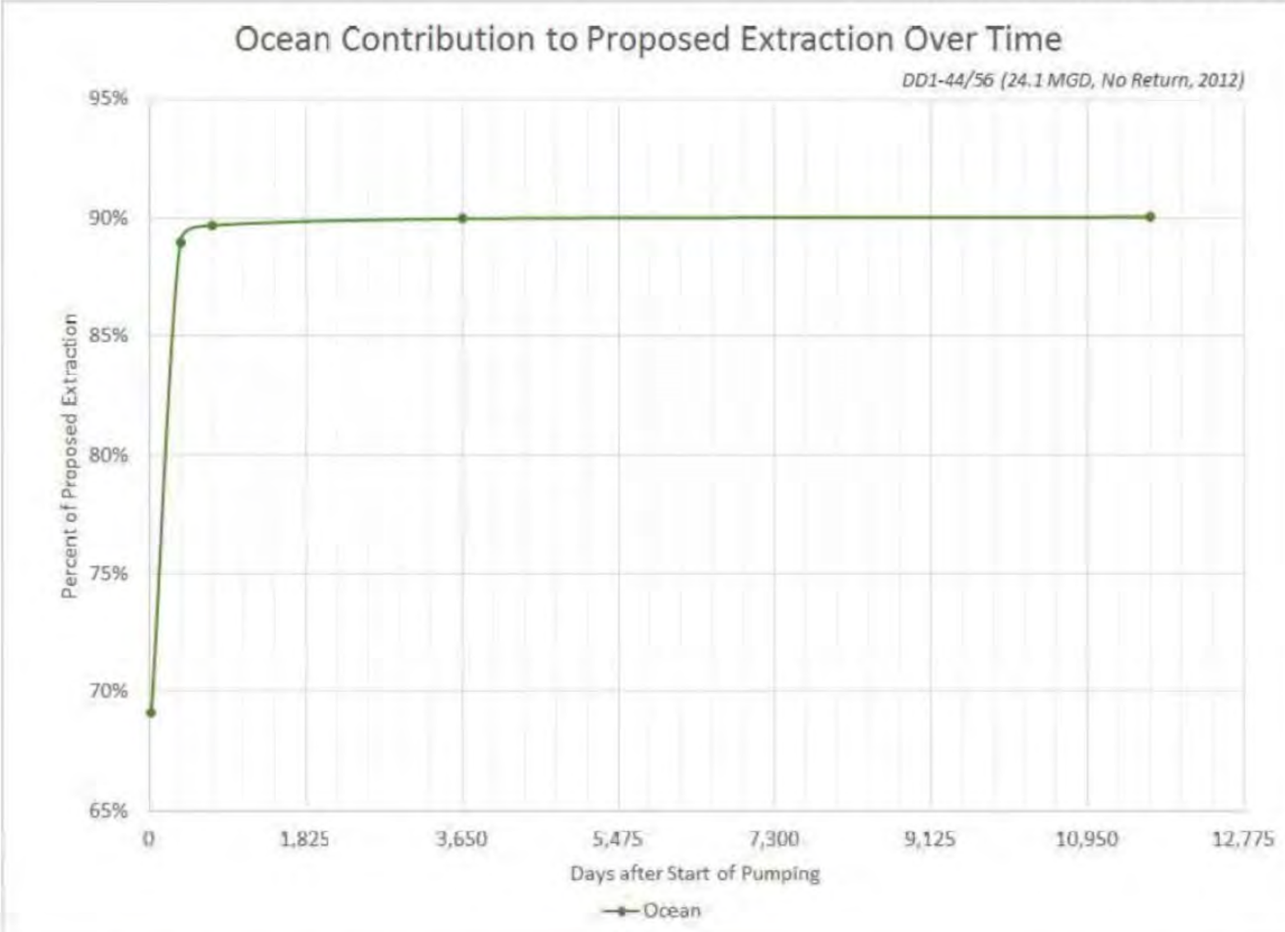


Figure 24.
Plot showing how the contribution from the ocean to the proposed wells is predicted to evolve over time.

28 March 2017

MEMORANDUM

To: Keith Van Der Maaten, P.E., Marina Coast Water District
Michael Wegley, P.E., Marina Coast Water District

From: Vera Nelson, P.E., Erler & Kalinowski, Inc.
Anona Dutton, P.G., C.Hg, Erler & Kalinowski, Inc.

Subject: Comments Regarding California America Water Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017
Marina Coast Water District, California
(EKI B60094.01)

On behalf of the Marina Coast Water District ("MCWD" or "District"), Erler & Kalinowski, Inc. ("EKI") has reviewed and prepared comments on the California America Water ("CalAm") Monterey Peninsula Water Supply Project ("MPWSP" or "Project") Draft Environmental Impact Report/Environmental Impact Statement, released 13 January 2017 ("DEIR/EIS"). The DEIR/EIS was prepared on behalf of the California Public Utilities Commission ("CPUC") and the Monterey Bay National Marine Sanctuary ("MBNMS"). The DEIR/EIS analyzes the potential environmental impacts of the proposed CalAm Project which includes an intake system consisting of 10 subsurface slant wells at the CEMEX sand mining site near the City of Marina; a desalination plant; a brine discharge system; product water conveyance pipelines; one pump station; storage facilities; and improvements to the existing Seaside Groundwater Basin's aquifer storage and recovery ("ASR") system. The proposed intake system lies immediately northwest of MCWD's Service Area, which includes the Central Marina Service Area, the MCWD Sphere of Influence ("SOI"), and the Ord Community Service Area, see Figure 1 (Shaaf & Wheeler, 2016).

A central issue addressed in the DEIR/EIS relates to CalAm's legal right to extract source water for the Project from offshore aquifers of the Salinas Valley Groundwater Basin ("SVGB"). This issue is addressed by the State Water Resources Control Board ("SWRCB") in its 2013 letter included in Appendix B2 of the DEIR/EIS, which states that in order for CalAm to appropriate groundwater from the SVGB, the DEIR/EIS must demonstrate that the proposed Project "*will not* *harm or cause injury to other basin users*". The SWRCB (2013) makes specific recommendations regarding additional studies and analyses required to make such a demonstration.

EKI's comments on the DEIR/EIS evaluate: (1) the adequacy of information presented in the DEIR/EIS to meet the SWRCB's requirement that the proposed Project "*will not harm or cause injury to other basin users*", and (2) whether the Project specifically has the potential to harm or cause injury to MCWD interests in the local subbasins. Where information is found to be inadequate, additional studies, demonstrations, and/or mitigation measures are identified. Specific issues discussed in this comment letter are summarized below.

- **The DEIR/EIS does not incorporate water quality from the Dune Sand Aquifer and 180-Foot Aquifer from nearby Fort Ord where over 300 monitoring wells have been installed.** The omission of these data leads to an incomplete understanding of hydrogeologic conditions and the importance of the Dune Sand Aquifer in limiting saltwater intrusion and providing fresh water recharge to the 180-Foot Aquifer within MCWD's service area. Fort Ord water quality data and water quality data collected from Cal Am monitoring wells show that fresh water exists in both the Dune Sand Aquifer and the upper 180-Foot Aquifer outside of the immediate area of the CEMEX site. This information is critical to the evaluation of the Project which will influence groundwater flow in these zones and disrupt the current system equilibrium.

- **The DEIR/EIS dismisses the potential beneficial use of groundwater within the Dune Sand and 180-Foot Aquifers.** Their characterization is based on assumed "poor water quality" and the current absence of groundwater production wells. This characterization is inconsistent with available monitoring well data, the Water Quality Control Plan for the Central Coastal Basin "Basin Plan" (RWQCB, 2016), and the remedial action objectives applied to these aquifer zones at Fort Ord, where millions of dollars have been spent restoring groundwater to drinking water standards. The DEIR/EIS also fails to consider the Project's impact on potential beneficial use of these aquifer zones for storage or augmentation of groundwater supplies through applied recharge. Multiple studies and field investigations have been conducted by MCWD since 2008 to assess such groundwater recharge options at the nearby Armstrong Ranch, many of which would be precluded by the Project.

- **The DEIR/EIS provides inadequate documentation of groundwater modeling inputs and outputs to facilitate transparency, public review, and future verification of results**. The DEIR/EIS does not include figures identifying assumed baseline water levels in each aquifer zone so hydraulic gradients can be verified. This issue is of particular concern for the Dune Sand Aquifer where model calibration results for Fort Ord wells are extremely poor. The DEIR/EIS also does not identify groundwater flow paths prior to and after Project implementation so changes to salt water migration patterns can be assessed and effects of boundary conditions can be evaluated. The use of superposition also precludes verification of modeling results through future monitoring. Most importantly, the modeling does not assess potential water quality changes to the Dune Sand Aquifer and the upper 180-Foot Aquifer that will occur as a result of reduced recharge from the Dune Sand Aquifer and induced saltwater migration inland of the Project's slant wells.

- **Groundwater modeling presented in the DEIR/EIS predicts that extraction from the slant wells will create significant water level declines within in the Dune Sand and 180-Foot Aquifers.** Although it is impossible to accurately assess the impacts of the Project on groundwater levels within MCWD's service area, given the poor model calibration for the Dune Sand and 180-Foot Aquifers south of the Salinas River, the model does predict that drawdowns will extend between 1.5 and 4.5 miles inland into MCWD's service area. Nonetheless, the DEIR/EIS does not acknowledge that any negative impacts to water quality will occur as a result. Cal Am proposes to replace groundwater withdrawn from these aquifer zones by in-lieu recharge in the 400-Foot Aquifer outside of MCWD's service area. This proposed in-lieu recharge, however, will not mitigate the Project's adverse impacts to Dune Sand and 180-Foot Aquifers or avoid harm to MCWD water rights. Nor does it recognize that the Project will preclude MCWD from utilizing the Dune Sand Aquifer for storage and/or augmentation of groundwater supplies through surface water recharge at Armstrong Ranch.

Further information in support each of these comments is provided below.

1. THE PROJECT DOES NOT DEMONSTRATE COMPLIANCE WITH SWRCB REQUIREMENTS FOR APPROPRIATION OF GROUNDWATER FROM THE SVGB

The SWRCB 2013 letter included in Appendix B2 of the DEIR/EIS (SWRCB, 2013) states: MCWD-EKI-1

To appropriate groundwater from the Basin, the burden is on Cal-Am to show their project will not cause injury to other users… The groundwater quality in the Basin will be a key factor in determining the effects of extraction on groundwater users in the Basin, assessing *any potential injury that may occur, and measures that would be necessary to compensate for it…*

Additional information is needed to accurately determine MPWSP impacts on current and future conditions of the Basin regardless of whether the extraction occurs from pumped or gravity wells. First, specific information is needed on the depth of the wells and aquifer conditions. Studies are needed to determine the extent of the Dune Sand Aquifer, the water quality and water quantity of the Dune Sand Aquifer, the extent and thickness of the Salinas Valley Aquitard, and the extent of the 180-Foot Aquifer.

As described in detail in the following comments, the DEIR/EIS does not meet the SWRCB criteria for demonstrating that the Project *will not cause injury*. In particular, through omission of publicly available data, the DEIR/EIS does not accurately characterize water quality and hydrogeologic conditions within the Dune Sand Aquifer and 180-Foot Aquifer in the vicinity of Project which includes the northern portion of MCWD's Service Area (i.e., including the Ford Ord portion of the Monterey Subbasin) (see Figure 2). As shown in Figures 3 and 4, water quality data, specifically Total Dissolved Solids ("TDS") and chloride data, have been collected over the years in the vicinity of the Project and south into Fort Ord. These data show that groundwater with TDS concentrations of less than 3,000 milligrams per liter ("mg/L"), which is the SWRCB Resolution No. 88-63 criteria *potentially suitable, for municipal or domestic water supply*[1] standard for drinking water, is present in the Dune Sand Aquifer and the 180-Foot Aquifer in the vicinity of the Project site and south into Fort Ord. These data show that the Dune Sand Aquifer and upper 180-Foot Aquifer are an important source of water in the region. As a result of this failure, the DEIR/EIS fails to analyze or disclose that increased groundwater extraction from Project wells

MCWD-EKI-1 cont.

[1] SWRCB Resolution No. 88-63 states:

All surface and ground waters of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be designated by the Regional Boards with the exception of surface and ground waters where:

a. *The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 us/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or*
b. *there is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or*
c. *The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.*

would impact the equilibrium of that system and the local and regional groundwater quality. Therefore, the DEIR/EIS does not demonstrate compliance with the SWRCB requirements for appropriation of groundwater from the SVGB

MCWD-EKI-1 cont.

2. PROJECTED IMPACTS FROM THE PROJECT ARE INCONSISTENT WITH THE BASIN PLAN

Potential degradation of groundwater water quality in the Dune Sand Aquifer and the 180-Foot Aquifer by the Project violates the Water Quality Control Plan for the Central Coastal Basin "Basin Plan" (RWQCB, 2016), which designates <u>all groundwater</u> within the SVGB as potential drinking water source[2]. As shown in Figures 3 and 4, groundwater in the Dune Sand Aquifer and upper 180-Foot Aquifer inland of the Project site meets the SWRCB Resolution No. 88-63 criteria for *potentially suitable, for municipal or domestic water supply*. This beneficial use designation within the Basin Plan is articulated as an applicable or relevant and appropriate requirement ("ARAR") within the Fort Ord Basin Wide Record of Decision (U.S. Department of the Army, 1997). As such, national and state primary drinking water standards are identified as ARARs and established as remedial action objectives for groundwater in the Dune Sand Aquifer and 180-Foot Aquifer at chemically impacted sites at Fort Ord. Millions of dollars have been, and continue to be spent, to remediate groundwater to meet these remedial action objectives within these aquifer zones. Therefore, statements made within the DEIR/EIS that imply that these aquifer zones have poor water quality and therefore have limited or no beneficial use, are inconsistent with the Basin Plan and any potential degradation of groundwater within these aquifers must be addressed within the DEIR/EIS.

MCWD-EKI-2

The Basin Plan further states that:

> *Controllable water quality shall conform to the water quality objectives contained herein. When other conditions cause degradation of water quality beyond the levels or limits established as water quality objectives, controllable conditions shall not cause further degradation of water quality*[3].

Therefore, further degradation of existing water quality <u>even within brackish areas of the aquifers</u> is also precluded under the Basin Plan.

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[2] Basin Plan *Chapter 2.I. Present and Potential Beneficial Uses*. States: "Ground water throughout the Central Coastal Basin, except for that found in the Soda Lake Sub-basin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use."

[3] RWQCB,2016. Chapter 3. Section II Water Quality Objectives. Page 3-1

3. HYDROGEOLOGIC CONDITIONS AND WATER QUALITY IN DUNE SAND AQUIFER AND UPPER 180-FOOT AQUIFER ARE INCOMPLETELY CHARACTERIZED IN THE DEIR/EIS

The Project slant wells at the CEMEX Site will be screened through the Dune Sand Aquifer and into the 180-Foot Aquifer. These wells will draw groundwater from these zones and potentially underlying aquifer zones. Therefore, characterization of groundwater quality and flow conditions within these aquifer zones is critical to understanding Project impacts. Cal Am recently installed eight groundwater monitoring well clusters (MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9) to further assess baseline groundwater conditions and monitor the response to extraction at the test slant well installed at the CEMEX Site. When information from these wells is combined with data from Fort Ord, a basic understanding of groundwater flow and quality conditions in the Project vicinity and within the northern portion of MCWD's Service Area can be inferred with reasonable confidence; such work or understanding is <u>not reflected</u> in the DEIR/EIS.

MCWD-EKI-3

Specifically, the baseline water level data and water quality information presented in the DEIR/EIS for the adjacent MCWD Service Area is incomplete. No water level maps for the Dune Sand Aquifer are included, although, as described below, water level data have been collected from local and CalAm monitoring wells that, when plotted, show a Bay-ward gradient and an apparent connection between the Dune Sand Aquifer and the 180-Foot Aquifer in the vicinity of the Project site. In addition, publicly-available water quality data from Fort Ord, where over 300 monitoring wells in the Dune Sand Aquifer and 180-Foot Aquifer have been installed, are not presented or analyzed.

Further, although the DEIR/EIS estimates projected drawdown within the Dune Sand Aquifer and 180-Foot Aquifer, the DEIR/EIS does not address the impacts of the Project on freshwater recharge from the Dune Sand Aquifer into the 180-Foot Aquifer. It is apparent that the modeling does not accurately characterize baseline water level conditions in these aquifer zones based on the limited information included in the DEIR/EIS for this area and extremely poor model calibration results are reported for the Dune Sand Aquifer (i.e., the root mean square error between modeled and observed water levels for the Dune Sand Aquifer is 30.2 feet).

3.1 The DEIR/EIS Does Not Adequately Characterize or Address Project Impacts to Groundwater Flow Within and Between the Dune Sand and 180-Foot Aquifers

The DEIR/EIS provides limited information regarding groundwater levels and hydraulic gradients in the Dune Sand Aquifer and 180-Foot Aquifer in the northern portion of MCWD's Service Area although over 300 monitoring wells have been installed at Fort Ord in these aquifer zones. For example, DEIR/EIS Figures 4.4-5 and 4.4-7 only present baseline water level data for the 180-Foot Aquifer in the 180/400 Foot Subbasin north of the Salinas River and in the Seaside Subbasin, respectively – <u>no data are presented for the Monterey Subbasin</u>, which lies between those two subbasins and includes the MCWD Service Area. Selected Fort Ord wells have been incorporated into the numerical model, however calibration results for the Dune Sand Aquifer are poor and do not accurately reflect baseline conditions[4]. The DEIR/EIS's failure to adequately characterize baseline conditions in the Dune Sand Aquifer is exemplified in its statement: MCWD-EKI-3.1

> *The groundwater flow patterns within the Dune Sand Aquifer are not known but, based on the aquifer depth and geologic structure, it is reasonable to expect that they would be tidally controlled, with little to no net horizontal flow in any particular direction[5].*

Draft Technical Memorandum No.2 ("TM2") referenced in the DEIR/EIS (Geosciences, 2016), includes water level maps for the Dune Sand Aquifer and 180-Foot Aquifer[6]. However, these maps further complicate and obscure the continuity of groundwater flow within the Dune Sand Aquifer, by separating this aquifer into a "perched zone" and "-2 foot aquifer zone", and incorrectly imply that groundwater flow is discontinuous between Fort Ord and the northern portion of MCWD service area in both the Dune Sand and 180-Foot Aquifers. Copies of these maps are presented in Appendix B hereto.

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[4] The root mean square error between modeled and observed water levels for the Dune Sand Aquifer was 30.2 feet.

[5] DEIR/EIS Section 4.4.1.3 Groundwater Flow and Occurrence; Groundwater Elevations and Flow Directions page 4.4-14

[6] TM2 Figure 9- Groundwater Elevations – "Perched Aquifer" (Using Fort Ord "A" Aquifer Wells, MCPCA 35-Foot Aquifer Wells, and MPWSP MW-5S) Fall 2015; Figure 10 - Groundwater Elevations – "Dune Sand Aquifer" (Using MCPCA -2-Foot Aquifer Wells, and MPWSP Shallow Completions and showing Fort Ord "A" Aquifer Monitoring Wells) Fall 2015; Figure 11- Groundwater Elevations – "180-FTE/180-Foot Aquifer" (Using Fort Ord Upper 180-Foot Aquifer Wells and MPWSP Middle Completions) Fall 2015

In contrast to this finding, EKI used water level data collected from CalAm[7] and Fort Ord wells to map hydraulic gradients in the Dune Sand Aquifer and 180-Foot Aquifer in the northern portion of MCWD's Service Area. These maps are presented on Figures 5 and 6, respectively, and present water level data measured in:

(a) Cal Am monitoring wells on 3 May 2016, immediately prior to the restart of extraction from the slant well[8], and
(b) Fort Ord wells in early June 2016, as part of the self-monitoring program conducted by the Army.

As shown on Figure 5, groundwater in the Dune Sand Aquifer in the northern portion of MCWDs Service Area is significantly above sea level and flows west towards Monterey Bay. In contrast, as shown in Figure 6, groundwater in the 180-Foot Aquifer flows eastward towards a regional pumping center in the interior of the Salinas Valley. Based on the head differences between these aquifers it is apparent that the Dune Sand Aquifer is "perched" on the Salinas Valley Aquitard in inland areas but has some degree of connection with the 180-Foot Aquifer as one moves west towards the Bay (i.e., the head difference between the two aquifer systems lessens near the Project Site).

MCWD-EKI-3.1 cont.

These water level data in combination with water quality data obtained from Fort Ord indicate that fresh water from the Dune Sand Aquifer seeps down into the upper portion of the 180-Foot Aquifer upgradient of coast and the Project site and then "U-turns" and flows back into the basin. The exact location and volume of groundwater that seeps from the Dune Sand Aquifer into the upper 180-Foot Aquifer and makes this "U-Turn" has not been quantified. However, 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 salt water intrusion in the upper 180-Foot Aquifer in that area. This natural mounding has maintained freshwater in the upper portion of the 180-Foot Aquifer under much of Fort Ord (see Figures 3 and 4). This natural barrier appears to have been undermined north of Fort

[7] Cal Am installed 8 well clusters (MW-1 and MW-3 through MW-9) in the northern portion of MCWD's Service Area in 2015. These wells were installed pursuant to the requirements of Coastal Development Permit and a request by the Monterey County Water Resource Agency ("MCWRA").

[8] Water level data from MRWPCA-1 collected during the baseline period ending on 11 April 2015, indicates that the potentiometric head elevation was -5 ft MSL. Although the transducer in this well apparently failed after the baseline period, review of water level data from nearby Cal Am 180-Foot Aquifer monitoring wells (MW-7M, MW-5M) indicates that water levels measured in 2015 are generally consistent with those measured in 2016, outside of the direct influence of the slant well and that water levels declined approximately 2 to 4 feet between April and May in the 180-Foot Aquifer in 2015 and 2016. Therefore, an estimated water level of -7 ft MSL has been included on Figure 6 for MRWPCA-1, for general reference. Replacement of the transducer in this well is recommended along with hand measurements to verify hydraulic gradients in this area.

Ord through groundwater extraction and/or salt water discharges into the Dune Sand Aquifer at the CEMEX Plant, and would likely be further disturbed by the Project. MCWD-EKI-3.1 cont.

3.2 The DEIR/EIS Does Not Adequately Characterize Water Quality Conditions in the Dune Sand Aquifer and 180-Foot Aquifer

MCWD-EKI-3.2

The water quality data included in the DEIR/EIS for the Dune Sand Aquifer and the 180-Foot Aquifer is limited to the immediate vicinity of the CEMEX facility where salt water intrusion has occurred and does not accurately characterize water quality as more broadly observed in these aquifer zones. For example, statements made in the DEIR/EIS indicate that groundwater within Dune Sand Aquifer and the 180-Foot Aquifer are directly and widely impacted by sea water[9,10]. However, the absence of inclusion of data from Fort Ord leads to an incomplete understanding of hydrogeologic conditions and the importance of the Dune Sand Aquifer in actually limiting saltwater intrusion and providing fresh water recharge to the 180-Foot Aquifer within the northern portion of MCWD's Service Area and inland of the Project site. Contrary to statements made in the DEIR/EIS, water level and water quality data obtained at Cal Am's recently installed monitoring well clusters MW-5, MW-6, MW-7 and Monterey Regional Water Pollution Control Agency ("MRWPCA") wells 1 and 2, indicate that chloride and TDS concentrations in the Dune Sand Aquifer and upper portion of the 180-Foot Aquifer meet SWRCB Resolution No. 88-63 criteria as a potential drinking water source and California Secondary Drinking Water Standards for these constituents[11]. Maps depicting TDS and chloride concentrations detected in groundwater samples most recently collected from Fort Ord and CalAm wells screened in these zones over the last 10 years (i.e., 2006 through 2016) are presented on Figures 3 and 4. These figures show that, outside of the immediate area of the CEMEX Site, groundwater in these aquifer zones is <u>not brackish</u> as characterized in the DEIR/EIS.

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[9] On page 4.4-6 and 4.4-8 the DEIR/EIS states *Water quality of the Perched A Aquifer and Dune Sand Aquifer is directly influenced and controlled by seawater. Because of the aquifer's proximity to the ocean, most of the water in the Dune Sand Aquifer has been intruded by seawater and is considered saline to brackish (Kennedy/Jenks, 2004). This influence decreases inland where the infiltration of precipitation and applied agricultural water has more of an influence.*

[10] On page 4.4-11the DEIR/EIS states *Based on the recent groundwater testing data discussed in the Groundwater Quality subsection below, the quality of water in the 180-FTE Aquifer is directly influenced by seawater; this influence extends for miles inland, as discussed below in the Seawater Intrusion section. The lower portion of the proposed slant wells at the CEMEX site would have well screens installed across and would draw water from these deposits*

[11] The recommended and upper secondary maximum contaminant levels for chloride are 250 mg/L and 500 mg/L. The recommended and upper secondary maximum contaminant level for total dissolved solids (TDS) is 500 mg/L and 1000 mg/L, respectively. (California Code of Regulations, Title 22. Division 4 Environmental Health, Chapter 15. Domestic Water Quality and Monitoring Regulations, Article 16, dated 27 September 2006.

The information presented in Figures 3 and 4 is consistent with data collected at Fort Ord in the late 1990's which was presented in Harding ESE's, *Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, California*, prepared for MCWRA dated 12 April 2001. (Harding, 2001). A copy of selected figures which depict water quality information from the upper 180-Foot Aquifer zone are included in Appendix A, hereto.

Geologic, water level, and water quality information from Fort Ord indicates that there are multiple clay zones within the 180-Foot Aquifer. As one moves deeper within this aquifer the salinity increases. A north-south transect that extends from Fort Ord into the area inland of the CEMEX facility was constructed (Figure 7). The transect identifies well screen depths and TDS and chloride measurements in wells screened in the 180-Foot Aquifer (Figure 8). These figures show that wells at Fort Ord that are screened in the upper 180-Foot Aquifer contain fresh water, but that salinity likely increases with depth. This is particularly apparent at well MCWD#05[12], which has a long screened interval that extends across the upper and lower portions of the aquifer[13]. Vertical profiling conducted in 1991 during groundwater extraction indicated:

MCWD-EKI-3.2 cont.

- TDS concentrations of <1,000 mg/L in the upper portion of the screen interval (i.e., elevations above -155 ft MSL); and
- TDS concentrations of approximately 5,000 mg/L at bottom of screen interval (i.e., elevations between -195 ft MSL to -235 ft MSL) (Stalle, Gardner & Dunne, Inc., 1991).

These data provide insight regarding TDS concentrations detected in wells with long screened intervals, such as those constructed by CalAm, which likely reflect a mix of lower salinity (fresh) water from the upper portions of the 180-Foot Aquifer and more saline water from the deeper portion of the aquifer. Therefore, data from these wells is difficult to interpret and inadequate for characterizing salinity within the upper portions of the 180-Foot Aquifer. It is likely that the well known saltwater intrusion maps prepared by MCRA and cited in the DEIR/EIS are based on wells screened in the lower portion of the 180-Foot Aquifer[14].

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[12] Well MCWD#05 is screened in the 180 Foot Aquifer and was shut down in 1983 due to elevated TDS concentrations (i.e., up to 4,000 mg/L).

[13] The screen at well MCWD#05 extends from approximately 216 ft below ground surface ("bgs") to 370 ft bgs; corresponding to an elevation of -91 feet mean sea level ("ft MSL") to -245 ft MSL

[14] In locations where wells screen across both fresh water and saline water and vertical gradients exist between zones TDS concentrations measured in the well bore may only reflect the salinity of groundwater from the zone at higher hydraulic head, as groundwater flows down the well bore from the zone with higher head to lower head, and therefore samples collected are not reflective of water quality in both zones. Such conditions were observed at MCWD#05, where vertical profiles of EC measurements during pre-pumping static conditions were all 500 micro

Arguments have been made that extraction from the upper 180-Foot Aquifer would inevitably draw water from deeper zones. However, numerous groundwater extraction wells have been operating within the upper 180-Foot Aquifer at Fort Ord to facilitate remediation of volatile organic compounds. These wells have maintained low salinity levels, demonstrating the significant vertical stratification of salinity within higher permeability sediments within the 180-Foot Aquifer. These conditions confirm the aquifer's beneficial use designation within the Basin Plan and substantiate remedial action objectives established at Fort Ord, which are reviewed by the U.S. Environmental Protection Agency every five years, and continue to drive remedial efforts at Fort Ord to bring groundwater back to drinking water standards. As such, statements made in the DEIR/EIS that dismiss the beneficial use and conditions of the local groundwater system are inconsistent with the data and minimize the potential impact that the Project will have on degrading groundwater quality. MCWD-EKI-3.2 cont.

4. THE PROJECT WILL IMPACT GROUNDWATER CONDITIONS AND MCWD'S ABILITY TO IMPLEMENT GROUNDWATER RECHARGE AUGMENTATION AT ARMSTRONG RANCH

4.1 Impacts of the Project on Groundwater Conditions

Construction and operation of the Project as proposed will (a) limit recharge of fresh water from the Dune Sand Aquifer into the upper 180-Foot Aquifer, (b) influence this natural hydraulic barrier and (c) decrease the existing freshwater zone within a portion of MCWD's service area. The estimated area of impact from the Project's proposed intake system on the Dune Sand and 180-Foot Aquifer is presented on Figures 9 and 10. This figure shows that the zone of influence extends anywhere from 1.5 miles to 4.5 miles inland based on modeled results[15]. As shown in these figures, withdrawal of groundwater from the proposed slant wells will draw fresh water from Dune Sand Aquifer, which in turn will decrease recharge of such water into to the 180-Foot Aquifer. The full extent of these impacts is unknown and must be evaluated prior to Project approval. MCWD-EKI-4

Further, water within both the Dune Sand Aquifer and upper 180-Foot Aquifer will be fully saline within the zone of capture of the slant wells, as ocean water will be drawn into these areas by the slant wells. The predicted lateral extents of these capture zones based on groundwater modeling

siemens (i.e., 270 mg/L TDS). These conditions could explain, low salinity levels measured in samples collected in Some Cal Am wells and MRWPCA wells 1 and 2, which are screened at the base of this aquifer zone.

[15] Figure E3 of Appendix E2 of DEIR EIS

results are depicted on Figure 5.6 of Appendix E2 of the DEIR/EIS and have been included on Figures 11 and 12, herein. No current water quality data exists in the southern portion of these capture zones which may extend into areas where non-saline water currently exists. Further characterization of water quality in these areas is needed prior to Project approval to verify that degradation of the beneficial uses of groundwater will not occur at these locations. In addition, it is anticipated that the salinity of groundwater within the Dune Sand Aquifer and 180-Foot Aquifer will increase immediately inland of these capture zones as saline water is drawn into these areas to backfill groundwater that is withdrawn. The DEIR/EIS discounts such impacts as it erroneously characterizes all water within the area as salt water intruded and does not recognize its designated beneficial use. The modeling in the DEIR/EIS must estimate changes in salinity within MCWD's Service Area.

MCWD-EKI-4 cont.

4.2 Impacts of MPWSP on MCWD's Ability to Implement Groundwater Recharge Augmentation at Armstrong Ranch

The Project will also affect MCWD's ability to utilize the Dune Sand Aquifer for storage and/or groundwater recharge augmentation at Armstrong Ranch. Armstrong Ranch is a 230 acre property located with MCWD's sphere of influence and owned by MCWD (Figures 1 and 2). MCWD has conducted multiple studies to evaluate the potential for groundwater recharge augmentation at Armstrong Ranch. These studies include:

- Todd Engineers, 2008. *Phase I Investigation Armstrong Ranch Groundwater Storage Project.* Marina Coast Water District, Marina;
- RMC, 23 May 2008. *Preliminary Draft Technical Memorandum, Armstrong Ranch: Seasonal Subsurface Storage of Recycled Water, Modeling TM;*
- RMC, 2 October 2008. *Draft Technical Memorandum, Marina Coast Water District – Water Augmentation Project; and*
- EKI, 16 January 2017. *Technical Memorandum, Preliminary Feasibility Assessment – Potential to Conduct Augmented Groundwater Recharge at the Armstrong Ranch Property*

These studies evaluate the potential for infiltrating and or/storing surplus Salinas River storm flows and/or tertiary treated recycled water from MRWPCA in the Dune Sand Aquifer and potentially extract stored water from the Dune Sand or 180-Foot Aquifers. The studies include:

(a) Compilation/evaluation of historic water levels from (3) existing Dune Sand Aquifer monitoring wells located on Armstrong Ranch, completion of four (4) borings and four cone penetrometer testing ("CPT") sites to assess geologic conditions in the Dune Sand Aquifer at Armstrong Ranch, (Todd, 2008);
(b) Numerical groundwater monitoring to estimate the volume of water that could be stored in the Dune Sand Aquifer through infiltration, (RMC, 2008a);
(c) Conceptual plans and cost estimates for storage of Salinas River winter storm flows that exceed National Oceanic and Atmospheric Administration National Marine Fisheries ("NOAA") instream requirements within the Dune Sand Aquifer (RMC, 2008b);
(d) A feasibility study assessing the viability and potential costs for increasing MCWD's water supplies through augmented groundwater recharge at the Armstrong Ranch Property (EKI, 2017).

MCWD-EKI-4 cont.

The studies conclude that local hydrogeologic conditions would support enhanced groundwater recharge at Armstrong Ranch. One of the simplest and most cost effective options evaluated as part of the EKI's (2017) feasibility study focuses on direct infiltration of surplus Salinas River storm flows and/or tertiary treated recycled water from MRWPCA into the Dune Sand Aquifer for later extraction from the 180-Foot Aquifer at Armstrong Ranch[16]. Further description of this option is illustrated on Figure 13.

Implementation of such an option could be used to augment MCWD groundwater supplies by approximately 1,500 acre-feet per year ("AFY") to 3,000 AFY, and could aid in limiting salt water intrusion within the 180-Foot Aquifer. The Project as proposed, however, would preclude MCWD from utilizing the Dune Sand Aquifer for storage and/or groundwater recharge augmentation at Armstrong Ranch, because groundwater within the Dune Sand Aquifer downgradient of Armstrong Ranch would be drawn into the Project's slant wells and not return to the groundwater system within MCWD's service area.

5. THERE ARE SIGNIFICANT DEFICIENCIES IN THE GROUNDWATER MODELING APPROACH AND PRESENTATION

MCWD-EKI-5

The DEIR/EIS provides inadequate documentation of groundwater modeling inputs and outputs to facilitate transparency and public review of results. For example, the DEIR/EIS does not include

[16] Salinas River storm flows could be augmented by tertiary treated wastewater flows, if it were demonstrated that waste water flows had at least one (1) year of residence time within the aquifer.

figures identifying assumed and calibrated baseline water levels in each aquifer zone so hydraulic gradients can be verified. This issue is of particular concern south of the Salinas River for the 180-Foot Aquifer and the Dune Sand Aquifer where model calibration results for Fort Ord wells are extremely poor and water quality conditions are mischaracterized in statements made in the DEIR/EIS (see Section 3.1 herein). The DEIR/EIS also does not identify groundwater flow paths prior to and after Project implementation so changes to salt water migration patterns can be assessed and effects of boundary conditions can be evaluated. The use of a superposition model, also precludes verification of modeling results through future monitoring and obscures potential model deficiencies. Most importantly, the modeling does not assess potential water quality changes to the Dune Sand Aquifer and the upper 180-Foot Aquifer that will occur as a result of reduced recharge from the Dune Sand Aquifer and induced saltwater migration inland of the Projects slant wells. In order to evaluate potential impacts of the Project on salt water intrusion and water quality, a well calibrated density dependent fate and transport model must be used. The absence of this information does not meet the requirements specified by the SWRCB in its 2013 letter, discussed in Section 1 herein, and does not address the extent of the project's potential degradation of groundwater which would be in direct violation of the Basin Plan.

MCWD-EKI-5 cont.

6. IN-LIEU RECHARGE DOES NOT ADDRESS PROJECT IMPACTS ON MCWD'S SERVICE AREA

The DEIR/EIS states that slant wells will draw water and create water level declines within in the Dune Sand Aquifer and 180-Foot Aquifer approximately 1.5 to 4.5 miles inland of the slant wells within MCWD's service area, but does not acknowledge that any negative impacts to water quality will occur as a result of such withdrawals as it dismisses potential beneficial use of groundwater within these aquifer zones. Cal Am proposes to replace groundwater withdrawn from these aquifer zones by in-lieu recharge of the 400-foot aquifer within other areas of the SVGB. This replacement water does not mitigate impacts or avoid harm to MCWD water rights, nor does it recognize that the Project will preclude MCWD from utilizing the Dune Sand Aquifer for storage and/or augmentation of groundwater supplies through surface water recharge at Armstrong Ranch.

MCWD-EKI-6

7. CONCLUSIONS

The DEIR/EIS does not demonstrate the proposed Project "*will not harm or cause injury to other basin users*" as required by the SWRCB for CalAm to appropriate groundwater from the SVGB, (SWRCB, 2013). These comments demonstrate that prior to Project approval Cal Am must at a minimum:

MCWD-EKI-7

(a) Further characterize baseline hydrogeologic and salinity conditions in the Dune Sand and 180 Foot Aquifers in MCWD's Service Area, including installation of additional groundwater monitoring wells to establish baseline water quality conditions and facilitate future monitoring of groundwater within the Dune Sand Aquifer and upper and lower portions of the 180-Foot Aquifer within the predicted capture zone of the slant wells

(b) Expand/modify groundwater modeling and use a well calibrated density dependent fate and transport model to assess changes in salinity within each aquifer, including the upper 180-Foot Aquifer zone, to demonstrate that the Project will not degrade groundwater quality in MCWD's Service Area and not preclude MCWD's options for groundwater augmentation at Armstrong Ranch.

(c) Commit to future long-term monitoring of water levels and water quality within MCWD's Service Area if the Project is implemented to demonstrate that the Project does not degrade groundwater conditions within MCWD's service area and provide a mitigation plan to address any degradation in water quality that is observed. Such monitoring and mitigation should be conducted under the oversight of the RWQCB, to verify that the Project does not violate the provisions of the Basin Plan.

MCWD-EKI-7 cont.

ACRONYMS

ASR	Aquifer storage and recovery
Basin Plan	Water Quality Control Plan for the Central Coastal Basin
CalAm	California American Water
CPUC	California Public Utilities Commission
DEIR/EIS	Draft Environmental Report/Environmental Impact Statement
EKI	Erler & Kalinowski, Inc.
MBNMS	Monterey Bay National Marine Sanctuary
MCL	Maximum Contaminant Level
MCWD Service Area	Collectively refers to the Central Marina service area, MCWD sphere of influence (“SOI”), and Ord Community Service Area
MCWD:	Marina Coast Water District or District
MCWRA	Monterey County Water Resources Agency
MCWRA	Monterey County Water Resources Agency
MPWSP	Monterey Peninsula Water Supply Project
MRWPCA	Monterey Regional Water Pollution Control Agency
NOAA	National Oceanic and Atmospheric Administration National Marine Fisheries
RWQCB	Central Coast Regional Water Quality Control Board
SOI	Sphere of influence
SRDF	Salinas River Diversion Facility
SVGB	Salinas Valley Groundwater Basin
SVIGSM	Salinas Valley Integrated Groundwater Surface Model
SVWP	Salinas Valley water project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TM2	Geosciences Draft Technical Memorandum No. 2

FIGURES

Figure 1. MCWD Service Area

Figure 2. Northern portion of MCWD's Service Area

Figure 3. Groundwater Quality, TDS and Chloride – Dune Sand Aquifer

Figure 4. Groundwater Quality, TDS and Chloride – 180 Foot Aquifer

Figure 5. Groundwater Elevations – Dune Sand Aquifer

Figure 6. Groundwater Elevations –180 Foot Aquifer

Figure 7. Well Screen Transect A – A' Location – 180 Foot Aquifer

Figure 8. Well Screen Transect A – A'

Figure 9. Predicted Lateral Extent of Drawdown TDS/Chloride Concentrations (2006 – 2016) – Dune Sand Aquifer

Figure 10. Predicted Lateral Extent of Drawdown TDS/Chloride Concentrations (2006 – 2016) – (upper) 180 Foot Aquifer

Figure 11. Predicted Ocean Capture Zone and TDS/Chloride Concentrations (2006 – 2016) – Dune Sand Aquifer

Figure 12. Predicted Lateral Extent of Drawdown TDS/Chloride Concentrations (2006 – 2016) – (upper) 180 Foot Aquifer

Figure 13. Conceptual Map Groundwater Augmentation at Armstrong Ranch – Option 1

APENDICIES

Appendix A: Selected figures from Harding ESE, *Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, California*, prepared for Monterey County Water Resources Agency, dated 12 April 2001

Appendix B: Selected figures from Geoscience Monterey Peninsula Water Supply Project Hydrogeologic Investigation-TM2 Monitoring Well Completion Report. Released July 2016

REFERENCES

Alta, 2016. Final Operable Unit Carbon Tetrachloride Plume Second Quarter 2016 Groundwater Monitoring Report, Former Fort Ord, California, dated 29 August 2016

California Coastal Commission, 2014. Coastal Development Permit #A-3-MRA-14-0050 issued to Cal Am dated 8-Dec-14

EKI, 16 January 2017. Technical Memorandum, Preliminary Feasibility Assessment – Potential to Conduct Augmented Groundwater Recharge at the Armstrong Ranch Property, dated 16 January 2017

Cal Am Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping—Monitoring Report No. 55, released 24-May 2016.

Guo & Langevin, 2002. User's Guide to SEAWAT, U.S. Geological Survey Techniques of Water Resources Investigations 6-A7, released 2002.

Geosciences, 2014. Monterey Peninsula Water Supply Project Hydrogeologic Investigation Technical Memorandum (TM1) Summary of Results – Exploratory Boreholes, dated 8 July 2014.

Geoscience, 2015. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.

Geoscience, 2016. Monterey Peninsula Water Supply Project Hydrogeologic Investigation-TM2 Monitoring Well Completion Report. released July 2016

SWRCB, 2017. State Water Resources Control Board GeoTracker database, accessed 13 February 2017

Harding ESE, 2001. Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, California, prepared for Monterey County Water Resources Agency, dated 12 April 2001

RMC,2008a. Preliminary Draft Technical Memorandum, Armstrong Ranch: Seasonal Subsurface Storage of Recycled Water, Modeling TM, dated 23 May 2008;

RMC, 2008b. Draft Technical Memorandum to Marina Coast Water District- Water Augmentation Project, Subject Water Supply Evaluation Date 2 October 2008.

SWRCB 2013. State Water Resources Control Board Final Review Of California American Water Company's Monterey Peninsula Water Supply Project, dated July 31, 2013

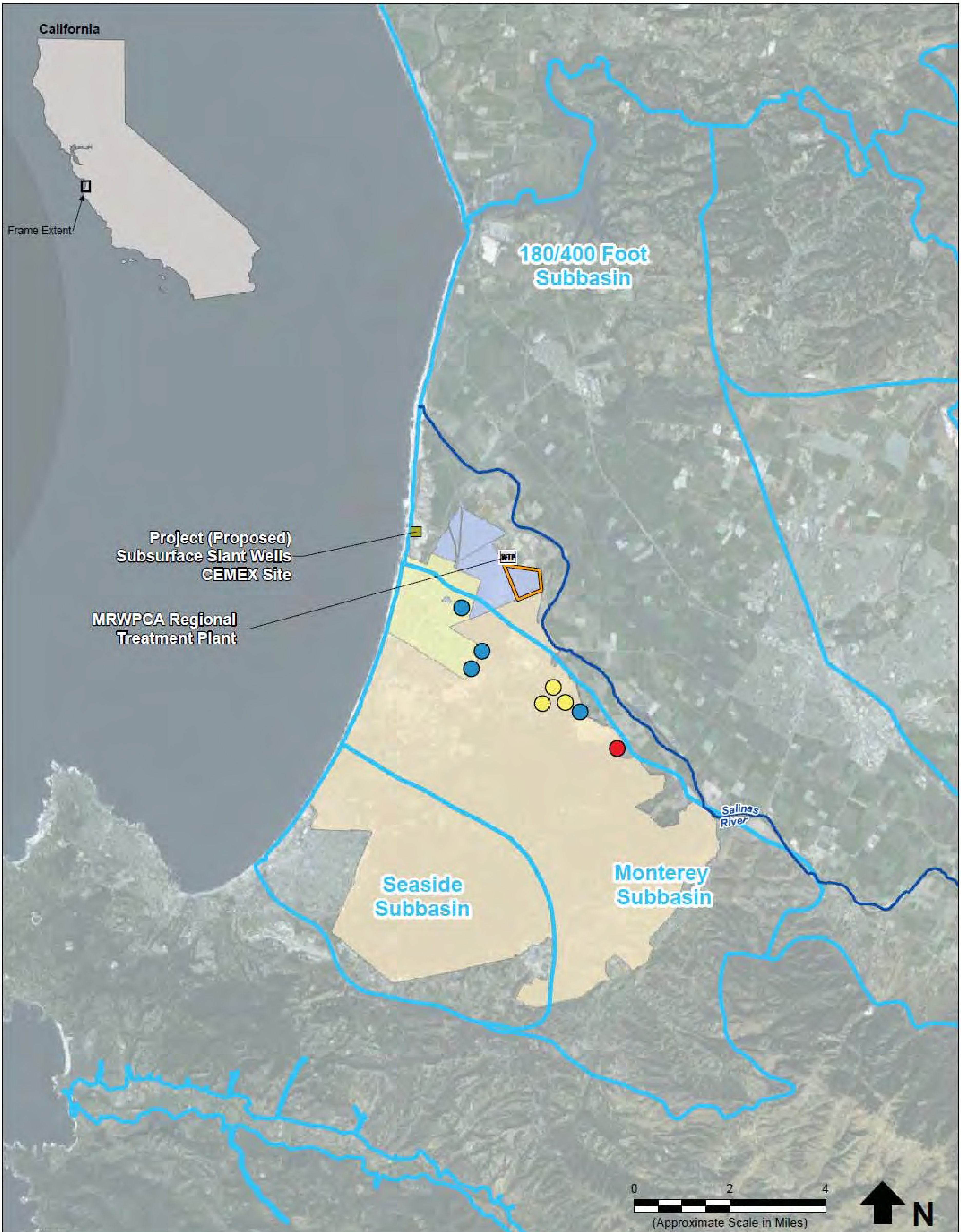
RWQCB, 2016. Water Quality Control Plan for the Central Coast Basin, Regional Water Quality Control Board Central Coast Region, State Water Resources control Board, California Environmental protection Agency, March 2016 Edition

Schaaf & Wheeler, 2016. Marina Coast Water District, 2055 Urban Water Management Plan, Dated June 2016

Stalle, Gardner & Dunne, Inc., 1991. Ground Water Quality Assessment-District Well No. 5., released July 3 1991

Todd Engineers, 2008. Phase I Investigation Armstrong Ranch Groundwater Storage Project. Marina Coast Water District, Marina;

U.S. Department of the Army, 1997. Record of Decision Basinwide Remedial Investigation Sites, Fort Ord, California



Legend

- DWR Groundwater Basin
- MCWD's Service Area - Ord Community
- MCWD's Service Area - Central Marina
- MCWD's Sphere of Influence
- Armstrong Ranch

MCWD Wells by Aquifer

- 180-Foot and 400-Foot
- 400-Foot
- Deep

Abbreviations

DWR = Department of Water Resources
MCWD = Marina Coast Water District
MRWPCA = Monterey Regional Water Pollution Control Agency

Notes

1. All locations are approximate.

Sources

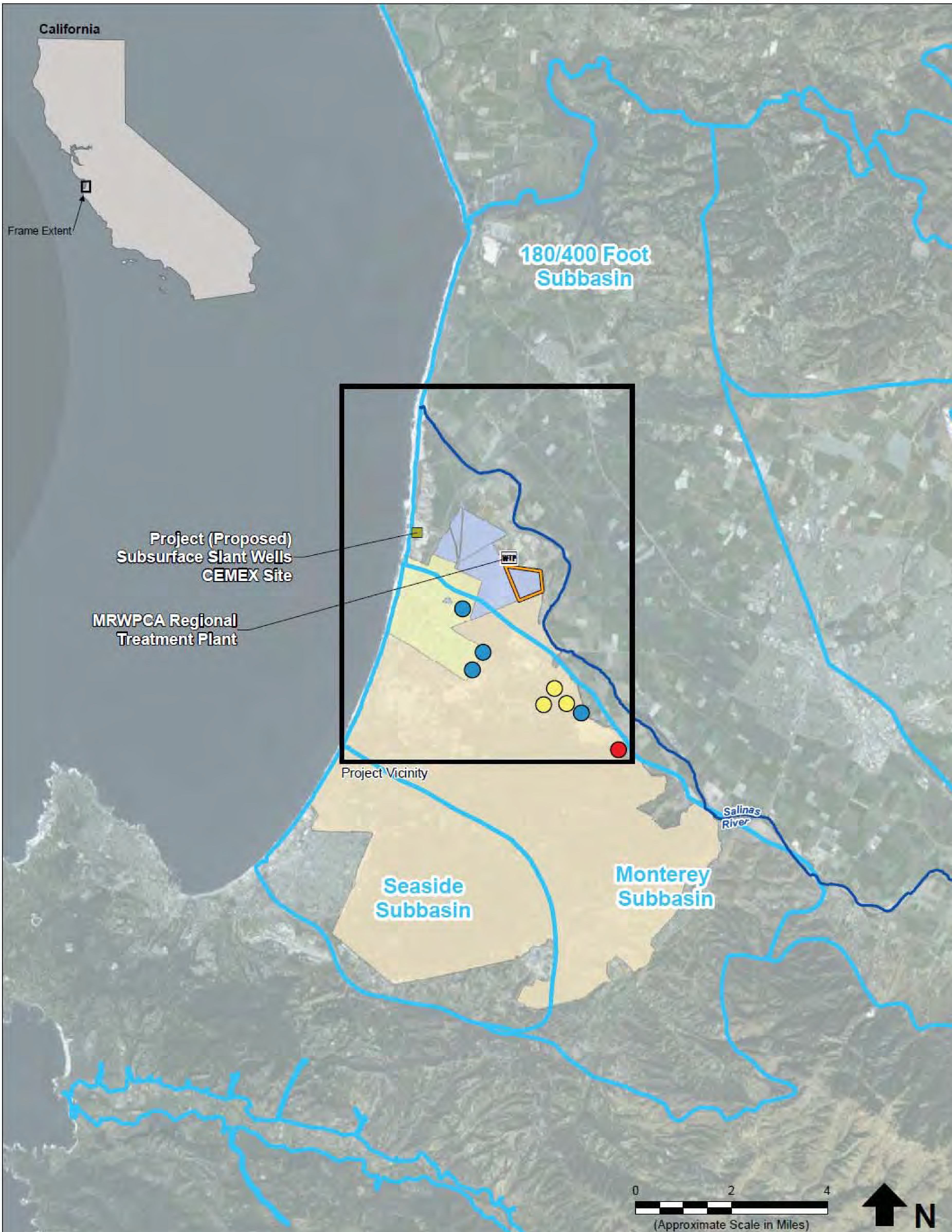
1. Aerial photograph provided by ESRI's ArcGIS Online, Obtained 22 March 2017.

Erler & Kalinowski, Inc.

MCWD Service Area

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 1

Path: X:\B60094\Maps\2017\02\Fig1_MCWD_ServiceArea.mxd



Legend

- DWR Groundwater Basin
- MCWD's Service Area - Ord Community
- MCWD's Service Area - Central Marina
- MCWD's Sphere of Influence
- Armstrong Ranch

MCWD Wells by Aquifer

- 180-Foot and 400-Foot
- 400-Foot
- Deep

Abbreviations

DWR = Department of Water Resources
MCWD = Marina Coast Water District
MRWPCA = Monterey Regional Water Pollution Control Agency

Notes

1. All locations are approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, Obtained 22 March 2017.

Erler & Kalinowski, Inc.

Project Vicinity

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01

Figure 2

Path: X:\B60094\Maps\2017\02\Fig2_Northern_MCWD_ServArea.mxd

Legend
- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Well with Data

Concentration
- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling
MW-8S — Well ID
1,214/251 — TDS/Chloride Concentration (mg/L)
(6/23/2015) — Sample Date

Path: X:\B60094\Maps\2017\02\Fig3_TDS_Cl_DuneSandAquifer.mxd

Abbreviations

DWR	= Department of Water Resources	NA	= not analyzed
MCWD	= Marina Coast Water District	TDS	= total dissolved solids
mg/L	= milligrams per liter		

Notes
1. All locations are approximate.
2. TDS Isoconcentration line is dashed when approximated off sparse data.

Sources
1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.

Erler & Kalinowski, Inc.

Groundwater Quality, TDS and Chloride - Dune Sand Aquifer (2006-2016)

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01

Figure 3

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8M — Well ID
20,500/10,546 — TDS/Chloride Concentration (mg/L)
(6/23/2015) — Sample Date

Path: X:\B60094\Maps\2017\02\Fig4_TDS_CL_180ftAquifer.mxd

Abbreviations

DWR	= Department of Water Resources	NA	= not analyzed
MCWD	= Marina Coast Water District	TDS	= total dissolved solids
mg/L	= milligrams per liter		

Notes

1. All locations are approximate.
2. TDS Isoconcentration line is dashed when approximated off sparse data.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.

Erler & Kalinowski, Inc.

Groundwater Quality TDS and Chloride - Upper 180 Foot Aquifer (2006-2016)

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01

Figure 4

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- Groundwater Divide
- Edge of Fort Ord-Salinas Valley Aquitard
- Groundwater Elevation Contour (2' Interval)
- Groundwater Elevation Contour (10' Interval)
- Cal Am Monitoring Well
- Fort Ord Monitoring Well

Well Labeling

MW-5S — Well ID
35 — Groundwater Elevation (ft MSL)

Abbreviations

Cal Am = California American Water
DWR = Department of Water Resources
ft MSL = feet mean sea level
MCWD = Marina Coast Water District
mg/L = milligram per liter
TDS = total dissolved solids

Notes

1. All locations are approximate.
2. Groundwater levels obtained from Reference 2 are measured in May 2016. Groundwater levels at Fort Ord are measured during June 2016 (Ahta, 2016. Final Operable Unit Carbon Tetrachloride Plume Second Quarter 2016 Groundwater Monitoring Report, Former Fort Ord, California, dated 29 August 2016). All groundwater levels are approximate.
3. Groundwater levels have been correlated for density, where TDS > 10,000 mg/L (see Reference 3).
4. Groundwater elevation contour dashed where approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping—Monitoring Report No. 55, released 24-May-2016.
3. Guo & Langevin, 2002. User's Guide to SEAWAT, U.S. Geological Survey Techniques of Water Resources Investigations 6-A7, released 2002.

Erler & Kalinowski, Inc.

Groundwater Elevations
Dune Sand Aquifer

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 5

Path: X:\B60094\Maps\2017\02\Fg5_GWE_DuneSandAquifer.mxd

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- Groundwater Divide
- Edge of Fort Ord-Salinas Valley Aquitard
- Groundwater Elevation Contour (2' Interval)
- Cal Am Monitoring Well
- Fort Ord Monitoring Well

Well Labeling

MW-5M — Well ID
-1 — Groundwater Elevation (ft MSL)

Abbreviations

Cal Am = California American Water
DWR = Department of Water Resources
ft MSL = feet mean sea level
MCWD = Marina Coast Water District
mg/L = milligram per liter
TDS = total dissolved solids

Notes

1. All locations are approximate.
2. Groundwater levels obtained from Reference 2 are measured in May 2016. Groundwater levels at Fort Ord are measured during June 2016 (Ahta, 2016. Final Operable Unit Carbon Tetrachloride Plume Second Quarter 2016 Groundwater Monitoring Report, Former Fort Ord, California, dated 29 August 2016). All groundwater levels are approximate.
3. Groundwater levels have been correlated for density, where TDS > 10,000 mg/L (see Reference 3).
4. Water level at MRWPCA-1 estimated based on baseline water level measurements from April 2015 and changes observed in water levels at other nearby Cal Am 180 Foot wells between April 2015 and May 2016.
5. Groundwater elevation contour dashed where approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping—Monitoring Report No. 55, released 24-May-2016.
3. Guo & Langevin, 2002. User's Guide to SEAWAT, U.S. Geological Survey Techniques of Water Resources Investigations 6-A7, released 2002.

Erler & Kalinowski, Inc.

Groundwater Elevations
180 Foot Aquifer

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 6

Path: X:\B60094\Maps\2017\02\Fig6_GWE_180ftAquifer.mxd

Path: X:\B60094\Maps\2017\02\Fig7_TDS_Cl_WithTransect_180ftAquifer.mxd

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- Transect A-A'
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8M — Well ID
20,500/10,546 — TDS/Chloride Concentration (mg/L)
(6/23/2015) — Sample Date

Abbreviations

DWR	= Department of Water Resources	mg/L	= milligrams per liter
MCWD	= Marina Coast Water District	TDS	= total dissolved solids

Notes

1. All locations are approximate.
2. Water Quality Assessment conducted by MCWD in 1991 indicates TDS <1000 ug/L in upper portion of screen interval (i.e., elevations above -155 ft MSL) and approximately 5,000 mg/L at bottom of screen interval (i.e., elevations between -195 ft MSL to -235 ft MSL).

Sources

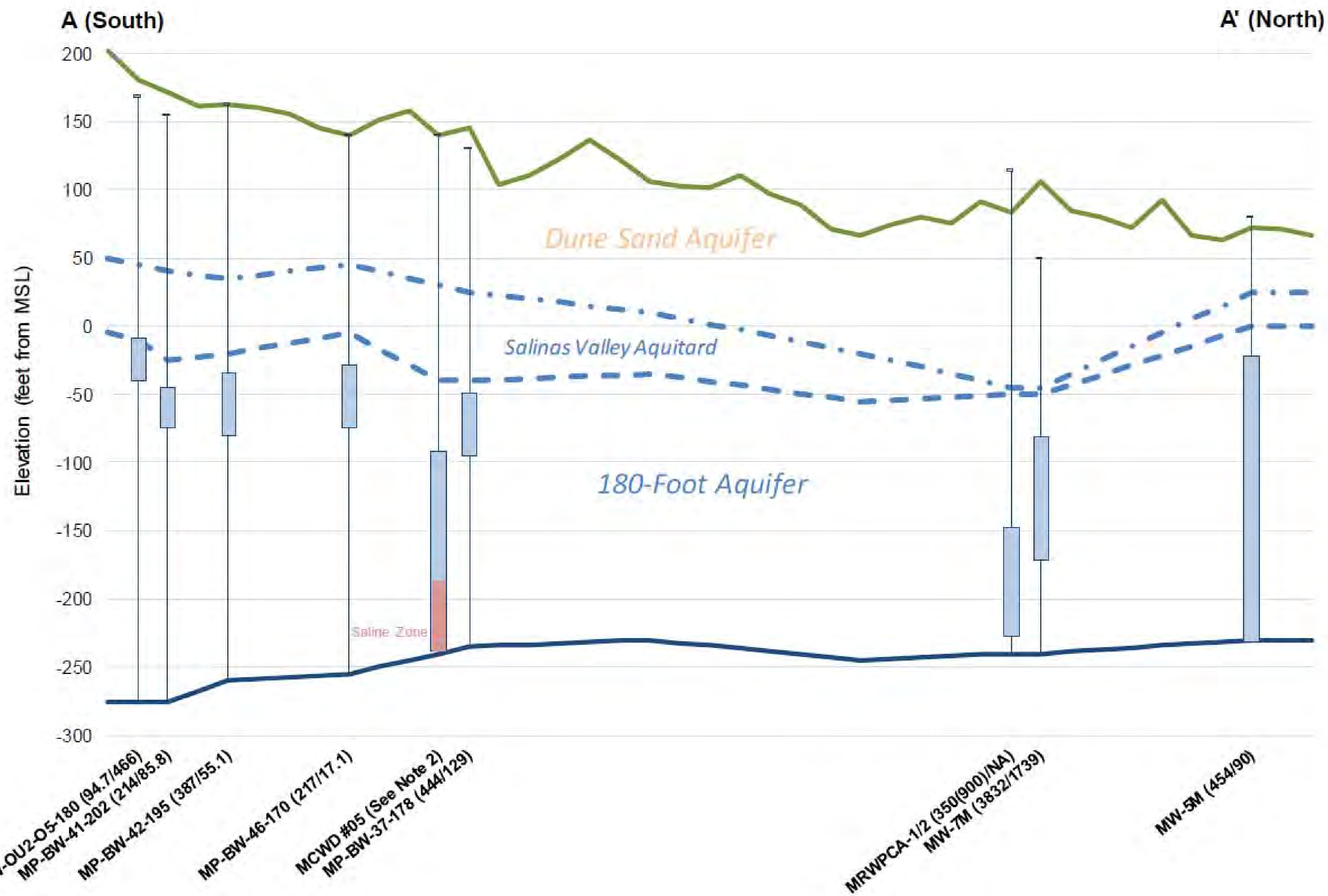
1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.

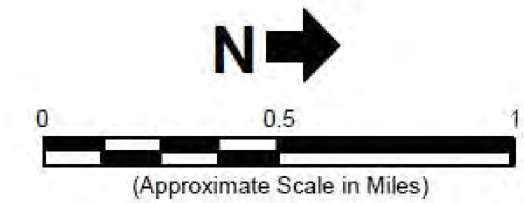
Erler & Kalinowski, Inc.

Well Screen Transect A-A' Location
180 Foot Aquifer

Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01

Figure 7





Legend

- Ground Surface Elevation (feet)
- Top of Salinas Valley Aquitard
- Bottom of Salinas Valley Aquitard
- Top of 180/400 Aquitard
- Well Screen Interval
- **MW-5M (454/90)** —— TDS/Chloride Concentration (mg/L)
  └—Well ID

Abbreviations

ft. = feet
MSL = mean sea level
NA = not analyzed
TDS = total dissolved solids

Notes

1. Wells MRWPCA-1/2, MW-5M, and MW=7M were sampled in 2015. Well EW-OU2-05-180 was sampled in 2009. Wells MP-BW-41-202, MP-BW-46-170, and MP-BW-37-178 were sampled in 2008. Well MP-BW-42-195 was sampled in 2007. Well MCWD #05 was sampled in 1991.
2. Water Quality Assessment conducted at MCWD #05 in 1991 indicates TDS less than 1000 mg/L in upper portion of screen interval (i.e. elevations above -155 ft MSL) and approximately 5,000 mg/L at bottom of screen interval (i.e. elevations between -195 ft. MSL to -235 ft MSL)

Sources

1. Geoscience, 2016. Monterey Peninsula Water Supply Project Hydrogeologic Investigation-TM2 Monitoring Well Completion Report. released July 2016
2. State Water Resources Control Board GeoTracker database, accessed 13 February 2017
3. Stalle, Gardner and Dunne, Inc., 1991. Ground Water Quality Assessment: District Well No. 5., released July 3 1991

Erler & Kalinowski, Inc.

Well Screen Intervals
Transect A-A'

Marina Coast Water District
Marina, CA
February 2017
B60094.01
Figure 8

Path: X:\B60094\Maps\2017\02\Fig9_TDS_Cl_WithDrawdown_DuneSand.mxd

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Groundwater Level Decrease (Drawdown) Contour 1'
- Possible Extent of 1' Drawdown (Based on Sensitivity Tests)
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8S — Well ID
1,214/251 — TDS/Chloride Concentration (mg/L)
(6/23/2015) — Sample Date

Abbreviations

DWR = Department of Water Resources
MCWD = Marina Coast Water District
mg/L = milligrams per liter
NA = not analyzed
TDS = total dissolved solids

Notes

1. All locations are approximate.
2. TDS Isoconcentration line is dashed when approximated off sparse data.
3. Drawdowns based on extraction of 24.1 MGD at CEMEX Site 2012 sea level, no return water.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels– Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.
4. Appendix E2 of CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017.

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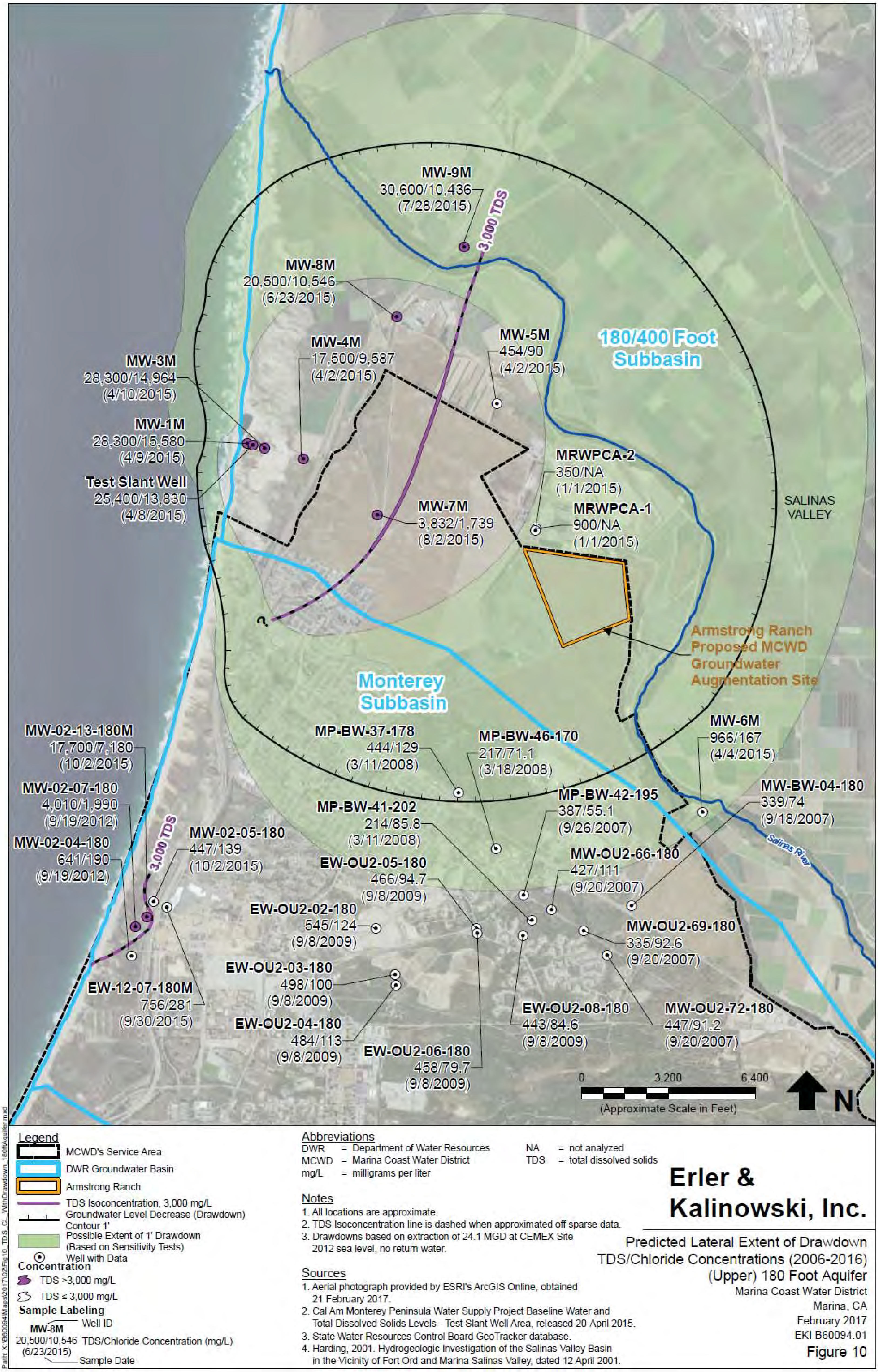
Predicted Lateral Extent of Drawdown
TDS/Chloride Concentrations
(2006-2016) - Dune Sand Aquifer
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 9



MW-9M
30,600/10,436
(7/28/2015)
3,000 TDS
MW-8M
20,500/10,546
(6/23/2015)
MW-4M
17,500/9,587
(4/2/2015)
MW-5M
454/90
(4/2/2015)
180/400 Foot Subbasin
MW-3M
28,300/14,964
(4/10/2015)
MW-1M
28,300/15,580
(4/9/2015)
Test Slant Well
25,400/13,830
(4/8/2015)
MRWPCA-2
350/NA
(1/1/2015)
MW-7M
3,832/1,739
(8/2/2015)
MRWPCA-1
900/NA
(1/1/2015)
SALINAS VALLEY
Armstrong Ranch Proposed MCWD Groundwater Augmentation Site
Monterey Subbasin
MW-02-13-180M
17,700/7,180
(10/2/2015)
MP-BW-37-178
444/129
(3/11/2008)
MP-BW-46-170
217/71.1
(3/18/2008)
MW-6M
966/167
(4/4/2015)
MW-02-07-180
4,010/1,990
(9/19/2012)
MP-BW-42-195
387/55.1
(9/26/2007)
MW-BW-04-180
339/74
(9/18/2007)
MP-BW-41-202
214/85.8
(3/11/2008)
MW-02-04-180
641/190
(9/19/2012)
MW-02-05-180
447/139
(10/2/2015)
Salinas River
MW-OU2-66-180
427/111
(9/20/2007)
EW-OU2-05-180
466/94.7
(9/8/2009)
EW-OU2-02-180
545/124
(9/8/2009)
MW-OU2-69-180
335/92.6
(9/20/2007)
EW-OU2-03-180
498/100
(9/8/2009)
EW-12-07-180M
756/281
(9/30/2015)
EW-OU2-08-180
443/84.6
(9/8/2009)
MW-OU2-72-180
447/91.2
(9/20/2007)
EW-OU2-04-180
484/113
(9/8/2009)
EW-OU2-06-180
458/79.7
(9/8/2009)
0
3,200
6,400
(Approximate Scale in Feet)
N
Legend
MCWD's Service Area
DWR Groundwater Basin
Armstrong Ranch
TDS Isoconcentration, 3,000 mg/L
Groundwater Level Decrease (Drawdown) Contour 1'
Possible Extent of 1' Drawdown (Based on Sensitivity Tests)
Well with Data
Concentration
TDS >3,000 mg/L
TDS ≤ 3,000 mg/L
Sample Labeling
MW-8M Well ID
20,500/10,546 TDS/Chloride Concentration (mg/L)
(6/23/2015) Sample Date
Abbreviations
DWR = Department of Water Resources
MCWD = Marina Coast Water District
mg/L = milligrams per liter
NA = not analyzed
TDS = total dissolved solids
Notes
1. All locations are approximate.
2. TDS Isoconcentration line is dashed when approximated off sparse data.
3. Drawdowns based on extraction of 24.1 MGD at CEMEX Site 2012 sea level, no return water.
Sources
1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels– Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.
4. Harding, 2001. Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, dated 12 April 2001.
Erler & Kalinowski, Inc.
Predicted Lateral Extent of Drawdown
TDS/Chloride Concentrations (2006-2016)
(Upper) 180 Foot Aquifer
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 10

Path: X:\B60094\Maps\2017\02\Fig11_TDS_CL_WithOceanCapture_DuneSand.mxd

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Ocean Capture Zone (0.0004, 0.0007, 0.0011)
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8S — Well ID
1,214/251 — TDS/Chloride Concentration (mg/L)
(6/23/2015) — Sample Date

Abbreviations

avg	= average	mg/L	= milligrams per liter
DWR	= Department of Water Resources	NA	= not analyzed
MCWD	= Marina Coast Water District	TDS	= total dissolved solids

Notes

1. All locations are approximate.
2. Ocean Capture Zone, porosity = 0.1, average gradient between 0.0004 and 0.0011.
3. TDS Isoconcentration line is dashed when approximated off sparse data.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels-- Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.
4. Appendix E2 of CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017.

Erler & Kalinowski, Inc.

Predicted Ocean Capture Zone and TDS/Chloride Concentrations (2006-2016) - Dune Sand Aquifer
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 11

Legend

- MCWD's Service Area
- DWR Groundwater Basin
- Armstrong Ranch
- TDS Isoconcentration, 3,000 mg/L
- Ocean Capture Zone (0.0004, 0.0007, 0.0011)
- Well with Data

Concentration

- TDS >3,000 mg/L
- TDS ≤ 3,000 mg/L

Sample Labeling

MW-8M — Well ID
20,500/10,546 — TDS/Chloride Concentration (mg/L)
(6/23/2015) — Sample Date

Abbreviations

avg	= average	mg/L	= milligrams per liter
DWR	= Department of Water Resources	NA	= not analyzed
MCWD	= Marina Coast Water District	TDS	= total dissolved solids

Notes

1. All locations are approximate.
2. Ocean Capture Zone, porosity = 0.1, average gradient between 0.0004 and 0.0011.
3. TDS Isoconcentration line is dashed when approximated off sparse data.

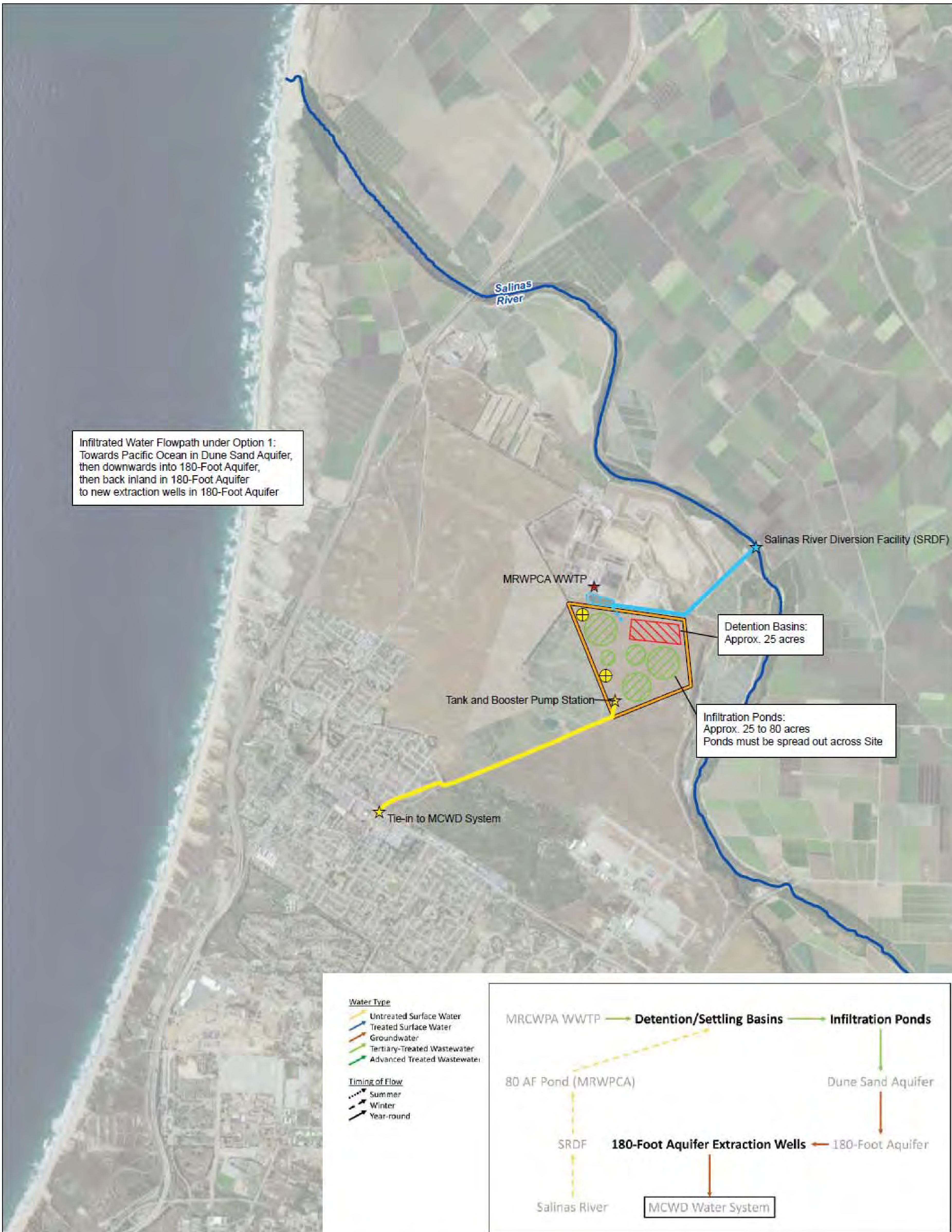
Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.
2. Cal Am Monterey Peninsula Water Supply Project Baseline Water and Total Dissolved Solids Levels– Test Slant Well Area, released 20-April 2015.
3. State Water Resources Control Board GeoTracker database.
4. Appendix E2 of CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017.

Erler & Kalinowski, Inc.

Predicted Ocean Capture Zone and TDS/Chloride Concentrations (2006-2016) - (Upper 180 Foot Aquifer)
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.01
Figure 12

Path: X:\B60094\Maps\2017\02\Fig12_TDS_CL_WithOceanCapture_180ftAquifer.mxd



Legend

- Armstrong Ranch
- Detention/Settling Basin
- Infiltration Pond
- 80 AF Pond (MRWPCA)
- Pipeline to Armstrong Ranch
- SRDF Surface Water Intake Pipeline
- Pipeline to MCWD System
- 180-Foot Aquifer Extraction Well

Abbreviations

MCWD = Marina Coast Water District
MRWPCA = Monterey Regional Water Pollution Control Agency
SRDF = Salinas River Diversion Facility

Notes

1. All locations are approximate.

Sources

1. Aerial photograph provided by ESRI's ArcGIS Online, obtained 21 February 2017.

0 3,200 6,400
(Approximate Scale in Feet)

N

Erler & Kalinowski, Inc.

Conceptual Map
Groundwater Augmentation at
Armstrong Ranch – Option 1
Marina Coast Water District
Marina, CA
February 2017
EKI B60094.00
Figure 13

Path: X:\B60094\Maps\2017\02\Fig13_ConceptualGrndWaterAugOption1.mxd

IntakeWorks

March 28, 2017

Marina Coast Water District
11 Reservation Road
Marina, California 93933

Attn: Mr. Keith Van Der Maaten
General Manager

Dear Mr. Van Der Maaten:

Subject: Monterey Peninsula Water Supply Project
Draft Environmental Impact Report/Environmental Impact Statement

Intake Works LLC has reviewed the Draft Environmental Impact Report/Environmental Impact Statement for the Monterey Peninsula Water Supply Project prepared for California Public Utilities Commission and the Monterey Bay National Marine Sanctuary (dated January 2017) and provides these comments regarding potential alternatives to the proposed MPWSP slant well intake system and desalination plant, as requested. As we previously informed you, our review of the DEIR/EIS was initially hampered by delays in receiving references cited in the DEIR/EIS and ultimately the lack of any references for most of the DEIR/EIS's conclusions regarding alternative intake technologies. Based on information provided in the DEIR/EIS and the limited reference materials cited in the document and appendices, the DEIR/EIS's conclusion that slant wells are the only potentially feasible subsurface intake system for the MPWSP is unsupportable. While we generally agree with the DEIR/EIS's conclusions regarding the unacceptable impacts of open water intakes, there are several alternative subsurface intake technologies that are likely feasible (based on available information) and would avoid or reduce the MPWSP's significant impacts as discussed below. MCWD-IW-01

Comments on MPWSP DEIR/EIS

In preparing these comments, we have reviewed the relevant portions of (1) the DEIR/EIS (2) the DEIR/EIS appendices; (3) references cited in the DEIR/EIS and DEIR/EIS appendices (where available); and (4) publicly available information referenced in these comments. We have also conducted independent research regarding intake technologies based on work in this area and our experience in seawater desalination.

MCWD-IW-02

I. Comments on Open-Water and Subsurface Intakes (Appendix I1)

As requested, our comments focus on whether there are potentially feasible intake technologies for the MPWSP that could reduce the project's environmental impacts. Therefore, our review was primarily focused on Appendix I1 (and the limited reference materials cited in the appendix). We provide the following comments on Appendix I1, which are identified under section headings for ease of reference:

A. ***Comments on Operations and Maintenance Considerations for Open-Water Intakes (I1-3)***

The Open-Water Intake section's statement that maintenance would occur every 3 to 5 years is not supported by any research and appears unrealistic (See p. I1-3). Based on reports from existing seawater intakes in the Monterey Bay National Marine Sanctuary and other intakes along the Monterey Bay, it is more likely that Intake Screens would need to be cleaned every 3 to 5 months.[1] The Intake pipelines would also need to be "pigged" at least annually.[2] MCWD-IW-03

B. ***Comments on Subsurface Intakes (I1-3 through I1-7):***

The General Comments section of Subsurface Intakes states: "*the magnitude of potential entrainment of marine species into the bottom sediments caused by continuous subsurface intake operations has not been systematically and scientifically studied to date*" citing WateReuse 2011 (See p. I1-3). While a full citation of the reference was not provided in the DEIR/EIS reference materials, we assume the citation referred to in Appendix I1 is the white paper entitled "Desalination Plant Intakes Impingement and Entrainment Impact and Solutions" from the WateReuse Foundation which states, "to date there are no studies that document the actual level of entrainment reduction that can be achieved by these types of intakes." (WateReuse 2011, p. 9).[3,4] This nonsensical statement appears to repeat comments from proponents of open-ocean intakes. If there was impingement of marine species on the surface of the seabed, especially marine fish larvae, there would be an accompanying biological response which would be noteworthy. To our knowledge, there is no field observation of increase biomass, increase primary production, increase in fish density (or diversity) or other marine invertebrates' population increase in zones of subsurface infiltration. Studying a non-significant biological event is extremely difficult (i.e. expensive) and, therefore, it is not surprising that no agencies have funded a study of entrainment for intakes that draw water through several feet of natural sediment or artificial media. MCWD-IW-04

The appendix, next addresses the advantages of subsurface intakes compared with open ocean intake (See p. I1-3). This discussion is based on work done for a regional desalination project in Santa Cruz involving the adjacent Soquel Creek Water District and the City of Santa MCWD-IW-05

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[1] Eric Quanmen, Facilities Systems Manager, Monterey Bay Aquarium, e-mail February 15, 2017.

[2] As per Wikipedia, "Pigging in the context of pipelines refers to the practice of using devices known as "pigs" to perform various maintenance operations. A "pig" in the pipeline industry is a tool that is sent down a pipeline and propelled by the pressure of the product flow in the pipeline itself."

[3] WateReuse Association, 2011. Desalination Plant Intakes: Impingement and Entrainment Impacts and Solutions. *WateReuse Association White Paper*.

[4] Similar to comments by Daniel P. Cartamil, Marine Biologist from Scripps Institution of Oceanography in his opinion piece "Evidence to Support an 'Eco-Friendly' Desalination Technology Lacking when comparing subsurface infiltration galleries with open-ocean intakes systems" that appeared in The Scientist (http://www.the-scientist.com/?articles.view/articleNo/47085/title/Opinion--Evidence-to-Support-an--Eco-Friendly--Desalination-Technology-Lacking/).

Cruz Water Department that advocated for a direct intake system.[5] While reference is not on point, we agree there are significant advantages of using *appropriate* subsurface intakes for seawater desalination.

First, the elimination of impingement and entrainment of marine organisms through subsurface intakes is a serious issue and provides many benefits. Not only from a regulatory perspective (Desalination Amendment to the Ocean Plan encourages indirect or subsurface intake technologies), but also from an operational perspective, removal of organic material prior to reverse osmosis membrane is beneficial to the desalination plant operation. The RO membranes are designed to separate water from salt in an aqueous solution. The reverse osmosis membranes are not designed to deal with fluctuating biological (organic) loads, which require additional pretreatment systems. Employing subsurface intakes, there is a substantial reduction in pretreatment equipment, smaller footprint, lower chemical usage (including costs for training of personnel and storage of chemical supplies), and reduced energy consumption – which all add up to real cost savings over the lifecycle of the plant.[6]

MCWD-IW-05 cont.

The second advantage listed in the appendix is that "*natural water filtration and pretreatment provided by ocean floor sediments, which in some cases can reduce the need for some treatment chemical during the desalination process.*" Again, we concur with this statement.

For example, data from Neodren systems[7] show that Neodren filtrate, the source water delivered through the under-the-sea intake conveyance, has reduced range or variation in temperature[8] that allow for more stable operations. The data also show the filtrate has reduced turbidity compared with ambient natural seawater conditions.[9] This is an important attribute because RO membrane manufactures require low turbidity waters for processing. Manufacturers

[5] Kennedy/Jenks Consultants. 2011. scwd2 Seawater Desalination Intake Technical Feasibility Study (ITFS). September 21.

[6] To illustrate this point, a proposal for a nearby open ocean desalination plant with approximately 12 MGD production includes an engineer's estimate of the amount of waste derived from the pretreatment process. The estimate of dry sludge is 27.6 tons per day requiring 20 dump trucks per week to haul waste offsite. Draft Process Design Report for the People's Moss Landing Water Desal Plant prepared by Watek Engineering, February 27, 2015. see http://thepeopleswater.com/Draft_Process_Design_Report_and_Cost_Information.pdf

[7] Neodren systems (discussed in more detail in section on Horizontal Wells below) are seawater intake subsystems in which filter pipes are installed in boreholes executed from the back of the beach by drilling subsoil and boring into geological formation offshore (see Figure 1 below)

[8] Peters, Thomas and Pintó, Domènec. 2006. Sub-seabed drains provide intake plus pretreatment. Desalination & Water Reuse, Volume 16. 2006

[9] Typically, turbidity values for a Neodren system are much less than 2.0 NTU. Nephelometric Turbidity Unit (NTU) refer to EPA Method 180.1. Peters, Thomas and Pintó, Domènec. 2006. Sub-seabed drains provide intake plus pretreatment. Desalination & Water Reuse, Volume 16. 2006

of the seawater reverse osmosis membranes recommend a silt density index (SDI[10]) of 5 or lower for seawater reverse osmosis membrane systems.[11] In our experience, when using the Neodren systems, particle concentrations are lower than ambient natural seawater conditions;[12] total suspended solids – a measure of the dry weight of particles trapped by a filter – are lower;[13] and total organic carbon, a measure of the amount of Carbon bound in organic compounds is reduced.[14,15]

The third benefit listed in the appendix is that "*minimal growth of marine organisms that occurs inside the intake pipeline.*" Again, we agree this is an important consideration as biological fouling prevention is important for overall operational efficiency. The more biological material that is prevented from entering the desalination subsystem, the better the system will perform over a longer period before diminished yield, failure, repair or other faults. MCWD-IW-05 cont.

And finally, we generally agree with the statement that if intake technologies are not appropriately sited, subsurface intakes can adversely affect coastal aquifers and increase the risk of saltwater intrusion in freshwater aquifers (see p. I1-4). We note, however, that the vertical and slant wells are far and away the most likely to impact *adversely* affect coastal aquifers and *increase* the risk of saltwater intrusion in freshwater aquifers as explained more fully below.

1. Comments on Vertical Wells conclusions (I1-4 through I1-5):

While the DEIR/EIS's overall description of vertical wells as applied to the MPWSP appear to be generally accurate, its conclusion that they are not a potentially feasible alternative intake source for the MPWSP lacks any supporting factual information. Vertical wells have been in use for a long time, have a good track record, and are used in seawater desalination internationally. The celebrated case is in Malta where the Pembrooke desalination plant has a capacity of 9.5 MGD from a field of vertical wells in a sandstone formation is of similar size the proposed MPWSP. Notably, for smaller systems on the order of 5 MGD, there is documented life cycle costs saving approaching 17% when vertical wells at the beach are installed.[16] As the appendix notes, the primary limitation for vertical wells is logistics of dealing with multiple well heads spread out over some expanse. We also agree it is preferable to locate beach wells as close to the coastline as possible to minimize impacts on inland aquifers, because the influence over groundwater supplies inland of the sea are a concern as noted. That said, vertical wells can be MCWD-IW-06

[10]Silt Density Index – a measure of fouling capacity of RO membranes systems – is greatly reduced to less than 5.0 (SDI_{15}) SDI_{15} is notation used for ASTM Standard D4189 Standard Test Method for Silt Density Index (SDI) of Water at 15-minute interval.

[11] Membrane Manufacturers will not guarantee their products if SDI is above 5.

[12] Peters, T., Schuster, O., von Harten, B., Ulbricht, M. Schmidt, E. Pintó, D. and Pintó, E. (2008) Comparison of options for seawater pre-treatment for SWRO plants. 10th World Filtration Congress, proceedings volume II, Leipzig/Germany, April 14-18, 2008

[13] Peters, T. (2009) personal communication (email), 1/17/2009

[14] Münk, F. (2008) Ecological and economic analysis of seawater desalination plants. Diploma Thesis, University of Karlsruhe, Institute for Hydromechanics, Karlsruhe

[15] Peters, Thomas and Pintó, Domènec. 2006. Sub-seabed drains provide intake plus pretreatment. Desalination & Water Reuse, Volume 16. 2006

[16] Schwarcz, J. (2000) Beach wells intake for small seawater reverse osmosis plants, Middle East Desalination Research Center Project 7-BS-015.

located outside of or inland of environmentally sensitive habitat areas. They can also be sited in areas where studies show the greatest amount of seawater has intruded (or areas indicating a preferential seawater inflow) to reduce groundwater impacts. Neither the appendix nor the DEIR/EIS provides any information regarding these possibilities. MCWD-IW-06 cont.

We further note that expansion of the current Sand City desalination system or similar system may meet the water requirements of the MPWSP with a smaller overall ecological and environmental impact. Therefore, we would recommend DEIR/EIS address the capacity for expanding the existing Sand City Desalination facility. If this is not feasible, we would recommend the DEIR/EIS examine the use of pre-engineered, so called "packaged" desalination systems which could result in avoiding or substantially lessening the proposed project's significant impacts. Smaller desalinations systems (even if two are required) can be accomplished with significantly less environmental impacts and can be more economical because package solutions are available for desalination plants that are up to 5 MGD. To illustrate, IDE Technologies Ltd. has a modular RO which can be bought, leased or contracted for water purchase (see http://www.ide-tech.com/solutions/ide-progreen/). Modular systems also reduce site work, come pre-assembled, and reduce installation time. In the case of the IDE Technologies system, no chemicals are required as the systems uses the brine concentrate to purge the membranes. The system also has a relatively low electrical consumption (10 – 12 kWhr/1000 gal), and consequently lower OPEX. Several other firms that have similar offerings. MCWD-IW-07 (See Exhibit 1 - Summary of City of Santa Barbara Desalination Plant Reactivation Project choice of a modular approach in 2016). We also note that packaged or modular systems reduce consulting engineers custom design work, foster concurrent civil site work and fabrication of SWRO modules, allow consistency between multiple desalination sites, similar parts, similar training and can be controlled remotely and thus reduce operational costs.

In summary, using a package system with vertical wells may provide sufficient supplies to meet CalAm's water demand in conjunction with the Pure Water Monterey Groundwater Replenishment (GWR) Project noted in the DEIR/EIS. Obviously with the implementation of the GWR Project, the number of vertical wells required for feed water supplies would be substantially lower than the 24 estimated in Apppendix I1. (see p. I1-4.) This reduction could address the unspecified economic, legal (permitting) and environmental factors noted in the Appendix. However, without any information regarding these factors, we cannot assess this conclusion is accurate. We only note that given the *potential* reductions in environmental impacts and costs, we were surprised the DEIR/EIS did not evaluate vertical wells in its alternatives analysis.

2. *Comments on Infiltration Galleries conclusions (I1-5):*

The DEIR/EIS's limited and conclusory discussion of infiltration galleries as applied to the MPWSP seems wholly inadequate. The DEIR/EIS dismisses this alternative intake option MCWD-IW-08 stating because of the extent of temporary and permanent disturbance that an infiltration gallery would have on the sand dunes and sensitive marine habitat, it is considered infeasible based upon environmental, social and legal factors. Again, no analysis or information is provided regarding the environmental, social and legal factors that would make this infiltration galleries infeasible.

We note that beach infiltrations galleries were examined in the CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach".[17] Their conclusion that infiltration galleries located closer to the beach were potentially a feasible options for subsurface intakes for the proposed Poseidon Water Desalination Facility, which proposes producing 50 Million Gallons per Day (MGD) of potable water, five times as much as the current project. The CCC's Report notes that:

> ***A key aspect of a beach gallery system is that it underlies the surf zone of the beach, fully or in part. This means that the active infiltration face of the filter is continuously cleaned by the mechanical energy of the breaking waves and is therefore self-cleaning*** (Maliva and Missimer, 2010). ***Also, the location within the intertidal zone allows the gallery to be continuously recharged with no impact on the inland shallow aquifer system. The vertical flow of water from the sea assures that the inorganic chemistry is not significantly altered over time***... The gallery system is unaffected by variations in the deeper groundwater, which could be fresh or brackish in nature at the shoreline. The uppermost natural sand layer is the primary treatment zone within the filter and will likely allow the removal of all algae and a high percentage of bacteria and naturally occurring organic compounds (e.g., natural organic matter). The long-term data collected at the seabed gallery in Japan shows that the SDI was reduced below two, which is at the approximate level produced by conventional SWRO pretreatment systems (Shimokawa, 2012).
>
> ***The beach gallery would reduce or eliminate the impingement and entrainment of marine fauna. Also, upon completion of construction, the gallery would be located below the surface and could not be observed by beach users.***

(Id. at p. 40.)

MCWD-IW-08
cont.

The DEIR/EIS does not address why the same would not hold true for the MPWSP. Notably, the DEIR/EIS's apparent conclusion that infiltration galleries result in permanent disturbance to habitat does not appear to be consistent with the CCC's report. (*Ibid.*; see also *id.*, Figure 3.6 on p. 41.) Moreover, the DEIR/EIS, does not address whether an infiltration gallery could be designed in such a way that would not require the massive excavation and artificial prescribed fill used in the existing infiltration case in Fukuora, Japan cited in the CCC Report. Unlike the Fukuora location (on the semi-protected coast of the Sea of Genkai),[18] it may be possible to lay out sections of filter pipe on the sandy seabed and allow natural forces to bury the system over time. The sandy bottom biological community in Monterey is adapted to moving sands and may not be significantly impacted. Regardless, without any discussion or information

[17] http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf.

[18] The infiltration gallery in Fukuora, Japan has a capacity of 27.2 MGD operating since 2005 (Missimer et al 2013).

regarding the potential impacts at the CEMEX site (or elsewhere) it is impossible to comment further on this issue.

Importantly, beach infiltration gallery would not adversely impact the coastal aquifers as they do not pump groundwater. Therefore, because infiltration galleries are at least potentially feasible and could eliminate some of project's significant impacts, the DEIR/EIS's failure to address the potential options for infiltration galleries or its environmental impacts is not supported by the any available information.

MCWD-IW-08 cont.

3. Comments on Horizontal Wells conclusions (I1-5)

The DEIR/EIS's limited discussion of horizontal (or HDD) wells as applied to the MPWSP wholly inadequate. The Appendix states that it describes each subsurface intake type to include "*typical suitable locations, examples of existing technology, general construction methodology, operation and maintenance, and capabilities and limitations*" (page I1-4). Given our particular expertise as it relates to Horizontal Wells, we were shocked that DEIR/EIS—in less than 200 words---dismissed this technology in an Appendix without citation to a single reference material. (See Appendix I1 Open-Water and Subsurface Intakes, p. I1-5.) Importantly, the DEIR/EIS dismisses the feasibility of horizontal wells without adequately describing the technology, its advantages over the project's proposed slant wells intakes and its appropriateness for the Monterey Bay coastal environment as the Appendix suggests.[19] Therefore, we provide the following information for your background regarding Horizontal Wells using the Neodren subsurface intake systems.[20] While our comments address Horizontal Wells using Neodren subsurface intake systems, please note there are other Horizontal Well technologies that could also be employed and could be investigated by the CPUC or Sanctuary. Following this background, we explain why none of the reasons listed for rejecting Horizontal Wells are accurate.

MCWD-IW-09

a) <u>Background on Horizontal Wells Not Included In the DEIR/EIS</u>

Directional boring also known as Horizontal Directional Drilling (HDD) is "a steerable trenchless method of installing underground pipes, conduits and cables in a shallow arc along a prescribed bore path by using a surface-launched drilling rig, with minimal impact on the surrounding area."[21] A key aspect is the shallow arc as shown in Figure 2 below.

Horizontal Wells have been installed using directional boring techniques at multiple locations internationally. While there is currently no installation in California, this is not

[19] We note that in the past couple of years with the flurry of activities involving subsurface intakes and the interest in HDD, no one from the CPUC or MBNMS has contacted Catalana de Perforacions (developers of Neodren subsurface seawater intake systems) for information regarding its feasibility for the MPWSP. We find this remarkable because the technology has been discussed at various desalination conferences (including in California) on panels with Geoscience (the developers of the Slant Well technology for the MPWSP). A copy of Neodren Subsurface Intake Technology presentation at recent California Conference is attached as Exhibit 2.

[20] Attached as Exhibit 3 is a bibliography on Neodren.

[21] https://en.wikipedia.org/wiki/Directional_boring

surprising because most seawater desalination is performed outside the United States. In fact, there are only a handful operational seawater desalination plants in California, and even fewer operational seawater desalination plants in California that use subsurface intakes.

The technology of HDD, however, is well known in California having been conceived to cross rivers by Martin Cherrington in the early 1970s. When excavating or trenching is not practical, HDD is commonly used in a wide variety of environments including crossing under

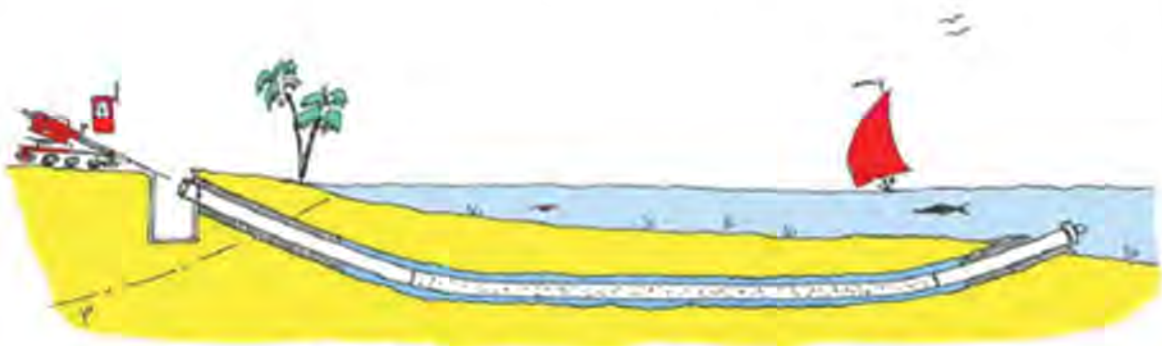

Figure 1. Cross section of stylized Neodren installation.

MCWD-IW-09 cont.

waterways, roadways, congested areas, sensitive environmental areas and areas where other methods are more destructive or expensive.

The technology of HDD, however, is well known in California having been conceived to cross rivers by Martin Cherrington in the early 1970s. When excavating or trenching is not practical, HDD is commonly used in a wide variety of environments including crossing under waterways, roadways, congested areas, sensitive environmental areas and areas where other methods are more destructive or expensive.

The constellation or spatial pattern of lateral wells is dependent on the site and its hydrogeological properties. Note that in the existing operating intakes joined to seawater desalination plants, none of them are in 3 or 4 well clusters as advertised in the DEIR/EIS (page 11-5).

Typical Suitable Locations

In the case of Neodren subsurface seawater intake systems, coastal sites with appropriate offshore geological formation for transmission of water through the upper 15 to 30 ft of the seafloor are ideal.

Examples of Existing Technology

Neodren systems have been installed at various sites in Spain (Table 1). The Neodren drains are engineered to ensure the correct scheduling per pipe specification, pipe path positioning and punch out location. Using basic installation techniques, HDD allows multiple curves in plan and section, striving to avoid submerged structures and geological stratums with no productive yield. Drain filter pipes are installed in the excavated borehole, ensuring a long-term intake, and ensuring stability of the borehole. In total, 36 lateral drains comprising over 5 miles of pipe drawing in 63.4 MGD are operating at seawater desalination plants.

Table 1. Neodren Installations in Spain.

Year	Location and description	m^3/day	l/s/m	Status
1996	Fish farm, Sant Pere Pescador (Gerona)	4,320	0.22	Operating
2001	Fish farm, Sant Pere Pescador (addition)	8,640	0.26	Operating
2003	SWRO IDAM, San Pedro del Pinatar (MU)	172,800	0.44	Operating
2003	Fish farm, Cabo Cope (Murcia)	8,640	0.48	Operating
2004	SWRO, IDAM Águilas (Murcia)	41,472	0.48	Operating
2004	Cooling water, Albuixech (V)	47,952	2.92	Operating
2005	Investigation for SWRO IDAM en Barcelona	8,500	0.33	Dismantled
2005	Investigation for SWRO IDAM Alicante, phase 1	1,128	0.46	Operating
2006	IDAM Águilas (MU), Com. de Regantes	31,104	0.46	Operating
2007	Investigation SWRO, Tordera (Girona)	8,640	0.33	Dismantled
2008	Addition to desalination Plant, Alicante II	76,300	0.30	Operating
2008	Application CRAM (El Prat de Llobregat)	8,640	0.33	Operating

MCWD-IW-09 cont.

Note: Dismantled systems were customer's decisions after test and data collection.
Source: Catalana de Perforacions.

General Construction Methodology

The general construction methodology can be divided into the construction of the borehole and the insertion of the filter pipe. To establish an appropriately sized borehole, first a pilot hole is drilled with a guidance system to steer the drilling head along the desired route. A reamer is added to the drill string to expand the annulus of the borehole. Once the reaming is complete, the hole is swapped to insure passage of the filter pipe. General guidance on HDD is available[22,23,24] as well as industry standards.[25]

Float-and-Sink Method. For the insertion of the filter pipe, the preferred method is the float-and-sink method outlined in Chapter 10 Marine Installations of the Plastic Pipe Institute'

[22] Willoughby, David (2005). Horizontal Directional Drilling, p. 1-263. McGraw-Hill, New York. ISBN 0- 07-145473-X.
[23] Short, Jim (1993). Introduction to Directional and Horizontal Drilling, p. 1-222. PennWell Books, Tulsa, Oklahoma. ISBN 0-87814-395-5.
[24] HDD Consortium. (2008). Horizontal Directional Drilling–Good Practices Guidelines.
[25] ASTM International F1962, Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings

Handbook of Polyethylene Pipe[26]. Conventionally, filter pipes are pulled into the borehole with the float-and-sink method. Obviously, care and attention are required to the details of the design to insure a safe and successful operation.

The 'Push' Technique. Alternatively, a newer process developed by The HDD Company, is similar as drilling a water well. By directionally boring from shore into and through the offshore aquifer, a steel casing can be put into the borehole to greatly aid insertion of the well screen and avoid release of drilling fluids into the marine environment. Once the casing has been installed, the well screen is inserted, then the casing pipe can be removed and lateral well can be completed. Multiple wells can be placed into the aquifer.

A significant benefit of this "push" approach is the virtual elimination of marine support operations, thus considerably reducing installation costs and most disturbances to the seafloor. This benefit is an important development in subsurface intakes especially along environmentally sensitive coast lines in California. Operating well back from the beach, under the sea intakes can operate effectively with low environmental impact on the marine environment, nearshore coastal environment and foreshore habitat. MCWD-IW-09 cont.

Permits should not be any more difficult than a permit for a typical water well. No fisheries would be impacted. The procedure is virtually the same as vertical water wells with the exception that HDD can drill further and place more well screen (horizontally) into the aquifers.

Operation and Maintenance

The operation and maintenance requirement are minimal with the Neodren system. According to Jordi Camps Querol, Technical Director of Catalana de Perforacions, who has been involved since the beginning of Neodren development, Neodren "only needs to be able to have some backwash, in case of fine sands." [27] Some installations prefer occasional backwash of the subsea intake system at approximately twice the inflow rate. Discussions with Neodren consultant Dr. Thomas Peter indicated that most plants do not backwash. Neodren systems have been deployed since 1996, and that experience shows Neodren is a long-lasting and less expensive solution over the long term.

b) <u>The DEIR/EIS reasons for not analyzing Horizontal Wells are unsupported and inaccurate.</u>

The DEIR/EIS (at p 11-5) states: "*Horizontal wells are not evaluated further for the following reasons: (1) the amount of pipeline that would be pushed under the sea floor (upwards of 2,500 feet) would be challenging in terms of construction time, physical limitations and the disposal of drilling sludge (and consequently much more expensive than other options); (2) installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis, and; (3) HDD would not avoid or minimize any of the impacts associated with the proposed action.*" There is no evidence provided to support any of the conclusion. As explained below, all three conclusions are inaccurate. MCWD-IW-10

[26] Available online at the Plastic Pipe Institutes web site. The Plastic Pipe Institute Handbook of Polyethylene Pipe, Chapter 10 Marine Installations

[27] Email from Jordi Camps Querol to A.T. Jones, February 20, 2017

First, the DEIR/EIS dismisses the capabilities of Horizontal wells, but does not adequately address the limitations of this technology. The DEIR states that *"wells are not evaluated further for the following reasons: (1) the amount of pipeline that would be pushed under the sea floor (upwards of 2,500 feet) would be challenging in terms of construction time, physical limitations and the disposal of drilling sludge (and consequently much more expensive than other options)"*

Construction Time. The construction time for developing horizontal directionally drilled drains or lateral wells would be considerable shorter than the proponent's preference for angle wells based on construction times along the Spanish Mediterranean Coast for Neodren system. The closest example is Alicante II where an additional eight (8) laterals were commissioned using one HDD drilling rig. The drilling schedule was not the critical path for completion of the project. Construction on this project took about four (4) months. The intake flow was 20.15 MGD.[28]

Multiple HDD maxi-rigs could be used to accelerate schedules, if that is a requirement. The HDD Company (Cameron Park, CA) through its affiliate, The Crossing Company, operate 27 HDD rigs in western North America. As it is likely, if not certain, that Horizontal Wells could be constructed in less time that proposed slant wells, we believe the decision to exclude this alternative from analysis in the DEIR/EIS is unsupportable.

MCWD-IW-10 cont.

Physical Limitations. The DEIR/EIS's conclusions regarding the physical limitations of HDD are based on either no information or outdated information. In fact, the physical limitations of HDD are much less than the slant well technology proposed for the MPWSP. For example, in terms of length, HDD can extend further than the 2,500-foot maximum mentioned in the description of Horizontal Wells (Appendix I1 p. I1-5). Table 2 below summarizes select recent activities that highlight lengths more than 2,500 feet specifically related to shore approaches or ocean outfalls.[29] As a result, HDD wells can be located significantly further inland than slant wells and avoid impacts to sensitive habitats and impacts associated with potential exposure from erosion.

Table 2. Selected HDD Projects with Shore Approaches or Ocean Outfalls.

Project Name	Location		Formation
FASTER Cable Project	Bandon, Oregon	Beach Approach: Pacific Ocean 5,000' of 5" Steel Pipe	Sandstone / Siltstone Rock
ZA1 - 230KV UG Line	San Francisco, California	(6)-Beach Approaches into S.F. Bay 12" & 3" HDPE Bundle	Rock and Bay Mud
Mayport Naval Base	Jacksonville, Florida	Beach Approach - 4000' of 5" steel	Sand/Silts

[28] See attached Appendix with site profiles and photographs during construction.
[29] 'Shore approaches' or 'ocean outfalls' are terms used in HDD to describe drilling out under the sea.

OOI RSN	Pacific City, Oregon	(2) Beach Approaches 5000' of 5" Steel Pipe (ea.)	Sands/Silts/Clays
Hueneme Outfall Replacement	Port Hueneme, California	2540' of 36" HDPE Ocean Outfall in the Pacific Ocean	Sand, Silts, Cobble and Boulders
Wastewater Treatment Plant Outfall		4600 feet of 18" Steel Outfall Columbia River. Installation of 80-foot diffuser, pig launching facility, 500 feet of Ductile	Silt, Sand and Gravel
Twin Rocks Sanitary District Ocean Outfall	Twin Rocks, Oregon	4400' Beach Approach. 8" coated steel pipe.	Sand, Silt and Gravel
Effluent Disposal System.	Port Orford, OR	2200' of 12" HDPE for an Ocean Outfall	Mudstone
NOSD HDD Outfall Replacement	Netarts, Oregon	4150' of 14" HDPE Ocean outfall	Mudstone and Basalt

Source: The HDD Company

Moreover, unlike slant wells, HDD wells can avoid unfavorable subsurface conditions. Notably, The HDD Company has installed pipelines and utilities for ocean outfalls, under rivers, ship channels, creeks, wetlands, buildings and highways. The company is noted for execution in difficult situations. Therefore, as there is no support for rejecting Horizontal Wells on this basis, we believe the decision to exclude this alternative from analysis in the DEIR/EIS is unsupportable. MCWD-IW-10 cont.

Disposal of Drilling Sludge. Finally, the disposal of drilling sludge is not an issue for this site. There are options within Monterey County including Johnson Valley part of the Salinas Valley Solid Waste Authority. Importantly, the proposed Slant Wells would have the same issues relating to drilling sludge, if not further concerns related to chemical nature of their deeper geologic materials. Therefore, as there is no support for rejecting Horizontal Wells on this basis, we believe the decision to exclude this alternative from analysis in the DEIR/EIS is unsupportable.

Number of Wells and Expense. The DEIR/EIS Appendix states that approximately 10 to 12 horizontal wells would be needed to provide sufficient source water for the 9.6-mgd MPWSP Desalination Plant. We believe this estimate is potentially reasonable, but would need additional information that was not provided in the DEIR/EIS to confirm. While we believe the DEIR/EIS's suggestion that Horizontal Wells would be more expensive than other options is likely inaccurate, there is insufficient information provided to comment on this issue. Based on our knowledge of the costs of slant wells to date, we do not believe that drilling Horizontal Wells is likely to be more expensive. We also note that using Horizontal Wells would eliminate the need for return water and the proposed Castroville Pipeline, which ironically would be installed beneath the Salinas River and Tembladero Slough using HDD. (See DEIR/EIS, p. 4.6-142.) Therefore, we believe that Horizontal Wells could actually reduce the MPWSP's costs.

Finally, there are more operating Horizontal Wells conveying seawater to reverse osmosis plants in the world than Slant Wells drawing water from deep aquifers for desalination. In fact, we are unaware of any operating Slant Wells drawing water from deep aquifers for desalination. Given the observed reduction in efficiency over a short period at Dana Point Slant Well (discussed below), it is possible, if not likely, that less Horizontal Wells would be needed to supply the required feedwater than slant wells over the life of the project.

Second, the DEIR/EIS's statement that "*(2) installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis*" (Appendix I, page I1-5) is inaccurate.

Artificial Filter Packs. Starting in 1985 in the United States, artificial gravel-pack filters around horizontal well screens have been designed, constructed and operating per plan. One drilling and construction company, Layne, has installed tens of thousands of lineal feet of gravel-packed lateral well screens. Sites have been coastal and inland. Subsurface deposits at potential sites in and around the Monterey Bay area would fall within the range of depositional environments in which screens have been successfully installed. MCWD-IW-10 cont.

Moreover, to date, artificial filter packs have not been required when utilizing the Spanish technology Neodren. The function of the artificial filter pack is to prevent unwanted sands and fines from entering the plant. The Neodren system accomplishes this goal by utilizing well screens with high porosity (35% to 45%) that match soil formation characteristics. The nature of the sintered high molecular weight polyethylene well screen allows uniform pore size distribution. A scanning electron micrograph of the material shows polymer structure with closely controlled pores allowing water movement towards the inner conduit (Figure 2).

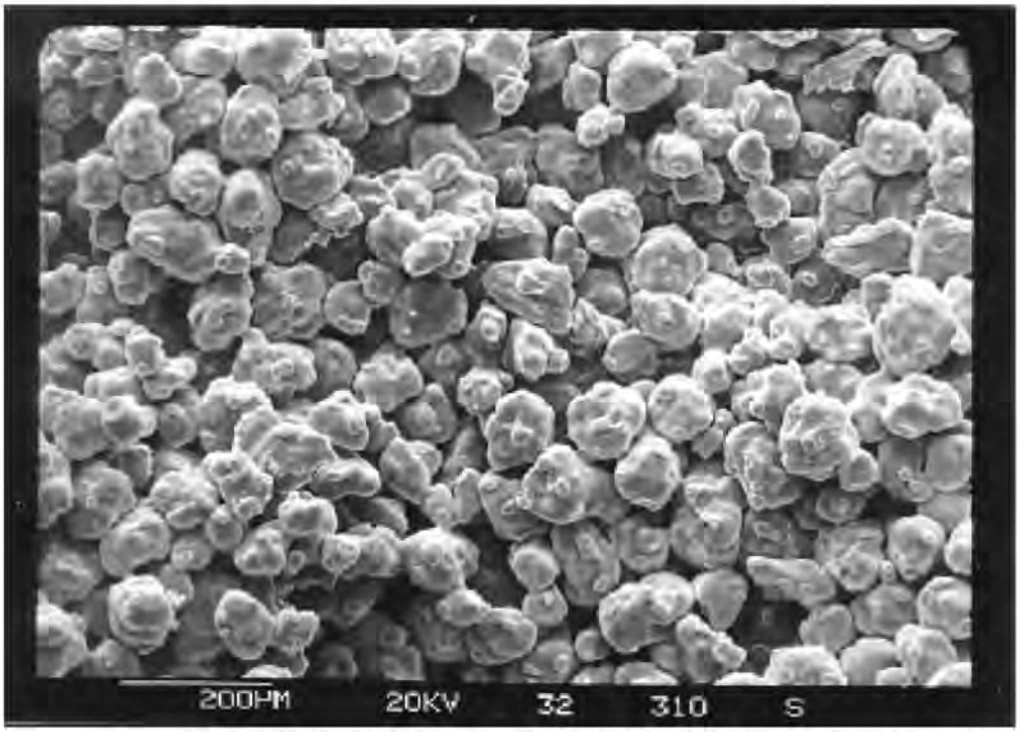

Figure 2. SEM Micrograph of sintered HDPE well screen

MCWD-IW-10 cont.

To illustrate this point, in the case of the current Intake Test Program comparing side by side screened open ocean intake with a subsurface intake, the San Diego County Water Authority selected a Neodren system which will have an average grain cut off size of 60 microns.

Finally, if filter packs are required, an offshore oil and gas product that uses an open-cell foam, which allows normal fluid production while controlling sand migration, could be used here.

Again, there is no support for rejecting Horizontal Wells on this basis. Therefore, the decision to exclude this alternative from analysis in the EIR/EIS is unsupportable.

Third, the DEIR/EIS's conclusion that "*HDD would not avoid or minimize any of the impacts associated with the proposed action*" is also based on unsupported conclusions and unsupportable for the reasons explained below.

MCWD-IW-11

Horizontal Wells Have the Potential to Avoid or Substantial Reduce the Projects Significant Environmental Impacts. At the CEMEX site, construction activities for the HDD intake could be located well further inland and outside any endangered species habitat avoiding impacts to endangered species along the coast. If HDD intake is designed to extract water from upper section of the marine sediment with direct conductance to the overlying seawater, then impacts to groundwater basin water levels would be circumvented and the groundwater quality would not be impacted. There would be no take from the Salinas Valley Groundwater Basin (SVGB), so there would be no need for the return water obligation. This method would reduce impacts associated with return water pipeline, reduce amount of water needed (thus less wells and less disturbance). As noted above, the Castroville Return Water Pipeline, would be installed beneath the Salinas River and Tembladero Slough using the same HDD drilling technology as Horizontal Wells to avoid impacts.

At the Potrero site, drawdown impacts on groundwater basin could be avoided, if properly designed and installed HDD intakes to take advantage of the transmission of seawater in the upper 15 to 25 feet of sea bottom sediments, therefore, eliminate impacts to Elkhorn Slough. If seawater is drawn into a HDD intake in the upper most section of the seafloor, the groundwater from SVGB would not be impacted and thus there would be no obligation to convey desalinated product water to the interior, which would reduce all impacts associated with return water pipeline. MCWD-IW-11 cont.

By drawing seawater from the uppermost strata and eliminating the need for returning water to the SVGB as proposed, HDD intakes would avoid the impacts associated with the return water pipeline and reduce the amount of supply water necessary for the MPWSP thereby also reducing energy needs and impacts on GHG.

We would also note that Horizontal Wells could potentially be located at numerous other locations along the Monterey Coast Shoreline, including locations closer to CalAm's service area.

4. Comments on Ranney Wells

The DEIR/EIS's decision that Ranney Wells would have similar impacts to the MPWSP's proposed slant wells and, therefore, need not be evaluated further is based on the limited discussion in Appendix I1 and conclusory allegations in the DEIR/EIS. (DEIR/EIS, p. 5.3-18.) The discussion of Ranney Wells in Appendix I1, like the DEIR/EIS's conclusions is not supported by any meaningful analysis and appears to be inaccurate.

To illustrate Ranney Collector Wells functioning in the marine environment, the DEIR/EIS (at p. I1-6) cites the California Academy of Sciences in San Francisco as an example. Unfortunately, the Ranney Well that served the Steinhart Aquarium in Cal Academy has been shut down since July 2010.[30] Ranney seawater collector wells in Mexico, however, have been operating since 2000. The site was revisited by the Project Manager about ten (10) years after commissioning and showed no signs of "discernible degradation of the well screens."[31] MCWD-IW-12

The DEIR/EIS's description of the approach in this analysis related to requiring a shaft 90 to 260 feet deep seems ridiculous if they are attempting to tap into the shallow marine aquifer. As proposed it is an extension of a vertical shaft with lateral jacked radial arms serving to extract groundwater from the deeper aquifers. This error, could be the reason the DEIR/EIS concludes the Ranney Wells would have similar groundwater impacts. If the Ranney Wells were properly designed to tap the shallow marine aquifer, this alternative would likely significantly reduce groundwater impacts.

[30] Ed Miller, Senior Aquarist (retired), Steinhart Aquarium, personal correspondence with Arnell Bautista, Chief Engineer, Steinhart Aquarium, February 10, 2017.

[31] Henry Hunt, Senior Project Manager, Layne, personal correspondence, February 14, 2017.

The DEIR/EIS's statement about distance between Ranney Wells of 350 to 500 feet should be clarified to indicate that the objective of spacing Ranney Wells is to minimize hydraulic interference and is dependent on the well yields and aquifer characteristics.

The DEIR/EIS's statement that the construction area for a Ranney Well set up is larger than a Geoscience Slant Well construction site is suspect. If photographs during the construction phase of the Geoscience Dana Point Test Slant Well are indicative, then a Ranney Well could occupy the same footprint according to experts in Ranney Collector Wells operations.[32] As with other subsurface systems, the infrastructure including electrical panels can be below grade, if there is an aesthetic concern.

The construction process for Ranney Wells does not include dewatering as described in the Appendix I1. An upcoming Ranney Collector Well site is ½ acre, half the size used in this analysis. The duration of construction could be as short as 4 months and extend over a year depending on limitation to seasonal construction.

Contrary to the statements on page I1-7 related to submersible pumps, most collector wells employ vertical turbine pumps, although submersible pumps have also been used. Collector Wells could be connected by piping in such a way that the wells drain by gravity into a common wet well with pumping station located outside any sensitive habitat. For the MPWSP, vertical turbine pumps work satisfactory. MCWD-IW-12 cont.

Regarding the DEIR/EIS's suggestion on the limitation on the lateral lengths, if they have any experts advising them, they should be aware that laterals are routinely installed to 150 to 300 feet using conventional Ranney technology, but that longer horizontal wells screens are available using modified methods. One project had lengths out to 800 ft. Thus, the statement that Ranney Collectors for water supply are limited to 150 feet is unsubstantiated and outdated. Typical projects are 150 to 200 feet or more in lateral extent.[33]

The DEIR/EIS's statement related to equivalency of Slant Wells occupying the same physical area is also unlikely. There would be, depending on the number of collector wells needed, likely fewer Ranney Wells than Slant Wells, which would reduce the Ranney Well footprint.

In summary, the DEIR/EIS will need evaluate the Ranney Wells as they are both feasible and would at least potentially reduce the project's significant impacts at the CEMEX site.

We also note, that one could envision Ranney Collectors at two or three sites along the Carmel Beach providing adequate feedwater for the smaller desalting option of 6.4 MGD. The relatively larger sand size at this site would be ideal for transmission of seawater from the shallower marine aquifer. This intake site could avoid issues of endangered species and is closer to where the water is to be delivered, thus is could drastically cut cost of conveyance of product water. Carmel Beach is a 2-km long continuous beach, part of the Carmel River littoral cell which delivers sand and sediment in a principally southward direction. According to the USGS, MCWD-IW-13

[32] Henry Hunt, Senior Project Manager, Layne, personal correspondence, February 14, 2017.
[33] Henry Hunt, Senior Project Manager, Layne, personal correspondence, February 14, 2017.

the Carmel Beach has had a long-term accretionary trend from 1896 to 2002.[34] However, along the southern segment of the beach, the shorter-term influences (1952 to 2002) have been erosionary at a rate of 1.7 m/yr.[35] Finally, we note that with uncertainty in Pacific Ocean climate, having flexibility among several intake systems to draw feed water, is something the DEIR/EIS should consider. MCWD-IW-13 cont.

5. Comments on Slant Wells

The DEIR/EIS's discussion of slant wells ignores the fact that slant wells are experimental unproven technology, with no track record in terms of long term operations. As noted above, we find this particular problematic given the DEIR's rejection of Horizontal Wells on this basis. Notably, an independent scientific technical advisory panel for an ocean desalination facility in Southern California convened as part of the California Coastal Commission proceedings addressed concerns about the engineering performance of a slant well in this manner[36]:

MCWD-IW-14

> Only one slant well has been successfully constructed to date, although a major installation to provide 20 MGD of feedwater capacity is under consideration in the Monterey Bay area *[this project*]. The successfully completed well is at Dana Point. When it was built and tested in 2006, it was test pumped at 2000 gpm and displayed a well efficiency of 95%. Recent longer term testing of the completed test well in 2012 documents the reduction in well efficiency from the original value of 95% in 2006 to 52% in 2012 (GeoScience 2012). Given this observed reduction in efficiency over a short period, the long-term performance of the technology has yet to be confirmed.
>
> … Slant wells completed in the Talbert aquifer would draw large volumes of water from the Orange County Groundwater Basin, which in itself is considered a fatal flaw. Recent public comments have suggested that pumping seawards of the Talbert Salinity

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34 Dartnell, P., Maier, K.L., Erdey, M.D., Dieter, B.E., Golden, N.E., Johnson, S.Y., Hartwell, S.R., Cochrane, G.R., Ritchie, A.C., Finlayson, D.P., Kvitek, R.G., Sliter, R.W., Greene, H.G., Davenport, C.W., Endris, C.A., and Krigsman, L.M. (P. Dartnell and S.A. Cochran, eds.), 2016, California State Waters Map Series—Monterey Canyon and Vicinity, California: U.S. Geological Survey Open-File Report 2016–1072, 48 p., 10 sheets, scale 1:24,000, http://dx.doi.org/10.3133/ofr20161072.

35 Hapke, C.J., Reid, D., Richmond, B.B., Ruggiero, P., and List, J., 2006, National assessment of shoreline change part 3—Historical shoreline change and associated coastal land loss along sandy shorelines of the California coast: U.S. Geological Survey Open-File Report 2006–1219, 72 p., available at http://pubs.usgs.gov/of/2006/1219/.

36 CCC's "Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, dated October 9, 2014, pp. 37, 56, 64, available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf

> Barrier could have beneficial impacts in managing seawater intrusion. In the Panel's opinion, however, this benefit is too uncertain to overcome the ISTAP conclusion about the fatal flaw of this technology as applied to the proposed Huntington Beach site. The advantage of having a subsea completion is largely lost in confined aquifers. The performance risk is considered medium, as the dual-rotary drilling method used to construct the wells is a long-established technology, but there is very little data on the long-term reliability of the wells. Maintainability is also a critical unknown issue.
> … Slant wells tapping the Talbert aquifer would interfere with the management of the salinity barrier and the management of the freshwater basin, and further, would likely have geochemical issues with the water produced from the aquifer (e.g., oxidation states of mixing waters).

MCWD-IW-14 cont.

This report was available over two years prior to the release of the DEIR/EIS. Remarkably, the DEIR/EIS fails acknowledged or address the conclusions in the report. The DEIR/EIS's failure to disclose and discuss the reduced efficiency of the Dana Point Slant Well testing is particularly noteworthy because one of the representative on the Hydrogeology Working Group authored the report on the Slant Well's decline.[37]

The DEIR/EIS's failure to disclose and address the findings in both reports must be acknowledged and addressed in the DEIR/EIS as it bears on the project's potential environmental impacts. Specifically, the DEIR/EIS must evaluate the how many slant wells will likely need to be replaced over the course of the foreseeable life of the project, and the impacts of replacing that number slant wells. Even under a best-case scenario, it is likely that all of the slant wells will need to be replaced at least once if not more. Notably, the selection of metallic components for the well screen and well, even if stainless steel, are not advisable in the highly corrosive seawater environment. The use of sacrificial zinc anode to deter galvanic corrosion is putting a band aid on a pulsating wound. Corrosion will continue; requiring replacement of the Slant Wells. The DEIR/EIS must be revised to address these impacts and address the impacts of replacement slant wells.

[37] See GeoSciences's Aquifer Pumping Test Analysis and Evaluation of Specific Capacity and Well Efficiency Relationships SL-1 Test Slant Well, Doheny Beach, Dana Point, California, dated September 7, 2012, available at http://www.mwdoc.com/filesgallery/SL_1_Step_Test_Comp._FINAL_TM_Geoscience_12_09_2012.pdf

II. Comments on DEIR-EIS Project Description

Comments on *Pretreatment System* (3.2.2.1)

Without some understanding of the source water chemistry, it is difficult to comment on the pretreatment process outlined. Note that the decision on the pretreatment filtration (media versus pressure filtration) has not been decided, probably for the same reason that the water quality of source water is unknown.

The coagulation and flocculation processes outlined in the pretreatment subsystem may not be relevant to subsurface intake sourced feedwater. If subsurface intakes are properly installed, the dissolved organic matter generally seen in natural seawater is not a factor in RO operations. In discussions with the design-build consultants on the desalination facility, they did not have access to water quality of the feedwater, so a conservative approach of introducing the possibility of a coagulation and flocculation steps was acknowledged. MCWD-IW-15

Comments on *Reverse Osmosis System* (3.2.2.2)

The configuration of the SWRO process is conventional with a first stage, followed by a partial second stage to reduce boron concentration to level acceptable to the drinking water standards of California (1 mg/l B). Other developers in the Monterey County have proposed a similar RO design.[38] MCWD-IW-16

Comments on *Operation of the Seawater Intake System, MPWSP Desalination Plant, and Brine Discharges* (3.4.1)

The statement about periodic maintenance of slant wells, "*The slant wells would require maintenance every 5 years.*" (3-57), seem highly optimistic given the state of development of the Slant Well technology. This information is unknown as there are no operating wells to derive maintenance records. When the casing is withdrawn, the slumping sand could enter the well screen. Additionally, after the first maintenance efforts, when the gravel/sand filter pack gets agitated, the introduction of sand into the well is likely. Attempts to mitigate this issue have been presented by GEOSCIENCE such as a half-moon cover of the well screen area to alleviate sand migration. MCWD-IW-17

Comments on *Power Demand* (3.4.5)

Most seawater desalination plants with capacity proposed in this project built in the last ten years incorporate energy recovery, whether isobaric or centrifugal, as means to lower energy consumption which can be a significant cost component of the operating budget. MCWD-IW-18

Qualifications of Intake Works LLC and Anthony T. Jones, Ph.D.

[38] Draft Process Design Report for the People's Moss Landing Water Desal Plant prepared by Watek Engineering, February 27, 2015. see
http://thepeopleswater.com/Draft_Process_Design_Report_and_Cost_Information.pdf

Intake Works LLC is a group of oceanographers, marine geologists, marine ecologists, HDD drilling specialists and marine construction professionals engaged in developing under-the-sea intakes for delivering low-turbid ocean water for industrial processes such as desalination. The company has surveyed existing seawater desalination intakes internationally and visited intake facilities in Malta, Spain, Saudi Arabia, Mexico, US Virgin Islands, and the Bahamas, besides installations in Massachusetts, Florida and California. We have studied various types of seawater intake systems and been involved in developing a synthetic infiltration system for porting the correct filter media to a proposed site.[39] The company is currently comparing subsurface intake systems with a direct wedge-wire screen open intake system at Camp Pendleton for the San Diego County Water Authority. Additionally, we have projects in Baja California providing intake installation for an aquaculture development.

As it relates to HDD, we work closely with Catalana de Perforacions (Barcelona, Spain), the drilling company that developed the Neodren process of installing microporous filterpipe under the sea from shore with horizontal directional drilling. Intake Works is the licensed provider of this technology in California. A brochure from Catalana de Perforacions describing their project history with Neodren installations (Exhibit 3).

Anthony T. Jones, Ph.D is the primary author of these comments. Prior to joining Intake Works, Anthony T. Jones, Ph.D was the Chief Technology Officer for Campbell Applied Physics Inc. and its predecessor, Oases Global System, where he led a team that developed advanced seawater desalination systems incorporating technology transferred from the US Department of Energy national laboratories. The team he led demonstrated, at a 1/8th scale, 30% lower energy consumption and up to 70% lower carbon footprint for seawater reverse osmosis potable water production. As it relates to this assignment, he served as a taxonomic expert and provided science support for U.S. Navy studies on marine biological fouling in San Diego Bay as part of a Congress-mandated study of an anti-fouling paint, tributyl tin. While participating in a study of sediment transport along shore and down submarine canyons for the US Army Corp of Engineers, he made more than 200 dives in the head of Scripps Canyon and La Jolla Canyon to observe firsthand the migration of sand down canyons. Additionally, his scientific diving training began at dive sites along the Monterey Peninsula. His first research cruise was off Monterey coring the deep-sea Monterey and Delgada fan on a US Geological Survey research vessel. Finally, he worked on a retrofit of Marina Coast Water District's seawater desalination in 2002.[40] A copy of his CV is attached as Exhibit 4.

[39] Jones, A. T. (2008). Can we reposition the preferred geological conditions necessary for an infiltration gallery? The development of a synthetic infiltration gallery. *Desalination*, *221*(1-3), 598-601.

[40] Campbell, R. L., Hanlon, J., Seamon, F., & Jones, A. T. (2003). Retrofit of a California coastal desalination plant: add technology, lower costs. In *OCEANS 2003. Proceedings* (Vol. 1, pp. 246-248). IEEE.

Conclusion

For the reasons outlined in the foregoing comments, we conclude the DEIR/EIS's conclusions regarding the Alternatives are unsupportable. To consider a reasonable range of alternatives, the DEIR/EIS must be revised to analyze, at minimum, the following potentially feasible alternatives, which would likely reduce the project's significant impacts:

(1) Horizontal Wells at CEMEX site

(2) Horizontal Wells at the Potrero site and/or other sites closer to CalAm's service area.

(3) Ranney wells at CEMEX and Potrero Road sites.

(4) Ranney wells at sites along Carmel Beach or other suitable locations closer to CalAm's service area. MCWD-IW-19

As discussed above, each of these alternatives was dismissed based on misinformation about the design, installation, maintenance and cost savings in comparison to the unproven Slant Well technology proposed for the MPWSP. At minimum, the each of these alternatives is potentially feasible, would avoid or reduce the project's significant environmental impacts, and meet all (or most) the project objectives as well as the stated purpose and need statements declared in the EIR. Without a fuller analysis of these alternatives, the DEIR/EIS does not consider a reasonable range of alternatives, and lacks support for its conclusion regarding the environmentally superior alternative.

Sincerely,

Anthony T. Jones, Ph.D.
President

Attachments: Exhibit 1. City of Santa Barbara Desalination Reactivation Project information
Exhibit 2. Presentation on Neodren Subsurface Intake Technology
Exhibit 3. Brochure on Neodren Projects from Catalana de Perforacions
Exhibit 4. Curriculum Vitae Anthony T. Jones, Ph.D.

MARINA COAST WATER DISTRICT

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November 9, 2017

Eric Zigas, Environmental Science Associates (ESA)
550 Kearny Street, Suite 800
San Francisco, CA 94108

Mary Jo Borak, CPUC
c/o ESA

Karen Grimmer, Monterey Bay National Marine Sanctuary
c/o ESA

Re: Information to Consider in the Environmental Review of the Monterey Peninsula Water Supply Project (CPUC Proceeding A-12-04-019)

Dear Mr. Zigas, Ms. Borak, and Ms Grimmer:

On March 29, 2017, the Marina Coast Water District (MCWD) provided comments regarding Cal Am's Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement that was prepared for the California Public Utilities Commission and the Monterey Bay National Marine Sanctuary. Since that time, MCWD has performed additional studies of the Salinas Valley Groundwater Basin as part of the District's responsibilities as a Groundwater Sustainability Agency in both the DWR Bulletin 118 Monterey Subbasin and the 180/400 Subbasin. We are providing the reports from those studies for your consideration in the environmental review process for the proposed Monterey Peninsula Water Supply Project.

Enclosed is a June 16, 2017, preliminary report from Stanford University (Gottschalk and Knight), "Preliminary Interpretation of SkyTEM Data Acquired in the Marina Coast Water District"; a September 29, 2017, memo report by Hopkins Groundwater Consultants, "Monterey Peninsula Water Supply Project Return Water"; and a memo report by EKI Environmental and Water, "Groundwater Remedial Actions and Establishment of Remedial Goals at Fort Ord Marina Coast Water District, California". The final report from Stanford University on the Airborne Electromagnetic Survey (SkyTEM) is expected to be complete in early 2018 and we will provide that report as soon as it is available.

Very truly yours,

Keith Van Der Maaten, PE
General Manager

Enclosures

MEMORANDUM

To:	Mr. Keith Van Der Maaten General Manager, Marina Coast Water District
From:	Curtis J. Hopkins Principal Hydrogeologist, Hopkins Groundwater Consultants, Inc.
Date:	September 29, 2017
Subject:	Monterey Peninsula Water Supply Project Return Water

Introduction

Hopkins Groundwater Consultants, Inc. (HGC) provides this memorandum to update our January 22, 2016, report to Marina Coast Water District (MCWD) regarding the Monterey Peninsula Water Supply Project (MPWSP or the project) return water proposal that was submitted to the California Public Utilities Commission (CPUC) with Curtis Hopkins' direct testimony dated January 22, 2016, including estimates regarding "return water" volume. This memorandum supplements that analysis and provides our professional opinion on why providing return water to the Castroville area as proposed in the Return Water Settlement Agreement will not address or mitigate the adverse groundwater impacts caused by the project in the North Marina Area of the 180-400 Foot Aquifer Subbasin within the Salinas Valley Groundwater Basin (SVGB). As explained in our prior memorandum and expanded upon herein, providing return water north of the Salinas River may beneficially affect groundwater in those aquifers, but it will not mitigate the project's primary adverse impacts to the aquifers south of the Salinas River and its water users. This memorandum further addresses new evidence, including the recent airborne electromagnetic (AEM) data collection by a team from Stanford University led by Dr. Rosemary Knight and the preliminary report on the data, which supports our original analysis regarding the extensive groundwater resources in the shallow aquifers along the coastline around the CEMEX site that will be adversely impacted by the MPWSP. This new evidence also confirms the importance of preserving and protecting the groundwater resources in these coastal aquifers. As requested, HGC provides our professional opinion regarding California American Water Company's (Cal-Am's) revised estimates regarding the volume of "return water" that the proposed MPWSP will be obliged to return to the SVGB.

In preparing these comments, we have reviewed the relevant portions of: (1) the MPWSP Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) prepared for the CPUC, dated January 2017; (2) the DEIR/EIS appendices; (3) Direct Testimony of Ian Crooks, dated September 15, 2017; (4) Settlement Agreement on MPWSP Desalination Plant

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Return Water, filed on June 14, 2016 (Return Water Settlement); (5) the documents provided to HGC in response to MCWD's data and public records act requests that were made available before September 26, 2017; (6) publicly available information referenced at the end of our comments; and (7) Preliminary Interpretation of SkyTEM Data Acquired in the MCWD, Ian Gottschalk and Rosemary Knight, dated June 16, 2017 (SkyTem Data Report). We note that while the initial SkyTem data (or AEM data) supports our prior analysis, our discussion of the SkyTem Data Report will need to be updated once the report is finalized. As explained below, this regional survey and the AEM data of subsurface resistivity values greatly assists the understanding of the presence of freshwater and saltwater in the coastal aquifer system and the type and location of extraction facilities that might effectively target seawater production in a beneficial manner. The AEM data provide a valuable source of information and this type of survey should have been conducted as part of the Cal-Am MPWSP original siting study.

Preliminary Statement Regarding Updated Professional Opinion Regarding Proposed Return Water Settlement Agreement and Cal-Am's Estimates of the Amount of Return Water Needed to Meet Its Estimated Demand.

Cal-Am proposes to return to the SVGB the percentage of the raw water (or feedwater) pumped from the MPWSP intake wells that is determined to be groundwater as opposed to ocean water. Our January 22, 2016, report discussed several options that Cal-Am had proposed to meet its return water obligations because Cal-Am had not selected a return water method at that time. Our report explained why several options under consideration would not satisfy Cal-Am's return water obligations, but concluded that Cal-Am had not provided sufficient information to evaluate its proposed methods for returning groundwater. Subsequent to our report, Cal-Am entered into a proposed return water settlement agreement, which provides in relevant part:

> Pursuant to the terms of this Settlement Agreement, the Parties propose that Cal Am deliver Return Water to the Castroville Community Services District (CCSD) and to the CSIP ***to satisfy Return Water requirements that may arise out of the Agency Act, CEQA, or California groundwater law,*** in accordance with terms and conditions and general principles contained in this Settlement Agreement and separate Return Water Purchase Agreements between Cal Am as seller and CCSD and the Agency, respectively, as purchasers of Return Water.

(Settlement Agreement on MPWSP Desalination Plant Return Water, p. 4 [¶AA].) As explained below, available information indicates the proposed return water settlement agreement will not satisfy the MPWSP's return water requirements under the California Environmental

Quality Act (CEQA) or California groundwater law.[1] As we explained in our original report, it is critical that the return method selected ensure the protective groundwater levels in the Northern Marina Subarea [2] are maintained to prevent increased seawater intrusion and would erase the substantial conservation efforts that have restored this portion of the SVGB. This is corroborated by the recent SkyTem data and Report, which further demonstrates that the aquifers in the Northern Marina Subarea contain substantial groundwater capable of supporting beneficial uses and is not entirely seawater intruded as Cal-Am claims. As we explained in our original report, modeling that correlates actual data—rather than unproven assumptions—from the MPWSP test slant well project (TSW) and monitoring well data from the aquifers within the Northern Marina Subarea affected by the project must be performed to provide any reasonable scientific basis for estimating the MPWSP's return water obligation and the efficacy of the method selected. As explained below, updated modeling to date is inadequate to evaluate the MPWSP's direct and cumulative impacts on water levels in the Northern Marina Subarea aquifers and entirely fails to evaluate how the project or return water method will impact water quality in the Northern Marina Subarea aquifers affected by the project.

Finally, HGC provides its comments regarding Cal-Am's revised demand testimony that estimates the MPWSP source water return water obligation at 7%. (Ian Crooks Direct testimony, dated September 15, 2017, p. 14:25-26.) Our January 22, 2016, report addressed Cal-Am's estimated amount of return groundwater included in its overall demand estimates, which were based on Cal-Am's plant sizing technical memorandum, which assumed that 875 acre-feet per year (afy) of groundwater, representing approximately 3.2 percent of the project's feedwater, would need to be returned to the SVGB for a 9.0 million-gallon-per-day (mgd) desalination plant without the Pure Water Monterey Groundwater Replenishment (GWR) Project.[3] (RBF Consulting, Memorandum from Paul Findley to Richard Svindland, Recommended Capacity for

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[1] / This memorandum does not address the adequacy of the DEIR/EIS or whether the Cal-Am's preferred MPWSP alternative that proposes slant wells as the CEMEX site in Marina, CA complies with California water rights law, the Monterey County Water Resources Agency Act's ("Agency Act"), the Sustainable Groundwater Management Act, pumping limits imposed by Marina Coast's 1996 Annexation Agreement pertaining to the CEMEX property, or other legal requirements. We have attached our comments on the DEIR/EIS for reference as they provide further information and explain why the Settlement Agreement on MPWSP Desalination Plant Return Water is inadequate.

[2] / For purposes of the memorandum, the Northern Marina Subarea is defined as that portion of the 180/400 Foot Aquifer Subbasin located south of the Salinas River and north of the northern boundary of the adjoining Seaside Area Subbasin. The CEMEX property is located in the southwest corner of the Northern Marina Subarea. Six of MCWD's water supply wells are located along the northern boundary of the Seaside Area Subbasin.

[3] / HGC understands that Cal-Am's current proposal includes a 9.6 mgd desalination plant without the GWR Project or a 6.4 mgd desalination plant with the GWR Project.

the MPWSP Desalination Plant, dated January 7, 2013.) The technical memorandum further estimated that 550 afy of groundwater would need to be returned to the SVGB for a 5.4 mgd desalination plant with the GWR Project. Our report concluded that the TSW project monitoring data available at that time demonstrates that Cal-Am's 2014/15 modeling and its estimates regarding the percentage of groundwater that would be pumped by the MPWSP were not accurate and needed to be updated. We further explained that updated modeling using information developed from the TSW field investigations and available from other studies in the Marina Subarea must be used to refine the MPWSP modeling to accurately simulate aquifer conditions and evaluate alternative methods of returning the groundwater pumped by the MPWSP and to provide a reasonable estimate of the amount of return water that will be required for the project to operate.

There is no supporting documentation or explanation as to how Cal-Am estimated the 7% source water return water obligation used to estimate demand in Mr. Crooks testimony. As explained below and our comments on the DEIR/EIS, the updated modeling to date does not estimate or provide any information useful to estimating the amount of groundwater that will need to be returned to the SVGB. The modeling in the 2017 DEIR/EIS bracketed the return water percentage between 0% to 12%, but failed to calculate the amount of return water that would be necessary to replace the groundwater drawn from the SVGB. The DEIR/EIS did not provide any discussion or information to support bracketing the return water percentage between 0% to 12%. As explained below, it is likely that MPWSP's return water obligation would be more than 12%, especially in the initial years of operation. As explained in our original report, until updated modeling correlated with actual data—rather than unproven assumptions—from the MPWSP TSW and monitoring well data from the aquifers within the Northern Marina Subarea affected by the project, there can be no reasonable estimate to inform Cal-Am's demand numbers and the efficacy of the MPWSP.

North Marina Area Geology Differs from the Geology North of the Salinas River.

As discussed in our prior report, the geology in the North Marina Area differs from the geology north of the Salinas River in the main portion of the 180-400 Foot Aquifer Subbasin and has been described in detail by studies conducted for the MPWSP. As shown and as described by previous study (Geoscience, 2014 and 2015, KJC, 2004), the terrace deposits that comprise the 180-Foot Equivalent Aquifer (180-FTE) in the North Marina Area grade into the alluvial deposits that comprise the 180-Foot Aquifer in the main portion of the basin around the present location of the Salinas River. This is illustrated in Figure 1 – Cross-Section A-A', which provides an interpretation of subsurface deposits within this specific coastal area using a portion of a subsurface profile constructed by Geoscience Support Services, Inc. from borehole data collected in the area (Geoscience, 2014). The approximate location of Cross-Section A-A' is shown in Figure 2 – Groundwater Basin Boundary Map.

Figure 1 – Cross-Section A-A'

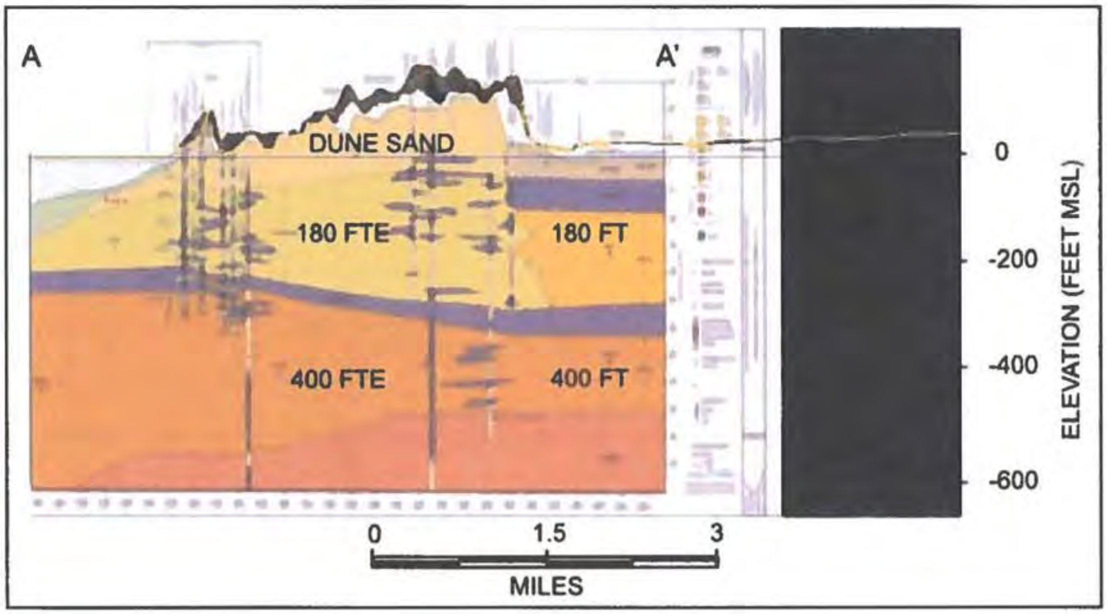
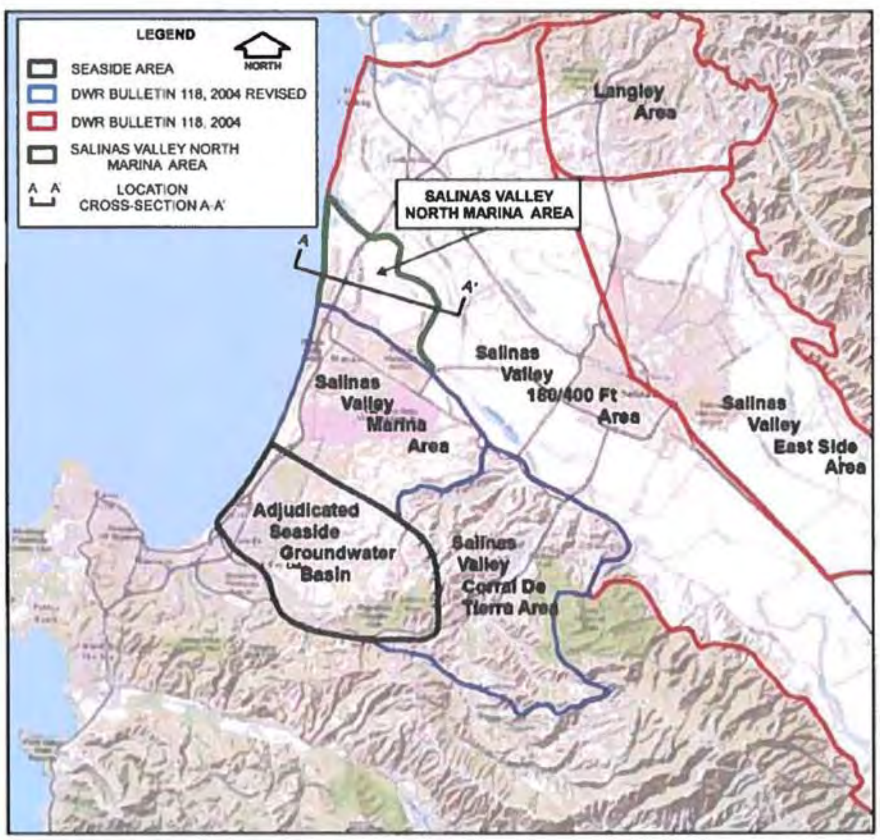
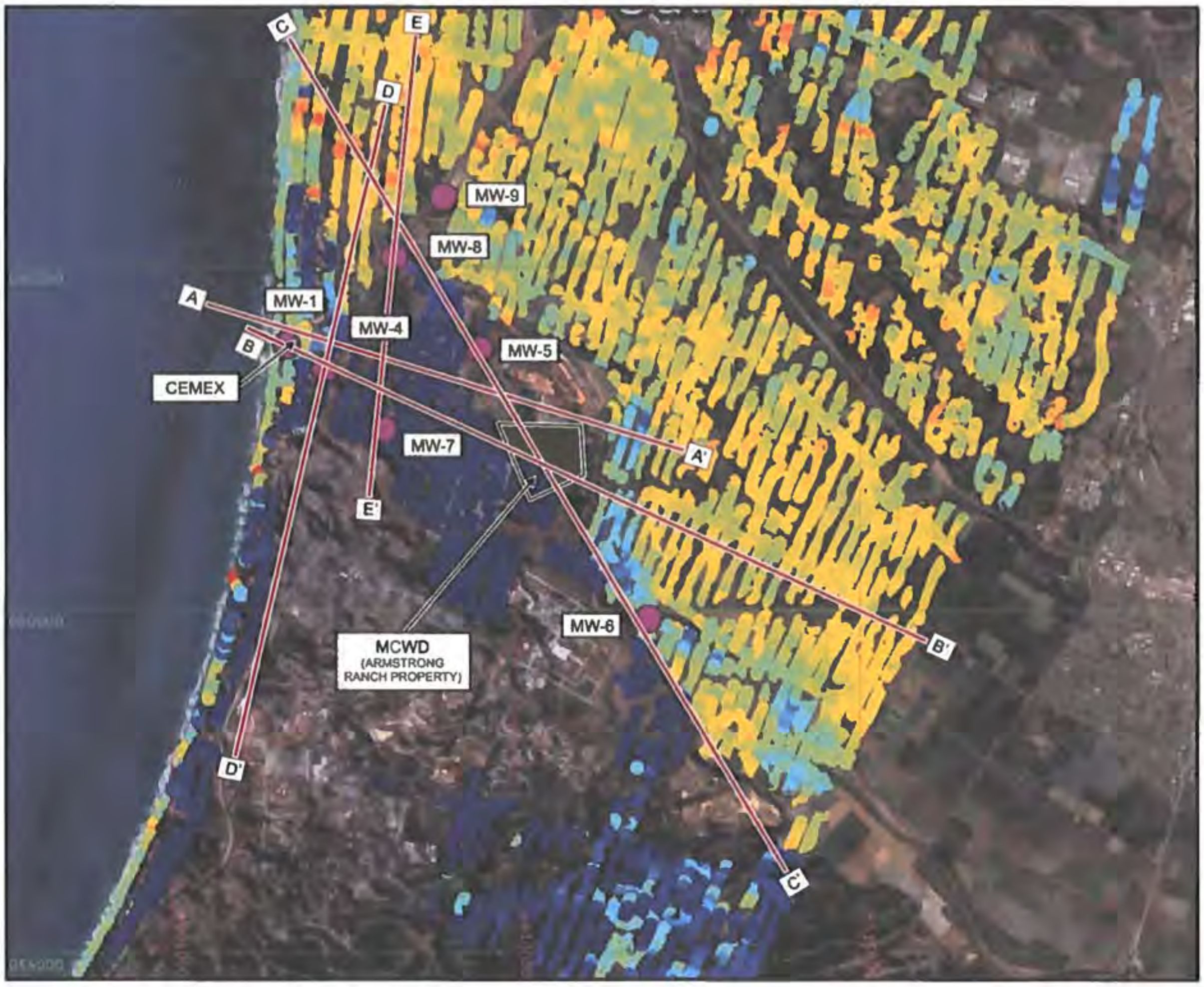


Figure 2 – Groundwater Basin Boundary Map



Investigation for the MPWSP includes the installation of a test slant well and multiple monitoring wells in and around the CEMEX property where the MPWSP intake wells are proposed to be located. The monitoring well network is being used to generate background water level and water quality data within the North Marina Area of the 180-400 Foot Aquifer Subbasin. The location of the monitoring facilities is shown on Figure 3 – Well Location, Geophysical Data Lines, and Resistivity Profile Map.[4]

Figure 3 – Well Location, Geophysical Data Lines, and Resistivity Profile Map



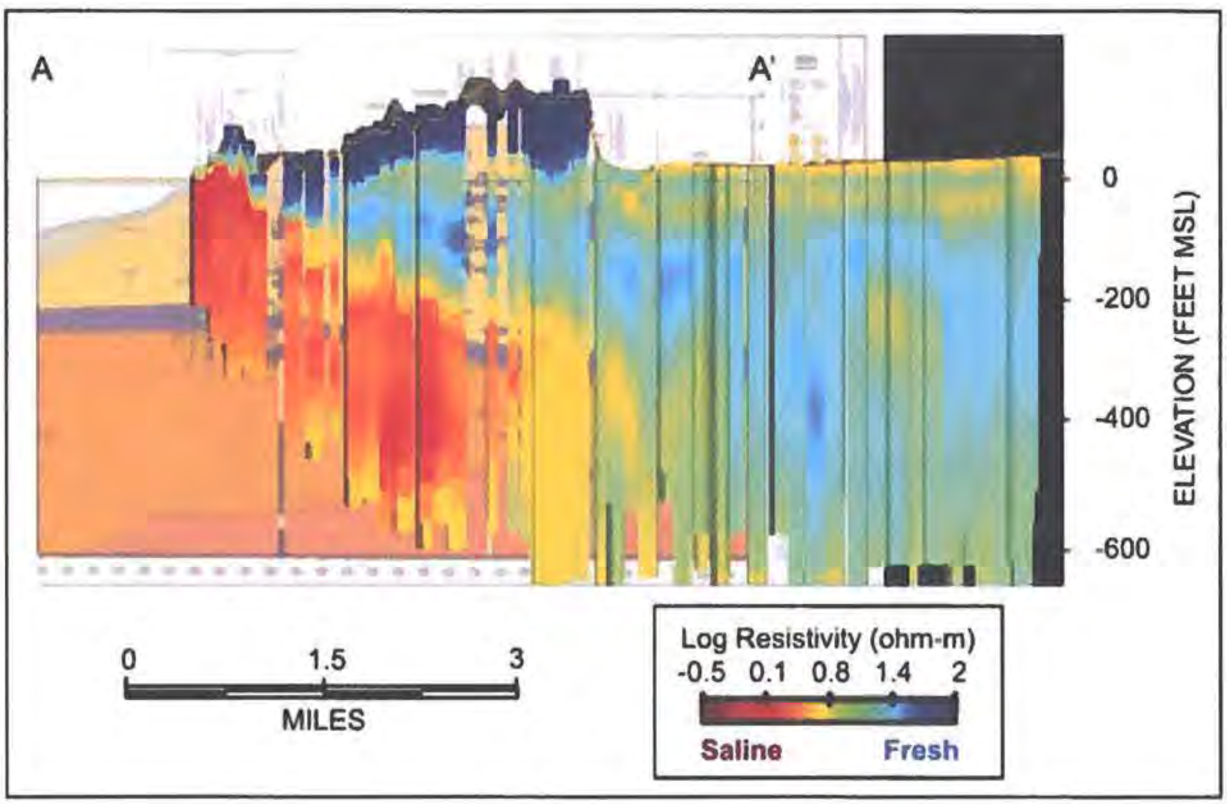
In addition to showing the approximate locations of the MPWSP monitoring wells, Figure 3 above, shows the substantial area of undeveloped land in and around the North Marina

[4] The pre-project studies indicate that MW-1S, MW-3S, MW-4S, and MW-7S likely are connected to the Dune Sand Aquifer zone recognized as the -2-Foot Aquifer that is identified beneath the County landfill site (Geoscience, 2016). The elevation and thickness of this zone indicates it likely has a hydraulic connectivity to the A-Aquifer zone in the main portion of the SVGB located north of the river.

Subarea that the AEM survey was able to target and obtain resistivity data. Each dot represents a location that resistivity data was collected. The color of the dots signifies the uppermost resistivity value at the measurement location where the electrical readings were collected. Figure 3 also shows the location of the hydrogeologic cross-sections/resistivity profiles provided in Figures 4, 6, 8, 17 and 18 below. Each cross-section/profile shows the resistivity by depth along the line shown in Figure 3. The resistivity profiles are presented in subsequent figures to illustrate the study findings at specific locations within the study area. Additional resistivity profiles are included in Attachment A – Regional Resistivity Profiles to further illustrate the changes in groundwater conditions across the entire study area. As explained in the SkyTem Data Report by Dr. Knight, those areas that are blue and green are more resistive where the groundwater is fresher and likely supports beneficial uses. Areas that are yellow, orange, or reddish are less resistive and likely contain more brackish groundwater. Nonetheless, these less resistive areas may still contain groundwater that supports beneficial uses. Additional information is needed to confirm the beneficial users that may be supported in these areas as explained by Dr. Knight in her preliminary report.

An overlay of these AEM survey data on the hydrogeologic cross-section from Figure 1 is provided in Figure 4 – Cross-Section A-A' with AEM Data, which starts along the coastline at the CEMEX site and runs directly inland several miles.

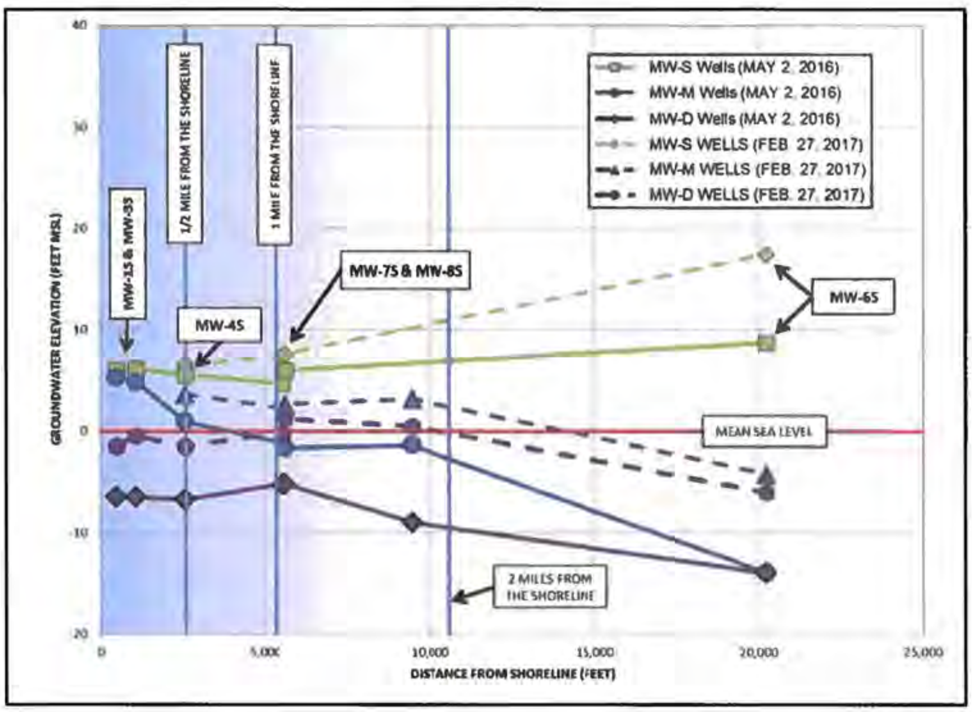
Figure 4 – Cross-Section A-A' with AEM Data



These data from this cross-section indicate a substantial amount of fresh water inland of the coastline and within the Dune Sand and 180-FTE Aquifer zones of the North Marina Subarea. These data further substantiate the opinions we provided in our original report that we noted were based on relatively sparse monitoring well water quality data that indicated this freshwater presence.

Also discussed below, recent data obtained regarding the gradient beneath the landfill (near MW-5) shows recharge from the river that creates a groundwater gradient toward the coastline. Importantly, this is consistent with the elevated heads in MW-6S where it also receives recharge from the river. Figure 5 – Water Level Elevation and Shoreline Proximity compares available data that were collected just prior to restarting the long term pumping test on May 2, 2016, and the high water level conditions observed on February 27, 2017. [5] This diagram shows the wells that are constructed in the Dune Sand Aquifer zone that is equivalent to the -2-Foot Aquifer zone along with MW-6S, which is in the A Aquifer zone (Geoscience, 2016). As shown by these data, there is a groundwater gradient that moves water from the river area of recharge toward the coastline in the Marina Subarea of the SVGB.

Figure 5 – Water Level Elevation and Shoreline Proximity



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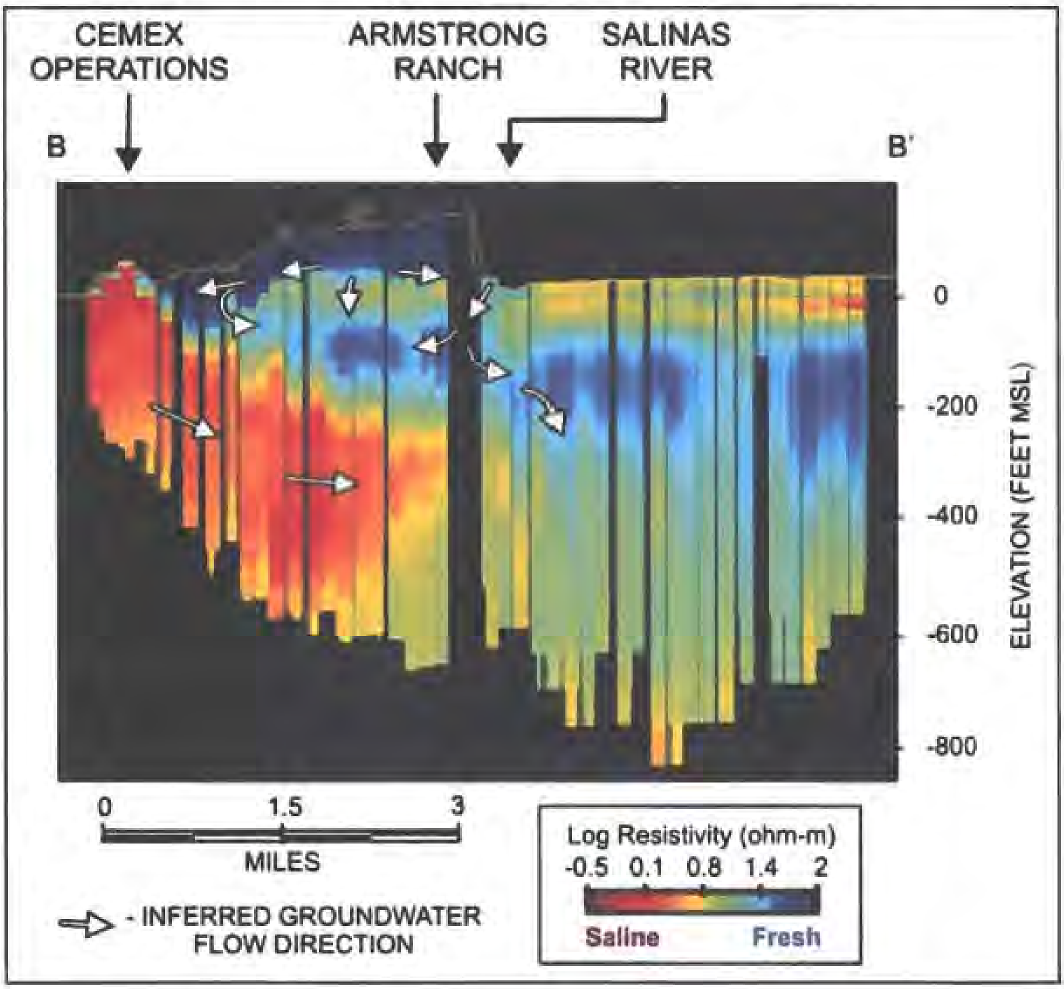
[5] Monitoring Well MW-5S data with water levels in excess of 35 feet amsl were not included in Figure 5 because it is now recognized to be screened in a semi-perched dune sand layer on top of the aquitard layer identified as the Fort Ord Salinas Valley Aquitard (FO-SVA). The FO-SVA layer overlies the -2-Foot Aquifer/Dune Sand Aquifer, which is reportedly 30 to 40 feet thick and rests on the Salinas Valley Aquitard near the river in the Marina Subarea northeast of the project site (Geoscience, 2016).

The significance of this condition south of the Salinas River is illustrated by Figure 6 – Resistivity Profile B-B' Groundwater Flow Direction which shows the inferred groundwater flow directions that could create this large area of freshwater. The survey reveals that along the shoreline, seawater is present in varying amounts in almost all aquifer zones but is neither ubiquitous nor present in all aquifer zones away from the coastline in the North Marina Area. These data demonstrate that there is a substantial freshwater resource in the Marina Subarea and that our inference in our original report that were based on the sparse water quality data made available from the project was not a selective manipulation of data or "cherry picking" as Cal-Am has claimed. These data indicate conditions within the aquifer within the North Marina Area are not well understood, but likely have significant effects on the actual occurrence and movement of groundwater.

Figure 6 – Resistivity Profile B-B' Groundwater Flow Direction



The dune sand area south of the river is readily recharged by rain water and storm water detention basins in the developed MCWD area south of the project which recharges the underlying 180-FTE aquifer. The Salinas River appears to provide a substantial source of fresh water recharge around the North Marina Subarea which decreases the effects of the pumping stress from the main portion of the 180/400 Foot Basin located north of the river.

While these freshwater recharge mechanisms in the North Marina Area have not be thoroughly investigated to date, the AEM data indicate they provide a key source of protection to the aquifers in the groundwater basin located inland of the Marina Subarea. The magnitude of pumping proposed by the project will disrupt the natural balance that has controlled seawater intrusion to its present location. It is clear that the modelling preformed for the MPWSP to date does not predict its presence, the protective head it provides, or the impedance to seawater intrusion it provides. In fact, the MPWSP modelling indicates a much faster rate of seawater intrusion than presently indicated by these data. Figure 7 – Particle Tracking 180-FTE Aquifer – shows the simulated movement of groundwater in the 180-FTE Aquifer under assumed historical conditions.

Figure 7 – Particle Tracking 180-FTE Aquifer

Because of the lack of data within the North Marina Subbasin coastal area included in the MPWSP modelling to date, the inferred model conditions simulate movement of seawater in the 180-FTE Aquifer zone(s) from the coastline to MW-5 within 14 to 15 years. Overdraft conditions in the 180-400 Foot Aquifer Subbasin have persisted for decades, if this assumption had been accurate. Both the AEM data and the test well monitoring results show this is not the case. Notably, the rate of movement simulated in the MPWSP modelling would have driven the saltwater front miles further than presently observed if the groundwater model parameters and assumptions were accurate.

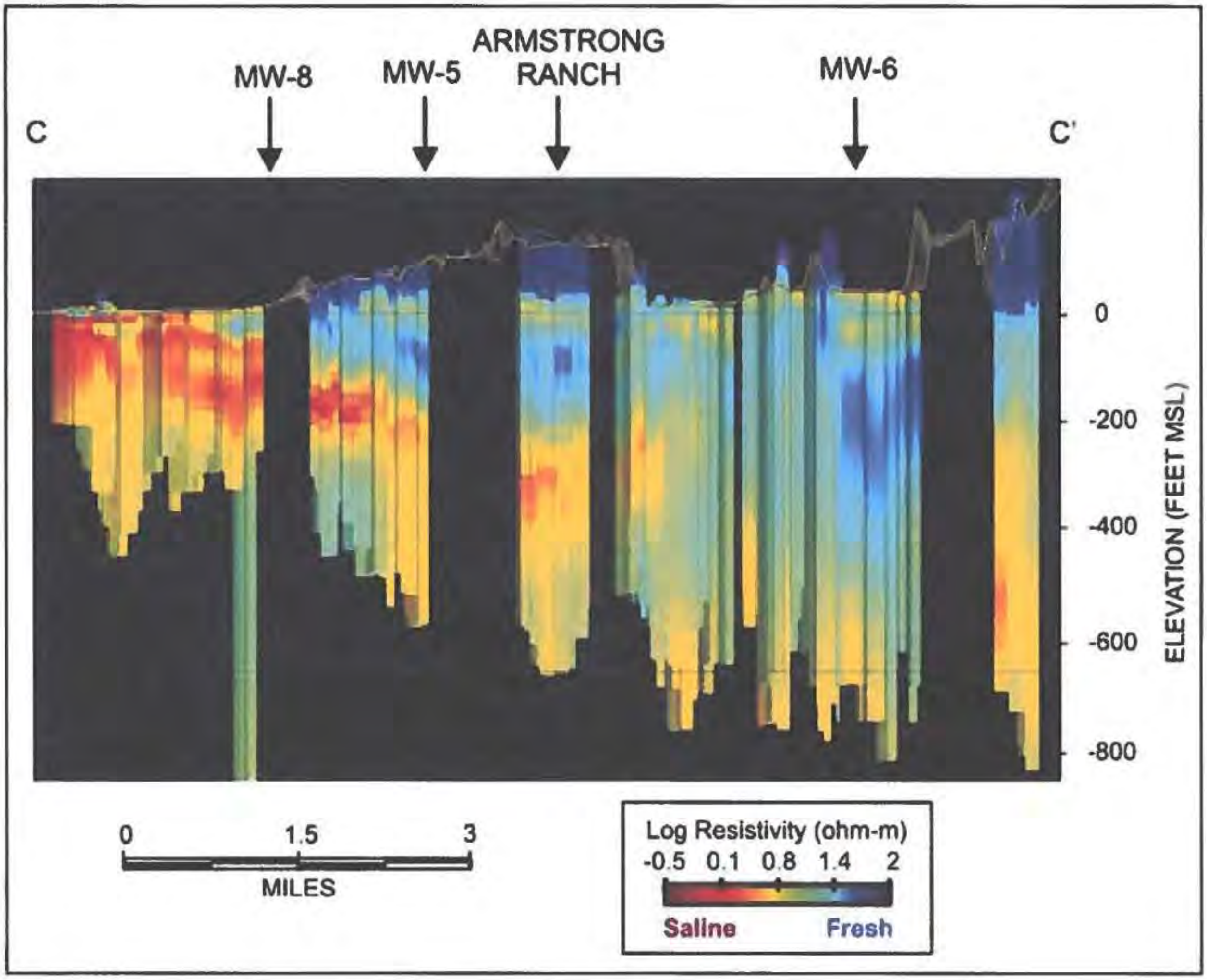
Given the potential magnitude of the increased groundwater production in the Dune Sand Aquifer and the 180-FTE Aquifer, the impacts to the SVGB, in particular the North Marina Subarea are grossly understated by the MPWSP modelling to date. Therefore, a well calibrated model is needed to quantify the project's potential impacts with a reasonable scientific basis to evaluate the mitigation that will be required and to calculate the amount of return water that will be required. Specifically, a model that utilizes all the recharge and discharge components included in the older Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM), and constructed with a level of detail reflecting our present understanding and knowledge of the hydrogeological system in the Marina Subarea is needed. Moreover, because seawater is an issue, a variable density model should be used to allow calculation of the head differences between the ocean water offshore and onshore, and freshwater in the aquifer zones inland and to allow prediction of water quality changes and the concentrations of feedwater that would be produced by the proposed project.

Water Quality in North Marina Area Aquifers.

Water quality data developed as part of the test slant well project are summarized in the tables included in Attachment B – Laboratory Water Quality Test Results. The first table shown in Attachment B provides the only data published for wells other than the test slant well and MW-4 (Geoscience, 2015a). This table includes laboratory results for wells including MW-1, MW-3, MW-4, MW-5, and the test slant well. The second table in Attachment B is a compilation of laboratory data received by MCWD in October 2015 in response to a data request in the CPUC proceedings. This table includes data for monitoring wells MW-6, MW-7, MW-8, and MW-9 that to our knowledge, have not been published in any of the MPWSP documents.

Figure 3 indicates the location of additional subsurface resistivity profiles provided below to show the results of the AEM survey. Figure 8 – Resistivity Profile C-C' shows the subsurface resistivity values for a line drawn past MW-8, MW-5, and MW-6. The significance of these data is that they indicate beneficial conditions have developed (or have always existed) in the shallow aquifer zones in the North Marina Area of the 180-400 Foot Aquifer Subbasin and appear contrary to information published by the Monterey County Water Resources Agency (MCWRA).

Figure 8 – Resistivity Profile C-C'



The recent investigation that is being conducted in and around the North Marina Area as part of the MPWSP has uncovered an occurrence of freshwater within the shallow Dune Sand Aquifer and the underlying 180-FTE Aquifer within the area delineated as seawater intruded by the MCWRA. As previously shown, water level data from wells in the shallow Dune Sand Aquifer indicate that there are protective water levels sufficiently above sea level to prevent seawater intrusion in the shallower sediments. This condition, combined with the lack of pumping in the 180-Foot Aquifer in the North Marina Area, appears to have slowed seawater intrusion in the aquifers in this portion of the coastline.

This is further illustrated by the water quality test results for total dissolved solids and chloride concentrations in these two uppermost aquifer zones are shown on Figures 9 and 10 – Average Total Dissolved Solids Concentrations in Groundwater and Average Chloride Concentrations in Groundwater, respectively.

Figure 9 – Average Total Dissolved Solids Concentrations in Groundwater

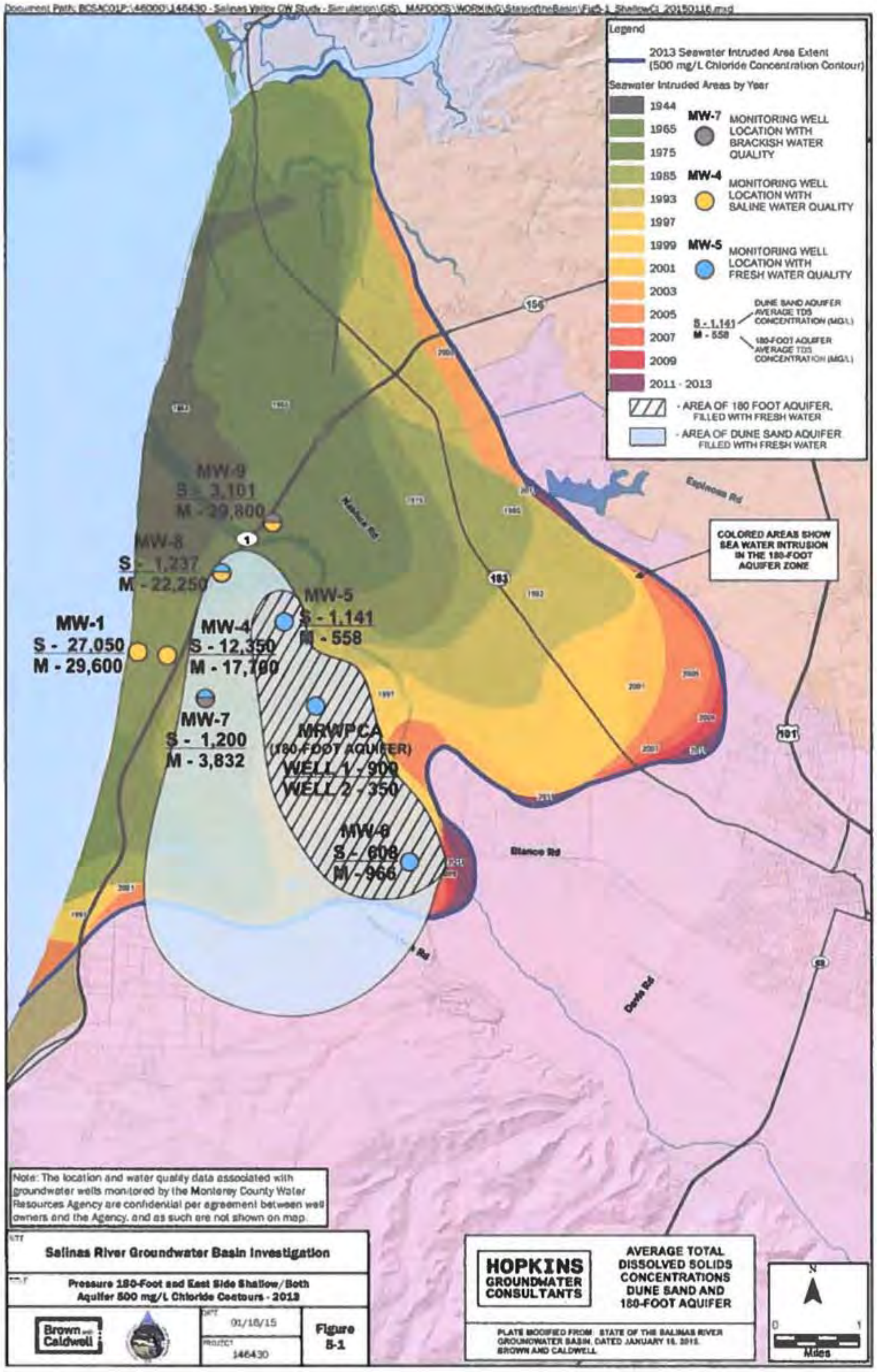
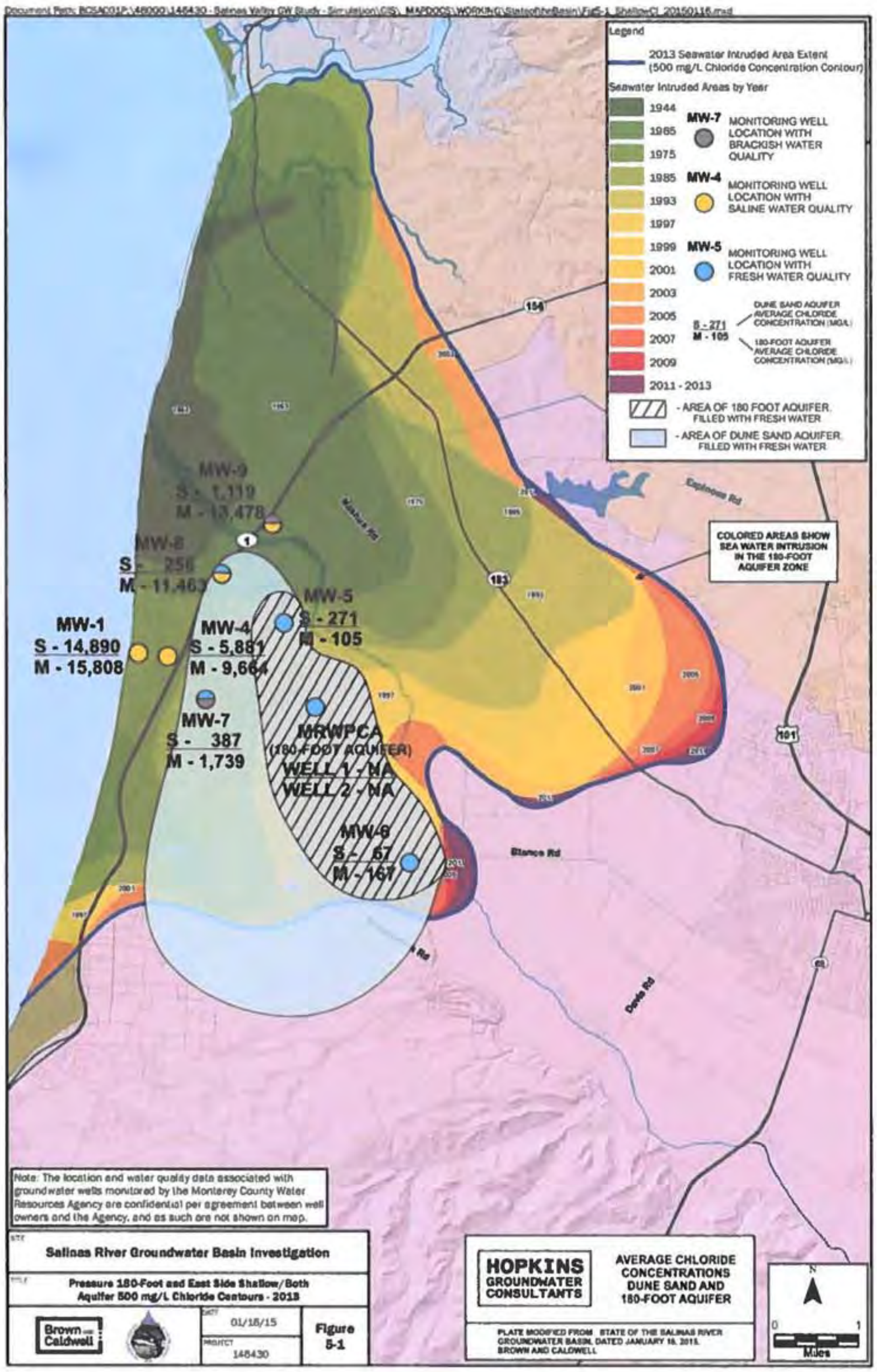


Figure 10 – Average Chloride Concentrations in Groundwater



These data indicate a change of groundwater conditions in this coastal section of the aquifer or alternatively, they may reveal the groundwater conditions that existed in an area largely lacking historical data. While the freshwater in this area contains some salts and nutrients that are derived from overlying land uses that include agriculture, landfill, and wastewater treatment plant and composting facilities, the chemical character is not sodium chloride, which is indicative of seawater intrusion.

Figures 11 and 12 – Stiff Diagrams of Dune Sand Aquifer Groundwater and 180-Foot Aquifer Groundwater, respectively show that the chemical character of groundwater in the new wells away from the coast is predominantly calcium chloride and calcium bicarbonate. Additionally, elevated concentrations of nitrate are present in monitoring wells MW-5S, MW-7S and MW-8S and range from 115 milligrams per liter (mg/l) to 237 mg/l. The concentration of nitrate decreases with depth at all of these sites, and is the highest at MW-5, which is closest to the landfill and the wastewater treatment facilities. While additional investigation is needed to determine the extent to which this area can be used as a direct source of potable groundwater supply, existing conditions show effective abatement of seawater intrusion in these shallower aquifer zones in this coastal portion of the SVGB. As explained in the EKI report, this condition could support the future beneficial uses of the 180-Foot Aquifer zone, including aquifer storage and recovery of highly purified recycled water for indirect potable reuse (EKI, 2017).

These data further substantiate the conclusions in our original report that a unique condition exists in the North Marina Subarea south of the Salinas River that provides a significant degree of protection against seawater intrusion in the shallower aquifers under the present and recent past hydrologic conditions.

Figure 11 – Stiff Diagrams of Dune Sand Aquifer Groundwater

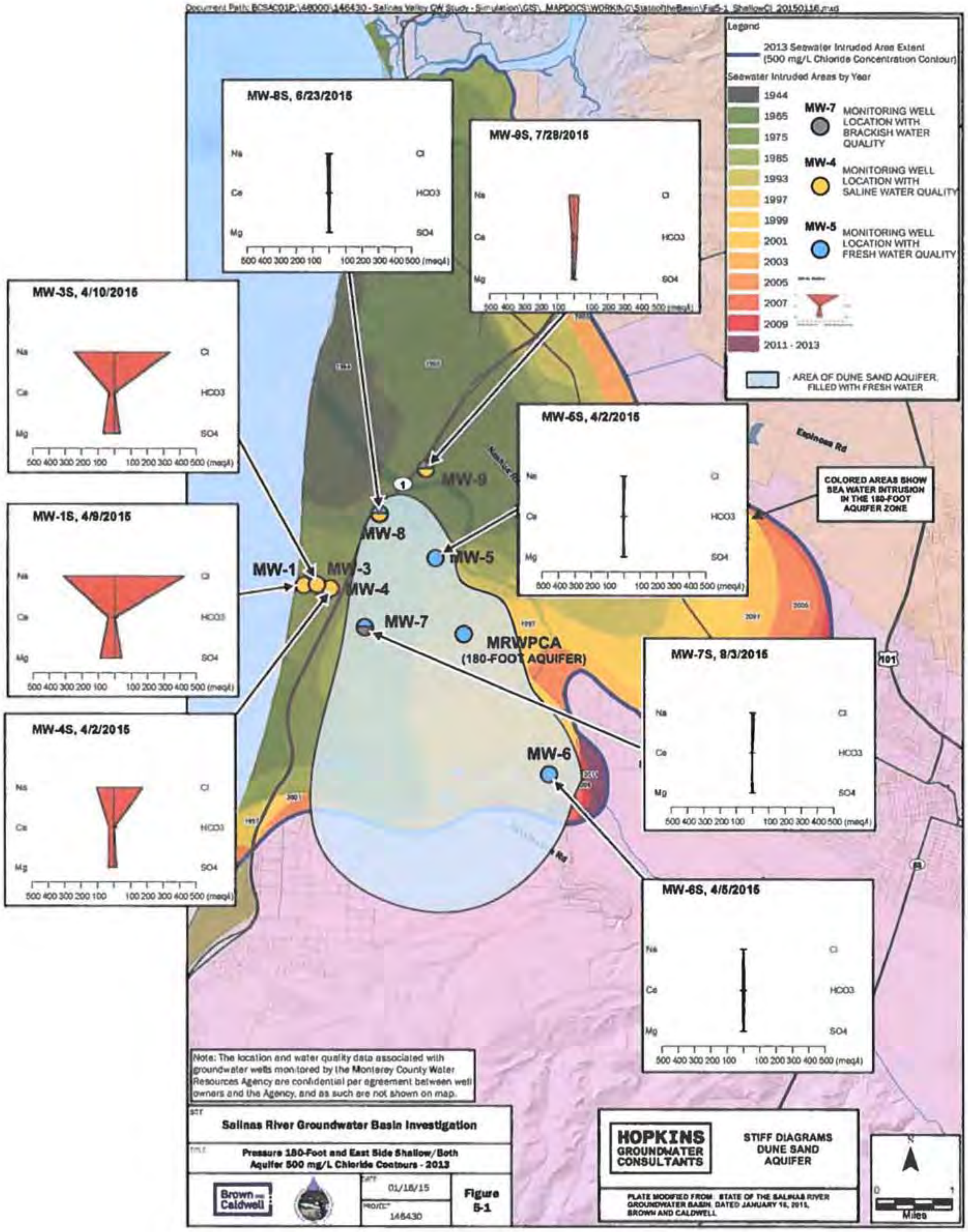


Figure 12 – Stiff Diagrams of 180-Foot Aquifer Groundwater

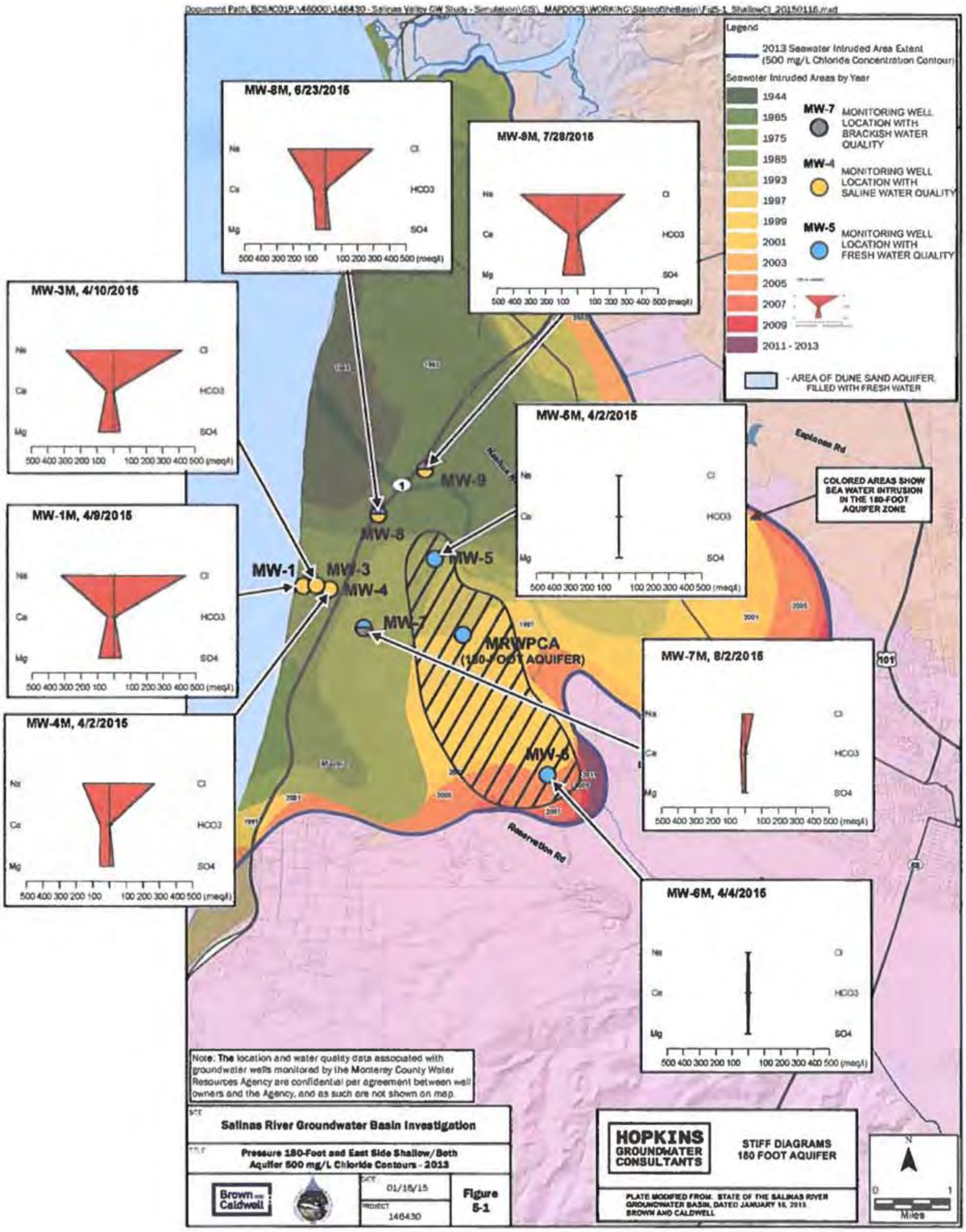
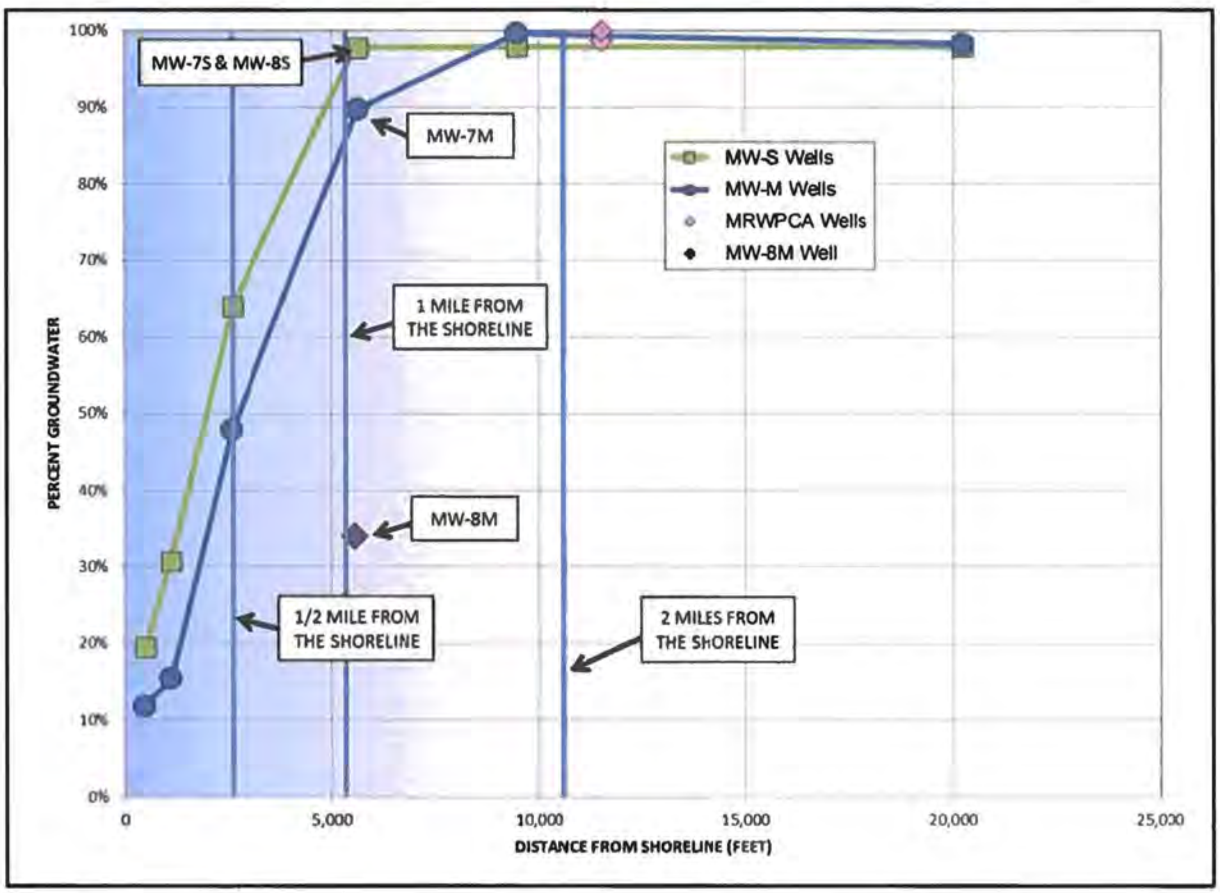


Figure 13 – Percent Groundwater with Distance From the Shoreline provides an updated rudimentary calculation of groundwater percentage versus ocean water percentage in the 180 FTE and 400-foot aquifers in the CEMEX area using the same equation applied to the test slant well discharge. The percentage of fresh groundwater in well water samples was calculated using the following equation:

GWP = [1 – (WSS – GWS/OWS – GWS)] X 100

Where: GWP = Percent Groundwater
WSS = Well Sample Salinity (mg/l)
GWS = Groundwater Salinity (420 mg/l)
OWS = Ocean Water Salinity (33,500 mg/l)

Figure 13 – Percent Groundwater With Distance From the Shoreline



Water quality data used in this analysis were provided by the laboratory test results summarized in Attachment B. These available data show that the percentage of ocean water decreases significantly within a short distance from the coastline in the North Marina Area and the salinity of groundwater that is comparable to seawater is not up to 8 miles inland in the 180-Foot Aquifer as assumed by previous study and modeled by the project proponent. Calculation of percent ocean water using this method cannot differentiate between salts from overlying land uses and salt from ocean water.

This calculation assumes that all salt in groundwater with a total dissolved solids (TDS) above a concentration of 420 mg/l is from ocean water. As shown in Figure 9, monitoring wells MW-5M and MW-6M along with the Monterey Regional Water Pollution Control Agency (MRWPCA) Wells are located in the 180-Foot Aquifer and the average TDS concentration for samples from these wells ranges from approximately 558 to 966 mg/l and is also considered fresh water (See Figure 9 and Attachment B). However, the TDS concentration for MW-7M (3,832 mg/l) and MW-8M (22,250 mg/l) show that closer to the coast and closer to the main portion of the SVGB north of the river, seawater has impacted the underlying 180-Foot Aquifer as shown in Figures 9 and 10.

Cal-Am's Estimates of Groundwater That Must Be Returned Are Substantially Understated.

As noted above, there is no supporting data or explanation for the 7% return water estimate included in Cal-Am's updated demand number. It does not appear to be based on the DEIR/EIS or any other information that has been made available. As we have previously addressed, the DEIR/EIS failed to disclose the amount of return water that would be necessary to replace the groundwater drawn from the SVGB as proposed in the Project Description. Also, the DEIR/EIS did not provide any discussion or information to support bracketing the return water percentage between 0% to 12%. In fact, it is likely that the return water obligation would be more than 12%, especially in the initial years of operation. Even the North Marina Groundwater Model ($NMGWM^{2016}$) calibrated model, which likely underestimates the slant wells production of groundwater, predicts up to 22% of groundwater will be produced from the Dune Sand Aquifer and another 3.5% of groundwater will be produced from the 180-FTE Aquifer during the initial time step.[6]

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[6] / Modeling summarized in Appendix E1 of the April 30, 2015 MPWSP Draft EIR (Geoscience, 2014a, Figure 20) indicates that the initial groundwater production would be much greater during the initial production period (50 to 40 percent during the first year) and would decrease over a 4-year period to an estimated 4 percent after 4 years of production. Our review of the $NMGWM^{2016}$ calibrated model results indicates that initially over 25 percent of the production will come from groundwater and that after 5 years, the component predicted to come from the SVGB is approximately 10 percent. The $NMGWM^{2016}$ calibrated model, like the prior modeling, likely underestimates the slant wells production of groundwater (See Comment Nos. 3 and 9,

While it is not stated exactly how the range of 0 to 12 percent estimates were determined in the DEIR/EIS, an analysis of the salinity of the feedwater using ocean water with a TDS concentration of 33,500 mg/l and groundwater with an average TDS concentration of 440 mg/l can yield an estimate. Using these values and the laboratory test results obtained during the MPWSP's TSW production period and included in the water quality report to the Hydrogeologic Working Group (HWG) (Geoscience, 2015p, Table 2), the TSW produced water with an average TDS concentration of 25,033 mg/l and was comprised of 25.6 percent groundwater and 74.4 percent ocean water.

Over the initial period of the long-term pumping test, the TDS concentration had reached approximately 29,100 mg/l prior to cessation of the test in early June 2015. Subsequent laboratory test results indicate that on December 12, 2016, and January 19, 2017, the TDS concentration had reached approximately 30,200 mg/l and 31,700 mg/l, respectively. Using these values along with the average June and July 2017 value of 29,150 mg/l, we can estimate a range of return water quantities by considering the groundwater component produced if a groundwater TDS concentration of 1,000 mg/l (State Drinking Water secondary standard) or 3,000 mg/l (Regional Water Quality Control Board (RWQCB) Water Quality Control Plan (WQCP) for the Central Coast Basin, water quality defined for beneficial uses) were used compared to the reported 440 mg/l average groundwater TDS concentration. Table 1 – Feedwater Composition Based on TDS Concentrations shows a comparison of the results using these values.

As shown in Table 1, approximately 13.3 to 14.4 percent of the feedwater was groundwater when pumping was initiated. While higher salinity feedwater was produced by the TSW in December 2016 and January 2017, the concentration declined by June and July 2017, where approximately 13.2 to 14.3 percent of the groundwater produced would need to be returned. As explained below, the water quality bias of the TSW to be more saline than other comparable wells located away from the CEMEX operations is a result of the dredge pond location and the salt water discharges that occur inland of the TSW location. As discussed below, this bias is unlikely to exist at the proposed slant well locations further south of the current MPWSP test well or continue at the current test well location after CEMEX ceases operations.

Notably, if a greater percentage of groundwater is produced than presently estimated by the DEIR/EIS, which is highly likely, or if usable groundwater salinity increases, the annual amount of return water to the SVGB would increase accordingly. The higher return water volumes required during the initial production period when a greater component of groundwater is pumped is not addressed in the DEIR/EIS return water proposal. Please note that our comment here should not be interpreted to suggest the return of all groundwater to the SVGB as

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Hopkins, 2017) and should not be considered to represent maximum amount of groundwater that may need to be returned to comply with the Agency Act.

proposed MPWSP's return water proposal would mitigate the project's impacts to the North Marina Subarea. The inadequacy of the DEIR/EIS's analysis of the MPWSP's return water proposal and DEIR/EIS's failure to mitigate the project's cumulative impacts on groundwater is still an issue.

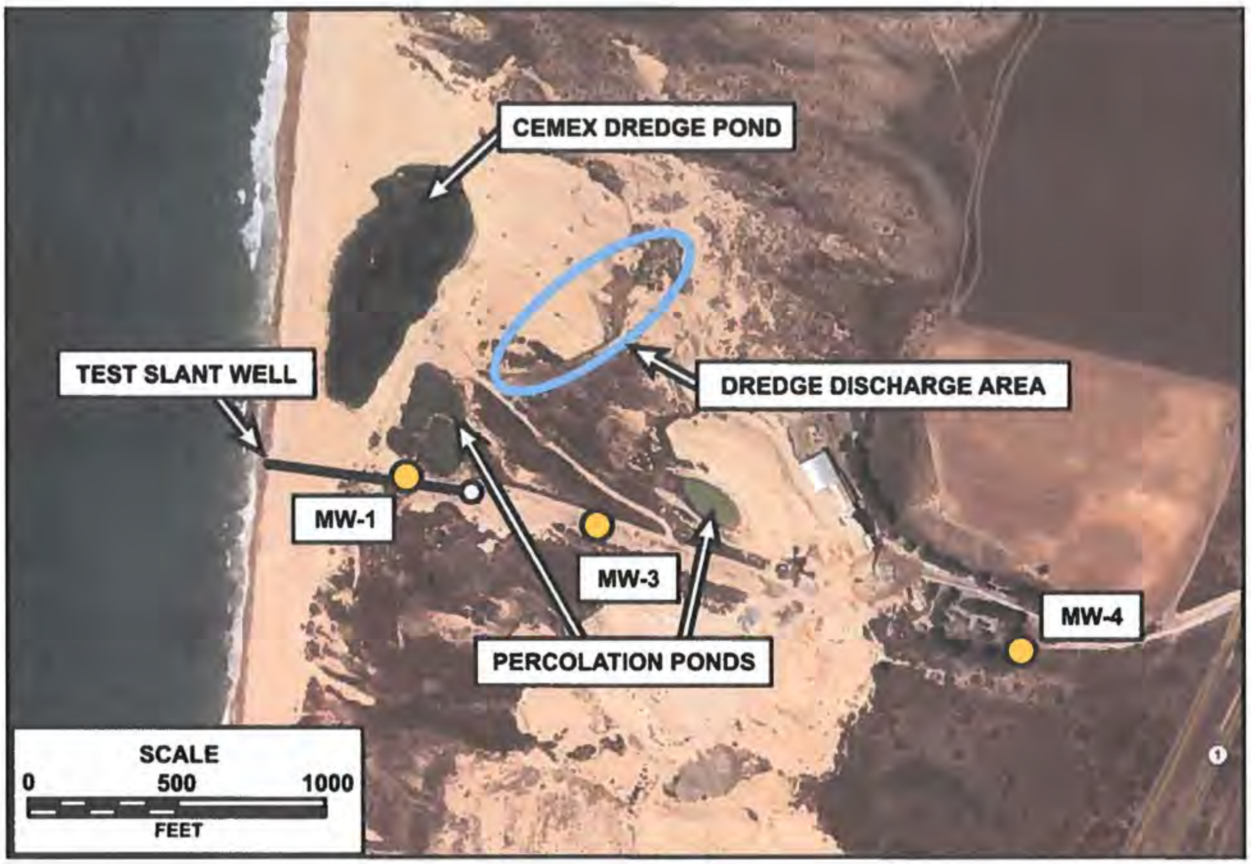
Table 1 – Feedwater Composition Based on TDS Concentrations

OCEAN WATER SALINITY (MG/L)	GROUNDWATER SALINITY (MG/L)	FEEDWATER SALINITY (MG/L)	GROUNDWATER PERCENTAGE	OCEAN WATER PERCENTAGE
33,500	440	29,085	13.3	86.7
33,500	1,000	29,085	13.5	86.5
33,500	3,000	29,085	14.4	85.6
33,500	440	30,200	10.0	90.0
33,500	1,000	30,200	10.2	89.8
33,500	3,000	30,200	10.8	89.2
33,500	440	31,700	5.4	94.6
33,500	1,000	31,700	5.5	94.5
33,500	3,000	31,700	5.9	94.1
33,500	440	29,150	13.2	86.8
33,500	1,000	29,150	13.4	86.6
33,500	3,000	29,150	14.3	85.7

Cal-Am's return water estimates again fail to address how CEMEX's operations affected the TSW discharge water quality and whether they would have similar effects on the 9 additional slant wells proposed further south and away from the dredge pond, the dredge pond discharges, and wash water containment ponds infiltration. Notably, due to CEMEX operation, the measured values relevant to salinity (specific conductivity, TDS, and practical salinity units (PSU)) provided by the TSW laboratory results and field measurements are not representative of what is expected from the larger MPWSP source wells array. At the time the higher salinity water quality samples were taken, the CEMEX dredge pond, which is in close proximity to the test well and inland of the shoreline, was breached for a significant period of time and directly filled by ocean water. It is likely the significant increase in salinity readings in the TSW during and following this period of time were the result was a large surge of ocean water into the dredge pond area overlying the inland portion of the beach adjacent to the test well. This condition will not persist throughout the year and is not present at the other proposed MPWSP source well locations.

Additionally, the CEMEX plant operations have influenced shallow groundwater quality in this section of shoreline for decades. As shown on Figure 14 – CEMEX Surface Water Features August 2013, the test slant well is located adjacent to numerous sources of saline water that are not present at other locations along the coast in particular where the other source water wells are proposed.

Figure 14 – CEMEX Surface Water Features August 2013

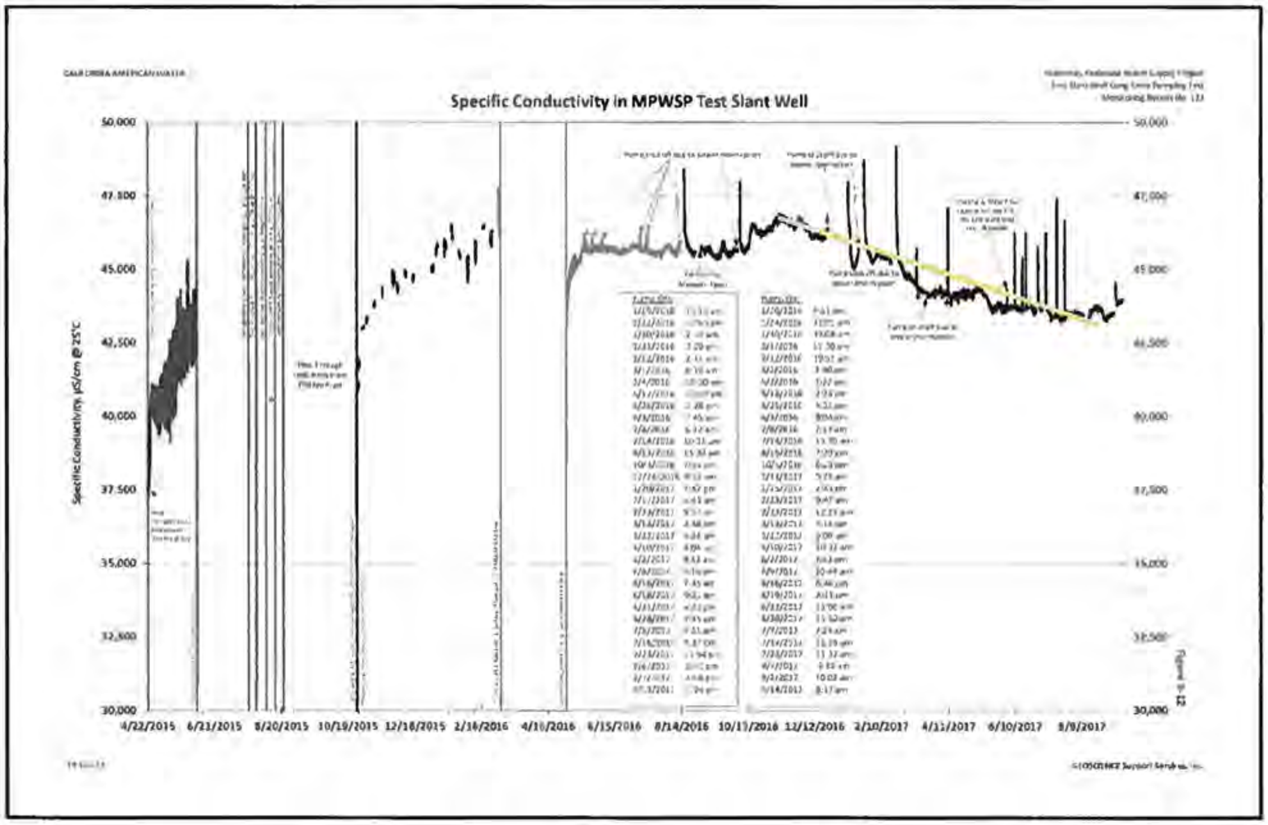


These localized sources of salt water shown in Figure 14 significantly influence the quality of the shallow groundwater that is observed in MW-1, MW-3, MW-4 and produced by the TSW. The result is a substantial overestimation of the seawater component flowing landward from the shoreline and an underestimation of the return water that will be required for mitigation.

The depletion of these landward sources of seawater is evident in Figure 15 – TSW Specific Conductance Values and shown by the declining specific conductance trend for the

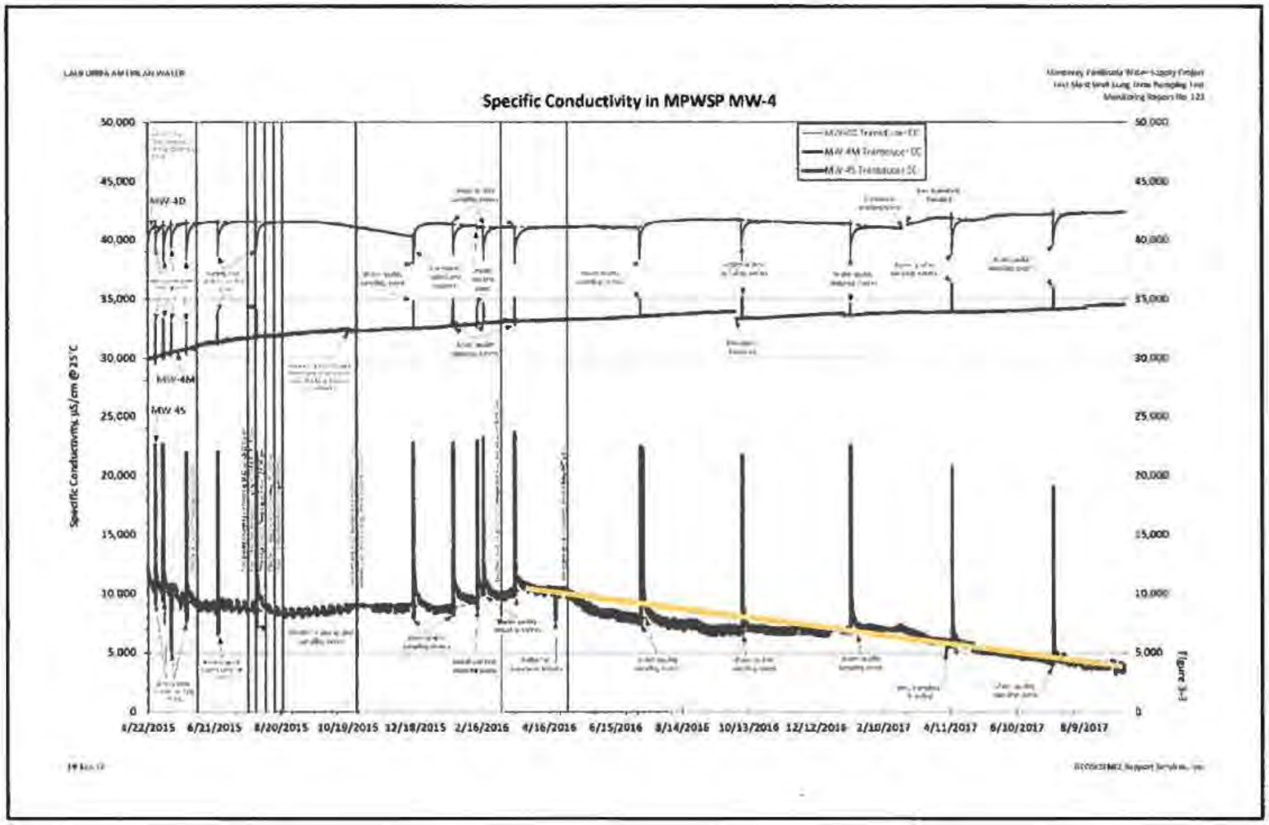
TSW since November 2016 over a period when dredge operations were not active (from Figure 3-12, Geoscience, 2017). Dredge pond operations were observed to be active in early August 2017. If there is a direct correlation between inland salt water discharges and the TSW produced water quality, the specific conductance values should begin to rise again.

Figure 15 – TSW Specific Conductance Values



The overall decline in specific conductance trend in MW-4S since operation of TSW is shown in Figure 16 – MW-4 Specific Conductance Values (from Figure 3-3, Geoscience, 2017) and is an indication of the seaward gradient caused by the mounded fresh water inland of the TSW location. These conditions are also evident in the AEM Survey data that show a mound of saline water at the coast on the CEMEX site (see Figure 6). This localized saline mound has been established by the decades of salt water discharge in the vicinity of the TSW (see Figure 14). Using the TSW data to estimate return water volumes is biased by this anomaly and the fact that the TSW operations were initiated at the end of a drought. Cessation of the CEMEX operations will result in removal of this site specific saltwater influence and in a decline in the TSW salinity. Because this influence is not located further south along the coast where the intake facilities are proposed, the proportion of fresh groundwater contribution to the feedwater supply is expected to be much higher.

Figure 16 – MW-4 Specific Conductance Values



The AEM Survey data confirm that the shallow coastal aquifers in the CEMEX area as far inland as MW-4 are impacted by the saline water discharge operations. Figure 17 – Resistivity Profile D-D' shows the subsurface resistivity values in the vicinity of MW-4 where a conductive mound of salt water is located (also see Figure 6). The increase in fresh/slightly brackish groundwater that is indicated by the available laboratory data, as we move a short distance away from the coastline (see Figure 13) is also shown in the AEM Survey data provided as Figure 18 – Resistivity Profile E-E' which crosses through MW-7 and MW-8. The location of Profiles D-D'and E-E' is shown on Figure 3.

Figure 19 – CEMEX Dredge Barge shows the dredge mining operations that consist of using a barge equipped with a suction pump that literally pulls sand off of the bottom of the pond and pumps it over the sand dunes in a slurry of seawater. Figure 20 – Dredge Slurry Discharge Line shows the pipeline that conveys the saltwater slurry over the sand dunes to the point of discharge as shown in Figure 14. While we do not know the rate of discharge, it must be relatively high (between 1,000 and 2,000 gallons per minute) in order to keep the sand from settling in the pipeline as it makes its way uphill.

Figure 17 – Resistivity Profile D-D'

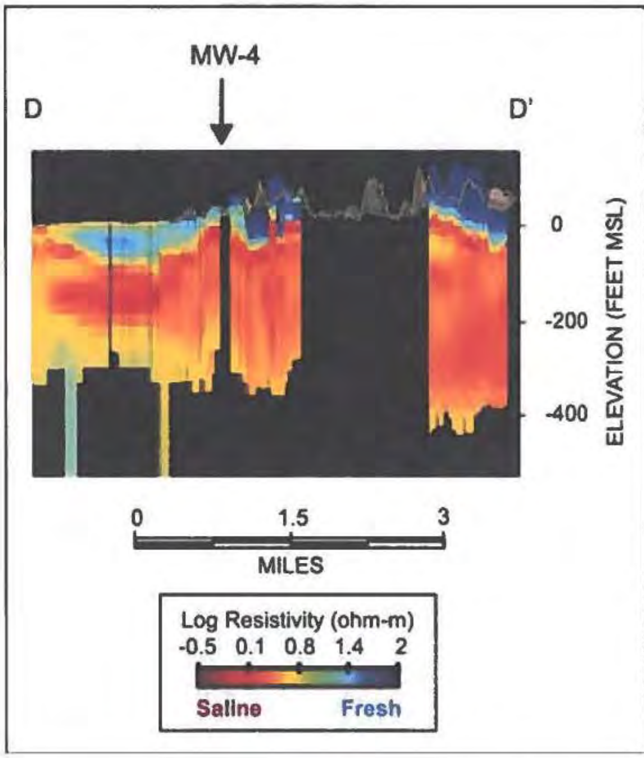


Figure 18 – Resistivity Profile E=E'

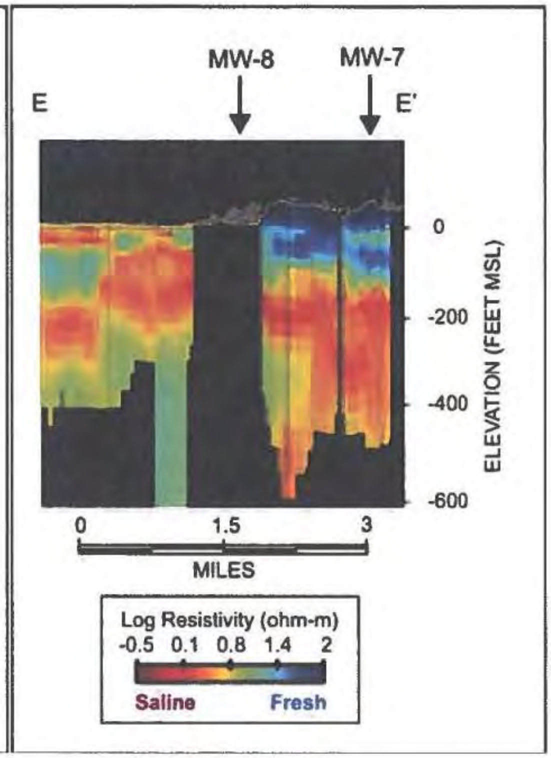


Figure 19 – CEMEX Dredge Barge

Figure 20 – Dredge Slurry Discharge Line

Proposed Return Water Settlement Agreement Does Not Mitigate MPWSP's Adverse Groundwater Impacts to North Marina Area Aquifers.

Under Cal-Am's proposed Return Water Settlement Agreement, all of the groundwater extracted by the MPWSP source wells from the North Marina Area aquifers would be returned to water users north of the Salinas River [i.e, CCSD and Castroville Seawater Intrusion Project (CSIP)]. Notably, the return water is provided ostensibly to reduce groundwater pumping from those users' groundwater wells. The wells that allegedly would not be pumped (or where pumping would be reduced) to mitigate the impacts of the MPWSP source wells, however, are located north of the Salinas River outside of the areas most impacted by the proposed MPSWP supply wells. Cal-Am's demand estimates assume that the "Settlement Agreement on MPWSP Desalination Plant Return Water" will mitigate the project's groundwater impacts to the SVGB and the North Marina Subarea. There is no support for this assumption as explained below. To illustrate this discussion we will use the AEM Survey geophysical data at the locations shown on Figure 21 – Castroville Resistivity Profiles Location Map. The map shows the location of a profile that extends from Castroville through the MCWD Armstrong Ranch property and a profile that extends further inland into the Fort Ord area where there is a greater coverage of geophysical data.

Figure 21 – Castroville Resistivity Profiles Location Map

As shown in Figure 22 – Resistivity Profile of North Marina Subarea, the hydrogeological framework and the groundwater quality indicated by the AEM data are substantially different than the subsurface conditions in the vicinity of Castroville where the return water is proposed to be delivered. Impacts from the MPWSP proposed production in the aquifer zones in the upper 300 feet of the North Marina Subarea cannot be mitigated by delivery of return water to Castroville, which is located several miles to the north.

Figure 22 – Resistivity Profile of North Marina Subarea

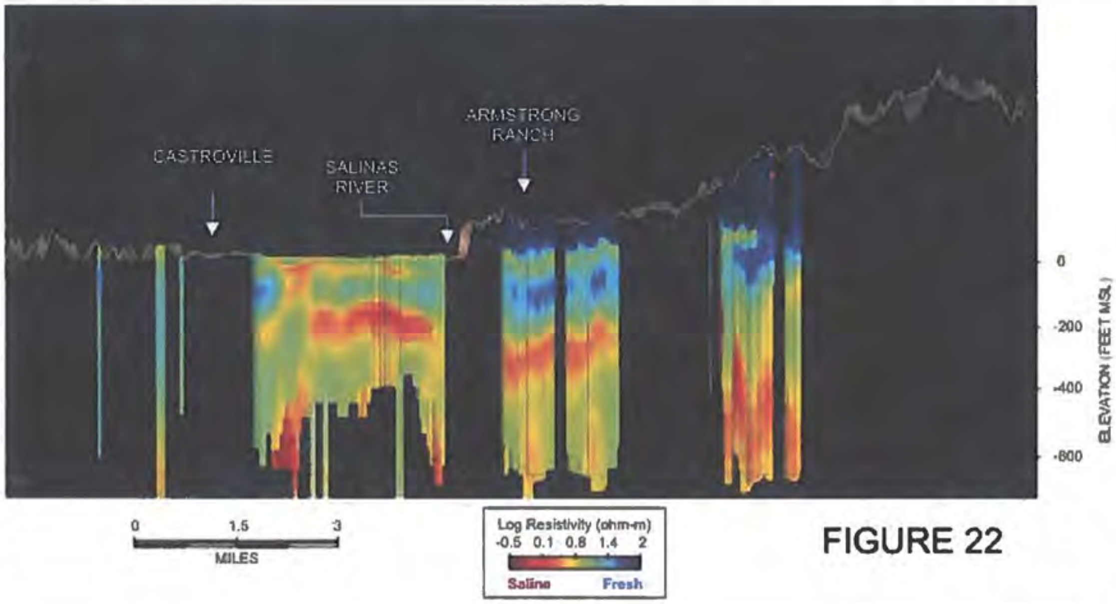


FIGURE 22

Likewise, Figure 23 - Resistivity Profile Inland of North Marina Subarea, indicates the difference between the hydrogeology south of the Salinas River from the hydrogeology north of the Salinas River. Return water to CSIP may benefit the main portion of basin, but not mitigate the impacts to the portion of the basin impacted south of the river.

Figure 23 – Resistivity Profile Inland of North Marina Subarea

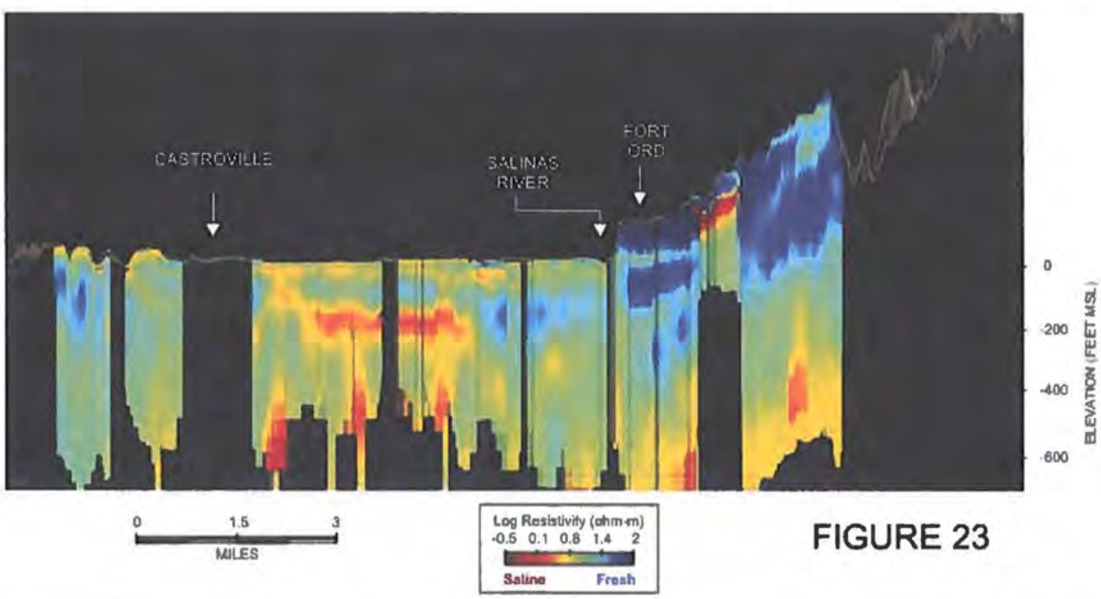


FIGURE 23

Initially, the 175-acre feet of return water would be provided to the CSIP at the start-up of the MPWSP grossly underestimates the amount of groundwater that modeling shows will be pumped during the initial start-up period as discussed above.

In addition, Cal-Am's claim that the proposed return water settlement would benefit each of the aquifers by either reducing the area of influence of the MPWSP or by increasing groundwater levels in other areas is misleading. While the proposed return water agreement would likely increase groundwater levels in other areas, it would not reduce the area of influence within the North Marina Subarea. Moreover, it fails to acknowledge that it does not address potential harms to present and future legal users in the North Marina Subarea. Perhaps more importantly, the CCSD and CSIP wells where pumping will be reduced (or cease) do not pump water from the Dune Sand or 180-FT Aquifers from which the MPWSP will extract its groundwater supply. This is important for two reasons.

First, as discussed above, groundwater conditions in the Dune Sand or 180-FTE Aquifers inland of the proposed MPWSP intake system create protective heads in the shallow dune sand that is evident by the water levels in monitoring wells MW-4S, MW-6S, MW-7S, and MW-8S and the available water quality data. Downward recharge into the underlying 180-FTE was observed to elevate the groundwater levels above sea level during 2015-2016 winter season, which occurred after a 4-year drought, and subsequently again in the 2016-17 winter season where above average rainfall occurred. The benefits from these unique groundwater recharge conditions creating shallow mounding in the North Marina Area will be removed by the project and delivery of return water north of the Salinas River to reduce pumping will not mitigate the potential impacts realized by the changed conditions.

Moreover, as indicated by water levels in MW-6M and MW-6D (or 6ML), there is direct vertical recharge between aquifers at certain locations with the North Marina Area where aquitard layers are discontinuous. Leakage through these layers can facilitate vertical flow of seawater that is induced into the North Marina Area by the project. Cal-Am's return water proposal does not address the increased seawater intrusion that the project will cause within the North Marina Area by lowering existing protective heads and removing freshwater in storage. Given the groundwater gradients in the North Marina Area, water injected north of the Salinas River simply will not flow towards the North Marina Area, but rather away from it. For this same reason, reduced pumping north of the Salinas River will not mitigate the reduced water levels and induced seawater intrusion in North Marina Area that will result from the MPWSP.

Second, providing water north of the Salinas River as proposed in Cal-Am's Return Water Settlement Agreement will not remedy the harms to the water users in North Marina Area from reduced water levels and water quality caused by the MPWSP source wells. Again, none of the water provided to the CCSD or CSIP will flow towards the North Marina area or lessen the Project's impacts in this area. Thus, the Cal-Am's proposed Return Water Settlement Agreement will not mitigate impacts to the North Marina area or its water users (i.e., MCWD).

Therefore, the water users receiving the offset supply to reduce pumping must be located in the Marina Subarea of the SVGB affected by the project (i.e., south of the Salinas River) in order mitigate the MPWSP's groundwater impacts and satisfy Cal-Am's return water obligations.

As we noted in our January 22, 2016 memorandum, providing return water though injection wells or percolation basins within the Northern Marina Subarea may provide Cal-Am with a viable option to meet is mitigation requirements and return water obligations. Any such proposal would need be studied to ensure the proposed injection sites will not degrade water quality in the North Marina Subarea or adversely affect the beneficial conditions that exist in the these aquifers discussed above and in our prior comments. We note that placing the wells in the wrong location could actually push groundwater impacted by seawater into aquifer areas that are currently fresh to slightly brackish in quality, but usable (see AEM data in Figures 6 and 8). Additional information and analysis is needed to determine whether these possible options would offset the impacts of the project on the Northern Marina Subarea aquifers and the groundwater users within the subarea. To evaluate such an alternative, we would need know the location where the water is proposed to be injected or percolated, the zones and rates for an injection proposal, and what quality of water would be injected or percolated.

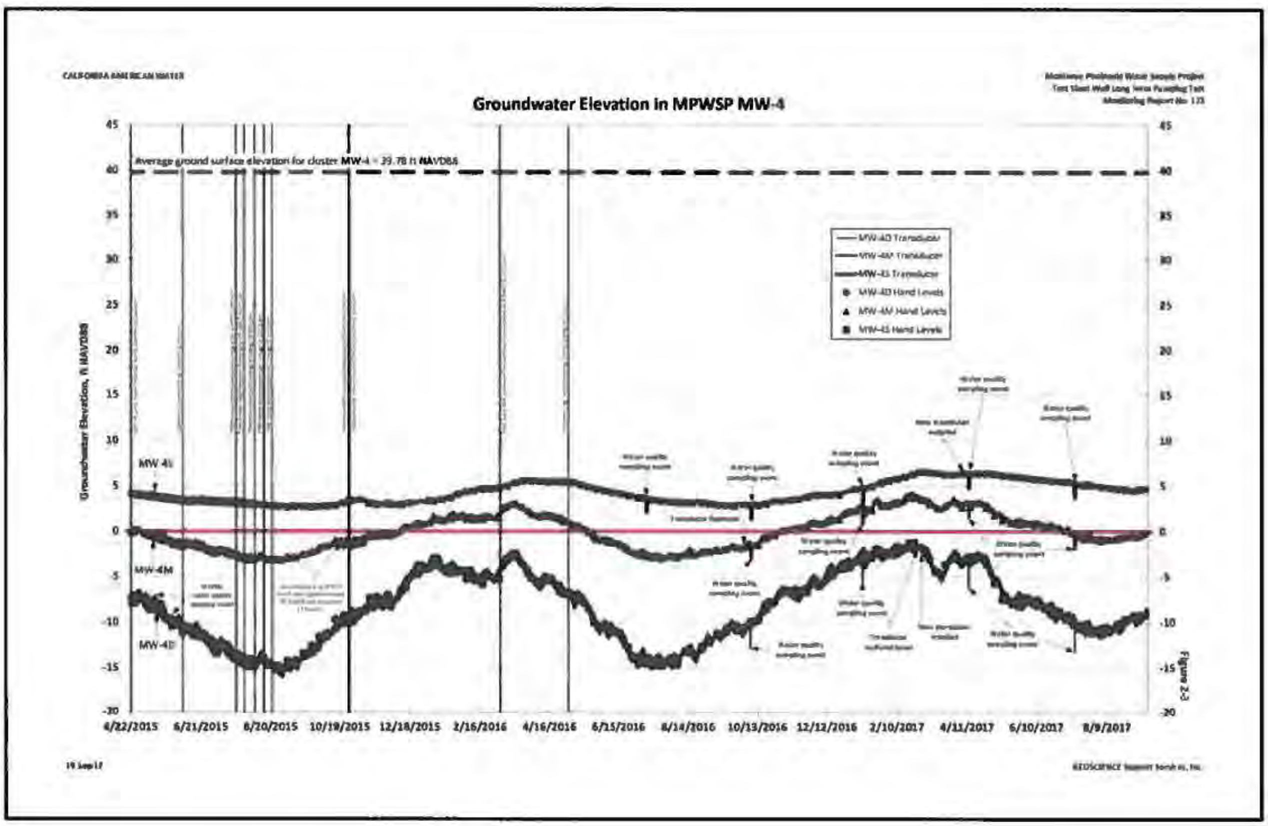
Conclusion.

In sum, Cal-Am's Return Water Settlement Agreement does not consider or address the adverse impacts that would result from the MPWSP's source wells. The return water method selected must ensure that the protective water level elevations within the Northern Marina Subarea aquifers are maintained to prevent further seawater intrusion at an accelerated rate within this portion of the SVGB. Unless a return water method ensures that the protective conditions discussed above are not harmed, the MPWSP will induce seawater intrusion into the Dune Sand Aquifer (and will exacerbate seawater intrusion in the 180-Foot Aquifer and 400-Foot Aquifer through vertical leakage) in the Northern Marina Subarea and likely result in cumulative impacts to aquifers and wells much further inland. It will also delay (or eliminate benefit from) efforts to reverse the trend of seawater intrusion in the Northern Marina Subarea and throughout the SVGB. The MPWSP will also undercut extensive efforts by MCWD and others to eliminate the long-term overdraft condition and to respond to the serious existing drought conditions.

As indicated in our prior January 22, 2016 memorandum, updated modeling using information developed from the TSW field investigations and available from other studies in the North Marina Subarea must be used to refine the MPWSP modeling to accurately simulate aquifer conditions. Additional analysis regarding a method for returning groundwater pumped by the proposed MPWSP source wells that demonstrates the protective conditions that currently exist in the Northern Marina Subarea are not adversely impacted to the detriment of the groundwater users in and inland of the subarea is still necessary. Without this updated modeling and additional analysis, it is impossible for the public and public agencies to provide meaningful testimony regarding Cal-Am's return water proposal. Nonetheless, it is clear that Cal-Am's Return Water Settlement Agreement will not mitigate the MPWSP's groundwater impacts to the groundwater aquifers within the North Marina Area where the fresh water conditions have been identified.

Finally, the TSW project was initiated toward the end of a drought cycle when water levels in the North Marina Subarea were depressed from lack of recharge and continued inland pumping stresses. Aquifer conditions that result from multiple years of normal or wet periods with average or above average rainfall have not been observed and are not available as background data to inform the public of pre TSW pumping conditions. Figure 24 – Monitoring Well MW-4 Hydrograph shows the seasonal water level fluctuations in all three aquifer zones relative to mean sea level. The high and low water level elevations in MW-4S were at least 2 feet higher during 2017 compared to the same seasonal time periods in 2015. The high and low elevations in MW-4M and MW-4D were at least 3 feet and 5 feet higher, respectively over this same time period. These water level recoveries from the initial drought conditions that were documented certainly help explain why there is freshwater in the shallower aquifer zones inland of the CEMEX site.

Figure 24 – Monitoring Well MW-4 Hydrograph



Figures 25, 26, and 27 – Monitoring Well MW-7, MW-5, and MW-6 Hydrographs, respectively, show how all the monitoring wells in or inland of the North Marina Subarea show water levels that recovered during the 2016 and 2017 annual water cycles. These data show that the shallowest aquifer monitored (Dune Sand Aquifer) rose approximately 5 feet in MW-5S and MW-7S over this period, while MW-6S had a huge peak when the Salinas River had substantial flows during the 2017 rainy season. These data also show that between MW-5 and MW-7 the 180-FTE and 400-Foot Aquifers had very similar elevations near mean sea level. It is our professional opinion that it is this type of water level condition, relatively high with a flat gradient, that has impeded seawater intrusion in the shallower aquifer zones in the project area. As shown by the geophysical data (see Figure 4), salt water intruding into the North Marina Subarea is restricted near the coast in the upper 200 to 300 feet and has mostly intruded the 400-Foot Aquifer zone. While the deep 400-Foot Aquifer monitoring wells within the North Marina Subarea have relatively elevated water level, the water levels north of the Salinas River show a significant decline MW-6M and MW-6D (changed to ML).

Figure 25 – Monitoring Well MW-7 Hydrograph

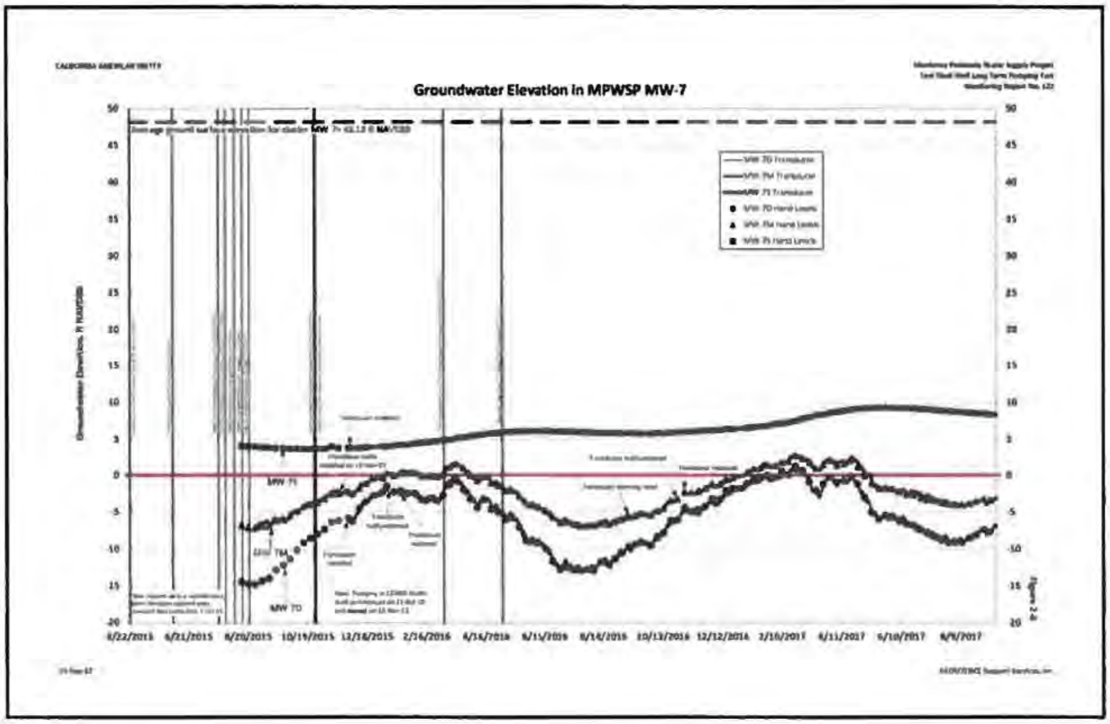


Figure 26 – Monitoring Well MW-5 Hydrograph

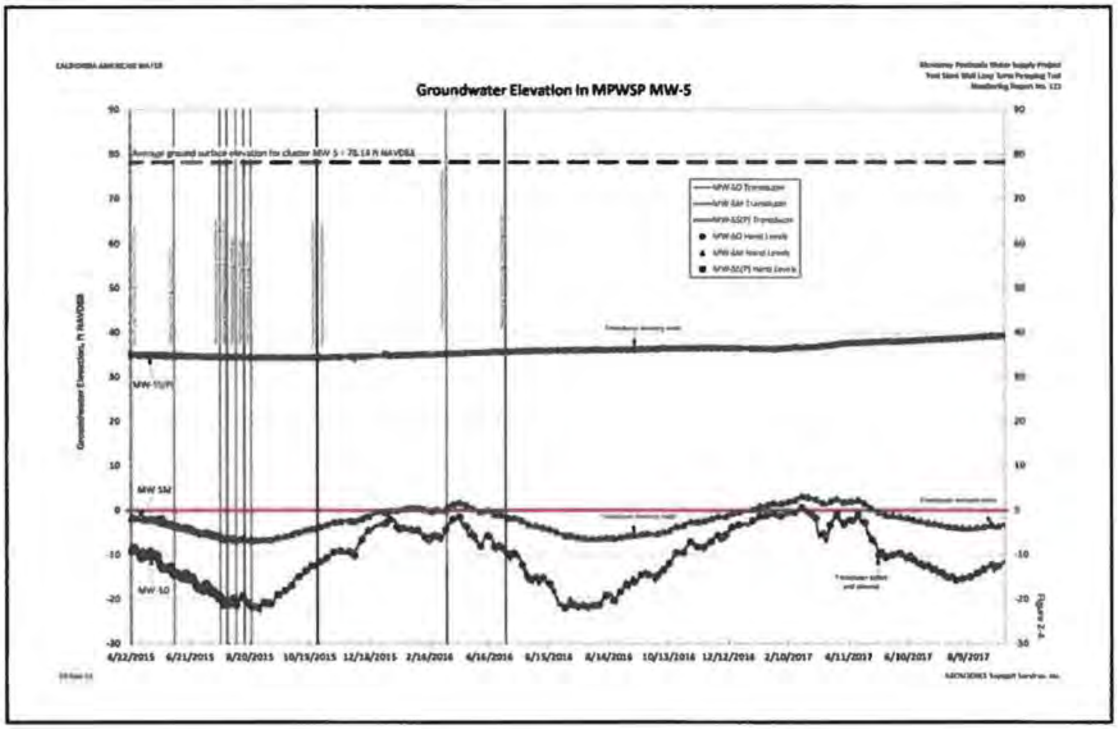
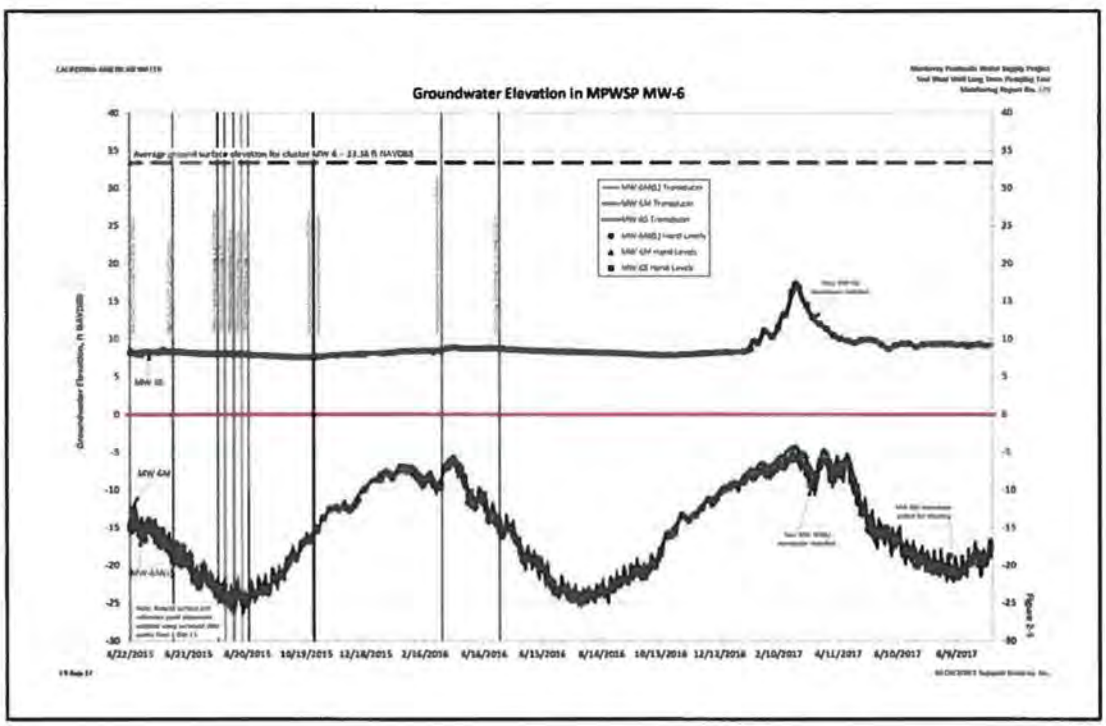


Figure 27 – Monitoring Well MW-6 Hydrograph



From these data we conclude that there is much about the hydrogeology and the mechanisms of groundwater recharge south of the Salinas River that are not well documented and that previous assumptions that this area was the same as the main portion of the 180-400-Foot Basin north of the river are not accurate. The present conditions observed by the AEM Survey and the MPWSP monitoring program indicate that the protective fresh water conditions present in the North Marina Subarea have contributed to the protection of the groundwater basin, which would be adversely impacted by the MPWSP as designed. Cal-Am's proposed Return Water Settlement Agreement would not reduce or lessen these significant impacts. And as explained above, even if it could, Cal-Am's estimate of the required volume of groundwater that would need to be returned is substantially understated.

Sincerely,

HOPKINS GROUNDWATER CONSULTANTS, INC.

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CURTIS J. HOPKINS
EG NO. 1800
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Curtis J. Hopkins
Principal Hydrogeologist
Certified Hydrogeologist HG114
Certified Engineering Geologist EG1800

Attachments: Attachment A – Regional Resistivity Profiles
Attachment B – Laboratory Water Quality Test Results

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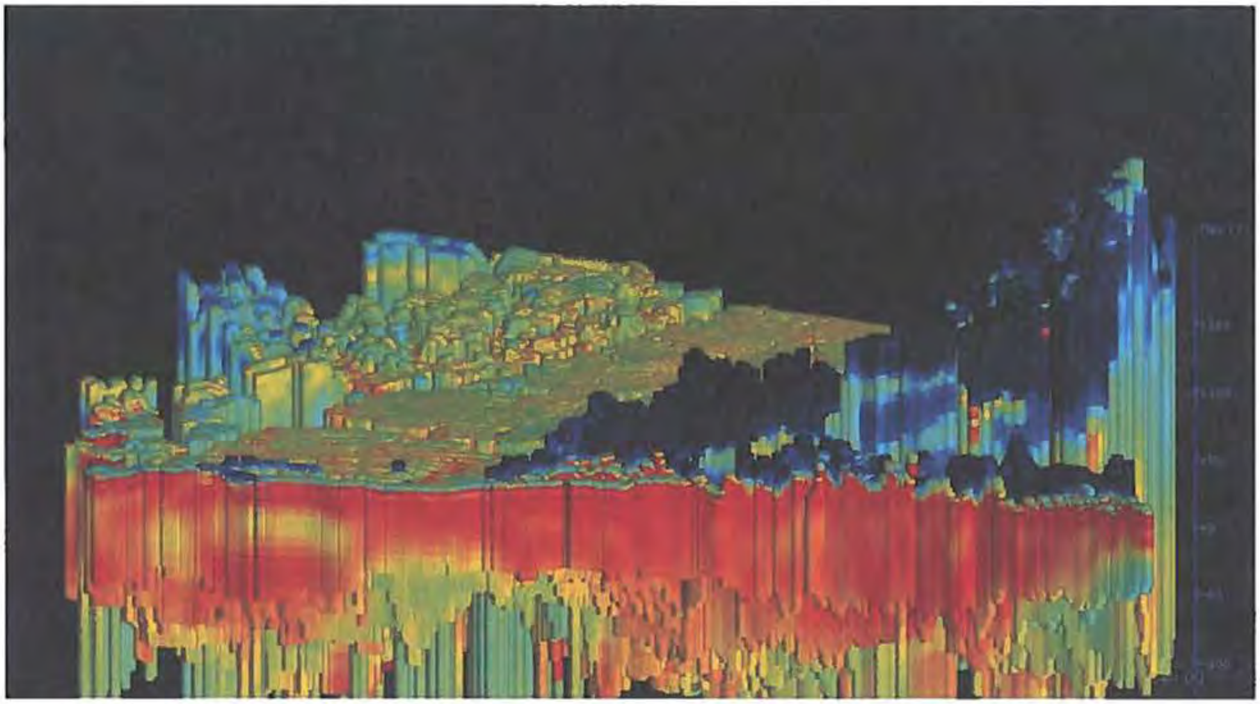
ATTACHMENT A
REGIONAL RESISTIVITY PROFILES

GEOPHYSICAL STUDY AREA OF AEM SURVEY

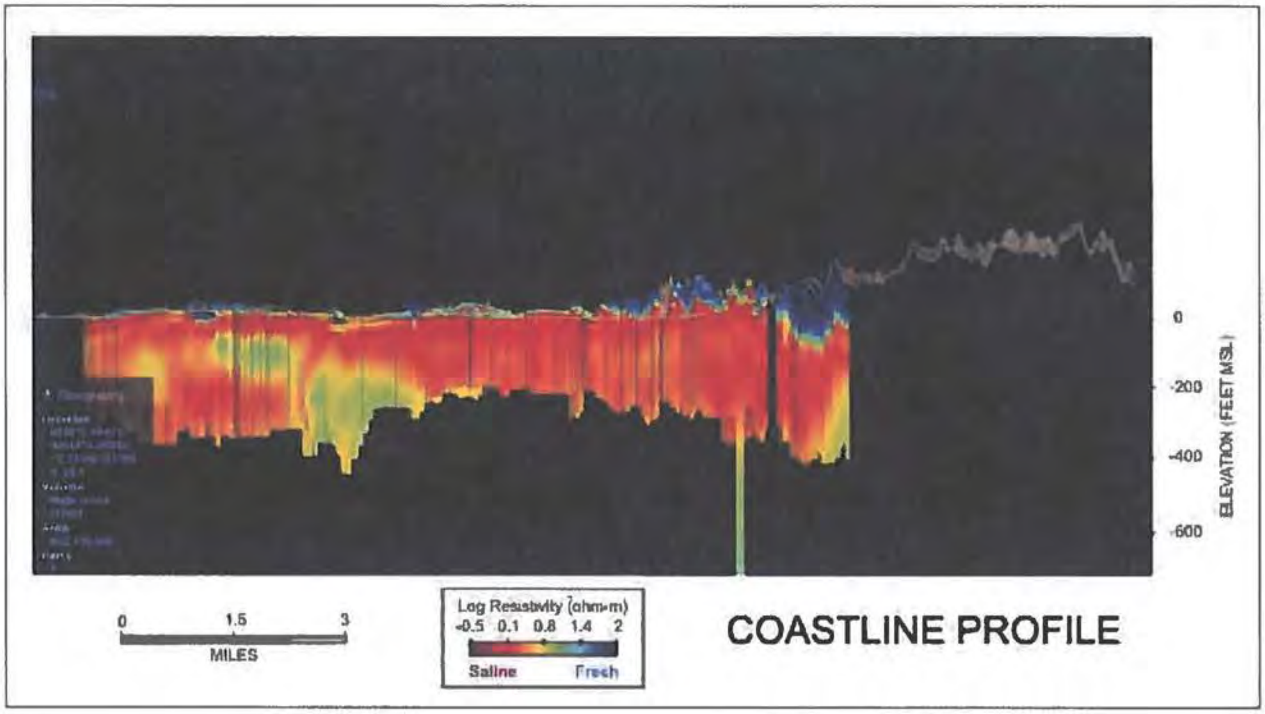
STUDY AREA WITH AEM SURVEY DATA

HOPKINS
GROUNDWATER
CONSULTANTS



AEM SURVEY DATA SET

RESISTIVITY PROFILE LINE LOCATION MAP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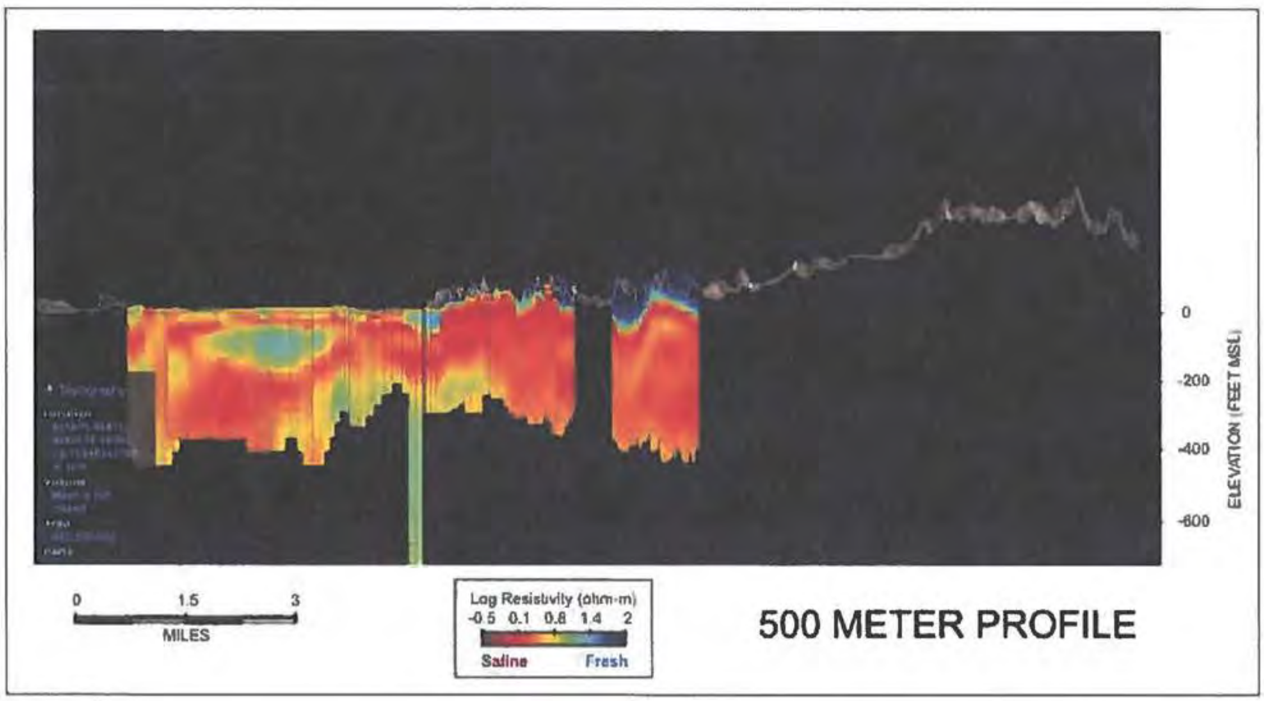
Saline
Fresh
COASTLINE PROFILE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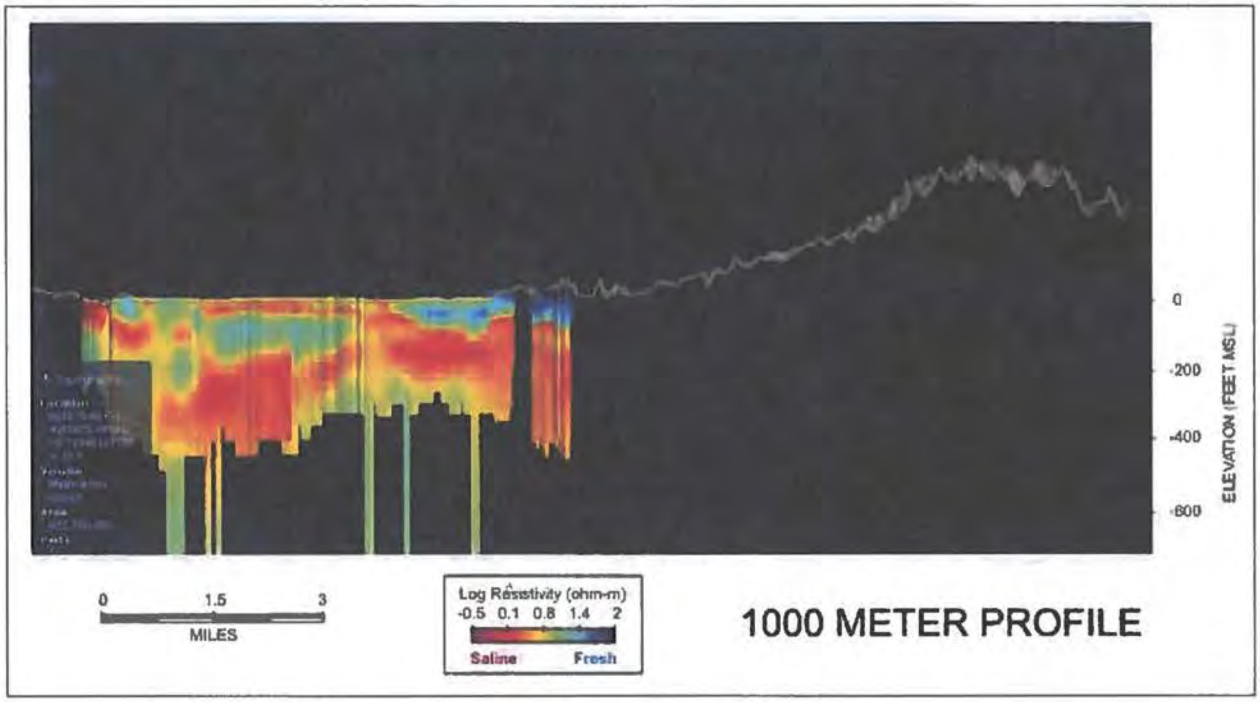
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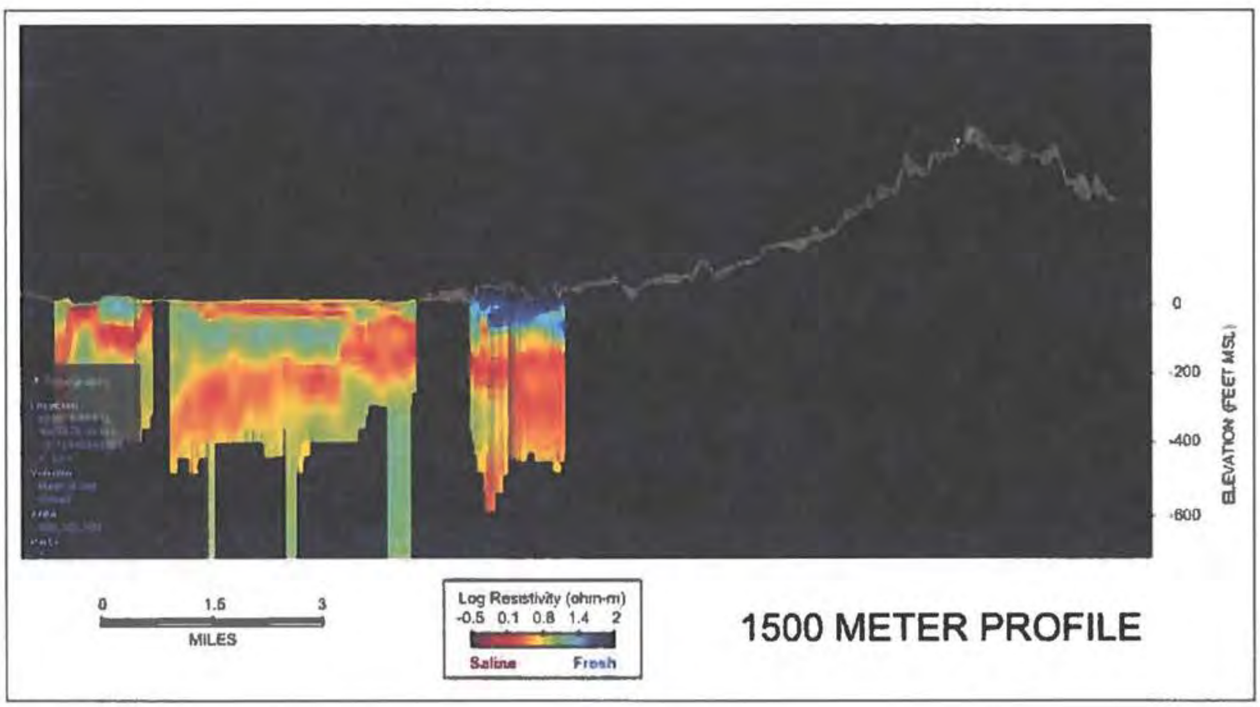
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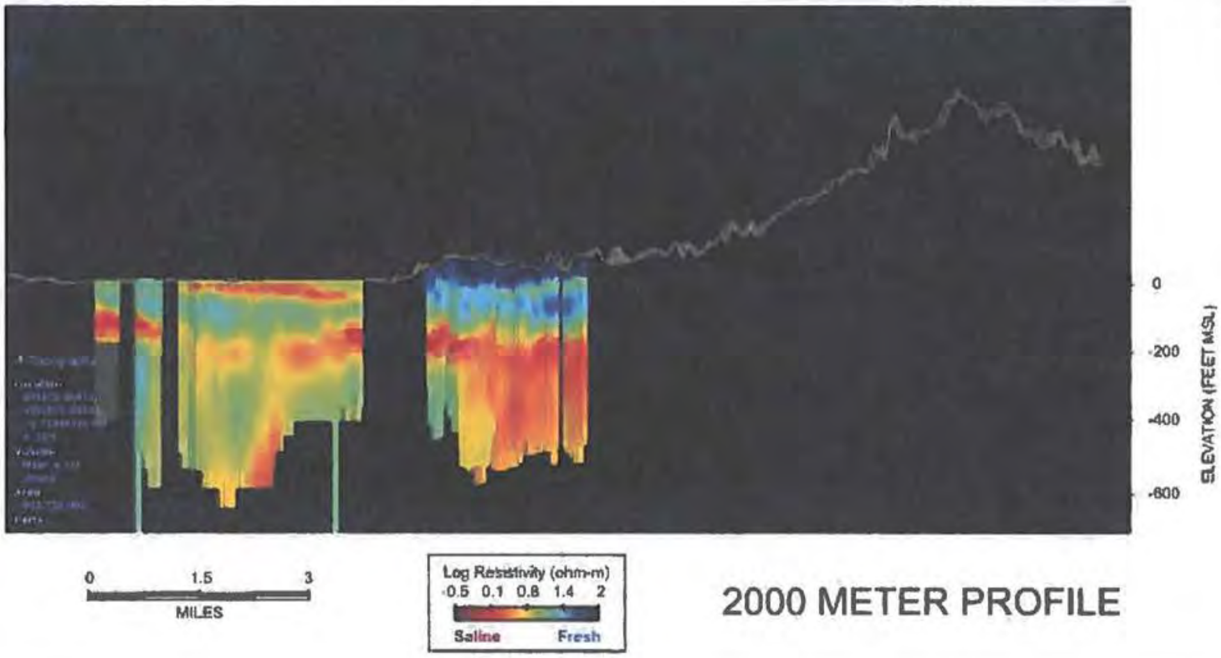

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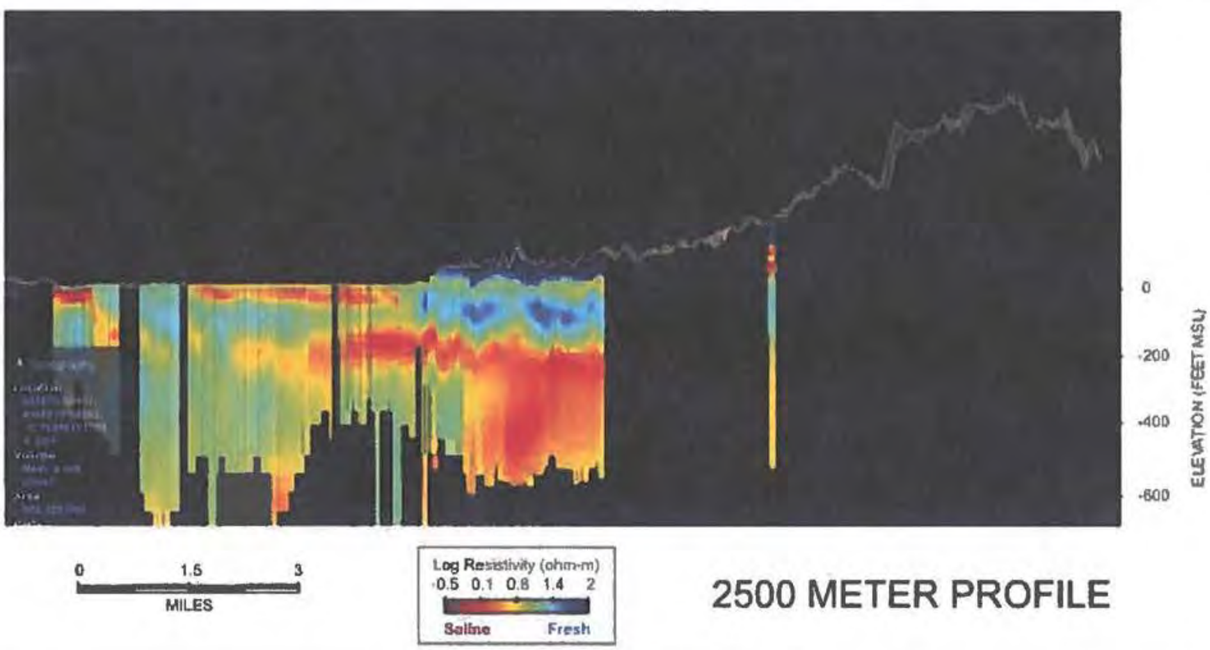

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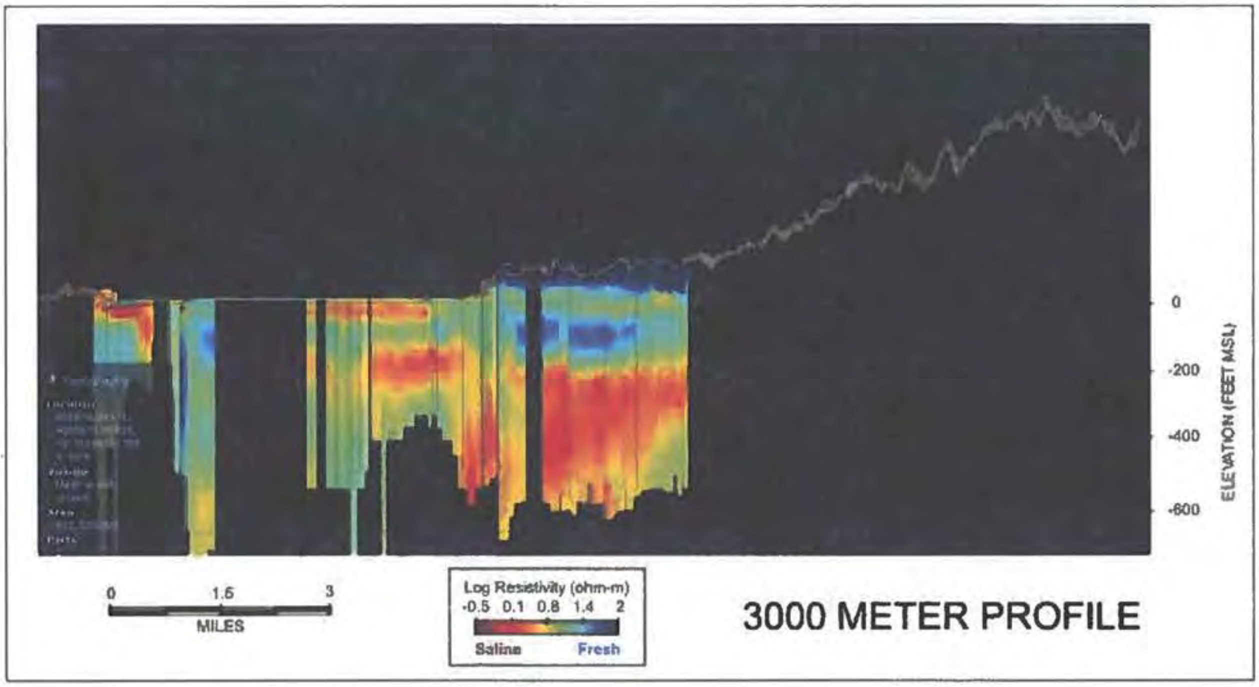
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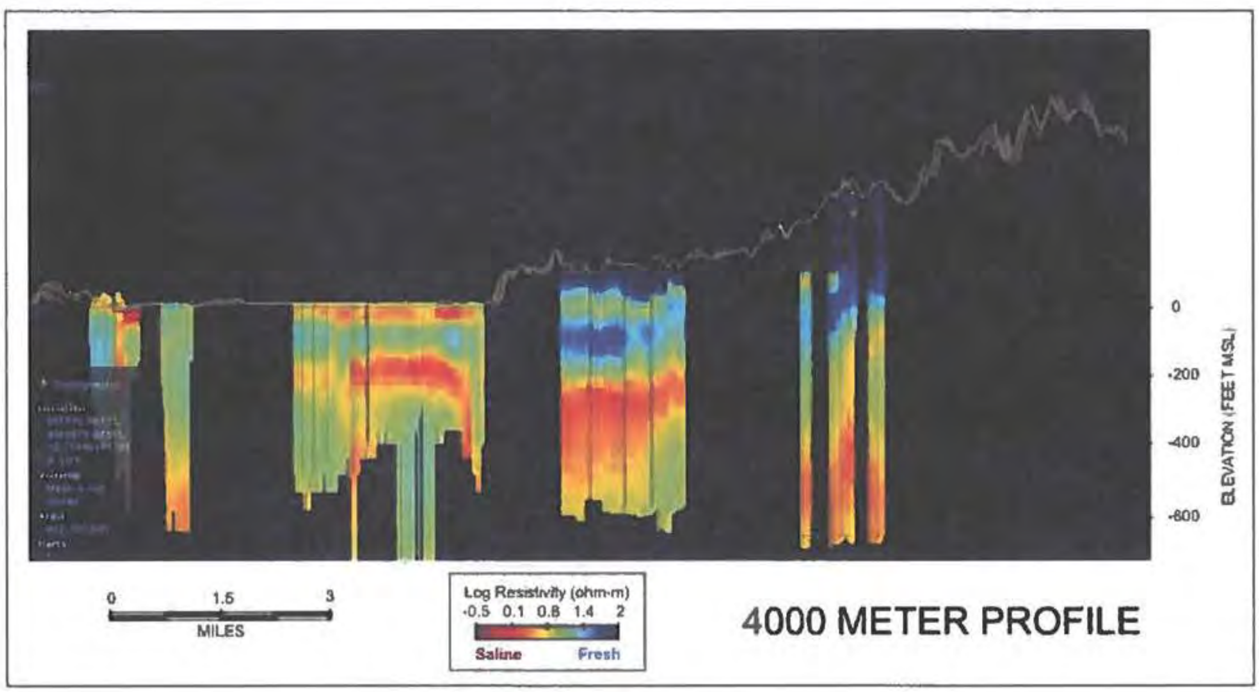
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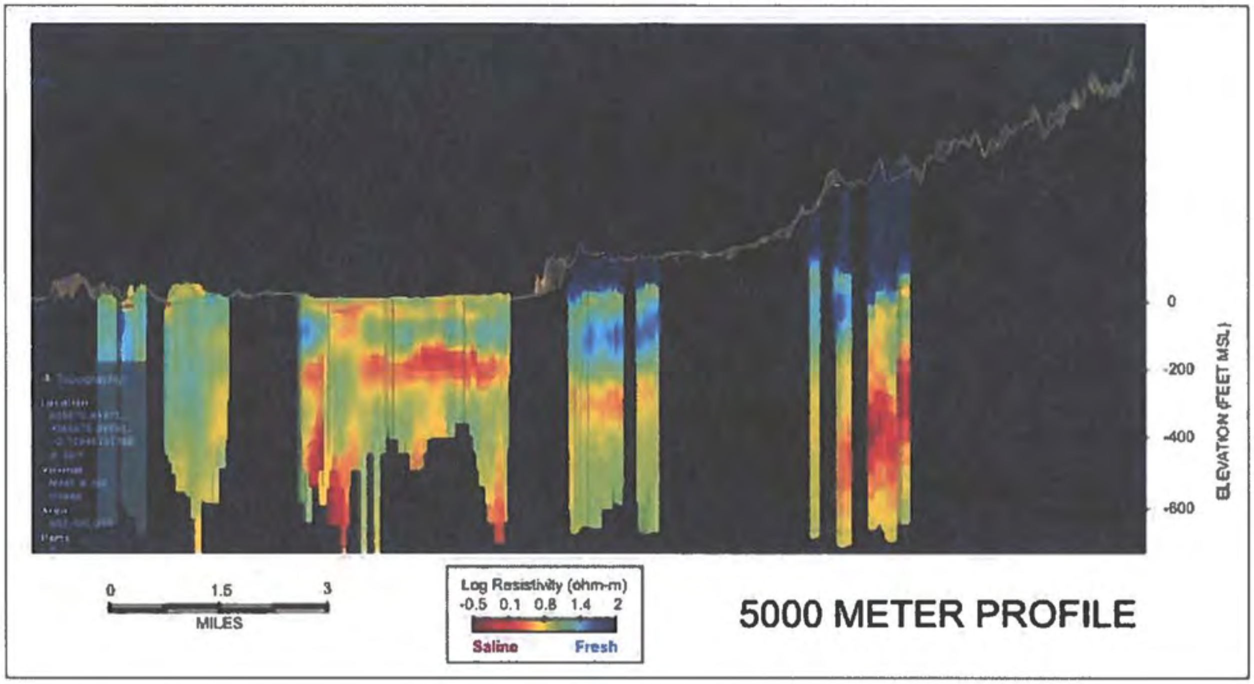
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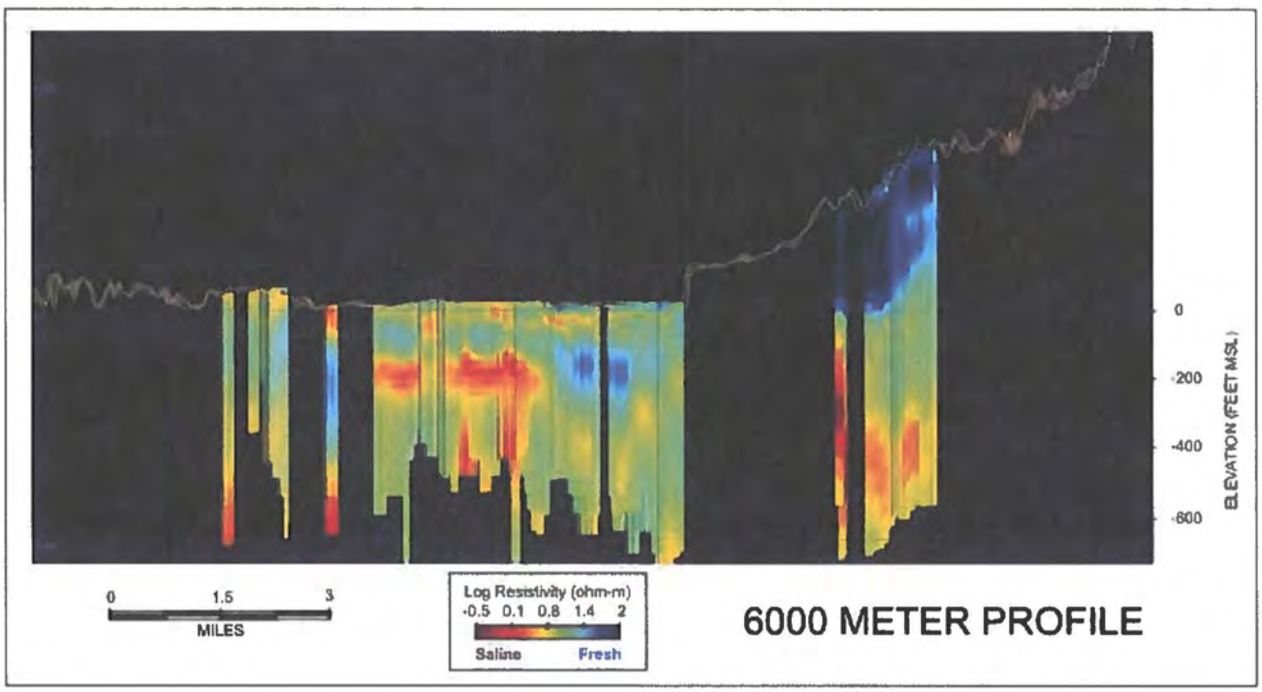
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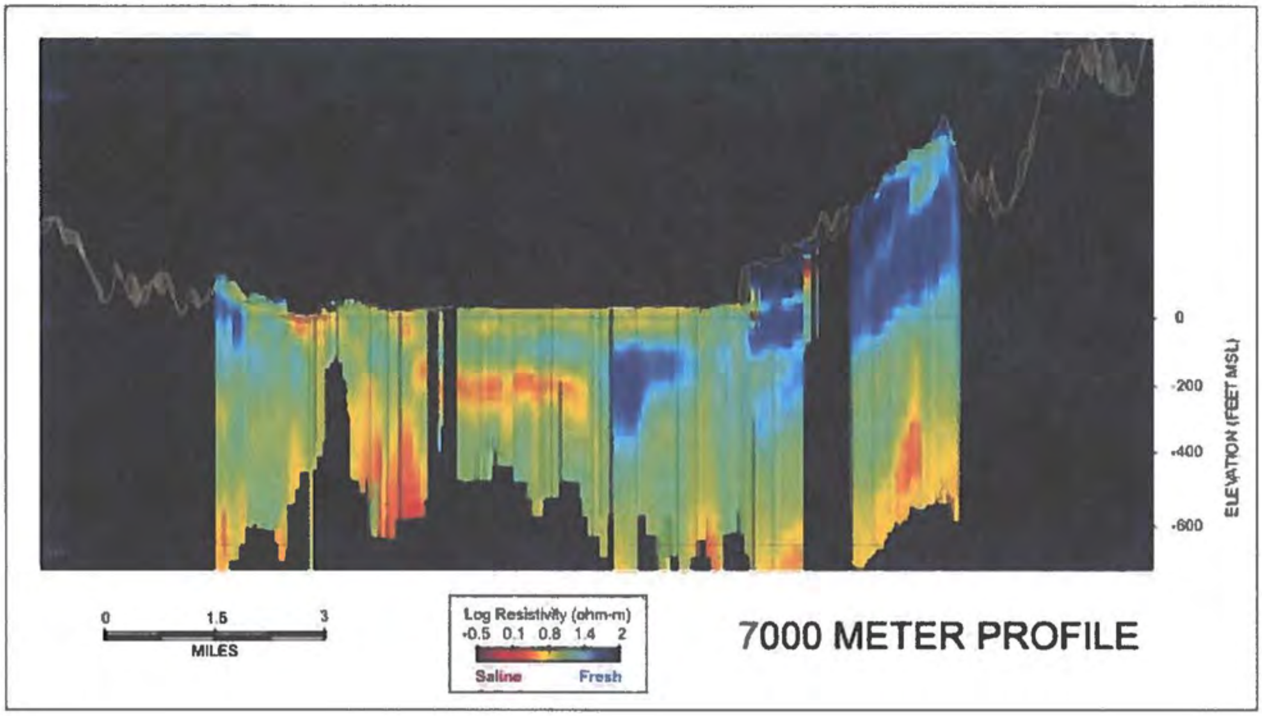
6000 METER PROFILE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Fresh
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ATTACHMENT B
LABORATORY WATER QUALITY TEST RESULTS

Cal Am / RBF
Baseline Water and Total Dissolved Solids Levels
Monterey Peninsula Water Supply Project Area

Table 2

Summary of Laboratory Water Quality Results in Monitoring Wells

	Well Name:	MW-1D		MW-1M		MW-1S		MW-3D		MW-3M		MW-3S		MW-4D		MW-4M		MW-4S		MW-5D		MW-5M		MW-5S		Test Slant Well		
	Screen Interval (ft bgs):	277 - 327		115 - 225		55 - 95		285 - 330		105 - 215		50 - 90		280 - 330		100 - 230		50 - 90		380 - 430		100 - 325		50 - 90		140 - 320, 400 - 710 (MD)		
	Sample Date:	14-Feb-15	9-Apr-15	14-Feb-15	9-Apr-15	13-Feb-15	9-Apr-15	21-Feb-15	10-Apr-15	24-Feb-15	10-Apr-15	25-Feb-15	10-Apr-15	19-Feb-15	2-Apr-15	6-Mar-15	2-Apr-15	7-Mar-15	2-Apr-15	17-Feb-15	2-Apr-15	3-Mar-15	2-Apr-15	10-Mar-15	2-Apr-15	20-Mar-15	24-Mar-15	8-Apr-15
Constituent[1]	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Alkalinity, Total (as $CaCO_3$)	mg/L	123	124	112	117	105	120	114	118	105	104	97	97	111	124	97	97	80	86	112	117	195	121	50	50	N/A	N/A	117
Aluminum, Total	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	166	18	166	36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	33	N/A	N/A	ND
Ammonia-N	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.08	ND	N/A
Ammonia-N, Dissolved	mg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Ammonia-NH_3 (calc) Un-ionized	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Arsenic, Total	µg/L	46	34	41	33	43	30	44	39	37	34	34	27	40	30	21	22	15	14	4	3	2	3	4	3	N/A	N/A	33
Barium, Dissolved	µg/L	141	143	61	63	68	63	162	157	79	66	97	91	166	176	104	104	92	107	562	466	96	67	173	200	N/A	N/A	95
Bicarbonate (as HCO3-)	mg/L	150	151	137	143	128	146	139	144	128	127	118	118	135	151	118	118	98	105	137	143	238	148	61	61	N/A	N/A	143
Boron, Dissolved	mg/L	0.89	1.16	2.36	2.78	2.27	2.73	1.06	1.03	1.01	2.68	2.2	2.3	0.65	0.75	1.16	1.03	0.79	0.88	0.09	ND	ND	ND	ND	ND	N/A	N/A	2.6
Bromide, Dissolved	mg/L	44	44	46	50	39	49	44.1	44	53.8	49	44.8	38	43.8	47	31	31	16.7	18	3.3	2	0.4	ND	4.4	5.2	N/A	N/A	37
Calcium	mg/L	2,440	2,510	746	805	661	791	2,470	2,350	826	835	628	664	2,980	2,827	1,040	1,131	594	621	360	358	96	62	129	132	N/A	N/A	349
Calcium, Dissolved	mg/L	2,410	2,480	732	781	646	771	2,370	2,360	844	879	666	664	3,070	2,810	1,060	1,100	617	627	363	356	99	63	142	138	N/A	N/A	371
Carbamates by HPLC (EPA 531)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Carbonate as $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Chloride, Dissolved	mg/L	14,905	16,346	16,037	15,580	14,504	15,276	16,069	16,456	14,686	14,964	11,680	12,136	14,142	14,177	9,751	9,587	5,497	6,266	1,168	1,152	120	90	271	272	N/A	N/A	13,830
Chlorinated Pesticides and PCB (EPA 508)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Chlorine Residual,Total (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Coliform, E. Coli (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<10	N/A
Coliform, E. Coli (Quantitray)-18 Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
Coliform, Total (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	490	N/A
Coliform, Total (Quantitray)-18Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,755	N/A	N/A
Color, Apparent (Unfiltered)	CU	10	20	ND	ND	4	ND	6	ND	ND	ND	ND	7	8	ND	4	ND	3	ND	ND	4	ND	ND	7	8	60	10	4
Copper, Total	µg/L	40	52	61	80	62	52	56	76	62	90	42	78	46	30	42	22	ND	16	13	4	ND	ND	5	ND	N/A	N/A	44
DBCP & EDB	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Dioxin	pg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Diquat (EPA 549)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Dissolved Oxygen (Field)	mg/L (H)	N/A	0.08	N/A	3.34	N/A	2.64	N/A	0.225	N/A	3.85	4.7	3.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.28	N/A	N/A
Dissolved Oxygen (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.34	8.84	N/A
Endothall	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Fluoride, Dissolved	mg/L	ND	ND	ND	ND	0.3	ND	ND	ND	0.5	ND	0.4	ND	ND	0.1	ND	ND	ND	0.1	0.1	0.1	0.1	0.1	ND	ND	N/A	N/A	0.2
Glyphosate	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Hardness (as $CaCO_3$)	mg/L	10,765	11,338	6,327	6,606	5,678	6,439	12,063	11,140	6,378	6,520	5,044	5,109	11,617	11,021	5,601	5,740	3,176	3,321	1,484	1,429	367	229	561	540	N/A	N/A	4,751
Hydroxide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Iodide	µg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Iron	µg/L	146	722	ND	ND	25	ND	169	671	ND	ND	ND	ND	77	223	ND	ND	ND	169	39	17	ND	ND	ND	26	N/A	N/A	69
Iron, Dissolved	µg/L	118	726	12	ND	15	ND	142	684	ND	ND	ND	ND	80	215	ND	ND	ND	175	ND	ND	ND	ND	ND	ND	N/A	N/A	65
Kjeldahl Nitrogen, Dissolved	mg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	0.6	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Lithium	µg/L	254	200	201	155	172	157	250	184	159	115	144	106	222	193	34	25	16	18	75	53	7	3	6	8	N/A	N/A	152
Magnesium	mg/L	1,130	1,230	1,080	1,120	978	1,080	1,430	1,280	1,050	1,080	844	838	1,020	962	730	708	411	430	142	130	31	18	58	51	N/A	N/A	942
Magnesium, Dissolved	mg/L	1,180	1,230	1,100	1,110	979	1,080	1,290	1,310	1,020	1,160	797	859	979	969	752	681	421	437	135	128	31	18	62	54	N/A	N/A	989
Manganese, Dissolved	µg/L	440	1,060	18	ND	41	ND	259	1,080	ND	ND	ND	170	268	1,220	113	ND	ND	248	340	645	ND	ND	ND	ND	N/A	N/A	26
Manganese, Total	µg/L	484	1,100	19	ND	43	ND	289	1,060	14	ND	58	154	276	1,221	90	ND	ND	268	336	653	ND	ND	ND	ND	N/A	N/A	26
MBAS (Surfactants)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Nitrate as NO_3	mg/L	1	2	2	4	3	4	ND	2	5	3	29	6	1	ND	4	3	20	10	3	1	70	64	237	233	N/A	N/A	5
Nitrate+Nitrite as N	mg/L	0.4	0.6	1.1	1	0.7	0.9	0.1	0.6	1.2	0.8	6.5	1.5	0.2	0.1	1	0.9	5.3	2.3	0.8	0.4	16.2	14.6	54	52.7	N/A	N/A	1
Nitrite as NO_2-N, Dissolved	mg/L	0.2	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND	0.1	ND	0.1	ND	0.1	0.3	0.3	ND	0.1	N/A	N/A	ND
Odor Threshold at 60 C	TON	1	2	1	2	1	1	3	3	3	1	5	2	3	1	1	1	4	14	3	2	2	1	2	10	N/A	N/A	2
Oil & Grease (HEM)	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
o-Phosphate-P	mg/L	0.03	0.06	0.07	0.09	0.07	0.05	0.06	0.04	0.05	0.06	0.18	0.14	0.06	0.04	ND	0.06	0.06	0.09	0.04	0.05	0.06	0.12	0.05	0.12	N/A	N/A	0.1
pH (Field Test)	pH	6.72	7.24	7.02	7.74	7.15	7.87	6.55	6.84	6.89	7.05	7.25	7.27	6.65	6.56	6.78	6.78	6.77	6.91	7	7.18	7.23	7.44	6.46	6.63	7.53	7.07	7.03
pH (Laboratory)	pH (H)	7.1	7.1	7	7.4	7.2	7.5	6.9	7.2	7.2	7.4	7.2	7.5	7	7.1	7.1	7.2	7	7.2	7.5	7.4	7.3	7.5	6.7	7.1	7.7	7.2	7.2
Phenoxy Acid Herbicides (515.3)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Phosphorus, Dissolved Total	mg/L	0.04	0.03	0.09	0.08	0.05	0.04	0.04	ND	ND	0.06	0.12	0.13	0.11	0.14	ND	0.06	0.06	0.07	0.04	0.04	0.06	0.12	0.08	0.08	N/A	N/A	0.09
Potassium	mg/L	60	61	201	209	228	247	64.4	58	197	214	168	157	51.2	46.2	46	43.9	26	30.2	7.8	6.7	3.4	2.2	2	3.1	N/A	N/A	203
Potassium, Dissolved	mg/L	59	60.9	197	207	224	244	55.7	59.6	197	232	157	161	49.1	46.3	50	43.3	28	31.5	7.1	6.6	3.6	2.2	2.4	3	N/A	N/A	213
QC Ratio TDS/SEC		0.73	0.66	0.7	0.67	0.68	0.67	0.74	0.66	0.69	0.69	0.68	0.68	0.72	0.74	0.68	0.64	0.7	0.68	0.69	0.65	0.6	0.64	0.67	0.64	N/A	N/A	0.67
Reg. Org. Compounds (EPA 525)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Settleable Solids	mL/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Silica as SiO_2, Dissolved	mg/L	33	32	22	21	20	19	32	30	21	18	19	19	36	31	30	27	27	24	45	41	35	32	39	38	N/A	N/A	20
Sodium	mg/L	5,760	5,913	8,011	7,381	7,306	7,211	6,960	5,620	7,232	6,590	5,340	5,632	4,286	4,092	4,079	3,685	2,579	2,399	161	131	71	51	120	116	N/A	N/A	7,606
Sodium, Dissolved	mg/L	6,150	6,340	8,320	7,920	7,500	7,480	6,110	6,180	6,930	7,670	5,550	6,260	4,730	4,090	4,320	3,490	2,750	2,500	136	128	76	51	131	120	N/A	N/A	8,040
Specific Conductance (E.C)	µmhos/cm	40,120	43,440	43,960	42,510	39,090	40,840	44,020	43,570	41,090	41,040	34,180	34,300	38,000	37,390	26,250	27,200	17,050	18,800	3,775	3,729	1,106	714	1,752	1,735	36,890	36,280	37,860
Specific Conductance (E.C) (Field)	µmhos/cm	40,882	43,249	43,788	42,426	39,747	41,557	41,740	43,223	42,340	40,642	33,456	33,798	5,750	37,532	26,779	27,703	16,917	18,376	3,961	3,968	962	796	1,828	1,746	35,270	36,306	38,097
Strontium, Dissolved	µg/L	15,666	16,477	8,689	9,434	7,995	9,084	16,370	16,228	9,500	9,458	7,619	7,287	17,499	17,148	9,637	9,864	5,208	5,455	2,777	2,834	630	435	1,231	1,288	N/A	N/A	7,440

Cal Am / RBF

Baseline Water and Total Dissolved Solids Levels

Monterey Peninsula Water Supply Project Area

Table 2

Summary of Laboratory Water Quality Results in Monitoring Wells

Well Name:		MW-1D		MW-1M		MW-1S		MW-3D		MW-3M		MW-3S	
Screen Interval (ft bgs):		277 - 327		115 - 225		55 - 95		285 - 330		105 - 215		50 - 90	
Sample Date:		14-Feb-15	9-Apr-15	14-Feb-15	9-Apr-15	13-Feb-15	9-Apr-15	21-Feb-15	10-Apr-15	24-Feb-15	10-Apr-15	25-Feb-15	10-Apr-15
Constituent[1]	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Sulfate	mg/L	1,950	N/A	2,070	N/A	1,840	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate, Dissolved	mg/L	N/A	2,148	N/A	2,048	N/A	2,008	2,058	2,158	1,960	1,967	1,533	1,605
Temperature	°C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temperature (Field)	°C	19.2	20.02	17.2	17.89	18.8	17.64	19.6	20.22	16.3	18.74	17.5	19.17
Total Diss. Solids	mg/L	29,100	28,700	30,900	28,300	26,600	27,500	32,600	28,600	28,500	28,300	23,400	23,300
Total Susp. Solids	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Turbidity	NTU	1.8	0.15	0.1	0.1	0.1	0.15	1	0.3	0.1	0.16	0.15	0.24
Turbidity (Field)	NTU	0.65	0.69	0.41	0.35	0.28	0.43	0.38	0.87	0.42	0.21	0.96	0.55
Volatile Org. Compounds (524)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	RP	N/A
Zinc, Total	µg/L	ND	ND	ND	ND	413	ND	ND	ND	297	ND	312	ND

Well Name:		MW-4D		MW-4M		MW-4S		MW-5D		MW-5M		MW-5S		Test Slant Well		
Screen Interval (ft bgs):		280 - 330		100 - 230		50 - 90		380 - 430		100 - 325		50 - 90		140 - 320, 400 - 710 (MD)		
Sample Date:		19-Feb-15	2-Apr-15	6-Mar-15	2-Apr-15	7-Mar-15	2-Apr-15	17-Feb-15	2-Apr-15	3-Mar-15	2-Apr-15	10-Mar-15	2-Apr-15	20-Mar-15	24-Mar-15	8-Apr-15
Constituent[1]	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Sulfate	mg/L	1,700	N/A	N/A	N/A	N/A	N/A	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate, Dissolved	mg/L	N/A	1,796	1,184	1,205	716	807	N/A	31	110	67	197	192	N/A	N/A	1,840
Temperature	°C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.3	N/A	N/A
Temperature (Field)	°C	19.9	19.8	18.4	18.3	17.7	18.1	21.3	21.4	16.97	18.2	16.7	18.1	20.9	19.1	17.2
Total Diss. Solids	mg/L	27,500	27,600	17,900	17,500	11,900	12,800	2,616	2,437	663	454	1,166	1,117	25,300	24,400	25,400
Total Susp. Solids	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36	ND	N/A
Turbidity	NTU	0.65	0.15	0.25	0.05	0.3	0.2	0.25	0.25	ND	ND	0.4	0.75	17	1.6	0.4
Turbidity (Field)	NTU	0.76	0.53	0.71	0.84	0.52	0.17	0.71	0.87	0.47	0.45	1.31	1.26	40.3	0.66	0.74
Volatile Org. Compounds (524)	µg/L	RP	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	RP	N/A	N/A	N/A	ND
Zinc, Total	µg/L	ND	ND	211	107	ND	108	51	ND	40	ND	43	ND	N/A	N/A	ND

Notes:

°C = Degrees Celsius
CU = Color Units
mg/L = Milligrams per Liter
NTU = Nephelometric Turbidity Units
pg/L = Picograms per Liter
TON = Threshold Odor Number
µg/L = Micorgrams per Liter
µmhos/cm = Micromhos per Centimeter
H = Analyzed outside of hold time
MPN/100mL = The most probable number (MPN) of coliform or fecal coliform bacteria per 100 millilite

ND = NOT DETECTED at or above the Reporting Limit or Practical Quantitation Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
N/A = No Lab Results available
RP = Results to be provided

[1] Laboratory water quality reports will be provided in the Test Slant Well and mornitoring well completion report.
[*] Laboratory water quality results pending.

		MW-6D	MW-6M	MW-6S	MW-7D	MW-7M	MW-7S	MW-8D	MW-8D	MW-8M	MW-8M	MW-8S	MW-8S	MW-9D	MW-9D	MW-9M	MW-9M	MW-9S	MW-9S
CONSTITUENT	UNIT	4/2/2015	4/4/2015	4/5/2015	9-Aug-15	2-Aug-15	3-Aug-15	5/21/2015	6/23/2015	5/27/2015	6/23/2015	5/28/2015	6/23/2015	25-Jun-15	28-Jul-15	28-Jun-15	28-Jul-15	30-Jun-15	28-Jul-15
ALKALINITY, TOTAL (as $CaCO_3$)	mg/L	117	397	366	109	98	29	152	112	140	155	320	302	170	176	127	128	1,051	1,019
ALUMINUM, TOTAL	µg/L	ND	ND	ND	ND	18	ND	37	128	292	ND	ND	ND	ND	ND	ND	ND	11	ND
AMMONIA-N	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
AMMONIA-N, DISSOLVED	mg/L	ND	0.17	0.45	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND	0.07	0.12	0.17	2.83	2.86
AMMONIA-NH_3 (CALC) UN-IONIZED	ug/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
ARSENIC, TOTAL	µg/L	3	5	16	41	4	1	1	11	28	24	1	1	2	2	39	35	11	12
BARIUM, DISSOLVED	µg/L	255	155	105	110	282	199	88	178	154	119	57	75	59	48	163	141	315	273
BICARBONATE (AS HCO3-)	mg/L	143	484	447	133	120	35	185	137	171	189	390	368	207	215	155	156	1,282	1,243
BORON, DISSOLVED	mg/L	ND	ND	ND	1.71	ND	ND	0.05	0.66	1.83	1.37	0.22	0.29	0.08	0.07	2.93	2.77	0.69	0.64
BROMIDE, DISSOLVED	mg/L	2	0.5	0.2	44.3	6.6	1.3	0.6	11.5	42.1	33.6	0.9	1	0.2	0.2	49.6	47.6	4.2	3.5
CALCIUM	mg/L	341	139	93	1,900	507	120	64	413	1110	1500	149	142	32	34	878	1,060	209	234
CALCIUM, DISSOLVED	mg/L	347	140	92	1,890	520	114	59	416	1140	1500	151	139	35	33	869	1,100	242	235
CARBAMATES BY HPLC (EPA 531)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND		ND		ND	
CARBONATE AS $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLORIDE, DISSOLVED	mg/L	814	167	57	13,589	1,739	387	220	3995	12380	10546	261	251	74	75	16,519	10,436	1,199	1,038
CHLORINATED PESTICIDES AND PCB (EPA 508)	µg/L	ND	A	A	A	ND	ND	ND	ND	ND	ND	A	A	ND		ND		ND	
CHLORINE RESIDUAL, TOTAL (LABORATORY)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, E. COLI (QUANTITRAY)	MPN/100ml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, E. COLI (QUANTITRAY) - 18 HOUR	MPN/100ml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, TOTAL (QUANTITRAY)	MPN/100ml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, TOTAL (QUANTITRAY) - 18 HOUR	MPN/100ml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLOR, APPARENT (UNFILTERED)	CU	5	16	20	ND	ND	ND	11	16	ND	7	3	ND	ND	3	6	14	175	60
COPPER, TOTAL	µg/L	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	ND	ND	ND	ND	ND
DBCP & EDB	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DIOXIN	pg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DIQUAT (EPA 549)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DISSOLVED OXYGEN (FIELD)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
DISSOLVED OXYGEN (LABORATORY)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
ENDOTHALL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
FLUORIDE, DISSOLVED	mg/L	0.1	ND	0.2	ND	ND	0.1	0.3	ND	0.4	ND	0.1	ND	0.3	0.3	ND	ND	ND	0.4
GLYPHOSATE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
HARDNESS (AS $CaCO_3$)	mg/L	1222	565	393	9,030	2,044	547	263	2057	6080	6698	578	556	133	138	6,718	7,296	1,218	1,206
HYDROXIDE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IODIDE	µg/L	ND	35	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	500	330
IRON	µg/L	ND	184	315	ND	ND	33	81	274	ND	ND	104	ND	10	ND	670	1,540	6,964	6,878
IRON, DISSOLVED	µg/L	ND	182	315	ND	ND	26	15	ND	ND	ND	99	ND	ND	ND	667	1,520	6,300	1,400
KJEHLDAHL NITROGEN, DISSOLVED	mg/L	ND	0.7	1	ND	ND	0.09	ND	ND	ND	ND	ND	ND	ND	0.11	0.2	0.19	6.12	2.9
LITHIUM	µg/L	25	17	6	271	29	5	49	157	132	132	ND	6	38	39	289	296	23	20
MAGNESIUM	mg/L	90	53	39	1,040	189	60	25	249	801	717	50	49	13	13	1,100	1,130	169	151
MAGNESIUM, DISSOLVED	mg/L	83	49	37	1,010	192	58	23	250	828	692	51	47	13	13	1,090	1,140	161	152
MANGANESE, DISSOLVED	µg/L	714	821	2090	230	372	476	283	759	353	642	ND	76	247	186	1,120	1,410	4,920	4,830
MANGANESE, TOTAL	µg/L	750	810	1880	232	372	500	310	847	354	668	ND	86	254	188	1,160	1,380	5,140	4,840
MBAS (SURFACTANTS)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NITRATE AS NO_3	mg/L	2	ND	ND	6	15	198	2	6	5	6	123	115	2	2	5	6	ND	ND
NITRATE+NITRITE AS N	mg/L	0.7	0.5	0.5	1.4	3.4	44.8	0.7	1.3	1.5	1.4	28.2	26.8	0.9	0.8	1.2	1.3	2.5	1.2
NITRITE AS NO_2-N, DISSOLVED	mg/L	0.2	0.1	0.5	ND	ND	0.1	0.3	ND	0.4	ND	0.4	0.8	0.3	0.3	ND	ND	2.5	1.2
ODOR THRESHOLD AT 60 C	TON	1	1	2	1	2	2	1	2	1	1	2	1	1	2	1	2	2	5
OIL & GREASE (HEM)	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
o-PHOSPHATE-P	mg/L	0.05	0.32	1.55	0.05	0.016	0.035	0.06	0.04	0.06	0.04	0.1	0.13	0.06	0.13	0.06	0.04	1.34	0.28
pH (FIELD TEST)	pH	7.24	7.43	7.07	6.77	7.17	7.05	7.33	8.17	6.67	6.92	7.13	6.99	7.44	8.03	6.84	7.03	7.06	7.04
pH (LABORATORY)	pH (H)	7.4		7.1	6.9	7.2	7.3	7.6	8.2	7.2	7.2	7.4	7.2	7.5	7.8	6.9	6.9	7.1	7.1
PHENOXY ACID HERBICIDES (515.3)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
PHOSPHORUS, DISSOLVED TOTAL	mg/L	0.06	0.31	1.38	0.02	0.017	0.04	0.06	ND	0.07	ND	0.11	0.07	0.12	0.029	0.06	ND	1.4	0.16
POTASSIUM	mg/L	7.1	6.4	7.6	57	10	5.9	5.1	41	108	55	4.1	5	3.5	6.1	197	168	14	13
POTASSIUM, DISSOLVED	mg/L	8	7	7.2	55	10	5.5	4.6	42	111	50	4.3	4.8	3.6	6	196	167	12.8	13
QC RATIO TDS/SEC		0.67	0.63	0.61	0.69	0.68	0.68	0.56	0.58	0.69	0.7	0.62	0.63	0.59	0.61	0.66	0.69	0.6	0.58
REG. ORG. COMPOUNDS (EPA 525)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
SETTLEABLE SOLIDS	mL/L	NA	NA	NA				NA	NA	NA	NA	NA							
SILICA AS SiO_2, DISSOLVED	mg/L	44	44	34	35	30	37	45	33	30	33	37	40	45	44	35	30	43	40
SODIUM	mg/L	77	140	79	6,834	338	124	148	2192	6106	5310	262	245	68	75	8,407	8,224	732	691
SODIUM, DISSOLVED	mg/L	78	141	79	6,540	342	119	135	2290	6270	4950	265	239	68	74	8,430	8,240	698	692
SPECIFIC CONDUCTANCE (E.C)	µmhos/cm	2758	1545	989	38,800	5,650	1,768	1045	12190	35020	29320	2036	1935	624	617	44,090	44,660	5,330	5,190
SPECIFIC CONDUCTANCE (E.C) (FIELD)	µmhos/cm	2859	1531	869	39,065	5,507	1,762	1113	15312	35040	29888	2004	1932	574	658	44,462	45,724	5,384	5,255
STRONTIUM, DISSOLVED	µg/L	1826	761	561	12,676	3,689	1,327	470	3536	8504	8507	868	855	273	260	8,148	8,301	3,064	1,861
SULFATE	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
SULFATE, DISSOLVED	mg/L	85	175	87	1,882	176	61	32	541	1743	1430	258	239	25	23	2,286	2,207	210	220
TEMPERATURE	°C	NA	NA	NA				NA	NA	NA	NA	NA	NA						
TEMPERATURE, (FIELD)	°C	10.6	16.8	NA	19.7	18.4	18.2	21.2	19.2	17.17	17.2	16.83	17	21.2	20.2	17.2	17.3	17.3	17.1
TOTAL DISS. SOLIDS	mg/L	1840	966	608	26,700	3,832	1,200	583	7100	24000	20500	1260	1214	366	377	29,000	30,600	3,204	2,997
TOTAL SUSP. SOLIDS	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
TURBIDITY	NTU	0.2	0.7	2.6	0.2	0.2	0.3	0.55	1.9	0.1	0.2	0.1	0.15	0.1	0.5	1.3	3	55	50
TURBIDITY (FIELD)	NTU	0.59	0.7	0.62	0.85	0.88	0.7	2.48	1	0.56	1	0.92	1	0.86	0.7	0.29	0.3	0.82	0.2
VOLATILE ORG. COMPOUNDS (524)	µg/L	ND	ND	ND	ND	A	ND	ND	ND	ND	ND	A	A	ND		ND		A	
ZINC, TOTAL	µg/L	24	ND	ND	ND	ND	ND	ND	ND	340	ND	636	ND	22	ND	ND	ND	ND	ND

Total Dissolved Solids in Monterey Regional Water Pollution Control Agency Wells

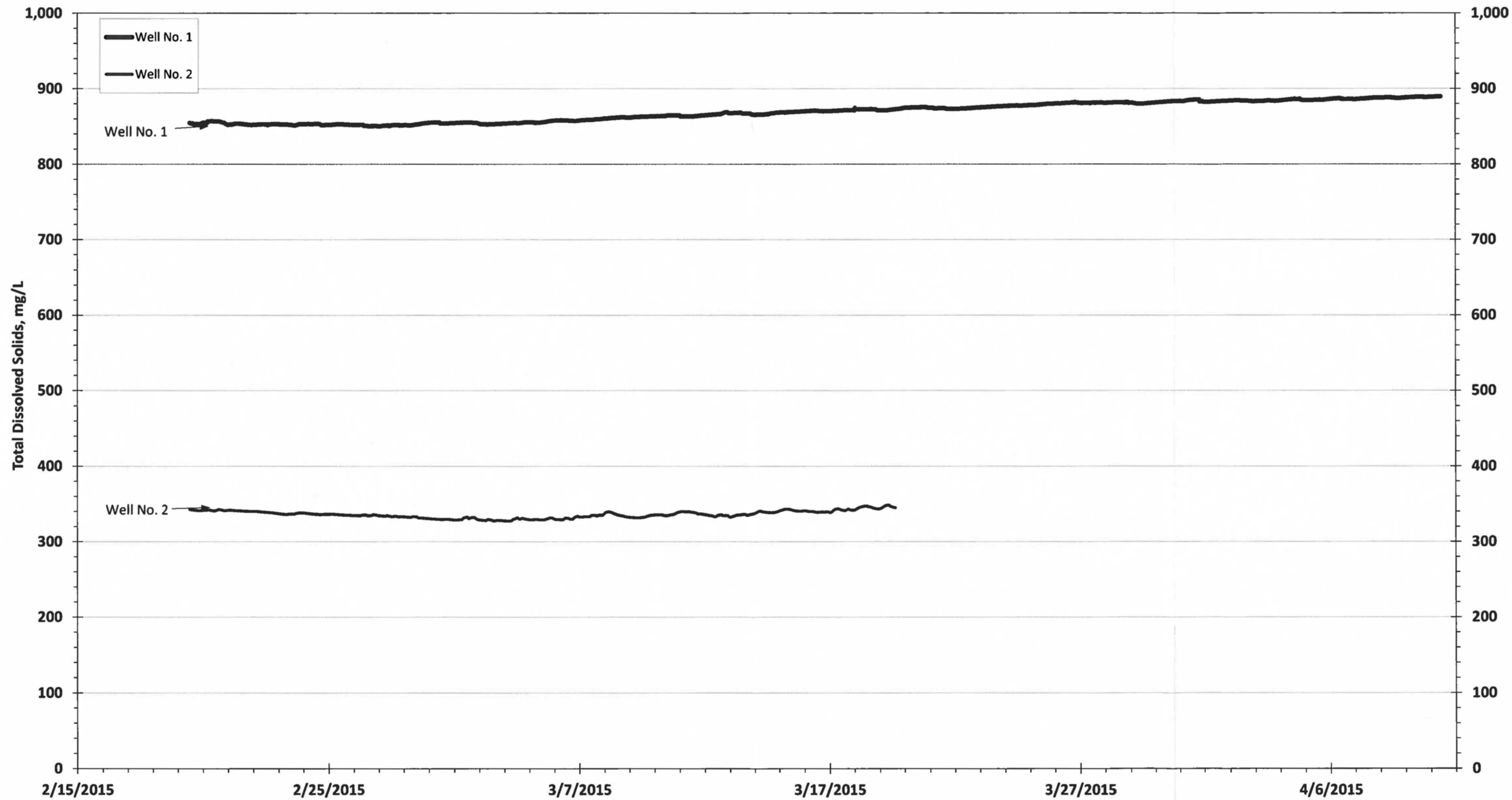

Figure 3-5

ATTACHMENT

Preliminary Interpretation of SkyTEM Data Acquired in the Marina Coast Water District

Ian Gottschalk and Rosemary Knight
June 16, 2017

Objective:

Airborne electromagnetic (AEM) data were collected in the Northern Salinas Valley, CA, within and around the Marina Coast Water District (MCWD). The data were processed and inverted with lateral constraints by Aqua Geo Frameworks (AGF), and the resulting resistivity models given to Stanford. The work described in this report focuses on the region of a suspected isolated freshwater lens. Figure 1 shows the region of interest. "Isolated freshwater lens" is defined here as a water-bearing unit with anomalously low concentrations of total dissolved solids (TDS) in an area otherwise known to be saltwater intruded. Figure 2 shows a highly simplified schematic of the current understanding of the hydrostratigraphy and distribution of fresh and salt water in the region of interest. There is considerable interest in the interpreted isolated freshwater lens, which is suspected to lie in the Dune Sand and 180-Ft and 180-Ft Equivalent Aquifer. The objective of this report is to review the resistivity models obtained through inversion of the AEM data to determine whether we see evidence of the presence of freshwater in the area mapped as the freshwater lens.

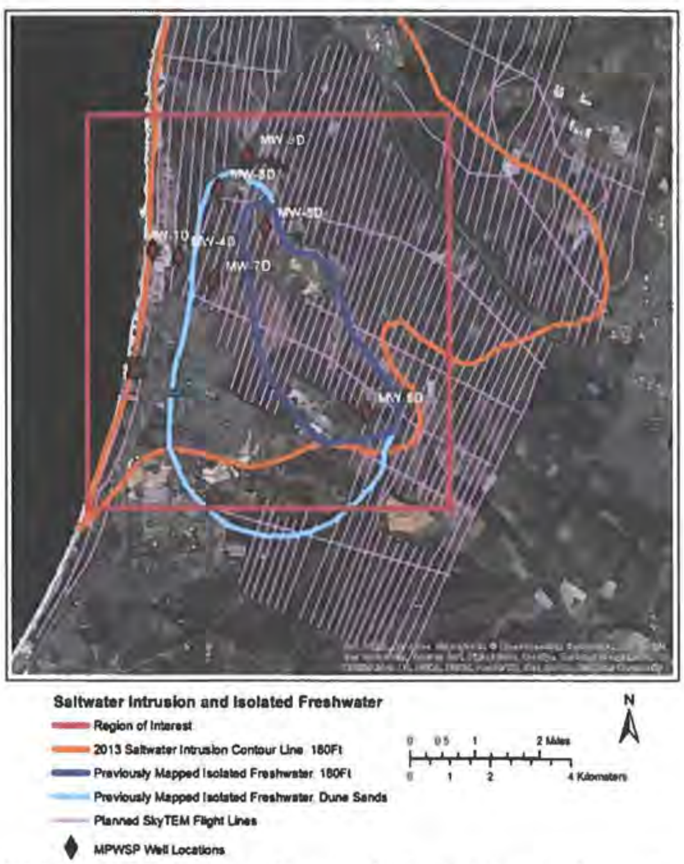

Figure 1: Region of interest (pink box) showing previously mapped saltwater intrusion (orange) extent in the 180-Ft Aquifer and the previously mapped extent of the isolated freshwater (light and dark blue) in the Dune Sand and 180-Ft Aquifers. Also shown are the 7 MPWSP well clusters with geophysical borehole logs as well as continuous data loggers in all screened intervals, and the planned SkyTEM flight lines for the AEM data acquisition

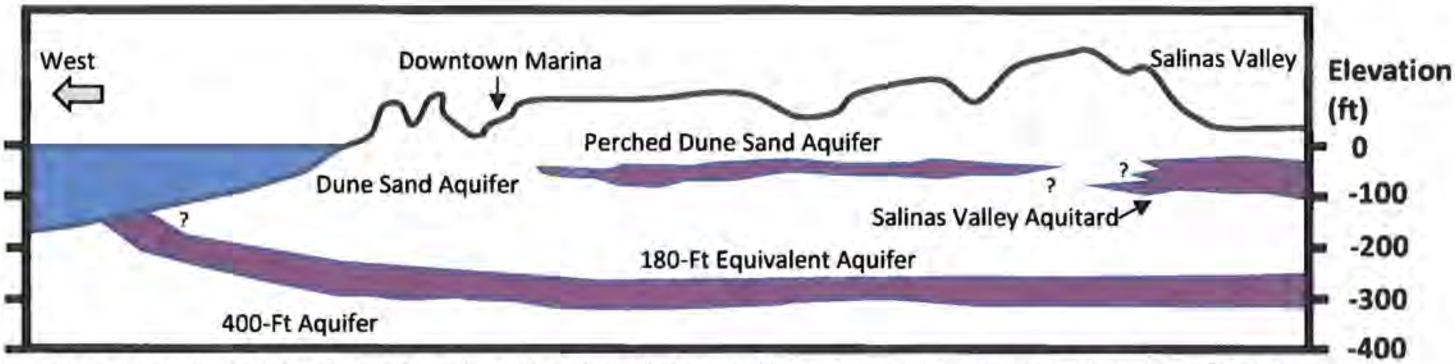

Figure 2: Conceptual cross-section of the hydrostratigraphy in the region of interest. Isolated freshwater has been documented to exist in the 180-Ft/180-Ft Equivalent Aquifers, and in the Dune Sand/Perched Dune Sand Aquifers.

Existing Hydrologic Data:

We have assembled from the study area a database of well location and lithology information. Much of the analysis in this report will use information provided from nine monitoring well clusters drilled by California American Water for its Monterey Peninsula Supply Project (MPWSP), due to the high quality data collected in the wells, and the continuous monitoring within them. These nine MPWSP monitoring well clusters were drilled using a sonic drilling method, with retrieved cores.

Geophysical borehole logs were collected in seven of the monitoring well clusters, shown in Figure 1. Each of the seven well clusters is comprised of three wells, each screened at a different elevation, corresponding roughly to the three aquifers nearest to the ground surface in the region: The Dune Sand Aquifer, the 180-Ft Equivalent Aquifer, and the 400-Ft Aquifer, ranging from highest to lowest elevation. The logs include induction-based resistivity (deep and medium length), spontaneous potential, and gamma radiation. The full geophysical borehole fence diagram for the seven MPWSP well clusters is shown in the Appendix Figure A3. Geophysical logging measurements were collected near the time of drilling which was spring 2015. A baseline geochemical analysis of water from each screened interval was reported approximately 1-2 months after borehole geophysical data collection; wells were bailed before taking a geochemical lab sample. This process has been repeated monthly since then, but the data are not publically available. A continuously logging pressure transducer and electrical conductivity meter was installed in every well in each cluster, and reports submerged pressure, water density, and electrical conductivity every 5 to 15 minutes. Well and transducer specifications are reported by Geoscience Support Services, Inc., shown in the Appendix Table A1. The trend in electrical resistivity on a monthly time scale is negligible, based on the data collected by the continuous data logger in each well; therefore, we consider the lab water quality assessment and the borehole geophysical data to be contemporaneous.

In addition to well lithology (developed from review of the core samples) and geophysical measurements from the MPWSP monitoring wells, previous hydrogeological studies in the area provide a background knowledge of the hydrostratigraphy of the area (Fugro, 1995; Harding, 2001; Kennedy/Jenks, 2004; Geoscience, 2014; Hopkins, 2016).

Overview of SkyTEM Data

635 km of AEM data were acquired in the Marina area May 16-18, 2017, using a SkyTEM 304M system. The locations of the as-flown flight lines are shown in Figure 3, taken from the AGF's QA/QC and Preliminary LCI Report. In this study, we focus on the line-km overlying the study area, shown by the bounding box in the Figure 1.

The inversion of the SkyTEM data by AGF has provided 2-D sections along the SkyTEM flight lines that display the variation in electrical resistivity of the subsurface. The cutaway section in Figure 4 displays data in the region of interest, along with a map of the same area from the 2016 Hopkins Consulting report (Hopkins Consulting, 2016). In all images, we show inverted data considered to be very well determined to determined, with a resistivity standard deviation of <1.5 (Behroozmand et al., 2013). The standard deviation cutoff of 1.5 corresponds to a depth of investigation of nearly 50 mbgs in especially saline regions of the coast, down to over 150mbgs in more resistive inland regions. Inverted resistivities span a wide range in MCWD region of interest, reaching well above 500 ohm-m above the water table in the Fort Ord area, and below 1 ohm-m in zones near the coast.

Figure 3: As-flown flight lines in the MCWD SkyTEM data acquisition. 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"

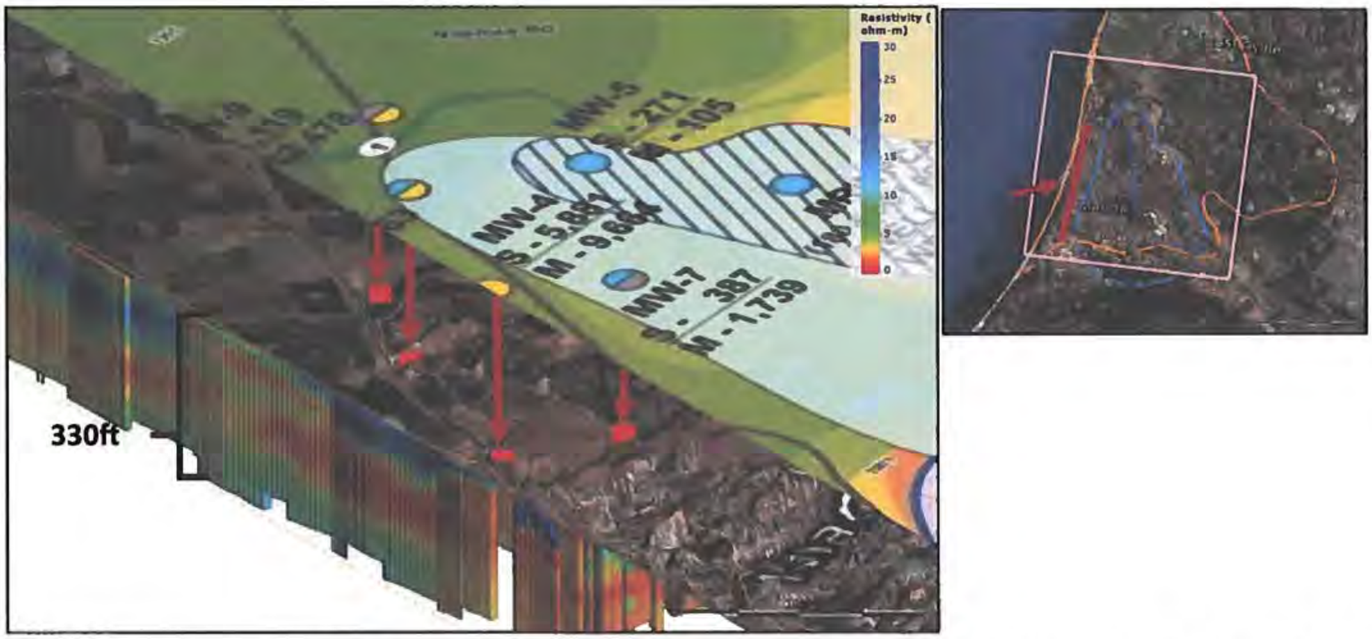

Figure 4: Oblique cutaway view of inverted AEM data in the region of interest, facing northwest from the Monterey Bay. Superimposed above the topography is an image of previously mapped freshwater in the region of interest (Hopkins, 2016). MPWSP wells are shown in red on the topography, and red arrows show the same wells from the superimposed image. The near-surface high-resistivity zone in the Marina area generally extends to the Salinas River.

Figure 5 shows a series of cutaways of the AEM data in the region of interest. Plotted alongside the AEM data are borehole resistivity measurements, for reference. In most locations, borehole resistivity measurements agree very well with the nearest AEM data. This correlation gives us confidence in the AEM data. Although the borehole resistivity measurements were made in 2015, the changes in the subsurface have not made the difference between the datasets very large. Some exceptions are in areas where the pore fluid has changed significantly in the past 2 years (e.g. MW-4 in Figure 5a), which is supported by the trends in EC recorded by the continuous data loggers in the MPWSP wells.

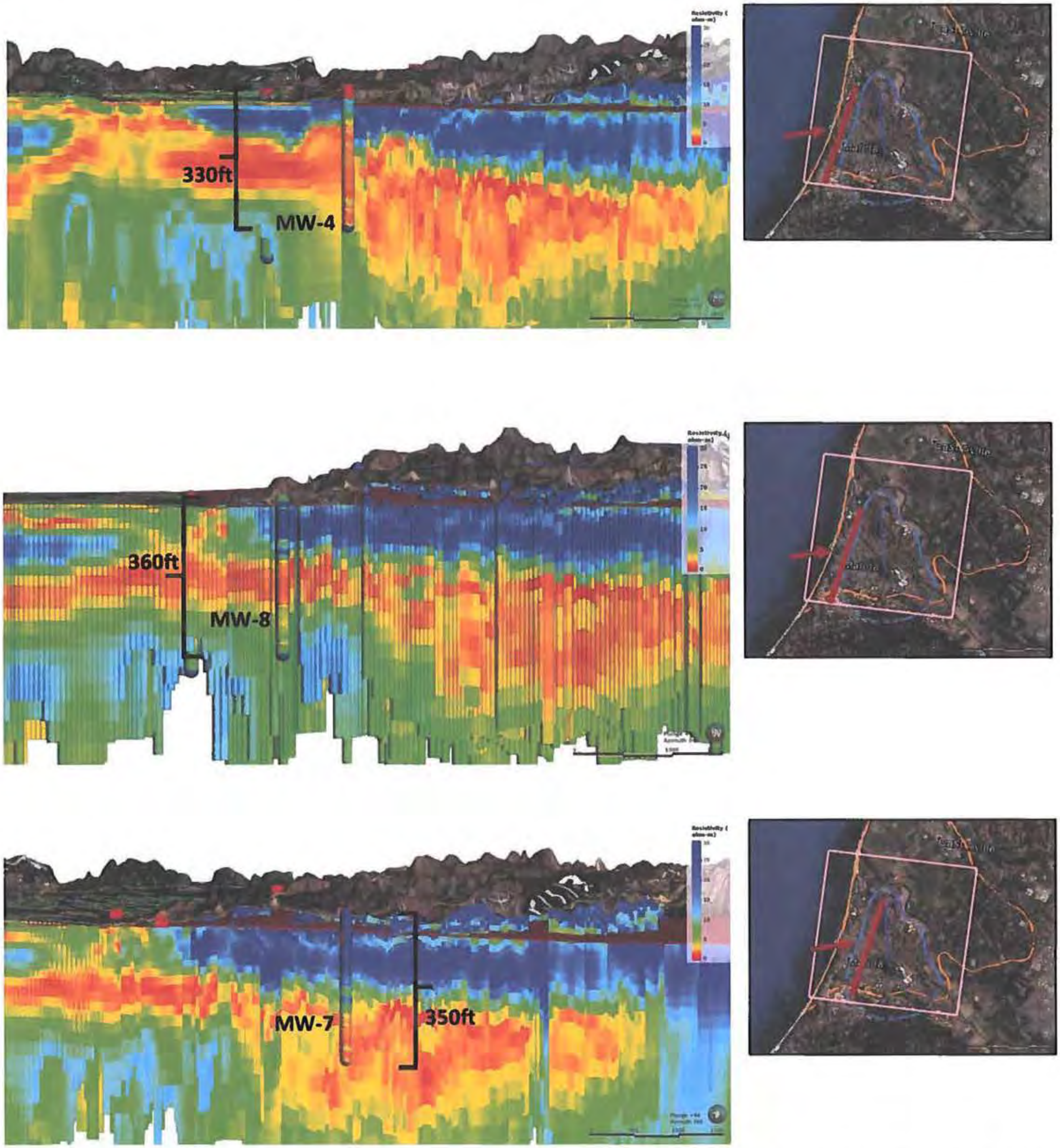

Figure 5: Cutaway slices of AEM data, along with nearby borehole geophysical data (long induction resistivity), and a plan view showing the slice and viewing direction. The top figure shows a notable discrepancy between the geophysical log at the top of MW-4 and the nearby AEM data. This difference emphasizes the changes in water quality since 2015, when MW-4 was logged. The changes observed (increasing in resistivity since 2015) are consistent with the trend of EC in MW-4 since 2015.

Interpretation of the SkyTEM Data

Our objective was review AEM data for the existence of possible freshwater within the region where isolated freshwater had been documented. Resistivity measured by the SkyTEM system is a function of not just water quality, but of sediment mineralogy as well. In order to reliably extract water quality information in the region of interest, our workflow included the following steps:

1) Map the water table in order to separate the unsaturated from saturated zone,
2) Define the resistivity of freshwater and saltwater-saturated zones in order to identify these zones in the AEM data, and
3) Apply the resistivity cut-off values defined above to the data.

<u>1) Mapping the Water Table</u>

<u>1.1) Interpolating a Water Table Surface</u>

In the region of interest, isolated freshwater is suspected to be present in the Dune Sand Aquifer and the 180-Ft/180-Ft Equivalent Aquifer. Since isolated freshwater may be in contact with the unsaturated zone, and both will appear relatively resistive in the AEM data, it is important to delineate between for an accurate assessment of the freshwater resources. Most wells in the region are not screened in the unconfined (Dune Sand) aquifer. However, water table level measurements contemporaneous with the collection of AEM data were available in nine MPWSP wells, recorded by the continuous pressure transducers. A schematic for the conversion used to calculate groundwater elevation from pressure transducer readings is shown in Figure A2 in the appendix, taken from a MPWSP long-term pumping report.

Water table elevations tend to be a muted expression of the surface topography: in high elevation areas, the water table often elevates, and sinks where the topography depresses. In order to model the water table surface to reflect the true water table, control points are needed especially in hilly regions, where the topography changes quickly. In the case of this study, few control points exist in the central and northeastern sections of Marina, where dune deposits create hilly topography (Figure 6b).

Using the available water table data from the MPWSP well measurements, an estimated map of the water table was created with a kriging interpolation. The variogram ranges were calculated automatically from the data, and the groundwater level at the ocean was set at 0m.

Near control points and in regions where topography does not change dramatically, the interpolated water table are expected to reflect the true water table elevation. However, in areas where topography varies quickly, the interpolated water table can be inaccurate. Since the majority of available control points are at lower elevations, the interpolation is biased toward lower elevations. Therefore, in hilly, high elevation regions, the interpolated water table surface is likely to underestimate the elevation of the true water table.

<u>1.2) Applying a Resistivity Cutoff for the Unsaturated Zone</u>

The AEM data itself also helps to define the water table elevation. The absence of water in the subsurface has a profound effect on the resistivity: above the measured water table at control points, the inverted AEM resistivities are found in the range of 100-1000 ohm-m; however, below the water table at control points, nearly all data are below 50 ohm-m. This stark contrast normally exists at the interface between the unsaturated and saturated zone. By applying a resistivity cutoff to allow only <75 ohm-m data, we can compare the interpolated water table surface with the elevation at which the AEM resistivity spikes. Figures 6c and 6d display the topmost AEM data, between the ground surface and the interpolated water table surface. (In these two figures, the interpolated water table surface is draped with the satellite image of Marina, for spatial reference.) Figure 6c shows data above the interpolated water table, but with no resistivity cutoff. Figure 6d introduces the 75 ohm-m cutoff. With an accurate interpolated water table surface and the appropriate resistivity cutoff, the top of the AEM data in Figure 6d should closely match the interpolated surface. Notice that the areas with few control points and hilly terrain in Figure 6b (e.g. NE of Marina and the coastal dunes) correspond to regions where larger volumes AEM data does not match the interpolated surface.

Because of the dramatic resistivity change between saturated and unsaturated zone in this area, using a resistivity cutoff helps to map out the unsaturated zone in regions where water table data is not available. However, in order not to underestimate the amount of freshwater in the near surface, more water table measurements are critical in hilly, high elevation areas in the region of interest.

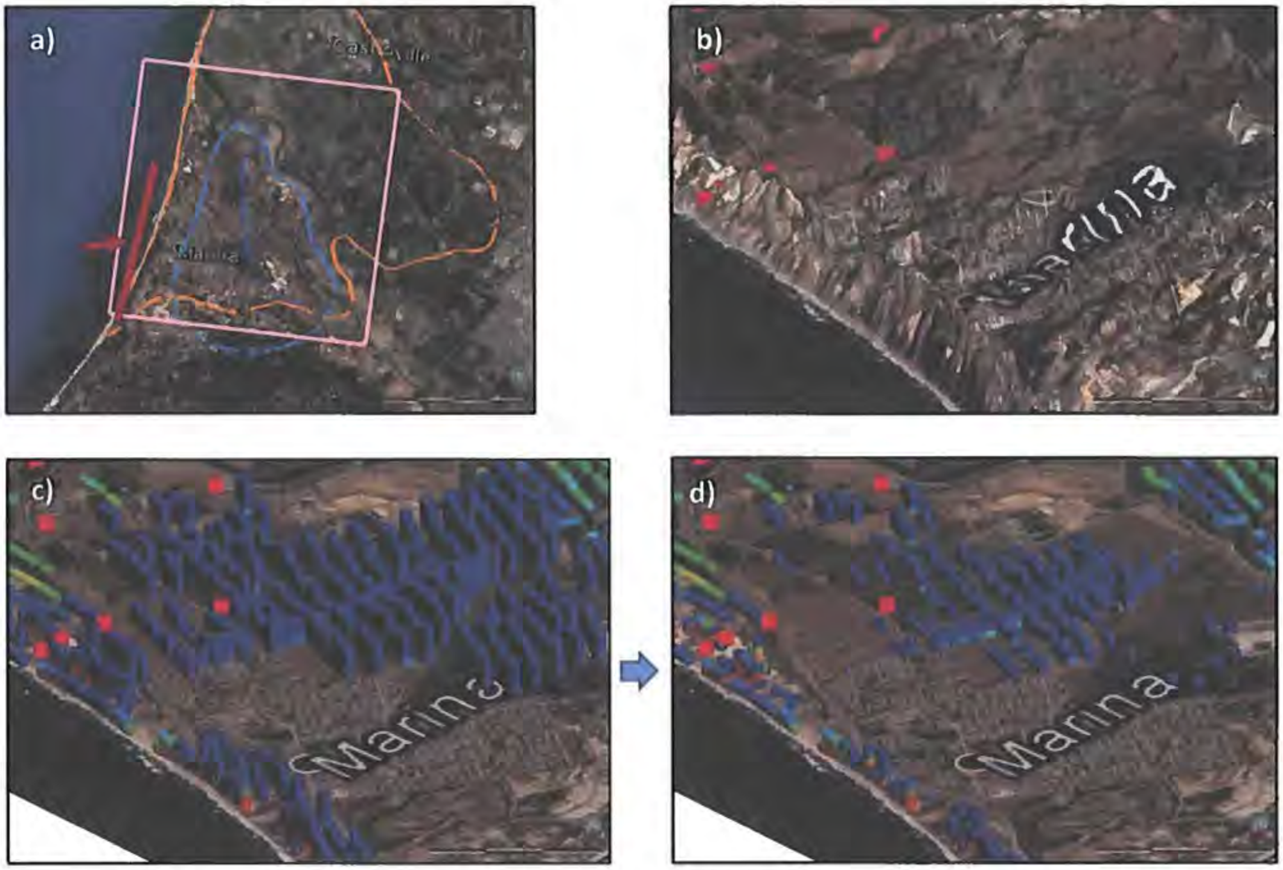

Figure 6: Oblique view of SkyTEM AEM data between the ground surface and the interpolated water table, displaying of few control points on the interpolated water table.
***a)** Plan view showing region of interest, viewed line (red line) and viewing direction (red arrow)*
***b)**Oblique view showing topography of Marina area and control points from which the interpolated water table surface was created (vertical exaggeration x15)*
***c)** All AEM data, bounded beneath by the satellite map of the area set to the elevation of the interpolated water table surface*
***d)** A conservative <75 ohm-m cutoff is applied to the data to remove data which have a high probability of being in the unsaturated zone. Between water table control points, the water table surface smoothly varies. In areas with few control points and hilly terrain (such as in the northern Marina area, the coastal dunes, or the Fort Ord area), the water table surface will deviate from reality.*

Defining the resistivity of freshwater and saltwater-saturated zones

Within the saturated zone, resistivity values vary significantly. In order to use the AEM data to interpolate between and extrapolate beyond water quality information from wells, we need to have information on the bulk resistivity of the various sediments containing water of variable quality; i.e., what is the resistivity of a freshwater-saturated sand unit? What is the resistivity of a saltwater-saturated sand unit? What is the resistivity of a freshwater-saturated clay unit? In a lithologically homogenous subsurface, changes in resistivity can be attributed simply to changes in the pore water resistivity, and therefore to changes in salinity. In the case of this study area, the lithology of the subsurface is documented as being very heterogeneous, where aquifer units contain silt and clay lenses from fluvial and alluvial deposits. The presence of finer-grained—especially clay-bearing —sediment affects the resistivity of the bulk material, and therefore affects the return signal in an AEM survey in the same way that pore water resistivity does.

The ranges of resistivity expected in different sediments and water quality from the coastal Seaside area are reported from a recent study in Table 1 (Goebel et al., 2017). While resistivities vary based on both lithology and salinity, we can conclude that the lowest resistivity values will always correspond to saltwater-saturated sediments and the highest resistivity values will always correspond to freshwater-saturated sediments.

Table 1: Expected resistivities of sediments in coastal Seaside area, CA (adapted from Goebel et al., 2017).

Resistivity (ohm-m)	Sand and Gravel	Silt	Clay
Freshwater Saturated	30–70	N/A	7–12
Saltwater Saturated	0.7–3	1.2–3	1.5–5

We developed the analogous table for the Marina area sediments using the geophysical borehole logs in the seven MPWSP wells and pore water TDS measurements made at the time of the logging, where fresh, brackish and saltwater are defined by total dissolved solids thresholds of <3,000, 3000-10,000, and > 10,000 mg/L, respectively. These thresholds are defined according to the EPA Guidance for the Determination of Underground Sources of Drinking Water. The results are shown in Table 2. Given the quality of the lithology cataloging, data were available for multiple lithology categories, beyond sand, silt, and clay. We see a trend similar to the one found in the Seaside area sediments: saltwater-saturated sediments, regardless of lithology, have the lowest resistivity values. Similarly, freshwater in coarser-grained sediments have a distinctively high resistivity, but freshwater in finer-grained sediments can be convoluted with sediments in brackish water. To make conservative estimate of zones that are freshwater-saturated, we apply a 30 ohm-m cutoff to the data defining all freshwater-saturated sediments. A similar estimate can be made for saltwater-saturated zones by applying a 3 ohm-m cutoff, defining all saltwater-saturated sediments.

Table 2a: Expected resistivities in the coastal Marina area, compiled from MPWSP geophysical well logs (long induction resistivity)

Resistivity (ohm-m)	Gravel/ Boulders	Sand and Gravel	Sand	Silty Sand	Clayey Sand	Silt/Loess	Silty Clay	Clay
Freshwater-saturated	N/A	65.00	31.40	15.37	N/A	N/A	11.58	16.98
Brackish-saturated	N/A	7.36	22.98	N/A	N/A	N/A	N/A	N/A
Saltwater-saturated	1.69	1.58	1.76	1.42	1.58	1.65	N/A	1.68

Table 3b: Summary of expected resistivities in the coastal Marina area

Resistivity (ohm-m)	Range	Average	SD
Freshwater-saturated	11-65	28.06	21.97
Brackish-saturated	7-23	15.17	10.38
Saltwater-saturated	1.4-1.7	1.62	0.11

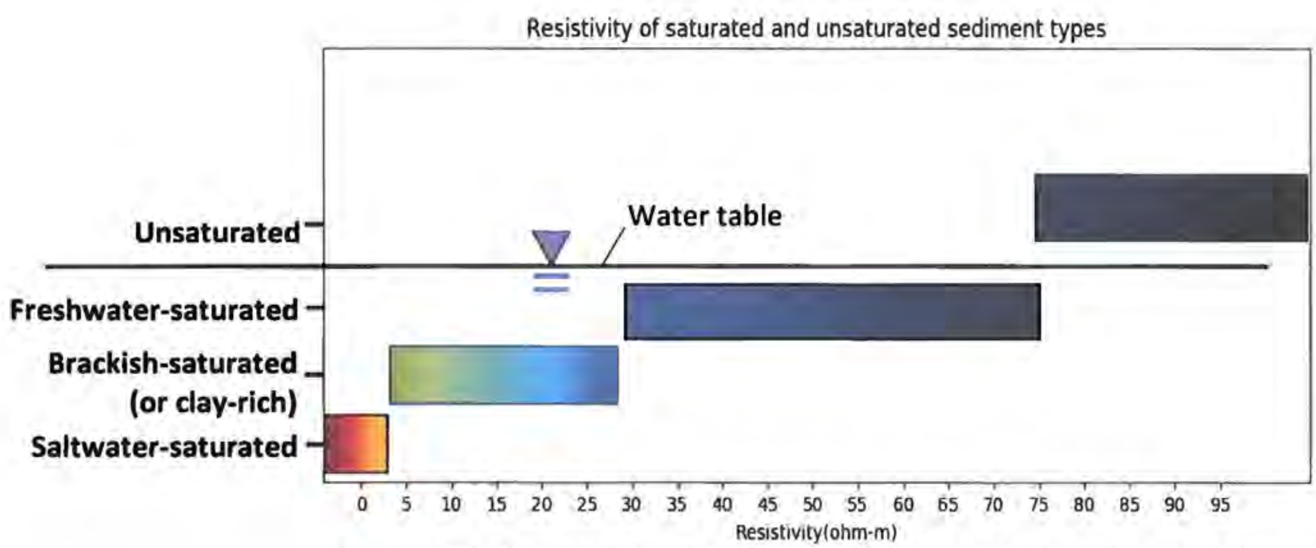

Figure 7: Range of resistivities expected in the region of interest based on Table 2, along with the cutoff values for each classification:
Saltwater-saturated: <3 ohm-m; Freshwater-saturated: 30-75 ohm-m; Unsaturated: > 75 ohm-m.
The range between saltwater-saturated and freshwater-saturated is less certain; sediments could be coarse in brackish water, or clay-rich.

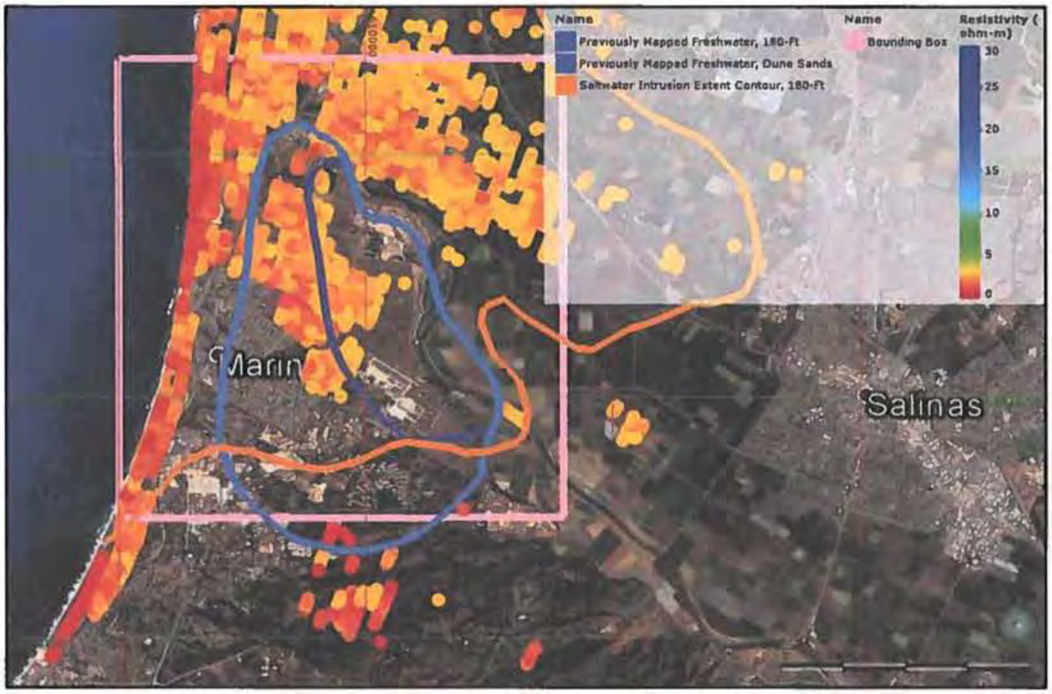

Figure 8a: Plan view showing resistivity below 3 ohm-m to a depth of -150m elevation. Map is shown at -150m elevation

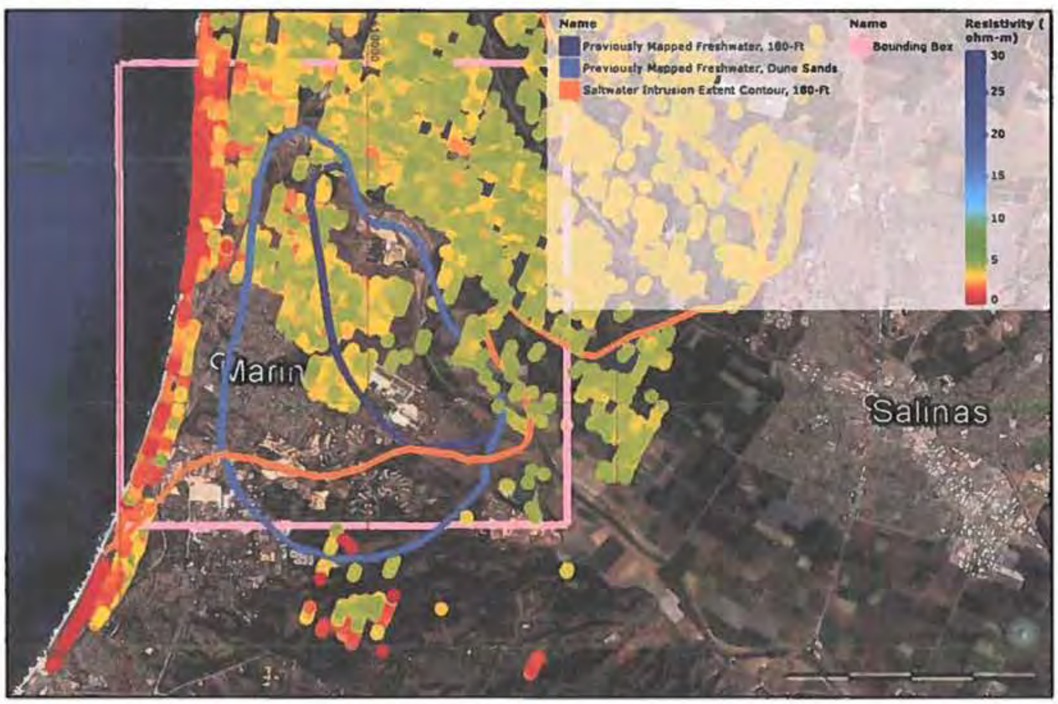

Figure 8b: Plan view showing resistivity below 5 ohm-m to a depth of -150m elevation. Map is shown at -150m elevation

3) Fresh and Saltwater in AEM data

Figure 8 shows the applied saltwater cutoff found from the geophysical well logs (3 ohm-m). Saltwater intrusion tends follow the contours from the previously mapped saltwater intrusion contour in the 180-Ft Aquifer. For comparison, a cutoff of 5 ohm-m is shown in Figure 8b. Figure 9 displays the region of interest with the applied freshwater cutoff found from geophysical well logs (>30ohm-m), and a >20ohm-m cutoff (Figure 9b), for comparison.

It is distinctly clear that areas in the region of interest have a significant volume of freshwater in the near subsurface. In the Marina area, the thickness of freshwater grows, which corresponds to previous water quality measurements in the MPWSP wells, as well as a 2016 report by Curtis Hopkins. The AEM data furthermore show the extension of the isolated freshwater beyond the area formerly thought to contain freshwater in the near surface (in the Dune Sand Aquifer), likely up until near the Salinas River.

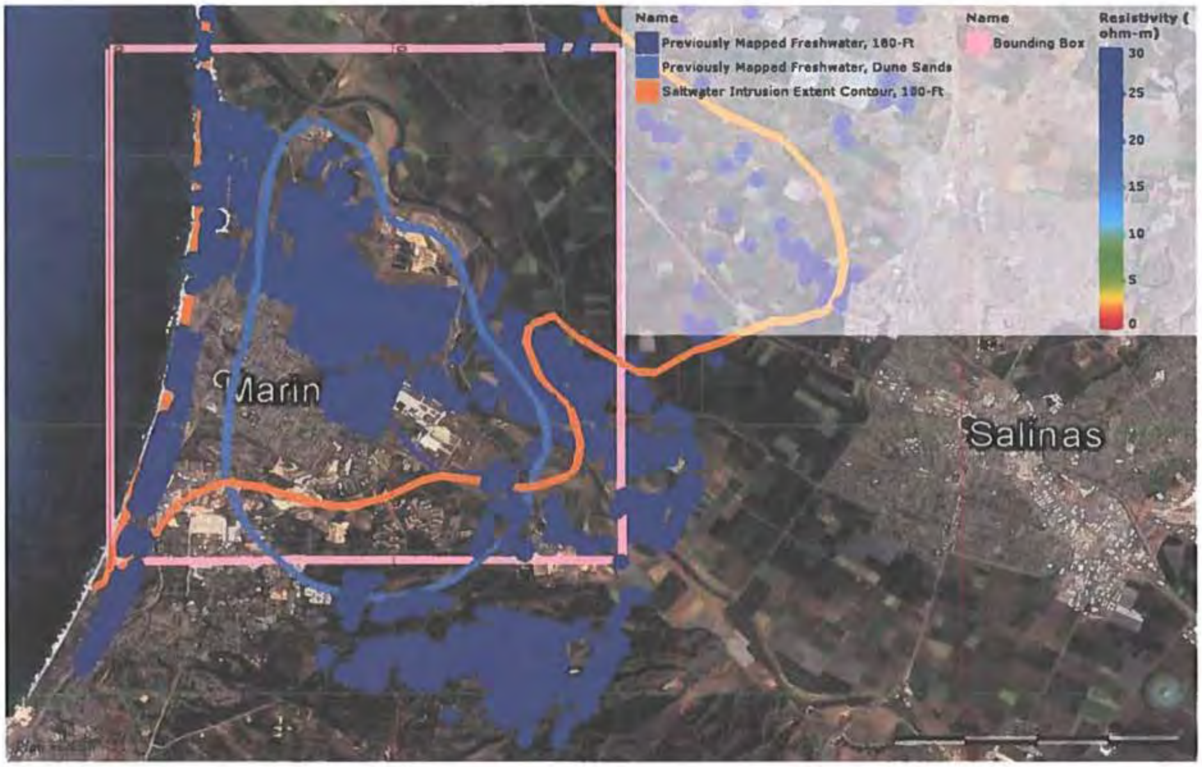

Figure 9a: Plan view showing >30ohm-m resistivities between elevations -100 to 29masl.

Figure 9b: Plan view showing >20ohm-m resistivities between elevations -100 to 29masl

Summary

We have made a preliminary interpretation of AEM data collected in the Marina region in May 2017. From geophysical logs and water quality measurements, we have conservatively defined an interpolated water table surface, which is likely to underestimate the volume of isolated freshwater in the region of interest. We have compared this interpolated water table, based on few control points, with a conservative resistivity cutoff of <75 ohm-m, to distinguish the saturated zone from the unsaturated zone. Based on borehole geophysical measurements, we defined a lower bound resistivity cutoff of 3 ohm-m to distinguish between freshwater-saturated sediment and saltwater-saturated sediment, considering that saltwater-saturated materials have a uniquely low resistivity range.

The AEM dataset provided by the SkyTEM system and processed by AGF offers an abundance of information into the hydrogeology of the region of interest, in and around the MCWD-operated Salinas Valley Marina Area. The 3-dimensional interactions between fresh and salt water shown by this data can deliver valuable information for groundwater management by MCWD, and offer insight into future action by the District.

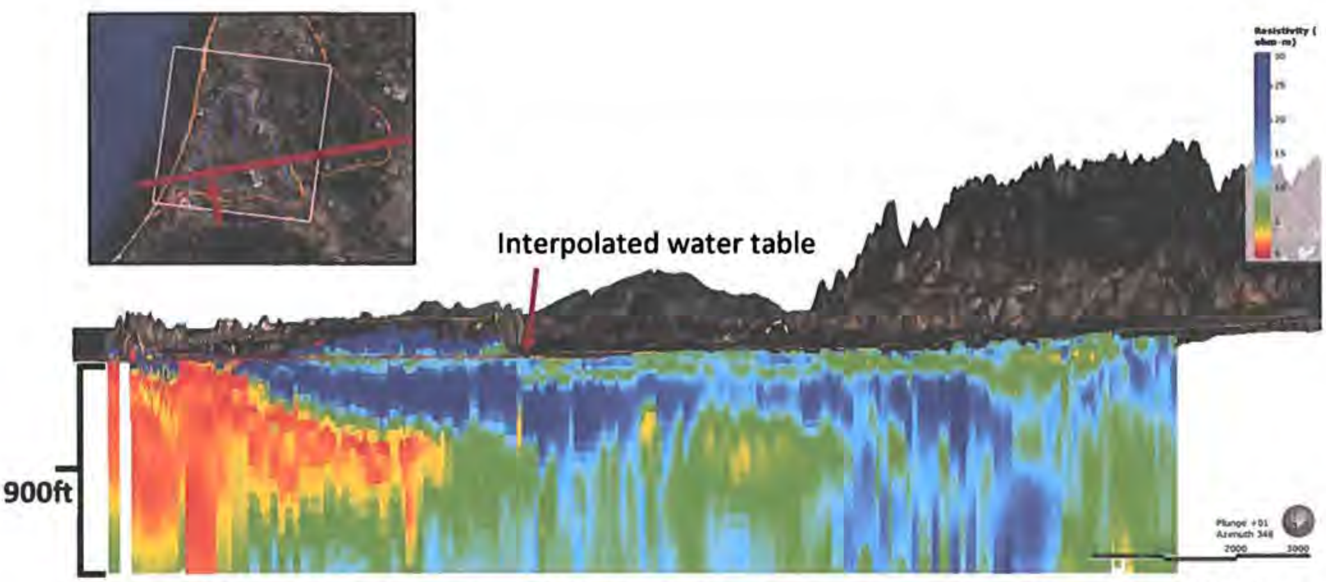

Figure 10: Cross-sectional cutaway view of AEM data, displaying larger-scale structures within the inverted AEM dataset. Interpolated water table surface is shown in red. The large conductive feature on the coast extends inland and downward, while the near-surface resistive body pinches out near the coast.

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Appendix

Figure A1a: Plan view showing occurrence of freshwater between elevations -20 to 29masl. Map elevation is set at -20m elevation. From this angle, it is appears that the region of the Salinas River serves as the northern extent for the shallow isolated freshwater zone.

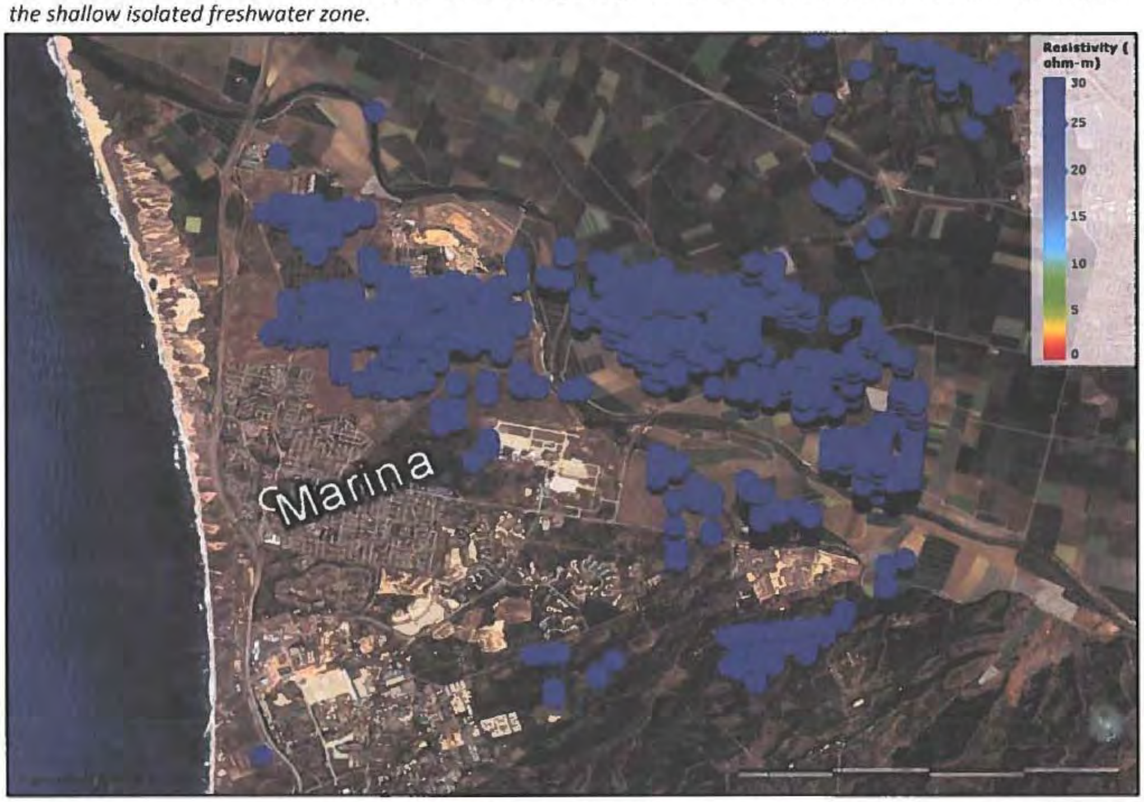


Figure A1b: Plan view between elevations of -20 to -80m. At lower elevations, the isolated freshwater region crosses the Salinas River.

Table A1: Technical specifications for the MPWSP well network. From California American Long Term Pumping Monitoring Report 107

			State Plane Coordinates										
Well Name	Cluster	Reference Point (RP)	Northing	Easting	RP Elevation ft NAVD88	RP Height (ft above GS)	Distance of RP from Slant Well Head (ft)	Top of Screen Interval (ft below GS)	Bottom of Screen Interval (ft below GS)	Transducer Installed Depth (ft below RP)	Survey Date	Data Logging Start Date	Data Collected
MW-1S	MW-1	Top of ABS Transducer Mount	2,154,745.35	5,739,355.82	30.51 [1]	2.65 [1]	211	55	95	76	26-Mar-15	19-Feb-15	Level, Conductivity
MW-1M	MW-1	Top of ABS Transducer Mount	2,154,751.93	5,739,347.94	29.86	2.48	220	115	225	182	26-Mar-15	19-Feb-15	Level, Conductivity
MW-1D	MW-1	Top of ABS Transducer Mount	2,154,753.60	5,739,337.98	29.68 [1]	2.65 [1]	230	277	327	309	26-Mar-15	19-Feb-15	Level, Conductivity
MW-3S	MW-3	Top of ABS Transducer Mount	2,154,599.85	5,739,977.02	37.16	2.66	428	50	90	76	26-Mar-15	4-Mar-15	Level, Conductivity
MW-3M	MW-3	Top of ABS Transducer Mount	2,154,592.96	5,739,988.54	37.35	2.73	441	105	215	182	26-Mar-15	4-Mar-15	Level, Conductivity
MW-3D	MW-3	Top of ABS Transducer Mount	2,154,589.81	5,739,998.68	36.93	2.74	451	285	330	321	26-Mar-15	4-Mar-15	Level, Conductivity
MW-4S	MW-4	Top of ABS Transducer Mount	2,154,170.90	5,741,427.62	41.96	2.26	1,940	60	100	66	26-Mar-15	9-Mar-15	Level, Conductivity
MW-4M	MW-4	Top of ABS Transducer Mount	2,154,172.79	5,741,416.78	41.99	2.15	1,929	130	260	208	26-Mar-15	9-Mar-15	Level, Conductivity
MW-4D	MW-4	Top of ABS Transducer Mount	2,154,174.30	5,741,406.08	41.95	2.15	1,918	290	330	317	26-Mar-15	20-Feb-15	Level, Conductivity
MW-5S(P)	MW-5	Top of ABS Transducer Mount	2,156,239.19	5,748,566.86	80.25 [1]	2.20 [1]	9,135	43	83	71	26-Mar-15	10-Mar-15	Level, Conductivity
MW-5M	MW-5	Top of ABS Transducer Mount	2,156,230.38	5,748,564.26	80.48 [1]	2.31 [1]	9,131	100	310	171	26-Mar-15	10-Mar-15	Level, Conductivity
MW-5D	MW-5	Top of ABS Transducer Mount	2,156,220.77	5,748,560.95	80.06	1.97	9,126	395	435	417	26-Mar-15	19-Feb-15	Level, Conductivity
MW-6S	MW-6	Top of ABS Transducer Mount	2,141,142.87	5,756,164.01	35.89	2.45 [1]	21,436	30	60	54	1-Oct-15	22-Apr-15	Level, Conductivity
MW-6M	MW-6	Top of ABS Transducer Mount	2,141,138.40	5,756,154.35	35.68	2.44 [1]	21,431	150	210	184	1-Oct-15	22-Apr-15	Level, Conductivity
MW-6M(L)	MW-6	Top of ABS Transducer Mount	2,141,133.06	5,756,144.94	35.82	2.42 [1]	21,427	255	325	315	1-Oct-15	22-Apr-15	Level, Conductivity
MW-7S	MW-7	Top of ABS Transducer Mount	2,152,099.25	5,744,148.10	50.64	2.06	5,274	60	80	72	1-Oct-15	13-Aug-15	Level, Conductivity
MW-7M	MW-7	Top of ABS Transducer Mount	2,152,110.46	5,744,146.08	50.29	2.09	5,266	130	220	187	1-Oct-15	13-Aug-15	Level, Conductivity
MW-7D	MW-7	Top of ABS Transducer Mount	2,152,120.50	5,744,144.38	50.24	2.24	5,260	295	345	322	1-Oct-15	13-Aug-15	Level, Conductivity
MW-8S	MW-8	Top of ABS Transducer Mount	2,159,440.33	5,744,871.52	19.96	2.14 [3]	7,116	40	80	61	1-Oct-15	30-May-15	Level, Conductivity
MW-8M	MW-8	Top of ABS Transducer Mount	2,159,430.86	5,744,866.05	19.99	2.17 [2]	7,106	125	215	181	1-Oct-15	30-May-15	Level, Conductivity
MW-8D	MW-8	Top of ABS Transducer Mount	2,159,421.47	5,744,861.04	20.08	2.10 [3]	7,096	300	350	326	1-Oct-15	30-May-15	Level, Conductivity
MW-9S	MW-9	Top of ABS Transducer Mount	2,162,010.77	5,747,345.03	18.42	2.16 [3]	10,677	30	110	71	1-Oct-15	1-Jul-15	Level, Conductivity
MW-9M	MW-9	Top of ABS Transducer Mount	2,162,016.58	5,747,353.64	18.32	2.13 [2]	10,687	145	225	182	1-Oct-15	29-Jun-15	Level, Conductivity
MW-9D	MW-9	Top of ABS Transducer Mount	2,162,022.89	5,747,362.25	18.32	2.15 [3]	10,697	353	393	377	1-Oct-15	26-Jun-15	Level, Conductivity
Well No. 1 [4]	MRWPCA	Well Cover	2,151,622.14	5,750,015.59	114 ft amsl (GS)	1.60	10,898	260	340	299	-	19-Feb-15	Level, Conductivity
Well No. 2 [4]	MRWPCA	Well Cover	2,151,550.18	5,749,987.41	115 ft amsl (GS)	1.65	10,892	260	340	319	-	19-Feb-15	Level, Conductivity
CEMEX Dredge Pond	CEMEX	Top of ABS Transducer Mount	2,155,912.41	5,739,497.26	14.14	8.92*	1,212	-	-	-	26-Mar-15	8-Mar-15	Level, Conductivity
Test Slant Well	CEMEX	Near Ground Surface	2,154,702.56	5,739,561.92	30.86	0	0	46**	231**	305MD	26-Mar-15	1-Apr-15	Level, Conductivity
CEMEX North Well	CEMEX	Well Cover	2,154,284.48	5,741,032.07	39.20	0.25	1,529	244	481	150	1-Oct-15	1-Apr-15	Level, Conductivity
CEMEX South Well [4]	CEMEX	Ground Surface	2,154,213.90	5,740,998.57	31 ft amsl (GS)	0	1,518	400	506	-	-	-	-

Horizontal Datum: NAD83 State Plane Zone 4
Vertical Datum: NAVD88
* RP height above pond water level 5.22 ft NAVD88 (8-11 am 26-Mar-15)
** Top of 18 in. screen = 140 ft x Sin(19) = 46 ft TVD, Bottom of 14 in. screen = 710 x Sin(19) = 231 ft TVD

[1] RP/elevation change on May 17, 2015 - New caps
[2] RP/elevation change on July 17, 2015 - New caps
[3] RP/elevation change on September 24, 2015 - New caps
[4] Estimated - not surveyed

MD: Measured Depth - lineal feet along the angle of the slant well
GS: Ground Surface - approximate ground surface elevation based on Google Earth

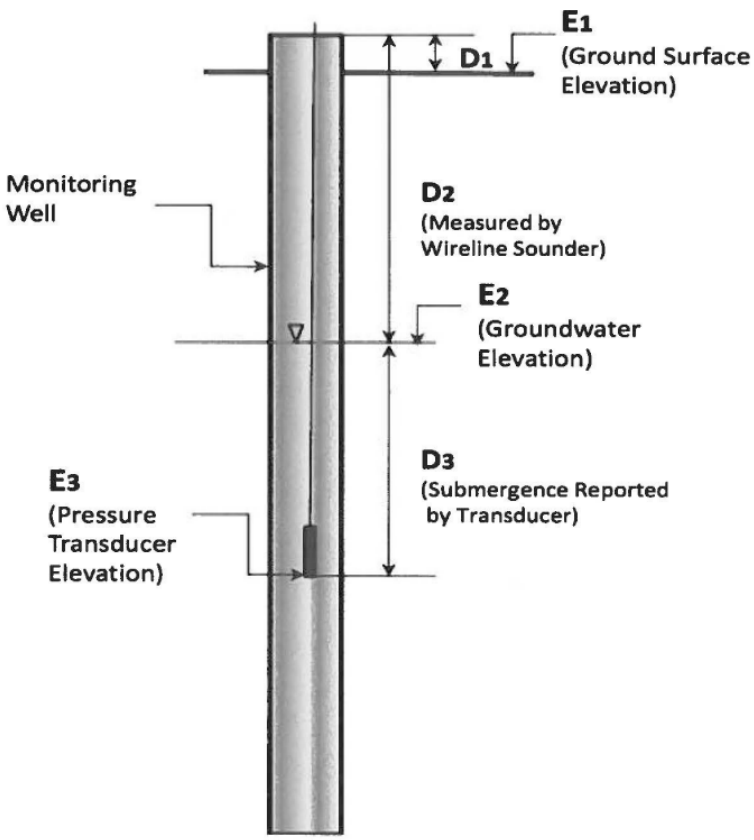


Figure A2: Schematic explaining the measurements taken to convert transducer-reported pressure to groundwater elevation. From California American Long Term Pumping Monitoring Report 107

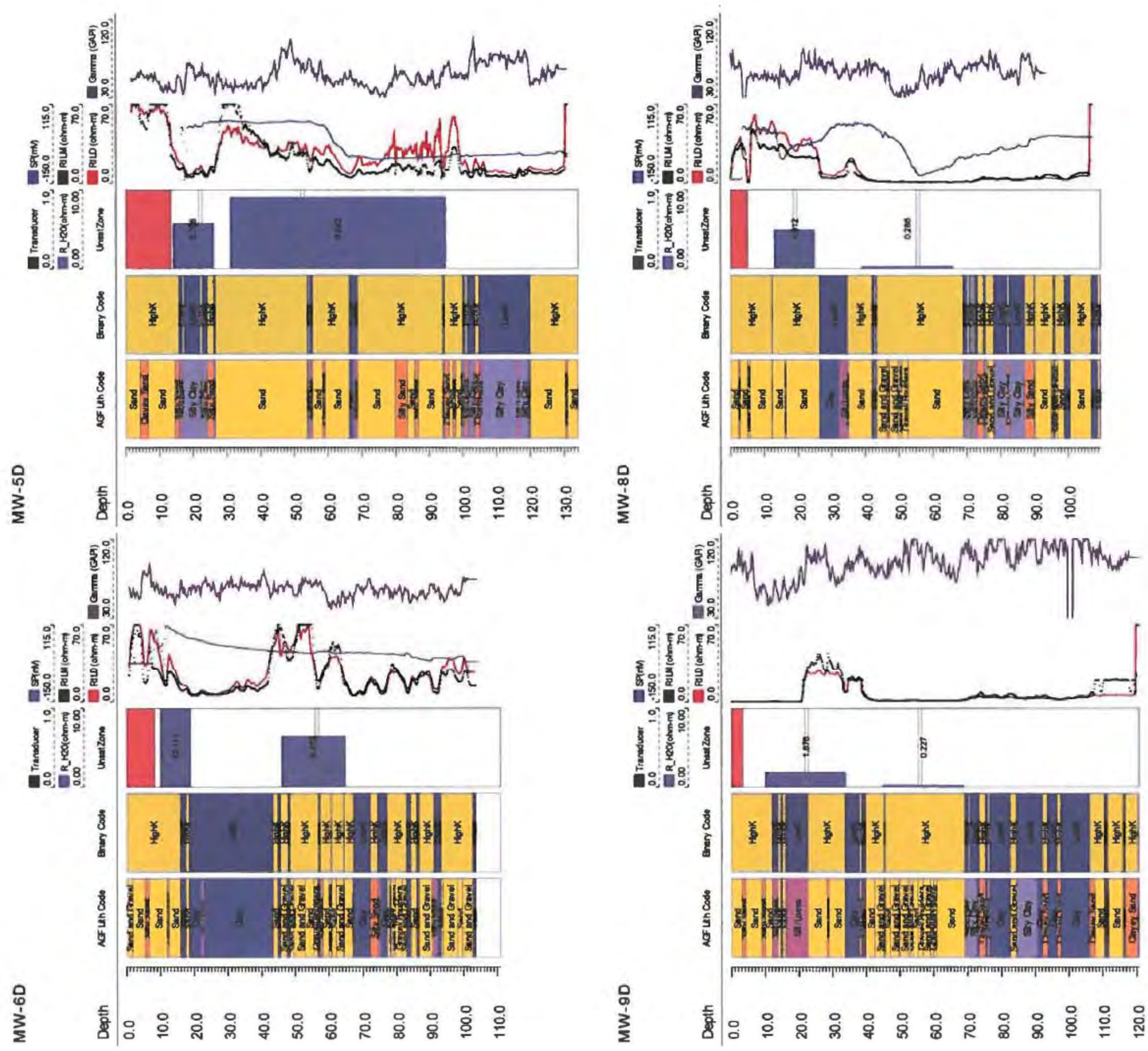
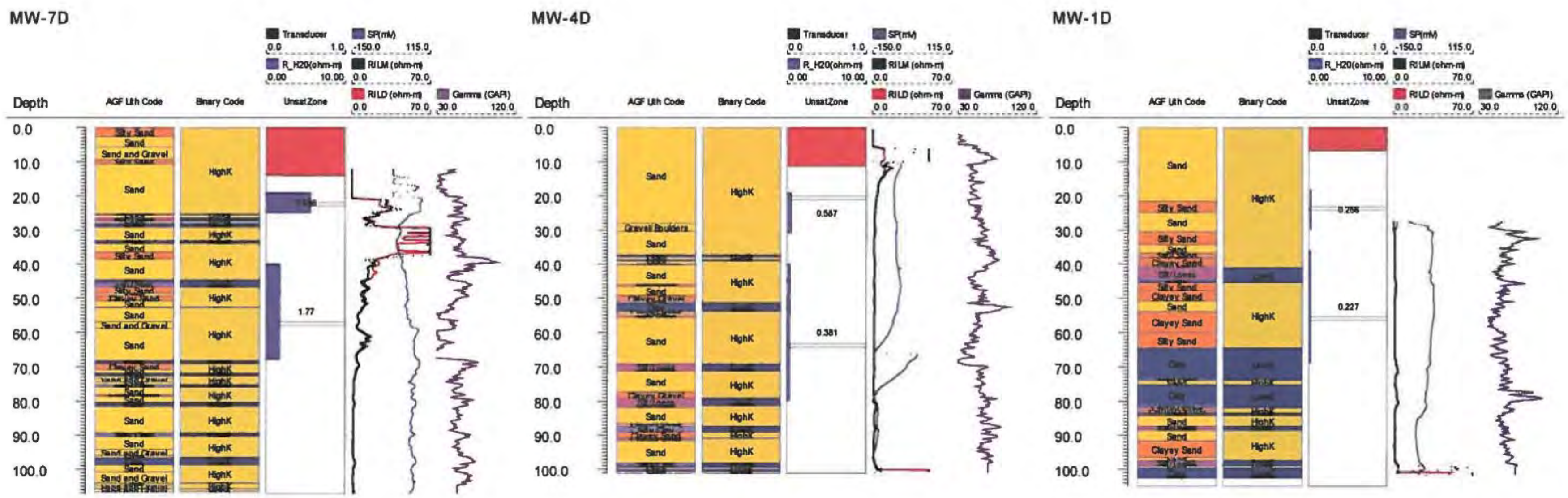


Figure A3: Geophysical borehole logs. Columns from left-to-right: 1) depth (meters below reference point); 2) lithology code; 3) binary lithology classification; 4) top two screened intervals of the well (purple) and the water resistivity from baseline lab samples, unsaturated zone (red block), and the transducer depth (black lines); 5) deep induction resistivity (red), medium induction resistivity (black), and spontaneous potential (blue); 6) gamma radiation (purple).


MW-7D
MW-4D
MW-1D
Transducer
SP(mV)
R_H20(ohm-m)
RILM (ohm-m)
RILD (ohm-m)
Gamma (GAPI)
Depth
AGF Lith Code
Binary Code
UnsatZone
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
Sand
Silty Sand
Sand and Gravel
Clayey Sand
Gravel Boulders
Clay
HighK
1.77
0.587
0.381
0.256
0.227

eki environment & water

22 June 2017

MEMORANDUM

To: Keith Van Der Maaten, P.E., Marina Coast Water District
Michael Wegley, P.E., Marina Coast Water District

From: Vera Nelson, P.E., EKI Environment & Water, Inc.

Subject: Groundwater Remedial Actions and Establishment of Remedial Goals at Fort Ord Marina Coast Water District, California (EKI B60094.02)

EKI Environment & Water, Inc. ("EKI"; formerly known as Erler & Kalinowski, Inc.) is pleased to provide Marina Coast Water District ("MCWD") with this memorandum outlining the groundwater remedial actions and establishment of remedial goals in the Dune Sand Aquifer (identified as the A- Aquifer at Fort Ord) and 180-Foot Aquifer at former Fort Ord. These remedial goals are based on drinking water standards and are consistent with the beneficial use designation of groundwater within these aquifer zones articulated in the Central Coast Water Quality Control Plan ("Basin Plan").

SUMMARY

EKI's understands that MCWD and its counsel intend to meet with the Central Coast Regional Water Quality Control Board ("Central Coast RWQCB") and the California State Water Resources Control Board ("State Board") to discuss the potential environmental impacts of the proposed California America Water Monterey Peninsula Water Supply Project ("Cal Am Project" or Project").

The Cal Am Project includes a seawater intake system consisting of 10 subsurface slant wells at the CEMEX sand mining site near the City of Marina. The Cal Am Project has the potential to degrade water quality within the Dune Sand Aquifer and 180-Foot Aquifer that underlie MCWD's service area. The Draft Environmental Impact Report/Environmental Impact Statement, released on 13 January 2017 ("DEIR/EIS") for the Cal Am Project characterizes the Dune Sand Aquifer and 180-Foot Aquifer as having poor water quality and being impacted by salt water intrusion. The DEIR/EIS does not acknowledge that further Project-related degradation of the groundwater quality in these aquifers violates the Water Quality Control Plan for the Central Coastal Basin

("Basin Plan;" RWQCB, 2016), which designates all groundwater within the Salinas Valley Groundwater Basin as a potential drinking water source.[1]

State and Federal agencies have required cleanup of groundwater within the Dune Sand Aquifer and 180-Foot Aquifer at former Fort Ord to drinking water standards, consistent with the Basin Plan's beneficial use designation. Millions of dollars have been, and continue to be, spent to remediate groundwater within these aquifers and to restore groundwater to drinking water standards. The DEIR/EIS findings directly contradict these restoration efforts and the remedial action requirements and remedial action objectives upon which they are based.

The DEIR/EIS implies that Project-related degradation of groundwater within the aquifers is acceptable because they are of "poor quality." The Cal Am Project should be held to the same standards as restoration efforts at Fort Ord, given the potential for the Project to impact the beneficial use of the Dune Sand Aquifer and 180-Foot Aquifer. We believe that the RWQCB should take an active role in reviewing the potential impacts to groundwater quality of the Project and oversee monitoring of baseline conditions within each aquifer. RWQCB oversight will aid in ensuring that the Project does not adversely impact the beneficial uses of the aquifers.

HISTORY AND REGULATORY OVERSIGHT OF ENVIRONMENTAL CONDITIONS AT FORMER FORT ORD

Former Fort Ord is adjacent to Monterey Bay in northwestern Monterey County, California, approximately 80 miles south of San Francisco. The former military base consists of approximately 28,000 acres adjacent to the cities of Seaside, Sand City, Monterey, and Del Rey Oaks to the south and Marina to the north. Former Fort Ord overlies the Monterey Subbasin, the Seaside Subbasin, and a small portion of the 180/400 Foot Subbasin (Figure 1). It is located immediately south of the Cal Am Project proposed seawater intake system at the CEMEX sand mining site near the City of Marina. The base was closed in 1994 and portions of the base have been transferred to various entities and are slated for redevelopment.

Environmental investigations began at former Fort Ord in 1984 at the direction of the Central Coast RWQCB (i.e., Cleanup and Abatement Orders 84-92, 86-86, and 86-315). Initial investigations indicated the presence of organic compounds in soil and groundwater at the Fire Drill Burn Pit (Operable Unit 1 or OU1). In 1986, further investigations were performed at former Fort Ord Landfills (Operable Unit 2 or OU2) and in 1990, former Fort Ord was placed on the EPA's National Priorities List ("NPL"), primarily because of volatile organic compounds ("VOCs") found in groundwater at OU2. A Federal Facility Agreement ("FFA") was signed in 1990 by the Army,

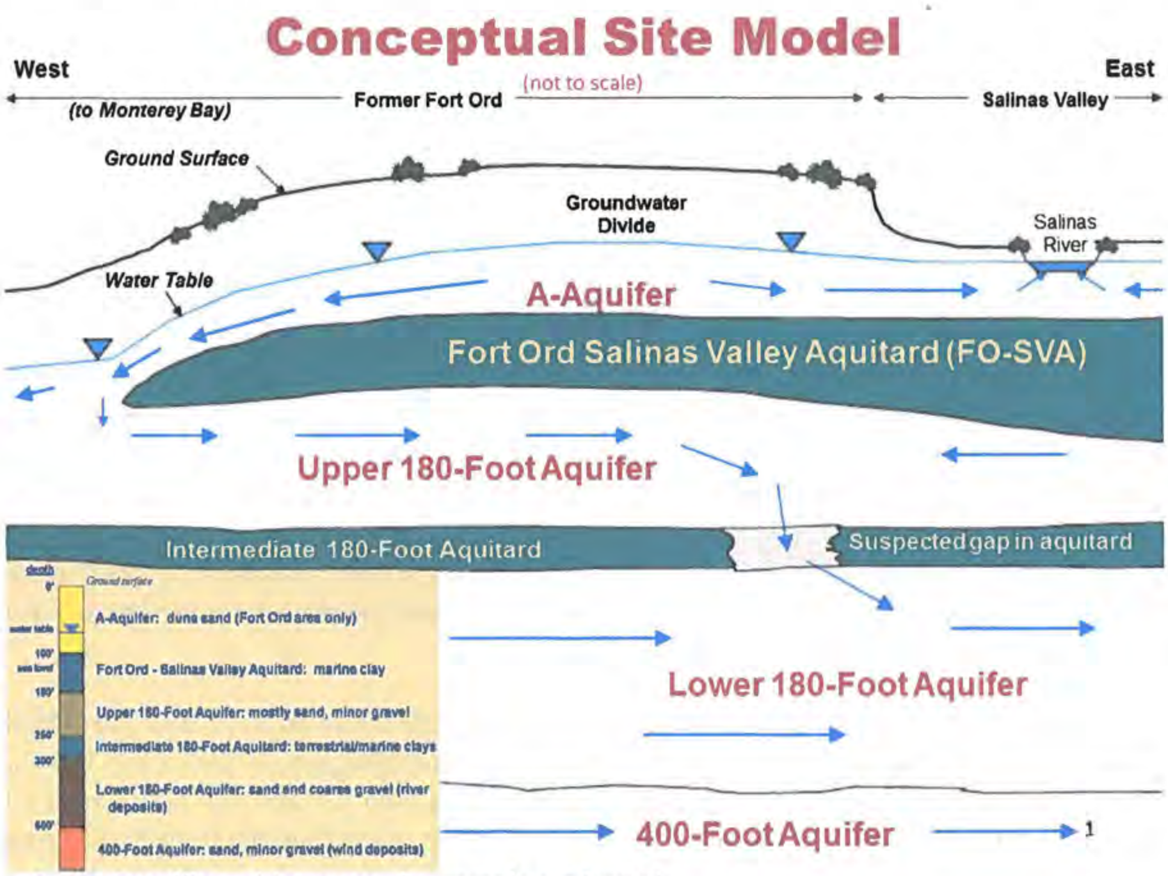
[1] Basin Plan *Chapter 2.I. Present and Potential Beneficial Uses*. States: "Ground water throughout the Central Coastal Basin, except for that found in the Soda Lake Sub-basin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use."

U.S. EPA, DTSC (formerly the Department of Health Services or DHS), and the Central Coast RWQCB.

The FFA established schedules for performing remedial investigations and feasibility studies, and required remedial actions be completed as expeditiously as possible. The base wide Remedial Investigation Feasibility Study ("RI/FS") commenced in 1991. The Army performs these activities pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") also known as Superfund.

CHARACTERIZATION OF HYDROGEOLOGY AND GROUNDWATER USE AT FORT ORD

The below diagram depicts the conceptual site model ("CSM") of the hydrogeology for the northern portion of former Fort Ord, which overlies the Monterey Subbasin, as characterized by the Army and endorsed by U.S. EPA, DTSC, and Central Coast RWQCB. The CSM is based upon groundwater investigations conducted by the Army over the last 30 years, during which over 300 monitoring wells have been installed and water levels monitored to assess vertical and horizontal groundwater gradients.



[1]

Source: http://fortordcleanup.com/programs/groundwater/

Four aquifers, each separated by an aquitard, have been identified in the northern portion of former Fort Ord. The upper-most, or shallowest, aquifer is called the A-Aquifer. Deeper aquifers consist of the 180-Foot Aquifer, which is split into the Upper and Lower 180-Foot Aquifers, and the 400-Foot Aquifer. The names of these three deeper aquifers relate to their depth below ground surface in the Salinas Valley.

The **A-Aquifer** is encountered between 60 feet and 100 feet deep, and is not used as a public water supply. Sediment within the A-Aquifer is generally composed of ancient dune sand. The A-Aquifer also is referred to as the Dune Sand Aquifer.

The **Upper 180-Foot Aquifer** has been used as a public water supply, but is not currently used as a source of drinking water for either former Fort Ord or the City of Marina. Sediment within this aquifer is composed of mainly sand with some gravel.

The **Lower 180-Foot Aquifer** and the **400-Foot Aquifer** consist of gravel and sand with some clay. Both are major sources of drinking water for Fort Ord and farms in the Salinas Valley.

The CSM is consistent with the hydrogeologic characterization of the aquifer system presented by EKI in the following memoranda:

- Preliminary Feasibility Assessment – Potential to Conduct Augmented Groundwater Recharge at the Armstrong Ranch Property, Marina Coast Water District, California, dated 16 January 2017.
- Comments Regarding California America Water Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017 Marina Coast Water District, California, dated 28 March 2017.

As described in EKI's memoranda, groundwater in the A- or Dune Sand Aquifer in the Monterey Subbasin, (Figure 1) is significantly above sea level and flows west towards Monterey Bay (Figure 2). In contrast, as shown on Figure 3, groundwater in the 180-Foot Aquifer flows eastward towards a regional pumping center in the interior of the Salinas Valley. Based on the head differences between these aquifers it is apparent that the Dune Sand Aquifer is "perched" on the Salinas Valley Aquitard within inland areas but has some degree of connection with the 180-Foot Aquifer nearer to the Bay.

These water level data in combination with water quality data obtained from Fort Ord indicate that fresh water from the Dune Sand Aquifer seeps down into the upper portion of the 180-Foot Aquifer upgradient of Monterey Bay and the Project site and then "U-turns" and flows back into the basin. The exact location and volume of groundwater that seeps from the Dune Sand Aquifer into the Upper 180-Foot Aquifer and makes this "U-Turn" has not been quantified. However, 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 salt water intrusion in the Upper 180-Foot Aquifer in that area. This natural mounding has maintained freshwater in the upper portion of the 180-Foot Aquifer under much of Fort Ord (see Figures 4 and 5).[2] This natural barrier appears to have been undermined north of Fort Ord through groundwater extraction and/or salt water discharges into the Dune Sand Aquifer at the CEMEX sand mining site, and would likely be further disturbed by the Cal Am Project.

Water level and water quality data obtained at Cal Am's recently installed monitoring well clusters MW-5, MW-6, MW-7 and Monterey Regional Water Pollution Control Agency ("MRWPCA") wells 1 and 2, indicate that chloride and TDS concentrations in the Dune Sand Aquifer and the Upper 180-Foot Aquifer meet SWRCB Resolution No. 88-63 criteria as a potential drinking water source and California Secondary Drinking Water Standards for these constituents.[3] Maps depicting TDS and chloride concentrations detected in groundwater samples collected from Fort Ord and Cal Am wells screened in these aquifers over the last 10 years (i.e., 2006 through 2016) are presented on Figures 4 and 5. These figures show that, outside of the immediate area of the CEMEX site, groundwater in these aquifers is <u>not brackish</u> as characterized in the DEIR/EIS.

CHEMICAL IMPACTS, REMEDIAL ACTIONS, AND COSTS TO ADDRESS GROUNDWATER CONTAMINATION AT FORT ORD

The majority of groundwater contamination at former Fort Ord is present in the A-Aquifer, also known as the Dune Sand Aquifer, and the Upper 180-Foot Aquifer. Small amounts of contamination below drinking water standards have been measured in the Lower 180-Foot Aquifer and no contamination has been detected in the 400-Foot Aquifer.

Four areas of groundwater contamination have been identified at former Fort Ord. The most frequently detected chemicals in these areas are trichloroethene ("TCE") and carbon tetrachloride ("CT"). Suspected sources, locations, primary contaminants, affected aquifers, and status of remedial actions are summarized in Table 1. The locations and estimated lateral extent of groundwater plumes in 2006 and 2010 are shown on Plates 3 and 4 in Attachment A.

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[2] The information presented in Figures 4 and 5 is consistent with data collected at Fort Ord in the late 1990's which was presented in Harding ESE's, Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina Salinas Valley, California, prepared for MCWRA dated 12 April 2001. (Harding, 2001).

[3] The recommended and upper secondary maximum contaminant levels for chloride are 250 mg/L and 500 mg/L. The recommended and upper secondary maximum contaminant level for total dissolved solids ("TDS") is 500 mg/L and 1000 mg/L, respectively. (California Code of Regulations, Title 22. Division 4 Environmental Health, Chapter 15. Domestic Water Quality and Monitoring Regulations, Article 16, dated 27 September 2006.

(U.S. Department of the Army, 2012). As indicated by these plates, the lateral extent of the plumes has significantly decreased as a result of remedial actions implemented at Fort Ord.

As indicated on Table 1, remedial actions implemented at Fort Ord to address contaminated groundwater include:

- Capping of the Fort Ord landfill and excavation of chemically impacted soil to limit further leaching of chemicals to groundwater.
- Installation and operation of groundwater extraction and treatment facilities to limit further chemical migration (see Plate 5a, 5b, 6 and 7 in Attachment A).
- Treatment of extracted groundwater using granular activated carbon ("GAC") to remove chemicals and allow groundwater reuse at former Fort Ord for irrigation or reinjection into the aquifer (see Plate 5a, 5b, 6 and 7 in Attachment A).
- Injection of lactate at the Operable Unit Carbon Tetrachloride Plume ("OUCTP") to stimulate in-situ biodegradation of VOCs in groundwater (see Plate 8 in Attachment A).
- Long-term monitoring of water levels and chemical concentrations utilizing wells screened in individual aquifers (i.e., A-Aquifer, Upper 180-Foot Aquifer, and Lower 180-Foot aquifer) to assess groundwater flow directions and the lateral and vertical extent of chemical impacts.

Total estimated cost spent through 2015 to remediate soil and groundwater contamination at former Fort Ord is reported to be **320 million dollars.**[4] The costs specifically related to groundwater contamination versus soil are not identified, but likely represent a significant portion of overall costs given groundwater remedial actions have been ongoing for over 25 years and requirements for soil remediation are often driven by concerns over chemicals leaching to groundwater.[5]

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[4] In the Report to Congress Fiscal Year 2015, is included as Attachment B and was provided by William K. Collins Environmental Coordinator, Fort Ord BRAC Field Office by e-mail on 6/82017. Contaminated groundwater investigation and remediation costs are included in the "IRP" columns but also include the costs for soil and landfill investigations and remedial actions. The munitions investigations and remedial action costs are identified under "MMRP" and are independently tracked and not part of groundwater remedial action costs.

[5] Estimated costs identified as part of feasibility studies completed by the Army to implement selected remedial alternatives for identified groundwater plumes in OU1, OU2, Sites 2/12, and OUCTP are presented in Table 1. These values are based upon estimates presented in the ROD and ESDs for these areas, and in many cases have not been updated since the 1990s, and likely underestimate actual costs.

ESTABLISHMENT OF REMEDIAL ACTION OBJECTIVES AND CONTINUED COMMITMENT TO MEET THESE OBJECTIVES AT FORMER FORT ORD

Groundwater remedial action objectives and aquifer cleanup goals at Fort Ord are established within the *Records of Decision* ("ROD") and subsequent *Explanations of Significant Difference* ("ESD") prepared for each operable unit where groundwater impacts have been detected (U.S. Department of the Army, 1994; 1995a; 1995b; 1996; 1997a; 1997b; 2003; 2006; 2007a; 2007b; 2010; 2012; 2015). These documents are part of the administrative record and have been endorsed by state and federal agencies, including the Central Coast RWQCB. The RODs document all facts, analyses of facts, and site-specific policy determinations considered in the course of selecting a remedial action, and how nine remedy selection criteria were used to decide the remedy (NCP §300.430(f)(5)(i)). The RODs also describes statutory requirements as they relate to the scope and objectives of the remedial action (NCP §300.430(f)(5)(ii)) including:

- How the selected remedy is protective of human health and the environment, explaining how the remedy eliminates, reduces, or controls exposures to human and environmental receptors.

- The federal and state requirements that are applicable or relevant and appropriate ("ARARs") to the site that the remedy will attain.

- The ARARS of other federal and state laws that the remedy will not meet, the waiver invoked, and the justification for invoking the waiver.

- How the remedy is cost-effective, (i.e., explaining how the remedy provides overall effectiveness proportional to its costs).

- Goals (i.e., cleanup levels) that the remedy is expected to achieve. Remediation goals shall establish acceptable exposure levels that are protective of human health and the environment.

RODs completed for the four areas where chemical releases have impacted groundwater at former Fort Ord are included as Attachment B.

ARARS AND AQUIFER CLEANUP LEVELS AT FORMER FORT ORD

For a remedial alternative to pass into the detailed analysis stage of the RI/FS and thus become eligible for selection under CERCLA, it must comply with ARARs or waivers need to be identified and justifications provided for invoking them. An alternative that cannot comply with ARARs, or for which a waiver cannot be justified, is eliminated from consideration for further discussion as a potential alternative in the Proposed Plan or ROD. ARARs include any federal or state standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate to a CERCLA site or action.

One of the primary ARARs identified in the Fort Ord RODs that address groundwater contamination is the Basin Plan, which designates all groundwater within the Salinas Valley Groundwater Basin as a potential drinking water source.[6] As such all aquifer cleanup levels at Fort Ord are based on federal or state Maximum Contaminant Levels (MCLs).[7] These cleanup levels have driven the selection of groundwater remedial actions at Fort Ord. ARARS and aquifer cleanup levels identified in RODs completed for the four areas where releases of VOCs have impacted groundwater at Fort Ord are highlighted in Attachment C.

The continued requirement and commitment to achieving these remedial action objectives is reiterated in the 1st, 2nd and 3rd 5-Year Review Reports, prepared by the Army in 2002, 2007, and 2012, respectively (U.S. Department of the Army, 2002; 2007a; 2012). These 5-Year Review Reports provide a statutory review every five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment, until such time as hazardous substances, pollutants, or contaminants remaining on-site are not above levels that allow for unlimited use and unrestricted exposure. The next 5-Year Report for Fort Ord is scheduled for completion in the fall of 2017. The continued commitment/requirement to meet drinking water standards at Fort Ord was recently reiterated in the ESD for Sites 2/12, dated 28 April 2015, where groundwater contamination still exists. This document states:

> The Army's overall cleanup strategy for Sites 2/12 is to return groundwater to a condition that will allow beneficial uses to occur, including potential future use as a drinking water source without unacceptable risks to users... to reduce concentrations of VOCs to levels that will not result in concentrations of VOCs in groundwater that continue to exceed ACLs [Aquifer Cleanup Levels] and thereby prolong the period of unacceptable human health risk due to contamination in groundwater. (U.S. Department of the Army, 2015).

CAL AM PROJECT APPROVAL AND CENTRAL COAST RWQCB OVERSIGHT

The Cal Am project should be held to the same standards as remedial actions at Fort Ord, given the potential for the Project to impact the beneficial use of groundwater within the Monterey Subbasin. Modeling done to date does not adequately assess potential salinity impacts to

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[6] Basin Plan Chapter 2.I. Present and Potential Beneficial Uses. States: "Ground water throughout the Central Coastal Basin, except for that found in the Soda Lake Sub-basin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use."

[7] In some cases ACLs but may be lower than the MCLs based on risk calculations, or may be based on Preliminary Remediation Goals where a MCL is not established.

groundwater in the vicinity of the Project.[8] Eight monitoring well clusters screened in the A- or Dune Sand Aquifer, 180-Foot Aquifer, and 400-Foot Aquifer have been installed inland of the CEMEX site to assess pre-pumping conditions and impacts during initial pilot testing of an individual slant well. However, many of those wells are screened over the entire 180-Foot Aquifer (i.e., have 100 to 200 feet well screens) and do not characterize the different salinity characteristics within the Upper 180-Foot Aquifer and Lower 180-Foot Aquifer that are observed at former Fort Ord. No monitoring wells have been installed north and south of the slant wells, where inland groundwater gradients outside of the capture zone of the slant wells are likely occur. It is also unclear what, if any, additional monitoring wells will be installed if the Project goes forward.

Given the potential for the Project to disrupt the complex hydrogeologic conditions and increase salt water intrusion, more extensive monitoring of current and potential future water quality conditions is required. We believe that the Central Coast RWQCB should take an active role in reviewing the potential impacts to groundwater quality of the Project and oversee monitoring of baseline conditions within each aquifer. RWQCB oversight will aid in ensuring that the Project does not adversely impact beneficial uses of the aquifers that have been the focus of extensive groundwater restoration efforts at former Fort Ord.

ACRONYMS

ARARs	Applicable or Relevant and Appropriate Requirements
Basin Plan	Water Quality Control Plan for the Central Coastal Basin
CalAm	California American Water
ROD	Record of Decision
DEIR/EIS	Draft Environmental Report/Environmental Impact Statement
EKI	EKI Environment & Water, Inc.
ESD	Explanation of Significant Difference
FFA	Federal Facilities Agreement
MCL	Maximum Contaminant Level
MCWD Service Area	Collectively refers to the Central Marina service area, MCWD sphere of influence ("SOI"), and Ord Community Service Area
MCWD	Marina Coast Water District or District

[8] Inadequacies of the modeling done to date are described in EKI's Comments Regarding California America Water Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017 Marina Coast Water District, California, dated 28 March 2017

SWRCB 2013. State Water Resources Control Board Final Review of California American Water Company's Monterey Peninsula Water Supply Project, dated 31 July 2013.

RWQCB, 2016. Water Quality Control Plan for the Central Coast Basin, Regional Water Quality Control Board Central Coast Region, State Water Resources control Board, California Environmental protection Agency, March 2016 Edition.

Schaaf & Wheeler, 2016. Marina Coast Water District, 2055 Urban Water Management Plan, dated June 2016.

Stalle, Gardner & Dunne, Inc., 1991. Ground Water Quality Assessment-District Well No. 5., released 3 July 1991.

Todd Engineers, 2008. Phase I Investigation Armstrong Ranch Groundwater Storage Project. Marina Coast Water District, Marina.

U.S. Department of the Army, 1994. Record of Decision, Operable Unit 2, Fort Ord Landfills, Fort Ord, California, dated 15 July 1994.

U.S. Department of the Army, 1995a. Record of Decision, Operable Unit 1, Fritzsche Army Airfield, Fire Drill Area, Fort Ord, California, dated 25 July 1995.

U.S. Department of the Army, 1995b. Explanation of Significant Differences, Operable Unit 2, Fort Ord Landfills, Fort Ord, California, dated 3 August 1995.

U.S. Department of the Army, 1996. Explanation of Significant Differences, Area A, Operable Unit 2 Landfill, Fort Ord, California, dated 13 August 1996.

U.S. Department of the Army, 1997a. Record of Decision, Basewide Remedial Investigation Sites, Fort Ord, California, dated 13 January 1997.

U.S. Department of the Army, 1997b. Explanation of Significant Differences, Consolidation of Remediation Waste in a Corrective Action Management Unit (CAMU), Operable Unit 2 Landfill, Fort Ord, California, dated 13 January 1997.

U.S. Department of the Army, 2002. 1st Five-Year Review Report, Fort Ord Superfund Site, Monterey, California, dated 23 August 2002.

U.S. Department of the Army, 2003. Explanation of Significant Differences, Excavation and Segregation of Spent Ammunition From Soil, Site 39, Former Fort Ord, California, dated 31 October 2003.

U.S. Department of the Army, 2006. Explanation of Significant Differences, No Further Action for Munitions and Explosives of Concern, Landfill Gas Control, Reuse of Treated Groundwater, Designation of Corrective Action Management Unit (CAMU) Requirements as Applicable for Relevant and Appropriate Requirements (ARARs), Operable Unit 2, Fort Ord Landfills, Fort Ord, California, dated 15 August 2006.

U.S. Department of the Army, 2007a. Final Second Five-Year Review Report, Fort Ord Superfund Site, Monterey, California, dated 10 September 2007.

U.S. Department of the Army, 2007b. Record of Decision, Operable Unit Carbon Tetrachloride Plume, Former Fort Ord, California, dated 2 November 2007.

U.S. Department of the Army, 2010. Explanation of Significant Differences No.1, Operable Unit 1, Fritzsche Army Airfield Fire Drill Area, Former Fort Ord, California, dated June 2010.

U.S. Department of the Army, 2012. Final Third Five-Year Review Report, Fort Ord Superfund Site, Monterey County, California, dated September 2012.

U.S. Department of the Army, 2015. Explanation of Significant Differences No. 1, Basewide Remedial Investigation Sites 2 and 12, Former Fort Ord, California, dated 28 April 2016.

8.5.3 Monterey Bay Air Resources District (MBARD)

Monterey Bay Air Resources District
Serving Monterey, San Benito, and Santa Cruz Counties
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Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

February 27, 2017

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Email: MPWSP-EIR@esassoc.com

SUBJECT: DEIR/EIS for Cal-Am Monterey Peninsula Water Supply Project

Dear CPUC/MBNMS:

Thank you for providing the Monterey Bay Air Resources District (Air District) the opportunity to comment on the above-referenced document.

The Air District has reviewed the document and has the following comments:

1. Table ES – 2 Air Quality, Mitigation Measures, Page ES-40 – The table indicates significant and unavoidable impacts due to excessive emissions during construction. A suite of mitigation measures are presented which include using high tiered engines, idling restrictions, a fugitive dust control plan and paving the reservoir access road. While the District supports these measures we would further encourage the use of clean construction equipment powered by electricity or natural gas whenever feasible. This would have the added benefit of reducing diesel exhaust emissions which would be particularly beneficial when working near sensitive receptors, such as day care centers, schools and residential neighborhoods. MBARD-1

2. 3.3.4 Pipeline Installation, Page 3-49 – This section indicates that approximately 21 miles of pipelines will be installed near the Monterey Peninsula Recreational Trail, mostly using conventional open-trench methods. Please note, if older asbestos containing pipes or materials are encountered during the trenching operation, the requirements of Air District Rule 424 National Emissions Standards for Hazardous Air Pollutants could be triggered. Rule 424 contains the investigation and reporting requirements for asbestos. If you have questions about District Rule 424, please contact Mike Sheehan, Air District Compliance Inspector III, at (831)647-9411 x 217. MBARD-2

3. Table 4.10-5 Estimated Maximum Daily Construction Emissions, Page 4.10 - 22 – The table shows maximum unmitigated daily NO_x emissions estimated at 384 lb/day. Mitigation Measure 4.10-1a **Equipment with High Tiered Engine Standards** is proposed which reduces estimated emissions by about 60 lbs/day to 324 lbs/day, still nearly 2½ times the Air District's 137 lb/day significance threshold for NO_x. MBARD-3

In order to limit the extent of this Significant and Unavoidable impact, the Air District suggests that the following measures be considered: MBARD-3 cont.

- Upgrade to Tier 4 engines which can produce significant emission reductions over Tier 3 engines.
- Use non-diesel or non-gasoline powered equipment wherever feasible. This could include electric powered equipment as well as equipment powered by natural gas or propane. MBARD-4
- Avoid scheduling the highest emitting activities simultaneously, particularly during the May-October ozone season. MBARD-5

Alternatively, in order to mitigate excess NO_x emissions, the applicant may consider: MBARD-6

- Working with the Air District to fund an off-site mitigation program to reduce NO_x emissions from other NO_x sources in the area not associated with the project.
- Developing an on-site mitigation program to reduce NO_x from sources within the operation. For example, the motor vehicle fleet associated with the operation could be replaced with electric vehicles. Partial funding for such a fleet conversion may be available through the Air District. Please contact David Frisbey, Planning and Air Monitoring Division Manager if you would like to consider that option. His number is 831-718-8016. MBARD-7

4. <u>Mitigation Measure 4.10-1c: Construction Fugitive Dust Control Plan, Page 4.10-25</u> – The Air District appreciates inclusion of Mitigation Measure 4.10-1c as a starting point for the Fugitive Dust Control Plan as well as Measure 4.10-1d which will pave the Terminal Reservoir access road. However, given the high level of unmitigated PM_{10} emissions (279 lbs/ton per Table 4.10-5) and the finding that mitigated emissions (75 lbs/day) are only slightly below the threshold, additional actions may be needed to maintain compliance with the California air quality standard for PM_{10} as well as Air District Rule 402, Nuisances. These could include more frequent watering and modulating activity when dust producing operations are being conducted, particularly when working along populated corridors. MBARD-8

Feel free to contact me if you have any questions. I can be reached at (831) 718-8027 or bnunes@mbard.org.

Best Regards,

Robert Nunes

Robert Nunes
Air Quality Planner

cc: David Frisbey, Manager Planning and Air Monitoring Division
Alan Romero, Air Quality Planner III
Mike Sheehan Mike Sheehan, Air District Compliance Inspector III

MONTEREY COUNTY
RESOURCE MANAGEMENT AGENCY
Carl P. Holm, AICP, Director

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February 27, 2017

CPUC/MBNMS
c/o ESA
550 Kearney St., Suite 800
San Francisco, Ca 94108

Subject: Comments on Draft EIR for MPWSP (SCH#2006101004)

Dear CPUC/MBNMS,

The Monterey County land use departments have reviewed the subject Draft EIR and have the following comments:

RMA-Planning

1. The Draft EIR does not address visual impacts, in particular with regard to the proposed desalinization plant located in the unincorporated area north of Marina off Charles Benson Road. The Draft EIR should include a visual analysis of the facility and discuss consistency with applicable Monterey County General Plan policies. MCRMA-1

2. Page 4.8-19 (Monterey County Local Coastal Program). The discussion incorrectly states that "The five land use plans stand alongside the 2010 Monterey County General Plan ...." It should say the "1982 General Plan." MCRMA-2

3. Page 4.8-25. The discussion of Policy LU-1.11 incorrectly states that the desalinization plant site may need to be redesignated to accommodate the plant. The applicant has applied for a Use Permit which, if approved, would not require that the land use designation or zoning of the site be changed. MCRMA-3

4. Page 4.8-26. The discussion of North County LUP Policy 4.3.4 does not indicate whether or not the project is consistent with this policy. MCRMA-4

Agricultural Commissioner's Office

The elements of the project description with the potential for impacts to farmland are numerous and not clear in the analysis. For example, in the "Consistency with Regulatory Requirements" section of the document, it states that the proposed project would not be subject to FPPA requirements because the *project would not irreversibly convert farmland to nonagricultural use (emphasis added)*. However, this statement contradicts other portions of the analysis in the Agricultural Resources section. MCRMA-5

No mitigation for the conversion of the 25-acre MPWSP Desalination Plant site, designated as Permanent Grazing, has been proposed. The DEIR states:

> ....the land has been vacant since 1913 (RBF Consulting, 2012). Therefore, construction of the MPWSP Desalination Plan would not temporarily disrupt agricultural activities, as none currently are conducted on the site, and would have a less-than-significant impact with respect to conversion of land zoned for agricultural use to non-agricultural uses because no agricultural uses currently are present in this location.

MCRMA-5 cont.

Regardless of the land's current or historic fallowness, the loss of agricultural land to development must be addressed in the analysis and mitigation. Specifically, the Ag Land Trust should be consulted to determine what the estimated value of the loss of this type of agricultural land would cost, and appropriate mitigation funds should be required to acquire like lands elsewhere in the region to compensate for the permanent loss of agricultural land. Other projects have been partially mitigated by moving topsoil to avoid the loss of that resource in addition to contributing to a mitigation bank, which the Ag Land Trust has also assisted with.

Additionally, this project must be reviewed by the County Agricultural Commissioner's Ag Advisory Committee for input on the best way to mitigate the impacts of construction, maintenance, and operation of the site. For example, although construction will take place in existing farm roads for some portions of the project, the remaining land will be potentially impacted during construction and plantings and access to planted crops may be impacted. Individual landowners must be consulted to determine what the best schedule for construction is and to determine how to minimize temporary and/or permanent impacts to agricultural land.

MCRMA-6

Sincerely,

Bob Schubert, AICP
Senior Planner

MONTEREY COUNTY

WATER RESOURCES AGENCY

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(831)755-4860
FAX (831) 424-7935

DAVID E. CHARDAVOYNE
GENERAL MANAGER

STREET ADDRESS
893 BLANCO CIRCLE
SALINAS, CA 93901-4455

March 21, 2017

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny St., Ste. 800
San Francisco, CA 94108

Subject: Comments on the Draft EIR/EIS for the Monterey Peninsula Water Supply Project dated January 2017 (SCH# 2006101004)

Dear CPUC/MBNMS:

The Monterey County Water Resources Agency (MCWRA) has received the DEIR/EIS for the Monterey Peninsula Water Supply Project (MPWSP). This letter conveys correspondence and recommendations concerning issues that are relevant to the MCWRA's areas of responsibility.

The MCWRA has reviewed the DEIR/EIS, particularly with respect to any potential impacts the proposed project may have on the Salinas Valley Groundwater Basin (SVGB). The DEIR/EIS Chapter 2, Water Demand, Supplies, and Water Rights, adequately describes the concept and need to provide return water to the SVGB. The DEIR/EIS adequately considers the effect of the return water in section 4.4, Groundwater Resources. Furthermore, the 2015 Draft EIR included a groundwater analysis which has since been updated by a new groundwater modeling consultant. MCWRA has reviewed the updated groundwater analysis made available in Appendix E. The updated groundwater analysis in the DEIR/EIS demonstrates that the proposed project will not harm or cause injury to other basin users. It is the opinion of the MCWRA that the concerns regarding groundwater modeling, SVGB impacts, and water rights have been adequately addressed throughout the DEIR/EIS. Additionally, MCWRA is developing an independent groundwater monitoring program, per the Settlement Agreement and Mutual Release (executed Dec 4, 2012). MCWRA-1

The MCWRA has reviewed Chapter 4, sections 4.3 Surface Water Hydrology and Water Quality and 4.4 Groundwater Resources and the associated mitigation measures. With respect to these sections, the DEIR/EIS adequately evaluates and describes any potential environmental impacts associated with the construction, operation and maintenance of the project, and identifies those impacts that could be significant. MCWRA has only a few general comments in regards to these sections which should be addressed for the Final EIR/EIS: MCWRA-2

From Section 4.2 Geology, Soils, and Seismicity,

- Pages 4.2-23 states that Nacimiento Dam was completed in 1961, but it was actually completed in 1957. Also, on this same page, the text indicates that San Antonio dam was completed in 1965; it was actually completed in 1967. MCWRA-2 cont.

From Section 4.4 Groundwater Resources:

- With regard to groundwater basin nomenclature, I would suggest that Figure 4.4-1 be updated to reflect the basin boundary spatial definitions and names as published by DWR in October 2016. MCWRA-3
- Discussion of the Seaside Groundwater Basin should be carefully reviewed and, when appropriate, clarification added as to whether the text is referring to the "Seaside Groundwater Basin" as defined by the Seaside Watermaster and MPWMD or the "Seaside Area Subbasin," which is defined by DWR and is a subbasin of the Salinas Valley Groundwater Basin. Page 4-4.12 contains an example of where this is relevant. Since DWR published new groundwater basin/subbasin boundaries in October 2016, the geographic boundaries of both are the same, however, DWR does not further subdivide the Seaside Area Subbasin as is described on page 4-4.12. MCWRA-4
- On page 4.4-5 there is a reference to the Pressure Area being bounded on the south by the Seaside basin. This should refer to the Monterey Subbasin, as this portion of the groundwater basin is now known. MCWRA-5
- Page 4.4-19 references the 2015 Brown and Caldwell report as being "conducted for the MCWRA". The State of the Salinas River Groundwater Basin report, as it is titled, was actually conducted for the County of Monterey Resource Management Agency, not MCWRA. MCWRA-6
- The Salinas Valley Reclamation Project (SVRP) operates in tandem with CSIP to deliver recycled water, but SVRP is not mentioned in the discussion of CSIP on page 4.4-20. MCWRA-7
- Page 4.4-28 they are confusing TDS and chloride. Chloride concentrations from that of seawater (19,000 mg/L) down to 500 mg/L near the leading edge... The MCWRA define the leading edge of inland seawater intrusion a groundwater containing CHLORIDE at 500 mg/L. The following paragraph also has two places were TDS is used but it should be chloride. MCWRA-8

MCWRA finds the DEIR/EIS demonstrates that any water resources related impacts associated with the project can be sufficiently mitigated. MCWRA looks forward to reviewing the Final EIR/EIS. If you have any questions regarding this response, please contact me at 831-755-4860 or by email at chardavoyneDE@co.monterey.ca.us. Please send the Final EIR/EIS to the address above.

Sincerely,

David E. Chardavoyne

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8.5.6 Monterey Peninsula Regional Water Authority (MPRWA)

MONTEREY PENINSULA REGIONAL WATER AUTHORITY

Directors:
Bill Kampe, President
Ralph Rubio, Vice President
David Pendergrass, Secretary
Jerry Edelen, Treasurer
Steve Dallas, Director
Clyde Roberson, Director

Executive Director:
Jim Cullem, P.E.

February 27, 2017

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

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

Re: Monterey Peninsula Regional Water Authority Comments on the Monterey Peninsula Water Supply Project Draft EIR/EIS

Dear Ms. Borak and Ms. Grimmer:

MPRWA-1

The Monterey Peninsula Regional Water Authority (Water Authority) is a joint powers authority comprised of the six cities of the Monterey Peninsula with a board of directors consisting of the six respective city mayors. The Water Authority generally supports the Monterey Peninsula Water Supply Project (Project) proposed by California American Water Company (Cal-Am) in Application 04-09-019.

The Water Authority contracted with Separation Processes, Inc. and its sub-consultant Geosyntec Consultants to conduct a technical review of the Draft EIR/EIS with respect to the intake structures (including modeling) and brine discharge. With the input of Geosyntec Consultants and the Water Authority's Technical Advisory Committee, we find the Draft EIR/EIS to be well done and commend the lead agencies and **Environmental Science Associates** for their excellent work.

The Water Authority offers the following comments and recommendations in the interest of further strengthening a few sections of the analysis for the Project's Final EIR/EIS.

I. Brine Discharge Analysis

Dr. Preston of Geosyntec Consultants reviewed the brine discharge analysis and has informed the Water Authority that the analysis is well done, thorough, and appears to be conservative in its estimation of the amount of brine dilution that is likely to occur. Dr. Preston did, however, offer two recommendations to further improve the analysis, which we request that you incorporate into the Final EIR/EIS. They are as follows:

1. We recommend that you update the temperature of the brine discharge to reflect its source from groundwater (not the ocean) and to also include the increase in temperature of the brine due to waste heat in the desalination process. The original near-field analysis by Flow Science (2014) that was presented in the April 2015 Draft EIR assumed that the temperature of the brine discharge was equal to the temperature of the ocean. The Revised Draft EIR/EIS (January 2017) updated the temperature profiles of the ocean water using site-specific data collected from February 2014 to December 2015, which were up to approximately 3°C warmer than the temperature profiles used previously. However, the Draft EIR/EIS does not include an update of the assumed temperature of the brine discharge in its dilution calculations. The assumption of using the same temperature for the brine discharge as the ocean water is potentially inaccurate on two accounts: (1) the source water is from the groundwater and not from the ocean water, and (2) the desalination process produces waste heat that will likely increase the temperature of the brine discharge. We recommend that you include these effects by using temperatures of water taken from the test slant well (e.g., *Monterey Peninsula Water Supply Project Test Slant Well Long Term Pumping Test Monitoring Report No. 48*, April 5, 2016) and add some increase in temperature attributable to the desalination process (e.g., it has been noted that the temperature of the brine may increase approximately 1.5 to 2°C [IDE, personal communication, February 2017]). Geosyntec Consultants anticipates that these corrections will have minimal effect on the near-field dilution calculations because the density of the brine (which is important to the mixing/dilution processes) is dominated by the salinity differences, rather than the temperature differences. However, for the sake of utmost accuracy, we recommend that the brine temperature assumptions be updated as discussed. It is likely only necessary to assess the effects of corrected brine temperature on a few select calculations and demonstrate negligible impact, rather than revising all of the calculations in the Draft EIR/EIS. MPRWA-2

2. We recommend that you revise the analysis of the potential for hypoxia. The Draft EIR/EIS cites a mass-balance analysis provided by Geosyntec (2015) to indicate that hypoxia is unlikely. However, that analysis used far-field modeling results that were provided in the April 2015 Draft EIR, but are not in the January 2017 Draft EIR/EIS. While the hypoxia mass-balance analysis is likely still valid, it should be revised so that it does not rely on the far-field analysis that is no longer provided. Additional analysis could range from calculations assessing potential for vertical mixing (i.e., Richardson number considerations) coupled with discussions of the favorable surrounding topology (i.e., flat slope with no depressions) that will limit potential brine pooling to more sophisticated far-field modeling. MPRWA-3

II. Greenhouse Gas Emissions

The analysis of operational greenhouse gas emissions at section 4.11.4.2 and in Appendix G2 calculates CO2 emissions from brine degassing. However, it does not take into account the reduction in CO2 emissions that will result from a reduction in groundwater production by both the Castroville Community Services District (CCSD) as a result of the receipt of Project water as "return water" to offset its groundwater production, and from Cal-Am's reduced extractions from the Seaside Groundwater Basin and from the Carmel River Valley. The reductions in CO2 emissions stem from both avoided energy that would otherwise be used to power CCSD's wells and other production and conveyance facilities and the avoided degassing from the groundwater that would otherwise be produced.[1] In other words, the analysis of operational greenhouse gas emissions should incorporate the aspects of reduced emissions as a result of the Project alongside the aspects of increased emissions and thereby provide a net emissions analysis. MPRWA-4

The analysis of operational greenhouse gas emissions should also incorporate a discussion of the local Community Choice Energy program known as Monterey Bay Community Power. A joint powers agreement to create a joint powers authority has been approved, or will soon be submitted for approval, by 19 local member agencies partnering in the program. One goal of the program is to source more of the Monterey Bay area's power supply from renewable energy. This will reduce the CO2 emissions resulting from the Project's operations. MPRWA-5

III. Other Comments

In Table 3-1, "60 inch diameter pipe" is repeated twice. One of the pipes should be "48 inch". MPRWA-6

In Appendix D-1, caption to figure 10 indicates "buoyant". It should read "negatively buoyant". MPRWA-7

In the last bullet on page 4.3-73 it states, "Estimate regions within the BMZ where salinity would exceed 2 ppt." It should be modified, since the 2 ppt limit applies to the *difference* from background salinity, not the absolute salinity. MPRWA-8

The Water Authority hopes these comments will be helpful in preparing a thorough Final EIR/EIS for the Project. Thank you for your consideration.

Sincerely,

Bill Kampe

Bill Kampe, President
Monterey Peninsula Regional Water Authority

[1] It appears that the analysis already does a net power consumption analysis for Cal-Am's groundwater production, but it does not appear to back-out the CCSD's avoided energy consumption nor the avoided CO2 degassing associated with CCSD's and Cal-Am's existing groundwater production.

8.5.7 Monterey Peninsula Water Management District (MPWMD)

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

March 20, 2017

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

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

SUBJECT: Draft Environmental Impact Report/Environmental Impact Monterey Peninsula Water Supply Project State Clearinghouse No. 2006101004

Dear Sir or Madam:

This letter from the Monterey Peninsula Water Management District (MPWMD or District) is written in response to the joint Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/E1S) issued in January 2017 for the California American Water Company (Cal Am) application to develop a replacement water supply for CalAm's Monterey District service area. The District serves as a Responsible Agency under the California Environmental Quality Act for this project because a MPWMD Water Distribution System (WDS) Permit Amendment is needed to amend the current water system to serve water within the District boundary (MPWMD Rule 20-A). MPWMD-1

ES.5 The Proposed Project: All references to a Terminal Reservoir should be removed. This is no longer a part of the Project.

p. 1-9, Section 1.4.2, item 3: CalAm has elected to forego the "Terminal Reservoir" but increase the storage at the desalination facility. It would be useful to conform the MPWSP description to the actual elements in this chapter and in the project description in Chapter 3, especially Section 3.23.5 and related Figures 3-2 and 3-9b. If any changes are required to the description of "Treated Water Storage Tanks" in Chapter 3 and Figure 3-5b, they should be made. All impacts, mitigations, or other discussion related to the Terminal Reservoir could be removed throughout. MPWMD-2

p. 2-2, Section 1 Introduction, 1st full paragraph: In the first sentence, the Monterey Airport District should be included in the description. The Monterey Peninsula Airport District was created in 1941 and is not incorporated into the city or the county. MPWMD-3

"CalAm is proposing this project to replace part of its existing water supplies, which have been constrained by legal decisions affecting CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. State Water Resources Control Board (State Water Board) Order 95-10, State Water Board Order 2009-0060 (also referred to as the Cease and Desist Order, or CDO), **State Water Board Order 2016-0016,** and the Monterey County Superior Court's adjudication …" MPWMD-4

p. 2-3, Section 2.2.1.1: In the paragraph following the bullet points under "Facility Overview" the statement is made that "CalAm's Carmel River supplies are supplemented, especially during the summer high-demand season, by groundwater production wells in the Seaside Groundwater Basin." This statement is not true. Due to the "hydraulic trough" near the Naval Support Activity (Naval Postgraduate School), as described at the top of page 2-4, there always exists a portion of customer demand in the north part of the service area that cannot be served by the Carmel River, must be served from the Seaside Basin, therefore the supply is not "supplemented." MPWMD-5

p. 2-4 to 2-5, Section 2.2.2.2: There is no emergency intertie between Hidden Hills and the CalAm main system. There is a connection between Toro and Hidden Hills. Theoretically, this intertie could result in water from the MPWSP being used in the Toro system unless it is removed, but it means Carmel River water cannot be provided to Hidden Hills during "fires and emergencies" from the Crest Tank. MPWMD-6

In this section, it would be useful to state, just before the last sentence of the first paragraph on page 2-5, that the MPWSP facilities include permanent interconnections to the CalAm Main System as described in Section 3.2.3.9 and shown in Figures 3-2, 3-10a, and 3-10b.

p. 2-4, footnote 6: Add "In January 2017, the MPWMD approved a contract for preparation of an alternatives study for Los Padres Dam and sediment management in the reservoir." MPWMD-7

p. 2-5, Section 2.2.2.3: There is an inaccurate explanation of the MPWRS. MPWRS is not only CalAm sources of supply, but includes supplies for non-CalAm pumpers in the Seaside Basin and in the Carmel Valley Alluvial Aquifer. MPWMD-8

p. 2-5, Section 2.2.2.4 Carmel River Flow Agreements: The text should also include State Water Board Order 20016-0016. MPWMD-9

p. 2-7, Section 2.2.3: In the third paragraph it states "If CalAm fails to meet a milestone, the Revised CDO specifies that the annual diversion limit will be reduced by 1,000 afy." However, the Revised CDO states, "If the State Water Board determines that the cause is beyond Applicants' control, it may suspend any corresponding reductions" in the effective diversion limit due to a missed milestone. MPWMD-10

p. 2-12, Table 2.3: For reasons cited in our comments on pages 6-13, 6-14, and 6-18 below, we do not believe the Pebble Beach entitlements or legal lots of record should be considered as "future demands." MPWMD-11

p. 2-14, Section 2.3.3.3: Estimates are outdated and unsupported. There has been development based on the Paralta and pre-Paralta allocations since the early 2000's. There was new connection (i.e. vacant lot) development pre-CDO. There is development from the Sand City, Malpaso, and Pebble Beach entitlements. The vacant lot study included vacant buildable lots on existing parcels, including developed parcels (such as in Pebble Beach and Carmel Valley) that may never be split apart from the main property and developed. Hence, new analysis may be warranted. MPWMD-12

p. 2-16, Section 2.3.4.2: Non-revenue water is discussed in the second paragraph. It should be noted that the direct testimony of CalAm's Eric Sabolsice filed July 1, 2016 stated the total water loss for the Monterey Main System was 250 AF for Calendar year 2015. By Cal-Am's calculation the NRW percentage is 2.7%. MPWMD-13

p. 2-18 Aquifer Storage and Recovery: MPWMD has recently revised its estimate of the average annual yield from the ASR Project to 1,600 acre-feet per year. Please see **<u>Attachment 1 – Effects of Monterey Pipeline on ASR Yields by Water Year Type</u>**. With additional improvements to the Cal Am system, MPWMD estimates that the yield from ASR will be 920 afy from Phase 1 and 1,080 afy from Phase 2 for a combined total long-term average of 2,000 afy. MPWMD-14

p. 2-20 and 2-21: Water rights Permits 20808A and 20808C are incorrectly numbered. This is also repeated in Section 4.4 and should be corrected. In addition, MPWMD owns the ASR Phase 1 site and Cal Am owns the ASR Phase 2 site. MWPMD and Cal-Am jointly hold water rights Permits 20808A and 20808C to divert Carmel River water to the ASR Project. MPWMD-15

p. 2-21, Section 2.4.6.2: The term "Water Use Permit subscriber" is used in several places. A Water Use Permit has a specific meaning at MPWMD and is used incorrectly here. For clarity, we suggest you simply use the word "subscriber." In the third paragraph, change "water use permit" to "Water Permit". MPWMD-16

p. 2-23, Section 2.5.2.1 Los Padres Reservoir: A recent resurvey of Los Padres Reservoir showed that the reservoir can hold 1,810 AF at the spillway level (see **<u>Attachment 2 – Final Los Padres Reservoir Survey Study Report</u>**). The actual safe usable storage at this facility is less than 1,400 af due to concerns about releasing anoxic water or water with hydrogen sulfide from the lowest portion of the reservoir. MPWMD now estimates the long-term sedimentation rate to be between about 11 afy to 19 afy, depending on how the effects of the Marble-Cone fire on sedimentation are treated. In addition, releases from Los Padres Dam were originally intended to flow approximately five miles through the Carmel River to San Clemente Dam and Reservoir, where water was re-diverted into the Cal-Am delivery system. When Los Padres Reservoir was operated this way, a relatively small amount of the releases were lost due to evapotranspiration and channel losses along the interdam reach, which is a narrow channel flanked in most places by steep, rocky slopes. MPWMD-17

Cal-Am has changed its operations in Carmel Valley to divert Carmel River flows through its downstream wellfield. Thus, flow releases from Los Padres Dam must travel at least 11 miles and up to about 22 miles through the river channel before being diverted. In practice, it is unlikely that a significant portion of the releases from Los Padres Reservoir are actually diverted into the Cal Am system. Even if the releases are beneficial to the downstream riparian corridor, it is a very inefficient method of delivery to the Cal Am system. This may call into question whether Cal-Am can continue to divert as much as it releases from storage in the future. A replacement supply of 510 af for these considerations appears to be low; however, because of the potential long-term nature of a change in supply available from Los Padres Reservoir, it is conceivable that the water supply freed up in the Seaside Groundwater Basin after 25 years of in-lieu replacement could help offset any losses in supply from Los Padres Dam and Reservoir. MPWMD-17 cont.

p. 2-25, Section 2.5.3.1: The completion date in the 7th line of the first paragraph should be 2017. MPWMD-18

p. 2-26, Section 2.5.3.3: See comment above for p. 2-16. MPWMD-19

p.2-27, Section 2.5.3.4: The County General Plan planning area titled "Greater Monterey Peninsula" contains the City of Marina and vast swaths of land south and east of Carmel Valley, none of which are connected to the CalAm system and should not be reflected in future demand. Further, even the 2030 estimates overstate future population and per capita water demand. Hence, these numbers are overstated. MPWMD-20

p. 2-29 and 2-30, Section 2.5.4 Assumptions about the Allocation of MPWSP Water: When it becomes clear that Cal Am will complete construction of replacement supplies, MPWMD will update the original 1990 Allocation Program EIR and evaluate the impacts to the environment from allocation of water from the Monterey Peninsula Water Resources System, including new supply projects built since 1990. The considerations that formed the basis of the 1990 allocation may or may not be the same in a future analysis. Environmental analysis will be based on the conditions present or foreseeable at the time MPWMD makes a determination about allocating new supplies. MPWMD-21

Need the acronym "AFY after the numbers 16,294 and 16,994 on page 29. On page 30 it states, "any water left over would be allocated in general proportion to projected growth in the CalAm service area jurisdictions." That is unlikely true, MPWMD may not allocate all water, may choose to retain water to be allocated later as general plans change over time, retain a reserve for public benefit projects, maintain a reserve to offset Pebble Beach entitlements, maintain a buffer for fluctuating demand due to economic or climate issues, or retain allocable water to allow a lower plant capacity factor for operations. The future allocation process has not been defined.

p. 2-35, Section 2.6.1: In footnote 34 "Salinas Valley Growers Association" should be changed to "Salinas Valley Water Coalition." MPWMD-22

Monterey Peninsula Water Management District

p. 3-3, Figure 3-1: The segment labelled "Ambler*" includes a bigger portion that should be labelled "Toro*" MPWMD-23

p. 3-34, Figure 3-9b: Indicates "water produced during development of ASR-5 and ASR-6 Wells would be conveyed to this natural depression and infiltrated into the ground." This is further described in Sections 3.3.2.2 and 4.3.5.1. No other disposal methods are analyzed. This is the District's preferred method such that the water recharges the Seaside Basin and is not discharged outside of the Monterey Peninsula Water Resource System. MPWMD-24

p. 4.1-16, Table 4.1-2: Project No. 6 City of Sand City Coastal Desalination Plant is presently being reconfigured. The description should be changed in the Table after consulting with CalAm. MPWMD-25

p. 4.1-18, Table 4.1-2: Project No. 17 Monterey Downs. This project is no longer being considered. MPWMD-26

p. 4.3-63: The San Pablo Depression was not used for the spreading of development water from ASR Well 3. MPWMD-27

p. 4.4-3 Figure 4.4.1: This figure does not reflect the Bulletin 118 boundary adjustments approved by the California Department of Water Resources for the Seaside Area and the Corral De Tierra Area in 2016, and is therefore incorrect. The DEIR should reflect the 2016 Bulletin 118 Interim Update and should be updated with the newly modified shapefile from the DWR SGMA website. MPWMD-28

p. 4.3-11: At the top of the page, the capacity of Los Padres Reservoir has been reduced to about 60% of original capacity – not 2% as stated in the text. MPWMD-29

p. 4.4-12: Seaside Groundwater Basin is separated into sub regions not sub basins. The Seaside Groundwater Basin is a sub-basin of the Salinas Groundwater Basin. MPWMD-30

p. 4.4-25: Please cite the reference for the 22-30% estimate of injected potable water at Well PCA E. MPWMD-31

p. 4.4-28 top of the page: ASR extracted water will not be treated at the Ord Grove Ozone Plant, but rather will be treated at the Santa Margarita Chemical Building. MPWMD-32

p. 4.8-32, Section 4.8.2.4: Please delete the two references to the term "a Water System Expansion Permit" and replace with "an amendment to its Water Distribution System Permit". MPWMD-33

p. 4.4-34: RWQCB regulates ASR operations throughout California under SWRCB Order 2012-0010 General Waste Discharge Requirements for Aquifer Storage and Recovery Projects That Inject Water Into Groundwater. MPWMD operates the Seaside Basin ASR wells under an agreement with RWQCB that pre-dates issuance of Order 2012-0010. MPWMD-34

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p. 4.4-36 Division of Water Rights Permit 20808C Amended Permit for Diversion and Use of Water: The description of Permit 20808 should be updated. This permit was split into three parts – 20808A, 20808B and 20808C. Please see **Attachment 3 – Genealogy of Water Rights Permit 20808**. MPWMD and Cal Am jointly own Permits 20808A and 20808C, which total 5,326 afy that are subject to instream flow requirements based on NMFS 2002 recommendations. The ASR Project to divert excess Carmel River water operates under these permits.

The requirement to limit recovered water to 1,500 af in a given year is associated with a side agreement between MPWMD, Cal Am, and CDFW concerning recovery of water injected into the Seaside Basin under Permit 20808A. The Quarterly Water Budget Group set up to determine how the Cal Am system should be operated can decide to extract less. This agreement does not include water recovered under Permit 20808C; however, Condition 7 in CDO 2016-0016 requires that all water injected under either Permit 20808A or Permit 20808C be recovered in the same year, unless CDFW and NMFS agree to an alternate recovery plan. Under the CDO, the first 600 afy of water diverted to ASR in any water year must go toward offsetting Carmel River diversions in the water year it is diverted in. MPWMD-35

These requirements and others placed by the SWRCB on ASR recovery will be lifted once the CDO is met, thus these limits will not be an operational or budgetary limit after replacement supplies are operational and Cal Am has reduced its Carmel River diversions to authorized amounts.

MPWMD owns Permit 20808B for 18,674 afy, which is referred to as the "remainder" permit and is associated with a project to build a new main stem reservoir on the Carmel River downstream of the existing Los Padres Dam. That permit has a different set of instream flow requirements that was fixed to the permit by the SWRCB in 1995 prior to NMFS listing steelhead as a threatened species. No water has been diverted under this permit.

p. 4.4-48 Return Water Considerations: This section states

> "…it is estimated that somewhere between 0 and 12 percent of the source water withdrawn for the project would comprise water originating from the inland aquifers, and thus would be returned to the basin."

The "Settlement Agreement on MPWSP Desalination Plant Return Water" dated June 14, 2016 states: MPWMD-36

> "J. For Project planning and engineering purposes, Cal Am submits that the Project source water wells have been designed so that approximately 4% of the source water produced by the Project will originate as brackish groundwater from the SRGB."

Data from "Test Slant Well Long Term Pumping Monitoring Report No. 93 (8-Feb. to - 15Feb.),"

Monterey Peninsula Water Management District

and available on the MPWSP web site indicate that the amount of fresh water (as indicated by total dissolved solids) in samples taken during the period 21 January 2016 to 26 January 2017 averaged about 8% with a maximum of 11% and a minimum of 4%.[1]

It is MPWMD's understanding from Cal Am that the Hydrologic Working Group (HWG) has some confidence that design changes and long-term drawdown associated with production wells will result in the salinity of intercepted water exceeding 96% (i.e., 4% "fresh water" intercepted). MPWMD recommends that the analysis or opinion of the HWG be presented and/or referenced in the FEIR. The amount of fresh water intercepted by the slant wells is an issue of great importance to the success of the project and should be fully explained.

MPWMD-36 cont.

Instead of presenting a theoretical range concerning the composition of brackish source water, the Final EIR and EIS should describe a likely freshwater content with an upper and lower bound and should explain the rationale for determining this. The amount of fresh water intercepted at the beginning of the project and the long-term expected composition of the source water should also be described.

p. 4.4-49, Section 4.4.4.2: There is insufficient discussion to show the feasibility of delivery and use by CSIP of water in excess of the needs of CCSD. MPWMD-37

p. 4.4-51: SEAWAT is not a component of the Seaside Basin Modflow Model. The Pacific Ocean boundary is simulated through freshwater equivalent head constant head boundary. The SEAWAT modeling effort was a separate effort completed with several 2D cross-sectional models extending offshore in order to determine the protective water levels at the coastal monitor wells. MPWMD-38

p. 4.4-53: Who will prepare the groundwater contour maps and what time of year will the data be collected? Who is responsible for collecting the water levels? Is this a Quarterly Water Budget Process as these rules will affect how the group decides which sources to use for supply? MPWMD-39

4.3-63: The San Pablo Depression was not used for the spreading of development water from ASR3. MPWMD-40

p. 4.4-68, Section 4.4.5.2: In the last paragraph on the page, the sentence which starts with, "Although the program has not achieved 2,426 afy, …" should be revised to say, "Although, due to weather and constraints in the existing CalAm transmission system, the program has not achieved 2,426 afy, …" MPWMD-41

Also, there is contradictory information concerning which aquifer desalinated water would be injected into. Initially, the text states that water would be injected into the Santa Margarita MPWMD-42

[1] Testing began in April 2015 when the fresh water content at the well was about 23%. The total dissolved solids in the tests appear to stabilize in a range of approximately 30,000 to 32,000 ppt starting as early as February 2016 and continuing through January 2017. Ocean salinity at the site is presumed to be about 33,500 ppt.

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Sandstone, which is the deeper of the potable aquifers. The text then goes on to state that water would be injected into the "Shallow Zone Aquifer."

It is MPWMD's understanding that ASR 5 and ASR 6 wells are to be screened in the Santa Margarita Sandstone. P.4.4-83 also states that desalinated water will be injected into the Santa Margarita Sandstone. If the intent is to describe injection of desalinated water into the vadose zone, please state this. MPWMD-42 cont.

It should be noted that other water supply wells in the vicinity of the ASR wells are screened in both the Paso Robles and Santa Margarita formations.

Please clarify this section concerning where in the aquifer system injection and extraction will occur.

p. 4.4-69: The additional ASR wells 5 and 6 are not listed as places of use on any existing Carmel River water rights permits and therefore these wells will not help to improve the Carmel River ASR program unless these points of injection are added on to the water rights permits. A Petition for Change would have to be submitted to the SWRCB for approval to use these points of injection. MPWMD-43

p. 4.4-69, Section 4.4.5.2: In paragraph 3 and 4 the CalAm recharge of the basin is described. However, CalAm is not actually returning 700 afy, rather it is not extracting 700 afy. While not extracting water to which it is legally entitled to is similar, it is not the same as delivering actual water. Unless natural inflow from precipitation delivers a like amount, in lieu recharge delivers paper water instead of wet water. This section could more adequately describe this as an in lieu recharge program. MPWMD-44

p. 4.4-82, Section 4.4.5.2: The second paragraph refers to Figure 4.7-2 regarding location of contaminated sites. However, Figure 4.7-2 does not show any of the referenced sites. It may have intended to refer to Figure 4.7-1, but that figure does not show the ASR location. MPWMD-45

p. 4.11-13 to 14, Section 4.11.4.2: Wouldn't CO_2 be released from the 57% seawater component at the brine equalization basin which is open to the atmosphere, rather than once diffused back into the ocean? MPWMD-46

p. 4.19-2, Table 4.19-1: California Department of Finance estimates included approximately 1,000 new housing units in the CAW system between 2010 and 2015. That is impossible given that there is a moratorium on setting new water meters. This should be corrected to reflect a more reasonable number. MPWMD-47

p. 5.2-6, Section 5.2.5: Paragraph 2 on this page states that the Monterey County Agency Act has a "prohibition on out-of-basin transfers." Section 21 of the Act only refers to export of groundwater from the Salinas River Basin, not surface water. MPWMD-48

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p. 5.4-6, Section 5.4.2.3: The "Supply Shortages" first paragraph states that the No Project Alternative "assumes that potential demands associated with Pebble Beach water entitlements, hospitality industry rebound, and legal lots of record could not be served, and thus are not counted among demands under the No Project Alternative." This is an incorrect assumption in two regards: (i) the Pebble Beach build-out has been approved under a separate EIR and the entitlements, by agreement, are to be honored from existing supplies whether a project is built, or not; and (ii) economic rebound occurs in existing properties at existing service connections, hence could occur whether a project is built, or not. Those demands cannot be assumed away. MPWMD-49

p. 5.4-7, Section 5.4.2.3: In the discussion of 1,000 afy reductions for missed milestones, you fail to mention the Revised CDO states, "If the State Water Board determines that the cause is beyond Applicants' control, it may suspend any corresponding reductions" in the effective diversion limit due to a missed milestone (see comment for page 2-7, above.) Hence, the No Project Alternative with the reductions in effective diversion limits must presume that CalAm is at fault and "chooses" not to execute a project. The description should clarify its assumptions. MPWMD-50

p. 5.5-366, Section 5.5.21.2: The middle paragraph on the page states , "1,755 afy would support new development." This is a specious argument for two reasons: (i) the Pebble Beach build-out has been approved under a separate EIR and the entitlements, by agreement, are to be honored from existing supplies whether a project is built, or not; and (ii) a legal lot of record has already undergone environmental review by a local land use authority and its growth inducing impacts already analyzed. In both of these cases, the provision of water should not be considered "growth inducing." This impact should be revised to LS, Less Than Significant Impact. MPWMD-51

p. 5.5-368, Section 5.5.21.3: The conclusion that there are no indirect growth inducing effects from the No Project Alternative should be revised to reflect the likelihood of a contraction due to penalty rates and rationing, i.e. negative growth, which would be significant and unavoidable. MPWMD-52

p. 5.6-19, Table 5.6-1: Impacts 6.3-1 and 6.3-C should be changed to LS for the Proposed Action and SU↑ for the No Action alternatives, based on previous comments, above. MPWMD-53

p.6-3, Section 6.1: Revise the last bullet pursuant to comment on p.5.5-366, above. MPWMD-54

p. 6-5, Section 6.3.1: See comment for page 2-2 above MPWMD-55

p. 6-10, Section 6.3.2.3: The third sentence should read: "The MPWMD manages surface and groundwater resources within its jurisdictional boundary"

Revise the second set of bullets under "The MPWMD's responsibilities also include:" MPWMD-56

- computer modeling of water resources systems;
- hydrologic monitoring;

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- issuing water ~~connection~~ permits ***for new connections and remodels***;
- allocating water to jurisdictions ***and tracking its use***;
- ~~adopting water conservation ordinances and performing inspections~~ ***developing, implementing, and enforcing water efficiency programs and ordinances***~~;~~
- determining when ~~drought~~ ***water supply*** emergencies exist and then imposing ***and enforcing*** rationing programs;

MPWMD-56 cont.

p. 6-13, Section 6.3.5.1: The District believes that the DEIR has errs in its evaluation of growth inducement. Previously, our comments have stated the following:

(i) The Pebble Beach build-out has been approved under a separate EIR, hence its impacts have already been analyzed and are, in effect already "in the system". The entitlements are to be honored from existing supplies whether a project is built, or not, and that has been recognized by the State Water Board and in written agreement between CalAm, the Pebble Beach Company, and MPWMD. The proposed action does nothing to change the effect of the Pebble Beach Entitlements.

(ii) Economic rebound occurs in existing properties at existing service connections, hence could occur whether a project is built, or not. Furthermore, this effect is broader than just restaurants and lodging, rather include all commercial, industrial, and institutional (CII) revival under an improved economy, much of which is ancillary to tourism. The proposed action does nothing to change the effect of an improved economy. MPWMD-57

(iii) A legal lot of record has already undergone environmental review by a local land use authority and its growth inducing impacts already analyzed. It is a slippery slope to infer already approved projects are "induced" by the proposed action. While we recognize that the meter moratorium can only be lifted when the project or something similar occurs, an alternative approach might be a class-action lawsuit by such property owners, who should already have been served years ago.

In each of these cases, the provision of water should not be considered "growth inducing."

p. 6-14, Section 6.3.5.1: The section on Pebble Beach Entitlements and Hospitality Industry Rebound should be revised pursuant to the comments made above. MPWMD-58

p. 6-16, Section 6.3.5.1: the last paragraph says, "For simplicity's sake, this analysis assumes that about 250 afy of supply designated for rebound of the hospitality industry would likely be used for this purpose and 250 afy would be available for new development." However, your own discussion in Section 2.3.3.2 showed that CII demand was 440 afy greater in the period prior to the recession. That discussion also indicated that MPWMD's direct testimony to the CPUC in February 2013 concluded the estimate of demand related to economic rebound (500 afy) was MPWMD-59 reasonable. We find your assumption made for simplicity's sake is, in and of itself, growth-inducing. MPWMD-59 cont.

p. 6-18, Section 6.3.5.1: Top of 6.18 states, "That is, for purposes of this EIR/EIS, it is assumed that supply provided by the proposed project would be allocated to meet existing demand within the CalAm service area, and that water service capacity beyond that would be allocated to the jurisdictions in general proportion to an estimate – which the MPWMD has not yet developed – of their future water supply needs."

Existing demand would not result in an "allocation." As stated in our comment on page 2-29, MPWMD may not allocate all water, may choose to retain water to be allocated later as general plans change over time, retain a reserve for public benefit projects, maintain a reserve to offset Pebble Beach entitlements, maintain a buffer for fluctuating demand due to economic or climate issues, or retain allocable water to allow a lower plant capacity factor for operations. The future allocation process has not been defined.

This Section also states, "This analysis also recognizes that the MPWMD could choose not to allocate to the County the approximately 325 afy proposed to serve Pebble Beach water entitlement-holders, to ensure that adequate water supply would be available when development associated with those entitlements was proposed. If, on the other hand, the MPWMD did allocate this water to the County, the County could then elect to allocate at least a portion of the 325 afy to other development – if, for example, other development was proposed first or the County determined that the entitlement holders were unlikely to use the full amount. In either case, this portion of the proposed MPWSP supply would be used to serve new development." We believe that the DEIR incorrectly evaluates the Pebble Beach entitlements, which should be treated as existing demand or demand to be served irrespective of the source of supply, not "new development." Therefore, this is not plant capacity to serve new development, rather is plant capacity to further reduce diversions from the Carmel River, Pure Water Monterey, the Seaside Basin, or the Sand City desalination plant to serve the entitlements. MPWMD-60

An "Entitlement" is different from an "Allocation". Therefore, the above scenario would not happen. The Pebble Beach Entitlement is not recognized in the County's Allocation. It is a separate commitment of water to specific sites. Please see other comments earlier regarding the Pebble Beach Entitlement.

The third paragraph on the pages says, "Similarly, because there is no guarantee that the 500 afy proposed to meet demand associated with hospitality industry rebound will actually go to that use, this analysis assumes that either the MPWMD or the local jurisdictions could elect not to set aside 500 afy exclusively for use by existing businesses. Therefore, some portion of this 500 afy could actually serve new development within the service area." The top of the page uses MPWMD analysis to support this.

Monterey Peninsula Water Management District

If 500 AF is not needed to "cover" CII water use as a result of recovery from the recession, the water would be subject to the MPWMD Allocation program. It would not be automatically available to the jurisdictions, nor could a local jurisdiction elect how to use it. As indicated in earlier comments, your decision to assume the 500 afy is in excess is an unprovable assumption. To fully allocate water designed to provide a buffer against a revived economy would be unlikely. MPWMD-60 cont.

p. 6-25, Table 6.3-7: AMBAG made projections on housing units and population. As the number of housing units in CalAm shown increases by approximately 3,000 between 2010 and 2020, one can assume that AMBAG did not anticipate the CDO and moratorium on new connections, and the data is of marginal value. MPWMD-61

p.6-36, Section 6.3.5.3 and Table 6.3-8: Reference is made to the 20x2020 water conservation requirement and the author notes that the 2006 MPWMD estimate may need to be reduced by 20%. And Table 6.3.8 reduced needs to 2,820 using this suggestion. However, the factors used by MPWMD in 2006 assumed water efficient plumbing fixtures that would meet or exceed the requirements of 20x2020. Water needs should stay at the revised 3,526 afy and the 2,820 afy value should be stricken. MPWMD-62

Other: In Appendix K Water Conservation and Demand Management, please note the following: MPWMD-63

1. Need to add that MPWMD requires retrofit upon change of ownership ***and remodel or change of use.*** (Pg K-3, last paragraph)

2. Table K-1 is missing MPWMD's CII mandatory retrofit requirement.

My staff and I are available to meet if further coordination is needed. I can be reached at dstoldt@mpwmd.net or 831/658-5650 if you have questions.

Sincerely,

David J. Stoldt
General Manager

Cc: David Laredo, MPWMD Counsel
Jon Lear, Stephanie Locke, Larry Hampson, MPWMD staff

Attachments: 1 – Effects of Monterey Pipeline on ASR Yields by Water Year Type
2 – Final Los Padres Reservoir Survey Study Report
3 – Genealogy of Water Rights Permit 20808

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Monterey Peninsula Water Management District

8.5.8 Monterey Regional Waste Management District (MRWMD)

TIMOTHY S. FLANAGAN
GENERAL MANAGER

GUY PETRABORG, P.E., G.E
DISTRICT ENGINEER

ROBERT WELLINGTON
COUNSEL

MONTEREY REGIONAL WASTE MANAGEMENT DISTRICT

Home of the Last Chance Mercantile

March 29, 2017
Via Electronic Mail (https://www.regulations.gov/comment?D=NOAA-NOS-2016-0156-000)

RE: Comments to Monterey Peninsula Water Supply Project
January 13, 2017 Draft Environmental Impact Report/Statement (DEIR)/(DEIS)

Dear Madam/Sir:

Please find below the comments to the Monterey Peninsula Water Supply Project's January 13, 2017 Draft Environmental Impact Report/Statement (DEIR)/(DEIS) as prepared by the Monterey Regional Waste Management District (MRWMD). These comments are submitted for your review and consideration during the project approval process. Thank you for the opportunity to submit these comments.

1. Figure 3-5a on Page 3-20 illustrates three (3) of the proposed new pipelines to be located in relatively undeveloped land to the north of the Monterey Regional Waste Management District's (MRWMD) property for the Charles Benson Road. The "Optional Alignment" for the three pipelines is located on MRWMD property under and/or along approximately one mile of Charles Benson Road. MRWMD supports the alignment of these three proposed new pipelines to be located in the relatively undeveloped land to the north of the MRWMD property containing Charles Benson. MRWMD-1

2. Figure 3-5a on Page 3-20 illustrates three (3) of the proposed new pipelines to be located in relatively undeveloped land to the north of the Monterey Regional Waste Management District's (MRWMD) property for the Charles Benson Road. The "Optional Alignment" for the three pipelines is located on MRWMD property under and/or along approximately one mile of Charles Benson Road. Charles Benson Road is used by MRWMD employees (>100), MRWMD customers carry non-hazardous waste materials (permitted for 2,000 waste carrying vehicles per day), several third-party lease operations employees at MRWMD, the Monterey Regional Pollution Control Agency (MRWPCA), deliveries to MRWMD and MRWPCA facilities, and several of the agricultural entities operating in the vicinity. Along the proposed "Optional Alignment" of the three pipelines, Charles Benson Road is two lanes wide. Given that Charles Benson Road is the main access to both the MRWMD and MRWPCA facilities and due to the volume of traffic associated with the two facilities, conventional 'cut and cover construction installation methods with one-way traffic control' does not appear to be an acceptable option to MRWMD. MRWMD anticipates that it would be necessary to construct a third traffic lane in order to provide two-way traffic to the MRWMD and MRWPCA facilities at all times during the construction installation of the proposed pipelines along Charles Benson Road. The construction of a third lane along one side of Charles Benson Road would require the removal of more than 150 trees (primarily Monterey cypress Hesperocyparis macrocarpa and secondarily, Eucalyptus globulus 'Compacta'). MRWMD anticipates that appropriate mitigation would be required should tree removal occur. MRWMD-2

MRWPCA

Monterey Regional Water Pollution Control Agency

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

Administration Office:
5 Harris Court, Bldg. D, Monterey, CA 93940-5756
(831) 372-3367 or 422-1001, FAX: (831) 372-6178
Website: www.mrwpca.org

March 28, 2017

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

Monterey Bay National Marine Sanctuary
c/o Project Lead for CalAm Desalination Project
99 Pacific Ave, Bldg. 455a
Monterey, CA 93940

SUBJECT: Comments on the joint Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) for the Monterey Peninsula Water Supply Project (MPWSP)

To whom it may concern,

Monterey Regional Water Pollution Control Agency (MRWPCA) owns and operates the outfall facilities that would be used by the Monterey Peninsula Water Supply Project for desalination brine disposal. As the owner and operator of the facility, MRWPCA is a responsible agency for the proposed project, and any use of the outfall must meet standards specified by MRWPCA. MRWPCA hereby submits the following comments on the Draft EIR/EIS for the MPWSP to identify analysis and mitigation that MRWPCA will need for its decision whether to approve use of its outfall facilities. Attached to this letter are more detailed comments on specific sections of the EIR/EIS (**Enclosure 1**).

1) The Draft EIR/EIS analysis of the impacts of the proposed project (a 9.6-million gallon per day desalination plant and associated source water intake and distribution) and most alternatives does not assume operation of MRWPCA and Monterey Peninsula Water Management District's (MPWMD's) Pure Water Monterey Project (PWM). PWM is an approved project that is moving forward through design and implementation, with groundbreaking scheduled for May 5, 2017. **Enclosure 2** provides a summary of the status of project implementation and a list of entitlements, permits, and authorizations received to date. The project is expected to be operational in late 2018, and therefore, will be operating for over a year before the desalination MRWPCA-1

plant becomes operational. In particular, the effects analyses of brine discharge from the desalination plant through the MRWPCA's outfall facilities should reflect that PWM reverse osmosis concentrate will be a consistent component of flows in the outfall. In addition, secondary-treated effluent flows from the MRWPCA Regional Wastewater Treatment Plant through the outfall will be lower with PWM than has been assumed in the project analysis. For MRWPCA to be able to rely on the EIR/EIS to support its approval of use of the outfall facilities, the EIR/EIS must analyze project impacts under conditions that include PWM.

MRWPCA-1 cont.

2) MRWPCA has identified several improvements that must be completed prior to MRWPCA allowing use of the outfall for disposal of desalination brine to the ocean. Recent reports have been prepared assessing the integrity and materials of the outfall including the land portion from the beach junction structure inland (Land Outfall) and the ocean portion that extends from the beach structure out into the ocean (Ocean Outfall). The environmental impacts of constructing and operating each improvement must be described and evaluated in the EIR/EIS so that MRWPCA can rely upon the EIR/EIS as a responsible agency when it considers whether to allow use of the outfall. The improvements include the following:

   a. *Land Outfall Protection.* The Land Outfall must be lined to protect it from corrosion by the brine which can substantially shorten the useful life of the outfall. MRWPCA contracted with Brown and Caldwell at the expense of, and with input from, California American Water Company (CalAm) to prepare a detailed analysis of the current outfall condition and recommendations for corrosion protection. **Enclosure 3** (Brown and Caldwell, *Technical Memorandum: Land Outfall Pipeline Evaluation and Protection Measures,* January 9, 2017) describes the two most promising and feasible options for ensuring that the land outfall is protected from corrosion for the life of the project. The EIR/EIS includes a description and impact analysis of a third option that is no longer being considered for engineering reasons. The EIR/EIS should include a description and impact analysis of the two most promising and feasible options to enable MRWPCA to rely upon the EIR/EIS for the required CEQA compliance to approve accepting MPWSP desalination brine into the existing ocean outfall.

MRWPCA-2

   b. *Brine Mixing Structure*. This structure is required to properly mix and monitor the water quality of brine and treated wastewater flows to be discharged via the MRWPCA outfall in compliance with MRWPCA's NPDES permit requirements. A brine mixing structure is not required for discharge of PWM reverse osmosis concentrate alone or in combination with municipal wastewater or trucked brine. It is being designed by E2 Consulting Engineers at the expense of and with input from Cal Am because it is necessitated by the proposed Water Supply Project when the proposed project is operating in combination with MRWPCA's operations including PWM. A value engineering study that describes this facility is contained in **Enclosure 4**. Although the EIR/EIS describes the need for the brine mixing structure, the EIR/EIS should include a description of the brine mixing structure and its environmental impacts to enable MRWPCA and the RWQCB to rely upon the EIR/EIS for associated approvals.

MRWPCA-3

   c. *Beach Structure Erosion Protection*. The EIR/EIS identifies the need to protect the first 100 feet of the Ocean Outfall pipe; however, the EIR/EIS should also recognize that MRWPCA will be undertaking a Beach Junction Structure and Outfall Protection Project that will affect the same pipe segment. MRWPCA's beach junction structure that

MRWPCA-4

connects the Land Outfall to the Ocean Outfall was recently exposed due to coastal erosion during high wave storm events in December 2015 through March 2016. The Draft EIR/EIS should be updated to reflect the need to replace, remove, and/or modify the Ocean/Land Outfall junction structure and adjacent 650 to 1,000 feet of Land Outfall pipe due to the potential for coastal erosion to damage these structures within the life of the desalination plant. **Enclosure 5** (Technical Memorandum: Beach Structure Evaluation and Protection Measures) contains a technical memorandum by Brown and Caldwell that evaluates alternative design concepts and feasibility of these improvements and recommends a preferred project construction method. The project could also be designed to include pipe material that would not corrode. It would be preferable for the improvements to the junction structure and westernmost portion of the Land Outfall be completed prior to accepting brine discharges into the outfall to ensure that the ability to discharge brine and other treated wastewater effluent is not interrupted for project construction. MRWPCA-4 cont.

d. *WEKO Seal Band Replacement*. After the Loma Prieta earthquake, MRWPCA identified cracks in the Ocean Outfall pipe and they were repaired from the inside. The metal bands hold neoprene seals in place to stop leaking. The bands are expected to be Type 316/316L stainless steel, an alloy known to be susceptible to chloride corrosion. The seals and metal bands, or at a minimum, just the metal bands, must be replaced prior to operation of the desalination plant to ensure the integrity of the joint connections are maintained for the life of the project, and such that the outfall can be continuously used for discharging brine, PWM reverse osmosis concentrate, and secondary-treated effluent. A discussion of this issue is provided in **Enclosure 3** at page 2 and **Enclosure 5** at page 2. MRWPCA requests that the EIR/EIS describe these improvements and analyze their environmental effects given that MRWPCA will require completion of these improvements prior to operation of the desalination project to ensure that the joints do not fail during the life of the project. MRWPCA-5

e. *Ocean Outfall End Gate Modification*. The end of the Ocean Outfall has an approximately 2-inch opening below the End Gate that allows sediments and water to flow out into the ocean. With secondary effluent discharges, this end gate configuration provides additional mixing with ocean water because secondary effluent is buoyant. When desalination brine will be the main or only discharge, brine containing little to no dilution by other waters in the outfall pipeline would flow through this opening onto the seabed without the velocity and associated dilution afforded by the duckbill diffusers. **Enclosure 3,** page 2, provides a discussion of this improvement. The end gate may need to be modified to comply with California Ocean Plan and permitting requirements of the Regional Water Quality Control Board. The EIR/EIS should describe the improvements to the end gate, and identify any associated environmental impacts of constructing and operating the improvements. MRWPCA-6

3) The EIR/EIS approach states that the discharge to the ocean (brine, concentrate, trucked brine, and secondary effluent) may not meet Ocean Plan requirements. If Ocean Plan compliance cannot be achieved with the present design of the project, then Cal Am would build additional facilities (such as modifying the outfall or adding treatment processes at the desalination plant and/or the Regional Treatment Plant) or would make operational changes (such as pulsing flows MRWPCA-7

of brine to increase velocity, and thus dilution, of discharge at the diffusers on the outfall). MRWPCA requests that the additional facilities or operational protocols needed for Ocean Plan compliance be thoroughly described in the EIR/EIS and their impacts evaluated in the EIR/EIS. It is unclear if the information in the EIR/EIS will be adequate to enable MRWPCA and the RWQCB to rely upon the EIR/EIS for their approvals as responsible agencies. The EIR/EIS must present and evaluate the indirect effects of the implementation of feasible mitigation measures. MRWPCA urges the CPUC to improve the analysis of this issue in the EIR/EIS to ensure that the project can feasibly comply with the Ocean Plan and be permitted, and to enable use of the EIR/EIS by MRWPCA and the RWQCB as responsible agencies for their subsequent project approvals. Several specific concerns about the mitigation measures presented as methods to meet Ocean Plan compliance requirements include:

MRWPCA-7 cont.

a. Adding up to 5 mgd of wastewater into the outfall to dilute the brine is not feasible. MRWPCA does not have rights to bypass secondary treated wastewater to the outfall to meet CalAm's needs for Ocean Plan compliance and does not expect those entities holding the rights to authorize that use.

b. Installation of a 20-inch pipe within MRWPCA's land and ocean outfall, with an extension of the 20-inch pipeline through the side of the Ocean Outfall to a dedicated brine outfall near one of the Angle Points, would result in an ocean discharge into the "Zone of Prohibition" and would require MRWPCA to pump secondary effluent to the existing ocean diffusers during high flow events rather than let it flow by gravity as it currently does. This solution appears to be infeasible and MRWPCA would not support pursuing this physical change to the outfall.

Thank you providing us the opportunity to comment on this environmental review document. We look forward to reading your response. Please contact Bob Holden if you have any questions at bobh@mrwpca.com or (831)645-4634. We would like to meet with you at your earliest convenience to assist you with responding to these comments to ensure that MRWPCA's future actions can rely upon the final document for its decision whether to approve use of its ocean facilities.

Sincerely,

Paul A. Sciuto, P.E.
General Manager

Enclosures:

1. Detailed Comments to Specific Section of the EIR/EIS
2. PWM Project Implementation Status with list of Entitlements, Permits, and Authorizations Received to Date
3. Land Outfall Pipeline Evaluation and Protection Measures
4. Brine Mixing Structure Value Engineering Report and Process Flow Diagram
5. Beach Structure Evaluation and Protection Measures

CC: Bridget Hoover, Karen Grimmer, Eric Zigas, Paul Sciuto, Dave Stoldt, Bob Holden

Enclosure 1 – Specific Comments on the MPWSP of Draft EIR/EIS for MPWSP

NOTE: MRWPCA comments are shown in *bold/italics and proposed text inserts are shown in <u>bold/italics/underlined.</u>*

1. Section 3.3.9 Construction Schedule (Page 3-55). Construction July 2018 through June 2020. Construction of the slant wells would be over 15 months. Section 3.3.2.1 Subsurface Slant Wells (Page 3-47) states that slant wells construction (15 months) can be anytime during the 24-month overall construction project. The section goes on to say (Page 3-48) that after each well is drilled that it would be pumped for 2 to 6 weeks for well completion and initial well testing and discharge into the MRWPCA ocean outfall. MRWPCA-8

   Comment: CalAm would need to obtain MRWPCA's agreement to accept seawater into its outfall. Use of the outfall may be precluded during construction of the Ocean Outfall Erosion Protection Project, WEKO Seal Protection, and End Gate Protection improvements (described in the letter).

2. Section 3.4.1 Operation of the Seawater Intake System, MPWSP Desalination Plant, and Brine Discharges (Pages 3-56 through 3-58). The section states that after a shutdown, CalAm might operate the plant with all RO modules in service (11.2 mgd versus Proposed Project capacity of 9.6 mgd). MRWPCA-9

   Comment: A higher brine flow may increase outfall diffuser dilution when brine was the only water going to the ocean. However, when other waters must be discharged together with the brine (including 24 hours per day, 7 days per week when the AWPF is operating), the outfall dilution will be reduced. MRWPCA requests that the EIR/EIS include brine modeling to show how dilution would be affected by these high flow events.

3. Table 4.1-1 Overview of Alternatives Evaluated in Detail (Pages 4.1-3 and 4.1-4) MRWPCA-10
   a. Proposed Project.

   Comment: **For column "Brine Discharge/Outfall Discharge Facilities" *add:***
   - ***<u>Brine Mixing Structure</u>***
   - ***<u>Land Outfall Corrosion Protection</u> {discussed in Section 4.13 (Page 4.13-1) and Impact 4.13-5 (Pages 4.13-25 through 4.13-17) Mitigation Measure 4.13-5a: Installation of Protective Lining, Periodic Inspections and As-Needed Repairs for Offshore Segment of MRWPCA Ocean Outfall (Pages 4.13-27 and 4.13-28 plus Secondary Impacts Page 4.13-29), and Mitigation Measure 4.13-5b: Access Land Segment of MRWPCA Ocean Outfall and Install Protective Lining, If Needed (Pages 4.13-28 and 4.13-29 plus Secondary Impacts Page 4.13-29 through 4.13-31)}.***
   - ***<u>Outfall Erosion Protection Modifications</u>***
   - ***<u>WECO Seal Band Replacement</u>***
   - ***<u>Ocean Outfall End Gate Modification</u>***

   All five facility upgrades and construction improvements would need to be completed before the start of MPWSP operation that is estimated to be June 2020 (Section 3.3.9, Page 3-55).
   For column "Groundwater Replenishment Project Water Purchase Agreement", ***add <u>The CalAm/MPWMD/MRWPCA Water Purchase Agreement, SWRCB Cease and Desist</u>***

Order Amendment (Order 2016-0016), and pending implementation of Pure Water Monterey (per Enclosure 2) would be in effect and operating under all proposed project and alternative scenario.

b. No Project Alternative: ***No comments.***

c. Alternatives 1-4.
Comment: For column "Groundwater Replenishment Project Water Purchase Agreement", ***add The CalAm/MPWMD/MRWPCA Water Purchase Agreement, SWRCB Cease and Desist Order Amendment (Order 2016-0016), and pending implementation of Pure Water Monterey (per Enclosure 2) would be in effect and operating under all proposed project and alternative scenarios.***

d. Alternatives 51 and 5b. ***No comments.***

MRWPCA-10 cont.

4. Table 4.1-2 Cumulative Projects (Pages 4.1-14 through 4.1-24)

   a. Pure Water Monterey Groundwater Replenishment (GWR) Project.

   Comment: Please list under MRWPCA (not MPWMD), but you should mention "with Monterey Peninsula Water Management District". All projects except the first (No. 59) will be required as part of CalAm's Outfall Lease Agreement with MRWPCA.

   - ***Project No. 59. MRWPCA believes that PWM needs to be included as part of the assumed background conditions under all desal alternatives because of MRWPCA's Water Purchase Agreement with CalAm and MPWMD and SWRCB Cease and Desist Order Amendment (Order No. 2016-0016).***
   - ***Brine Mixing Structure (Project No. 59a?). See Kennedy/Jenks Consultants and E2 Consulting Engineering Value Engineering describing changes to the brine mixing structure and the E2 Consulting Engineering Process Flow Diagram that shows the new configuration at the new site at the Regional Treatment Plant front gate both in Enclosure 4.***
   - ***Land Outfall Protection (Project No. 59b?). See report "Land Outfall Pipeline Evaluation and Protection Measures", dated January 9, 2017, by Brown and Caldwell, Enclosure 3, describing the current anticipated project.***
   - ***Ocean Outfall Manhole Protection (Project No. 59c?). See report "Beach Structure Evaluation and Protection Measures", dated January 30, 2017, by Brown and Caldwell, Enclosure 5, which describes the current anticipated project and primary construction methodology options.***
   - ***WECO Seal Protection (Project No. 59d?). See Section 2.4.2.2, Page 5, of Brown and Caldwell January 30, 2017 report, Enclosure 5, and Section 2.2.3, Page 2, of Brown and Caldwell January 9, 2017 report, Enclosure 3)***
   - ***Ocean Outfall End Gate Correction (Project No. 59e?). See Section 2.2.2, Page 2, of Brown and Caldwell January 9, 2017 report, Enclosure 3.***

MRWPCA-11

   b. Regional Urban Water Augmentation Project (RUWAP) Desalination Element (Project No. 31).

   Comment: Remove "/Salinas Valley Reclamation Plant" from "Planning Jurisdiction/Location".

MRWPCA-12

c. Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project (Project No. 35).

Comment: Change to one pump station and a 2 million gallon storage tank. Project will be built in two parts. Remove "/Salinas Valley Reclamation Plant" from "Planning Jurisdiction/Location". Expect construction from August 2017 through September 2018.

d. Monterey Pipeline and Pump station (Project No. 60).

Comment: Include location: Cities of Seaside, Monterey, and Pacific Grove. Include other environmental reviews undertaken, namely approval of the Water Distribution System Permit and Pipeline Alignment modifications by MPWMD that included approval of two Addenda to the PWM EIR.

MRWPCA-12 cont.

5. Table 4.3-9 Monthly Average Flows of Secondary Treated Wastewater from the MRWPCA Regional Wastewater Treatment Plant (MGD) (1998-2012).

Comment: MRWPCA provided these data to ESA and the CPUC in 2013. We believe it would be more appropriate to use average flows from 2011 through 2016 or even more recent averages. In 1998, 1999, and the start of 2000, growers were still connecting to the CSIP system resulting in higher values for flow to the ocean than after those years. The crops grown in CSIP have been evolving since the beginning. The increased farming of strawberries increases the amount of water used during the winter and thus reduces ocean discharge. Cost of potable water and increased conservation has been reducing overall sewage flow to the Regional Treatment Plant with a downward trend since 2002 resulting in less ocean discharge. The net result is that the more recent flows to the ocean are probably the most relevant for ocean discharge estimates. PWM, currently out to bid, will further reduce ocean discharge, especially during the winter. The reduced ocean flows may affect Table 4.3-10 Proposed Project Discharge Scenarios Modeled.

MRWPCA-13

6. Table 4.3-10 Proposed Project Discharge Scenarios Modeled.

Comment: MRWPCA believes, as stated for Table 4.3-9, above, that more recent ocean flows should be used. As stated in Table 4.1-1, above, we believe PWM should be assumed to be operational under all proposed project and alternatives scenarios. As such, it would be appropriate to conduct modeling based on PWM concentrate and correspondingly reduced effluent flow to the ocean. In addition, previous studies included trucked brine as one of the constituents of ocean discharge in all situations. It is not present in the analysis and should be.

MRWPCA-14

The modeling in the EIR/EIS Appendix D1includes the Ocean Outfall having an opening underneath the End Gate at the termination of the outfall. As the Ocean Outfall exists now, it will allow 5% of all the brine discharge water (per Appendix D1 Page 52) onto the seafloor with minimal dilution during negative buoyant conditions. The End Gate must be closed for MRWPCA to accept brine. All dilution calculations should be revised accordingly.

MRWPCA-15

7. Section 4.3.5.3 Results and Impact Discussion.

Comment: MRWPCA objects to this section and the appropriate appendices (D1, D2, and D3)

MRWPCA-16

that support this section. MRWPCA believes that due to its signed Water Purchase Agreement that the PWM project must be assumed to be operating under all proposed project and alternative scenarios. Data in this section was not calculated with that assumption. Thus Tables 4.3-15 and 4.3-16 do not reflect any contribution from the Advanced Water Purification Facility and thus do not evaluate the actual environmental impact. And as stated above, they do not reflect closing the opening under the End Gate. MRWPCA cannot rely on the EIR/EIS for approval of use of its outfall facilities unless the analsis includes operation of PWM and reflects closing the opening under the End Gate. MRWPCA-16 cont.

Table 4.3-16 MPWSP Operational Discharge Scenarios: Estimated Concentrations at the edge of the ZID expressed as percentage of Ocean Plan Objective for Ocean Plan Constituents (Page 4.3-99 through 4.3-101).

Comment: MRWPCA believes that the discharge scenarios modeled (Table 4.3-10, Page 4.3-70) should be increased to also include the potential higher flows described after an outage (Section 3.4.1, Pages 3-56 through 3-58). Also, there is a large range between scenario 4 (2 mgd secondary effluent and 13.98 mgd brine) and scenario 6 (19.78 mgd secondary effluent and 13.98 mgd brine). In Table 4.3-16, scenario 5 (9 mgd secondary effluent and 13.98 mgd brine) has a very high (68%) value for ammonia. No data is shown to determine if a higher percentage might be found between scenarios 5 and 4 (2 to 9 mgd) or between scenarios 5 and 6 (9 to 19.78 mgd). Especially when PWM is considered as part of this calculation, it is likely that percentages will be over 80% and may even reach 100%. MRWPCA will need assurance that the project will meet Ocean Plan (and NPDES permit) requirements from the beginning and in all conditions in which PWM is operating. MRWPCA-17

Mitigation Measure 4.3-5 Implement Protocols to Avoid Exceeding Water Quality Objectives (Pages 4.3-103 through 4.3-106). Impact 4.3-5: Violate water quality standards or waste discharge requirements or otherwise degrade the water quality of receiving water in Monterey Bay as a result of brine discharge from the operation of the MPWSP Desalination Plant. Section 5.5.3.8 Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a (CEMEX) and 5b (Potrero Road)-(Pages 5.5-59 through 5.5-78). In particular, Table 5.5-11 (Page 5.5-76) shows expected violation of Ocean Plan.

Comment: MRWPCA requests that the EIR/EIS provide more description and impact analysis of feasible mitigation measures to allow MRWPCA to accept desalination brine from CalAm. The EIR/EIS should determine and present analysis to indicate whether effluent will meet the Ocean Plan requirements. If it will not, then additional mitigation measures should be included in the EIR/EIS to enable an analysis of indirect impacts of the mitigation and consideration of feasibility by CalAm and the decision-makers. MRWPCA-18

The Mitigation Measure 4.3-5 measures to ensure Ocean Plan compliance include four separate approaches (pages 4.3-104 and 4.3-105) and Section 4.3.5.4 Secondary Impacts of Mitigation Measure 4.3-5, (Pages 4.3-106 through 4.3-110).

1) Additional pretreatment of source water to the Desalination Plant. MRWPCA-19
    a. Additional filtration at desalination facility
    b. Granular activated carbon (GAC) at desalination facility

    Comment: Both options are acceptable to MRWPCA but do not improve Ocean Plan

compliance for all constituents.

2) Treatment of discharge.
The three options provided include:
   a. GAC at desalination facility
   b. Advanced oxidation with ultraviolet light with concurrent addition of Hydrogen peroxide at desalination facility
   c. Biologically Active Filtration (BAF) at Regional Treatment Plant.

   Comment: The two desalination facility options (GAC and Advanced Oxidation) are acceptable to MRWPCA but do not improve Ocean Plan compliance for all constituents of concern. The third option, BAF, could be acceptable to MRWPCA if it were for reverse osmosis concentrate but can no longer be located where it was shown within the PWM FEIR. MRWPCA's plans for the Advanced Water Purification Facility do not accommodate space or utility/operational demands of a BAF process. Also regarding the third option, the heading says Biologically Active Filtration System to Treat the Brine. Is it to treat the brine? MRWPCA is not aware of a BAF system for brine. MRWPCA's BAF system within its PWM FEIR was for AWPF concentrate and not for brine. This option is not acceptable as stated.

MRWPCA-19 cont.

3) Retrofitting the existing outfall to increase dilution. This would be accomplished through retrofitting the outfall diffusers to be inclined upward to increase dilution.

   Comment: This option is not acceptable to MRWPCA as currently defined. This option might prevent MRWPCA from meeting its NPDES discharge requirements whenever the desalination facility was offline. MRWPCA could be agreeable to other mitigation measures to increase dilution such as reducing the number of open diffuser ports and/or reducing the size of the diffusers, and/or changing the Tideflex duckbill diffuser nozzles to a different type or removing them altogether.

MRWPCA-20

4) Flow augmentation. This would be accomplished through addition of up to 5 mgd of flows near the density of fresh water.

   Comment: This option is not considered to be feasible, unless an additional/new secondary effluent or water having better quality that would not require treatment were identified and proposed. Secondary effluent is mentioned as possible water in Appendix D1 but neither CalAm nor MRWPCA has rights to use that water for diluting brine.

MRWPCA-21

8. Section 4.4.5.2 Operational Impacts and Mitigation Measures (Pages 4.4-57 through 4.4-87). Figure 4.4-15 (Page 4.4-62).

   Comment: MRWPCA's two wells in the 180-foot aquifer should be <u>shown.</u>

   Figure 4.4-16 (Page 4.4-63).

   Comment: Two MRWPCA wells in the 180-foot aquifer are shown but are incorrectly shown as being located in the 400-foot aquifer. One additional well is in the 400-foot aquifer.

MRWPCA-22

Table 4.4-10.

Comment: The MRWPCA portion of the table incorrectly shows wells 14S/02E-20B01 and 14S/02E-20B02 as being in the 400-foot aquifer when they are in 180-Foot aquifer. Well14S/02E-20B03 is shown in the 900-foot aquifer when it is in the 400-Foot aquifer. MRWPCA-22 cont.

9. Section 4.5.5.2 Operational and Facility Siting Impacts (Pages 4.5-51 through 4.5-66).

Comment: Please see MRWPCA comments on this issue as discussed under Section 4.3.5.3, above. MRWPCA-23

10. Impact 4.13-5: Increased corrosion of the MRWPCA outfall and diffuser as a result of brine discharge associated with project operation (Page 4.13-25 through 4.13-31). There are two mitigation measures 4.13-5a for the Ocean Outfall (lining 100 feet of the pipeline) and mitigation measure 4.13-5b for the Land Outfall (line the entire length).

Comment: Protection of the Ocean Outfall will be ensured by the improvements identified in the MRWPCA comment letter of March 2017 not by the Ocean Outfall Lining described:

- ***a. Ocean Outfall Protection (See report "Beach Structure Evaluation and Protection Measures", dated January 30, 2017, by Brown and Caldwell, Enclosure 5).***
- ***b. WECO Seal Replacement (See Section 2.4.2.2, Page 5, of Brown and Caldwell January 30, 2017 report in Enclosure 5 and Section 2.2.3, Page 2, of Brown and Caldwell January 9, 2017 report in Enclosure 3).***
- ***c. End Gate Protection (See Section 2.2.2, Page 2, of Brown and Caldwell January 9, 2017 report in Enclosure 3). This is not a corrosion issue but is included here as it is an essential improvement for use of brine and essential to allow dilution of the brine before it reaches the ZID or BMZ. It is shown here as it is part of an ongoing corrosion study.***

MRWPCA-24

Protection of the Land Outfall.

Comment: The Land Outfall lining project has been defined more fully.

- ***a. Land Outfall Protection (See report "Land Outfall Pipeline Evaluation and Protection Measures", dated January 9, 2017, by Brown and Caldwell, in Enclosure 3). MRWPCA would like last sentence of Section 4.13.5.2 to read, "<u>However, CalAm shall enter into an agreement whereby MRWPCA would obtain all necessary RWQCB approvals and permits to temporarily run the pipe along or below the ground surface</u>."***

Comment: MRWPCA requests that the EIR/EIS include a description and analysis of the construction and operation of a Brine Mixing Structure in accordance with the information in Enclosure 4.

11. Table 5.3.2 Outfall Options Screening Results (Page 5.3-19 and 5.3-20) and Section 5.3.4.1 Outfall Option 1 – Modified MRWPCA Outfall and New Diffuser. Table 5.3-5 Outfall Options Evaluation – Preliminary Environmental Impacts Comparison (Pages 5.3-38 through 5.3-43)

MRWPCA-25

Comment: The Outfall-1 Alternative proposes to suspend a 20-inch pipe within the existing outfall with a new diffuser section for use during wet-weather flows only. This option was "retained for Further Analysis". This is similar to a previous proposal, which is not considered

to be feasible by MRWPCA due to restricting the outfall pipe's usefulness and removing the ability to repair the pipeline from the inside. In addition, this alternative would result in extreme disruption to the ocean outfall for the pipe insertion and the new diffuser construction. Ocean flow disruption might be limited to 0.5 acres if sheet piling is used. We think a well planned construction contract might only discharge undiluted effluent into the Zone of Prohibition for two or three days, and might be feasible. However we believe it would be very difficult, if not impossible, to achieve regulatory approval to discharge diluted brine into the Zone of Prohibition on a continuous basis. MRWPCA-25 cont.

Typos (various locations):

- Change all use of the phrase "Ground Water Replenishment Project" to "Groundwater Replenishment Project"
- Change all use of the phrase "CSIP Pond" to the "Salinas Valley Reclamation Project (or SVRP) Storage Pond"
- Change all spellings of "Trussel" to Trussell

MRWPCA-26

Enclosure 2 - Pure Water Monterey Implementation Status as of March 17, 2017

Designs for the Pure Water Monterey first phase project components are complete and bids are being solicited for construction of those facilities. The first phases of construction are scheduled to being in May 2017 and conclude in the fall of 2018 with commissioning and start-up testing. Thus, the Pure Water Monterey project is on schedule to provide 3,500 acre-feet per year of water and approximately 4,000 to 5,000 acre-feet per year of agricultural irrigation water starting at the end of 2018. These new water supplies will allow CalAm to reduce Carmel River diversions and improve the conditions of local groundwater basins.

The Pure Water Monterey project has also received most entitlements needed to be constructed. By the end of April, all entitlements are anticipated to be in place to enable construction of the primary phases of facilities (Source Waters – Surface Diversions, Advanced Water Purification Facility, Product Water Conveyance, and Injection Facilities).

- MRWPCA approval of the project and certification of the EIR (October 8, 2015)
- California Public Utilities Commission approval of a Water Purchase Agreement with California American Water Company (September 22, 2016)
- State Water Resources Control Board (SWRCB) Division of Drinking Water approved the project's Title-22 Engineering Report with conditions (November 7, 2016)
- National Marine Fisheries Service Endangered Species Act Section 7 Consultation completed with a Letter of Concurrence (December 5, 2016)
- U.S. Fish and Wildlife Service Endangered Species Act Section 7 Consultation completed with Biological Opinion (December 20, 2016)
- Monterey County approved the Minor Use Permit Amendment for construction of the Advanced Water Purification Facility (February 22, 2017)
- Central Coast Regional Water Quality Control Board issued a Waste Discharge Requirement for the Advanced Water Purification Facility and the injection of purified recycled water into the Seaside Basin (March 9, 2017)
- SWRCB Division of Water Rights issued the water rights to use surface waters in Blanco Drain and Reclamation Ditch for recycling and reuse (March 17, 2017)

Other key approvals are anticipated in March or April, including the following:

- SWRCB Division of Water Rights issuance of a Water Quality Certification for components in riparian areas and waterbodies (expected March 31, 2017)
- SWRCB grant and loan initial funding agreements under Proposition 1 and the Clean Water State Revolving Fund (expected mid-April 2017)
- U.S. Army Corps Reissuance of Nationwide Permit for construction in waters of the United States (expected April 14, 2017)
- California Department of Fish and Wildlife Lake and Streambed Alteration Agreement for components in riparian areas and waterbodies (estimated April or May 2017)
- State Lands Commission - Land Lease approval (on the commission agenda for consideration on April 22, 2017)
- Various land owner lease and right of way agreements (ongoing)

8.5.1 Responses to Comments from City of Marina

8.5.1.1 Responses to Comments from City of Marina – Main Letter

Marina-A This comment provides an introduction to the fact that the City of Marina is a Responsible Agency for the proposed project under CEQA due to its authority to issue a Coastal Development Permit (see EIR/EIS Section 1.5.4.3), and that the City is providing comments on the CEQA adequacy of the Draft EIR/EIS on behalf of the citizens of Marina, and on the adequacy of the Draft EIR/EIS under NEPA. The comment explains who prepared the comments on behalf of the City and provides an overview of the organization of the expressed concerns, which include water demand, water rights, conflicts with the Sustainable Groundwater Management Act (SGMA), legal prohibitions, adequacy of the project description, the baseline, impacts on groundwater, adequacy of the groundwater modeling, impacts from brine discharge, impacts on coastal ecosystems, greenhouse gas emissions, impacts on historic resources, adequacy of the analysis of environmental justice and of alternatives. The concerns expressed in this comment are subsumed within the following, more detailed comments and responses.

Marina-1 CEQA Guidelines Chapter 3, Article 9 ("Contents of EIRs" §§ 15120-15132) does not require that a Draft EIR include a Mitigation Monitoring and Reporting Program (MMRP). Specifically, CEQA Guidelines Section 15126.4 ("Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects") requires that a Draft EIR describe proposed mitigation measures, but does not include mention of an MMRP. Further, CEQA Guidelines Section 15132 ("Contents of Final Environmental Impact Report") does not require the inclusion of an MMRP in a Final EIR. Rather, an MMRP is required to be prepared and adopted at the time a lead agency makes findings in preparation for approving a project (CEQA §21081.6; CEQA Guidelines §§15091(d) and 15097). The absence of an MMRP in the Draft EIR/EIS does not trigger a need to recirculate the Draft EIR/EIS (CEQA Guidelines §15088.5), nor does CEQA mandate that responsible agencies and other interested parties be given an opportunity to comment on the MMRP. Rather, CEQA Guidelines Section 15097(d) states that (at the time the MMRP is being prepared and considered for adoption), "Lead and responsible agencies should coordinate their mitigation monitoring or reporting programs where possible," but clarifies that "Generally, lead and responsible agencies for a given project will adopt separate and different monitoring or reporting programs." The Guidelines list several reasons that may occur, including that "each agency has the discretion to choose its own approach to monitoring or reporting."

The contents of an MMRP depend on what project or alternative is approved by the lead agency and which mitigation measures are being adopted by the agency to mitigate or avoid significant environmental effects. Those decisions have not yet been made and it would, therefore, be speculative to prepare an MMRP for public review at this stage. All mitigation measures that are currently proposed and that would, at the time of preparing findings, be incorporated into an MMRP if relevant to the project or alternative being selected were included in full in the Draft EIR/EIS and are included, as revised, in the Final EIR/EIS as required by CEQA and NEPA. Nothing in this comment letter or the associated responses triggers a need for recirculation per CEQA Guidelines Section 15088.5. Furthermore, the Draft EIR/EIS was itself a revised, updated and enhanced version of the Draft EIR that was published by the California Public Utilities Commission for the MPWSP in April 2015. The environmental review for the MPWSP has entailed a lengthy process with multiple opportunities for public review and comment.

The comment states generally that many of the EIR/EIS mitigation measures lack sufficient detail to establish feasibility and methods of implementation. This comment lacks specificity needed to enable a substantive response; however, the Lead Agencies have carefully crafted the mitigation measures to be clear, comprehensive, feasible and to include performance standards for implementation.

Marina-2 The project objectives listed in EIR/EIS Section 1.3.1 were developed by the Lead Agencies; further discussion of the water needs associated with vacant legal lots of record, water supplies to pay back the Seaside Basin, and conveyance capacity is provided in EIR/EIS Section 2.3.3.3, Section 2.4.2, and Section 6.3.5.2. See also Master Response 13, Demand (Project Need) and Growth, specifically, Section 8.2.13.2. Objective and need statements provided by CalAm are included in Appendix H of its March 14, 2016 Amended Application, which is referenced in Chapter 2 as CalAm, 2016a.

Marina-3 See Master Response 13, Demand (Project Need) and Growth, regarding the estimate of existing annual demand and other service area demands proposed to be served by project water and CalAm's other supply sources. Two of the factors that have resulted in the decline in water use in recent years have been the "Great Recession" and the recent five-year drought, as discussed further in Master Response 13 and in EIR/EIS Section 2.3.

The meaning of the phrase "even after anticipated litigations and restrictions" is not clear. A purpose of the project is to replace Carmel River and Seaside Groundwater Basin water that CalAm had historically used because its use of those sources was reduced – not eliminated – by State Water Board and Superior Court decisions. This background is discussed in EIR/EIS Section 2.2. CalAm's other supply sources are discussed in Section 2.4 and in Master Response 13, Section 8.2.13.3.

As stated in the first paragraph of Chapter 2, the chapter describes the water demand, supply information and assumptions included in CalAm's application, and provides supplemental information about factors affecting water supply and demand and in the CalAm service area. The information on supplies and demands (Sections 2.1 through 2.5) is essentially descriptive and augments the Project Description. Section 6.3, Growth Inducing Impacts, analyzes the demand CalAm anticipates and proposes to meet, to ensure that the growth inducing impact of the project is adequately disclosed and analyzed. The analyses presented in Chapters 4 through 6 evaluate the impacts of the project proposed to meet the demand, and the amount of water proposed to be pumped, treated, and delivered to the CalAm service area (immediately or via the ASR system). If it turns out that less water is needed, it is anticipated that CalAm would operate the desalination plant at a lower level, and impacts related to pumping and treatment would be somewhat less than presented in the EIR/EIS analysis. See also the discussion under "Water Available for Growth" in Master Response 13.

Marina-4 The EIR/EIS discussion of demand for and supply of water did not form the basis for the CEQA project objectives or the NEPA project purpose and need statement. The project objectives are set forth in full in EIR/EIS Section 1.3.1. As indicated there, the primary purpose of the proposed project is "to replace existing water supplies that have been constrained by legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources." The list of project objectives includes nine primary objectives and two secondary objectives. Of those, only three contain set levels of water that the project seeks to satisfy, but these are not based on supply and demand. They are based upon the need for CalAm to meet clear legal requirements:

1. Replace existing Carmel River diversions in excess of CalAm's legal entitlement of 3,376 afy, in accordance with SWRCB Orders 95-10 and 2009-0060;
2. Reduce pumping from the Seaside Groundwater Basin from approximately 4,000 to 1,474 afy, consistent with the adjudication of the groundwater basin, with natural yield, and with the improvement of groundwater quality, and;
3. Pay back the Seaside Groundwater Basin by approximately 700 afy over 25 years as required of CalAm by the Seaside Groundwater Basin Watermaster.

None of these numeric goals is based upon demand assumptions. Master Response 13, Demand (Project Need) and Growth, discusses a variety of ways to view current and future supply and demand, and project alternatives that could be pursued under differing scenarios. See also EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights, concerning water rights issues, and EIR/EIS Section 4.4, Groundwater Resources, with respect to water supply and water quality impacts.

Marina-5 The commenter is correct that a water supply project needs to identify that it can obtain water from an identified source. However, so long as it is clear where the source water will come from (as is the case here), the subject of the rights to the source water is one of project feasibility because, without rights to the source water, the project would not be viable. See EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights, for details on this topic.

The cases cited by the commenter arose in different contexts and did not involve water supply projects. The issue in both *Santa Clarita Org. for Planning the Env't v. City of Los Angeles*, 106 Cal, App, 4th 715 (2003) and *Save Our Peninsula Comm. V. Monterey Cty. Bd. Of Supervisors,* 87 Cal. App. 4th 99 (2001) was whether there would be enough water to serve a housing development project, with the concern that if such water were not physically available, the homes would be built and occupied and there would be insufficient water for those homes and for the remainder of the community. The case of *Cadiz Land Co. v. Rail Cycle, L.P.*, 83 Cal. App. 4th 74 (2000) involved an EIR for a landfill project, with the concern being accurate baseline characterization of the aquifer over which the landfill would lie in order to fairly ascertain the risk posed by a landfill to a groundwater source. EIR/EIS Section 4.4, Groundwater Resources, describes the potentially affected aquifers in detail and examines possible impacts to them, including risks of exacerbating contamination. None of the cases cited in the comment involve water rights issues.

See Master Response 6, The Sustainable Groundwater Management Act, for discussion of the applicability and effect of this law on the project. See Master Response 8, Project Source Water and Seawater Intrusion, concerning project effects within the groundwater basin. With respect to Marina being a minority community, see EIR/EIS Section 4.20, Socioeconomics and Environmental Justice, where this is acknowledged and environmental effects are addressed accordingly.

Marina-6 See Master Response 3, Water Rights. Note that the cited SWRCB Report (EIR/EIS Appendix B2) does not discuss cumulative effects, but EIR/EIS Section 4.4.6 contains an analysis of cumulative effects on groundwater resources. See also Master Response 4, The Agency Act and Return Water; Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin; Master Response 11, CalAm Test Slant Well, and; Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-7 The project's consistency with SGMA (concluding that the project would not result in the undesirable results addressed by SGMA) is addressed in Master Response 6, The Sustainable Groundwater Management Act, and in Section 4.4, Groundwater Resources. Water rights are addressed in Master Response 3, Water Rights. The commenter notes that Water Code section 10720.5 "bars the use of groundwater extraction after January 1, 2015 in high-priority basins (like the SVGB) to establish prescriptive water rights." While this is correct, the proposed project would not rely upon prescriptive water rights, but rather would expect to use appropriative water rights pursuant to California common law. Water Code section 10720.5(b) provides "Nothing in [SGMA], or in any groundwater management plan adopted pursuant to [SGMA], determines or alters surface water rights or groundwater rights under common law. . . ." It thus does not appear that SGMA would impair the ability of CalAm to possess water rights for the project under common law appropriative rights. Marina-8 See Master Response 3, Water Rights, and Master Response 4, The Agency Act and Return Water. The EIR/EIS analyzes inconsistencies with applicable plans and policies within each topical section in Chapter 4. The Agency Act's statements of its general purposes do not constitute legal requirements, but set forth the underlying policies behind the requirements, which are themselves analyzed in the EIR/EIS. Furthermore, the topic of project effects on seawater intrusion is explored in EIR/EIS Section 4.4, Groundwater Resources, and in Master Response 8, Project Source Water and Seawater Intrusion, concluding that the project would not adversely impact, and may retard, the inland migration of seawater.

As to Ordinance 3709, whereby the County precludes the establishment of new wells within the 180-Foot Aquifer, the EIR/EIS has been updated in Sections 2.6.3 and 4.4, Groundwater Resources, to reflect the fact that the CEMEX property where project slant wells would be located does not lie within the area subject to the Ordinance. Thus, feasibility and operations of the proposed project would not be affected by Ordinance 3709.

Marina-9 See Master Response 3, Water Rights, Section 8.2.3.8, Effect of Annexation Agreement. Also see Master Response 4, The Agency Act and Return Water, and Master Response 8, Project Source Water and Seawater Intrusion. Changes have been made to Section 2.6, Water Rights, in response to this comment.

Marina-10 The project description in EIR/EIS Chapter 3 provides factual information about the proposed project location in text and figures. The wells are described in EIR/EIS Section 3.2.1.1 as being located in the City of Marina. EIR/EIS Table 3-1 explains that each slant well would extend beneath the coastal dunes, sandy beach, and the surf zone, terminating seaward of the Mean High Water (MHW) line within MBNMS, except #10 which would not extend past the MHW line.[1] The EIR/EIS also explains that each well would be screened for approximately 400-800 linear feet at depths corresponding to both the Dune Sands Aquifer and the underlying 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin. However, in response to comments about the characterization of the source water in the Draft EIR/EIS, the EIR/EIS has been revised to include in Section 3.1.1.1, definitions of the components of source water that are used throughout the EIR/EIS and the EIR/EIS text has been revised accordingly for clarification. For example, Table 3-1 now explains the wells would draw ~~sea~~water from groundwater aquifers that extend beneath the ocean floor…for use as source water.

Furthermore, EIR/EIS Figure 3-3a presents an accurate, to-scale, geo-referenced plan view of the location of the proposed wells within the City of Marina relative to the MHW line, and Figure 3-3b (there is no Table 3-3b) is labeled "illustrative." While the EIR/EIS acknowledges the wells would be located in the groundwater aquifers and explains that the source water would be primarily seawater drawn through those aquifers, it does not represent that the groundwater aquifers

1 Numbering in Figure 3-3a has been revised; this is now labeled Slant Well #10.

underlying the City of Marina contain ocean water. See also Master Response 2, Source Water Component and Definitions, for further explanation, and Master Response 8, Project Source Water and Seawater Intrusion. The legal references in the comment for definitions of groundwater are consistent with the geographic, locational definition of groundwater that is provided in Master Response 2. However, such groundwater may comprise seawater, brackish water, or fresh water, as those terms are defined by their chemical constituency in Master Response 2. These more specific definitions focus on the usability/functionality of the water and are more pertinent to the key analyses within the EIR/EIS of whether the project would adversely alter groundwater quality or adversely impact groundwater users (see Section 4.4, Groundwater Resources) and whether the project would cause harm to legal water users within the SVGB (see Section 2.6, Water Rights, and Master Response 3, Water Rights). For instance, it is only by considering the chemical constituency of water drawn into the project capture zone and water otherwise within the SVGB that the EIR/EIS could conclude that the project may help retard the rate of seawater intrusion within the area.

Marina-11 Text in EIR/EIS Section 3.2.1.1 has been revised as follows to reflect the evolving technology of slant wells:

> When compared to vertical wells, slant wells are a new and evolving technology that allows for a substantially increased screen length in the target water source, resulting in higher production rates than vertical wells.

The Huntington Beach Independent Scientific Technical Advisory Panel (HB ISTAP) *Phase 1 Final Report* noted -- not concluded -- that based on the experience at Dana Point, "the long term performance of the [slant well] technology has yet to be confirmed." See Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, where this document is cited as HB ISTAP, 2014.

The March 2016 Santa Barbara Subsurface Desalination Intake Feasibility Study Technical Memorandum No. 1 cited by the comment (Carollo, 2016) does not have a page 3-19, nor does it contain the presented quotes. However, the 2017 Final Feasibility Study (Carollo, 2017) does contain the presented quotes, the full context of which follows: "At present, no full-scale desalination plants exist that employ slant wells for source seawater collection. As discussed previously, the slant wells have been tested for over six years at the Dana Point test site and are currently being evaluated at a test site near Monterey, CA. The overall experience with Dana Point was positive, but results indicated the system did not collect only seawater but instead a mix of seawater and fresh water from the alluvial aquifer in the vicinity of the intake location." (Carollo, 2017, p. 3-19)

See Master Response 11, Section 8.2.11.8 for further discussion of this study and the Dana Point Test Slant Well. Furthermore, the construction of the Dana Point slant well did not take an unusually long time; the drilling of the slant well borehole was initiated on February 4, 2006 and the well casing reached final depth on February 25, 2006 (USBR, 2009). Additionally, as discussed in Master Response 4, The Agency Act and Return Water, and Master Response 8, Project Source Water and Seawater Intrusion, the indication that the Dana Point test system collected both seawater and aquifer water is consistent with expectations for and analyses of the proposed intake system for the MPWSP. See also Master Response 2, Source Water Components and Definitions.

The alternatives analysis in EIR/EIS Section 5.3 evaluated 13 separate intake options, including alternative subsurface well locations, alternative subsurface well technology, and open water intake facilities and locations. The comparative evaluation is presented in Table 5.3-4 and conclusions of that evaluation are included in Section 5.3.6.

Nothing presented in this response meets the CEQA threshold for recirculation as defined in CEQA Guidelines Section 15088.5.

Marina-12 The test slant well is an existing project that underwent separate CEQA and NEPA review, described in Master Response 11, CalAm Test Slant Well, Sections 8.2.11.2 and 8.2.11.3. As such, its installation and ongoing operation were evaluated in this EIR/EIS as a cumulative project and is identified as project No. 47 in EIR/EIS Table 4.1-2. It is not part of the proposed MPWSP and thus extensive details of its construction and implementation are not appropriate for inclusion in Chapter 3, Description of the Proposed Project. For clarification, the estimated construction schedule shown for the test slant well in that table has been revised as follows:

> "April 2015 Construction completed, pilot program currently underway."

The test slant well data was employed to assess the 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) performance, and results presented in EIR/EIS Appendix E2, Section 4.2 indicate that, "There is generally good agreement between the model-calculated and measured timing of drawdown and recovery" of the test slant well data. The results of the test well pumping are presented in a technical memo prepared by the HWG; see Final EIR/EIS Appendix E3.

Marina-13 The "acceptable level" was described in Draft EIR/EIS Section 3.2.2.5 on page 3-27: "The brine storage and disposal system would consist of … a brine aeration system to maintain dissolved oxygen concentrations in the brine at 5 mg/L." As described in EIR/EIS Section 4.3.1.3, Surface Water Quality, ambient dissolved oxygen levels in Monterey Bay at a depth of approximately 100 feet have ranged from 4.25 mg/L to 8.00 mg/L, and explains that dissolved oxygen in the range of 5 to 8 mg/L is considered protective of fish and marine biota depending on the species and life-stage.

Marina-14 See Draft EIR/EIS page at 4.17-3: "Active sand mining operations no longer occur in the southern portion of the CEMEX property, and this area is retired and under reclamation." See also Master Response 14, CEMEX Settlement Agreement, for an updated discussion of the status of the CEMEX site.

Marina-15 The text in Table 3-1 and Section 3.2.1.1 has been revised as follows:

> The wellheads (surface components) for the ten slant wells would be located at six sites ~~along the back~~ inland ~~side~~ of the dunes face.

This change does not affect any analyses or conclusions of the EIR/EIS.

Marina-16 See Final EIR/EIS Section 1.5.3; Terminal Reservoir is no longer part of the proposed project, and has been removed from the project description and impact analyses.

Marina-17 The graded road at CEMEX shown on EIR/EIS Figure 3-3a would provide access to the slant well sites for maintenance activities and it would be accessed from the source water pipeline easement. CEMEX uses a graded access from the existing access road to the retired mining area that CalAm would use to access the wells. See Master Response 14, CEMEX Settlement Agreement, Section 8.2.14.2. EIR/EIS Section 3.4.1 explains that maintenance activities would disturb roughly 6-acres every 5 years. Since mining no longer occurs in this area (see response to Marina-14), there would be no conflict with mining operations. Potential long-term impacts on the 6 acres of dune complex from operations and maintenance activities at the slant wells were described in the Draft EIR/EIS starting on page 4.6-234, at page 4.6-244, and again at page 4.6-247 and some of these temporary acres of disturbance are conservatively considered to be permanent acres, because of the frequency of disturbance. Therefore, the potential impact from having to grade the road more frequently has been addressed and mitigation identified.

Marina-18 The text in EIR/EIS Section 3.2.1.2 has been revised to reference "well sites" instead of "well clusters."

The Source Water Pipeline Optional Alignment has been evaluated throughout the EIR/EIS in each Chapter 4 resource section. This analysis was included within the Draft EIR/EIS, so no changes are needed. The Project Area Boundary on Figures 3-4 and 3-5a has been revised to include this component.

Marina-19 Public tours of the desalination plant are not part of the proposed project. The 20-foot by 20-foot Overlook Tour Stop shown on EIR/EIS Figure 3-5b would include benches and landscaping and would accommodate desalination plant employee use, as well as occasional private tours for individuals or small groups of regulators, researchers, etc.

Marina-20 The temporary storage described in Section 3.2.2.5 is not intended to address longer-term brine storage in the event that outfall repairs may be needed. As described in Section 4.13, Public Services and Utilities (see Draft EIR/EIS page 4.13-24), "…the brine stream, when combined with instantaneous peak flows of wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant, could exceed the capacity of the outfall and diffuser during large storm events. Based on previous studies prepared by Trussell Technologies…six hours of storage capacity would provide more than adequate storage during periods of peak effluent flow (Trussell Technologies, 2012). The 3-million-gallon brine storage basin described in Section 3.2.2.5 has sufficient capacity to detain flows from approximately 6 hours of desalination plant operations." Therefore, Section 3.2.2.5 has been revised to reflect 6, not 5, hours of storage time.

Section 3.4.1 describes operation of the desalination plant in the event of a shutdown, and such operational conditions are analyzed as appropriate throughout the EIR/EIS.

Marina-21 The last paragraph of Section 3.2.2.5 explains that the "ports are approximately 6 inches above the ballast rock and nominally 54 inches above the seafloor, although this varies." See Draft EIR/EIS Section 4.3, Surface Water Hydrology and Water Quality, at page 4.3-68; also Appendix D1, Section 3, Outfall Hydraulics, and Figure 6, where the outfall and dilution assumptions are further described.

The brine discharge modeling and analysis included several conservative assumptions, such as the height of the ports above the seafloor. The modeling results indicate that at 48 inches above the seafloor, the densest brine plume evaluated would contact the seafloor well within regulatory limits. If the ports were in fact at 54 inches above the seafloor, the additional height would allow for increased dilution before the plume makes contact. The impact summary and conclusion in Draft EIR/EIS Section 4.3.5.2 starting on page 4.3-85 includes a discussion of the conservative approach taken to the analysis. No new information is being provided in response to this comment; there is no cause for recirculation of the Draft EIR/EIS. See also response to comments from MRWPCA in Section 8.5.9.

Marina-22 Figure 3-6 is correct and matches the text in EIR/EIS Section 3.2.3.3. The New Desalinated Pipeline is described in Section 3.2.3.3 as running parallel to Lapis Road until it meets Del Monte Boulevard, at which point it would be built under the Monterey Peninsula Recreational Trail and Transportation Agency for Monterey County (TAMC) right-of-way.

The new Desalinated Water Pipeline was evaluated in the Draft EIR/EIS consistent with the description in Section 3.2.3.3. To be consistent with the text, the Project Area Boundary on Figures 3-4 and 3-5a has been revised to include this component. No further change to the EIR/EIS is required.

Marina-23 The EIR/EIS identifies seven paved parking lots and one sandy area that are proposed as construction staging areas in Table 3-4 and describes them in Section 3.3.1.2. All resource sections evaluate the staging areas as appropriate. Figures 3-6 through 3-8 have been revised to reflect a more accurate footprint for the trenchless pipeline ingress/egress locations; however, the EIR/EIS analysis for the use of these sites accurately addresses their size and location. There are no trenchless construction ingress/egress pits proposed within the area covered by Figure 3-9, and this figure has not been revised in response to this comment.

Marina-24 The engineering constraints mentioned in the discussion of the Pipeline to CSIP Pond in Section 3.2.3.8 are associated with the proposed Castroville Pipeline connection to CSIP, not the Castroville Pipeline. The issue is related to where in the CSIP system the return water is introduced: in the middle of the system as proposed with the Castroville Pipeline or at the head of the system via the Pipeline to CSIP Pond. The EIR/EIS provides coverage for both pipeline options in each topical section of Chapter 4. For example, see the tables in each section that present the regional and local land use plans, policies, and regulations pertaining to each applicable resource that were adopted for the purpose of avoiding or mitigating an environmental effect.

Marina-25 EIR/EIS Table 3-1 and the text in Section 3.2.1.1 explain that the five new well sites (i.e., those accommodating the nine new slant wells) would each include a 5,250- to 6,025-square-foot concrete pad for the aboveground facilities. Details of these pads are shown as an inset on Figure 3-3a. However, as a result of CalAm's comments on the Draft EIR/EIS (see Section 8.6.3), only the 18-foot by 11-foot (approximately 200 square feet) electrical enclosure would be on a concrete pad, eliminating approximately 25,000 square feet of impervious surfaces from the proposed project. Therefore, the table, the text and the figure in Section 3.2.1.1 have been revised accordingly in the Final EIR/EIS. Section 3.3.2.1 explains that construction activities at CEMEX would temporarily disturb approximately 9 acres of land within the project area boundary shown in Figure 3-3a, and Section 3.4.1 explains that slant well maintenance would disturb roughly 6 acres every 5 years. Potential impacts on the 9 acres of dune complex from the slant well construction were accurately described in the Draft EIR/EIS starting on page 4.6-124, at page 4.6-186, and again at page 4.6-209.

Aboveground facilities, including the wellheads, are described in EIR/EIS Section 3.2.1.1, and again in Section 3.3.2.1. Potential impacts on the 6 acres of dune complex resulting from operations and maintenance activities at the slant well sites are described starting on Draft EIR/EIS page 4.6-234, at page 4.6-244, and again at page 4.6-247.

Marina-26 The slant wells would be drilled into the Dune Sands, the Older Dunes Sands and the Terrace Deposits, all of which are composed of sand and some gravels, and described in the Draft EIR/EIS on page 4.2-8. The sand and gravel from the drilling would be spread within the 9-acre construction area. See also response to comment Marina-73 and -89.

Marina-27 See Final EIR/EIS Section 1.5.3. The Terminal Reservoir is no longer a component of the proposed project.

Marina-28 The text in EIR/EIS Section 3.3.9 has been revised; the word "active" has been replaced with "retired."

Marina-29 Water Rights Permit 20808C limits the injection period of Carmel River supplies to December through May. Desalinated water does not have the same limitation. See EIR/EIS Section 3.4.2.

Marina-30 See response to comment MCWD-79 in Section 8.5.2.

Marina-31 The text in EIR/EIS Section 3.4.1 has been revised as follows:

> "All disturbance would occur on the ~~back~~ inland side of the dune~~s~~ face . . ."

Marina-32 EIR/EIS Section 3.4.2 describes the operation of the ASR system. Because the Terminal Reservoir is no longer a component of the MPWSP, the text in Section 3.4.2 has been revised accordingly. See EIR/EIS Section 4.4 for a description of the northern subbasin.

As described in EIR/EIS Section 3.2.4.1, the two proposed new wells, ASR-5 and ASR-6, would operate in conjunction with the existing Phase 1 and Phase II ASR wells (ASR-1 and ASR-2, and ASR-3 and ASR-4), which are described in EIR/EIS Section 2.4.3. With implementation of the MPWSP, any of the six ASR injection/extraction wells could be used to inject desalinated product water and Carmel River supplies.

Marina-33 The large use of energy is analyzed in EIR/EIS Section 4.18. The analysis assumed all electrical power needed for the project would be provided by the local PG&E power grid. As described on Draft EIR/EIS page 4.18-17, PG&E has indicated that it has adequate capacity and infrastructure to support the proposed project (PG&E, 2016c). An option for CalAm to use methane gas as an alternative energy source is described in Section 4.18.4.3 for information purposes and is discussed in Section 4.11.5 as a renewable energy option. Section 4.11.5 also presents the secondary impacts of the proposed mitigation measure.

Marina-34 See Master Response 10, Environmental Baseline under CEQA and NEPA. Regarding reference to requirements to analyze the No Project alternative, the No Project/No Action alternative was analyzed in compliance with both CEQA and NEPA (see EIR/EIS Section 5.5).

Marina-35 The cited statement in EIR/EIS Section 4.1.5 provides an incomplete summary of the requirements in 40 CFR §1502.16(c) and 40 CFR §1508.27(b)(10), which the Draft EIR/EIS cites as the basis for the NEPA evaluation of potential inconsistencies. The statement has been revised to read:

> Also, per NEPA, the analysis includes a discussion of the possible conflicts between the proposed project and ~~the objectives of~~ federal, regional, state, and local land use <u>laws, requirements, policies, and/or</u> plans for the area concerned that are imposed for the protection of the environment (40 CFR §1502.16(c) and 40 CFR §1508.27(b)(10)).

This revision accurately represents 40 CFR §1508.27(b)(10), and is consistent with the language in 40 CFR §1506.2(d), cited in the comment. Responses to City of Marina comments about specific instances of alleged inconsistency with federal, regional, state, and local laws, requirements, plans, and policies are provided below, where enough specificity is provided by the comment to allow a substantive response.

Marina-36 The EIR/EIS did not fail to analyze the MPWSP's potential to accelerate or exacerbate coastal erosion and dune retreat. Section 4.2.1.3, Geologic Hazards, discusses erosion in general, and then provides a specific discussion of sea level rise and coastal erosion, including the four existing mechanisms that combine to affect coastal retreat in Monterey Bay: long-term erosion, sea level rise, storm events, and rip embayments. Section 4.2.4.5, Coastal Retreat Study, discusses the results of the site-specific studies conducted to quantify the anticipated level of sea level rise and the resulting coastal erosion that would occur from 2012 through 2073.

Because of the anticipated rate of coastal retreat, the originally-proposed locations of the slant wells were relocated further inland specifically to avoid being exposed and thus accelerating or exacerbating erosion. In addition to the usual CEQA Guidelines Appendix G significance criteria, EIR/EIS Section 4.2.5, Direct and Indirect Effects of the Proposed Project, added the following additional significance criterion to specifically address the issue of coastal retreat: Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment. The Draft EIR/EIS concluded on page 4.2-70 that, "If exposed, the subsurface slant well could contribute to accelerated and/or exacerbated natural rates of coastal erosion, scour, and dune retreat that could alter the natural coastal environment." The potential for erosion to occur as a result of any other proposed project component is discussed in Section 4.2.5 and was determined to be less than significant.

To ensure that the slant wells would not accelerate or exacerbate coastal erosion and dune retreat, Mitigation Measure 4.2-10, Slant Well Abandonment Plan, requires CalAm to monitor the rate of coastal retreat, and to remove the slant wells at risk of exposure in accordance with state well destruction standards, prior to their exposure. The implementation of this mitigation measure would ensure that the risk of exposure is eliminated, and the slant wells therefore would not accelerate or exacerbate coastal erosion and dune retreat. No revisions were made in response to this comment, but Mitigation Measure 4.2-10 was revised as a result of response to comment Surfrider-5.

Marina-37 As discussed in EIR/EIS Section 3.4.1, the source water supply system is designed to have 8 of the 10 slant wells operational at any given time, with 2 slant wells out of service for routine maintenance or on stand-by. Therefore, the project could operate with one well out of service. If CalAm needs to replace a slant well after abandonment, it will need to apply for a Coastal Development Permit to do so, with associated environmental review under NEPA and CEQA, as warranted.

The slant well abandonment procedures are discussed in Mitigation Measure 4.2-10, Slant Well Abandonment Plan. The slant wells would be removed in accordance with state well destruction standards, and prior to their exposure. The slant well casing would be pressure grouted such that the screened section is sealed. The sections of well casing and pipelines at risk of exposure would be cut and removed to a depth of five feet below the 2060, 100-year lower profile envelope as determined by the 2014 Coastal Erosion Study cited in Impact 4.2-10 or as directed by any permit condition. The installation of replacement wells is not part of this MPWSP, and since the closure of sand mining operations at CEMEX (see Master Response 14, CEMEX Settlement Agreement), the rate of erosion at the slant wells will be less than projected in the EIR/EIS. It is therefore unlikely that the slant wells will need to be replaced because of coastal erosion, but if and when they do need to be replaced, that would be a separate project subject to NEPA/CEQA review and new discretionary approvals.

Marina-38 EIR/EIS Section 4.3.2.2 provides a description of the California Coastal Act, including reference to the relevant Public Resources Code Section, and summary of the specific policies and requirements of the Act relevant to and sufficient for the assessment of impacts from the proposed project related to surface water hydrology and water quality. Additional discussion of the Act is provided in other resource chapter regulatory setting sections as relevant to those topics. See for example EIR/EIS Section 4.5.2.2, where a detailed description of the California Coastal Act, policies, and requirements is provided in the context of marine biological resources.

To provide more specificity to the description of the California Coastal Act, the description of the Act provided in EIR/EIS Section 4.3.2 has been revised as follows:

> The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California's coastal

> zone boundary. The Coastal Act includes specific policies for management of natural resources and public access within the coastal zone. Of primary relevance to surface water hydrology and water quality are Coastal Act policies concerning protection of the biological productivity and quality of coastal waters. For example, Article 4 of the Act details policies related to the marine environment, such as biological productivity and water quality. Specifically, and relevant to surface water hydrology and water quality, the Act requires the quality of coastal waters, streams, wetlands, estuaries appropriate to maintain optimum populations of marine organisms and for the protection of human health be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges, controlling runoff, and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams (Cal. Pub. Res. Code §§ 30231).

A preliminary assessment of project consistency with these priorities is provided in the EIR/EIS. Final determinations regarding project consistency are necessarily reserved for the Coastal Commission. Operational discharges of the MPWSP under certain scenarios may exceed Ocean Plan water quality objective thresholds. Exceedances of these thresholds would be potentially inconsistent with Coastal Act policies. This issue is discussed further in Impact 4.3-5.

The evaluation criteria described in EIR/EIS Section 4.3.3 are appropriate and adequate for assessing the potential impacts related to surface water hydrology and water quality from implementation of the MPWSP. These evaluation criteria comprehensively apply and consider the applicable regulations discussed in the regulatory setting section (EIR/EIS Section 4.3.2). As detailed in EIR/EIS Section 4.3.4, Approach to Analysis, the evaluation and disclosure of environmental impacts determines if, and to what degree, the MPWSP would change the existing hydrology and water quality conditions (described in Section 4.3.1) based on the evaluation criteria (presented in Section 4.3.3) and whether it would comply with the relevant regulatory requirements, which are comprehensively described in Section 4.3.2.

Marina-39 The EIR/EIS assesses and discloses the potential environmental impacts of the MPWSP as described in Chapter 3. As described in EIR/EIS Section 3.2.2.5, the project proposes to discharge brine from the reverse osmosis process via the existing MRWPCA ocean outfall, comingling the brine with secondary treated wastewater when available. The potential for the proposed project to impact water quality or to violate water quality standards or waste discharge requirements is comprehensively evaluated in EIR/EIS Section 4.3.5.

As discussed under Impacts 4.3-4 and 4.3-5, the proposed project would not exceed or violate the Ocean Plan numeric water quality standards or degrade water quality in terms of salinity and other constituents for which data is available. Because water quality data is unavailable for a limited number of constituents for which the Ocean Plan defines a numeric water quality objective, the EIR/EIS conservatively concludes that the MPWSP could result in exceedances of Ocean Plan objectives, resulting in a significant impact related to water quality standards, waste discharge requirements and water quality of receiving waters in Monterey Bay. Such impacts would be reduced to a less-than-significant level by implementing Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives), which ensures that discharges would not occur if they would not conform to the Ocean Plan water quality objectives.

Mitigation Measure 4.3-5 specifies implementation of additional design features, engineering solutions (including but not limited to inclined diffusers), and/or operational measures to be implemented to reduce the concentration of water quality constituents in the operational discharges and/or to increase dilution at the outfall diffuser such that they conform with Ocean Plan water quality objectives.

EIR/EIS Appendix D1 provides detailed descriptions of the various model analyses conducted to assess potential water quality impacts for operational discharges that utilize the MRWPCA outfall diffuser. The model analyses described in Appendix D1, and discussed in detail as part of the impact analyses presented in Chapters 4 and 5 of the EIR/EIS relevant to surface water hydrology, water quality, and marine biological resources, assess operational discharges associated with the proposed project as well as Alternative 1, Alternative 2, and Alternatives 5a and 5b, which all propose use of the existing MRWPCA outfall diffuser. Modeling analyses at a comparable level of detail, described in EIR/EIS Section 5.5.3.6, was conducted for Alternative 3 (Monterey Bay Regional Water Project or Deep Water Desal), which proposes a new brine discharge structure that would discharge a higher volume of brine than the proposed MPWSP. As described in EIR/EIS Section 5.5.3.7, Alternative 4 (People's Moss Landing Desalination Project or People's Project) proposes to discharge brine through a rehabilitated existing outfall. As discussed in Section 5.5.3.7, the design of the Alternative 4 outfall diffuser is not yet advanced enough to conduct detailed model analyses comparable to the other alternatives. However, an impact analysis for Alternative 4 consistent with the requirements of CEQA and NEPA was conducted using the information available at the time of preparing the Draft EIR/EIS. Further, a detailed comparison of proposed alternatives was provided to facilitate public understanding of the impacts related to operational discharges (as well as other impacts) for all alternatives (see EIR/EIS Table 5.3-5).

Marina-40 The Draft EIR/EIS is not required to include a MMRP (see response to comment Marina-1) and Mitigation Measure 4.3-4 does not defer mitigation nor does it lack performance standards. Response to comment Marina-41 addresses issues of deferral related to updating water quality and marine biological resource data required by Mitigation Measure 4.3-4. The performance standards of Mitigation

Measure 4.3-4 are described as those outlined in Appendix III of the *Water Quality Control Plan – Ocean Waters of California*, also known as the Ocean Plan, prepared by the State Water Resources Control Board (SWRCB, 2016). The primary performance standard within this mitigation measure is clearly described as "compliance of operational discharges with the Ocean Plan receiving water salinity limitation, which specifies discharges shall not exceed a daily maximum of 2 parts per thousand (ppt) above natural background salinity, as measured no further than 100 meters (328 ft) horizontally from the discharge point" (see Draft EIR/EIS page 4.3-90). Response to comment Marina-42 further addresses performance standards. Response to comment Marina-1 addresses the requirements for preparing and circulating an MMRP.

Marina-41 Surveys conducted as part of Mitigation Measure 4.3-4 do not constitute deferral under CEQA of either a characterization of baseline conditions or the analysis of potential impacts from implementation of the proposed project or alternatives. A comprehensive and detailed characterization of baseline conditions relevant to the project area and adequate for assessing the potential environmental impacts of the proposed project and alternatives consistent with the requirements of CEQA and NEPA is presented in EIR/EIS Chapters 4 and 5. Specifically, baseline conditions in the marine environment of Monterey Bay relevant to the discharge of brine at the MRWPCA outfall diffuser are presented in Sections 4.3.1 and 4.5.1 for water quality and marine biological resources, respectively. As described in Sections 4.3.1 and 4.3.5, detailed and project-specific water quality and biological surveys were conducted and the results of these surveys are presented along with relevant information from a comprehensive literature review. A detailed analysis of the potential impacts of implementing the proposed project and alternatives on water resources and marine biological resources is presented in Sections 4.3.5, 4.5.5, and Chapter 5.

As described in EIR/EIS Sections 4.3.1 and 4.5.1, conditions relevant to water quality and marine biological resources, especially benthic community diversity and abundance, are dynamic over time and may be influenced by factors unrelated to the proposed project, such as other regional projects or long-term water quality trends. For this reason, existing baseline conditions related to water quality and marine biological resources have been characterized within the context of typical observed ranges and regional trends (such as species presence and abundance, seasonal ocean conditions, habitat conditions, and long-term water quality trends). Within that context, a detailed and comprehensive assessment of impacts to receiving ocean water quality from operational discharges and associated impacts to marine biological organisms is presented in EIR/EIS Sections 4.3 and 4.5 of the Draft EIR/EIS. Section 4.3.1 and Appendix D presents detailed baseline water quality information specific to Monterey Bay, including site specific water quality data for the area immediately surrounding the MRWPCA outfall diffuser, sufficient for assessing the potential impacts from implementation of the MPWSP. Under Impact 4.3-5, baseline water quality data is utilized to conservatively assess impacts from a wide range of water quality constituents present in operational discharges (see Table 4.3-15 for a comprehensive list of constituents assessed). As described in Section 4.3.5, because implementation of the project may not occur for several years, Mitigation Measure 4.3-4 would, in part, ensure that adequate water quality and marine biological resources data are gathered at least one year prior to construction of the project to confirm conditions at the time of construction. Due to the dynamic nature of water quality and marine biological resource conditions, it is appropriate and scientifically defensible to confirm and/or re-establish ambient conditions, especially benthic community diversity and abundance, in the vicinity of the outfall diffuser in order to assess potentially adverse deviations from long-term trends in community diversity and abundance that may occur from implementation of operational discharges.

Marina-42 The conditions under which the RWQCB and MBNMS may, following detailed assessment, authorize CalAm to terminate the long-term monitoring of salinity compliance at the outfall diffuser required under Mitigation Measure 4.3-4 are defined and described in EIR/EIS Section 4.3.5. Specifically, Mitigation Measure 4.3-4 states, in part, that "[I]f at the end of five complete years of monitoring operational discharges, the 24-hour average salinity measured at the edge of the BMZ is less than 75 percent of the salinity performance standard for 45 days without interruption under all discharge scenarios representative of typical operations (i.e., irrigation season and non-irrigation season operations), and with approval by the RWQCB and MBNMS, the discharger(s) may terminate the monitoring and reporting specified as part of this mitigation measure (but not terminate monitoring and reporting required as part of compliance with NPDES permit conditions or Ocean Plan monitoring and reporting requirements for discharges into California ocean waters)."

Therefore, CalAm could not be authorized to terminate such monitoring unless at some point after five years of monitoring and assessment have occurred (i.e., a minimum of five years of monitoring must be completed), the salinity standard required under Mitigation Measure 4.3-4 is met for a continuous 45-day period for all discharge scenarios that occur under standard operations. If the terms described above are not met, the monitoring required as part of Mitigation Measure 4.3-4 will not cease. However, additional mitigation would not be required as the clearly defined standard for salinity under Mitigation 4.3-4 has conservatively been set at 75 percent of the salinity performance standard required in the California Ocean Plan. Failure to meet the conservative 75 percent threshold defined in Mitigation Measure 4.3-4 would not represent an exceedance of the Ocean Plan salinity requirement and would not, as discussed in Sections 4.3.5 and 4.5.5, result in additional impacts not previously disclosed in the EIR/EIS for discharges associated with desalination facilities.

Marina-43 As described in EIR/EIS Section 5.5.3.7, as for operational discharges associated with the proposed project and other alternatives, operational discharges from

Alternative 4 could locally increase salinity levels and could potentially exceed Ocean Plan water quality objectives, resulting in violation of water quality standards, waste discharge requirements and/or the degradation of water quality in Monterey Bay. Implementation of Mitigation Measures 4.3-4 and 4.3-5 would reduce water quality impacts to receiving ocean waters from desalination facility operational discharges to less than significant for Alternatives 1, 2, 3, 5a and 5b. It is acknowledged and disclosed in Section 5.5.3.7 that application of measures substantially consistent with Mitigation Measures 4.3-4 and 4.3-5 would reduce impacts to a less-than-significant level for Alternative 4. However, while the applicant for Alternative 4 may agree to comply with such measures or provide model analyses to demonstrate compliance with Ocean Plan objectives, the proposed "two new 16-inch-diameter diffuser ports" are not multi-port as preferred by the Ocean Plan. The effectiveness of the Alternative 4 diffuser design is currently unknown and, therefore, feasible mitigation and the effectiveness of that mitigation cannot be fully assessed at this time, without additional information related to facility design, operational protocols, and diffuser dynamics. Until such information is developed by the applicant (such as for analysis under CEQA and NEPA when Alternative 4 facility and operations are more fully developed) and shared with the Lead Agencies, it is logical to assume that Alternative 4 would result in an increased impact related to operational discharges and water quality for other Ocean Plan constituents compared to the proposed project and that such impacts would be significant and unavoidable.

Marina-44 Resolution No. 88-63 adopted by the SWRCB on May 19, 1988, and amended on February 1, 2006, provides that surface waters and groundwater that are considered to be suitable or potentially suitable for municipal or domestic water supply (MUN) should be so designated by regional boards in their water quality plans.

The Resolution presumes that surface water and groundwater are suitable for MUN designation except where:

a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or

b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or

c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

Resolution No. 88-63 at page 2. This standard was incorporated into the Water Quality Control Plan for the Central Coast Basin (latest edition, March 2016, see page 2-1 of the Basin Plan) for all groundwater resources. The Salinas River Groundwater Basin (a sub-basin of the Central Coast Basin, see Basin Plan

Figure 2-2), a groundwater resource within the Central Coastal Basin, is designated as suitable for MUN, agricultural water supply, and industrial use. See Basin Plan at page 2-1.

The Basin Plan and the beneficial use of groundwater resources, including the MUN designation, were discussed in the Draft EIR/EIS on page 4.4-35, such that it was not necessary to cite to the Resolution that informed the Basin Plan. The EIR/EIS provides in pertinent part:

> The Basin Plan for the Central Coast, originally adopted in 1971 and last amended in 2011, identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Central Coast of California. The listed beneficial uses for groundwater resources are:
>
> - Agricultural water supply (AGR)
> - Municipal and domestic water supply (MUN)
> - Industrial use (IND)
>
> . . . The RWQCB has established water quality objectives for selected groundwater resources; these objectives serve as a basis for evaluating water quality management in the basin. Specific water quality objectives have been defined for the 180-Foot Aquifer and 400-Foot Aquifer for the SVGB.

The Basin Plan's Total Dissolved Solids (TDS) water quality objective for the 180-Foot Aquifer is 1,500 mg/L TDS, and the water quality objective for the 400-Foot Aquifer is 400 mg/L TDS. The Basin Plan acknowledges that groundwater in the Salinas River Sub-basin has average TDS concentrations that range from 300 mg/L to over 3,000 mg/L. Basin Plan at page 3-12. The analysis conducted for the EIR/EIS also demonstrates that the groundwater within the capture zone for the project (where the water is projected to be derived) exceeds the 3,000 mg/L TDS requirement for MUN designation; see EIR/EIS Section 4.4, Groundwater Resources, and Master Response 8, Project Source Water and Seawater Intrusion. Therefore, groundwater that could be withdrawn from the 180-Foot Aquifer by project supply wells does not currently meet the Basin Plan objective of 1,500 mg/L TDS, nor would it be considered suitable for MUN designation under Resolution No. 88-63.

That alone, however, does not de-designate the MUN designation of the Salinas River Groundwater Basin, but it is instructive given that such groundwater is not considered suitable for municipal or domestic water supply. The Basin Plan states that if groundwater is beyond the levels or limits established as water quality objectives, controllable conditions shall not cause further degradation of water quality. (Basin Plan at page 3-1.) As demonstrated in EIR/EIS Section 4.4, Groundwater Resources, and Master Response 8, Project Source Water and Seawater Intrusion, the project would not cause further degradation of the water quality in the sub-basin. Therefore, the project does not conflict with and is consistent with the Basin Plan.

Marina-45 See Master Response 2, Source Water Components and Definitions, for definitions of brackish water, seawater, source water, and fresh water. EIR/EIS Section 4.4, Groundwater Resources, has been updated to be consistent with these terms. Brackish water is defined in EIR/EIS Sections 3.1.1.1 and 4.4.1.4 as water that is a combination of seawater and fresh water, and thus contains TDS levels between 500 mg/L and 33,500 mg/L.

The text in EIR/EIS Section 4.4.5.2 states that groundwater in the inland area of influence of the proposed MWSP slant wells is brackish with elevated TDS attributable to seawater intrusion; the groundwater in the Dune Sand, 180-FTE and 400-Foot Aquifer is, therefore, unsuitable for potable supply. That is a true statement based on the understanding that groundwater within the capture zone of the slant wells far exceeds 3,000 mg/L TDS and there are currently no groundwater extraction wells in that area. See Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 and 8.2.8.2, for a description of water quality conditions in the slant well capture zone. See Master Response 3, Water Rights and response to comment Marina-44 for further clarification on the use of the term brackish water. The commenter indicates that it is a discrepancy to state that the groundwater in the project capture zone is unsuitable for potable supply when such water would be part of the project source water. However, the point of such text in the EIR/EIS is that the water in its existing form is not suitable for potable supply and could only become suitable through desalination, as proposed by the project.

EIR/EIS Figures 4.4-10 and 4.4-11 are the 2015 seawater intrusion maps that are produced annually by Monterey County Water Resources Agency; they are used in the EIR/EIS to illustrate the extent of seawater intrusion in the Salinas Valley Groundwater Basin, inland from the coast. This is considered the best available information showing the inland advance of the seawater intrusion front. Hydrostratigraphic and water chemistry data obtained from the CalAm test slant well and groundwater monitoring wells provide adequate information to characterize the hydrogeologic conditions in the region that would be affected by the slant wells. See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.3, for information on the applicability and use of ERT/AEM in the EIR/EIS. The MPWSP would extract highly brackish to saline water for use as desalination feedwater from a coastal adjacent capture zone in the Dune Sand and 180-FTE Aquifers without negatively impacting the water supplies in the Salinas Valley Groundwater Basin. Refer Master Response 3, Water Rights, Section 8.2.3.5 regarding CalAm's right to extract water from this source.

Marina-46 Refer to Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1 through and 8.2.8.4 for additional clarity on the slant well feedwater source. See Master Response 4, Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2, for detailed information on the proposed project's compliance with the Agency Act and return water requirements, and Section 8.2.4.3, which presents the results of the Hydrogeologic Working Group (HWG) evaluation of return water estimates. The HWG concluded that the anticipated actual annual volume of return water could be 10 percent in the first few months of project pumping (approximately 2,700 afy), but would be no more than 5 percent (approximately 1,350 afy) within 5 years of project pumping. See EIR/EIS Appendix E3. The 0 to 12 percent range used in the EIR/EIS and the NMGWM^{2016} is consistent with these conclusions, and no edits to the analysis relevant to return water presented in the Draft EIR/EIS are necessary. See also response to Marina-44; groundwater that could be withdrawn from the 180-Foot Aquifer by project supply wells does not currently meet the Basin Plan objective, nor would it be considered suitable for MUN designation under Resolution No. 88-63 adopted by the SWRCB on May 19, 1988, and amended on February 1, 2006.

Marina-47 EIR/EIS Sections 2.6.3 and 4.4.2.3 describe the MCWRA Agency Act and Ordinance 3709; Section 2.6.4 presents the effect of the Annexation Agreement on the proposed project. Master Response 2, Section 8.2.4.1 also addresses compliance with the Agency Act and Ordinance 3709. Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 through and 8.2.8.4 provide additional context to understand the relationship between the projected slant well capture zone at the coast, which is a highly brackish to saline environment, and the projected area of influence of the slant pumping, which has more variable ranges of seawater intrusion.

Marina-48 Refer to Master Response 3, Water Rights, Section 8.2.3.5, for additional clarity of water rights and use of the seawater intruded groundwater. The EIR/EIS does not state that the water in the Dunes Sand, 180-Foot Aquifer and 400-Foot Aquifer *cannot* be extracted for domestic, agricultural, or industrial uses. Further, the EIR/EIS bases its conclusion of the existing extent of seawater intrusion in these aquifers on data publicly available from the MCWRA. The EIR/EIS correctly states in Section 4.4.5.2 that current groundwater production in those aquifers is limited to minor irrigation and dust control and that there are no water supply wells pumping potable water. Most of the wells in this area are no longer active because of seawater intrusion.

Marina-49 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Marina-50 See Master Response 6, Sustainable Groundwater Management Act, Section 8.2.6.3, for a discussion of consistency of the proposed project with SGMA. A summary of the analyses to address each undesirable result identified in SGMA has been added to Final EIR/EIS Section 4.4 in Impacts 4.4-3 (groundwater supplies and recharge) and 4.4-4 (groundwater quality). The scientific information presented in EIR/EIS Appendix E2 indicates that the proposed project would not contribute to additional seawater intrusion or significantly lower groundwater levels. Figures 5.3 and 5.4 show drawdown contours due to slant well pumping at the CEMEX site. The contour maps show the area where project pumping is expected to lower groundwater levels by 1 foot or more relative to groundwater levels in the absence of the project. Slant well pumping effects on the continued inland movement of saltwater due to background pumping were also assessed using the $NMGWM^{2016}$ and MODPATH. Results show that slant well pumping would slow future saltwater intrusion in the southern portion of the 180-Foot/FTE Aquifer; slant well pumping would have little to no effect on the continuation of saltwater intrusion in the 400-Foot Aquifer.

Marina-51 See response to comment Marina-50.

Marina-52 See response to comment Marina-50.

Marina-53 The EIR/EIS states that the proposed project would extract groundwater that is highly brackish to saline from a capture zone along the coast at CEMEX where no other groundwater users are currently pumping groundwater from the Dunes Sand Aquifer or the 180-Foot Aquifer. The source of the slant well feedwater and the capture zone from where the feedwater originates is described in detail in Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1 through and 8.2.8.4. The amount of return water is based on the ocean water percentage (OWP), which is the amount of seawater that contributes to the source water supply. In other words, the return water amount would be all source water that is not classified as ocean water but rather is characterized as groundwater, as explained in Master Response 2, Source Water Components and Definitions. The OWP is projected to increase with time as seawater replaces the highly brackish ambient groundwater in the coastal Terrace Deposits. See Master Response 4, Agency Act and Return Water, Section 8.2.4.3 for clarity regarding the OWP and calculation of return water. See also EIR/EIS Appendix E3.

Marina-54 See Master Response 12, The North Marina Groundwater Model (v. 2016). The $NMGWM^{2016}$ is a MODFLOW model, which is a widely utilized groundwater modeling program accepted by the hydrologic community. It has been extensively tested and verified, making it state-of-the-art. The $NMGWM^{2016}$ is a complex three dimensional flow model comprising 8 layers, and each layer has one or more zones that represent the distribution of aquifers and aquitards (see Table 2.1 in Appendix E2). The $NMGWM^{2016}$ was employed in superposition mode to isolate the calculated water level decline (drawdown) in response to proposed project pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information. Specifically, the model was primarily employed to estimate the cone-of-depression, which was defined as the area where the difference between model-calculated pumping and non-pumping water levels is greater than or equal to one foot. The $NMGWM^{2016}$ was not employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The specified pumping stress and modeled aquifer properties have a much larger effect on the model-calculated drawdown than variations in water quality and density. The specified pumping rates, return water volumes, projected sea level, aquifer parameter values, and the relative contributions of multiple aquifers to total slant well production have a greater influence on the extent of model-calculated drawdown than a contrast in groundwater density, and the effects of these factors on the uncertainty in the model-calculated cone of depression was rigorously tested and conservatively quantified for the NMGWM^{2016}.

Marina-55 EIR/EIS section 4.4.3 lists the thresholds of significance (referred to in this document as Evaluation Criteria) that are consistent with the questions set forth in Appendix G of the CEQA Guidelines. The two criteria listed pertain to groundwater supply and water quality and are published in Appendix G under the impact questions for Hydrology and Water Quality. As lead agencies frequently do, the EIR/EIS adapted these questions as significance criteria for the analysis of impacts in the Groundwater Resources section. Due to the complexity of the project, the criteria were expanded into several descriptions that were intended to elaborate on the CEQA Appendix G questions and clarify the significance thresholds for the reader. The phrase “net deficit in aquifer volume,” precise language taken directly from Appendix G of the CEQA Guidelines, describes the potential for the project to interfere with recharge and draw down the aquifer (thus experiencing a net deficit in aquifer volume) to a point that it could cause harm to the well yields and wells of other users. This is an appropriate application of the CEQA Guidelines in developing a significance threshold.

The project impacts on the aquifer volume were adequately analyzed under Impact 4.4-3 in EIR/EIS, Section 4.4.5.2. The impact analysis evaluated whether the project would deplete supplies in the aquifer and appropriately concluded that the project would continue to extract only brackish, degraded groundwater from the coast and to a lesser extent from the inland portion of the aquifer, but would not deplete the supply in the aquifer to the extent that other groundwater users would be impacted. The analysis also evaluated the project’s impact on water levels in local wells and determined that some wells would experience drawdown of 1 to 5 feet, but that such degree of drawdown would not reduce well yield or cause physical damage to the wells.

Master Response 8, Project Source Water and Seawater Intrusion, provides additional clarity regarding the hydrogeologic and water quality effects of the proposed project pumping. The information in Master Response 2, Source Water Components and Definitions, provides supplemental technical information but does not change the conclusion in the EIR/EIS. The return water component was also evaluated and it was determined that, under certain circumstances, water levels in the 400-Foot aquifer would increase due to in-lieu recharge; see EIR/EIS Section 4.4.5.2.

Marina-56 Given the location of the slant wells and characteristics of the groundwater capture zone, which is further discussed in Master Response 8, Project Source Water and

Seawater Intrusion, and the results of the NMGWM[2016] groundwater modeling, the EIR/EIS, Section 4.4.5.2, Impact 4.4 concluded that: 1) localized change in groundwater quality that could occur as a result of slant well pumping is not expected to violate water quality standards or interrupt or eliminate the potable or irrigation groundwater supply available to other basin users, and 2) MPWSP pumping would be expected to retard future inland migration of the seawater intrusion front and provide a benefit for the basin. The EIR/EIS did not, as the comments states, "condense this water quality degradation inquiry into a narrow analysis of whether the extractions will move the 'seawater/freshwater interface' in the 180/400 Foot Aquifers." Rather, the water quality analysis presented in EIR/EIS Section 4.4.5.2, Impact 4.4-4: 1) considered potential water quality impacts to groundwater users in the slant well pumping area of influence; 2) evaluated the project's effects on SVGB seawater intrusion; 3) assessed water quality impacts associated with groundwater remediation systems; and 4) analyzed water quality impacts of the ASR wells. The EIR/EIS adequately addressed the potential groundwater quality impact associated with the MPWSP on current legal users; to opine on impacts to future legal users would be speculative and is not the focus of or required by CEQA and NEPA.

Marina-57 See Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.3 and response to comment Marina-55. EIR/EIS Section 4.4.5 evaluates the short- and long-term impacts of the proposed project on current legal users; to opine on impacts to future legal users would be speculative and is not the focus of or required by CEQA and NEPA.

Marina-58 For SGMA related issues, see Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.3. Information on the 900-Foot Aquifer is provided in Master Response 7, Deep Aquifers of the Salinas Valley Groundwater Basin. See response to comment Marina-56 for additional information on the water quality analysis. Contrary to the claims in the comment, EIR/EIS Section 4.4.5.2, Impact 4.4 provides a complete analysis of the potential water quality effects that could impact or harm other groundwater users, otherwise degrade groundwater resources, and exacerbate seawater intrusion. Supplemental discussion of the hydrogeological characteristics, graphic representation of the slant well capture zone, and supplemental discussion of water quality impacts are provided in Master Response 8, Project Source Water and Seawater Intrusion.

The coastal location of the slant wells, the inland gradient, and the capture zone created during slant well pumping would confine water quality changes to the capture zone. The water quality impacts at the slant wells would be localized at the capture zone and thus limited in areal extent. There are no groundwater users with active wells within the capture zone. Groundwater storage would not be substantially reduced because most of the water removed by the pumping slant wells would be recharged with seawater. Under steady state conditions, the slant wells would begin to capture seawater that would have otherwise flowed inland and contributed to seawater intrusion, resulting in a beneficial but localized water quality effect. For this reason, the EIR/EIS concluded that the slant wells would not harm other groundwater users. The analysis employed particle tracking to assess changes to the MCWRA-defined seawater intrusion front. Results of the groundwater modeling indicate that slant well pumping would retard the migration of saltwater into the southern portion of 180-Foot Aquifer that would have otherwise contributed to the advancement of the seawater intrusion front; slant well pumping would have little to no effect on future saltwater intrusion in the 400-Foot Aquifer.

Marina-59 The "900-Foot Aquifer" is discussed in Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin. The EIR/EIS has been revised to incorporate additional environmental setting information (see Section 4.4.1.2) and pertinent impact analysis regarding the deep aquifers (see Section 4.4.5.2). See also response to comment Marina-JJ&A-2. The additional information does not change the impact conclusions in the Draft EIR/EIS.

Marina-60 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), for a complete discussion of the relevance of ERT and AEM to the EIR/EIS analysis. The preliminary results of the 2017 ERT/AEM survey presented a distribution of groundwater chemistry that is generally consistent with the findings of the hydrogeologic investigation conducted for the EIR/EIS and is generally consistent with the salinity mapping for the 180-Foot and 400-Foot Aquifers published by the MCWRA. The Stanford study also provides data to help interpolate between control points provided by the MPWSP monitoring network and confirms the work completed for the hydrogeologic investigation regarding the distribution of water quality in the MPWSP study area. While the ERT/AEM data is useful, it does not offer new information that would cause a change in the EIR/EIS conclusions regarding the proposed project's impacts on groundwater resources. See also response to comment Marina-61 and Marina-JJ&A-1 through -4.

Consistent with evidence in the EIR/EIS, the 400-Foot Aquifer in the project area is confined, and the 180/400-Foot Aquitard, although shown as inferred within dashed lines on EIR/EIS Figure 4.4.3, is most certainly present and restricts vertical flow from the 180-FTE aquifer above it. The EIR/EIS groundwater modeling (EIR/EIS Appendix E2) did in fact consider, model and evaluate potential effects to the 900-Foot Aquifer (Model Layer 8) from pumping of the proposed slant wells. See EIR/EIS Appendix E2, Figures 5.3a, 5.3b, 5.4a, and 5.4b and Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, Section 8.2.7.2. The modeling indicates that pumping of the MPWSP would not affect the 900-Foot Aquifer.

Marina-61 The $NMGWM^{2016}$ does analyze the effects of slant well pumping on the Deep Aquifer (Model Layer 8), and results indicate the drawdown would be less than 1 foot everywhere within the model domain. See Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin.

The NMGWM^{2016} was employed to calculate the water level decline and cone of depression, which is defined as the area where the differences between pumping and non-pumping water levels (the drawdown) would be greater than or equal to 1 foot. The model was also utilized to provide insight into the change in groundwater-flow directions in response to pumping. Particle-tracking methods were employed to show areas from which seawater recharge is extracted by the wells (the capture zone), and the retardation of existing saltwater intrusion.

The geophysical study prepared by Professor Knight provides a 2-D cross sectional resistivity map that also relied on modeling and inversion codes to visually plot the field collected data. Electro Resistivity Tomography (ERT) captures a static image – a point in time – and relies on actual conditions provided by monitoring well data for calibration. As outlined in Lucius et al., 2007, geophysical resistivity techniques are limited in that supplemental geologic information (such as borehole data or well logs) is needed to interpret the differences in resistivity observed within lithologic units. Additional limitations include the spacing of arrays required and avoiding potential sources of noise, such as pipelines or buried utility cables. Indeed, Professor Knight's work reports on the substantial vertical noise introduced into the ERT salinity cross-section by a pipe (Watsonville Wastewater ocean outfall pipe), which without knowledge of the interference could be inferred as indicating vertical saltwater flow (Goebel et al., 2017). Therefore, the ERT data will not necessarily produce greater certainty for a 3-D model because of the uncertainty in the ERT methodology; it is spatially limited because results presented to date represent a 2-D plane within the 3-D groundwater-flow system; it represents a single point in time rather than the time-series simulated by the model, and; it requires ground-truthing using much of the same data that is used by the groundwater model (well data) (Goebel et al., 2017). See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.2.

The model is not "too simplified" to fully evaluate potential effects. Substantial care was exercised to incorporate the available lithologic and hydraulic conductivity data. Also, a range of parameter values was used to determine the uncertainty in model output and thus a range of values for drawdown. For example, (see EIR/EIS Appendix E2, Table 2-1), Model Layer 2 represents the shallow water-bearing sediments referred to as Dune Sand Aquifer, A-Aquifer, Perched Aquifer, Perched 'A' Aquifer, 35-Foot Aquifer, and -2 Foot Aquifer. Similarly, Model Layer 4 represents the 180-Foot Aquifer, 180-Foot Equivalent (FTE) Aquifer, Upper and Lower 180-Foot Aquifer, and Pressure 180-Foot Aquifer. The geographic and hydrogeologic characteristics of these water bearing units are not equivalent, and they are represented in the NMGWM^{2016} by different zones, and each zone is assigned a unique value for its water transmitting and storage property values. The NMGWM^{2016} is a MODFLOW model developed by the USGS, and is a widely utilized groundwater modeling program that is accepted by the hydrologic community. It has been extensively tested and verified, making it state-of-the-art. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information as well as response to comment Marina-JJ&A-4. Consistent with evidence in the EIR/EIS, the 400-Foot Aquifer in the project area is confined and the 180/400-Foot Aquitard restricts vertical flow from the 180-FTE aquifer above it.

Marina-62 The inland movement of groundwater is driven by regional inland recharge and pumping patterns. Locally-focused efforts implemented near the coast by MCWRA and others to reduce groundwater pumping cannot reverse the effect of these regional gradients. To place this concept in perspective, locally-focused efforts would have to provide sufficient recharge to mitigate the inland pumping responsible for historical overdraft and seawater intrusion.

The slant wells would access subsurface water at and west of the shoreline, and rising sea levels are expected to increase the movement of seawater toward the wells. Seawater intrusion was first mentioned for the Salinas Valley in the early 1930s (see EIR/EIS Section 4.4.1.3), and even prior to that and before intense inland pumping for agriculture (for example, the 1920s), there was almost certainly a salt water wedge that dipped landward such as is described in Todd.[2] It is therefore unlikely that "most and possibly all of the water pumped by the slant wells would be groundwater from the Basin rather than seawater" because even if the seawater intrusion in the SVGB is reversed, the slant wells would draw in seawater because the brackish groundwater at CEMEX would be recharged from the ocean. See Master Response 8, Project Source Water and Seawater Intrusion.

Additionally, the water transmitting properties of aquifer materials near the coast are insufficient to supply the majority of the water extracted by slant wells. For example, the modeled horizontal conductivities of the inland A-Aquifer (2-4 feet/day) are one- to two-orders of magnitude smaller than the modeled Dune Sand Aquifer tapped by the slant wells (150-625 feet/day). Clearly, the water supplied to the slant wells that would originate as inland recharge to Model Layer 2 would necessarily be less than the water derived from the Dune Sand Aquifer at the coast and beneath the ocean. The combination of this hydraulic conductivity contrast and ample recharge available from the ocean make it implausible for the inland gradients to reverse and "strand" the project.

Marina-63 The National Marine Sanctuaries Act (NMSA; 16 USC §§1431-1445c) does not specifically list discharge of brine effluent as a prohibited activity in marine sanctuaries (16 USC §1436). Each sanctuary has unique regulatory prohibitions codified within a separate subpart of Title 15, Code of Federal Regulations, Part 922. The regulations implementing the NMSA in MBNMS (15 CFR 922, Subpart M) prohibit discharging or depositing from within or into the Sanctuary any material or other matter, except as otherwise specified in the section, and prohibit discharging or depositing from beyond the boundary of the Sanctuary any material or other matter that subsequently enters the Sanctuary and injures a

2 Todd, David Keith, 1976, Groundwater Hydrology, John Wiley and Sons

Sanctuary resource or quality, except as otherwise specified in the section. 15 CFR 922.132(a)(2)(i and iii). However, under NMSA regulations at 15 CFR 922.49, a person may conduct an otherwise prohibited activity in a Sanctuary if specifically authorized by a valid permit that is subsequently authorized by the Sanctuary. Regarding authorizations in MBNMS, 15 CFR 922.132(e) provides, "The prohibitions in paragraphs (a)(2) through (a)(8) of this section … do not apply to any activity authorized by any lease, permit, license, approval, or other authorization issued after the effective date of Sanctuary designation (January 1, 1993) and issued by any Federal, State, or local authority of competent jurisdiction, provided that the applicant complies with 15 CFR 922.49 … ."The term "authorization" in this context, and the specific authorizations MBNMS is considering relevant to the proposed project, are described in EIR/EIS Section 1.3.2.1. Additionally, the Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary (cited as MBNMS, 2010 in EIR/EIS Section 6.4) provide that all desalination plants should be designed to minimize impacts from brine discharge, and that the project proponent should evaluate the short and long-term impacts of discharge on marine organisms. EIR/EIS Section 6.4 contains a detailed discussion of the consistency of the MPWSP with the Guidelines. Finally, EIR/EIS Section 4.5.2.1 describes the NMSA provisions and MBNMS regulations that are relevant to the construction and operation of desalination plants, including restrictions on discharging material or other matter into the sanctuary and restrictions on activities that alter the submerged lands (aka seabed) as a result of the installation of desalination facility structures on or beneath the ocean floor (e.g. an intake or outfall pipeline).

With respect to their applicability to marine biological resources, other laws, regulations, policies, and guidance mentioned in the comment are discussed in the EIR/EIS as follows: the Magnuson-Stevens Fishery Conservation and Management Act, MBNMS Desalination Guidelines, Marine Mammal Protection Act, and Federal Endangered Species Act are discussed in Section 4.5.2.1. The California Endangered Species Act, Marine Life Protection Act, Marine Life Management Act, and California Ocean Plan are discussed in Section 4.5.2.2. Consistency with these and other components of the marine biological resources regulatory framework is discussed throughout Section 4.5.

Marina-64 The project study area for Marine Biological Resources is described in the first paragraph of EIR/EIS Section 4.5: "The marine biological resources study area encompasses the nearshore waters (within 5 miles from shore) of Monterey Bay and extends from the Salinas River southward to the northern limits of Sand City." It was established by delineating a region of the coastal marine environment that was several orders of magnitude greater than an area of potential impact resulting from the proposed project, consistent with CEQA Guidelines Section 21060.5. This paragraph in EIR/EIS Section 4.5 goes on to explain, "This area encompasses the ocean waters adjacent to the proposed subsurface slant wells site at the CEMEX sand mining facility and surrounding the Monterey Regional Water Pollution

Control Agency's (MRWPCA) existing ocean outfall…" There is no need or justification for the study area to extend further north, or south since the project has no potential to generate impacts at such distance. While the study area extends outward from the shoreline for five miles, the EIR/EIS demonstrates that project effects would be confined to a much smaller range.

Marina-65 Baseline conditions relevant to marine biological resources, especially benthic community diversity and abundance, are dynamic over time and may be influenced by factors unrelated to the proposed project, such as other regional projects or long-term water quality trends. For this reason, existing baseline conditions have been characterized within the context of typical observed ranges and regional trends (such as species presence and abundance, seasonal ocean conditions, habitat conditions, and long-term water quality trends). See response to comment Marina-41.

There are abundant scientific articles, reports and studies of the marine biological communities and habitats present in MBNMS to characterize the project study area. In fact, more than 130 scientific studies and reports are cited in Section 4.5, Marine Biological Resources, to support the impact assessments. Additionally, the assessment of project activities assumed that a specific marine taxa or species is present unless clearly known and documented not to be present in the project study area.

The EIR/EIS dismisses the presence of cold water seeps in the second page of EIR/EIS Section 4.5, since water depths in the project study area are less than 500 feet, and cold water seeps are located at depths greater than 3,000 feet.

As described in EIR/EIS Section 4.3.5, Mitigation Measure 4.3-4 would ensure that adequate marine biological resource data are gathered at least one year prior to construction of the project to confirm conditions at that time, and that the discharge would continue to meet Ocean Plan water quality objectives that are protective of marine biological resources.

The purpose of the plankton sampling was not to establish an environmental baseline. Because potential effects of shear stress associated with the brine discharge are related to organism size, with smaller organisms being most affected, the sampling was conducted to determine, at a single point in time, the relative proportions of organisms of different sizes. The plankton data were incorporated into the description of baseline conditions because they contribute to the available data gathered for this purpose. Nevertheless, in order to avoid further confusion, the text on page 4.5-6 has been revised, as follows:

> Small zooplankton was sampled near the MRWPCA outfall in the spring of 2016, to ~~characterize~~ provide an example of the assemblages that could be affected by the proposed discharge of desalination brine (AMS, 2016).

Moreover, the determination that impacts due to shear stress are less than significant was based on the small volume of pelagic habitat that would be affected by shear stress from the brine discharge and the very small percentage of organisms in the size range that would potentially be affected. Even if the plankton sampling included much larger organisms, as suggested by the commenter, this would cause the percentage of organisms affected to decrease even further.

EIR/EIS Section 4.5.1 establishes that the existing MRWPCA outfall is associated with rocky habitat in the form of ballast rock that supports a rich hard-substrate assemblage and that the majority of the seafloor habitat surrounding the outfall is soft substrate with associated infaunal and megafaunal species. EIR/EIS Figure 4.5-2 clearly indicates, to scale and with an arrow, the hard substrate habitat at the "MRWPCA Outfall (Existing)" and the text, as indicated above, indicates that the outfall consists of artificial hard substrate habitat and references the figure to illustrate the extensive areas within Monterey Bay that contain hard substrate habitat. Additionally, experienced marine biologists who routinely conduct diver and submersible assessments of hard and soft substrate habitats and assemblages reviewed the video footage (referenced in the EIR/EIS as Ballard, 2014) of the MRWPCA outfall inspection as part of the EIR/EIS preparation and provided the information on species composition of sessile and motile marine species inhabiting the ballast rock along the outfall, thereby negating the need to conduct additional field investigation to gather already available information. Furthermore, the potential impact analysis of project activities considered the species that make up both soft and hard substrate communities inhabiting the Monterey Bay near shore region.

Marina-66 EIR/EIS Table 4.5-2 lists all of the State and Federal special status species known and documented to have any potential to be present within MBNMS. The basis for determining their potential occurrence within the study area is provided for each species within the table notes as well as within the table itself, and is based on multiple scientific sources, all of which are listed in EIR/EIS Table 4.5-2. Merely because a specific marine species is known to occur within MBNMS, it is not necessarily present in the Study Area. MBNMS stretches between Rocky Point, located north of the Golden Gate to Cambria in San Luis Obispo County and 30 miles offshore, encompassing approximately a quarter of the California coast; the project study area encompasses less than 0.1 percent of MBNMS. Consequently, individual species may occur within MBNMS but not within the project study area. Employing scientifically established and documented natural life history and behaviors of an individual species, including geographic occurrence, is an acceptable and well-established methodology for determining the potential presence of an individual species to be present in a given location along the California coast. NOAA, CDFW and multiple universities and research institutes already extensively monitor the marine mammal population within MBNMS.

The studies and information presented in the EIR/EIS are referenced in Table 4.5-2 and demonstrate the scientific integrity of the analysis of species distributions. For example, MBNMS, 2016b, cited in the Table, explains that the Minke whales in Monterey Bay are typically observed inshore of 100 nautical miles and on occasion have been observed within 1.9 nautical miles (2.1 statute miles) of shore. They are normally observed as single individuals and not in groups. Typically, Minke whales are observed near and over natural hard bottom habitat where they typically feed on juvenile rockfish, which does not occur within the project study area. Although both resident and migrating Minke whales occur offshore in California, the only apparent sightings of resident Minke whales in Monterey Bay have been dozens of miles south of the project area along the Big Sur Coast. Sightings of Minke whales in Northern Monterey Bay by whale watching boats out of Santa Cruz occur less than 10 percent of the time, indicating limited presence in Northern Monterey Bay where the Project area is located. For all of these reasons, the determination that the likelihood of occurrence of a Minke whale in the project study area was assessed at Low to Moderate. Additional studies were not required for this EIR/EIS assessment. No changes have been made to the potential for any of the special status species listed in EIR/EIS Table 4.5-2 to occur within the study area.

Furthermore, any special status species with any potential to occur within the study area was included in the impact assessment, even if a specific species of fish, marine mammal, or reptile is identified as only having a low or moderate potential for occurrence in the Project Study Area, or not specifically cited in the text. The commenter correctly identified an inconsistency between Table 4.5-2 and the text on Draft EIR/EIS page 4.5-23; the text is in error and has been revised as follows:

> Chinook salmon, depending on the run, is State en<u>d</u>angered or threatened, federally endangered or threatened and has a <u>low to</u> moderate ~~to high~~ potential to occur in the study area.

Finally, the commenter expressed concern about the EIR/EIS consideration of the white shark and tidewater goby in the impact assessment. Both species are presented in the EIR/EIS Table 4.5-2. The tidewater goby only occurs in Elkhorn Slough, Bennett Slough and the Salinas River, all of which are outside the designated project study area. Hence, its potential for occurrence in the context of the proposed project analysis alone would have been “not present.” However, because the cumulative impact analysis included the DeepWater Desalination Project, which has elements within Moss Landing and the Elkhorn Slough, its potential for occurrence was increased to Low. As indicated above, all species with the potential to occur within the project study area were considered in the impact analysis, or in the cumulative analysis as applicable.

Marina-67 The commenter’s assertion that the discharge of brine “will cause significant adverse impacts on the environment” is not consistent with the results of the extensive discharge modeling and analysis that is presented in EIR/EIS Section 4.3and

Appendix D1, and with the implementation of Mitigation Measures 4.3-4 and 4.3-5 which are also discussed in Section 4.3. The assertion that the project "would result in the decimation of 2,010 - 5,900 square meters of market squid habitat" is not a conclusion in the EIR/EIS. Examination of the text in question (Draft EIR/EIS pages 4.5-60 and 4.5-61) reveals no use of the word "decimation," and the impact analysis was based on brine discharge modeling, which found that brine >2 ppt above ambient salinity would not contact the seafloor. The calculation of the area greater than 2 ppt above ambient levels, as explained on Draft EIR/EIS page 4.5-61, was compared to the "area of suitable spawning habitat in Monterey Bay south of Monterey Submarine Canyon, ***which is the greatest focus of commercial fishing activities associated with spawning***" (emphasis added) and was intended to provide a worst-case assessment, should the area of brine >2 ppt above ambient happen to contact the seafloor, which the modeling demonstrated it would not. As explained on Draft EIR/EIS page 4.3-81, "The area where salinity exceeds the 2 ppt threshold under the worst case scenario (brine only) around each of the 129 outfall diffuser jets is a conical area with a volume on the order of 8.5 cubic feet (approximately 8 feet long by 2 feet in diameter), located approximately 2 feet above the seafloor (Figure 4.3-10)." Consequently, the conclusion that the proposed project would not violate water quality standards and would, therefore, be consistent with the MLMA, remains valid.

EIR/EIS Section 4.5.5.2 discusses the potential effects of elevated salinity from brine discharge, the potential effects of other brine discharge contaminants, and a discussion of the potential effects of brine discharge shear stress; all marine biological species were considered in the analysis. The public and decision-makers have been provided with a meaningful analysis (see response to comment Marina-61 regarding baseline) and have not been deprived of relevant information. As the EIR/EIS states in the conclusion of Impact 4.5-4, "Impacts on marine biological resources, including MBNMS resources, during operations of the proposed MPWSP would be less than significant."

Marina-68 The EIR/EIS conclusion that "… construction and operational impacts of the Project are not expected to result in the degradation of essential fish habitat within Monterey Bay" is supported with data and analysis. EIR/EIS Tables 4.5-3 and 4.5-4 list MSA managed fish species, and their potential to occur within the project study area in various life stages. EIR/EIS Figures 4.5-3 and 4.5-4 provide illustrations of rockfish conservation areas and designated EFH areas within Monterey Bay near the project study area. Additionally, EIR/EIS Section 4.5.1.3 presents the special status marine species and specifically discusses managed fish and invertebrate species. As designated special status species (Section 4.5.1.3), all the MSA listed species were considered in assessing Impacts 4.5-1 through 4.5-6, and 4.5-C (EIR/EIS Sections 4.5.5.1, 4.5.5.2 and 4.5.6).

Marina-69 Underwater noise levels measured in San Francisco Bay were not used in the EIR/EIS analysis. The only ambient underwater noise levels used in the analysis were those from a study located offshore Fort Ord and within the project study area; the identified underwater ambient noise from these studies was on average 138 dB (see EIR/EIS Section 4.5.5.1, Impact 4.5-1).

The potential risk for discharge of drilling fluids into the marine environment was presented and evaluated in EIR/EIS Section 4.3.5.1 under Impact 4.3-2; the potential threat to marine biological resources would be negligible to non-existent because drilling fluids would consist of water, bentonite mud, and/or environmentally-inert biodegradable additives. Regardless, the use of any slant well drilling fluids would require mandatory compliance with NPDES Construction General Permit requirements that would involve the implementation of erosion and stormwater control measures so as to prevent substantial adverse effects on water quality during construction.

There was no underwater noise monitoring conducted during the test slant well drilling.

Marina-70 The EIR/EIR has been revised based on guidance from the CCC, and is based on the definition of primary habitat provided in the City of Marina's LCLUP and the definition of ESHA provided by the CCC and in other Local Coastal Plans (e.g., North County and City of Seaside). These revisions are consistent with the findings from the CCC staff report for the test slant well and assume that the entire subsurface slant well project area would be considered primary habitat by the City of Marina, and ESHA by the CCC.

Consistent with the comment, the EIR/EIS acknowledges that the project would result in impacts to primary habitat in Impacts 4.6-2 and 4.6-7. As described in these impact statements, impacts to primary habitat and ESHA would be reduced to less than significant with implementation of prescribed mitigation measures. The EIR/EIS adequately analyzes the proposed project's consistency with the City of Marina's LCLUP in Impact 4.6-4 and acknowledges, as the commenter describes, that the project would be inconsistent "with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, a significant and unavoidable impact." See also response to comment Marina-94.

The EIR/EIS does not suggest that the project's conflict with the City of Marina's LCLUP would be circumvented by relying on Section 30260 of the Coastal Act. The EIR/EIS simply states that, for the test slant well, the CCC was ultimately able to approve the project consistent with the Coastal Act by relying upon Coastal Act Section 30260, which encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned. CalAm will apply to the City of Marina for a Coastal Development Permit during the permitting process, which is separate from this CEQA/NEPA process. The City of Marina will need to decide whether or not to issue a Coastal Development Permit for this project. See EIR/EIS Section 3.5, Table 3-8. See also the response to MCWD-130 in Section 8.5.2.

Marina-71 As the commenter states, the Terrestrial Biological Resources study area includes a 50-foot buffer around the project area. The study area for the evaluation of Noise and Vibration impacts is described in EIR/EIS Section 4.12.2 as encompassing the project area and the nearest potentially affected sensitive receptors to the proposed facilities.

As stated in EIR/EIS Section 4.6.1.1, the Terrestrial Biological Resources study area was established as the anticipated area where direct and indirect impacts to sensitive biological resources may occur. The majority of the length of the project would include the installation of pipelines (approximately 6-inch to 42-inch in diameter) within a narrow linear work area. Due to the general duration, the project area, and the anticipated impacts, a 50-foot buffer of the project area was determined to provide an adequate analysis of existing conditions and to evaluate potential direct and indirect impacts on sensitive biological resources. Mitigation measures include pre-construction survey areas beyond 50 feet of the project area to ensure that indirect impacts to special-status species are avoided and/or minimized. For example, Mitigation Measure 4.6-1i requires that preconstruction "surveys shall cover all potential nesting sites within 500 feet of the project area for raptors and within 300 feet for other birds" and Mitigation Measure 4.6-1j requires a survey for American badger within 100 feet of the project area.

Marina-72 The electrical control panel and electrical control building at the slant well site at CEMEX are no longer part of the proposed project and were inadvertently mentioned in Impact 4.6-1. In response to this comment, the reference to these facilities in Impact 4.6-1 has been removed. This revision does not affect the impact analysis and conclusions, which remain relevant to the subsurface slant wells, and does not result in a need to recirculate the Draft EIR/EIS because it does not disclose a new or substantially more severe impact.

The EIR/EIS accurately describes the location of the proposed slant wells as mainly in the eastern side of the vegetated sand dunes. The majority of the wells would be located within largely unvegetated areas east of the heavily vegetated areas of the sand dunes. However, in response to this comment, the following text in Section 4.6.1.10, Sensitive Terrestrial Biological Resources in the Study Area has been clarified as follows:

> The <u>majority of the</u> remaining well clusters would be installed on the eastern side of the <u>heavily</u> vegetated <u>area of the</u> sand dunes.

Similarly, the following text in Impact 4.6-1 has been revised:

> The<u> majority of th</u>e remaining nine wells (Sites 2 through 6) would be installed on the eastern side of the <u>heavily</u> vegetated <u>area of the</u> sand dunes and constructed on concrete pads.

Although Impact 4.6-1 describes that some of the impacts of construction of the subsurface slant wells on western snowy plover and central dune scrub habitat would be temporary, such impacts are not “dismissed” because of the temporary nature of slant well construction. Rather, as indicated on Draft EIR/EIS pages 129 and 130, temporary loss of 8.0 acres and permanent loss of 1.0 acre of western snowy plover habitat, direct and/or indirect impacts on individual plovers, and several other construction-period impacts on special-status species, such as causing “temporary flight of breeding birds, nest abandonment, or nest failure,” would be significant because of potentially lasting effects on nesting behavior in a particular area. These impacts have been qualified as temporary because the direct cause of the impacts (i.e., construction activities and disturbance of habitat) would be temporary, but for the reasons described in EIR/EIS Section 4.6.4 have been determined to be significant, because of the intensity and duration of the impact, rarity and context of the species, and susceptibility of the species to disturbance (i.e., including the potential for longer-term harm to result from temporary disturbance, such as in the event of nest failure). Impact 4.6-1 has been revised to clarify that construction-period impacts described above may have lasting effects on behavior that would be significant. This impact discussion analyzes these potential impacts and includes mitigation measures that would reduce such impacts to less than significant through implementation of avoidance and minimization measures, such as directing work to be done outside of the nesting season or requiring visual separation and/or noise reduction measures.

The terrestrial biological resources section of the Draft EIR/EIS states that portions of some project facilities may overlap with portions of other project facilities. The Draft EIR/EIS was structured so that potential impacts were analyzed for each project facility. However, discrete work limits for portions of these facilities that would overlap with each other have not been defined. During construction these overlapping work areas would not be divided into work areas for each project component, but would be treated as one work area. The Draft EIR/EIS quantifies the impact area of each project facility throughout the document. For example, Impact 4.6-2 on page 4.6-192, states “Earthmoving activities associated with installation of the Castroville Pipeline could result in the temporary loss of approximately 0.004 acre of central dune scrub, 0.15 acre of northern coastal scrub, and 0.06 acre of riparian woodland and scrub.” The impact area and required mitigation for the entire project would be based on the total impact area within the entire project footprint, which would account for areas of overlap. Impacts 4.6-1, 4.6-2, 4.6-3, and Section 4.6.6, Cumulative Effects of the Proposed Project in the Final EIR/EIS have been revised to include the total acreage of sensitive biological resource habitat that would be impacted by the entire project.

Marina-73 Other than the portion that would be off-hauled (approximately 100 cubic yards), spoils returned from drilling the slant wells (approximately 1,600 cubic yards) would be composed of sand, and would form a layer less than 2 inches thick when spread within the 8-acre permanent disturbance area. Although this sand would initially contain salts, the salinity of the sand spread within the construction disturbance area would be reduced after rains wash the salts from this layer, and would not permanently impact this area. Spoils would not be placed on top of the topsoil because topsoil would be salvaged and replaced after disturbance as required by Mitigation Measure 4.6-2b. Impact 4.6-1 in Section 4.6 has been revised to include this information; however, because this impact would be less than significant, this information does not trigger a need to recirculate the Draft EIR/EIS.

Marina-74 Impact 4.6-C does not conclude that the project's contribution to cumulative impacts on western snowy plover would be less than significant for the reasons that the commenter describes. Rather, Impact 4.6-C states that while the project's contribution would be significant, the residual effects of the project on western snowy plover after mitigation would not have a significant contribution because mitigation would avoid the potential impacts or minimize them to a degree that is not cumulatively significant. In response to this comment, Impact 4.6-C has been revised in the Final EIR/EIS to clarify the effects of the mitigation measures and how residual impacts would be minimized, as well as to describe the availability of western snowy plover habitat within the Monterey Bay Area. The cumulative impact analysis does account for the permanent, ongoing disturbance impacts related to project maintenance. Further, as described in Master Response 14, CEMEX Settlement Agreement, the closure of the CEMEX plant and planned restoration of the site now offers opportunities to implement compensatory mitigation for the project within adjacent, potentially high-quality habitat areas.

Marina-75 Impacts from slant well maintenance are evaluated in EIR/EIS Section 4.6.5.2. Slant well maintenance would disturb roughly 6 acres every 5 years (see Section 3.4.1). This would include access to and maintenance of the slant wells. Slant well operational impacts, including maintenance activities, are described in Impact 4.6-6 on Draft EIR/EIS page 4.6-235 and Impact 4.6-7 on Draft EIR/EIS page 4.6-244.

Marina-76 The biological resource information described in Section 4.6, Terrestrial Biological Resources, is based on surveys conducted by ESA, Arcadis, and AECOM between 2012 and 2016; see EIR/EIS Section 4.6.1.2.

Impact 4.6-6 explains that coast buckwheat, the host plant for Smith's blue butterfly, occurs at the site and that, "maintenance activities have potential to impact up to approximately 1.6-acre of Smith's blue butterfly habitat." The 1.6-acre impact area is the area of coast buckwheat mapped during surveys conducted by ESA, Arcadis, and AECOM between 2012 and 2016 within the slant well maintenance area. This impact assessment is based on multiple surveys conducted at the site and provides an accurate assessment of impacts based on baseline conditions.

Impact 4.6-6 identifies the mitigation measures that would be implemented and describes how they would ensure that operational impacts to sensitive biological resources are reduced to a less-than-significant level for each project facility. Mitigation Measure 4.6-1n states that CalAm shall develop and submit a Habitat Mitigation and Monitoring Plan (HMMP, not a Hazardous Materials Management Plan) to the appropriate resource agencies for approval. It will be up to each of the permitting agencies (i.e., CCC, CDFW, CCRWQCB, USACE, USFWS, MBNMS, local agencies) to determine if it expects the HMMP to be revised for each maintenance cycle or if one umbrella HMMP would suffice.

Marina-77 The mitigation measures cited in the comment are adequate and appropriate. Mitigation Measure 4.6-1c includes a list of several general measures that would be implemented to avoid and minimize impacts to sensitive biological resources, including a measure to remedy erosion. As described in Mitigation Measure 4.6-1a, a qualified biologist and/or qualified biological monitor would be onsite during all fencing and ground disturbance activities and would identify erosion as they monitor these activities. Mitigation Measure 4.6-1a also includes definitions of qualified biologist and qualified biological monitors. The term “qualified biologist” or “qualified Lead Biologist” for surveys is defined as an individual who shall possess, at a minimum, a bachelor’s degree in biology, ecology, wildlife biology or closely related field and has demonstrated prior field experience using accepted resource agency techniques for the survey prescribed, and who possesses all appropriate USFWS, NMFS, and CDFW permits.

The term “biological monitor” or “qualified biological monitor” is defined as someone holding similar educational credentials to those of a qualified biologist and who has functioned as an environmental inspector or monitor on at least two construction projects within the preceding two years. This terminology is commonly employed in permits issued by the regulatory agencies; therefore, the use of it anticipates requirements that are likely to be incorporated into conditions of project approval. Erosion is a common term and a process familiar to those experienced with construction monitoring activities. A qualified biologist or qualified biological monitor has the capability to identify erosion, determine how the erosion shall be remedied, and to determine if it has been remedied.

Similarly, for Mitigation Measure 4.6-1j, a qualified biologist would conduct the preconstruction survey to determine whether the dens are inactive. As described in Mitigation Measures 4.6-1a, the qualified biologist would have the appropriate qualifications to conduct preconstruction surveys for badgers and to identify whether a den is inactive.

Regarding the use of the phrases “to the extent feasible” and “when feasible” in Mitigation Measure 4.6-2b and others, the mitigation measures include a two-tiered approach to mitigate impacts. If the first option is not feasible, then the mitigation measure provides a second option that would fully mitigate the impact. For example, Mitigation Measure 4.6-1f, Avoidance and Minimization Measures for Smith's Blue Butterfly, states, "Construction of project elements shall be planned to avoid mapped host plants for Smith's blue butterfly whenever feasible" then "If it is not feasible to avoid disturbance to host plants during project construction, the following shall be implemented…" If it would not be feasible to avoid the host plant, then CalAm would implement measures to fully mitigate the impact.

In response to this comment, the Mitigation Measures 4.6-1c, 4.6-1e, 4.6-1h, 4.6-1i, 4.6-1k, 4.6-2b, and 4.6-6 have been revised to either include or to clarify this two-tiered approach.

Marina-78 Mitigation Measure 4.6-1i requires the implementation of avoidance and minimization measures for nesting birds. This measure requires that if work is conducted during the nesting season, then preconstruction surveys would be conducted within 14 days prior to site clearing and/or ground disturbance. In the response to comments from the California Department of Fish and Wildlife (CDFW), the measure has been revised from 14 days to 10 days. See the response to CDFW-6 in Section 8.4.2 for additional information. Mitigation Measure 4.6-1i follows the guidelines requested by CDFW, the agency responsible for enforcing California Fish and Game Code policies protecting special-status bird species. The measure adequately reduces impacts on nesting birds to less than significant for the purposes of CEQA and NEPA and follows the request by CDFW.

Similarly, Mitigation Measure 4.6-1 h, which requires implementation of avoidance and minimization measures for western burrowing owl, follows the guidelines established by CDFW in its Staff Report on Burrowing Owl Mitigation (CDFG, 2012). This report is the standard guidance report prepared and approved by CDFW to mitigate impacts to western burrowing owl. The measure adequately reduces impacts to western burrowing owl to less than significant for the purposes of CEQA and NEPA because it requires implementation of measures for avoidance of take, including establishing disturbance buffers and exclusion from burrows as outlined in standard CDFW guidance, and compensatory mitigation for loss of breeding and/or wintering habitat. See the response to comment Marina-77 regarding the commenter's statement that this measure is vague and fails to guarantee any effective mitigation.

In response to this comment, Mitigation Measure 4.6-6 has been revised to change "should" to "shall."

Marina-79 The Draft EIR/EIS did quantify the amount of permanent and temporary impact on special-status species habitat and sensitive natural communities for each facility throughout Impact 4.6-1 and Impact 4.6-2. For example, on page 4.6-132 of Impact 4.6-1, the Draft EIR/EIS states, "construction of the MPWSP Desalination Plant would result in the temporary loss of 10 acres and permanent loss of 15 acres of potential California red-legged frog and California tiger salamander upland habitat." On page 4.6-189 of Impact 4.6-1, the Draft EIR/EIS states, "earthmoving activities associated with installation of the Source Water Pipeline could result in the temporary loss of approximately 6.7 acres of central dune scrub." Impacts 4.6-1, 4.6-2, and 4.6-3, and Section 4.6.6, Cumulative Effects of the Proposed Project have been revised to include the total project impact acreages. The amounts of permanent and temporary impact are reported in the Final EIR/EIS to the level of detail available at the preliminary design stage and include a reasonably conservative estimate of the extent of impacts. Further project refinements will occur, which are expected to reduce the impact area because preliminary estimates of areas impacted were intended to be conservatively large, and more detailed quantification of impact areas will be incorporated into the permitting process and implementation of mitigation measures, which provide that compensation acreage would be based on final design and construction specifications.

The commenter inaccurately states that "the HMMP is supposed to address the need for compensatory mitigation." Rather, Mitigation Measure 4.6-1n states that the HMMP would "outline measures to be implemented to, depending on the mitigation requirements, restore, improve, or re-establish special-status species habitat, sensitive natural communities, and critical habitat on the site." The HMMP itself would not address the need for compensatory mitigation. Compensatory mitigation requirements and ratios for permanent impacts on special-status species and sensitive natural communities are described in the species and sensitive natural community specific mitigation measures in Impact 4.6-1 and 4.6-2. The performance standards and monitoring duration are included in the revised special-status species and sensitive natural community-specific mitigation measures included at the end of this response. Mitigation Measure 4.6-1n states that the HMMP shall incorporate the performance standards described in the revised special-status species and sensitive natural community specific mitigation measures.

The project proponent is not required under CEQA or NEPA to already own or otherwise have rights to available mitigation lands to satisfy the requirements of proposed mitigation measures. Although proposed mitigation measures must be demonstrated to be feasible, at this time, the project or an alternative has not yet been approved, and mitigation measures for the project or an alternative have not yet been adopted or been required by any regulatory agency, that would result in the need for CalAm to acquire these lands. To confirm the feasibility of implementing measures requiring compensatory mitigation, ESA and AECOM biologists have spoken with Jacob Martin at USFWS and Kriss Neuman from Point Blue on July 20, 2017, to discuss potential lands that may be available and that would be suitable for mitigation. Representatives from CDFW were unavailable for the July 20, 2017 meeting. During that conference call, the existing CEMEX property, which will be required to end the mining operations in the near future (see Master Response 14, CEMEX Settlement Agreement), was identified as the most likely site that could be restored, enhanced, or preserved to provide appropriate compensatory mitigation for project impacts on coastal species.

Other potential specific lands identified by ESA biologists that may be available and suitable for compensatory mitigation land include Sparling Ranch Conservation Bank (for California tiger salamander and California red-legged frog) and the Monterey Regional Park District (special-status plants). CalAm would be held to any compensatory mitigation measures described in the Draft EIR/EIS and would be required to secure or acquire any necessary compensatory mitigation as a condition of project implementation.

In response to this comment, Mitigation Measures 4.6-1d, 4.6-e, 4.6-1f, 4.6-1h, 4.6-1m, 4.6-1n, 4.6-1o, 4.6-2b, and 4.6-3 have been revised to clarify mitigation ratios, methods for mitigating the impacts, and performance standards. These revised measures have been developed based on measures that are feasible, available, and typically included in CEQA/NEPA documents and in regulatory permit authorizations and that have been vetted by state and federal regulatory agencies with jurisdiction over the affected resources in the past. Therefore, no contingency measures are necessary given the evidence that the proposed measures are feasible and available and will be effective.

These revisions do not result in a need to recirculate the Draft EIR/EIS. As described in CEQA Guidelines Section 15088.5, “New information added to an EIR is not ‘significant’ unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon … a feasible way to mitigate or avoid such an effect … *that the project’s proponents have declined to implement*” (emphasis added). Revised Mitigation Measures 4.6-1d, 4.6-e, 4.6-1f, 4.6-1h, 4.6-1m, 4.6-1n, 4.6-1o, 4.6-2b, and 4.6-3 do not disclose any new or more severe impacts and are not considerably different from those analyzed in the Draft EIR/EIS because they merely clarify or amplify the requirements of the measures analyzed in the Draft EIR/EIS, and the project proponent (CalAm) has not declined to implement these measures as revised (to the contrary, the Lead Agencies would enforce these measures if and when adopted in support of approval of the project or an alternative).

Marina-80 CEQA and NEPA do not require that mitigation measures refer to specific permits. The requirement to obtain an Incidental Take Permit is not required to be listed in Mitigation Measure 4.6-1o. Mitigation Measure 4.6-1o does state that “if California red-legged frog or California tiger salamander are observed within the construction area, a qualified biologist shall relocate the individual according to the relocation plan above and only with authorization from USFWS and CDFW.” Authorization would include an Incidental Take Permit from CDFW for take of California tiger salamander as the commenter describes. EIR/EIS Section 3.5 explains that the proposed project would be subject to various regulations and could require discretionary permits from federal, state, and local jurisdictions. EIR/EIS Table 3-8 summarizes the permits and authorizations that would likely be required to build, operate, and maintain the proposed project, and includes the CDFW Incidental Take Permit.

Mitigation Measure 4.6-1a specifies that the qualified biologist that would implement surveys would possess all appropriate permits, including any CDFW permits that would be required of an ITP.

Mitigation Measure 4.6-1o was drafted to include conditions that would be consistent with CDFW's ITP requirements. In response to comments from CDFW, this measure has been revised. See the response to comment CDFW-8 in Section 8.4.2. If take of state listed species, including California tiger salamander, cannot be avoided, CalAm would apply for an ITP from CDFW prior to project implementation during the permitting process, which is separate from this CEQA/NEPA analysis.

In regard to Mitigation Measure 4.6-1g, the commenter correctly states that possession of a CDFW Scientific Collection Permit does not authorize an individual to capture and/or relocate sensitive species for CEQA compliance and, therefore, this measure does not adequately mitigate impacts to black legless lizard, silvery legless lizard, and coast horned lizard. However, Mitigation Measure 4.6-1g provides measures that describe survey methods and development of a relocation plan, in addition to the measure that the commenter lists, to adequately mitigate potential impacts to these lizards.

Marina-81 See the response to comment Marina-79.

Marina-82 Response to comment Marina-79 addresses the commenter's statement that the "Draft EIR/EIS fails to identify the lack of comparable areas suitable for compensatory mitigation …" and "fails to identify appropriate performance standards for 'success' or the duration of annual monitoring"

Impacts from periodic maintenance of the subsurface slant wells are analyzed in Section 4.6.5.2, Operational Facility Siting Impacts. As described in Impacts 4.6-6 and 4.6-7, continual disturbance of the approximately 6-acre slant well area every five years is considered a permanent impact loss of western snowy plover habitat and central dune scrub habitat. The compensatory mitigation requirement included in Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, and 4.6-2b would only be applied once.

In response to this comment, Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, and 4.6-2b have been revised to clarify this point.

Marina-83 As stated in Section 4.6.5.1 on Draft EIR/EIS page 4.6-171, "Mitigation Measure 4.6-1e applies to: the subsurface slant wells, MPWSP Desalination Plant, Source Water Pipeline and Source Water Pipeline Optional Alignment, New Desalinated Water Pipeline and New Desalinated Water Pipeline Optional Alignment, Castroville Pipeline and Castroville Pipeline Optional Alignments, Proposed ASR Facilities (ASR-5 and ASR-6 Wells, ASR Pump-to-Waste Pipeline, ASR Conveyance

Pipeline, and ASR Recirculation Pipeline), New Transmission Main and New Transmission Main Optional Alignment, Terminal Reservoir, Ryan Ranch-Bishop Interconnection Improvements, Main System–Hidden Hills Interconnection Improvements, and staging areas." This measure applies to all project components where special-status plant species have the potential to occur, as summarized in Table 4.6-6, and not just to the Terminal Reservoir. Mitigation Measure 4.6-2b addresses impacts to sensitive communities.

Marina-84 Compliance with regulations, statutes, ordinances, and the law is required of contractors, and is not optional. The relevant regulations are summarized in Section 4.7.2, Regulatory Framework, and contractors are legally required to know and comply with all details of the relevant regulations. Reprinting the entire text of the relevant regulations is not reasonable or necessary.

The source water pipeline would carry slant well feedwater, not potable water. The feedwater would not become potable until after treated at the desalination plant and then distributed through other pipelines not located adjacent to the outfall pipeline. Therefore, the placement of the source water pipeline near the MRWPCA outfall would not violate 22 CCR 64572.

In response to this comment, the Project Consistency with Plan, Policy, or Ordinance entry has been revised as follows:

> ~~Potentially Inconsistent~~ <u>Consistent</u>: Some of the project components would result in excavation in areas within the Former Fort Ord. Although cleanup activities have removed known contamination, previously-unknown contamination may be discovered. This issue is addressed in Impact 4.7-2<u>, which requires compliance with relevant regulations</u>.

As stated in Table 4.7-3, there would be no facilities within the City of Marina, including the slant wells, that would store hazardous materials. Further, the construction of the slant wells would not use hazardous materials, as defined in Chapter 6.5 of the California Health and Safety Code. In addition, City Municipal Code Section 8.12.070 exempts small quantities of less than 500 pounds or 55 gallons a month, whichever is less, of a hazardous material. The construction and maintenance of the slant wells would not use hazardous materials above reportable quantities. Therefore, this code would not apply.

Marina-85 EIR/EIS Section 4.7 (Hazards and Hazardous Materials), concludes in Section 4.7.3 that impacts related to hazards or hazardous materials will not impair the implementation of an adopted emergency response plan, during construction or operation. However, the analysis for potentially significant and unavoidable traffic and circulation impacts during project construction due to potentially concurrent construction of the project and other foreseeable cumulative projects is evaluated in EIR/EIS Section 4.9.6, Cumulative Effects of the Proposed Project. The analysis notes that the schedules of the cumulative projects are unknown and it is not possible to determine whether a number of cumulative projects would occur at the same time and adversely impact traffic, thus resulting in the conservative conclusion that the cumulative impact could be significant and unavoidable. To address this, the EIR/EIS provides Mitigation Measure 4.9-C, Construction Traffic Coordination Plan, which would require CalAm to coordinate with the appropriate planning agency within each affected jurisdiction to develop and implement a Construction Traffic Coordination Plan to reduce the impact to less than significant. However, the conclusion of significant and unavoidable is retained because there is no guarantee that local agencies would participate in such coordination efforts during construction. While local and regional traffic and roadway capacity disruptions could contribute to a cumulative impact during construction, none of the roadways would be completely closed, the mitigation provides for alternative routes and this impact would therefore, not necessarily impair implementation of, or physically interfere with an adopted emergency response plan.

Marina-86 The analysis for encountering unknown hazardous materials sites is addressed in Impact 4.7-2. The text notes that "… although previous site cleanup activities have remediated known contamination at some sites, it is still possible that undiscovered contamination may be present, given the land use history in the project area." Implementation of Mitigation Measures 4.7-2a (Health and Safety Plan) and 4.7-2b (Soil and Groundwater Management Plan) would reduce this potential impact to less than significant. Because the potential for encountering unknown contamination has been addressed, no revisions were made to the EIR/EIS in response to this comment.

Marina-87 As explained in Impact 4.7-1, the well drilling methods would not use pressurized drilling techniques and frac-out events are not anticipated. Neither of the drilling methods would use fracking techniques or the chemicals used in fracking.

Marina-88 Mitigation Measures 4.7-2a and 4.7-2b do contain adequate performance standards. Mitigation Measure 4.7-2a, which is required by 29 CFR 1910.120 to include "a summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals." The maximum exposure limits in accordance with 29 CFR 1910.120 are specifically designed to meet both public and construction worker safety standards.

Mitigation Measure 4.7-2b states that "CalAm or its contractor shall develop and implement a Soil and Groundwater Management Plan that includes a materials disposal plan specifying how the construction contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner." The RWQCB or Cal EPA human health screening levels are discussed in Section 4.7.2.2 in the subsection titled Screening Levels for Hazardous Materials in Soil or Groundwater. "Compliance in a lawful manner," as stated in Mitigation Measure 4.7-2b, includes using the cited screening levels.

Marina-89 Mitigation Measure 4.7-2b would not apply to the slant wells and the spreading of drilling spoils at the slant well location because, as discussed in EIR/EIS Section 4.7.1, there would be no hazardous materials sites at the slant well locations and none would be expected on this dune sand location. As discussed in Section 3.3.2.1, Subsurface Slant Wells, the sand-bentonite mud slurry generated during the drilling of the first 100 feet or so of the dry dune sands would be containerized and transported offsite for disposal as non-hazardous waste at a facility permitted to accept the material. The drilling spoils generated below the first 100 feet or so would consist of sand and seawater and possibly some potable water; no bentonite mud or other additives would be used to drill this portion of the slant wells. The water and sediment mixture generated during the lower portion of slant well drilling and construction would be placed in settling tanks, as necessary, to allow sediment to settle out. The volume of water produced during this drilling phase would be small enough that the construction contractor would dispose of the clarified effluent by percolating it into the ground at the CEMEX active mining area and not in sensitive dune areas. Drilling spoils generated during the lower portion of slant well drilling would consist of sand and would be spread within the construction disturbance area, not in sensitive dune areas, and would not require offsite disposal.

Marina-90 As discussed in EIR/EIS Section 4.7.1.1 in the subsection on Fort Ord Military Base Seaside Munitions Response Area (MRA), including Site 39 Inland Ranges and Former Fort Ord York School, most of the project components are located outside of MRAs and would not have the potential to encounter UXO. Those project components located within an MRA are located in areas that have already been cleared by the U.S. Army and are within areas disturbed after the closure of Fort Ord. The UXO has already been removed from the proposed areas of disturbance.

Marina-91 See response to comment Marina-90.

Marina-92 EIR/EIS Section 4.7.5.2 discusses the hazards associated with disinfection by products in the Seaside Basin, and presents the history of the ASR water quality analysis. The location of the old test injection well is not relevant since the recent and ongoing operation of the four existing ASR wells offers more contemporary information; see also response to comment USARMY-14 through -16 in Section 8.3.2. EIR/EIS Section 4.4.1 presents the Environmental Setting (see subsections titled Groundwater Quality in the Santa Margarita Sandstone and the Seaside Groundwater Basin, and Water Quality and the Existing ASR System), and Section 4.4.5 presents an analysis of the proposed injection of water into Wells ASR-5 and ASR-6 (see Impact 4.4-4, Impacts Associated with ASR Injection/Extraction Wells). The analysis evaluates the chemical reactions documented from the current injection of treated (and chlorinated) water and concludes that the continued injection of treated water would have the same short-term less than significant reaction. As explained in EIR/EIS Section 4.4.1.4, Pueblo Water Resources prepares annual Summary of Operations reports that document the ASR system's well performance and water quality, and analyzes the water quality annually to monitor and re-evaluate the degradation rate of the disinfection byproducts every year. Therefore, no revisions were made to the EIR/EIS in response to this comment.

Marina-93 Impaired emergency access as a result of the proposed project is addressed in Section 4.9, Traffic and Transportation, Impact 4.9-4. Cumulative impacts on traffic and transportation, is addressed in Section 4.9.6. See response to comment Marina-85.

Marina-94 EIR/EIS Section 1.5.4.3 discusses other agencies' consideration of the EIR/EIS and identifies the City of Marina's authority in the issuance of a Coastal Development Permit for the slant wells, consistent with its certified local coastal plan. EIR/EIS Table 3-8 lists the anticipated permits and approvals required for the MPWSP and the City of Marina's responsibility under the Coastal Act (Cal. Pub. Res. Code §30000 et seq.) is shown on Draft EIR/EIS page 3-65.

EIR/EIS Section 4.8 addresses the potential impacts of the MPWSP on land use, land use planning and recreation. Section 4.8.2.2 presents the relevant state regulations, in this case the California Coastal Act; and Section 4.8.2.3 presents the local coastal program. The City of Marina's LCLUP is specifically presented on Draft EIR/EIS page 4.8-20, at which point Table 4.8-2 is introduced. Each resource section in EIR/EIS Chapter 4 includes a similar table that summarizes the pertinent regional and local land use plans, policies and regulations that were adopted for the purpose of avoiding or mitigating environmental effects, and indicates project consistency or inconsistency with such plans. Table 4.8-2 presents the applicable regional and local land use plans and policies relevant to land use and recreation from the City of Marina's Local Coastal Land Use Plan, and concludes the proposed project would be consistent with those land use and recreation policies. The text on Draft EIR/EIS page 4.8-29, however, identifies an inconsistency with a policy related to biological resources in Impact 4.6-4.

Impact 4.6-4, which begins on Draft EIR/EIS page 4.6-222, addresses the potential inconsistencies of the proposed project with the City of Marina LCLUP and concludes on page 4.6-224 that construction of the slant wells, the Source Water Pipeline, the new Desalinated Water Pipeline, the new Transmission Main and the staging area at Beach Road "would be inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, a significant and unavoidable impact." See also responses to comments Marina-70 and MCWD-150.

Marina-95 It would be premature to evaluate pre-project road conditions, and by extension to identify potential roadway rehabilitation measures, because the roads that would be used for project-related construction access and haul routes are not yet known. As stated in Mitigation Measure 4.9-6, "[t]he construction routes identified in the rehabilitation program must be consistent with those identified in the construction traffic control and safety assurance plan developed under Mitigation Measure 4.9-1." And as stated in the second paragraph of Mitigation Measure 4.9-1, "[t]he traffic control and safety assurance plan shall be developed on the basis of detailed design plans for the approved project."

Marina-96 The commenter's point that the Walmart parking lot is privately-owned is noted, and Mitigation Measure 4.9-7 is revised as follows:

> **Mitigation Measure 4.9-7: Construction Parking Requirements.**
>
> Prior to commencing project construction, the construction contractor(s) shall coordinate with the affected jurisdictions (i.e., Monterey County, Cal State Monterey, and the cities of Marina and Seaside), and affected parties (i.e., the Walmart Superstore at 150 Beach Road), to design the staging areas to avoid or minimize parking impacts in the publicly used parking lots.

Marina-97 To further reduce construction exhaust emissions of NOx, Mitigation Measure 4.10-1a has been revised to identify construction equipment that meets Tier 4 standards as opposed to Tier 3 standards. In addition, Mitigation Measure 4.10-1a has been revised to include requirements for construction equipment powered by electricity or natural gas as well as for the use of other non-diesel powered equipment where feasible. See responses to comments MBARD-1, MBARD-3, and MBARD-4 in Section 8.5.3 for discussion of these revisions. In addition, Mitigation Measure 4.10-1e (Off-site Mitigation Program) has been added to the Final EIR/EIS to require CalAm to work with the Monterey Bay Air Resources District (MBARD) to put forth a good faith effort to fund an off-site mitigation program that would be contemporaneous with project construction to offset construction-related NOx (see response to comment MBARD-6).

Because the availability of high-tiered and non-diesel-powered construction equipment at the commencement of construction of the project is currently unknown, and the Lead Agencies cannot substantiate at this time that off-site mitigation in the form of emissions offsets is feasible (see response to comment MBARD-6), it is acknowledged that the mitigated emissions could be higher than those disclosed in the Draft EIR/EIS. To add clarity to this point, the discussion of Gaseous Criteria Pollutant Emissions in Impact 4.10-1 has been revised as follows (note that the change in mitigated pounds of NOx per day reflects the addition of the Brine Mixing Box and removal of Terminal Reservoir to/from the project subsequent to the release of the Draft EIR/EIS):

> Although the exact amount of mitigated emissions cannot be substantiated at this time due to the uncertainty in equipment availability and unknown feasibility of the off-site mitigation program, ~~F~~for ~~the~~ informational purposes ~~of estimating mitigated construction emissions of NO_x~~, if ~~it is assumed that~~ compliance with Mitigation Measure 4.10-1a would result in equipment emissions that would be equivalent to those that would be associated with

use of engines that comply with Tier 3 engine standards, ~~. I~~implementation of this mitigation measure would decrease maximum daily construction emissions of NO_x to approximately 316~~324~~ pounds per day, which would continue to result in a significant impact with respect to contributing to an exceedance of an ozone and/or NO_2 ambient air quality standard.

With regard to the City of Marina's mitigation suggestions associated with limiting the quantity and types of construction equipment, limiting construction hours of operation, and limiting fuel consumption, as well as the suggestion to undertake construction during the non-ozone season, such measures designed to reduce the daily NOx emissions to a less-than-significant level are infeasible because they would extend the construction period substantially. See response to comment MBARD-6. With regard to stationary sources of construction equipment (or other off-road exhaust emission sources), off-road construction equipment 50 horsepower or more would be covered with implementation of Mitigation Measure 4.10-1. Tier 4 emission standards are the most stringent standards available for off-road construction equipment; therefore, additional requirements to apply RACT or BACT to those sources are not warranted.

Marina-98 Implementation of Mitigation Measures 4.10-1a through 4.10-1c (revised to specify that replanted vegetation would be native, drought-tolerant) would reduce maximum daily construction emissions of PM10 to approximately 68 pounds per day, which would be below the MBARD PM10 significance threshold of 82 pounds per day. Therefore, with implementation of these mitigation measures, it can be concluded that short-term emissions associated with construction of the project would not contribute to an exceedance of a PM10 state or federal standard, and the associated impact would be mitigated to a less-than-significant level. As the impact would be less than significant with mitigation, inclusion of the additional suggested mitigation measures to control fugitive dust is not warranted.

Marina-99 Mitigation Measure 4.10-1c is referenced in Impact 4.10-3 due to its potential to control spore-containing dust from becoming airborne. The measure requires application of fugitive dust control measures to ensure that fugitive dust (which could contain coccidioides immitis spores) would be controlled to the maximum extent feasible.

Valley Fever-related less-than-significant impacts identified in the Draft EIR/EIS are discussed in terms of increased risk to public health in general (see Impact 4.10-3). It is acknowledged that people who have jobs where dirt and soil are disturbed, including construction workers that would be associated with the project, may have a higher risk of getting infected than others. It is important that workers understand the potential hazards related to their work and how to protect themselves. Employers also have responsibilities to control workers' exposure to hazardous materials, including spores that cause Valley Fever. Regulations governing Valley Fever protection and exposure are in the California Code of

Regulations regarding reporting work-connected fatalities and serious injuries, injury and illness prevention, control of harmful exposures, respiratory protection, and employer records-log 300 (8 Cal. Code Regs. §§342, 3203, 5141, 5144, 14300). Compliance with these requirements is compulsory, and failure to protect workers from exposure to spores that cause Valley Fever can result in enforcement actions.

Enforceable federal health standards also apply. The Occupational Safety and Health Administration (OSHA)'s Hazard Communication Standard (29 CFR §1910.1200) requires employees to be informed and trained about potential work hazards and associated safe practices, procedures, and protective measures. Requisite actions taken to comply with the Hazard Communication Standard could include, for example, training workers and supervisors on how to recognize symptoms of Valley Fever and identifying ways to minimize exposure, such as washing hands and changing clothes at the end of shifts. Washing facilities could be provided nearby for washing at the end of shifts. National Institute of Occupational Safety and Health (NIOSH)-approved respiratory protection with particulate filters could be made available to workers who request them. OSHA's respiratory protection standard describes the components of a comprehensive respiratory protection program (29 CFR §1910.134). Because as little as one spore may transmit the disease, the employer should assess the associated risk when potential exposure to dust is unavoidable and determine the level of respiratory protection needed based on the effectiveness of the various types of respirators for spores and particles of dusts. If a half-mask respirator with a particulate filter or a filtering face piece respirator is determined not to provide sufficient protection, e.g., because of a beard or other factor that prevents a close fit, loose-fitting powered air-purifying respirators could be an alternative.

Independent of worker safety laws, air districts also have authority to enforce compliance with air district rules and regulations that control dust and, thereby, have the effect of protecting workers and members of the public from dust-born concerns. The Antelope Valley Air Quality Management District, for example, issued notices of violation in 2013 for uncontrolled dust emissions from a construction project in a Valley Fever endemic area (Trabish, 2013). There is no indication that the MBARD would be any less aggressive in the monitoring and enforcement of the rules and regulations governing dust control in the project area.

Because these worker protection obligations are required, compliance with worker safety, health, and air quality requirements are enforceable independent of the CEQA and NEPA processes, and oversight agencies have demonstrated a willingness to enforce these obligations specifically with respect to exposure to spores that cause Valley Fever, the Lead Agencies have elected not to amend the project Health and Safety Plan to require specific avoidance measures.

Marina-100 See responses to comments Marina-97 and Marina-98, above.

Marina-101 See response to comment USEPA-4 in Section 8.3.5 for the text of the revised Mitigation Measure 4.11-1, which would require that CalAm achieve net zero GHG emissions from operational electricity use. As a result of these revisions, GHG-related impacts are reduced to a less-than-significant level as described in Section 4.11 of the Final EIR/EIS. Revisions to Mitigation Measure 4.11-1 address the comment's concerns about improper deferral by providing specific measures CalAm must take to achieve the GHG emissions performance standard outlined in the measure.

There is currently not enough project design information available to allow the Lead Agencies to describe in detail the carbon footprint for all operational components of the project in the EIR/EIS. Thus, the estimates provided in EIR/EIS Section 4.11 are based on best available information. However, Mitigation Measure 4.11-1 requires that a qualified professional prepare detailed carbon footprint information for project operation based on design specifications, and this would provide the basis for GHG emissions reductions and offsets required in this revised measure.

Marina-102 EIR/EIS Impact 4.12-4 addresses the proposed project's consistency with construction time limits established by the local jurisdictions and discusses the construction time limits allowed by local noise ordinances. This impact analysis explains that the cities of Seaside, Marina and Monterey all have ordinances that prohibit work outside of the allowable hours of construction and specifies the hours and conditions that apply for each jurisdiction. The Marina Municipal Code, Chapter 15.04, Section 15.04.055, limits outdoor construction activities that produce noise adjacent to residential uses, to the hours of 7:00 am to 7:00 pm. Project components in the city of Marina include subsurface slant wells, portions of the Source Water Pipeline, portions of the new Desalinated Water Pipeline, and portions of the new Transmission Main; portions of the new Transmission Main would be located in the city of Seaside. Mitigation Measure 4.12-4, Nighttime Construction Restrictions in Marina, specifically states that "[o]pen trench pipeline construction work within 500 feet to residential uses or transient lodging shall be restricted to the hours of 7:00 a.m. to 7:00 p.m. (standard time) Monday through Saturday, and 10:00 a.m. to 7:00 p.m. (standard time) on Sundays and holidays. During daylight savings time, construction hours may be extended to 8:00 p.m."

There are other project components (i.e. MPWSP Desalination Plant, Castroville Pipeline) that would require nighttime construction, but these components are not located within a jurisdiction with established construction time limits.

Marina-103 EIR/EIS Impact 4.12-4 addresses the proposed project's consistency with construction time limits established by the local jurisdictions and discusses the construction time limits allowed by local noise ordinances. As indicated in EIR/EIS Impact 4.12-4, no impact associated with conflicts with local construction time limits would occur from implementation of pipelines north of Reservation Road because these components would not require nighttime construction and/or are not located within a jurisdiction with established construction time limits.

Marina-104 See response to comment USARMY-6 in Section 8.3.2.

Marina-105 See response to comment USARMY-6 in Section 8.3.2.

Marina-106 Mitigation Measure 4.12-1a states in part that, "The coordinator shall determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem." It does not include the phrase, "could be implemented." Methods of addressing noise complaints are discussed in Mitigation Measure 4.12-1b, General Noise Controls for Construction Equipment and Activities. The commenter's suggestion of providing an estimated response time for addressing noise complaints is acknowledged as reasonable, and Mitigation Measure 4.12-1a has been revised to include the following a response time requirement:

> <u>CalAm and/or its contractor shall return all calls within 24 hours to answer noise questions and handle complaints. Documentation of the complaint and resolution shall be submitted to the CPUC weekly</u>.

Marina-107 Mitigation Measure 4.12-1c addresses noise controls for nighttime pipeline construction and requires CalAm to submit a Noise Control Plan that "shall identify all feasible noise control procedures to be implemented during nighttime pipeline installation in order to reduce noise levels to the extent practicable at the nearest residential or noise sensitive receptor." Mitigation Measure 4.12-1c requires that at a minimum, "the Noise Control Plan shall require use of moveable noise screens, noise blankets, or other suitable sound attenuation devices be used to reduce noise levels during nighttime pipeline installation activities below 60 dBA L_{eq}." Consistent with CEQA Guidelines Section 15126.4(1)(B), Mitigation Measure 4.12-1c specifies a performance standard that would mitigate the significant effect of the project and which may be accomplished with "other suitable sound attenuation devices." The EIR/EIS does not need to specify why other controls have not been included.

The EIR/EIS contains all of the feasible mitigation measures suggested by the comment. Mitigation Measure 4.12-1d, Additional Noise Controls for ASR-5 and ASR-6 Wells, identifies that barrier blankets are available with a sound transmission class rating of 32, providing 16 to 40 dBA of sound transmission loss, depending on the frequency of the noise source (ENC, 2014). These barriers are also referred to as shrouds that are suggested by the comment. Additionally, see response to comment Marina-102 regarding Mitigation Measure 4.12-4, Nighttime Construction Restrictions in Marina.

Mitigation Measure 4.12-1b, General Noise Controls for Construction Equipment, requires muffled exhaust systems on all combustion engines for construction equipment. Construction contractors are required to assure that construction equipment with internal combustion engines have sound control devices at least as effective as those provided by the original equipment manufacturer and no equipment is permitted to have an un-muffled exhaust. This measure also requires construction contractors to locate staging areas and stationary noise sources as far from nearby receptors as possible, and shall muffle and enclose them in temporary sheds, incorporate noise barriers, or implement other noise control measures, to the extent feasible.

Engine idling during construction is addressed in Mitigation Measure 4.10-1b, Idling Restrictions.

Electrically powered construction equipment is still in development and only a few equipment types are commercially available. Consequently, electrically powered construction equipment make up a negligible, if any portion of the contracting equipment fleet and are not considered to be a feasible mitigation strategy at present. Mitigation Measure 4.18-1 identifies specific measures that CalAm and its construction contractors would be required to implement as part of a Construction Equipment and Vehicle Efficiency Plan. The measures include a commitment to utilize existing electricity sources where feasible rather than portable diesel-powered generators.

See also response to comment USARMY-6 in Section 8.3.2.

Marina-108 A significant and unavoidable impact determination was identified with respect to construction and drilling activities associated with the ASR-5 and ASR-6 wells because, due to the proximity of sensitive receptors to this activity, it could not be demonstrated that attainment of a 60 dBA, Leq performance standard would be attainable using shielding techniques. As discussed in the response to comment USARMY-6, continuous 24-hour drilling is a requirement of constructing the ASR-5 and ASR-6 wells to prevent the borehole from potentially collapsing in on itself, filling the borehole with the surrounding geologic materials, and/or binding up the drill bit and trapping it in the borehole and seizing of the drill bit. Therefore, drilling during daytime hours only is not a feasible mitigation.

Marina-109 The closest sensitive receptors to the Desalination Plant site are residences on Neponset Road in unincorporated Monterey County; they are located 2,200 feet and 3,900 feet to the west. Construction of the Desalination Plant would be subject to the *Monterey County General Plan*. Monterey County General Plan Policy S-7.9 restricts evening construction activities within 500 feet of a sensitive land use. Because the nearest sensitive receptors are all greater than 500 feet away from the proposed Desalination Plant site, such construction activities would be consistent with Policy S-7.9. Consequently, construction activities at the Desalination Plant site would occur during times allowed by ordinance.

Marina-110 In response to this comment, the last sentence of Mitigation Measure 4.12-5, Stationary-Source Noise Controls, has been revised to specify that compliance monitoring would be based on post-construction operation of the stationary source and based on a single long-term (24-hour) measurement:

> … Once the stationary noise sources have been installed, the contractor(s) shall <u>conduct a single long-term (24-hour)</u> monitor<u>ing of</u> noise levels to ensure compliance with local noise standards. <u>CalAm shall submit a compliance monitoring report to the CPUC.</u>

Marina-111 See responses to comments USARMY-6, Marina-106, and Marina-107.

Marina-112 Impact 4.13-2 addresses the potential for non-hazardous project construction waste to exceed landfill capacity or conflict with the California Integrated Waste Management Act provisions to reuse or recycle nonhazardous construction and demolition waste. Standard procedure for spoils disposal in the quantity that the proposed project is estimated to generate would involve coordination between CalAm or its contractor with the disposal site regarding soils testing for potential hazardous contamination. This requirement is discussed in Impact 4.7-2 in Section 4.7, Hazard and Hazardous Materials. Mitigation Measure 4.7-2b includes a requirement that CalAm or its contractor develop a Soil and Groundwater Management Plan, one required component of which is to "identify protocols for soil testing and disposal, identify the approved disposal site, and include written documentation that the disposal site will accept the waste. Contract specifications shall mandate full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials, including those encountered in excavated soil or dewatering effluent." To provide clarification that Impact 4.13-2 addresses non-hazardous construction waste and Impact 4.7-2 addresses potentially hazardous construction waste, a cross-reference to Impact 4.7-2 has been added to the first paragraph under Impact 4.13-2.

Marina-113 The 10 constituents for which a compliance determination with the Ocean Plan water quality objectives cannot be drawn are listed in footnote 37 on Draft EIR/EIS page 4.3-101. The constituents are chlorinated phenolics, 2,4 dinitrophenol, tributyltin, aldrin, benzidine, bis(2-chloroethyl)ether, 3,3-dichlorobenzidine, 1,2-diphenylhydrazine, heptachlor, 2,4,6-trichlorophenol.

As stated on Draft EIR/EIS page 4.3-56, "the reported ambient water quality parameters and constituent levels described in Section 4.3.1.3… are considered to be representative of baseline concentrations; these are used, in part, to assess the proposed project's impacts on water quality." Section 4.3.1.3 describes the existing water quality setting and affected environment of the Monterey Bay, including salinity and temperature, dissolved oxygen, and other constituents such as pesticides, chemicals, and permitted point source discharges.

The proposed project is designed so that the MPWSP Desalination Plant would discharge brine through a multiport diffuser of the existing MRWPCA outfall and would be commingled with wastewater that is currently discharged through the outfall whenever the wastewater is available. As stated on Draft EIR/EIS page 4.3-27, the Ocean Plan requires an owner or operator of a desalination plant to first evaluate the availability and feasibility of diluting brine by commingling it with wastewater. Under Mitigation Measure 4.3-5, Implement Protocols to Avoid Exceeding Water Quality Objectives, the permittee shall complete a water quality assessment to ensure compliance with such Ocean Plan requirements and as part of the MRWPCA NPDES Permit amendment process (Order No. R3-2014-0013, NPDES Permit No. CA0048551), because in the absence of a water quality assessment, the brine may exceed water quality objective thresholds of the Ocean Plan. Implementation of Mitigation Measure 4.3-5 would ensure that data collection of source water and operational discharge quality are undertaken to establish compliance with the Ocean Plan and NPDES permit requirements. Implementation of Mitigation Measure 4.3-5 also would ensure that if the event arises where operational discharges do not meet the NPDES requirements, then operational discharges would not be released as proposed and additional design features, engineering solutions, and/or operational measures (such as additional pretreatment, additional treatment of discharge, retrofitting the existing outfall to increase dilution, and flow augmentation) would be implemented to reduce the concentration of non-conforming water quality constituents. See also response to comment Marina-41 and the discussion of the additional discharge and Ocean Plan Compliance modeling in Section 4.3.5.2 and Appendix D1.

Marina-114 As the owner and operator of the existing beach junction box and outfall, the MRWPCA was granted an Emergency Coastal Development Permit (EDCP No. G-9-16-0031, dated March 14, 2016) from the California Coastal Commission (CCC) to perform emergency protection work following the winter storms. See response to comment MRWPCA-4 in Section 8.5.9. MRWPCA sought approval from the CCC to leave the temporary protection measures in place to allow MRWPCA to conduct feasibility and alternatives analyses of a permanent protection solution (i.e., the Ocean Outfall Beach Erosion Protection Project). The permanent solution will be evaluated separately from this EIR/EIS (but included in the cumulative scenario relevant to the MPWSP; see Table 4.1-2) and would include an analysis of potential wave run-up/storm surge/coastal erosion. Studies conducted by Brown and Caldwell that were submitted by MRWPCA as comments on the Draft EIR/EIS indicate that the capacity of the outfall was not reduced as a result of the winter storms or emergency repairs.

The beach junction box relocation project would involve moving the junction box out of the surf zone and reinstalling it inland by approximately 650 to 1,000 feet. New, pre-lined 60-inch diameter outfall pipe would be installed on the westward side of the junction box, which would connect to the existing ocean outfall. The pipe diameter would match the existing outfall diameter of 60 inches, and the overall length of the outfall pipeline would not change; therefore, the components would be sized to maintain the current outfall capacity of 81.2 mgd (Brown and Caldwell, 2017). The 2012 Trussell Technologies Outfall Capacity Evaluation is still an accurate assessment and the outfall would continue to be capable of supporting the proposed project's discharge when combined with instantaneous peak flows of wastewater effluent from the MRWPCA Regional Wastewater Treatment Plant. For these reasons, the replacement of the junction box and outfall would not change the siting or design of the proposed project.

Regarding the outfall's capacity to service the MPWSP and future wastewater flows, refer to response to comment Marina-151.

Marina-115 See response to comment Marina-114 regarding status of the beach junction box, and response to comment MRWPCA-5 for revisions to Impact 4.13-5 and Mitigation Measure 4.13-5a. The new junction box and outfall pipe segment would be pre-lined with material that would protect the components from corrosion. Therefore, the 2015 E2 Consulting Engineering evaluation of the junction box and the first 100 feet of the offshore portion of the outfall are outdated, but the conclusion that anaerobic conditions past the first 100 feet of the offshore outfall would preclude the introduction of oxygen into the concrete/steel interface of the outfall pipe, thereby preventing corrosion, remains accurate. However, as part of the *Beach Structure Evaluation and Protective Measures Technical Memorandum* (2017) Brown and Caldwell recommended that MRWPCA replace all of the WEKO seal clamps inside the nearshore area of the ocean outfall prior to the relocation of the junction box since the existing clamps could be susceptible to chloride corrosion (Brown and Caldwell, 2017).

Marina-116 In its comment letter on the Draft EIR/EIS, the MRWPCA provided additional studies on the condition of the outfall. The *Land Outfall Pipeline Evaluation and Protective Measures Technical Memorandum* (Brown and Caldwell, 2017) concluded that brine effluent would likely cause the land segment of the outfall to deteriorate and recommended the installation of a liner ahead of adding brine to the outfall. Two types of liners were recommended: a Vylon slip liner and a spiral wound HDPE liner. See response to comment MRWPCA-2 in Section 8.5.9, and the resulting revisions to Impact 4.13-5 and Mitigation Measure 4.13-5b.

Marina-117 The RUWAP Desalination Element is listed as cumulative Project No. 31, and the RUWAP Recycled Water Element is included as cumulative Project No. 35 in EIR/EIS Table 4.1-2. If the brine flow of about 1.5 mgd from the RUWAP Desalination Element were added to the 13.98 mgd of brine from the proposed MPWSP, the blended salinity would not be expected to change substantially, because according to the MCWD RUWAP Draft EIR (2004), the brine from the proposed RUWAP desalination process would have an estimated total dissolved solids (TDS) level of 47,600 mg/L, or 47.6 ppt salinity, which is lower than the estimated salinity of the brine that would be generated by the proposed MPWSP

(58.23 ppt, see EIR/EIS Table 4.3-11). As explained in response to comment MRWPCA-9, the dilution analyses presented in Appendix D1 of the Draft EIR/EIS were revised and expanded to include a wider array of flow scenarios. Discharge scenarios involving higher volumes of desalination brine were modeled to assess impacts on water quality and regulatory compliance. As noted in Final EIR/EIS Table 4.3-12, when the brine from the proposed project is blended with 0.1 mgd of trucked brine (see Note a in Table 4.3-10), the combined effluent would have a salinity of 58.1 ppt (Scenario No. 2). If an additional 2.3 mgd of desalination brine (58.23 ppt) was added to the flow (Scenario 15) the combined effluent (58.12 ppt) would increase in salinity by 0.02 ppt; not a substantial change.

As noted in Table 4.1-2, the GWR Project is currently proposed by MRWPCA to include 600 afy of advanced treated water for irrigation use on Fort Ord by MCWD. This 600 afy would replace some of the recycled water that would have been delivered by the RUWAP Recycled Water Element. The expanded GWR project, as currently proposed, has been considered in the cumulative analysis of Alternative 5a and 5b. See response to comment MRWPCA-14 in Section 8.5.9.

Final EIR/EIS Section 4.13.6.2, Cumulative Impacts during Project Operations, has been revised to include the clarifying information in this response.

Marina-118 EIR/EIS Section 4.14.1.2 explains that consideration of visual quality, visual sensitivity and landscape exposure yields a qualitative measure of the aesthetic resource value of a given area, and the meanings of these terms as they are used in the EIR/EIS are defined. EIR/EIS Section 4.14.1.2 explains that landscape units represent combinations of physical and cultural features that contribute to varying degrees of visual quality, and that landscape units are “aesthetic delineations” based upon factors such as land use, location, degree of urbanization, and boundaries of vegetation communities. The EIR/EIS does not use landscape units to represent parcel-specific characterization of land use. Hence, the landscape unit classifications do not necessarily, nor are they intended to “identify existing on-site land uses, visual characteristics, and existing levels of development” for each parcel.

The landscape units described in EIR/EIS Section 4.14.2.2 (titled Landscape Units) are general characterizations intended to describe the “regional landscape” of the project area. In comparison, EIR/EIS Section 4.14.2.3 (titled Visual Setting of the Project Area) presents the on-site land uses, visual characteristics, and existing levels of development of each proposed project facility site. These characterizations are supported by photographs, taken by the preparer of this section, of specific sites for which MPWSP components are proposed.

For example, the site of the desalination plant[3] is depicted in Figure 4.14-3a, Photograph 2, and described on Draft EIR/EIS page 4.14-13. The EIR/EIS explains the site's visual quality is low considering the industrial development surrounding the site (the Dole and Budweiser processing facility, the Monterey County landfill and the regional wastewater treatment plant and drying beds). The visual exposure is low because this site is only seen for short durations by travelers along Charles Benson Road and is screened by rows of trees to the south and west. The visual sensitivity of the site is also rated low, as the area is not located within a vista or view corridor and is not valued for recreational uses.

Further, as presented in EIR/EIS Section 4.14.5, the aesthetic resources analysis is based upon field observations conducted by the author in September 2013 and April 2016, along with a review of project maps and drawings, analysis of aerial and ground-level photographs, and a review of a variety of data available in public records. For these reasons, the visual setting and baseline conditions have been properly established, no changes have been made to the EIR/EIS in response to this comment and a need for recirculation of the Draft EIR/EIS has not been triggered.

Marina-119 EIR/EIS Figure 4.14-2 was previously presented in the April 2015 Draft EIR. The acronyms have not been identified on the figure, they do not add any value, and they have been removed from the Figure; their removal has no bearing on the analysis or impact conclusions. While not identical in each instance, the titles of the photographs in Figure 4.14-2 generally correspond with the landscape units used in Figure 4.14-1, and are sufficiently detailed to allow the reader to determine which photograph corresponds with which landscape unit or units. The similarities between photographs depicting similar landscape units is precisely due to the similarities in the landscape units the photographs are intended to represent.

EIR/EIS Section 4.14.2.2 explains that Figure 4.14-2 presents photographs that are "representative" of the landscape units shown in Figure 4.14-1. Further, EIR/EIS Section 4.14.2.3 notes that the Figure 4.14-2 photographs are intended to represent the "general setting" of the project area. EIR/EIS Section 4.14.2.3 notes that Figures 4.14-3a and 4.14-3b depict specific sites for which MPWSP components are proposed.

Marina-120 The first sentence in EIR/EIS Section 4.14.2.3 explains that "this subsection describes the existing visual character of the areas in which MPWSP components would be constructed." See the Project Area Boundary at the CEMEX property on EIR/EIS Figure 3-3a. The proposed components would be located within the disturbed area associated with prior sand mining activities within the 376-acre CEMEX site.

[3] Pursuant to CEQA Guideline Section 15096(d), in commenting on a Draft EIR, responsible agencies shall limit their comments to those project activities which will be subject to the exercise of power by the agency. The desalination plant is located in unincorporated Monterey County, and not within the City of Marina.

EIR/EIS Section 4.14.2.3 explains that "the visual quality of the Beaches and Coastal Dunes landscape unit is generally high but due to extensive alterations to the natural features at the CEMEX facility, the visual quality of the site is considered moderate. The site's visual sensitivity is high because of its location along the coast and proximity to Highway 1, which is an eligible state scenic highway. The visual exposure of the site is low, since the site is partially screened by dunes and trees and is mainly visible only from automobiles traveling along Highway 1 at speeds of 60 miles per hour. Based on the above-described factors, the site for the proposed subsurface slant wells has a moderate aesthetic resource value."

Figure 4.14-3a, Photo 1, is introduced in the Draft EIR/EIS on page 4.14-10, where it is said to represent the "Beaches and Coastal Dunes landscape unit at the CEMEX sand mining facility" which has high visual quality. The comment is correct to point out that Photo 1 was taken from within the CEMEX facility, as noted in the photo's caption. The second sentence of EIR/EIS Section 4.14.2.3 has been revised to read:

> "In addition, photographs taken from representative ~~public~~ vantage points portray~~s~~ the visual character of these locations."

See also the photo on the cover of the EIR/EIS of the southern portion of the CEMEX property, looking east, which includes the disturbed area inland of the vegetation that would be the location of the proposed slant wells. The existing test slant well is also visible on the cover photo.

Nothing in this response to comment triggers a need for recirculation of the Draft EIR/EIS.

Marina-121 See response to comment Marina-118.

Marina-122 See responses to comments Marina-118 and Marina-120.

Marina-123 EIR/EIS Figure 4.15-1, Culturally Sensitive Areas, points to the "Lapis Mining HD" and Section 4.15.2.3 clearly states that the direct and indirect Area of Potential Effects (APE) of the Source Water Pipeline would traverse the Lapis Sand Mining Plant Historic District. As noted on Draft EIR/EIS page 4.15-21, SWCA, as a consultant to the City of Marina in the evaluation of the test slant well (SWCA, 2014), recommended that the project be redesigned to avoid direct impacts on the Lapis Siding in adjacent areas that do not contain structures associated with the Lapis Sand Mining Plant. In order to avoid the Lapis Siding (see EIR/EIS Section 3.2.1.2), the proposed Source Water Pipeline would follow the CEMEX access road. Therefore, the Lapis Siding would not be impacted by the proposed project.

In addition, since publication of the Draft EIR/EIS, the California State Historic Preservation Officer (SHPO) has concurred with the finding of *No Adverse Effect* *to Historic Properties*, including adverse effects to contributors to the Lapis Sand Mining Plant Historic District; see EIR/EIS Section 7.1.3.

Marina-124 In response to this comment, Section 4.16.1.1, Farmland Classifications, and Table 4.16-1, Monterey County Agricultural Land Summary and Conversion by FMMP Land Use Category, have been revised to reflect 2012-2014 agricultural conversion data for Monterey County rather than 2010-2012 data. Section 4.16.1.1 acknowledges that between 2012 and 2014, Monterey County experienced a net loss of Prime Farmland.

Marina-125 As stated in EIR/EIS Section 4.16, Agricultural Resources, the MPWSP Desalination Plant would be located on 25-acres of land that is zoned by the County of Monterey as Permanent Grazing and that is designated in FMMP maps as grazing land; however, the land has not been used for grazing or any other agricultural use since at least 1956, based on review of aerial photography of the site from 1956 through 2006, and confirmed in part based on an interview with a property manager with knowledge of the site dating to 1980 (RBF Consulting, 2012).

According to 2012-2014 California Department of Conservation Land Use Conversion data, 1,062,699 acres of grazing land were inventoried in Monterey County (CDC, 2014), and the removal of 25 acres would account for 0.0023 percent of such grazing land. In addition, a total of 739 net acres of grazing land were lost from 2012-2014, and the MPWSP Desalination Plant would account for only 3.38 percent of this net loss. For these reasons, the EIR/EIS correctly evaluated the potential impact in Impact 4.16-1, which assesses changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use, and correctly concluded that the conversion of 25 acres of grazing land for the MPWSP Desalination Plant would be a less-than-significant impact.

The 75-day public comment period for the Draft EIR/EIS provided ample opportunity for the public to review and comment on the proposed conversion. With respect to the gradual conversion of undeveloped, grazing, and/or agricultural lands that provide a buffer from more urbanized uses within the City of Marina and surrounding areas, the site of the proposed MPWSP Desalination Plant is located in unincorporated Monterey County, and is bordered on the west by agricultural fields, to the north by vacant land zoned for grazing, and to the south by Armstrong Ranch; to the east, the MRWPCA Regional Wastewater Treatment Plant and the MRWMD's landfill and recycling facilities are situated between the proposed desalination plant and the City of Marina. The 25-acre site does not act as a buffer from more urbanized uses within the City of Marina and surrounding areas.

Marina-126 The EIR/EIS adequately identifies the potential for proposed project operations to result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use; see EIR/EIS Section 4.16.5.

Operational impacts related to groundwater resources are analyzed in Section 4.4, Groundwater Resources, under Impacts 4.4-3 and 4.4-4, which conclude that impacts on groundwater quantity and quality would be less than significant, which in turn means that agricultural users would not be significantly impacted by adverse effects on groundwater quality. As explained in Impact 4.4-4 on Draft EIR/EIS page 4.4-77, which relates to impacts on seawater intrusion, the MPWSP would incrementally contribute to redirecting or retarding the inland advance of seawater intrusion by capturing a portion of the seawater currently migrating inland. Figure 4.4-17 illustrates the anticipated reversal of seawater intrusion that would be due solely to the MPWSP. In addition, potential impacts on groundwater supply analyzed in Impact 4.4-3, on Draft EIR/EIS pages 4.4-57 through 4.4-68, are found to be less than significant because when desalinated water is returned to the basin, groundwater levels in the 400-Foot Aquifer underlying the Castroville Seawater Intrusion Project (CSIP) and Castroville Community Services District (CCSD) and adjacent areas would improve. Water levels could decline in the 180-FTE Aquifer by between 1 and 5 feet, but that would not expose screens, cause damage, or reduce yield in the existing, active groundwater supply wells.

Although potential impacts on groundwater supply are determined to be less than significant, the project applicant has proposed to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer, the 180-FTE Aquifer and the 400-Foot Aquifer. Applicant Proposed Measure 4.4-3 (Groundwater Monitoring and Avoidance of Well Damage), described on Draft EIR/EIS pages 4.4-74 through 4.4-75, is not required to reduce a potential impact to less than significant, but if it were determined that the project was causing groundwater levels to damage local active wells, this measure would ensure that active wells would be repaired or replaced.

In response to this comment, a cross-reference to Impacts 4.4-3 and 4.4-4 in Section 4.4, Groundwater Resources has been added to the Impact Conclusion subsection of Impact 4.16-2 in Section 4.16, Agricultural Resources, as follows:

> <u>Impacts 4.4-3 and 4.4-4 in Section 4.4, Groundwater Resources describe the potential impacts on groundwater quality and quantity due to operation of the proposed project. As described therein, the proposed project would result in less-than-significant impacts on groundwater quality and levels. That analysis identifies less-than-significant impacts on existing users of wells that may be affected by the proposed project, including agricultural users. Because the proposed 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</u>

> the permanent conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.

Regarding the topic of groundwater pumping from the basin, water rights issues are addressed in Section 8.2.2, Master Response 3, Water Rights.

Marina-127 As stated in Impact 4.16-1 in Section 4.16.5.1, Construction Impacts, the analysis assumes that agricultural land that is adjacent to, but outside of, the project area boundary would not be subject to construction disturbance. The impact analysis focuses on project facilities within the project area boundary that would require construction on agricultural land or parcels that are zoned for agricultural uses. Therefore, potential construction effects on 1.7 acres of Prime Farmland that are on the northern portion of the 46-acre parcel shared by the MPWSP Desalination Plant site are not included in the analysis of direct impacts because the Prime Farmland is not adjacent to and is not within the project boundary of the MPWSP Desalination Plant; there would be no impact.

As stated in Impact 4.16-3 in Section 4.16.5.2, Operational and Facility Siting Impacts, proposed development of the MPWSP Desalination Plant on the 25-acre upper terrace of the 46-acre parcel would be allowed with a use permit from Monterey County (Monterey County Zoning Code, Section 21.34.050). The use permit would not convert the entire 46-acre parcel to an industrial use, but would allow for a "public and quasi-public land use, including public utilities" on the 25-acre portion of the parcel. Therefore, siting and operation of the MPWSP Desalination Plant would not limit, constrain, and/or prevent any future agricultural uses within the 1.7-acre portion of the parcel that is designated as Prime Farmland.

Finally, CEQA and NEPA do not require an analysis of impacts on speculative future uses of a particular property. This parcel hasn't been used as productive farmland in several decades, and there is no evidence that suggests that the use of a portion of the parcel for the Desalination Plant would preclude the productive use of an unattached piece of Prime Farmland elsewhere on the parcel. It is inaccurate to state that this piece of land would "fallow" as a result of the project because it already has been uncultivated for decades independent of this project.

Marina-128 See response to comment Marina-125 and Marina-127. The entire 46-acre parcel, with the exception of the unconnected 1.7 acres of Prime Farmland that would not be affected by the proposed project, has not been used for grazing or any other agricultural use since at least 1956. In response to this comment, the following text has been revised in Impact 4.16-3, under the MPWSP Desalination Plant heading:

> Current and recent uses of a property can provide a practical measure of its suitability for agriculture. The 46-acre MPWSP Desalination Plant parcel is zoned for Permanent Grazing, but with the exception of the unconnected 1.7 acres of this parcel that form a portion of a neighboring farm and which

would not be affected by the proposed project, the property has ~~been idle for five or more years~~ not been used for grazing or any other agricultural use since at least 1956 (RBF Consulting, 2012). Section 21.34.050 of the Monterey County Zoning Ordinance allows for public and quasi-public land uses including public utilities on land zoned for Permanent Grazing (Monterey County, 2011). Therefore, the proposed development of the 25-acre upper terrace of the parcel for the MPWSP Desalination Plant site would be allowed with a use permit from Monterey County. The 200-foot buffer between farmland and new development that is required by the Monterey County Municipal Code has been accounted for in the preliminary site plan for the MPWSP Desalination Plant (see Figure 3-5b in Chapter 3, Description of the Proposed Project. Therefore, the proposed desalination facilities on the upper terrace would not conflict with the existing zoning for agricultural uses.

Marina-129 See response to comment USEPA-4 in Section 8.3.5 for revisions to Mitigation Measure 4.11-1, which would require the use of renewable energy, including from the LFGTE facility expansion if available, as a primary method of reducing or offsetting operational electricity demand. The City of Marina's comments regarding the necessity of the project to meet water demand (i.e., comments on Sections 2.1 through 2.5) are addressed in detail above. As described in Impact 4.18-2, while the proposed project would require a large amount of electricity each year to operate, it is necessary to provide drinking water to area residents to protect human health and safety. Further, the proposed project would not consume energy wastefully or inefficiently. The design and construction of the MPWSP Desalination Plant would incorporate various energy-efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand. Electricity consumed as a result of project operations would not be unnecessary, wasteful, or inefficient and the energy conservation impact related to the use of fuel and energy during project operations would be less than significant. CEQA does not require "inclusion of all feasible energy conservation technologies/measures," even for large projects, if no significant unnecessary, wasteful, or inefficient use of energy would occur.

Although not required to reduce an energy conservation impact, implementation of Mitigation Measure 4.11-1, GHG Emissions Reductions Plan, would require CalAm to have a qualified professional prepare a GHG Emissions Reduction Plan that must include a summary of state-of-the-art energy recovery and conservation technologies available for utility-scale desalination facilities and must include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the project, the Plan shall clearly explain why such technology is considered to be infeasible.

Regarding the specific suggested mitigation in the comment, the EIR/EIS addresses these as follows:

Construction

1. Mitigation Measure 4.10-1b already included a requirement to notify construction vehicle and equipment operators of State-required idling time limits in order to ensure enforcement of these requirements. Further, in response to comment CURE-Fox-15, the idling time limit for off-road diesel engines has been lowered from the State-required 5 minutes to 2 minutes.

2. See response to comment Marina-97 regarding the use of Tier 4 equipment.

3. Construction and demolition waste is addressed in Mitigation Measure 4.13-2: Construction Waste Reduction and Recycling Plan.

4. This suggestion is unrelated to the topic of energy conservation, and GHG emissions are addressed and mitigated in EIR/EIS Section 4.11.

5. The use of alternative fuels for construction equipment (including, as applicable, electric equipment) is addressed in Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards and would apply to generators used during construction.

6. The use of alternative fuels for construction equipment is addressed in Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards.

7. See response to comment Marina-97 regarding the use of Tier 4 equipment; which conform to the most stringent standards available for off-road construction equipment. It would be infeasible to require that the diesel equipment fleet exceed the current highest tier; such equipment cannot reasonably be expected to be available.

Operations

1. Senate Bill 743, which pertains to transit oriented infill projects, is not relevant to the proposed project.

2. It is unclear to what “jurisdiction-wide EV proliferation goals” the comment refers; none are known to apply to the proposed project.

3. Local (i.e., Monterey County) parking requirements are not relevant to the proposed project.

4. It is unclear whether the comment refers to vehicles of employees who may carpool to the site, carsharing services, or another type of “shared vehicle;” however, the small number of operational employees contributes only marginally to the anticipated operational energy use, and the Lead Agencies cannot compel project employees to share vehicles when accessing the site; therefore, the usefulness of providing parking for shared vehicles is speculative.

5. The proposed project does not include multi-family residential projects or non-residential projects.

6. Operation of the proposed project would not impact bicycle, pedestrian, or transit connections, and no such amenities would be applicable to operational employee access to the MPWSP Desalination Plant.

7. The use of on-site renewable energy production is addressed in Mitigation Measure 4.11-1.

8. The proposed project includes no wood-burning fireplaces or developments that may contain wood-burning fireplaces.

9. The proposed MPWSP Desalination Plant would not be located in an area that experiences urban heat island effect; therefore, measures designed to reduce such an effect are not relevant to the proposed project.

10. The use of on-site renewable energy production is addressed in Mitigation Measure 4.11-1.

11. Organic collection would not be relevant to operation of the proposed project.

12. The proposed project is not a new development and landscaping at project facilities would be minimal.

13. Operational energy performance targets are discussed in Mitigation Measure 4.11-1.

14. See Mitigation Measure 4.11-1 for a discussion of the GHG Emissions Reduction Plan that must include a summary of state-of-the-art energy recovery and conservation technologies available for utility-scale desalination facilities and must include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies.

15. The proposed project does not include the design of bike lanes, nor do the Lead Agencies have the ability to require CalAm to develop bike lanes on Charles Benson Road, a private roadway.

16. Operation of the proposed project would not significantly alter drainage patterns; therefore, green infrastructure would not be a necessary mitigation measure for the proposed project.

17. The proposed project does not include public parking areas, and no such amenities would be applicable to operational employee access to the MPWSP Desalination Plant.

18. The proposed project is not a specific plan.

19. The proposed project would not create or be located near a major employment center.

20. No such amenities would be applicable to operational employee access to the MPWSP Desalination Plant.

21 through 23. The proposed project is not a residential development.

24. The small number of operational employees contributes only marginally to the anticipated operational energy use, and it would be speculative to assume energy use reductions could be achieved by requiring the provision of charging stations, because it cannot be known whether individual employees would own electric vehicles.

25. The proposed project is not on a park or public/quasi-public land.

26 and 27. The proposed project is not a residential development.

28 through 30. The proposed project is not a residential or commercial development.

31. See item 14, above.

32. The small size of the Desalination Plant parking lot would not create adverse energy impacts; therefore, tree cover would not be required.

33. See item 16, above.

34 through 36. See Mitigation Measure 4.11-1 for a discussion of the GHG emissions reduction plan and subsequent offsets of operational energy use.

Marina-130 Although Impact 4.18-3 would be less than significant independent of the implementation of Mitigation Measure 4.11-1, the measure would reduce energy consumption. Mitigation Measure 4.11-1 has been revised in the Final EIR/EIS to include measures that would further reduce the project's energy consumption and reduce GHG emissions. Therefore, PG&E's conclusion in the personal communication that it has adequate capacity and infrastructure to support the proposed project remains valid, even more so, since revised Mitigation Measure 4.11-1 would reduce energy consumption more than initially proposed in the Draft EIR/EIS. A written record of the communication with Jose Saldana at PG&E was included in the reference materials for the Draft EIR/EIS that were made available during the public review period.

Marina-131 See responses to comments Marina-129 and Marina-130. No significant impact related to energy consumption would occur during project operation; therefore, no mitigation is required. Nothing in these comments or responses triggers a need to recirculate the Draft EIR/EIS.

Marina-132 Both NEPA and CEQA requirements for analyzing environmental justice impacts are addressed in Section 4.20, Socioeconomics and Environmental Justice. This section also describes and cites CEQ's 1997 environmental justice guidance document.

With respect to impacts on coastal habitats and the coastal ecosystem in Marina, see responses to comments Marina-65 through Marina-83. With respect to impacts on coastal erosion in Marina, see responses to comments Marina-36 and Marina-37.

Responses to comments Marina-39 and Marina-113 address water quality impacts from brine discharge, and responses to comments Marina-5 through Marina-10 and Marina-45 through Marina-61 address groundwater impacts. Each of these categories of impacts would be less than significant, in some cases with implementation of mitigation measures. Thus, no "wide range of severe environmental impacts" as described in the comment would occur in relation to these resources; the conclusions in the EIR/EIS that no significant adverse impacts on these resources would occur is the basis for the Section 4.20 determination that no disproportionately high and adverse impacts related to these resources would occur. Similarly, cumulative impacts are analyzed based on the potential for the project to contribute to significant cumulative impacts; for these resources, the EIR/EIS found no potential for significant cumulative impacts that could result in disproportionately high and adverse environmental justice impacts. Sections 4.2 through 4.19 do not address environmental justice impacts.

Marina-133 As described in EIR/EIS Section 4.20, to determine whether there would be any proposed project environmental impacts that could disproportionately affect communities of concern, all of the individual resource issue area analyses in EIR/EIS Sections 4.2 through 4.19 were evaluated. Individual physical effects, cumulative effects, and potential aggregate or additive effects among different issue areas were reviewed. Only Section 4.10, Air Quality, described impacts that could result in a disproportionately high and adverse impact on minority and/or low-income populations.

In compliance with Federal Council on Environmental Quality (CEQ) guidance, the Lead Agencies have evaluated the land-based impacts in the context of environmental justice impacts; e.g., with respect to air pollutant emissions. As stated in EIR/EIS Section 4.20.4.2, the potential for disproportionately high and adverse impacts on minority and low-income populations was assessed applying USEPA's Guidance for Incorporating Environmental Justice Concerns in USEPA's NEPA Compliance Analysis (USEPA, 1988). EIR/EIS Section 4.20 identified and applied criteria for evaluating these air pollutant emissions in the context of environmental justice, including reference to maximum daily emissions scenarios and significance thresholds. Based on this analysis, EIR/EIS Section 4.20 concludes that the project would not result in a disproportionately high and adverse impact on minority and/or low-income communities. Section 4.20.6 also analyzed the potential for cumulative impacts with respect to environmental justice, and concluded that the potential cumulative impact in the identified regions would be less than significant.

The comment is unclear regarding what "multiple interrelated" project impacts it refers to or how the impacts discussed in response to comment Marina-132 might be additive. Consistent with CEQ guidance that requires consideration of cumulative or multiple adverse health or environmental hazard exposures (Council on Environmental Quality, 1997), the EIR/EIS considers those resource impacts that could affect health issues such as air quality, GHG emissions, noise, and hazardous materials exposure. Review of these impact topics in Chapter 4 does not indicate that there would be a substantial aggregate effect of resource impacts or disproportionately high and adverse impacts on minority and/or low-income communities. The less than significant (and thus, not "high and adverse") impacts on separate types of resources identified in Chapter 4 would not combine with one another to result in greater impacts from an environmental justice perspective. For more information, see EIR/EIS Section 4.20, which considers the potential cumulative environmental justice impacts of emissions, project construction and siting, and water rates increases within the context of the cultural, social, historical, and economic factors in the Monterey District, and considers that these impacts would be less than significant.

The EIR/EIS does in fact quantify potential disproportionately high and adverse impacts spatially – see Table 4.20-6 which quantifies emissions near specific minority and low-income communities and compares them to emissions near specific communities not identified as minority or low-income, consistent with the approach suggested in the USEPA guidance document.

The environmental justice analysis is not segmented – EIR/EIS Section 4.20 includes a complete analysis of environmental justice issues, in compliance with federal requirements. The analysis necessarily relies on individual physical resource impacts identified in Chapter 4, but evaluates these impacts from the perspective of environmental justice issues, including assessment of aggregate effects.

Although all resource topics were considered in the analysis and determination of the environmentally superior/NOAA preferred alternative, the differing conclusions with respect to environmental justice impacts of alternatives (which are based on the air quality conclusions related to PM_{10} emissions) were inadvertently excluded in the discussion of the environmentally superior alternative in Draft EIR/EIS Section 5.6. This section has been revised to acknowledge that Alternatives 3 and 4 would have potentially significant and unavoidable impacts related to PM_{10} emissions, which could result in significant and unavoidable environmental justice impacts. This revision does not change the conclusions of the EIR/EIS, but simply restates conclusions in Section 5.6.

With respect to the comment that the EIR/EIS "dismisses without evaluation" potential depletion and degradation of Marina's water supply, see responses to comments Marina-5 through Marina-10, Marina-45 through Marina-61, Master Response 3, Water Rights (particularly Section 8.2.3.7) and Master Response 8, Project Source Water and Seawater Intrusion.

Finally, mitigation specific to environmental justice impacts is not required because appropriate mitigation already is provided in EIR/EIS Section 4.10, Air Quality, to address potential disproportionately high and adverse impacts. See discussion in EIR/EIS Section 4.20.5.2. Also, there are many other mitigation measures in individual resource areas in Chapter 4 that reduce the overall physical impacts of the proposed project and therefore reduce the project's aggregate effects on communities of concern.

Marina-134 See responses to comments Marina-5 through Marina-10 and Marina-45 through Marina-61 and Master Response 8, Project Source Water and Seawater Intrusion. Because the proposed project would not exacerbate seawater intrusion or cause other adverse groundwater quality impacts, no socioeconomic effect is expected to stem from such physical impacts.

Marina-135 CEQA and NEPA require that an EIR/EIS analysis of cumulative environmental impacts focus on those impacts to which the project would contribute. Except with respect to emissions of criteria pollutants from pesticides, fertilizers, or other soil amendments (addressed below), the proposed project would not contribute to cumulative impacts related to use of pesticides, fertilizers, or other soil amendments from agricultural operations because it does not propose to use any of these materials. Additionally, the project would not contribute to impacts related to offensive odors (see EIR/EIS Section 4.10, Air Quality, Impact 4.10-5). Therefore, while the Lead Agencies acknowledge the concerns regarding existing environmental burdens caused by these impacts, the evaluation of the proposed project properly focuses on other types of impacts to which the project could or would contribute.

See Footnote 2 in Section 4.1, which states, "While a cumulative analysis includes past, present and reasonably foreseeable future projects, the category of past projects is captured within the existing setting, or baseline, against which impacts are judged throughout the EIR/EIS, including the cumulative analysis. However, where projects were implemented after 2012 (the baseline year), those projects are set forth within Table 4.1-2 and included in the cumulative analysis." Accordingly, air pollutant emissions from the existing Monterey Regional Water Pollution Control Agency (MRWPCA) facilities, existing Monterey Peninsula Regional Waste Management District (MPWMD) facilities, livestock ranching and other agricultural activities, and other facilities and activities that have existed in the Marina area since before 2012 are reflected in baseline conditions. Section 4.10, Air Quality, describes baseline criteria air pollutant concentrations based on data from the nearest ambient air quality monitoring station, which has not recorded any violations of the state or federal criteria air pollutant standards from 2011 through 2015.

In addition, as described in Section 4.10.6, in developing thresholds of significance for air pollutants, MBUAPCD considered the emission levels for which a project's individual emissions would be cumulatively considerable; therefore, if individual project emissions would exceed the identified significance thresholds, a significant cumulative air quality impact would occur and the project's contribution to the cumulative impact would be considered significant. Thus, it would be inappropriate to quantify the emissions from baseline facilities and activities and cumulative projects and add these to the proposed project's emissions estimates to analyze cumulative effects, because there are no relevant numeric emissions thresholds that would apply to such a total.

In response to this comment, a description of the above-mentioned existing sources of air pollution in and near the City of Marina and other communities identified in the environmental justice analysis has been added to Section 4.20.6. Because the analysis already accounted for baseline air quality, and because project-level criteria air pollutant significance thresholds remain relevant to the proposed project's emissions regardless of other past, present, and reasonably foreseeable future projects, this information does not result in a change in the conclusions regarding the project's potential to contribute to cumulative impacts.

Relevant numeric emissions standards used in the Impact 4.20-2 analysis are provided in Table 4.20-6 and discussed in Impact 4.20-2.

Marina-136 The Lead Agencies acknowledge the City of Marina's concerns regarding its discretionary approval authority with respect to the Coastal Development Permit that would be required in order for the project to proceed. The Lead Agencies understand that certain City of Marina decisions under its Local Coastal Program may be appealed to the California Coastal Commission (CCC), potentially resulting in a CCC decision that is inconsistent with the City's decision and preference. Both CPUC and MBNMS will consider the City of Marina's comments in their respective decision-making processes. Specific concerns related to water supply, coastal resources, traffic, and noise are addressed in above responses.

Marina-137 See response to comment Marina-4.

Marina-138 See Master Response 8, Project Source Water and Seawater Intrusion, for more information on the capture zone, the cone of depression, seawater intrusion and project effects on groundwater resources. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information on the NMGWM. See also responses to comments Marina-55 through Marina-62 regarding the analysis of the proposed project's impacts on groundwater in the EIR/EIS. Contrary to the comment, the discussion of groundwater impacts was not dropped from the EIR/EIS analysis of alternatives in Chapter 5. EIR/EIS Table 5.6-1 presents the comparison of the impacts on groundwater resources for all alternatives, and concludes that the impacts for all alternatives would result in a decreased severity (shown by the down arrow) for operational groundwater impacts and the impact conclusions are either the same as the proposed project (less than significant) or No Impact (No Action alternative).

Marina-139 The EIR/EIS describes a total of eight alternatives, including the proposed project, the No Project alternative, and Alternatives 1 through 5b in EIR/EIS Section 5.4, and evaluates these alternatives in Section 5.5. The extensively detailed screening of components is provided in EIR/EIS Section 5.3, and includes the screening and evaluations of 13 intake options, 7 outfall options, and 3 desalination plant site options in Sections 5.3.3, 5.3.4, and 5.3.5, respectively.

Marina-140 The commenter is incorrect that the EIR/EIS does not analyze an alternative of a size that would produce less water than the proposed project (the proposed project being either a 9.6 mgd desalination plant or a 6.4 mgd desalination plant that would be combined with a water purchase agreement whereby CalAm would procure water from the GWR project for its customers). Both Alternatives 5a and 5b are described in EIR/EIS Section 5.4 and are evaluated in EIR/EIS Section 5.5 with a 6.4 mgd desalination plant alone (at the CEMEX location and Potrero Road locations, respectively). Thus, the environmental impacts of these alternatives, as presented in the EIR/EIS and compared to the other alternatives, do not include effects of the GWR project. Alternatives 5a and 5b would produce approximately 3,500 afy less water than the proposed project; as such, each of these alternatives would produce only two-thirds the water of a 9.6 mgd desalination plant.

Clearly, the EIR/EIS analyzes alternatives that would avoid or minimize some of the project's environmental effects though they would impair attainment of the project objectives to some degree.[4] This is explained as to Alternative 5a, for example, in Section 5.4.7.3, Ability to Meet Project Objectives, where the EIR/EIS explains that implementation of Alternative 5a on its own and without the GWR project and associated water purchase agreement, would only partially meet the project objectives because the 6.4-mgd project would not develop enough supply to serve the existing land uses and water entitlements [12,845 afy] baseline or associated peak demands in CalAm's Monterey District. The 6.4 mgd desalination plant in combination with other existing sources (Carmel River legal entitlement, Seaside Basin, ASR, and Sand City Desalination) would achieve compliance with Order 95-10 and the Seaside Groundwater Basin Adjudication. However, Alternative 5a would not provide water supply reliability; and would not provide supply to fully serve Pebble Beach water entitlements or anticipated economic recovery at existing businesses. It would not provide enough supply to enable development of vacant legal lots of record. Assuming that the GWR Project is constructed (which is assumed in the cumulative analysis for this alternative), it would provide 3,500 afy of potable supply for the CalAm service area. Alternative 5a in combination with the GWR Project supply would meet the project objectives.

The GWR project is evaluated in the context of Alternatives 5a and 5b as a cumulative project. For further information on project objectives, see response to comment MCWD-2 in Section 8.5.2. Also see Master Response 13, Demand (Project Need) and Growth, concerning projected water needs in CalAm's service

[4] Because the EIR/EIS does evaluate these two smaller-sized options, the cases cited by the commenter are inapplicable.

territory and to satisfy the project objectives. As explained in Master Response 13, if the Lead Agencies determine, based upon the evidence in the record, that project objectives could be satisfied with a lesser amount of water than would be supplied with either the proposed 9.6 mgd desalination plant or the 6.4 desalination plant, then the Lead Agencies could opt to approve a smaller project.

Marina-141 See response to comment Marina-11, MCWD-168, and MCWD-170 through MCWD-175.

Marina-142 See response to comment Marina-140 and MCWD-168. Alternatives 5a and 5b, at about two-thirds the size desalination plant as the proposed project, are designed to lessen or avoid environmental effects. While Alternatives 5a and 5b as to many resource areas have the same classification of impact as the larger plant (e.g., significant or less than significant), the EIR/EIS plainly sets forth the comparative volume or quantity of the effect, which is generally less than that of the proposed larger plant. For example, as to energy impacts, EIR/EIS Section 5.5.18.8 provides, "Alternatives 5a and 5b would have a decreased desalinated plant capacity; therefore, the total operational electricity demand would be reduced compared to the proposed desalination plant; approximately 3.7 MW, which is equivalent to approximately 63 percent of that for the proposed project."

Marina-143 See response to comment Marina-4 and Marina-140 and Master Response 13, Demand (Project Need) and Growth.

Marina-144 See response to comment Marina-123; the proposed project would not cause a significant impact to historic resources. See response to comments Marina-55 through MCWD-62 regarding the EIR/EIS analysis of the proposed project's impacts on groundwater resources.

As noted on Draft EIR/EIS page 5.5-83, "Proposed project slant well pumping would not exacerbate seawater intrusion because the slant wells would capture seawater as it crosses the coast and proposed project pumping is therefore, expected to retard future inland migration of the seawater intrusion front. The impact on seawater intrusion would be less than significant." But the EIR/EIS does not draw the same conclusion for alternatives with screened open water intakes. In fact, the EIR/EIS concludes that an alternative with an open water intake "would not extract source water from groundwater aquifers, and would not include in-lieu recharge of the 400-Foot aquifer because Salinas Valley return water would not be required; the open water intake would not deplete groundwater supplies or interfere with groundwater recharge. Operation of Alternative [. . .] would have no impact on local groundwater levels in the SVGB, a reduced potential for impact compared to the proposed project." See EIR/EIS Sections 5.5.4.5 for that conclusion about Alternative 2 (Open Water Intake at Potrero Road), Section 5.5.4.6 for Alternative 3 (DeepWater Desal) and Section 5.5.4.7 for Alternative 4 (People's Project). Thus, while some options would have a less than significant impact on groundwater resources, other options would have no impact on groundwater resources. These comparative impacts will be taken into account in the decision-making process.

Marina-145 See response to comment Marina-4, regarding project objectives and purpose and need. EIR/EIS Section 5.6, provides 20 pages of discussion on the environmentally superior alternative, including an introduction, an overview of assumptions (Section 5.6.1.1), a summary of the significant impacts of the proposed project (Section 5.6.1.2), a discussion of the key differences between alternatives (Section 5.6.1.3) and a determination of the environmentally superior and NEPA-agency preferred alternative (Section 5.6.2); Table 5.6-1 provides an Alternatives Impact Summary.

The selection of the environmentally superior (CEQA) and environmentally preferred (NEPA) alternative did not downgrade any alternative with an open water intake because of permitting complexities and potential delays. The EIR/EIS explains in Section 5.6.1.3 that, "Three of the alternatives would use screened, open water intakes, which would reduce or avoid several proposed project impacts but result in new significant impacts." Section 5.6.1.3 further explains that the key differences in impacts pertaining to open water intakes include: the use of barges for construction and the placement of ballast rock on the seafloor within MBNMS which could result in temporary and permanent direct and indirect effects on marine habitat and associated marine biological resources, as well as historical resources (i.e., shipwrecks) in Monterey Bay; construction and operation of new facilities within a ravine of the Monterey Submarine Canyon could result in temporary and permanent effects due to unstable slopes; and the operation of screened open water intakes would result in long term effects on marine biological resources within MBNMS.

Two of the screened open water intake alternatives (Alternative 3, DeepWater Desal, and Alternative 4, People's Project) were determined not to be the environmentally superior alternative because, based on current information, each would produce more water than the proposed MPWSP and while they would each meet most of the project objectives and purpose and need, these alternatives would not generally reduce or avoid the potential significant environmental impacts of the proposed MPWSP. Alternative 2, the other open water intake alternative, was determined not to be the environmentally superior alternative because construction of the new intake structure would result in greater impacts on the seafloor than the proposed project, and operation of an open water intake would result in long-term marine biological impacts from impingement and entrainment. See EIR/EIS Section 5.6.2.

Marina-146 EIR/EIS Section 5.6.2 explains, "The impacts of the subsurface intakes at Potrero Road (Alternative 1), however, would have a greater impact on groundwater levels in the Dune Sands, 180- and 400-Foot aquifers, resulting in greater impacts on marine and terrestrial biological resources at Elkhorn Slough than pumping at CEMEX (proposed project). Therefore, neither Alternative 1 nor Alternative 5b would offer overall environmental advantages over the proposed project or reduced-size alternative (Alternative 5a).” This conclusion is supported by the analysis in EIR/EIS Section 5.5.4.4 and Figure 5.5-2: “The extent of modeled drawdown in the Perched “A” Aquifer is almost twice the inland distance modeled at CEMEX for the proposed project because: 1) the Perched “A” Aquifer is not as thick as the Dune Sand Aquifer underlying the CEMEX site, and 2) the ocean water capture zone is restricted at Potrero Road to the Perched “A” Aquifer (the wells would not be screened in the 180/180-FTE Aquifers) because the underlying Salinas Valley Aquitard separates the Perched “A” Aquifer from the 180-Foot Aquifer.”

EIR/EIS Section 5.5.4.4 further explains, “Modeling indicates that pumping under Alternative 1 would influence the Perched “A” Aquifer north of Potrero Road and the cone of depression would encompass the mouth of the Elkhorn Slough and about 1-mile inland up the slough (a portion of which is within MBNMS). This effect is shown by the 1-foot drawdown contour lines on Figures 5.5-2 and 5.5-3 and these results suggest a direct or indirect effect of project pumping at Potrero Road on the surface water/groundwater interaction in the Elkhorn Slough.” Section 5.5.4.4 concludes that, “Alternative 1 would not impact groundwater levels in neighboring wells or contribute to seawater intrusion within the SVGB … and would result in the same impact conclusion as the proposed project, less than significant.”

While minimal data are available for the Potrero Road site to assess the historical model calibration, borehole data collected at the Potrero Road site and at nearby Moss Landing helped confirm the modeled hydraulic conductivity in the Perched “A” Aquifer. EIR/EIS Appendix E2, Attachment 2, presents an Expanded Model which included Elkhorn Slough and the lower portion of the Pajaro Valley. The expansion was based on the USGS Pajaro Valley Hydrologic Model. The Expanded Model results indicate that the cone of depression due to slant well pumping at the Potrero Road site would extend northward into the Pajaro Valley by approximately one-half mile in the Perched “A” Aquifer, and approximately three-quarter mile for the 180-Foot/FTE Aquifer. While the amount of the groundwater that would otherwise flow into Elkhorn Slough cannot be quantified, the groundwater-surface water interaction at Elkhorn Slough is not speculative and a cone of depression from pumping at the well sites would have an effect on flows in Elkhorn Slough.

As described in Marine Biological Resources, EIR/EIS Section 5.5.5.4, based on the predicted areal extent of the drawdown, slant well pumping operations at Potrero Road could potentially adversely affect aquatic habitat in Elkhorn Slough due to reduced surface water flow and volumes. This would be an increased level of impact compared to the proposed project and because there is no method to mitigate for impacts on surface water flow and volumes in Elkhorn Slough, Alternative 1 would result in an ***increased impact conclusion*** on marine species, natural communities or habitat, protected wetlands or waters, and critical habitats compared to the proposed project, significant and unavoidable.

As explained in Terrestrial Biological Resources, Section 5.5.6.4, Alternative 1 would also avoid the proposed project's impacts on steelhead habitat in the Salinas River and Tembladero Slough, but instead may affect steelhead habitat in Elkhorn Slough. "While the modeling cannot predict the amount of water diverted from Elkhorn Slough, it must be conservatively assumed, based on the predicted areal extent of the drawdown, that operations could potentially adversely affect steelhead habitat in Elkhorn Slough due to reduced surface water flow and volumes."

The comment criticizes the EIR/EIS for making conservative assumptions as to impact conclusions when the precise amount of the impact is not known. This approach, however, is typical in NEPA and CEQA analyses and consistent with the standard approach of the Lead Agencies.

Marina-147 The analysis of alternatives in EIR/EIS Section 5.5 includes a reduced sized desalination plant with fewer slant wells: Alternatives 5a and 5b. The selection of the environmentally superior alternative is presented in detail in EIR/EIS Section 5.6, and as stated therein, the smaller desalination plant in Alternative 5a would be the environmentally superior alternative; if the GWR project were implemented, this alternative would be the environmentally superior alternative that meets the basic project objectives. Otherwise, the proposed project would be the environmentally superior alternative for the reasons stated in EIR/EIS Section 5.6.2. Further, see responses to comments Marina-137 and Marina-138 through Marina-146 regarding the fully adequate, legal, and detailed analysis of alternatives provided in Chapter 5 of the EIR/EIS.

Marina-148 See responses to comments Marina-97 through Marina-100 (Air Quality), Marina-101 (Greenhouse Gas Emissions) and Marina-129 through Marina-131 (Energy Conservation). EIR/EIS Section 6.1 has been revised accordingly.

Marina-149 See responses to comments Marina-3 and Marina-4, as well as Master Response 13, Demand (Project Need) and Growth, regarding the estimates of existing annual demand and other service area demands proposed to be served by the project; available supplies; and water available for growth. See also Appendix L, which was prepared to test whether the project could be smaller if different supply and demand numbers were considered, and Section 8.2.13.5 of Master Response 13, which summarizes the results of that inquiry.

Marina-150 An essential purpose of the proposed project is to provide replacement water supply that would enable CalAm to cease diverting Carmel River water in excess of CalAm's water rights and to cease pumping from the Seaside Groundwater Basin in excess of CalAm's adjudicated right. Project implementation is, therefore, assumed to enable CalAm to "stop illegal pumping on the Carmel River and

Seaside Basin." The prospect that CalAm's adherence to its Carmel River water rights and adjudicated groundwater rights in the Seaside Groundwater Basin would result in greater use of the same resources by others to serve urban growth is speculative. The SWRCB's explicit concern expressed in Order 95-10 and the subsequent CDOs has been the effect of CalAm's unlawful diversions on *instream* beneficial uses of the Carmel River (see, e.g., Section 5 of Order 95-10).

As described in EIR/EIS Section 2.2.3, Order 95-10 established CalAm's legal rights to the Carmel River, and the SWRCB directed CalAm to take actions to terminate its unlawful diversions; one potential action specified in the order was to obtain appropriative rights to the Carmel River water that was being unlawfully diverted, and another was to contract with other agencies that had appropriative rights to divert and use water from the Carmel River. In the years since, other than SWRCB Water Right Permit 21330 to divert "Table 13" water (see EIR/EIS Section 2.4.6.1), CalAm has been unable to obtain appropriative rights and CalAm's ability to contract with others that have appropriative rights has been extremely limited (a contract with Malpaso Water Company and temporary forbearance agreement with the Trust for Public Land, described in EIR/EIS Section 2.4.6).

CalAm's use of water to which the Malpaso Water Company has rights is limited to the quantity of water not needed by Malpaso. CalAm's cessation of unlawful diversions would not change Malpaso's rights or the rate at which Malpaso is using them. Much of the Trust's land with water rights subject to the forbearance agreement will be converted to riparian habitat, and much of the water associated with that property is, therefore, expected to remain in the River. Other ways the Trust may use that water right are unknown to the Lead Agencies. The extent to which CalAm's adherence to the Carmel River rights established in Order 95-10 would allow increased diversions by others, such as those holding Carmel River water rights that are subject to minimum flow requirements, is not known; nor is it known whether the SWRCB would issue additional permits to water users listed in Table 13 of SWRCB Decision 1632 when CalAm's unlawful river diversions cease.

As noted above, the SWRCB's expressed concern about the unlawful diversions has been effects on instream uses, not potential constraints imposed by the unlawful diversions on existing or future water rights holders. It is also speculative to assume that any increased diversions by others, if they did occur when CalAm's unlawful diversions cease, would be used for urban development. The Seaside Groundwater Basin is an adjudicated basin. CalAm has been adhering to the schedule of decreasing pumping from the basin established by the Watermaster. Given that rights to the basin have been adjudicated, CalAm's adherence to its adjudicated right will not create new rights by others to basin groundwater.

Marina-151 As described in EIR/EIS Section 6.3.5.3, the amount of water provided by the MPWSP that would be available for growth is consistent with growth anticipated by the jurisdictions in CalAm's service area. EIR/EIS Section 6.3.6 identifies the impacts of growth based on impacts identified in the general plan CEQA documents of service area jurisdictions. No significant impacts have been identified related to increased wastewater flows from growth anticipated in CalAm's service area jurisdictions.

In addition, since these plans and CEQA documents were prepared, the Pure Water Monterey Groundwater Replenishment Project (GWR) was approved, in 2016, which will recycle more wastewater flows than MRWPCA already recycles for irrigation by users of the CSIP. Increasing the use of recycled water is expected to be a continuing trend, and is a stated goal of MRWPCA (MRWPCA, 2016); increased wastewater recycling will further reduce the outfall capacity used by wastewater discharges. In Draft EIR/EIS Comment MRWPCA-13, the MRWPCA states that the "[c]ost of potable water and increased conservation has been reducing overall sewage flow to the Regional Treatment Plant with a downward trend since 2002 resulting in less ocean discharge… [The Pure Water Monterey GWR project], currently out to bid, will further reduce ocean discharge, especially during the winter." Therefore, consistent with the findings of the General Plan CEQA documents reviewed for the EIR/EIS, the impact on outfall capacity of growth in service area jurisdictions is not expected to be significant.

Marina-152 EIR/EIS Section 6.3.6 and Table 6.3-9 summarize the environmental impacts of growth that water supply provided by the MPWSP would, to an extent, support. Also refer to the discussion under "Impacts of Growth" in Master Response 13, Demand (Project Need) and Growth. As stated on Draft EIR/EIS pages 6-40 to 6-41, Table J2 in Appendix J2 presents a more detailed summary of those impacts and summarizes the identified mitigation measures. As stated on page 6-26 under "Growth Trends and Projections in Jurisdiction Land Use Planning Documents, "[a]ll of the jurisdictions cite limited water supply as a key factor limiting planned development within their boundaries." This is confirmed in the individual city and county summaries presented in the same section. The EIR/EIS growth analysis is predicated upon the assumption that the MPWSP would indeed remove a constraint to growth.

In 2006, in consultation with service area jurisdictions, the MPWMD prepared a comprehensive assessment of water supply needs associated with growth anticipated in the jurisdictions' general plans (see Section 2.5.3.4, General Plan Buildout, and Section 6.3.5.3, Growth Trends and Planning Agency Projections). At the time, CalAm had proposed the Coastal Water Project. The EIR prepared for the Coastal Water Project also analyzed a Regional Project, the second phase of which included water to meet the future water needs identified in MPWMD's 2006 analysis (see EIR/EIS Section 1.4.1, The Coastal Water Project). The Regional Project was not constructed. As noted in EIR/EIS Section 1.4.2, CalAm withdrew its support for the Regional Project in 2012 and subsequently submitted an application to the CPUC for the MPWSP. Thus, a water supply has yet to be developed to meet demand associated with general plan buildout identified by MPWMD. The limited amount of water supply available from the Malpaso Water Company to its subscribers in Carmel and the Carmel Valley area, discussed in EIR/EIS Section 2.4.6.2, does not change this conclusion. Since the MPWMD prepared its analysis, the estimates of some jurisdictions have been revised, reducing the total estimated demand from 4,545 afy to 3,526 afy, as discussed in EIR/EIS Section 2.5.3.4, General Plan Buildout, and shown in Table 2-5.

The 2nd column from the right in Table J2-1 in EIR/EIS Appendix J2, shows two levels of significance for the Monterey County General Plan EIR. As the column heading indicates, the significance levels shown are for general plan development "To 2030" and "To 2092." Table note "a" at this column heading explains: "The Monterey County General Plan EIR evaluated impacts anticipated to occur by the General Plan's 2030 planning horizon, as well as impacts anticipated to occur under full General Plan buildout, which is assumed to occur in 2092. The column shows both significance conclusions (impacts to 2030 are shown on the left and Impacts to 2092 on the right)." The table shows the significance level with mitigation.

Marina-153 The MPWSP has been proposed in response to SWRCB Order 95-10 and the revised 2016 Cease and Desist Order, which direct CalAm to terminate its unlawful diversions from the Carmel River. CalAm is obligated to comply with these orders as a matter of law, and EIR/EIS Section 4.6 concluded on Draft EIR/EIS page 4.6-2 that "since a primary purpose of the proposed project is to reduce pumping from the Carmel River to restore and increase flows, the effect of this project would be a beneficial effect on stream flows in the Carmel River and the river's aquatic and riparian biological resources." No infrastructure would be removed from the Carmel River, no decommissioning of facilities would be necessary and none is proposed. There is no reason to expect that implementation of the proposed MPWSP would result in any adverse impacts to the aquatic and riparian biological resources of the Carmel River.

8.5.1.2 Responses to Comments from City of Marina – Jacobson James & Associates Letter

Marina-JJ&A-1 The EIR/EIS did not rely only on the two-dimensional MCWRA maps to assess water quality degradation in the Dune Sand and 180-FTE Aquifer. Other sources included the water quality data obtained from the eight monitoring well clusters that CalAm installed to monitor the effects on the SVGB from test slant well pumping at CEMEX. These well clusters are screened discretely in the Dune Sand Aquifer, the 180-Foot/FTE Aquifer, and the 400-Foot Aquifer, and provide that "third dimension" needed to evaluate groundwater degradation, with depth and the vertical distribution of seawater intrusion in the underlying aquifers inland from the coast. In addition, the EIR/EIS used the pumping and water quality data obtained from the test slant well to monitor aquifer response from pumping and changes in capture zone water quality. A description of the groundwater data reviewed and applied to the EIR/EIS groundwater analysis is provided in EIR/EIS Section 4.4.4, Approach to Analysis and in EIR/EIS Appendix E3. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM); Mater Response 8, Project Source Water and Seawater Intrusion; and Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-2

EIR/EIS Section 4.4.5.2 presents the impacts of proposed project pumping on nearby production wells. Pursuant to significance criteria established by the Lead Agencies in Section 4.4.5, an impact is considered significant if the proposed project would lower groundwater levels in a nearby municipal or private groundwater production well enough to cause a substantial reduction in well yield, or to cause physical damage due to exposure of well screens and well pumps. The nearby production wells that could be affected by MPWSP pumping at the CEMEX site, including the MCWD wells, are shown on EIR/EIS Figure 4.4-14 and listed in Table 4.4-10. As noted in Table 4.4-10, the City of Marina's Wells 10, 11, and 12 are located over 2 miles to the southeast, and are screened in the 900-Foot/Deep Aquifer. The Ord Community Wells 29, 30, and 31 are located over 5 miles to the southeast and are screened in the lower 180-Foot and the 400-Foot Aquifers. See Master Response 3, Water Rights, Section 8.2.3.7, and Master Response 8, Project Source Water and Seawater Intrusion.

The transient North Marina Groundwater Model (NMGWM^{2016}) comprises eight different layers representing the depth distribution of aquifers and aquitards, and thus simulates three-dimensional groundwater flow (see Final EIR/EIS Appendix E2, Section 2.2, Model Construction). Model analyses assess the potential effects of changing vertical gradients between aquifers and across aquitards and were not limited to lateral flow within principal aquifers. For example, a range of values for the depth distribution of the relative volume of groundwater extracted by the slant wells from different aquifers was assessed as part of the sensitivity and uncertainty analysis. Analysis of potential impacts of vertical flow was implicit in the determination of water level changes in the 900-ft (Model Layer 8) and 400-ft (Model Layer 6) aquifers, which are reported together with model results for Model Layer 2 and Model Layer 4.; see Final EIR/EIS Appendix E2, Section 6, and Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-3

See Master Response 9; specifically, Section 8.2.9.1 discusses recent geophysical studies and Section 8.2.9.2 discusses correlation with actual subsurface data. Section 8.2.9.3 describes how the ERT/AEM data was used in the EIR/EIS. EIR/EIS Appendix E3, Section 3.1.8 discusses the evaluation of Stanford University's AEM data survey. In short, Dr. Knight's recent AEM survey provides data to help interpolate between control points provided by the MPWSP monitoring network and confirms the work completed for the hydrogeologic investigation regarding the distribution of water quality in the MPWSP study area. See also EIR/EIS Section 4.4.1.4, Groundwater Quality.

Marina-JJ&A-4 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM). EIR/EIS Section 4.4.1.4 and Table 4.4-4 explain that both the Dune Sand Aquifer and the 180-FTE Aquifer in this area already contain highly brackish groundwater. All data collected to date (see EIR/EIS Appendix E3) confirm that the Dune Sand Aquifer contains very transmissive materials and directly overlies and is in hydraulic continuity with the underlying 180-FTE Aquifer in the project area. Contrary to the comment and consistent with evidence in the EIR/EIS, the 400-Foot Aquifer in the project area is confined and the 180/400-Foot Aquitard, although shown as inferred within dashed lines on EIR/EIS Figure 4.4.3, is most certainly present and restricts flow from the 180-FTE aquifer above it. The assertion that movement of seawater intruded groundwater from the 180-FTE Aquifer to the 400-Foot Aquifer is likely to continue and be exacerbated by the MPWSP is inconsistent with the analysis in EIR/EIS Section 4.4.5, and Appendix E2 (see also Master Response 12, The North Marina Groundwater Model (v. 2016)). The 400-Foot Aquifer in the CEMEX area is already intruded with seawater as shown by the TDS concentrations on EIR/EIS Figure 4.4.3. The proposed slant wells would only draw groundwater from the Dune Sands Aquifer and the 180-FTE Aquifer. As discussed in EIR/EIS Section 4.4.5.2, the only drawdown response from the slant well pumping in the 400-Foot Aquifer would occur with 0 and 3 percent return water with current sea level conditions, but this would not result in a significant impact. The 6 and 12 percent return water scenarios with current sea level conditions would cause groundwater levels to increase in the 400-Foot Aquifer and after 63 years, there would be no drawdown response in the 400-Foot Aquifer. In response to the comment's assertion that the EIR/EIS did not consider the entirety of Dr. Knight's work in its analysis, see EIR/EIS Section 4.4.1.4, and Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM).

Marina-JJ&A-5 See Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), for a discussion of the use and applicability of the May 2017 AEM survey data in the EIR/EIS; see also EIR/EIS Appendix E3.

Marina-JJ&A-6 The inland movement of groundwater is driven by regional recharge and pumping patterns. EIR/EIS Section 4.4.1.3 describes the groundwater flow and occurrence in the SVGB, and describes how groundwater in the Pressure and East Side Areas flows northwest from the upper reaches of the SVGB until it reaches the city of Salinas, at which point groundwater in both the 180-Foot and 400-Foot Aquifers flows towards a groundwater depression north of the city; see EIR/EIS Figures 4.4-5 and 4.4-6, as well as Figures 3-1 through 3-4 in the 2015 State of the Salinas River

Groundwater Basin report (Brown and Caldwell, 2015). Along the coast, flow in both the 180-Foot and 400-Foot Aquifers is towards the east, or landward, and has resulted in seawater intrusion; see EIR/EIS Figures 4.4-10 and 4.4-11.Local conservation efforts implemented near the coast cannot alone reverse the effect of these regional inland gradients; to be successful and to place this concept in perspective, local conservation efforts would have to provide sufficient recharge to mitigate the inland pumping that is responsible for the historical overdraft and seawater intrusion. For example, ongoing groundwater enhancement programs in the SVGB (including the Castroville Seawater Intrusion Project (CSIP) and the Salinas Valley Water Project (see EIR/EIS Section 4.4.1.3), have been effective at reducing groundwater extraction in those areas. However, the objective of SVWP Phase 1 was to stop (not reverse) seawater intrusion and to provide adequate water supplies and flexibility to meet current and future (year 2030) needs (MCWRA, 2001, Section 3.0).

As reported in Brown and Caldwell 2015, Section 4.3.1, groundwater flows out of the Pressure Subarea into the East Side Subarea because of large groundwater elevation declines in the East Side Subarea that have reversed the natural groundwater head gradient. The large storage declines that have occurred in the Basin in the past, especially in the East Side Subarea, have created a significant landward groundwater head gradient that must be reversed before seawater intrusion can be halted. Pumping would have to be decreased by about 30 percent in the Pressure and East Side Subareas to decrease seawater intrusion to about 8,100 afy after 20 years. Specifically, based on 2012 actual extractions, pumping would have to decline from about 114,000 afy to 80,000 afy in the Pressure Subarea and from about 96,000 afy to 67,000 afy in the East Side Subarea. This would be a total pumping reduction of about 63,000 afy in both Subareas affected by seawater intrusion.

Phase II of the SVWP would put to beneficial use the water right allocated to MCWRA by Water Right Permit #11043[5] by further developing surface water resources that will be used to offset groundwater pumping in the Pressure Area and East Side. However, see response to comment Beech 3-3 and Beech 3-4 regarding the status of Water Right #11043. Both SVWP Phase I and Phase II are addressed in the cumulative impacts analysis in EIR/EIS Section 4.4.6. Actions that may be developed or required as a function of SGMA are too speculative to opine about in the EIR/EIS. Nonetheless, as demonstrated above, substantial actions would be needed merely to arrest seawater intrusion, without consideration of more dramatic actions that would be needed to reverse such intrusion.

The inland gradient imposed on the NMGWM^{2016} is based on real-world measurements and is not artificial. As outlined in Final EIR/EIS Appendix E2, Section 5.3, the average observed regional gradient (0.0007) represents Fall 2015

5 Available online at http://www.co.monterey.ca.us/home/showdocument?id=19020.

groundwater elevations based on water level contour maps provided by Geoscience Support Services, Inc. (2016). As part of sensitivity testing of the NMGWM^{2016} (see EIR/EIR Appendix E2, Section 5.4), average regional gradients of 0.0004 and 0.0011 were also superimposed on the superposition model. If the inland regional hydraulic gradient decreases over time as a result of successful actions by MCWRA or as a result of actions resulting from SGMA, the capture zone would be slightly larger and would more resemble that from the minimum gradient examined for this analysis (0.0004), shown in Final EIR/EIS Appendix E2, Figure 5.6. However, the expectation that the groundwater depression on the East Side will be resolved within a reasonable timeframe and the inland gradient would be dramatically decreased is speculative for the reasons explained above, and the impact conclusion on groundwater resources remains unchanged.

Marina-JJ&A-7 See response to comment Marina-JJ&A-06 regarding the potential capture zone. The assumption in the comment that future groundwater conditions will cause reduced or flat gradients fails to recognize that sea level is projected to rise, continuing to exacerbate the difference between coastal water levels and inland water levels. Therefore, any increases in inland groundwater elevations would be partially offset by future sea level rise. Sea level is one of the inputs for which a range of values was used to assess NMGWM^{2016} uncertainty and was reported in Final EIR/EIS Appendix E2. See Master Response 8, Project Source Water and Seawater Intrusion; Figures 8.2.8-1 and Figure 8.2.8-2 show the modeled capture zone for the Dune Sands Aquifer and the 180-FTE Aquifer, respectively, and resemble the commenter's Figure 6a.

The water transmitting properties of the aquifer materials inland near the coast are insufficient to supply the majority of the water extracted by the slant wells. For example, the modeled horizontal conductivities of the inland A-Aquifer (2-4 ft/d), are one to two orders of magnitude smaller than the modeled Dune Sand Aquifer that would be tapped by the slant wells (150-625 ft/d); see EIR/EIS Appendix E2, Figure 3.4a. The water supplied to the slant wells in Model Layer 2 would, therefore, originate more readily from the Dune Sand Aquifer at the coast and beneath the ocean, than from inland. The combination of this contrast in hydraulic conductivity and ample recharge available from the ocean make it implausible for the inland gradients to reverse and "strand" the project.

Marina-JJ&A-8 See Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, for a discussion of the deep aquifer system (inaccurately referred to as the 900-Foot Aquifer). The text in EIR/EIS Section 4.4.1.2 and Section 4.4.5.2 has been revised to provide additional information on the deeper aquifers of the SVGB and to clarify the discussion of the impact of the MPWSP on those aquifers.

Marina-JJ&A-9 See response to comment Marina-JJ&A-8. Final EIR/EIS Appendix E2, Figure 3.3a shows that the horizontal hydraulic conductivity specified for Model Layer 8 (the 900-Foot/Deep Aquifer) falls at the midpoint of reported values from other sources, and therefore, the NMGWM^{2015} values were reasonable and not modified in the NMGWM^{2016}. Moreover, hydrographs for four 900-Foot Aquifer wells with historical water level data from 1979 to 2011 are reported in Appendix E2 Figure 4.1, and show good agreement between measured and model-calculated water levels. All of the model runs reported in Appendix E2 show a substantially decreasing cone of depression with depth, confirming that uncertainty in model results attributed to uncertainty in parameter values (for example, variable values for horizontal and vertical conductivity) becomes less significant for the deeper model layers.

Marina-JJ&A-10 See responses to comments Marina-JJ&A-2, Marina-JJ&A-8 and Marina-JJ&A-9. See also Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin. Analysis of potential impacts of vertical flow was implicit in the determination of water level changes in the 900-Foot/Deep (Model Layer 8) and 400-Foot (Model Layer 6) aquifers, which are reported together with model results for Model Layer 2 and Model Layer 4 in Final EIR/EIS Appendix E2, Figures 5.3, 5.4, 5.9 and 5.10. The model results that consider return water also included all four model layers. Hydrographs presented in Final EIR/EIS Appendix E2, Figure 4.1, show the water-level declines ranging from 10 to 50 feet associated with seasonal pumping in Model Layer 8 (the 900-Foot Aquifer). As noted in EIR/EIS Section 4.4.1.3, Groundwater Flow and Occurrence, there is a groundwater divide along the north side of the SGB separating groundwater flow paths between the SGB and the SVGB in both the shallow and deep aquifers, as illustrated on Figures 4.4-7 and 4.4-8. Impacts on the SGB are described in EIR/EIS Section 4.4.5.2.

Marina-JJ&A-11 The proposed length and placement of the MPWSP slant wells are described in EIR/EIS Section 3.2.1.1 and in Table 3-1, and are shown on Figure 3-3a; the City of Marina City Limits and Mean High Water are both shown on the figure. EIR/EIS Table 3-1 explains that the slant wells would draw water "from groundwater aquifers that extend beneath the ocean floor (the Dune Sands Aquifer and the 180-Foot-Equivalent Aquifer of the Salinas Valley Groundwater Basin) for use as source water for the MPWSP Desalination Plant."

EIR/EIS Table 3-2 presents the total length of each slant well extending seaward of the 2020 MHW line, and EIR/EIS Figure 3-3b presents an Illustrative Cross-Sectional View of the Subsurface Slant Wells, so the distances onshore and offshore are fully disclosed. Contrary to Footnote 11 in the comment, the design details of the proposed slant wells that are noted in Footnote 79 on page 28 of Appendix EIR/EIS were made publicly available with all of the other references cited in the EIR/EIS: see https://tinyurl.com/MPWSPRefs.

The notes in EIR/EIS Table 3-2 reference Appendices C1 (Coastal Water Elevations and Sea Level Rise Scenarios) and C2 (Analysis of Historic and Future Coastal Erosion with Sea Level Rise). The basis for determining the 2020 mean high water line is provided in the Coastal Erosion Study (EIR/EIS Appendix C2), and it is discussed in EIR/EIS Section 4.2.5.4. Appendix C2 examined coastal processes to determine the likelihood for the slant wells and their well heads to become exposed before the end of their usable lifespan. The study estimated coastal retreat both laterally and vertically. The lateral extent of erosion was evaluated using coastal erosion hazard zones; the vertical extent was evaluated using coastal profiles. As explained in EIR/EIS Section 4.2.4.5, the future vertical profile is the current profile eroded at the historic rate, with added erosion caused by sea level rise. The lower profile envelope represents a highly eroded condition, which could occur from a combination of localized erosion (rip currents), a large winter storm, and seasonal changes.

As explained in EIR/EIS Section 3.3.1.1, the nine new permanent slant wells would be approximately 900 to 1,000, while keeping the well screen above the 180/400-Foot Aquitard. Based on EIR/EIS Table 3-2 and Figure 3-3b, the commenter's calculation that an average 82 percent of the individual well casing lengths would be landward of the projected 2020 MHW line in the City of Marina is not unreasonable. As explained in EIR/EIS Appendix E3, while placement of production well screens closer to or under the ocean may achieve the maximum ocean water percentage (OWP) in the first few months and a very slight increase in the medium-term, a difference of a few hundred feet in screen placement relative to the ocean boundary would have minimal overall effect on OWP.

Marina-JJ&A-12 As explained in Final EIR/EIS Appendix E2, Section 1, the NMGWM was developed in 2008 to evaluate proposed groundwater extraction projects for the Monterey Peninsula area. The NMGWM was updated for the April 2015 Draft EIR (herein referred to as NMGWM^{2015}) and again for the current EIR/EIS (herein referred to as NMGWM^{2016}). See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

As of this writing, the U.S. Geological Survey (USGS) model for the Salinas Valley (i.e., the Salinas Valley Integrated Hydrologic Model, or SVIHM) is not available nor has a release date been published. The initial hydraulic conductivity and storage values implemented in the SVIHM were also taken from the SVIGSM and refined based on sub regions (USGS, 2016), similar to the EIR/EIS Appendix E2 analysis where the Fort Ord layering and parameters were modified to better match the smaller-scale conceptual model, and to be consistent with the available data for these model inputs.

The NMGWM^{2016} is a more accurate representation of the hydro-stratigraphic framework in the Fort Ord area than SVIGSM and the NMGWM^{2015}, since it includes the "A-Aquifer" and "Fort Ord Salinas Valley Aquitard" ("FO-SVA"). The inclusion of these geologic features is consistent with, but was implemented independently from, the Lawrence Berkeley National Laboratory (LBNL) peer review of NMGWM^{2015} and recommendations; see EIR/EIS Appendix E1.

Marina-JJ&A-13 As explained in EIR/EIS Appendix E2, Section 1, the NMGWM was developed in 2008 to evaluate proposed groundwater extraction projects for the Monterey Peninsula area (Footnote 12 in the comment letter is a link to the April 2015 Draft EIR) and was updated for the current EIR/EIS (see response to comment Marina-JJ&A-12). Contrary to the comment, EIR/EIS Appendix E2 does not claim on page 7 – or anywhere – that the NMGWM was developed to evaluate regional scale impacts. In fact, Appendix E2, Section 2.2 explains that the SVIGSM represents the entire Salinas Valley Groundwater Basin, whereas the NMGWM represents only a 149 square mile portion of the over 650 square mile SVIGSM area. The NMGWM^{2016} was employed to calculate the water level decline (drawdown) and changes in groundwater flow directions in response to proposed project pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

Marina-JJ&A-14 Slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM^{2016} and MODPATH. As explained in EIR/EIS Appendix E2, Section 5.4, the MODFLOW computer code post-processer MODPATH was employed to simulate groundwater-flow paths. MODPATH utilizes the output from MODFLOW simulations to simulate paths for "particles" of water moving through the modeled groundwater system. In addition to delineating particle paths, MODPATH computes the time-of-travel for the simulated particles to reach their ending locations. The superposition NMGWM^{2016} was utilized without the regional gradient to isolate changes in saltwater movement due solely to slant well pumping.

The spatial resolution of the NMGWM^{2016} is sufficient for its intended purpose – to estimate the area where the difference between pumping and non-pumping water levels (the drawdown) are greater than or equal to one foot. EIR/EIS Appendix E2 reports that, "Under 2012 sea level conditions, the maximum distance from the well field to the 1-foot drawdown contour in Model Layer 2 is about 15,000 feet, and in Model Layer 4 the distance is about 20,000 feet." To place these distances in perspective relative to model resolution, there are 75 to 100 model cells between the well field and the 1-foot contour. If the distance to the 1-foot contour were actually one model cell further than estimated by the model, it would represent an error of 1 percent at most. Additionally, any error in the distance to the 1-foot contour owing to uncertainty in aquifer parameter values, sea level, pumping rate, and so forth is much greater than the error introduced by model discretization and is, therefore, rigorously quantified and accounted for by the model sensitivity analysis. See EIR/EIS Appendix E2, Section 6, and Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

Marina-JJ&A-15 EIR/EIS Section 4.4.3, Evaluation Criteria, explains that implementation of the proposed project would have a significant impact on groundwater resources if it would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level, or violate any groundwater quality standards or otherwise degrade groundwater quality. EIR/EIS Section 4.4.4 explains that four primary sources of data and information were used to guide the impact analysis: 1) information obtained through subsurface investigations commissioned by CalAm; 2) groundwater modeling; 3) the SWRCB Final Review of CalAm's MPWSP; and 4) CalAm operating rules for injection and extraction of desalinated water by ASR.

EIR/EIS Section 4.4.4.2 explains that groundwater modeling was a primary analytical tool used to evaluate proposed project impacts on groundwater resources, which are summarized in EIR/EIS Table 4.4-9 and evaluated in EIR/EIS Section 4.4.5.1 and 4.4.5.2. The NMGWM^{2016} was employed to estimate the cone-of-depression, which is defined in EIR/EIS Section 4.4.4.2 as the area where the difference between pumping and non-pumping water levels (the drawdown) would be greater than or equal to one-foot. The model was also utilized to provide insight into the change in groundwater-flow directions in response to pumping. Overlying jurisdictional or political boundaries were not considered. The model employs eight layers to represent the depth distribution of water-bearing and non-water-bearing sediments in the basin and the 149-square-mile model domain includes the City of Marina. Model Layer 8 represents the 900-Foot/Deep Aquifer (see Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, regarding the name of this aquifer and for more information about the deeper aquifers of the SVGB), which is one of the source aquifers for the City of Marina water supply. Therefore, while the degradation of groundwater quality in the City of Marina (or any overlying jurisdiction) resulting from the MPWSP was not an explicit objective of the groundwater modeling, the model evaluates the potential for drawdown and changes to groundwater flow (and quality) within the City of Marina. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

Marina-JJ&A-16 EIR/EIS Section 4.4.5.2, Impact 4.4-3 addresses groundwater supplies and groundwater levels, and explains that the first step in the analysis was to determine the pumping scenario that would have the most profound aquifer response surrounding the slant wells at the CEMEX site in order to conservatively judge potential impacts. EIR/EIS Figure 4.4-13 shows the cone of depression and the extent of pumping influence in the 180-FTE Aquifer; it assumes that no water would be returned to the SVGB, and sea level would be consistent with current levels. Since this scenario would generate the most pronounced cone of depression with the largest area of influence because groundwater would not be returned to the basin, and because current sea level would not increase groundwater levels and gradients at the coast, this scenario is used to represent the maximum area of pumping influence. In other words, Figure 4.4-13 depicts the improbable worst case aquifer response from the proposed project. The proposed project was appropriately modeled using the superposition approach because drawdown due solely to project pumping is independent of other stresses in the basin (including variations in weather patterns) and depends primarily on the pumping rate, and the water transmitting and storage properties of the aquifers.

EIR/EIS Section Impact 4.4.5.2, Impact 4.4-4 addresses changes in water quality, and explains that water quality considerations associated with the project operations include the exacerbation of seawater intrusion and the potential for the proposed project to cause new contamination, or to extend the limits of existing groundwater contamination through pumping at the subsurface intake system. The impact analysis considers the effect of continuous pumping at the CEMEX site on local groundwater quality in the Dune Sand and 180-FTE Aquifer. See Also response to comment Marina-JJ&A-14.

The cumulative drawdown is determined from the superposition results; the superposition results depicting the change resulting from the project's contribution to cumulative effects are simply added to the drawdown determined for other projects. The resulting total represents the overall cumulative effects and then the project's incremental contribution to the total is judged as to level of significance as warranted; see EIR/EIS Appendix E2, Attachment 1, and response to comment LWMC-15.

Marina-JJ&A-17

EIR/EIS Section 4.4.4.2 acknowledges that the MPWSP pumping will never be the only stress on the aquifers in the vicinity of the proposed project, and the effects from proposed project pumping would be additional to the effects from the other stresses on the basin such as seasonal climate and agricultural pumping trends, other pumping wells, injection wells, land use, or contributions from rivers. However, the superposition modeling approach simplified the complex problem of quantifying groundwater level changes and fluxes due to geographically and temporally varying recharge and discharge processes occurring within the Salinas Valley Groundwater Basin since the CEQA/NEPA analysis is required to evaluate the change in these groundwater elevations and fluxes as a result of a new stress – groundwater extraction by the proposed slant wells – against baseline conditions. Rather than employ a model to simulate the complex problem (i.e., attempt to quantify the effects of all recharge and discharge processes occurring within the basin and then subtracting the effects of the other stresses to isolate the effects of the proposed project to comply with CEQA/NEPA), superposition is employed to determine the incremental drawdown against baseline, due solely to the proposed groundwater extraction by the proposed slant wells. In other words, superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the slant wells and these impacts are presented in EIR/EIS Section 4.4.5.2. These changes would be additive to future changes that occur as the net result of all other recharge and discharge processes in the basin.

See response to comment Marina-JJ&A-14 (regarding the migration of degraded water quality) and response to comment Marina-JJ&A-15 (regarding impacts to Marina); see also Master Response 3, Water Rights, Section 8.2.3.7.

EIR/EIS Section 4.1.7.1 explains the approach to the analysis of cumulative impacts. For each resource or issue considered, the cumulative effects analysis identifies the relevant geographic area and time period within which cumulative effects could occur and then considers existing conditions (which are the combination of natural conditions and the effects of past projects) and describes the effects of other past, present and reasonably foreseeable future projects in combination with the effects of the proposed project. EIR/EIS Section 4.4.6 evaluates the cumulative effects of the proposed project in combination with other stress factors on groundwater resources.

Marina-JJ&A-18 See responses to comments Marina-JJ&A-6 and Marina-JJ&A-7.

Marina-JJ&A-19 See responses to comments Marina-JJ&A-1 and Marina-JJ&A -2 regarding the NMGWM and seawater intrusion. See also response to comment Marina-JJ&A-14 regarding the EIR/EIS analysis of slant well pumping effects on the inland movement of saltwater. The model does include system heterogeneity by using spatially varying conductivity zones. For example, Model Layer 2 represents the shallow water-bearing sediments referred to as Dune Sand Aquifer, A-Aquifer, Perched Aquifer, Perched ‘A’ Aquifer, 35-Foot Aquifer, and -2-Foot Aquifer. Similarly, Model Layer 4 represents the 180-Foot Aquifer, 180-FTE Aquifer, Upper and Lower 180-Foot Aquifer, and Pressure 180-Foot Aquifer.

Marina-JJ&A-20 The Fort Ord SVA and the transition zone west of the Fort Ord SVA are shown on EIR/EIS Appendix E2, Figures 3.2b, 3.2c, and 3.2f. However, Model Layer 3 is thin relative to Model Layer 2 and Model Layer 4, and not easily viewable in the cross sections.

Marina-JJ&A-21 EIR/EIS Appendix E2, Section 4.1 explains that “steep vertical gradients” refer to vertical gradients that are greater than 1.0 (see Footnote 67) and indicative of perched groundwater conditions (Belitz and Heimes, 1990). Perched groundwater occurs when an unsaturated zone separates an upper saturated zone from a deeper saturated zone. Vertical groundwater movement between upper and lower saturated zones must pass through the unsaturated zone. Water movement between saturated and unsaturated zones is referred to as flow under “variably saturated” conditions. MODFLOW simulates groundwater flow under saturated conditions only; it does not simulate water movement in unsaturated or variably saturated conditions. Hence, MODFLOW is limited for simulating steep vertical gradients. See Master Response 12, The North Marina Groundwater Model (version 2016), for more details.

EIR/EIS Appendix E2, Table 3.1 presents the modifications implemented in the NMGWM^{2016}; model layers were modified from NMGWM^{2015}, but model layers were not added.

Marina-JJ&A-22 The acceptance or rejection of a model depends not only on the evaluation of model error but also the intended application for which the model was created. The NMGWM^{2016} does include system heterogeneity; see the second part of response to comment Marina-JJ&A-19.

The model employs eight layers to represent the depth distribution of water-bearing and non-water bearing sediments; see the second part of response to comment Marina-JJ&A-15. Finally, model-calculated drawdown due to test slant-well pumping was compared to measured drawdown and validated model predictions (EIR/EIS Appendix E2, Figure 4.6 shows measured versus model calibrated drawdown in CEMEX monitoring wells during slant well pumping). The NMGWM^{2016} is capable of adequately supporting the impact conclusions in EIR/EIS Section 4.4.5 and 4.4.6 for the reasons explained in response to comment Marina-JJ&A-12 through Marina-JJ&A-22. See also Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

Marina-JJ&A-23 The NMGWM^{2016} was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. As noted by the comment, EIR/EIS Appendix E2, Section 4.3, presents the comparisons between MODFLOW (constant density model) calculated water level changes and calculations using SEAWAT (variable density model) and indicates only slight differences in calculated water levels. Slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM^{2016} and MODPATH, as noted in response to comment Marina-JJ&A-14. Response to comment Marina-JJ&A-2 explains that an analysis of potential impacts of vertical flow was implicit in the determination of water level changes in the 900-ft (Model Layer 8) and 400-ft (Model Layer 6) aquifers, which are reported together with model results for Model Layer 2 and Model Layer 4. See Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-24 Downward vertical gradients are addressed in response to comment Marina-JJ&A-2. The model represents the various hydrogeologic features using spatially varying conductivity zones; see the second part of response to comment Marina-JJ&A-19. The reliability of the specified aquifer parameters for these zones was determined by comparing $NMGWM^{2016}$ values to the measured or estimated values for similar materials. These comparisons indicated general agreement with values from previous hydrogeological and model studies (see EIR/EIS Appendix E2, Section 3.3, Aquifer Parameter Zones). The model employs eight layers to represent the depth distribution of water-bearing and non-water bearing sediments; see the second part of response to comment Marina-JJ&A-15.

See also response to comment Marina-JJ&A-19 regarding parameterization of hydraulic conductivity, and Master Response 12, The North Marina Groundwater Model (v. 2016), for more information on the assignment of hydraulic conductivity values to the model layers.

Marina-JJ&A-25 The model employs eight layers to represent the depth distribution of water-bearing and non-water bearing sediments; see the second part of response to comment Marina-JJ&A-15 for further explanation. See also response to comment Marina-JJ&A-9 for a discussion of the zone approach for the deeper aquifers. See response to comment JJ&A-26 concerning model calibration.

Marina-JJ&A-26 EIR/EIS Appendix E2 explains that the model layering and parameterization of the $NMGWM^{2015}$ was revised based on new borehole data and analysis of the test slant well data. Additionally, the A-Aquifer, FO-SVA, and clay transition parameter zones were added and their parameter values based on reported aquifer tests. The resulting $NMGWM^{2016}$ did not need to be recalibrated because the reliability of the specified aquifer parameters for these zones was determined by comparing $NMGWM^{2016}$ values with the measured or estimated values for similar materials. Model error was assessed using six (6) tests widely used and accepted within the groundwater modeling community. The acceptance or rejection of a model depends on the evaluation of model error and also the intended application for which the model was created (in this application, the model is employed to calculate drawdown and changes in groundwater flow directions). Model-calculated drawdown due to test slant well pumping was compared to measured drawdown and validated model predictions and the adequacy of model parameterization and parameter values (EIR/EIS Appendix E2, Figure 4.6, shows measured vs. model calibrated drawdown in CEMEX monitoring wells during slant well pumping). See also Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-27 Automated parameter estimation was not used to update the NMGWM^{2015} to the NMGWM^{2016} and, therefore, is not discussed in EIR/EIS Appendix E2. Parameter sensitivity identifies the parameters that have the greatest influence on model calculations. In model calibration, the sensitivity analysis identifies the parameters that have the greatest influence on the comparisons between model-calculated and measured values (parameter calibration sensitivity). As noted in response to comment MarinaJJ&A-26, the NMGWM^{2016} was not re-calibrated. When employing a model to predict future conditions, the sensitivity analysis identifies the parameters that have the greatest influence on the predictions (parameter prediction sensitivity).

EIR/EIS Appendix E2, Section 6.0, Uncertainty, explains that both sensitivity to assumed project operations and sensitivity to modeled aquifer parameters were considered. In the case of modeled aquifer parameters, the sensitivity assessment used “extreme values relative to the calibrated values and values reported by other sources, and therefore, using these values essentially brackets the range in possible drawdowns.” Extreme values were employed to test uncertainty in the conceptual model and choice of parameters and provided a conservative answer to the question “would the model predictions change so as to change the conclusions regarding proposed slant well operation?” See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

Marina-JJ&A-28 The model was employed to estimate the cone of depression and changes in groundwater flow directions; see responses to comments Marina-JJ&A-15 regarding the NMGWM^{2016} spatial resolution approach to assessing impacts to groundwater quality. Model heterogeneity is addressed in response to comment Marina-JJ&A-19, and model calibration is addressed in response to comment Marina-JJ&A-27.

Marina-JJ&A-29 As stated in EIR/EIS Appendix E2, Section 7, “[d]ue to the complex nature of simulating recharge and discharge processes in the Salinas Valley Groundwater Basin, *and identified problems with specified initial water levels and boundary conditions that were derived from SVIGSM results* (emphasis added), we employed the theory of superposition to remove these deficiencies. We converted the NMGWM^{2016} into a superposition model and ran 34 future scenarios representing variable project operations and sea levels (2012 and 2073).” The use of superposition is well documented in the scientific literature and, as explained in EIR/EIS Appendix E2, is a logical and technically valid approach for determining the effects of slant-well pumping and it overcomes the influence of deficiencies in quantifying initial conditions, pumping and recharge inherent in the SVGSM. The superposition approach provides substantial benefit in terms of reliability over the calibrated version of the model. As noted in response to comment MCWD-GeoHydros-16, a key advantage of the superposition approach is the simulation of effects of one stress when other stresses are not well quantified. Thus, superposition is a superior approach because the simulation of these other stresses is unnecessary and the superposition approach can provide reliable information about the effects due solely to project pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details. The use of superposition and the approach to cumulative drawdown effects are addressed in responses to comments Marina-JJ&A-16 and Marina-JJ&A-17. Model results at the CEMEX site of potential effects of proposed project pumping on the capture zone and seawater intrusion are presented in EIR/EIS Appendix E2, Section 5.4

Marina-JJ&A-30 It is not necessary to correct the SVIGSM because the use of superposition removed the dependency of the NMGWM^{2016} on the SVIGSM. Additionally, superposition is a more efficient approach for calculating drawdown and changes in groundwater flow directions due to proposed slant well pumping. See also Master Response 12, The North Marina Groundwater Model (v. 2016).

Marina-JJ&A-31 See response to comment Marina-JJ&A-12 regarding the availability of the USGS model for the Salinas Valley.

Marina-JJ&A-32 The use of superposition is well documented in the scientific literature and, as explained in EIR/EIS Appendix E2, is a logical and technically valid approach for determining the effects of slant-well pumping. It also overcomes the influence of deficiencies in quantifying initial conditions, pumping and recharge inherent in the SVIGSM. The superposition approach provides substantial benefit in terms of reliability over the calibrated version of the model. The technical approach to evaluating the MPWSP's impacts on groundwater impacts has been thoroughly documented in EIR/EIS Section 4.4 and Appendix E2. Specifically:

- EIR/EIS Section 4.4.5.2, Impact 4.4-3 addresses groundwater supplies and groundwater levels.
- EIR/EIS Section Impact 4.4.5.2, Impact 4.4-4 addresses changes in water quality, and explains that water quality considerations associated with the project operations include the exacerbation of seawater intrusion and the potential for the proposed project to cause new contamination, or to extend the limits of existing groundwater contamination through pumping at the subsurface intake system. Slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM^{2016} and MODPATH.

- Appendix E2 summarizes and provides extensive technical detail about the NMGWM^{2016} in relation to the hydrogeology, model construction, assessment of model inputs and output, revisions to the NMGWM^{2015} and its application to calculate drawdown using superposition.
- Model inputs are based on thorough scientific review of available data.
- The applicability of the equivalent fresh-water heads is well documented in Appendix E2, Master Response 12, The North Marina Groundwater Model (v. 2016), and the scientific literature.
- Comparisons between MODFLOW (constant density model) calculated water level changes and calculations using SEAWAT (variable density model) indicated slight differences in calculated water levels.
- The model adequately simulates measured water levels and seasonal trends, which demonstrates scientific validity.
- The model adequately simulates measured drawdown in response to test slant well pumping, which demonstrates its scientific validity.
- RMSE comparisons and evaluation of other model performance criteria demonstrate that the NMGWM^{2016} is an improvement relative to the NMGWM^{2015} and model errors and uncertainty minimally influence model output.
- The use of sensitivity analysis to provide a range of water-level drawdown is well documented and based on extensive data for hydraulic conductivity.

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USGS, 2016. Salinas Valley Integrated Hydrologic Model (SVIHM) Model Development TAC" Presentation. September 13. Available online at http://www.co.monterey.ca.us/home/showdocument?id=19648, Accessed November 8, 2017.

8.5.2 Responses to Comments from Marina Coast Water District

By letter dated March 29, 2017, the Marina Coast Water District (MCWD) provided comments on the Draft EIR/EIS. Responses to comments from MCWD are provided in Section 8.5.2.1. Attached to the MCWD letter, were comment letters from Hopkins Groundwater Consultants (MCWD-HGC, dated March 29, 2017), GeoHydros (MCWD-GH, dated March 27, 2017), EKI (MCWD-EKI, dated March 28, 2017), and IntakeWorks (MCWD-IW, dated March 28, 2017). Responses to these comments are provided in Sections 8.5.2.2 through 8.5.2.5. With its comment letter, MCWD submitted a flash drive containing voluminous materials (e.g., the April 2015 MPWSP Draft EIR and 2017 Draft EIR/EIS reference documents, and PRA-requested materials). The Lead Agencies reviewed and considered all such data in responding to comments and preparing the Final EIR/EIS. Due to the substantial volume of documents on the flash drive (25 GB), they are not reprinted within the Final EIR/EIS, but a copy of the flash drive will be made available upon request to either of the Lead Agencies.

Subsequent to the close of the Draft EIR/EIS comment period, MCWD sent the Lead Agencies additional information to consider in the MPWSP environmental review process. By letter dated November 9, 2017, the MCWD provided the following; a Preliminary Interpretation of SkyTEM Data Acquired in the MCWD (Gottschalk and Knight, June 16, 2017); a memo report by Hopkins Groundwater Consultants titled, Monterey Peninsula Water Supply Project Return Water (MCWD-HGC2, dated September 29, 2017), and; a memo report by EKI titled, Groundwater Remedial Actions and Establishment of Remedial Goals at Fort Ord MCWD, CA (MCWD-EKI2, dated June 22, 2017). Responses to MCWD-HGC2 and MCWD-EKI2 are provided in Sections 8.5.2.6 and 8.5.2.7, respectively. Gottschalk and Knight (2017) presents a preliminary interpretation of the Airborne Electromagnetic (AEM) imaging data that was conducted for the MCWD, and is referred to by MCWD, HGC and others in the comments. See also Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) as well as EIR/EIS Appendix E3.

8.5.2.1 Responses to Comments from MWCD – Main Letter

MCWD-1 Consistency with regulations, plans and policies is addressed in each relevant topic area in EIR/EIS Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures. As explained in EIR/EIS Section 4.1.5, Project Consistency Analysis, the EIR/EIS includes a discussion of any inconsistencies between the project and applicable general plans, specific plans, and regional plans and any conflicts between the project and applicable plans, policies, and regulations of agencies with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect (CEQA Guidelines §15125 and Appendix G). Also, per NEPA, the analysis includes a discussion of the possible conflicts between the proposed project and the objectives of federal, regional, state, and local land use plans and policies for the area concerned that are imposed for the protection of the environment (40 CFR §1502.16(c) and 40 CFR §1508.27(b)(10)).

The Sustainable Groundwater Management Act (SGMA) is described in EIR/EIS Section 4.4.2.2 and also in Master Response 6, The Sustainable Groundwater

Management Act. The MCWRA Agency Act is described in EIR/EIS Section 2.6.3, Section 4.4.2.3 and Master Response 4, The Agency Act and Return Water. The Federal and State Endangered Species Acts are discussed in EIR/EIS Sections 4.6.2.1 and 4.6.2.2, respectively, of Section 4.6, Terrestrial Biological Resources. The Coastal Act is addressed in multiple places in the EIR/EIS, as is the City of Marina's Local Coastal Land Use Plan (LCLUP) (see Final EIR/EIS Chapter 9, Index). The City of Marina's LCLUP is specifically addressed in Section 4.6, Terrestrial Biological Resources, in Section 4.6.5.2, which identifies a project conflict with the Marina LCLUP. Therefore, Impact 4.6.4 is determined to be significant and unavoidable. Monterey County Code of Ordinances Section 10.72.030(B) is addressed in the land use regulatory discussion in EIR/EIS Section 4.8.2.3. Water rights are addressed in EIR/EIS Section 2.6 and Master Response 3.

MCWD-2 The project that is proposed by CalAm, and described in Appendix H of its March 14, 2016 Amended Application to the CPUC (CalAm, 2016a), is the 9.6 mgd project, described in EIR/EIS Chapter 3, Description of the Proposed Project, and analyzed in Chapter 4, Environmental Setting (Affected Environment), Impacts, and Mitigation Measures. EIR/EIS Section 1.1, Introduction, explains that the Amended Application for the proposed project also includes a second option that would meet the project objectives by combining a reduced-capacity desalination plant (6.4 mgd) with a water purchase agreement for 3,500 acre-feet per year (afy) of advanced treated water from another source, the Pure Water Monterey Groundwater Replenishment (GWR) project. This second capacity option in CalAm's application is reflected in Alternative 5a. While both of these options were proposed by CalAm (in an "either/or" fashion) and thus represent the project proposed by the applicant, the larger desalination plant was selected to be analyzed as the "Proposed Project" in Chapter 4 of the EIR/EIS since it is larger and thus was expected to have greater impacts than the smaller capacity option.

Chapter 5, Alternatives Screening and Analysis, provides detailed descriptions of two reduced-sized alternatives (Alternatives 5a and 5b, see Sections 5.4.7 and 5.4.8, respectively) and Section 5.5, Alternatives Impact Analysis, presents an analysis of the environmental impacts of all alternatives, including Alternatives 5a and 5b. See response to comment Marina-140 concerning the EIR/EIS's evaluation of the smaller desalination plant options in Alternatives 5a and 5b. Under CEQA and NEPA, an alternative need not be analyzed unless it would meet most of the basic objectives of, or the purpose and need for, the project. See CEQA Guidelines Section 15126.6(a) and 40 CFR 1502.13 and 1508.9(b). The primary objective of the proposed project is to supply in a timely manner water for CalAm customers to replace certain existing supply sources, such that a smaller desalination plant than those considered in the EIR would not meet the basic project objectives. However, see Master Response 13, Demand (Project Need) and Growth, concerning demand and supply assumptions and the possible consideration of alternate scenarios in which lessened demand would allow for a smaller desalination plant. The Lead Agencies will consider all evidence in the record concerning demand and supply prior to acting upon the project, and may conclude that a smaller desalination plant (or some other alternative) would indeed satisfy the basic objectives of the project.

MCWD-3 As noted in EIR/EIS Section 1.1, this EIR/EIS has been prepared in accordance with CEQA (Cal. Pub. Res. Code §21000 et seq.) and the CEQA Guidelines (Cal. Code Regs., Tit. 20, Div. 6, Ch. 3, §15000 et seq.), and with NEPA (42 U.S.C. §4321 et seq.,) and its implementing regulations (40 CFR Parts 1500-1508). The potential effects that the proposed project (described in Chapter 3) and Alternatives (described in Section 5.4) may have on the environment are evaluated and disclosed in EIR/EIS Sections 4.2 through 4.20 (proposed project), and in Section 5.5 (Alternatives Impact Analysis). EIR/EIS Chapter 5 provides a robust and comprehensive alternatives analysis. As stated EIR/EIS Section 5.1.1, Alternatives Analysis – CEQA/NEPA Requirements, the selection of alternatives followed CEQA Guidelines Section 15126.6 and NEPA requirements in 40 CFR Sections 1502.13 and 1502.14, including identifying the feasibility of the various alternatives selected for analysis; see response to comments MCWD-168, below, and Marina-140, in Section 8.5.1. Furthermore, as stated in EIR/EIS Section 5.1.1, CEQA Guidelines Section 15126.6(a) acknowledges that an EIR need not consider every conceivable alternative to a project; see response to comment MCWD-170.

The federal actions proposed by MBNMS are presented in EIR/EIS Section 1.3.2 and consist of: 1) authorization of a Coastal Development Permit to be issued by the City of Marina for CalAm to drill into the submerged lands of the Sanctuary to install a subsurface intake system; 2) authorization of a Central Coast Regional Water Quality Control Board (RWQCB) issued National Pollutant Discharge Elimination System (NPDES) permit or other discharge authorization to allow for the discharge of brine into the Pacific Ocean and MBNMS via an existing ocean outfall pipe; and 3) issuance of a special use permit to CalAm for the continued presence of a pipeline[1] transporting seawater to a desalination facility in MBNMS.

Responses to comments from Hopkins Groundwater Consultants (HGC), GeoHydros, EKI, and Intake Works have been provided following responses to MCWD's main letter. EIR/EIS Chapter 3 presents a detailed description of the proposed project (see response to comments MCWD-78 through MCWD-85); Chapter 4 presents the environmental baseline (setting), impacts, mitigation and cumulative effects of the proposed project (see response to comments MCWD-86 through MCWD-167); and Chapter 5 provides a robust and comprehensive alternatives analysis (see response to comments MCWD-168 through MCWD-185).

See response to comments MCWD-2 regarding the 9.6 mgd versus the 6.4 mgd project.

[1] The Applicant proposes to use subsurface intakes (slant wells) to supply the desalination plant with source water. The well casings, or pipes, would extend seaward of MHW and would require a special use permit to be present within MBNMS.

MCWD-4 Response to comment MCWD-HGC1-3 and Master Response 6, Sustainable Groundwater Management Act, Section 8.2.6.2, discuss the “Marina Subarea” and the “Pressure Area.”

MCWD-5 EIR/EIS Section 1.4 presents the project setting and background, and describes the water supply challenges facing CalAm and its Monterey District Service Area customers; Section 1.4.1 presents the history of the Coastal Water Project (CPUC Proceeding A.04-09-019), the CPUC approval of implementation of the Regional Project alternative in Decision D.10-12-016 as well as the CPUC decision to close Proceeding A.04-09-019 in Decision D.12-07-008. The SWRCB orders are introduced in EIR/EIS Section 1.3 and are further explained in Section 2.2.3. The Sustainable Groundwater Management Act (SGMA) is discussed in EIR/EIS Section 4.4.2.2 and SGMA’s relationship to the proposed project is further clarified in Master Response 6. Climate change, sea level rise and coastal erosion are discussed in EIR/EIS Section 4.2.4.5 (Coastal Retreat Study) and Appendices C1 and C2. Assembly Bill 1182[2] (Keely) is discussed in EIR/EIS Sections 5.2.2 and 5.2.3.

MCWD-6 It is correct that one of the actions required for the project is an authorization by MBNMS; see EIR/EIS Section 1.3.2. However, there is not a specific regulation requiring MBNMS to consider public versus private ownership prior to issuing an authorization, and ownership is not specifically addressed in the MBNMS Desalination Guidelines. The reference to consideration of ownership comes from MBNMS Management Plan Desalination Action Plan Strategy 1, which lists numerous activities including: “In collaboration with the California Coastal Commission, consider the ramifications of public versus private ownership of desalination facilities.”

In 2006, MBNMS staff partnered with the Association of Monterey Bay Area Governments (AMBAG) in comprehensively identifying the potential environmental, economic, and social impacts, both positive and negative, associated with seawater desalination, if conducted in the Monterey Bay area. The Desalination Guidelines and the Desalination Feasibility Study for the Monterey Bay Region (AMBAG, 2006) were intended to address Desalination Action Plan Strategies 1 and 2 in the Management Plan. The MBNMS Desalination Guidelines (NOAA, 2010) were developed to specifically address the potential impacts that were identified during this initial investigation. As noted in the introduction to the MBNMS Desalination Guidelines, the guidelines were developed by MBNMS staff, in close collaboration with staff from the California Coastal Commission, the Central Coast Regional Water Quality Control Board, and NOAA’s National Marine Fisheries Service (NMFS). During this collaborative process, many factors were considered, including private versus public ownership. Furthermore, the

[2] The state legislature passed Assembly Bill 1182 in 1998, ordering the CPUC to identify alternatives to the Carmel River Dam which was the subject of CPUC Proceeding A.97-03-052.

EIR/EIS considers both private and public alternatives in Sections 5.4 and 5.5. See Section 6.4 regarding compliance with the MBNMS Desalination Guidelines.

Regarding the MBNMS Guideline stating that desalination plants should only be pursued when other economically and environmentally preferable alternative water sources are infeasible and should be sized not to induce growth, the EIR/EIS fully evaluates alternatives in Section 5.5, Alternatives Impact Analysis, including the No Project alternative (described in EIR/EIS Section 5.4.2) and reduced size desalination facilities (described in Sections 5.4.7 and 5.4.8). EIR/EIS Section 5.2, Alternatives Not Evaluated in Detail, considered other supply alternatives, but determined that these other alternatives were not feasible to achieve the project objectives. The purpose, need and objectives for the proposed project are established in EIR/EIS Section 1.3. Growth inducement is discussed in Section 6.3 and in Master Response 13, Demand (Project Need) and Growth.

The obligations of the Lead Agencies in the decision-making process is described in EIR/EIS Section 1.5.4. If the CPUC certifies the Final EIR/EIS, it will then decide whether or not to grant the Certificate of Public Convenience and Necessity (CPCN) for the MPWSP, as proposed or modified, or an alternative. In addition to environmental impacts addressed during the CEQA/NEPA process, the CPCN process will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, the need for the project, the SWRCB Orders on the Carmel River, and any and all current laws and regulations.

MCWD-7 See responses to comments MCWD-4 and MCWD-84. The locations of MCWD’s water supply wells are presented in EIR/EIS Section 4.4.5.2 in Table 4.4-10, which explains that MCWD’s wells are too far from the project capture zone to be affected by the proposed project pumping. The City of Marina’s Wells 10, 11, and 12 are over 2 miles to the southeast, and are screened in the 900-Foot Aquifer and the Ord Community Wells 29, 30, and 31 are located 5 plus miles to the southeast and are screened in the lower 180-Foot and the 400-Foot Aquifers. See also Master Response 8, Project Source Water and Seawater Intrusion, and Master Response 3, Water Rights, specifically, Section 8.2.3.7.

The “Marina Subarea” has not been the only source of water that MCWD has used since its founding to serve its ratepayers. Between early 1997 and February 2003, MCWD operated a 300-afy desalinated plant at its facility on Reservation Road for its Central Marina customers; the plant has remains idle.

MCWD-8 The Regional Project is described in EIR/EIS Section 1.4.1 and the decision to close Proceeding A.04-09-019 (D.12-07-008) is discussed in Section 1.4.2. This current environmental review process, however, is *different* in several key respects to the prior MPWSP and the prior Regional Project; EIR/EIS Section 1.4.3 provides context for the environmental review of the currently proposed project and the environmental review associated with this EIR/EIS, while Section 1.4.4 describes the revisions made in this EIR/EIS, and distinguishes between the current EIR/EIS and the prior April 2015 Draft EIR.

MCWD-9 See Master Response 3, Water Rights.

MCWD-10 The text quoted in the comment is in the introduction to EIR/EIS Section 5.2. Section 5.2.1 provides an overview of the alternatives not evaluated in detail, and Sections 5.2.2 through 5.2.6 provide a summary of five different projects (including the Coastal Water Project, see Section 5.2.4) that were considered and rejected in earlier environmental review documents because the projects were determined to be politically, legally, economically, or technically infeasible; others are concepts that were speculative or technically or economically infeasible.

The discussion of the Coastal Water Project, and therefore the North Marina Project and the Regional Desalination Project in Section 5.2.4, explains the history of the Coastal Water Project, and the CPUC's closing of proceeding A.04-09-019 with Decision D-12-07-008, and explains that certain elements of the three projects evaluated in the Coastal Water Project EIR (e.g., intake, plant location and brine discharge components) have been carried into the alternatives analysis presented in this EIR/EIS. The EIR/EIS does not explicitly call out the Regional Project as infeasible; rather the EIR/EIS explains the evolution of the MPWSP, of which the Regional Project was an earlier configuration. Yet, ongoing litigation and disputes between the two former proponent/partner parties over the Regional Project may well make it infeasible, and besides, it would not appear to have environmental advantages so as to lessen any significant effects of the proposed project. See also response to comment MCWD-4 which addresses the Marina Subarea, and Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), which addresses the availability and use of ERT/AEM data for assessing aquifers.

MCWD-11 See Master Response 4, The Agency Act and Return Water.

MCWD-12 Vertical wells were not considered in the EIR/EIS Section 5.3 component screening and evaluation; see responses to comments MCWD-172 and MCWD-IW-6 for details on why this component was eliminated from full analysis. The Regional Project did propose vertical wells; six wells pumping 2,800 gallons per minute (gpm) (equivalent to 4 mgd per well[3]) would have been located at least 500 feet apart along the coast in an area approximately 0.25 mile wide (starting on the inland side of the coastal dunes) by 3 miles long (an area south of the Salinas River and north of Reservation Road) and the water pumped from the wells would have included

[3] This is an unrealistic pumping rate. As noted in Draft EIR/EIS Appendix I1 on page I1-4, source water yield from a vertical well typically ranges between 0.1 and 1.5 mgd (Hunt, 2008). The 300 afy Sand City Desalination Plant utilizes two vertical wells (and two on standby). In order to supply 24 mgd of feedwater for a 9.6 mgd desalination plant, the project would need 24 vertical wells, not six. To provide 15.5 mgd of feedwater for a 6.4 mgd desalination plant, the project would need approximately 16 vertical wells.

approximately "15 percent of intruded groundwater from the SVGB" (Coastal Water Project Final EIR, SCH No. 2006101004, Section 5.2.2.1, page 5-21). The reliability of modeling slant wells is no different from modeling vertical wells because all groundwater models simulate subsurface water movement in porous media. They are approximations because a model cannot quantify exactly the spatially variable properties that exist in the real world; see Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.2.

MCWD-13 Groundwater modeling was conducted for the Coastal Water Project EIR (which included the Regional Project as well as the North Marina Project; see EIR/EIS Section 5.2.4) prior to approval of that project, not after its approval. The January 2009 CWP Draft EIR and the October 2009 CWP Final EIR both included an Appendix E titled "North Marina Ground Water Model Evaluation of Potential Projects," prepared for CalAm by Geoscience Support Services, dated July 25, 2008 (Geoscience, 2008). The July 2008 groundwater modeling concluded that "after 56 years of operating the Regional Project, the inland groundwater elevations in the 180-Foot Aquifer would be higher than under No Project conditions. The area around the Project wells would have lower groundwater elevations due to the trough developed by continuous pumping. Groundwater flow directions would be similar to normal hydrologic year flow directions."

As noted in D.10-12-016 at Findings of Fact 175: "Based on the analysis of hydrology and groundwater modeling in the FEIR, we are persuaded that the volume of water available for desalination and delivery to CalAm will not be diminished, although the water that originates from the Salinas Valley Groundwater Basin may well become purer, because pumping the wells (whether vertical or slant wells) will not only draw seawater towards the coast, but the saline-intruded groundwater will also be drawn towards the coast, which in essence reverses the seawater intrusion dynamic, and reduces the salinity of the groundwater portion of the intake supply but does not change the volume." (CPUC Decision D.10-12-016)

A version of the groundwater model that was used to evaluate the Regional Project was also used in the April 2015 Draft EIR to evaluate the proposed MPWSP. That 2015 version of the model (referred to as NMGWM^{2015}) was peer reviewed by Lawrence Berkeley National Laboratories, and HydroFocus independently advanced and revised the model for use in the current EIR/EIS, as NMGWM^{2016}. See Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to EIR/EIS, Section 8.2.5.6.

The NMGWM^{2016} employs eight layers to represent the depth distribution of water-bearing and non-water bearing sediments in the basin. The 149-square-mile model domain includes the City of Marina, and Model Layer 8 represents the 900-Foot/Deep Aquifer. Hence, the model clearly evaluates the potential for drawdown and changes to groundwater flow within the City of Marina. See Master Response 12, The North

Marina Groundwater Model (v. 2016), for more details, including the manner in which the test well data was indeed used in the modeling effort.[4]

Model-calculated drawdown due to test slant well pumping was compared to measured drawdown and was used to validate model predictions. EIR/EIS Appendix E2, Figure 4.6 shows measured versus model calibrated drawdown in CEMEX monitoring wells during slant well pumping.

Superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the proposed slant well pumping. These changes would be additive to future changes that occur as the net result of all other recharge and discharge processes in the basin. Therefore, the project drawdown is added to the drawdown determined for other cumulative projects and the results represent the overall cumulative effects; see EIR/EIS Section 4.4.6.

Conducting the modeling as part of the EIR/EIS process, and making the modeling results (as well as the model itself) available for public review, provides the public with ample opportunity to review and make comments, resulting in a transparent process that provides for full and open disclosure. Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage, proposes to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer, the 180-FTE and the 400-Foot Aquifer as a result of project pumping, and would, therefore, be included in the Mitigation Monitoring and Reporting Plan that gets adopted with any project approval decision. Therefore, any further MPWSP evaluation, testing, and modeling for groundwater impacts would proceed within a regulatory framework that would be open to full public scrutiny, consistent with CEQA, NEPA, the Public Utilities Code and due process.

MCWD-14 SGMA is discussed in Master Response 6, The Sustainable Groundwater Management Act.

MCWD-15 As demonstrated in Master Response 13, Demand (Project Need) and Growth, CalAm's objective of meeting peak demands of existing customers means meeting peak monthly demands, which are approximately 30 percent greater than average, not the 10 percent referenced in the comment; see the discussion of "Supply for Peak Demands" in Section 8.2.13.3 of Master Response 13.

See Master Response 13 Sections 8.2.13.1 and 8.2.13.2 regarding the demand and supply assumptions underlying the proposed MPWSP. Note that the supply sources CalAm has historically used were reduced by the Seaside Groundwater Basin

[4] The comment includes Footnote 4, which introduces litigation initiated by MCWD against the CCC with respect to the test slant well, and refers to an attached brief filed as part of that case. Indeed, MCWD has brought three lawsuits challenging aspects of the test slant well for the Project. See Response to Comment MCWD-89.

adjudication as well as by State Water Board orders on the Carmel River. Please see Marina-140, in Section 8.5.1, concerning Alternatives 5a and 5b.

Regarding alternative supply sources, the consideration and evaluation of numerous project alternatives over the years, described in EIR/EIS Section 5.2, Alternatives Not Evaluated in Detail, supports the conclusion that viable alternatives have not been identified that would supply sufficient water without a desalination plant. Indeed, an alternative source suggested in the descriptions of "Scenarios A and B" (see response to comment MCWD-31 through 42) includes a "small desalination plant." Refer to responses to comments MCWD-42 through MCWD-49 regarding alternative sources of supply. MCWD's contention that adequate alternative sources are available also relies on an arguably unrealistic assumption that demand in 2016 represents service area demand in non-drought periods (discussed under "Existing Annual Service Area Demand" in Master Response 13, Section 8.2.13.2) and further supposes that the other demands that the project proposes to serve need not be served.

See also the discussion in "Supply Provided by the Desalination Plant" in Master Response 13, Section 8.2.13.3, and "Alternative Supply and Demand Scenarios" in Section 8.2.13.4, which explains that the desalination plant could be operated at a somewhat lower capacity if long-term demand were to decline, and explores the potential to reduce the size of the desalination plant under alternative demand and supply scenarios, respectively. As described in EIR/EIS Section 1.5.4, the CPUC will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts, and the need for the project.

MCWD-16 The CPUC has properly exercised independent judgment under Public Resources Code section 21082.1(c)(3). A lead agency has the discretion to adopt materials that it chooses, such as those drafted by the applicant or its consultants, so long as the lead agency independently reviews, evaluates, and exercises judgment over that documentation and issues it raises and addresses. (*Friends of La Vina v. County of Los Angeles* (1991) 232 Cal.App.3d 1446; Pub. Resources Code, §21082.1, subd. (c); Cal. Code Regs., tit. 14, §15084, subd. (e).) The lead agency also has the discretion to resolve factual issues and to make policy decisions. As an example, "[i]f the determination of a baseline condition requires choosing between conflicting expert opinions or differing methodologies, it is the function of the agency to make those choices based on all of the evidence." (*Save Our Peninsula Committee v. Monterey County Board* (2001) 87 Cal.App.4th 99, 120; citing *Barthelemy v. Chino Basin Municipal Water District* (1995) 38 Cal.App.4th 1609, 1617.) Even if an entire study or technical document is initially prepared by the project applicant or a third party (such as the $NMGWM^{2015}$ prepared by Geoscience as CalAm's consultant) and subsequently adopted by the lead agency, that does not mean that the lead agency failed to exercise its independent judgement. (*City of Poway v. City of San Diego* (1984) 155 Cal.App.3d 1037, 1042.) Under NEPA regulations, materials may also be prepared by the applicant or a third-party contractor as long as the agency independently evaluates the information submitted and the agency is responsible for its accuracy (40 CFR §1506.5).

See also Master Response 5, The Role of the Hydrogeology Working Group and its Relationship to EIR/EIS, Section 8.2.5.5. The CEQA/NEPA consultants, under contract to the CPUC, prepared the EIR/EIS independent from the HWG, using professional judgment in evaluating the information provided by the HWG. The CEQA/NEPA consultants considered and incorporated information and data generated by the HWG to inform the EIR/EIS, only as appropriate. The EIR/EIS impact analysis conclusions and mitigation measures prepared by the CEQA/NEPA consultants were not shared or discussed with the HWG prior to publication of the Draft EIR/EIS.

Extensive documentation in EIR/EIS Appendix E2 (Section 3) demonstrates the reliability, authenticity, and genuineness of the NMGWM^{2016}. Responses to model-related comments provided by Hopkins, GeoHydros, EKI, and Dr. Abrams further demonstrate the soundness of the modeling approach and trustworthiness. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details. See responses to comments MCWD-168 through MCWD-174 for responses to comments addressing the CEQA/NEPA approach to alternative intake technologies and alternatives that was performed by the EIR/EIS preparers.

See also Master Response 5, The Role of the Hydrogeology Working Group and its Relationship to EIR/EIS, where the HWG members are discussed in Section 8.2.5.3 and the potential conflicts of interest are addressed in Section 8.2.5.6.

MCWD-17 EIR/EIS Section 1.5.4 describes the CPUC decision making process for the MPWSP; it is identical to the processes employed by the CPUC for other projects subject to CEQA. Before making a decision on the project, the Commission will consider all of the evidence in its record (including parties' testimony and briefs, all evidentiary hearings and the entire CEQA/NEPA review record, including the Final EIR/EIS). On the basis of all such evidence, the Commission will reach a decision on whether to issue a Certificate of Public Convenience and Necessity, all in accord with the Public Utilities Code and due process.

MCWD-18 The Lead Agencies appreciate the unique position of the commenter. Each comment presented in the comment letter and attachments has been addressed in this set of responses. See responses to comments MCWD-HGC, MCDW-GeoHydros, MCWD-EKI and MCWD-Intake Works, which follow these responses to MCWD's main letter.

MCWD-19 This comment is addressed in Master Response 6, The Sustainable Groundwater Management Act.

MCWD-20 The EIR/EIS preparers independently considered the reasonableness of the proposed demand, supply, and operations assumptions submitted by CalAm for its Monterey District Service Area, in the context of other water supply planning projections; Section 2.3 thoroughly describes the CalAm service area demand assumptions, and the "other demand" assumptions included in project sizing, while Section 2.4 describes the available supplies. EIR/EIS Section 6.3.5.1 evaluates the demand and supply assumptions to determine if the provision of water proposed by the project appears reasonable, and if it would directly or indirectly induce growth, and concludes that supply not used to meet existing demand, demand of existing business customers under more robust economic conditions, or the SVGB return water obligation would be available to support new development. New development might include improvement of existing vacant lots of record. Water supply capacity to serve new development would remove water supply limitations as an obstacle to such development and would be considered growth-inducing under CEQA and NEPA.

CalAm is under SWRCB orders to manage its current water supplies as efficiently as possible; the MPWMD presents monthly water supply reports and CalAm production reports at its monthly Board of Directors meetings and these reports are available at the MPWMD website.[5] Table 8.2.13-2 in Master Response 13, Demand (Project Need) and Growth, presents typical monthly operations to meet project demands assuming a 9.6 mgd desalination plant and 6 percent Salinas Valley Groundwater Basin (SVGB) return water obligation; see also EIR/EIS Appendix L. The comments about the relative complexity of CalAm's current and future water supply portfolio and similarities between operating an electric utility and a water utility are noted. Regarding peak demand, see the discussion under "Supply for Peak Demands" in Section 8.2.13.2 of Master Response 13.

MCWD-21 The information provided regarding reserves required of electric utilities and the comment about CalAm's objective of meeting peak demand are acknowledged. As stated in EIR/EIS Section 1.3.1, the fourth primary objective of the proposed project is to "[d]evelop a reliable water supply for the CalAm Monterey District service area, accounting for the peak month demand of existing customers." Peak demands ("reserve margins") are discussed in EIR/EIS Section 2.3.2, Peak Demands. Also see the discussion under "Supply for Peak Demands" in Master Response 13, Section 8.2.13.3.

MCWD-22 The reduction in CalAm's Carmel River supply pursuant to SWRCB orders is a key driver of the proposed MPWSP (see EIR/EIS section 2.2.3), as is the Seaside Groundwater Basin (SGB) Adjudication (see EIR/EIS section 2.2.4). EIR/EIS Table 2-1 presents the SGB adjudicated operating and natural safe yields, including CalAm's pre-adjudicated production, while Table 2-4 presents the legal and/or contractual limits of the portfolio of water supply sources available to CalAm's

5 http://www.mpwmd.net/who-we-are/board-of-directors/bod-meeting-agendas-calendar/

Monterey District, with the proposed MPWSP. Table 2-4 presents available supplies assuming construction of the proposed 9.6 mgd desalination plant or a 6.4 mgd plant combined with purchase of GWR Project water (Alternative 5a). As used in the EIR/EIS, in lieu replenishment of the Seaside Groundwater Basin – to replenish the amount of groundwater CalAm has pumped in excess of its adjudicated right – would occur when CalAm pumps only 774 afy of its 1,474 afy adjudicated right from the Basin, leaving the other 700 afy in the ground, as discussed in EIR/EIS Section 2.2.4. See also response to comment MCWD-28.

Since the SGB has been adjudicated, the amount of groundwater CalAm can pump from the Basin is limited by court order, as discussed in EIR/EIS Section 2.2.4 and presented in Table 2-1; this represents supply available under the No Action Alternative, and would not change with the proposed project. Under the adjudication, CalAm is able to augment storage, and withdraw water that it puts into the SGB via aquifer storage and recovery; the MPWSP proposes to enhance and increase ASR in the Seaside Basin. If purchased GWR water were added to CalAm's supply portfolio, CalAm would also be able to withdraw its portion of GWR that had previously been put into the Basin. The EIR/EIS subtracts the service area demand presented in EIR/EIS Table 2-3 from the available total supplies presented in Table 2-4, to determine how much supply provided by the proposed MPWSP would be in excess of current uses and would, therefore, be available for other uses (i.e., growth). Water produced by the proposed project in excess of CalAm's needs is assumed to induce growth, and the indirect impacts of that growth are evaluated in EIR/EIS Section 6.3.

An EIR/EIS is required to evaluate the effects of a proposed project against baseline (existing) conditions and not against a future scenario of demand and supply in 2022 – the environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant (CEQA Guidelines 15125(a)). Sections 8.2.13.2 and 8.2.13.3 of Master Response 13 summarize the EIR/EIS demand and supply assumptions, respectively, and document why they are reasonable. However, questions have been raised as to whether the proposed project is necessary or could be smaller if one considered different supply and demand assumptions.

EIR/EIS Appendix L was prepared to test that possibility by considering different supply and demand numbers. The primary consideration is whether facts exist to support a smaller desalination plant (e.g., having one or more fewer reverse osmosis [RO] units) such that either a smaller plant or a phased plant could be approved for the 9.6 mgd proposed project or the 6.4 mgd Alternative 5a. The results of this sensitivity analysis could inform and affect the ultimate project decision.

Regarding existing annual service area demand, see Master Response 13, Section 8.2.13.2. As stated in response to comment MCWD-20, Table 8.2.13-2 in Master Response 13 shows typical monthly operations to meet project demands; as discussed there, this table was provided to the EIR/EIS preparers by CalAm, but it was independently reviewed and subsequently revised by the EIR/EIS preparers. The table shows that available supplies from the multiple sources would be used to meet demand that varies each month over the course of the year. The table shows that operations would meet the supply and demand related objectives for the project. The first page of the table shows when and how much of the injected desalinated water would be extracted from the ASR system each year. As the table shows, this water would be injected in wetter months and withdrawn in drier months. The second page of the table shows how supplies provided by the desalination plant would be distributed.

EIR/EIS Appendix L presents a sensitivity analysis to test the possibility that the proposed project could be downsized, and examines whether the proposed project is necessary or could be smaller if one considered different supply and demand numbers that some commenters believe are more reasonable than those used in the Draft EIR/EIS. The Lead Agencies will consider all evidence in the record concerning demand and supply prior to acting upon the project, and may conclude that a smaller desalination plant (or some other alternative) would indeed satisfy the primary objectives of the project.

MCWD-23 See the discussion under “Existing Annual Service Area Demand” in Master Response 13, Section 8.2.13.2; see also the discussion of Pebble Beach Entitlements, which are considered part of existing demand, under “Other Demands.” Master Response 13, Section 8.2.13.2 explains that two other factors that influenced demand in recent years were the recession that began in late 2007 to early 2008 and the recent five-year drought.

MCWD-24 EIR/EIS Section 2.4.3 describes CalAm’s supply sources; see also Master Response 13, Section 8.2.13.3. Regarding the use of 2016 demand to represent annual service area demand, see the discussion of Existing Annual Service Area Demand in Master Response 13, Section 8.2.13.3. An average of 3,500 afy of GWR Project water would be available to CalAm, assuming the GWR Project is constructed and becomes operational, as also discussed in Section 8.2.13.3. Regarding the ASR system yield and CalAm’s water rights permits to divert water to aquifer storage and recovery, see response to comment MCWD-30. EIR/EIS Section 5.4.2.4, Ability to Meet Project Objectives, includes a discussion on the ability of the No Project Alternative to meet project objectives assuming implementation of the GWR Project.

MCWD-25 The CalAm Monterey District Service Area overlies a small portion of the Seaside Groundwater Basin, as shown in EIR/EIR Figure 3-1, but MCWD’s Ord Community overlies a substantial portion of the Basin. While CalAm used to pump upwards of 4,000 afy from the Seaside Basin CalAm’s adjudicated allocation from the Seaside Groundwater Basin is 1,474 afy, as explained in EIR/EIS Section 2.2.4 and Table 2-1. As explained in response to comment USARMY-16, the volume of water that CalAm could inject into the ASR system in a given year could be a combined maximum of about 7,426 acre-feet from all sources.

See also response to comment MCWD-22. Since the Seaside Basin Adjudication Decision (Monterey County Superior Court, 2007) Section II.C.2 acknowledges that " . . . the public interest is served by augmenting the total yield of the Seaside Basin through artificial groundwater recharge, storage, and recovery," and since CEQA Guideline Section 15126.2 states that " . . . an EIR shall identify and focus on the significant environmental effects of the proposed project," the EIR/EIS did not analyze the synergistic benefits of the increased groundwater storage in the Seaside Groundwater Basin because it would be a benefit, and not a potentially adverse significant impact. However, given that NEPA does consider beneficial effects, it is acknowledged that the enhanced ASR aspect of the project could provide beneficial effects to the groundwater resources within the Seaside Basin.

MCWD-26 EIR/EIS Chapter 3 provides a general description of the technical and environmental characteristics of the proposed facilities, consistent with CEQA Guidelines Section 15124(c). On March 23, 2017, CalAm provided to MCWD an assessment of estimated pipeline capacities, including pressure assumptions, for proposed uses of the MCWD-CalAm joint pipeline in General Jim Moore Boulevard, including future supply from CalAm's proposed desalination facility (CalAm, 2017). The assessment shows there would be ample capacity in the joint pipeline for projected future uses: up to 11,081 gallons per minute (gpm) on an average day, and up to 9,996 gpm at peak hour. Since the shared pipeline is part of a pressurized system, whatever source water that is permitted to use the pipeline would become blended in the pipeline. Regardless of the source or the destination, appropriate volumes associated with each source would share the pipeline during different times of the year. See also responses to comment MCWD-27 and MCWD-157.

MCWD-27 The purpose and need for the expansion of the existing Seaside Groundwater Basin ASR system is described in EIR/EIS Section 3.2.4. As noted in that section, the ASR expansion would provide additional injection/extraction capacity for both desalinated product water and Carmel River supplies in order to increase system reliability. The proposed new ASR injection/extraction wells would be used to inject Carmel River supplies and desalinated water into the Seaside Groundwater Basin for storage, and during periods of peak demand, the stored water would be extracted and delivered to customers; see EIR/EIS Table 3-1. As shown in Table 8.2.13-2 in Master Response 13, the MPWSP desalinated supplies would be extracted from the Seaside Groundwater Basin and delivered to customers between May and October. As proposed, the 2,100 afy of desalinated water that would be injected each winter into the Seaside Groundwater Basin when customer demands are lower means that CalAm would be able to extract that amount in the summer months when demands are higher, thus meeting a primary objective (see EIR/EIS

Section 1.3.1) of developing a reliable water supply for CalAm's Monterey District service area, accounting for the peak month demand of existing customers.

In addition, as discussed in EIR/EIS Section 2.2.4, CalAm is entitled to 1,474 afy from the Seaside Groundwater Basin as a result of adjudication but has agreed with the Seaside Groundwater Basin Watermaster to leave 700 afy of its entitlement in the Seaside Groundwater Basin for 25 years, as repayment for its previous overdrafting. Both the stored desalinated water and the Seaside Groundwater Basin water are assumed to be available supplies to meet the peak month demand. See Master Response 13.

MCWD-28 The GWR Project water to which MCWD is entitled would provide an in-lieu recharge of the adjudicated Seaside Groundwater Basin if there were subscribers/irrigators/customers who would use the water in exchange for the potable water they currently receive, or pump directly from the Seaside Groundwater Basin themselves. If the Bayonet and Blackhorse Golf Courses were to receive GWR Project water in exchange for their current use of an equal amount of groundwater from the Seaside Groundwater Basin, 400 to 500 afy of water could remain in the Seaside Groundwater Basin. If an additional 200-300 afy of GWR Project water could also be provided to other Seaside Groundwater Basin users in exchange for their existing use of potable water from the Seaside Groundwater Basin, and if CalAm could affect such an agreement to do so with the Watermaster, the court and other stakeholders, then that 700 afy (0.625 mgd) would not be required to be produced at the desalination plant. Since each desalination treatment module is sized at 1.6 mgd, this 700 afy reduction would represent less than one-half of a treatment module and would not alone be enough of a savings to justify downsizing the project. This and other possible reductions in demand will be considered by the Lead Agencies in their decision-making process. 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. An average of 3,500 afy of GWR water (as opposed to 3,700 afy noted in the comment) would be available to CalAm from MRWPCA; see Master Response 13, Section 8.2.13.3.

MCWD-29 See Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.3, regarding supply assumed to be available to CalAm from the Sand City desalination plant. EIR/EIS Section 5.4.2 has been revised to clarify that 230 afy represents supply assumed to be available to CalAm from the Sand City plant at the end of the Cease and Desist Order (CDO) extension period, and that CalAm's eventual, longer term supply from that desalination plant would be 94 afy. CalAm has a long term right only to the 94 afy so the Lead Agencies cannot reasonably assume any greater number would be available for CalAm's use. For the No Project Alternative, the estimate of 230 afy was assumed in order to characterize available supply at the end of the CDO extension period; at that time, a portion of Sand City's share of Sand City desalination plant production is assumed to not yet be needed by the City and therefore would continue to be available to CalAm. Over time, it is assumed that Sand City will need more of its 206 afy share of the plant's production to serve Sand City development, and supply available to CalAm will be reduced to CalAm's long term share of 94 afy. The third bullet under "Supply Shortages" in EIR/EIS Section 5.4.2.3 has been revised as follows:

> Continued use <u>at the end of the Revised CDO extension period</u> of approximately 230 afy provided by Sand City's existing desalination plant (*<u>eventually</u> <u>decreasing to CalAm's long term supply from the Sand City desalination plant of 94 afy</u>, same as proposed project*) . . .

MCWD-30 SWRCB-issued water rights permits for diversion of Carmel River supplies are discussed in EIR/EIS Section 2.4.3, Section 3.4.2, and Section 4.4.2.2. The combined diversion limits of the two permits (20808A and 20808C) is set at 5,326 afy (2,426 afy and 2,900 afy, respectively) and is contingent upon hydrology/rainfall and, therefore, meeting certain instream flow requirements based on NMFS 2002 recommendations and the physical attributes of the wells; the permits do not, as the comment states, include an estimated annual average yield. Nor does the MPWMD website describing the ASR project "report" average yields; rather the website explains that "[t]he Phase 1 ASR project *entails* [emphasis added] a maximum diversion of 2,400 afy from the Carmel River and an average yield of about 920 afy" and further explains that "[t]he average yield of the Phase 2 ASR project is *estimated* [emphasis added] at approximately 1,050 AFY of additional water supplies." (http://www.mpwmd.net/water-supply/aquifer-storage-recovery/). As noted by SWRCB Order WR 2016-0016, the ASR project diverted just over 1,110 afy of water in Water Year 2009-2010 and Water Year 2010-2011, and between 0 and 210 afy in the drier water years from Water Year 2011-2012 through Water Year 2014-2015. The 1,920 afy and 1,970 afy estimates cited in the comment are just that, whereas the historical values cited in Order 2016-0016 represent actual diversions that have been available as a result hydrology/rainfall.

In its comments on the EIR/EIS, the MPWMD provided Attachment 1 (see comment MPWMD-14, in Section 8.5.7), which calculates the ASR project yield with the new Monterey Pipeline (which is under construction) to be 1,600 afy under "normal" hydrology, compared to 918 afy without the new Monterey Pipeline in the same water year type. Taking all water year types into consideration, the estimated annual yield from ASR with the capacity of the new Monterey Pipeline would average 1,641 afy. The EIR/EIS is using 1,600 afy as a long-term average and not the 1,920 afy or 1,970 afy estimates, because the 1,600 is a more current and realistic value that has been provided by MPWMD, the agency formed under California Water Code with a mission "to promote or provide for a long-term sustainable water supply, and to manage and protect water resources for the benefit of the community and the environment." See also Master Response 13.

MCWD-31 The recycled water supplies anticipated by MCWD from the Regional Urban Water Augmentation Project (RUWAP) Recycled Water Project are described in EIR/EIS Table 4.1-2 as a cumulative project (Project No. 31), as is the Pure Water Monterey GWR (Project No. 59), through which MCWD will now receive the recycled supplies identified by the RUWAP Recycled Water Project. The full size of the GWR project, regardless of who administers or serves the supply (MCWD or MRWPCA), is fully considered in the cumulative analysis of Alternative 5a and 5b in Section 5.5. See also response to comment MCWD-28 regarding the use of GWR water and Seaside Basin in-lieu recharge.

MCWD-32 In assessing the No Project alternative, the Lead Agencies used a different set of supply assumptions from what is presented in the No MPWSP Option cited in the comment; see the first five rows of EIR/EIS Table 2-4, which are based on the best available information. For example, the Carmel River supply is not available equally in all months due to instream flow requirements (see EIR/EIS Section 2.2.3); the available Seaside Basin supplies are dictated by the adjudication and an agreement between CalAm and the Watermaster (see EIR/EIS Section 2.2.4); long term supply from the Sand City desalination plant is only 94 afy (see EIR/EIS Section 2.4.4); ASR is reliable at 1,600 afy (except in drought years when the yield would be zero, see EIR/EIS Section 2.4.3); and GWR will only supply CalAm with 3,500 afy -- the additional 200 afy is a drought reserve. Also see responses to comments MCWD-27 through MCWD-30 and Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.3. See Master Response 13, Section 8.2.13.2, regarding EIR/EIS demand assumptions. EIR/EIS Section 5.4.2.4, Ability to Meet Project Objectives, includes a discussion on the ability of the No Project Alternative to meet project objectives assuming implementation of the GWR Project.

MCWD-33 The EIR/EIS utilized a different supply assumption than the commenter’s No MPWSP Option Scenario A. For a discussion of supplies available to CalAm, see responses to comments MCWD-27 through MCWD-30, MCWD-32, and Master Response 13, Section 8.2.13.3. Regarding existing annual service area demand, see Master Response 13, Section 8.2.13.2.

MCWD-34 For a discussion of supplies available to CalAm, see responses to comments MCWD-27 through 30, MCWD-32, and Master Response 13, Section 8.2.13.3. For an explanation of existing annual service area demand used for sizing the proposed project, see EIR/EIS Section 2.3.1 and Master Response 13, Section 8.2.13.2; the EIR/EIS does not assume 2016 demand. Regarding the ability of the No Project Alternative to meet project objectives, see EIR/EIS Section 5.4.2 and response to comment MCWD-37. The analysis presented by the comment assumes an annual average demand and supply scenario when, in fact, the demand of customers and the availability of supplies varies by month; customer demand in the peak summer months is approximately 130 percent of normal, and supplies in a drought (specifically, water stored in ASR) may not be available. See also EIR/EIS Appendix L.

MCWD-35 The underlying supply and demand assumptions included in the commenter's No MPWSP Option Scenario A are not supported by the EIR/EIS. For a discussion of supplies available to CalAm, see responses to comments MCWD-27 through 30, MCWD-32, and Master Response 13, Section 8.2.13.3. Regarding existing annual service area demand, see Master Response 13, Section 8.2.13.2.

MCWD-36 The underlying supply assumptions regarding the commenter's No MPWSP Option Scenario B are not supported by the EIR/EIS. For a discussion of existing annual service area demand and other demands the project proposes to meet, see EIR/EIS Section 2.3.1, and Master Response 13, Section 8.2.13.2. See also the discussion of "Alternative Supply and Demand Scenarios" in Master Response 13, Section 8.2.13.4, which explores the potential to reduce the size of the desalination plant under alternative demand and supply scenarios; see also EIR/EIS Appendix L. Regarding the ability of the MPWSP No Project Alternative to meet project objectives, see response to comment MCWD-37.

MCWD-37 The conclusions presented in the comment about the No MPWSP Option Scenario B assumes an annual average demand and supply scenario, when in fact, the demand of customers and availability of supplies varies by month; customer demand in the peak summer months is approximately 130 percent of normal, and supplies in a drought (specifically, water stored in ASR) may not be available. See also EIR/EIS Appendix L.

EIR EIS Section 5.4.2.4 describes the ability of the No Project Alternative to meet project objectives, with and without the GWR Project. The EIR/EIS analysis concludes that the No Project Alternative would achieve compliance with the Revised CDO and the Seaside Groundwater Basin adjudication but would not provide sufficient supply to allow for replenishment of water that CalAm previously pumped in excess of its adjudicated rights from the Basin; would not provide water supply reliability; and would not provide supply for the development of vacant legal lots of record or supply to meet demand resulting from economic recovery of the hospitality industry. See also responses to comments MCWD-15 and MCWD-27.

MCWD-38 The supply assumptions presented in the commenter's No MPWSP Option Scenario A and Scenario B are not supported by evidence presented in this EIR/EIS. See responses to comments MCWD-32 through MCWD-37, MCWD-39, and Master Response 13.

MCWD-39 See the discussion under "Existing Annual Service Area Demand" in Master Response 13, Section 8.2.13.1 regarding CalAm's estimate of existing service area demand, consistent with project objective number 4. Refer to the discussion of Pebble Beach Entitlements under "Other Demands" in Master Response 13, Section 8.2.13.1 regarding CalAm's obligation to serve properties with these entitlements. Meeting existing demand, existing obligations to supply water, and demand of existing customers under improved economic conditions, and having the capacity to serve existing lots of record is consistent with the objective of providing a reliable water supply.

CalAm's March 2016 amended Project Description states, regarding the project variant (a 6.4 mgd plant combined with GWR water purchase), that the "primary objectives of the MPWSP Variant are the same as those for the proposed project [which are to provide additional water supplies] to meet the estimated total annual demand in the Monterey District of 15,296 afy…." That total, originally provided in CalAm's January 2013 supplemental testimony, includes the demand components described in EIR/EIS Chapter 2 and Section 6.3. The more specific objectives described in the EIR/EIS are consistent with the scope of the more general objectives stated in the project description of the amended application, including "diversify and create a reliable drought-proof water supply" and "protect the local economy from the effects of an uncertain water supply." The more specific objectives described in EIR/EIS Section 1.3.1 were indeed provided by CalAm, the project applicant; this information was presented in testimony and similar formal submittals during the CPUC's application proceedings. The existing annual demand assumed in the EIR/EIS was revised to 12,270 afy in supplemental testimony provided by CalAm in April 2016 (Svindland, 2016). The CEQA project objectives set forth in the EIR/EIS were compiled by the CPUC to reflect CalAm's application and other submittals.

MCWD-40 EIR/EIS Section 4.20.5.1 addresses socioeconomic impacts of the proposed project, and Section 4.20.5.2 addresses the environmental justice issues pursuant to NEPA requirements. As noted in EIR/EIS Section 4.20.2.2, and consistent with CEQA Guidelines Section 15131(a), "Economic or social effects of a project shall not be treated as significant effects on the environment" and the focus of the analysis in the EIR/EIS was on the physical changes caused by the proposed project. As noted in EIR/EIS Section 1.5.4, ". . . the Certificate of Public Convenience and Necessity process will consider any other issues that have been established in the record of the proceeding, including but not limited to economic issues, social impacts . . . and the need for the project."

MCWD-41 Regarding existing annual demand, other demands, and supplies available to CalAm, refer to responses to comments MCWD-32 through MCWD-40 and Master Response 13; regarding the proposed ASR wells, see response to comment MCWD-27; regarding the commenter's suggested alternative to replenishing the Seaside Groundwater Basin, see response to comment MCWD-28.

Contrary to the comment, the EIR/EIS does not use the 690 afy as a return water obligation. As discussed in EIR/EIS Section 2.5.1, Salinas Valley Groundwater Basin Return Water, groundwater modeling simulated operating scenarios with return water obligations representing 0, 3, 6, and 12 percent of the source water (see Section 4.4, Groundwater Resources). EIR/EIS Table 5.5-19 shows the amount representing 6 percent return water for the larger 9.6 mgd project (1,620 afy) and Table 5.5-24 shows the amount representing 6 percent return water for the smaller 6.4 mgd project (1,042 afy), and neither discussion makes a distinction or an assumption as to whether it is delivered to CCSD or the CSIP. See Master Response 4 regarding the Agency Act and SVGB return water. Because EIR/EIS Section 4.4 concluded the impacts of proposed project pumping at the CEMEX property on groundwater resources would be less than significant, there is no obligation to mitigate for environmental, groundwater, and SGMA direct, indirect, and cumulative impacts from slant well pumping; see also Master Response 6, The Sustainable Groundwater Management Act.

MCWD-42 Regarding alternative supply sources, see response to comment MCWD-15 and responses to comments MCWD-43 through MCWD-49. Regarding existing annual demand, including the suggestion of using 2015 or 2016 as a reliable estimate of service area demand, see the discussion of Demand Assumptions in Master Response 13, Section 8.2.13.2. See also the discussion of Alternative Supply and Demand Assumptions in Master Response 13, Section 8.2.13.4. Regarding the ability of the commenter's proposed No MPWSP Option Scenario A and Scenario B to meet project objectives, see response to comment MCWD-38.

MCWD-43 The Interlake Tunnel project is described in EIR/EIS Section 5.2.5 and has been under consideration by Monterey County Water Resources Agency (MCWRA) since the late 1970s. But the recent drought renewed interest in this project, which would involve building a tunnel between the Nacimiento Reservoir, and the larger capacity San Antonio Reservoir, to preserve approximately 50,000 afy of water that would otherwise spill from Nacimiento Reservoir because it is too small to capture all the watershed drainage. The project would provide additional flood control and water supply benefits to existing users and beneficiaries of the MCWRA Zone 2C, and would be funded through a Proposition 218 assessment of Zone 2C property owners; however, CalAm's service area is not within Zone 2C and, therefore, CalAm customers would not be direct beneficiaries of the Interlake Tunnel project.

A new Salinas River diversion and conveyance facility to convey water to near Salinas is proposed under the unexercised SWRCB-issued water right referenced in the comment; but the SWRCB issued a Notice of Proposed Revocation of Water Right Permit #11043 in 2010. The future availability of water under Permit #11043 is extremely uncertain. See response to comment Beech3-3 in Section 8.7.2.

It would be speculative to assume a Salinas River surface water right could be obtained and would be a component of a reliable water supply portfolio; without it, and considering the implementation concerns described in this response below, this scenario would not meet the project objectives. However, if a project could secure a water right to appropriate and divert 10,000 to 20,000 afy when there are excess surface water flows in the Salinas River, then:

1. The existing diversion facility (rubber dam) could be expanded to move the surface water to an expanded advanced water treatment facility (e.g., Pure Water Monterey) and then conveyed to the Seaside Groundwater Basin. If the treated surface water were blended with other GWR source waters, either during treatment or conveyance, additional injection/extraction wells would need to be constructed in the Seaside Groundwater Basin so the water could be stored and "polished" in the ground (retention time) before it is made available for extraction in the high demand months.

2. The surface water could be treated in a desalination plant, although it would be more cost-effective to use a standard surface water treatment plant. However, the excess stormwater would only be available for diversion and treatment in the winter months, and not the high demand months of summer, so storage would be necessary.

3. Under the scenario described by the comment, Salinas River flows would be available for diversion from November through March. Groundwater recharge in the Castroville area would need to occur through injection and not in-lieu recharge, because winter demands would be low. The CSIP was developed as an initial response to stopping seawater intrusion by raising groundwater levels at the coast through in-lieu recharge, and the implementation of SVWP Phase I met the objective of stopping seawater intrusion. However, the groundwater depression on the east side of Salinas persists; SVWP Phase II was meant to provide water to fill the depression and would have utilized new Salinas River diversions and conveyance facilities to deliver water from Water Right Permit #11043 to do so. See response to comment Beech3-4.

4. It is not clear how any portion of the excess Salinas River water stored at the Armstrong Ranch would help meet any of the objectives of the proposed project.

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) will decide what projects get implemented to remedy the critically overdrafted SVGB. The implementation of a Salinas River Excess Flow Capture project would be speculative for the reasons presented in this response.

MCWD-44 See response to comment MCWD-27 and 28.

MCWD-45 Since MCWD does not represent the agricultural community within the Salinas Valley, it is not clear whether such growers are concerned over the GWR project. Indeed, the GWR Project will provide an additional 1,000 afy to the growers who subscribe to the CSIP. See response to comment MCWD-43 for a discussion on stormwater capture/groundwater recharge.

MCWD-46 An analysis of the increased availability of ASR water as of January 1, 2022 has not been conducted because the Phase I and Phase II ASR projects correspond to MPWMD and CalAm's existing Water Rights Permits 20808A and 20808C, which authorize and limit the diversion of up to 2,426 afy for ASR Phase I, and up to 2,900 afy for ASR Phase II; see also response to comment MCWD-30. Carmel

River water in excess of CalAm's legal right to 3,376 afy would stay in the River when the CDO expires in 2022, and would not be available for diversion to use, or storage by CalAm.

Response to comment MPWMD-14 in Section 8.5.7 includes a table prepared by the MPWMD that presents the increased storage capacity of ASR, resulting from the increased conveyance capacity provided by the new Monterey Pipeline. The analysis by the MPWMD indicates that, in a normal precipitation year, an additional 682 af could be available for storage in ASR with the new Monterey Pipeline, and this EIR/EIS is using that assumption; in an above normal precipitation year, that incremental increase could be 1,016 af.

MCWD-47 See responses to comments MCWD-43 and MCWD-44. If MCWD has an unused entitlement of 727 afy from the GWR Project for use in the Ord Community, it is not clear why MCWD would need 1,000 afy from a Salinas River Water Treatment Plant; furthermore, it does not seem reasonably foreseeable that MCWD would build a 5,000 afy water treatment plant, of which MCWD would make 4,000 afy available to CalAm.

MCWD-48 As stated on Draft EIR/EIS page 4.4-89, Table 4.1-2 explains it is not reasonably foreseeable that MCWD would build a 2,700 afy desalination plant at its Armstrong Ranch[6] property if the MCWD need for Ord Community water is only 973 afy (unless some of the GWR Project entitlement were sold to CalAm). As noted by MCWD in response to a California Public Records Act request, the water source for a MCWD desalination facility has not been determined, but it could be seawater-intruded groundwater from the 180-Foot Aquifer, or it could be seawater from shallow wells located along the coast (MCWD, 2016). However, neither the timing or the capacity of a MCWD-proposed desal project would meet the objectives of the proposed project. Horizontal wells had not previously been mentioned or proposed, but have been addressed in response to comment MCWD-171.

MCWD-49 See response to comments MCWD-15, MCWD-39, and MCWD-43 for information on supply and demand.

MCWD-50 See responses to comments MCWD-HGC, Master Response 3, Water Rights, Master Response 4, The Agency Act and Return Water, and Master Response 6, The Sustainable Groundwater Management Act; the source water that originated in the SVGB is not required to be returned to the Marina Subarea. See also EIR/EIS Appendix E3; the return water percentage is likely to be no more than 10 percent within the first 2 years of project slant well pumping, decreasing to no more than 5 percent within 6 months to roughly 3 years. Longer term, it appears that the return water percentage would be between 1 percent and 4 percent, well within the

[6] It is unclear how a desalination plant of this size at the Armstrong Ranch and a groundwater recharge and augmentation project at the same general location would operate or what the inter-relationship would be. Neither project is well defined nor appears to be reasonably foreseeable.

0 to 12 percent range studied in the EIR/EIS. Because EIR/EIS Section 4.4 concluded the impacts on groundwater resources from proposed project pumping at CEMEX would be less than significant, there is no obligation to provide return water to mitigate for impacts to the Marina Subarea.

EIR/EIS Table 5.5-19 shows water supplies that would be available with the MPWSP, compared with the service area demands shown in Table 5.5-18, as well as two estimates of the SVGB return water obligation associated with operating the proposed 9.6-mgd desalination plant. Table 5.5-19 illustrates available and surplus supply (or deficit) during the SGB replenishment period, assuming a 6 percent or 12 percent return water obligation. As shown, under either of these return water scenarios, the available supply would meet demand associated with existing land uses and water entitlements (12,845 afy), with a surplus of 209 or 1,829 afy depending on the return water obligation. EIR/EIS Tables 5.5-20 through 5.5-24 present similar analyses for Alternative 1 through Alternative 5, respectively. See also response to comment MCWD-IW-11 (regarding HDD wells) and MCWD-IW-12 (regarding Ranney wells).

The EIR/EIS assumed an alternative that did not include a Salinas Valley Return Water commitment (i.e., one that would utilize an open water intake) would result in more water available for growth; see EIR/EIS Section 5.5.21.5 (Alternative 2), Section 5.5.21.6 (Alternative 3), and Section 5.5.21.7 (Alternative 4).

MCWD-51 See Master Response 3, Water Rights, Section 8.2.3.7, Effect on MCWD.

MCWD-52 See Master Response 3, Water Rights, and responses to comments MCWD-53 and MCWD-56.

MCWD-53 The EIR/EIS analyzes the subject of water rights to be sure the decision-makers are reasonably informed as to the feasibility of the project in order to minimize the possibility that they approve a project that cannot, in the end, be implemented. There is no legal imperative concerning this feasibility issue, and thus no legal standard is required to be applied. See Master Response 3, Water Rights, Section 8.2.3.1.

MCWD-54 See Master Response 3, Water Rights, and response to comment MCWD-53.

MCWD-55 See Master Response 3, Water Rights.

MCWD-56 CalAm's right to use water for the project would be an appropriative right. The EIR/EIS text referred to by the comment concerning use of water beyond the boundaries of the CEMEX property pertains to overlying rights, not to appropriative rights. See EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights, for additional details.

MCWD-57 See EIR/EIS Section 2.6, Water Rights, and Master Response 3, Water Rights.

MCWD-58 The locations of MCWD's water supply wells are presented in EIR/EIS Table 4.4-10 in Section 4.4.5.2, which explains that MCWD's wells are too far from the capture zone to be affected by the proposed project pumping. See Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1 and 8.2.8.2, for a description of the capture zone. While the MPWSP would draw water from the sediments of the Dune Sand Aquifer and the 180-Foot Aquifer (referred to locally as the 180-FTE Aquifer), the capture zone would be recharged primarily by seawater and would not extend inland to impact inland groundwater users.

MCWD-59 See Master Response 3, Water Rights, Master Response 4, The Agency Act and Return Water, Master Response 8, Project Source Water and Seawater Intrusion, and responses to comments MCWD-50 and MCWD-HGC.

MCWD-60 The onsite technical information sought by the SWRCB has been provided in EIR/EIS Section 4.4 and is supported by Appendices C3 and E3. See also responses to comments MCWD-59, MCWD-87, MCWD-EKI and MCWD-GeoHydros.

MCWD-61 See Master Response 2, Source Water Components and Definitions. This EIR/EIS uses 500 mg/L total dissolved solids (TDS) as the fresh water standard consistent with the recommended standard in 22 Cal. Code Regs. 64449, in Table 64449-B. Furthermore, the cited portion of the Basin Plan excepts groundwater from being suitable for municipal or domestic water supply where water exceeds 3,000 mg/l TDS and the area is not reasonably expected by the regional water board to supply a public water system. Monitoring well data concerning existing TDS levels within the area of the capture zone for the proposed project indicates that groundwater already greatly exceeds 3,000 mg/L TDS. In addition, there is no indication that the seawater-intruded portion of the SVGB is reasonably expected by the regional water board to supply a public water system.

MCWD-62 See Master Response 6, The Sustainable Groundwater Management Act, regarding the "Marina Subarea," which is not a DWR-recognized groundwater basin.

The comment refers to California Water Code section 10780, the Groundwater Quality Monitoring Act, but that act does not apply to the proposed project. Rather, its purpose was to establish and implement groundwater monitoring and oversight for well stimulation treatment activities in areas of oil and gas operations. (Wat. Code § 10783.) Since the project does not propose to engage in any well stimulation treatment activities for oil and gas operations, the Groundwater Quality Monitoring Act does not apply to the proposed project.

The commenter also cites to 40 CFR section 144.3(a) for the definition of "Underground Source of Drinking Water," and criticizes the State Board Report for not addressing it. The Lead Agencies did not author the State Board Report. SWRCB is the expert agency concerning water in California so presumably took federal law and regulations into account in preparing the Report. In addition, to the extent that such federal regulations pertain to the project, CalAm would be required to comply with them. Even if the SVGB were classified as an Underground Source of Drinking Water under federal regulations, that would not appear to preclude CalAm from having rights to the project source water under the common law "developed water" legal construct addressed in the State Board Report.

MCWD-63 See responses to comments MCWD-61 and MCWD-62.

MCWD-64 See response to comment MCWD-60, and Master Response 3, Water Rights, for a discussion of the potential injury to legal water users resulting from the proposed MPWSP. See also Master Response 6, Sustainable Groundwater Management Act, which explains that the "Marina Subarea" is not a DWR-recognized groundwater basin.

MCWD-65 See Master Response 8, Project Source Water and Seawater Intrusion, and Master Response 3, Water Rights.

MCWD-66 See Master Response 8, Project Source Water and Seawater Intrusion, Master Response 4, Agency Act and Return Water, and Master Response 3, Water Rights.

MCWD-67 See Master Response 4, Agency Act and Return Water, and Master Response 3, Water Rights.

MCWD-68 See Master Response 3, Water Rights, Section 8.2.3.8, Effect of Annexation Agreement.

MCWD-69 See Master Response 3, Water Rights.

MCWD-70 See Master Response 3, Water Rights, and Master Response 4, The Agency Act and Return Water.

MCWD-71 See Master Response 3, Water Rights.

MCWD-72 See Master Response 4, The Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2 for clarification on the Agency Act, MPWSP compliance with the Act, and the relationship between the proposed project and return water. As discussed in the EIR/EIS Section 4.4.5.2, the EIR/EIS did not identify significant impacts on groundwater resources from the proposed slant well pumping. See Master Response 8, Project Source Water and Seawater Intrusion, Sections 8.2.8.1, 8.2.8.2, and 8.2.8.4 for additional clarification on the MPWSP effects on groundwater resources at the CEMEX site and in the SVGB.

MCWD-73 This comment is addressed in Section 8.2.6 of Master Response 6, The Sustainable Groundwater Management Act.

MCWD-74 This comment is addressed in Master Response 6, The Sustainable Groundwater Management Act.

MCWD-75 See Master Response 3, Water Rights, and responses to comments MCWD-61 and MCWD-62.

MCWD-76 See Master Response 3, Water Rights, and Master Response 6, The Sustainable Groundwater Management Act.

MCWD-77 EIR/EIS Section ES.8 addresses private (versus public) ownership of the desalination plant, specifically Monterey Country Health and Safety Code Section 10.72.030. EIR/EIS Table 3-1 lists the Monterey County Health Department Permit to Construct a Desalination facility as an anticipated permit or approval.

With respect to the Monterey County Code provisions governing desalination plants, including a requirement that they be publicly owned, on October 25, 2012, the CPUC issued a decision (Decision 12-10-030) with a ruling summarized as follows:

> This decision determines that the authority of the Commission in regard to this application preempts Monterey County Code of Ordinance, Title 10, Chapter 10.72, concerning the construction, operation and ownership of desalination plants. This decision further determines that the findings, conclusions and orders herein are an exercise of jurisdiction that is paramount to that of a county Superior Court concerning the same subject.

The Coastal Commission report referred to by the comment does state that the issue of whether a proposed desalination plant is owned by a public versus private entity is a factor to be considered and addressed by the Coastal Commission because privately owned facilities would be subject to less government oversight and different economic incentives. Of course, given that CalAm is a regulated utility, albeit an investor-owned private entity, there is a layer of oversight by virtue of the CPUC requirements that would not apply to a purely private entity. The Coastal Commission report notes that there may need to be additional conditions of approval placed upon privately owned plants in order to ensure coastal resource protection. No doubt, the factors noted in the Coastal Commission report will be considered and applied as warranted if the project is approved by the Lead Agencies and CalAm seeks a coastal development permit. Similarly, MBNMS can consider the effect of public versus private ownership in its action on the MPWSP. See also response to comment MCWD-6.

MCWD-78 The EIR/EIS discloses the proposed project's technical, economic and environmental characteristics of all proposed project components, facilities and any and all anticipated activities. The useful life of each component is usually considered in the amortization of project costs (see CDM, 2014, Table 2-2) and with a routine maintenance schedule, the useful life can be exceeded and is not necessarily a reason alone for decommissioning. Components of large-scale infrastructure projects are typically decommissioned when a lease expires on the property (e.g., a solar project on federally owned property) or when the resource is exhausted (e.g., mining of aggregate ore) or when technology becomes obsolete (e.g., San Onofre Nuclear Generating Station). In this case, CalAm owns the property at the desalination plant and will have a deeded easement on a portion of the CEMEX property, the seawater resource is not finite, and the EIR/EIS discloses the impacts associated with a potential range of Salinas Valley Return Water volumes. The EIR/EIS provides project description information that allows for the evaluation and review of the potential environmental impacts of the proposed project, and nothing in this comment or response meets a threshold in CEQA Guidelines Section 15088.5 that would trigger a need to recirculate the Draft EIR/EIS. See responses to comments MCWD-79 through MCWD-85, below, for specific responses to the desalination plant, slant wells, and the return water obligation.

MCWD-79 Not unlike most large, capital-intensive infrastructure projects (e.g., the MCWD RUWAP, the Sand City Desalination Plant, the Salinas Valley Water Project, the MCWD 300 af Desalination Project, or the Pure Water Monterey GWR Project), the MPWSP EIR/EIS did not include a temporal length of the proposed project components, because the operational impacts of a capital project of this magnitude are assumed to occur indefinitely. There is no anticipated or planned end to the project. The analysis of GHGs conservatively used a 40-year project lifetime to amortize the project construction emissions (see EIR/EIS Section 4.11.4.1), but all other topical sections evaluated and disclosed the ongoing impacts resulting from maintenance activities described in EIR/EIS Section 3.4.1, particularly at the slant wells. See response to comment Marina-25 in Section 8.5.1.

MCWD-80 CalAm proposes as part of the project to forego decommissioning the test slant and to convert the test slant well into a project slant well. The EIR/EIS examines that proposal. Special Conditions 6 and 17 of the Coastal Development Permit (CDP), which address decommissioning of the test slant well and posting a bond to ensure that it is carried out, do not foreclose the possibility of CalAm converting the test slant well to a permanent well (see Master Response 11, CalAm Test Slant Well, Section 8.2.11.8, for general information regarding this proposed conversion). Notably, in its Summary of Staff Recommendation included on page 2 of the CDP Staff Report, the CCC stated:

> If the data collected from this proposed test well demonstrates that this well design and location would provide the necessary amount of water and not cause unacceptable adverse effects, CalAm may choose to apply for additional coastal development permits to convert the test well to a production well and/or construct additional similar wells, subject to certification of an Environmental Impact Report ("EIR") by the California Public Utilities Commission, which is preparing the document for the above-referenced water supply project.

Further, in its Findings and Declarations included on page 16 of the CDP Staff Report, the CCC stated:

> These Findings, and any coastal development permit issued pursuant to these Findings, apply only to the proposed test slant well and its associated monitoring wells and do not authorize development that may be associated with long-term use of the well, including converting the well to use as a water source for the separately proposed MPWSP. Any such proposal will require additional review and analysis for conformity to relevant Local Coastal Programs and the Coastal Act and will be conducted independent of any decision arising from these Findings. Further, the Commission's decision regarding these Findings exerts no influence over, and causes no prejudice to, the outcome of those separate future decisions.

Accordingly, and as described in EIR/EIS Table 3-8, CalAm intends to apply for a Coastal Development Permit(s) for the proposed project (including conversion of the test well) from the City of Marina and/or CCC, as applicable.

Finally, the EIR/EIS is not tiering from the CCC CEQA-equivalent analysis; the EIR/EIS independently evaluates the conversion of the test slant well to a permanent well, as described in EIR/EIS Section 3.2.1.1 in Table 3-1. See Master Response 11, CalAm Test Slant Well, Section 8.2.11.2.

MCWD-81 The test slant well is being operated under a CDP that was issued by the CCC (see Master Response 11, Section 8.2.11.2) and its ongoing operation under that permit is not part of the proposed project; the conversion of the test slant well to a permanent well is part of the proposed project and is described in EIR/EIS Section 3.2.1.1; see also Master Response 11, Section 8.2.11.7, and response to comment MCWD-80.

MCWD-82 EIR/EIS Section 3.4.1 describes the 5-year maintenance schedule for the proposed intake system and Impact 4.2-10 describes the potential for the intake wells to be influenced by coastal erosion. As noted in response to comment MCWD-78, the useful life of a component is not a reason alone for decommissioning. For clarification and consistency of terms, however, the text at page 4.2-70 has been revised as follows,

> The proposed slant wells would not be exposed during the ~~operational~~ <u>useful</u> life of the slant production wells (anticipated to be 20 to 25 years) and would not contribute to further coastal erosion or changes in the beach environment.

Slant wells are indeed a new, evolving technology[7] and the test slant well at CEMEX appears to be demonstrating that the technology does work at this location, under the pertinent hydrogeologic conditions, for this application. As shown in EIR/EIS

7 See response to comment Marina-11. See also Master Response 11, Section 8.2.11.8 for a discussion of the Dana Point slant well and the feasibility of evolving slant well technology.

Figure 4.2-7, coastal erosion could expose the test slant well in a 100-year storm event by the year 2060 and Mitigation Measure 4.2-10 is a Slant Well Abandonment Plan. Mitigation Measure 4.2-10 has been revised in the Final EIR/EIS and now includes additional details within the measure, as well as the identification of secondary impacts resulting from implementation of Mitigation Measure 4.2-10. All of the other proposed slant wells would be located further inland of the 2060, 100-year flood event envelope as shown on Figure 4.2-8. If CalAm needs to replace a slant well, it will need to apply for a Coastal Development Permit to do so.

MCWD-83 See Master Response 4, The Agency Act and Return Water, Section 8.2.4.3 for clarification on the Agency Act and the quantity of return water. See also EIR/EIS Appendix E3.

MCWD-84 There is no requirement that water be returned to the “Marina Subarea.” See Master Response 6, Sustainable Groundwater Management Act, Section 8.2.6.2, for a discussion of SGMA Basin designations. The Agency Act requires that no groundwater from the Salinas Basin may be exported for any use outside the Basin, but makes no specific mention of subdivisions in the Basin. EIR/EIS Section 4.4.4.2 describes the return water considerations and CalAm et al, 2016b, is the Return Water Settlement Agreement that includes the proposed formula for calculating the actual annual return water obligation, and explains “the volume of Annual Return Water Obligation shall be determined by the [Monterey County Water Resources] Agency based on the methodology set forth in Exhibit A” to the Agreement; see also Master Response 4, The Agency Act and Return Water, Section 8.2.4.3.

MCWD-85 The Final EIR/EIS will allow for informed decision-making to occur because the scope of the proposed project and the associated environmental consequences of the proposed project have been fully disclosed. Nothing in these comments or responses meets a threshold in CEQA Guidelines Section 15088.5 that would trigger a need to recirculate the Draft EIR/EIS.

MCWD-86 The potential impacts on the groundwater resources of SVGB are fully evaluated and presented in Section 4.4. See also response to comments MCWD-87 through MCWD-90.

MCWD-87 The onsite technical information sought by the SWRCB has been provided in EIR/EIS Section 4.4 and is supported by Appendices C3 and E3. The Dune Sand and 180-Foot Aquifers are described in EIR/EIS Section 4.2.1.1 (geologic setting), Section 4.4.1.2 (local and regional hydrogeology), Section 4.4.1.3 (groundwater flow and occurrence), and Section 4.4.1.4 (groundwater quality), as well as in EIR/EIS Appendix C3, Section 4.4.4 (regional geologic setting), Section 4.6.6 (hydrostratigraphy), Section 5.2 (groundwater quality, CEMEX area), and EIR/EIS Appendix E3, Section 1.2 (hydrogeologic conceptual model).

See Master Response 11, CalAm Test Slant Well, Section 8.2.11.4 (monitoring wells and baseline report), Section 8.2.11.5 (long-term pump test) and Section 8.2.11.6 (use of the test well data in the EIR/EIS). How "extracted fresh water is replaced" is addressed in EIR/EIS Section 3.2.3.7 (Castroville Pipeline) and Section 4.4.4.2 (groundwater modeling).

EIR/EIS Appendix E2 Section 5.3 explains that slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM^{2016} and MODPATH. Particles were placed along the edge of the inferred 2013 seawater intrusion front in the 180-FT Aquifer (Model Layer 4) and 400-FT Aquifer (Model Layer 6), as reported by MCWRA. Forward particle-tracking was then employed to show the change in front location after 63 years of slant well pumping. Without slant well pumping, the particles representing saltwater would continue to migrate inland. With slant well pumping, the movement of saltwater would be in response to the regional background gradient and drawdown created by slant well pumping. The superposition NMGWM^{2016} was thus used without the regional gradient to isolate changes in saltwater movement due solely to slant well pumping. The change in particle locations initially placed at the seawater intrusion interface represent the change in saltwater location relative to its inland location due to continued background recharge and pumping (e.g., the acceleration or retardation of existing saltwater intrusion).

EIR/EIS Appendix E2 Section 4.3 explains that the NMGWM^{2016} was developed using the MODFLOW computer code, which does not consider variable density effects. The NMGWM^{2016} employed equivalent freshwater heads to simulate the density contrast between seawater and the underlying groundwater. Comparisons between MODFLOW calculated water level changes and calculations using a variable density flow model (SEAWAT) indicated slight differences in calculated water levels (approximately one foot). These differences exist nearest the coast, where there is a measured difference in groundwater salinity ranging from seawater to freshwater. Near the coast, and where density effects are greatest, slant well pumping would have a much greater influence on water level changes and flow than the spatial differences in salinity and water density. However, as the salinity concentration decreases with increasing distance from the coast, the differences in model calculated water levels would diminish and become insignificant. The effects of variable density flow on NMGWM^{2016} model results were therefore considered negligible and a dual density model is not necessary.

See response to comment MCWD-HGC, and MCWD-GH-26 through MCWD-GH-30, and; Master Response 12, The North Marina Groundwater Model (v.2016) and EIR/EIS Appendix E3.

MCWD-88 The data from the test slant well was indeed used in the groundwater modeling, as explained in EIR/EIS Appendix E2, Sections 3.2 and 4.2. The comment misrepresents the capabilities of a superposition model; see Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.4.12.4. See also responses to comments MCWD-HGC and MCWD-GeoHydros.

MCWD-89 See response to comment MCWD-88 and Master Response 11, CalAm Test Slant Well, Section 8.2.11.6. The Lead Agencies for the EIR/EIS agree with the CCC statement provided in the comment that, "… pumping and water quality testing to be conducted during the slant well test is necessary to inform the design of a potential full-scale facility. Other actions, such as drilling additional boreholes or conducting additional modeling, would not be sufficient to characterize the site and its potential to provide source water."

The comment refers to litigation initiated by MCWD against the CCC with respect to the test slant well, and refers to an attached brief filed as part of that case. Indeed, MCWD has brought three lawsuits challenging aspects of the test slant well for the Project. A summary of the lawsuits and their status as of publication of the EIR/EIS is as follows:

1. *Marina Coast Water District v. California Coastal Commission*, Santa Cruz County Superior Court Case No. CISCV180839, California Court of Appeal, Sixth District, Case No. H042742.

In this action filed December 11, 2014, MCWD challenged the CCC's approval of Coastal Development Permit ("CDP") Nos. A-3-MRA-14-0050 and 9-14-1735 allowing CalAm to construct and operate the test slant well and associated infrastructure and development, MCWD alleged that approval of the two CDPs violated procedural and substantive requirements of the CEQA and the California Coastal Act. Following a hearing on the merits on July 23, 2015, the Honorable Judge Rebecca Connolly of the Santa Cruz County Superior Court denied MCWD's petition in its entirety. A judgment in favor of the CCC and CalAm was entered on August 24, 2015. MCWD appealed the judgment to the Sixth Appellate District of the California Court of Appeal. On October 26, 2016, the Court of Appeal affirmed the Superior Court's decision in full in an unpublished decision. On November 22, 2016, the Court of Appeal denied MCWD's petition for rehearing of that decision. On December 5, 2016, MCWD filed a Petition for Review in the California Supreme Court, which was denied on January 11, 2017. On January 12, 2017, the Court of Appeal issued its remittitur, closing the case.

2. *Marina Coast Water District v. California State Lands Commission*, Santa Cruz County Superior Court Case No. CISCV180895

In this action filed January 15, 2015, MCWD challenges the California State Lands Commission's (CSLC) approval of a lease to allow CalAm to construct and operate a portion of the test slant well on State-owned land. MCWD alleges that CSLC's approval of the test well lease violated procedural and substantive requirements of CEQA. On September 29, 2015, the Honorable Judge Rebecca Connolly of the Santa Cruz County Superior Court approved a stipulation staying all proceedings in this action until issuance by the Sixth Appellate District of its remittitur in the appeal of Marina Coast Water District v. California Coastal Commission, Case No. CISCV180839. This case remains pending before the Superior Court.

3. *Marina Coast Water District v. California Coastal Commission*, Santa Cruz County Superior Court Case No. 15CV00267

In this action filed November 5, 2015, MCWD challenges the Coastal Commission's October 6, 2015, approval of a permit amendment to CDP Nos. A-3-MRA-14-0050 and 9-14-1735 to clarify how certain operational performance standards are applied to the test well. MCWD alleges that the CCC's approval of the CDP permit amendment violated procedural and substantive requirements of CEQA and the California Coastal Act. On February 19, 2016, CalAm moved to stay the suit pending appeal of *Marina Coast Water District v. California Coastal Commission*, Superior Court Case No. CISCV180839, Sixth Dist. Court of Appeal Case No. H042742 (discussed above). Two of MCWD's four causes of action were heard on the merits by the Honorable Judge Paul Burdick in Santa Cruz County Superior Court on September 20, 2016. At the hearing, the Superior Court denied MCWD's petition as to those two causes of action. The remaining two causes of action were heard on August 30, 2017. The Superior Court denied the remaining two causes of action at a hearing on October 3, 2017. A judgment in favor of the CCC and CalAm on all causes of action was entered on January 11, 2018.

On January 12, 2018, MCWD appealed the Superior Court's judgment to the Sixth Appellate District of the California Court of Appeal. That appeal is pending.

MCWD-90 See responses to comments MCWD-HGC, MCWD-EKI, and MCWD-GeoHydros. See also responses to comments MCWD-92 through MCWD-106 regarding baseline, consistencies with applicable laws and regulations, the analysis of impacts on groundwater resources and cumulative impacts.

MCWD-91 Response to comment MCWD-HGC, and Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.2, explain that the "Marina Subarea" is not a DWR-recognized groundwater basin. See Master Response 10, Environmental Baseline under CEQA and NEPA. EIR/EIS Section 4.2.1.1 presents the existing regional geology and describes the geologic units of the Salinas Valley Groundwater Basin and the area around North Marina. EIR/EIS Section 4.4.1 presents the setting/affected environment for groundwater resources and includes a discussion of terminology and concepts (Section 4.4.1.1), local and regional hydrogeology (Section 4.4.1.2), groundwater flow and occurrence (Section 4.4.1.3), and groundwater quality (Section 4.4.1.4). See also response to comments MCWD-92 through MCWD-99.

MCWD-92 EIR/EIS Section 4.4.1.2 presents the local and regional hydrogeological conditions in the SVGB, including a description of the Dune Sands Aquifer. The 13-year old citation on Draft EIR/EIS page 4.4-8 represented the best available information on the Dune Sands Aquifer until CalAm started drilling boreholes in 2015, and began sampling water quality from the monitoring wells. The latest CalAm data has been incorporated into the conceptual model of the groundwater basin as well as into the NMGWM^{2016} and EIR/EIS Section 4.4; therefore, the more contemporary data was included and considered in the EIR/EIS analysis. The text in Section 4.4.1.2 has been revised to explain that,

> ". . . most of the water in the Dune Sand Aquifer along the coast has been intruded by seawater and is considered saline to brackish (Kennedy/Jenks, 2004 and Appendix C3 Section 5.2)."

General water quality conditions are discussed in EIR/EIS Section 4.4.1.4 and water quality results from test slant well sampling is presented in Table 4.4-4; see also EIR/EIS Appendix C3, Table 5-3.

The EIR/EIS sections present a description of the Dune Sand Aquifer, which has been developed and agreed upon by experts in hydrogeology with specific knowledge of the SVGB. The environmental setting for hydrogeology fulfills the requirements of CEQA/NEPA and was developed through subsurface investigations, review of available literature, data from groundwater monitoring wells and an evaluation of test slant well data (see EIR/EIS Section 4.4.4). As discussed in EIR/EIS Section 4.4.5.2, the proposed slant wells would be extracting water from the coastal region in an area with documented seawater intrusion and the impacts on neighboring production wells and water quality would be less than significant. See Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1, 8.2.8.2, and 8.2.8.4 for clarification regarding the MPWSP source water capture zone, its water quality conditions, and potential impacts on inland water users. Also refer to response to comment MCWD-HGC, which responds to claims made by HGC on the water quality of the Dune Sands Aquifer and 180-Foot Aquifer.

MCWD-93 The environmental setting description of the 180-Foot/180-FTE Aquifer presented in EIR/EIS Section 4.4.1 fulfills the requirements CEQA/NEPA and was developed through subsurface investigations, review of available literature, data from groundwater monitoring wells, and an evaluation of test slant well data (see EIR/EIS, Section 4.4.4).

The NMGWM^{2016} simulates the 180-FTE aquifer (Model Layer 4) as confined. However, beneath the CEMEX site, well logs from monitoring well borings do not show a confining clay bed above the 180-FTE Aquifer. The degree of confinement within the 180-FTE Aquifer, therefore, varies spatially with distance inland and away from the coast. In the NMGWM^{2016}, the modeled vertical conductivity decreases over seven orders of magnitude at the coast to areas less than 2 miles inland (see EIR/EIS Appendix E2, Figure 3.3b). The text in the EIR/EIS Section 4.4.1 has been revised to provide additional clarity regarding the degree of confinement in the 180-FTE Aquifer underlying the CEMEX site relative to the inland portions of the aquifer. The added text does not represent new information that would change the conclusions of the impact analysis presented in the Draft EIR/EIS.

See Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.2, and response to comment MCWD-HGC for additional information and discussion regarding water quality in the capture zone of the proposed MPWSP slant wells and the purported areas of "fresh" groundwater near the project site.

MCWD-94 The description of the 400-Foot Aquifer presented in EIR/EIS Section 4.4.1 provides the necessary basis for conducting an analysis of impacts, and is sufficient to fulfill the environmental setting/affected environment requirements of CEQA and NEPA. See response to comment MCWD-HGC regarding the purported "fresh" groundwater present in the 400-Foot Aquifer underlying the project site. See also Master Response 10, Environmental Baseline under CEQA and NEPA.

MCWD-95 EIR/EIS Section 4.4.1.3 discussing Groundwater Elevations and Flow Direction has been updated based on supplemental groundwater flow data provided through CalAm's recent hydrogeologic investigation for the MPWSP; see EIR/EIS Appendix E3, TM-2. Contrary to the comment, groundwater in the Dune Sands Aquifer flows inland from the Monterey Bay, as discussed in response to comment MCWD-HGC.

MCWD-96 The EIR/EIS uses water quality data provided by MCWRA and applicable groundwater data from CalAm's hydrogeologic investigation to represent the current effects on seawater intrusion. These sources were considered the best available information at the time the EIR/EIS was prepared. The EIR/EIS is designed to report information to the public, and by law should not mislead the public. The EIR/EIS has been updated to reflect current information on groundwater quality; see EIR/EIS Appendix E3. See response to comment MCWD-HGC regarding inconsistencies in the use of the monitoring data and areas of purported "fresh" groundwater in the MPWSP project area. As discussed in EIR/EIS Section 4.4.1.4 and Master Response 8, Project Source Water and Seawater Intrusion, the California Secondary MCL for TDS is 500 mg/L and as explained in response to comment MCWD-61, this EIR/EIS uses 500 mg/L TDS as the fresh water standard consistent with the recommended standard in 22 Cal. Code Regs. § 64449, in Table 64449-B.

MCWD-97 EIR/EIS Section 4.4.4.1 explains that, "Special Condition 11 of the Coastal Development Permit, Protection of Nearby Wells, requires the MPWSP HWG to establish baseline water and TDS levels prior to commencing the long term pumping tests." The Draft Technical Memorandum, Baseline Water and Total Dissolved Solids Levels, Monterey Peninsula Water Supply Project Area, April 15, 2015, [8] is referenced in EIR/EIS Section 4.4 as Geoscience, 2015b, and continues to be publicly available with all of the other EIR/EIS references. EIR/EIS Section 4.4.4.1 explains that the long-term pumping test began in mid-April 2015, and results (of the long-term pump test, not the baseline report) are available at http://www.watersupplyproject.org/#!test-well/c1f1l. See also Master Response 11, CalAm Test Slant Well, Section 8.2.11.4, for a discussion of monitoring wells and the baseline report.

The Geoscience technical memorandum was prepared in compliance with this provision of Special Condition 11, and included the results of five weekly monitoring reports. Chapter 6.0 of the Geoscience technical memorandum presents baseline water levels and TDS concentrations for the period from February 19, 2015 to April 10, 2015; the baseline water and TDS levels are shown on Figures 2-1 through 2-5 and 3-1 through 3-5, respectively. As discussed in Master Response 11, Section 8.2.11.4, the test slant well was shut down because, as required of CalAm by Special Condition 11, groundwater levels were approaching the maximum allowable water level decrease of 1.5 feet. The CCC then recommended that CalAm develop a proposed amendment to Special Condition 11 that better incorporated the local and regional trends in water levels and salinity. Special Condition 11 was revised in October 2015. The revised Special Condition 11 stated that if drawdown exceeds 1.5 feet at Monitoring Well-4 (MW-4) from *regional groundwater elevation trends*, or if TDS levels increase more than two thousand parts per million *from regional TDS level trends*, CalAm would shut down the slant well. Special Condition 11 also required CalAm and HWG to review weekly monitoring data and prepare a monthly report to document the regional/background groundwater elevation trends and TDS level trends. Long term pumping of the Test Slant Well resumed on October 27, 2015. Since that time, CalAm has collected and publicly reported groundwater level and water quality (TDS) data from the Test Slant Well and Cal Am monitoring wells. These data integrate the regional groundwater levels trends and thereby establish both water levels and water quality baseline.

The EIR/EIS relied upon the baseline water level and water quality data that have been collected from the test slant well and CalAm monitoring wells since October 2015. The CalAm clustered monitoring wells are screened across the Dune Sands,

[8] The Draft EIR/EIS references Geoscience, 2015b, which is the Draft Geoscience *Technical Memorandum Baseline Water and Total Dissolved Solids Levels, Monterey Peninsula Water Supply Project Area,* dated *April 15, 2015*. In that draft document, Section 6.0 was titled, "*Recommended Monitoring of Baseline and TDS Levels,*" which is incorrect and was subsequently revised in the final version of the document with the correct heading of "*Summary of Baseline and TDS Levels.*" The correct heading for Chapter 7.0 is *"Recommended Monitoring of Baseline and TDS Levels."* The EIR/EIS has been revised to cite the final version of Geoscience's *Technical Memorandum Baseline Water and Total Dissolved Solids Levels, Monterey Peninsula Water Supply Project Area, April 20, 2015.*

180-Foot/180-FTE Aquifer, and the 400-Foot Aquifer to provide groundwater levels in the discrete water bearing zones. As these water level and water quality data consider the regional pumping and climatic trends and have been collected for over 2 years, they were considered viable baseline for the analysis of groundwater draw down and water quality impacts.

In regard to refining the groundwater models, groundwater levels from the monitoring wells at the CEMEX site were used to determine measured drawdown in response to test slant well pumping, and the measured drawdown was compared to model-calculated drawdown for test slant well pumping. See EIS/EIS Appendix E2 Section 4.2, Figure 4.6 which shows improvement of the NMGWM^{2016}-calculated water levels compared to those of the NMGWM^{2015}, indicating that modifications to the aquifer parameter zones and conductivity values improved model performance at the CEMEX site.

MCWD-98 See response to comment MCWD-97. EIR/EIS Impact 4.4-4 explains the approach to, and impact of, the proposed project on groundwater quality within the slant well pumping area of influence, and presents the impact on seawater intrusion. Appendix E2 Section 5.3 explains that slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM^{2016} and MODPATH. Baseline water levels for the aquifers are presented in the April 15, 2015 report titled *Baseline Water and Total Dissolved Solids Levels*. However, water quality measured as TDS was not used to refine the NMGWM^{2016} because the model was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water.

MCWD-99 See response to comment MCWD-87 regarding studies recommended by the SWRCB, and Master Response 8, Project Source Water and Seawater Intrusion, regarding the source water capture zone and the existing brackish to saline groundwater within that zone. The MPWSP would not extract potable groundwater, but would extract brackish-to-saline ambient groundwater at first, which would be replaced by seawater infiltrating through the coastal sediments. See response to comment MCWD-HGC for a discussion of the purported “fresh” groundwater in the Dune Sands, 180-FTE and 400-Foot Aquifers. Contrary to HGC’s claims, it is unlikely that any large volume of low TDS (usable) water exists in the area that would be impacted (the capture zone) by the MPWSP slant wells. As discussed in response to comment MCWD-97, baseline water elevations and groundwater quality have been established based on over two years of groundwater monitoring data that includes regional pumping and climatic trends. See Master Response 4, The Agency Act and Return Water, Section 8.2.4.3, for clarity on the projected ocean water percentage and return water requirement. See response to comment MCWD-HGC for a discussion of the Dune Sands Aquifer and its role as an alleged “protective layer against seawater intrusion.” See Master Response 3, Water Rights, Section 8.2.3.3 and 8.2.3.5, for additional discussion of the beneficial use of the groundwater.

MCWD-100 EIR/EIS Section 4.4.2.4 refers to Table 4.4-7 for regional and local land use plans and regulations, not state regulations. As explained in EIR/EIS Section 4.1.5, the analysis of project consistency with federal and state regulations and plans, such as the Basin Plan (see EIR/EIS Section 4.4.2.2) and the Agency Act and Ordinance 3709 (see EIR/EIS Section 4.4.2.3), are addressed in the Regulatory Framework subsection of each topical section rather than in the table that occurs at the end of each Regulatory Framework subsection, which is reserved for regional and local plans and policies. See Master Response 4, The Agency Act and Return Water, regarding consistency with the Agency Act and MCWRA Ordinance 3709.

MCWD-101 See response to comment Marina-44.

MCWD-102 HydroFocus used the best available data to quantitatively represent the water transmitting and storage property values of the water-bearing and non-water bearing units represented by the model (parameter values). The sensitivity analysis evaluated the uncertainty in model results to the potential variability in the specified parameter values. The analysis demonstrated reasonable and acceptable levels of uncertainty in model outputs, and provided conservative estimates of possible error (in other words, using extreme values, the sensitivity analysis identified similarly extreme estimates of error). Hence, whether the uncertainty is "tolerable" is irrelevant, and what is relevant is that the effect of that uncertainty was quantified and thus made transparent to analysts and reviewers, thereby allowing the information to be considered as part of their assessments. See EIR/EIS Appendix E2, Section 6.0, Uncertainty.

Prior modeling efforts (i.e., the NMGWM^{2015}) were not abandoned. Rather, the prior modeling effort was improved by using new information to update the model (i.e., the NMGWM^{2016}), and EIR/EIS Appendix E2 shows that the performance of the updated model is superior to the prior modeling effort. As described in Master Response 12, The North Marina Groundwater Model (v. 2016), Section 8.2.12.3, the "superposition model" is not a different model, but rather an application of the NMGWM^{2016}. The superposition approach calculated the information required to analyze the impacts of project pumping directly – the changes in water levels and flow – and, therefore, is actually more transparent rather than an attempt to "mask problems." Indeed, GeoHydros employed the same approach of superposition to calculate changes in water levels and flow; however, its analysis was flawed as described in Section 8.2.12.3 in Master Response 12 (see "Water Levels" subheading).

Superposition does not preclude identification of the source of feedwater for the MPWSP slant wells. The NMGWM^{2016} was employed to calculate the water level decline (drawdown) in response solely to proposed project pumping. Drawdown due solely to proposed project pumping is dependent primarily on the pumping rate, the water transmitting and storage properties of the aquifer, and any change in groundwater recharge or discharge that occurs solely as a result of that drawdown.

For example, if pumping causes coastal water levels to decline below sea level, ocean water will percolate into the underlying aquifer and move inland to replace the extracted water. This increase in ocean water recharge induced by the new pumping reduces the drawdown relative to that which would have occurred in the absence of the ocean-water recharge. EIR/EIS Appendix E2, Figures 5.6 and 5.12, show the ocean capture zones that would be created by slant well pumping and its effect on recharge from the ocean. These capture zones reveal the likely source water extracted by the wells. See also Figures 8.2.12-1 and 8.2.12-2 in Master Response 12.

Further, superposition model results do not preclude prediction of measurable groundwater elevations associated with the proposed slant well pumping. Model-calculated drawdown due to slant well pumping can be compared to measured drawdown. For example, EIR/EIS Appendix E2, Figure 4.6, shows how the drawdown from measured water levels is compared with the drawdown calculated by the model using the superposition approach. See Master Response 12, Section 8.2.12.3. for more detail describing why superposition helps validate future drawdown projections compared to other methods.

The NMGWM^{2016} provides substantial benefits over the NMGWM^{2015}: it resolves discrepancies with initial water levels, boundary conditions, and uncertainties in predicted future background recharge and pumping. Further, the approach is more efficient because it calculates the change in water levels and drawdown directly, rather than relying on two model runs and performing a subtraction to isolate the change. The superposition approach described in EIR/EIS Appendix E2 is, therefore, more transparent.

The cone of depression is defined as the area where groundwater levels change as a result of a new stress; see Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1. In this analysis, it is the area where the water level change is more than 1 foot in response to proposed slant well pumping. As explained in detail above, this area is calculated most directly and reliably using superposition.

MCWD-103 The text in the EIR/EIS has been revised to clarify the degree of confinement in the 180-Foot Aquifer. The NMGWM^{2016} simulates the “180-FTE Aquifer” (Model Layer 4) as confined, as discussed in response to comment MCWD-93. The NMGWM^{2016} therefore addresses the “180-FTE Aquifer” semi-confinement by the absence of a clay layer at the CEMEX site and the addition of the transition zone between the site and the mapped extent of the FO-SVA.

Regarding the comment’s assertion that the EIR/EIS does not recognize the “protective water levels” in the Dune Sands Aquifer along the coast, see response to comment MCWD-HGC.

The groundwater in the capture zone of the proposed MPWSP slant wells would be a combination of highly brackish groundwater and seawater, well above the 3,000 milligrams per liter of TDS beneficial use standard in the California RWQCB Basin Plan for the Central Coast; see response to comment Marina-44, in Section 8.5.1. For this reason, and because brackish groundwater outside the MPWSP capture zone would not be impacted, there is no need to consider this threshold when determining production from the MPWSP slant wells.

Neither CalAm nor the Lead Agencies have proposed returning water to the basin as a mitigation measure needed to reduce a significant groundwater impact under CEQA or NEPA; rather, it is proposed by CalAm to ensure compliance with the Agency Act. This is discussed in detail in Master Response 4, The Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2.

Applicant-Proposed Measure 4.4-3 would expand the current groundwater monitoring program by including nearby active production wells and new wells to monitor changes in groundwater elevations, and ensures that if neighboring groundwater production wells are damaged or made unusable due to the project, they would be repaired or replaced by CalAm. However, it should be noted that implementation of this measure is not necessary to address a significant environmental impact. Applicant-Proposed Measure 4.4-3 would provide continued verification that the MPWSP does not negatively impact water quality or water levels to such a degree that wells are damaged or made unusable. This mitigation measure adequately fulfills (indeed, goes above and beyond given the finding that impacts are not significant) the requirements of CEQA and NEPA because it provides a mechanism to regularly monitor groundwater levels, and if drawdown occurs in a nearby well that damages or otherwise renders the well unusable, CalAm would restore or replace the supply.

MCWD-104 Refer to Master Response 12, North Marina Groundwater Model (v. 2016), Section 8.2.12.2, for further information on the construction and capabilities of the NMGWM. As stated in response to comment MCWD-HGC, the NMGWM^{2016} was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The use of equivalent freshwater head to represent seawater, and the constant groundwater density assumption to calculate the drawdown extent is a reasonable and appropriate approach because the error these approximations introduce is small relative to the uncertainty in other more influential factors like the specified pumping rates, return water volumes, projected sea levels, aquifer parameter values, and the relative contributions of multiple aquifers to total slant well production (see EIR/EIS Appendix E2, Section 6.0 “Uncertainty”).

The NMGWM’s consideration of the groundwater confinement of the Dune Sand Aquifer and 180-FTE/180-Foot Aquifer is discussed in response to comment MCWD-93.

Mitigation Measure 4.4-4 does not defer mitigation. As discussed in the EIR/EIS Section 4.4.5.2, Mitigation Measure 4.4-4 provides an adequate mechanism to monitor changes in groundwater levels near the Fort Ord remediation plumes and to reduce groundwater quality impacts by requiring CalAm to take necessary actions to ensure that the plumes do not expand or change direction due to groundwater flow by MPWSP. As described in Mitigation Measure 4.4-4, CalAm would incorporate groundwater elevation monitoring at the two plumes into its well monitoring program. This would provide continuous groundwater monitoring data, which CalAm would make available to the public and the U.S. Army. In response to the comment, the text of Mitigation Measure 4.4 has been revised to clarify that CalAm would continuously coordinate with the U.S. Army during the groundwater data evaluation stages. See also responses to comments from the U.S. Army in Section 8.3.2.

MCWD-105 See responses to comments MCWD-92 through MCWD-104.

MCWD-106 See responses to comments LWMC-14 through LWMC-19 for discussion of the approach to the cumulative analysis of groundwater resources.

MCWD-107 See response to comment Marina-71. Response to comment MCWD-108 and 109 explain that the project area boundary did not extend under the area of drawdown from project pumping because the groundwater effects would be isolated from surface water wetlands and other waters, such as ponds and streams, due to the depth of groundwater accessed by the slant wells and the lack of hydraulic connectivity between those aquifers and surface waters. As a result, the ecosystems are not groundwater dependent.

MCWD-108 EIR/EIS Figures 4.4-13 and Figures 8.2.8-3 and 8.2.8-4 in Master Response 8, Project Source Water and Seawater Intrusion show the area where operation of the slant wells would result in drawdown of the Dune Sand Aquifer and the 180-FTE Aquifer (see also response to comment MCWD-141). The analysis demonstrates that these effects would be isolated from surface water wetlands and other waters, such as ponds and streams, due to the depth of groundwater accessed by the slant wells and the lack of hydraulic connectivity between those aquifers and surface waters. As indicated by the groundwater level measurements of the groundwater underlying the CEMEX area (see Appendix E3), the brackish groundwater in the Dune Sand Aquifer that would contribute to the MPWSP slant well feedwater is 20 to 35 feet below the surface of the dunes. The perched freshwater that supports shallow wetland features is not hydraulically connected to the Dune Sands Aquifer, and water surface fluctuation in the aquifer would not translate to the upper perched freshwater.

MCWD-109 The EIR/EIS provides a thorough analysis of the proposed project’s effects on groundwater and concludes that no effects on shallow groundwater would result from the project (see EIR/EIS Figures 4.4-13 and Figures 8.2.8-3 and 8.2.8-4 in

Master Response 8, Project Source Water and Seawater Intrusion; see also response to MCWD-141). The analysis does demonstrate project effects on the Dune Sands Aquifer and the deeper 180-FTE Aquifer, which are not hydraulically connected to surface water features, such as the jurisdictional wetlands and other waters regulated by state and federal agencies (see EIR/EIS Section 4.4.4). For coastal wetlands and other waters to be affected by drawdown of these two aquifers, there would need to be an unconfined hydraulic connection between the surface water wetlands and other waters, and the aquifer that would be accessed by the slant well intakes; the groundwater analysis in the EIR/EIS shows that not to be the case. In the absence of effects on coastal wetlands and other waters, the proposed project would not conflict with the relevant portions of the guidelines for desalination plants in the Monterey Bay National Marine Sanctuary.

MCWD-110 See response to comment Marina-71.

MCWD-111 Responses to comments MCWD-115 through MCWD-129, MCWD-131, and MCWD-134, below, describe in detail how the existing measures do not defer mitigation, or how mitigation has been revised in the Final EIR/EIS to ensure that mitigation would not be improperly deferred.

MCWD-112 See response to comment Marina-77.

MCWD-113 Responses to comments MCWD-115 through MCWD-129, MCWD-131, and MCWD-134, below, describe in detail how the existing measures do not rely on future agency coordination or permits, or how mitigation has been revised in the Final EIR/EIS to ensure that mitigation would not rely on future agency coordination or permits.

MCWD-114 For each proposed facility that would result in less-than-significant impacts on terrestrial biological resources with incorporation of mitigation, the EIR/EIS identifies all applicable mitigation measures and includes a discussion of how the mitigation measures would reduce the impact to less than significant. For example, on Draft EIR/EIS page 4.6-131 in Impact 4.6-1, the Draft EIR/EIS lists the applicable mitigation measures and then describes in detail how the measures would reduce impacts on special-status species (e.g., by requiring installation of exclusion fencing to ensure special-status species do not occur within the construction area). The explanation of the effects of specific mitigation measures on reducing specific impacts follows the list of applicable mitigation measures.

MCWD-115 CPUC and MBNMS, as the Lead Agencies, will have oversight responsibilities to ensure that the project is implemented as disclosed in the CEQA/NEPA documents, including by way of a Mitigation Monitoring and Reporting Plan (MMRP) and the National Marine Sanctuaries Act (NMSA) permit process that would be adopted along with approval of the project or an alternative. Although CalAm would be responsible for hiring the Lead Biologist, Mitigation Measure 4.6-1a identifies the minimum requirements of a Lead Biologist: an individual who shall possess, at a minimum, a bachelor's degree in biology, ecology, wildlife biology or closely related field and has demonstrated prior field experience using accepted resource agency techniques for the survey prescribed, and who possesses all appropriate USFWS, NMFS, and CDFW permits. CalAm would be required to hire a Lead Biologist that meets those minimum requirements and who would therefore have the experience and capability to oversee and/or implement the proposed mitigation measures, and as noted in the measure "[t]he Lead Biologist, qualified biologists, and qualified biological monitors shall be subject to approval by resource agencies with jurisdiction over the special-status species with potential to occur at the project site (and local agencies, if required)."

Further, the monthly monitoring reports will be submitted to the regulatory agencies upon request. The CPUC and/or MBNMS, and not the public, will be responsible for overseeing and ensuring successful implementation of the mitigation measures by CalAm and/or its designee(s). Consistent with its pattern and practice, the CPUC Energy Division will contract with an independent third-party construction monitoring provider to ensure that a neutral third party will oversee the Applicant's implementation of all mitigation measures. Further, any monitoring reports that are submitted to the CPUC and/or MBNMS will be public records and will be accessible to the public upon request.

Moreover, while Mitigation Measure 4.6-1a states, "[t]he monthly report shall also document the effectiveness and practicality of the prescribed avoidance and minimization measures and recommend modifications to the measures if needed," it does not suggest that the mitigation measures might not be practical or effective. This statement does not undermine the effectiveness of the measures; rather, it ensures that any ineffective or impractical measures and suggested modifications to the measures are documented, and that further actions are taken to ensure that the performance standards are met.

MCWD-116 Mitigation Measure 4.6-1c does not include language that allows for improper deferral or diminishes the effectiveness of the measure. This measure limits work to the delineated construction boundary, and any work outside of the area will be prohibited unless approved by the Lead Biologist. The comment states that the measure needs to include performance standards to determine what activity could occur outside of the construction boundary and require that an impact assessment is conducted in these areas. The experienced and qualified Lead Biologist will be able to discern whether any work implemented outside of the project boundary would impact sensitive biological resources and, per Mitigation Measure 4.6-1a, would oversee compliance with the proposed mitigation measures.

Due to the size of the project area and varying site conditions, it is impractical to describe the exact type or method of best management practices (BMPs), referenced in Subpart 5, that would be employed. As Subpart 5 of Mitigation

Measure 4.6-1c requires, CalAm will implement the BMPs that would be required to prevent loss of habitat due to erosion caused by project related impacts. The Lead Biologist would oversee compliance with this measure. See also See response to comment Marina-77.

MCWD-117 Mitigation Measure 4.6-1d does describe under what circumstances the USFWS might approve work during the breeding season and describes the steps to obtaining USFWS approval during the breeding season in subpart 3. In response to this and other comments, this measure has been revised to clarify the performance standards that CalAm must meet to implement this measure. The revised measure includes enforceable criteria to be implemented if nests are discovered and stipulates that work may proceed, subject to USFWS approval, if the work 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, or as allowed within the take provisions authorized by USFWS. With respect to wintering plovers, the revised measure clarifies that the appropriate performance standard is to ensure that wintering plovers are not directly impacted by construction activities.

Additionally, in response to this and other comments, Mitigation Measure 4.6-1d has been revised to include performance standards for restored habitat. The revised measure no longer includes the option of contributing to an "in lieu" fee program or a mitigation bank. See the response to Marina-72 for the full text of the revised measure. See the response to MCWD-127 regarding the timing for preparation of the Habitat Mitigation and Monitoring Plan required under Mitigation Measure 4.6-1n.

MCWD-118 Although Mitigation Measure 4.6-1e describes that project facilities shall be sited to avoid impacts on special-status plants if feasible, the measure then describes what would be required if avoidance is not feasible. See response to comment Marina-77 for additional discussion.

In response to this comment, Mitigation Measure 4.6-1e subpart 2 has been revised to include the success criterion to be used to ensure that the site would be returned to pre-construction conditions. The exact methods by which the site would be returned to pre-construction conditions cannot be determined at this time because the project is still in the preliminary design phase. Once the plans have progressed beyond the preliminary design phase, and focused botanical surveys for special-status plants have been completed per the requirements in Mitigation Measure 4.6-1e, then the appropriate methods would be determined and the success criterion used to ensure the site is returned to pre-construction conditions.

EIR/EIS Impact 4.6-1 acknowledges that direct impacts, which would include take, would result in a significant impact. This is described for the subsurface slant wells on Draft EIR/EIS page 4.6-124. The EIR/EIS concludes that implementation of the entire Mitigation Measure 4.6-1e, not just obtaining an Incidental Take Permit as stated in subpart 3, would reduce impacts to less than significant. The measure discloses that an Incidental Take Permit may be required and provides several measures to reduce impacts to special-status plant species to less than significant.

In response to this comment, this measure has been revised to clarify the applicable success criterion and compensation ratios in subpart 5. The HMMP describing this compensation and success criteria is required in Mitigation Measure 4.6-1n.

See response to comment CDFW-4 regarding Mitigation Measure 4.6-1e.

MCWD-119 Mitigation Measure 4.6-1f does not "only" require that construction activities avoid impacts where feasible. Although the measure describes that construction activities shall be planned to avoid host plants for Smith's blue butterfly, the measure then describes what would be required if avoidance is not feasible, including the implementation of pre-construction surveys and relocation of host plants outside of the project area. See response to comment Marina-77 for additional discussion.

The mitigation measure does not improperly defer development of a relocation plan, including the scope of the survey area and identification of appropriate relocation sites, until after the project has been approved. It is impractical to develop a relocation plan at this time because the project is still in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, then the study area would be determined. Additionally, a floristic botanical survey would need to be conducted, as required in Mitigation Measure 4.6-1f, during project design and prior to project implementation to document the location of Smith's blue butterfly host plants within or adjacent to the project area. The exact impacts, and thus the exact location and dimension of appropriate relocation sites would be determined once the project has progressed beyond the preliminary design phase and required surveys have been conducted.

In response to the comment regarding the performance standards and compensation ratio in subpart 5, Mitigation Measure 4.6-1f has been revised. See the response to Marina-79 for additional discussion.

MCWD-120 Mitigation Measure 4.6-1g does not improperly defer mitigation. It is impractical to prepare this relocation plan at this time because the project is currently in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, the exact area of black legless lizard, silvery legless lizard, and coast horned lizard habitat that would be impacted would be determined. Once that area is determined, the potential relocation sites can be determined. Mitigation Measure 4.6-1g requires that surveys be conducted at the relocation sites prior to relocation, and includes a performance standard that only relocation sites that are not overpopulated and that have suitable habitat conditions (e.g., soils, moisture content, vegetation, aspect) shall be used to ensure relocation is feasible. There are large expanses of central dune scrub, which provide suitable habitat for these species, located in the vicinity of the proposed project area and lizards may be relocated to these areas as long as relocation performance standards have been met. Mitigation Measure 4.6-1g has been revised to change the use of the word “should” to “shall.”

Obtaining a Scientific Collecting Permit from CDFW would not authorize an individual to relocate black legless lizard, silvery legless lizard, and coast horned lizard. Obtaining a Scientific Collecting Permit from CDFW for these species would demonstrate that an individual has knowledge and experience with these species, which is necessary to implement this measure.

MCWD-121 Mitigation Measure 4.6-1h does not improperly defer mitigation. This mitigation measure requires development of a Burrowing Owl Exclusion Plan and, if compensatory mitigation is necessary, a Burrowing Owl Habitat Mitigation Plan that would be incorporated into the Habitat Mitigation and Monitoring Plan. It would be impractical to develop either of these plans at this time because the project is still in the preliminary design phase; the exact project area, and impacts on suitable burrowing owl habitat and potential areas where owls may need to be excluded can’t be determined until the design has progressed The elements that would be included in and performance standards for the Burrowing Owl Exclusion Plan are described in Mitigation Measure 4.6-1h. The Burrowing Owl Habitat Mitigation Plan would detail the required compensatory mitigation. Compensatory mitigation would be required if burrowing owls are found on-site, which according to Mitigation Measure 4.6-1h would be determined during protocol surveys and pre-construction surveys of the project area. The compensatory mitigation requirements would not be determined until these surveys have been conducted, so the Burrowing Owl Habitat Mitigation Plan cannot be prepared at this time; however, Subpart 9b of Mitigation Measure 4.6-1h specifies the performance standards that conservation lands must meet.

Subparts 5 and 6 of Mitigation Measure 4.6-1h state that a minimum buffer distance, as included in Table 4.6-8, shall be maintained unless otherwise authorized by CDFW. In response to this comment, the measure has been revised to include a performance standard to ensure that even if the buffer is reduced, it shall be sufficient to avoid significant impacts on burrowing owls (with authorization from and as determined by CDFW). CalAm and CDFW may agree to modify the buffer depending on site conditions where an owl is observed and the type of construction activities, so the exact buffer cannot be determined at this time.

Mitigation Measure 4.6-1h provides buffer distances to be established based on the level of disturbance. Table 4.6-8 in this measure includes the buffer distance depending on the time of year and level of disturbance. As included in the table footer, this information was derived from the Staff Report on Burrowing Owl Mitigation prepared by the California Department of Fish and Game in March 2012, which, as stated in the Staff Report, “is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers, California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls." This document is the guiding document for determining mitigation for western burrowing owl. As described in Mitigation Measure 4.6-1a, the Lead Biologist would oversee this measure and implement it in consultation with CDFW to determine the level of disturbance.

Subpart 8 of Mitigation Measure 4.6-1h requires that "site monitoring shall be conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided." Contrary to the comment, this measure does not state that take is a threshold of significance for impacts on burrowing owls. Subpart 8 is just one measure that would be implemented in Mitigation Measure 4.6-1h. Implementation of all measures in Mitigation Measure 4.6-1h would reduce impacts to less than significant.

In response to this comment, the measure has been revised to remove qualifying language such as "if feasible" and to change the use of "should" to "shall."

MCWD-122 Mitigation Measure 4.6-1i does not improperly defer mitigation. The measure stipulates a no-disturbance buffer for nesting birds, but allows for the buffer to be modified as determined in consultation with CDFW. In response to this comment, this measure has been revised to include performance standards to ensure that even if the buffer is modified, it would not cause significant impacts to nesting birds. The buffer may be modified depending on the exact location of the nest, species sensitivity to construction disturbance, and the type of construction, so the exact buffer cannot be determined at this time. Additionally, in response to comment CDFW-6 in Section 8.4.2, Mitigation Measure 4.6-1i has been revised to incorporate CDFW recommendations to monitor behavior before and during the project, consult with CDFW, and use a 250-foot no disturbance buffer around active nests of non-listed bird species and a 500-foot no disturbance buffer around the nests of unlisted raptors.

As described in EIR/EIS Section 4.6.18, special-status species include species protected by the federal Migratory Bird Treaty Act and Fish and Game Code. The Migratory Bird Treaty Act protects any part, nest, or egg, or any migratory bird, California Fish and Game Code 3503 protects nests or eggs of any bird, and California Fish and Game Code 3503.5 protects hawks, owls, and their nests and eggs. Mitigation Measure 4.6-1i addresses impacts on nesting birds protected under these regulations, not non-nesting birds, so the measure does not include pre-construction surveys or avoidance measures for non-nesting birds. Subpart 10 of Mitigation Measure 4.6-1c addresses impacts to special-status species that are within the work area to avoid and minimize direct impacts to these species.

MCWD-123 In response to this comment, Mitigation Measure 4.6-1j has been revised to include a buffer distance of 200 feet from an active natal badger den. CalAm and CDFW may agree to reduce this buffer as long as it continues to meet the performance standard of ensuring that construction does not alter the behavior of the adult or young in a way that would cause injury or death to those individuals. The buffer was selected based on the biological requirements and sensitivity of the species, best professional judgement, and a review of typical buffer distances that have been included in other CEQA documents. This buffer distance would ensure that the project would not result in injury or death to badgers, which would reduce potential impacts to badgers to less than significant. The impact analysis, as described in EIR/EIS Section 4.6.4, is based on the rarity and context of the resources and magnitude of the impact, among other criterion. Based on the status of the American badger, a species of special concern, and the magnitude of impact, it was determined that the proposed mitigation would be sufficient to reduce impacts to less than significant. All temporarily impacted areas would be returned to pre-construction conditions, as required in Mitigation Measure 4.6-1c, and no additional compensatory mitigation has been proposed.

MCWD-124 In response to this comment, subpart 3 of Mitigation Measure 4.6-1k has been revised to include a minimum 50-foot buffer. The buffer was selected based on the biological requirements and sensitivity of the species, best professional judgement, and a review of typical buffer distances that have been included in other CEQA documents.

In response to this comment, subpart 4 of Mitigation Measure 4.6-1k has been revised to remove “to the extent feasible” and to add an effective and enforceable measure to implement when young woodrats are encountered in the nest.

MCWD-125 In response to this comment, Mitigation Measure 4.6-1l has been revised to clarify that bat roosts that begin during construction would be unaffected by the continuation of the same type of construction.

The EIR/EIS acknowledges in Impact 4.6-1 that direct impacts, which would include take, would be a significant impact. Mitigation Measure 4.6-1l states that “take of individual bats will be avoided.” This measures provides for the avoidance of take as well as several other required measures, such as removing trees or structures when bats are active, and if this is not feasible, to remove trees and structures in a manner that would avoid and/or minimize impacts on roosting bats. Implementation of the all of the measures in Mitigation Measure 4.6-1l, including the measure for take avoidance, would ensure that impacts on special-status bats are reduced to less than significant.

MCWD-126 See the response to comment Marina-77 which describes the use of “to the extent feasible.” Additionally, the commenter notes that performance standards must be established in the measure. In response to this comment, Mitigation Measure 4.6-1m has been revised to include a performance standard that replacement trees shall have a minimum of 70 percent survival in the fifth monitoring year to ensure success.

MCWD-127 See the response to comment Marina-79. Mitigation Measure 4.6-1n does not include compensatory mitigation requirements and performance standards, but the HMMP would summarize the compensatory mitigation requirements and performance standards from the revised special-status species and sensitive natural community specific mitigation measures in Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1h, 4.6-1m, 4.6-1o, and 4.6-2b. These measures have been revised and/or clarified to include compensatory mitigation requirements and performance standards. The revised special-status species and sensitive natural community measures do not include an "in lieu" fee program option for compensation.

It is impractical to prepare the HMMP at this time. The HMMP would include a summary of special-status species and sensitive natural community compensation requirements. The project is currently in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, the exact area of special-status species and sensitive natural community habitat that could be impacted would be determined. Once this area is determined, then the exact amount, location, and type of appropriate mitigation would be identified. Additionally, the HMMP would outline a planting plan and identify appropriate planting material, which would be determined closer to restoration and enhancement implementation and based on site needs and the availability of local container stock at that time. Further, this plan would need to be approved by all appropriate agencies (*i.e.*, CCC, CDFW, CCRWQCB, USACE, USFWS, and local agencies that require a habitat mitigation and monitoring plan), which would be done as part of the permitting process, separate from this CEQA/NEPA analysis.

MCWD-128 In response to this comment, Mitigation Measure 4.6-1o has been revised to include performance standards for <u>restoration or compensation sites</u>. It is impractical to prepare this relocation plan at this time. The project is currently in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, then the exact area of California red-legged frog and California tiger salamander habitat that would be impacted would be determined. Once that area is determined, then suitable "nearby" relocation sites, as required in the measure, can be determined. Mitigation Measure 4.6-1a has been revised to include a performance standard that states that the animal would be relocated to a similar or better type of habitat. There are large expanses of grassland and other suitable habitat types for California red-legged frog and California tiger salamander in the project vicinity and individuals may be relocated to these areas as long as relocation performance standards have been met.

The California red-legged frog is a federal listed species and California tiger salamander is both a federal and state listed species. CalAm will need to obtain take authorization from the USFWS for take, including relocation, of both California red-legged frog and California tiger salamander from CDFW for take, including relocation, of California tiger salamander; see EIR/EIS Table 3-8. If either of these species is within the work area, the agencies would likely stipulate relocation out of harm's way rather than authorize injury or death of an individual. This is a typical provision of Biological Opinions and Incidental Take statements that are issued to authorize projects where there is potential for take.

See the response to comment CDFW-8 for a response to the CDFW's comment on Mitigation Measure 4.6-1o.

MCWD-129 In response to this comment, Mitigation Measure 4.6-1q has been revised to include a performance standard to avoid frac-outs, and if a frac-out occurs it is properly cleaned-up. It is impractical to prepare the frac-out plan at this time. The project is currently in the preliminary design phase. Once the design has progressed beyond the preliminary design phase, with locations and construction methods at crossings of wetlands or streams specified, then the frac-out plan can be prepared as part of the permit process.

MCWD-130 EIR/EIS Section 4.6.1.8 describes that various habitat areas "may" be considered primary or secondary habitat areas by the City of Marina's LCLUP and Environmentally Sensitive Habitat Areas (ESHA) by the CCC because a formal determination of the extent of primary and secondary habitat in the project area has not been made by the City of Marina and a formal determination of the extent of ESHA in the project area has not been made by the CCC. The extent of these areas would be determined as part of the permitting process, which is separate from this CEQA/NEPA analysis. In the absence of a formal determination from the City of Marina and the CCC, the EIR/EIS includes a conservative assumption that these areas would be considered primary habitat within the City of Marina's LCLUP jurisdiction, and ESHA in the project area for the purposes of the impact analysis.

The City of Marina defines primary habitat to include "habitat for all identified plant and animal species which are rare, endangered, threatened, or are necessary for the survival of an endangered species. These species will be collectively referred to as 'rare and endangered.'" The LCLUP (City of Marina, 1982) includes "preliminary" maps of habitat for rare and endangered plants "to provide a guide to the locations where more intensive study is required." The LCLUP includes a policy that "before any use or change in use, areas identified as potential habitat for rare and endangered plant or animal species shall be investigated by a qualified biologist to determine the physical extent of the primary habitat areas for the specific rare and endangered plants and animals on that site." So while these areas have been preliminarily mapped, they require site specific surveys to confirm these boundaries. The extent of these areas need to be confirmed by the City of Marina.

ESA and AECOM biologists met with staff from the CCC and a biologist from SWCA contracted to the City of Marina at the proposed project site on May 19 and July 19, 2017, to review and confirm the boundaries of ESHA and primary and secondary habitat within the project area. While the boundaries were not confirmed during these meetings, the CCC provided guidance that the approach taken in the

EIR to analyzing primary and secondary habitat was likely too conservative and that additional areas of non-sensitive habitat (i.e. dune topography, even where currently covered with iceplant) may also be considered ESHA. In response to this guidance, and based on the definition of primary habitat provided in the City of Marina's LCLUP and the definition of ESHA provided by the CCC and in other local coastal plans, the EIR/EIS has been revised to assume that all undeveloped areas within the coastal zone would be considered primary habitat (within the City of Marina's LCLUP jurisdiction) and ESHA in all other jurisdictions. Although the limits of these jurisdictional boundaries have changed in the Final EIR/EIS, the impact conclusions remain the same as in the Draft EIR/EIS. The new areas that are now assumed to be primary habitat and/or ESHA are areas that are largely ruderal or dominated by non-native plant species such as iceplant and their general function and value (as low quality, non-sensitive vegetation communities) has not changed since publication of the Draft EIR/EIS. See also the response to comment Marina-70.

MCWD-131 The EIR/EIS does analyze impacts from construction of the subsurface slant wells, including conversion of the temporary test slant well to a production well; see EIR/EIS Section 3.2.1, Table 3-1 and Section 4.6.1.10. As described on Draft EIR/EIS page 4.6-70, "the subsurface slant wells include ten subsurface slant wells (the converted test slant well and nine new wells)." The EIR/EIS does state that the exact limits of primary habitat would be determined through the Coastal Development Permit (CDP) process, but does not defer consideration of these impacts to the CDP application process. The EIR/EIS fully evaluates potential impacts to ESHA, including primary habitat as defined by the City of Marina's LCLUP, in Impacts 4.6-2 and 4.6-7. The response to comment MCWD-130 describes why the EIR/EIS includes conservative assumptions for the limits of ESHA and primary habitat in the absence of formal determinations by the CCC and City of Marina.

The EIR/EIS does not rely on conformance to Coastal Act policies to ensure impacts to ESHA are reduced to less than significant. The EIR/EIS states that implementation of Mitigation Measure 4.6-2a, as well as other measures such as Mitigation Measure 4.6-2b would ensure that if ESHA is affected by the proposed project, then this impact would be reduced to less than significant.

In response to the comment, Mitigation Measures 4.6-2a has been revised to state that the project would conform to ESHA policies or other policies of the Coastal Act, instead of only ESHA policies. Although the project would result in a less than significant impact on ESHA, as discussed in Impacts 4.6-2 and 4.6-7, the project would have a significant and unavoidable impact as it would be inconsistent with the City of Marina's LCLUP, as discussed in Impact 4.6-4. These findings are not inconsistent as they are both describing impacts to different resources. Impacts 4.6-2 and 4.6-7 evaluate impacts to ESHA as a sensitive natural community and Impact 4.6-4 evaluates the project's consistency with local plans and policies. Although the project would mitigate impacts to the ESHA, it would still conflict with a local plan or policy.

In regards to the test slant well, this structure currently exists at the project site and impacts from installation of the test slant well were evaluated in the CEQA document for the test slant well project. Its installation and operation as a test slant well is not a part of the proposed project. See Master Response 11, CalAm Test Slant Well, Sections 8.2.11.2, 8.2.11.3, and 8.2.11.7

Consistency with the policies in the City of Marina's LCLUP, and consistency with these policies protecting biological resources, is evaluated in Impact 4.6-4 under the heading "City of Marina LCLUP."

Each impact statement includes an explanation for how the mitigation measures would mitigate impacts to a less than significant level. See the response to MCWD-114.

In response to the comment regarding Mitigation Measure 4.6-2a, see the response to MCWD-130. Additionally, as described in Impact 4.6-2 and Impact 4.6-7, CalAm would be required to implement Mitigation Measure 4.6-2a, as well as other mitigation measures, including Mitigation Measure 4.6-2b, to reduce impacts to less than significant. The EIR/EIS does not rely solely on implementation of Mitigation Measure 4.6-2a to reduce impacts to less than significant.

See the response to comment Marina-77 in response to the "to the extent feasible" language in Mitigation Measure 4.6-2b. In response to this comment, this measure has been revised to include performance standards and clarify compensatory mitigation requirements.

The EIR/EIS evaluates the potential impacts of the proposed project on ESHA as a sensitive natural community in accordance with CEQA requirements. Impact 4.6-2 and Impact 4.6-7 describe potential impacts of the proposed project on ESHA and proposed mitigation measures to reduce the potential impacts to less than significant. Nonetheless, it is acknowledged that Section 30240 of the Coastal Act states that ESHA shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. However, Section 30260 of the Coastal Act does encourage coastal-dependent industrial uses provided, among other measures, that adverse environmental effects are mitigated to the maximum extent feasible.

MCWD-132 See responses to comments MCWD-117, MCWD-121, and MCWD-122, as well as responses to comments CDFW-6 and CDFW-7.

MCWD-133 The EIR/EIS' analysis of impacts on federal wetlands, federal other waters, and/or waters of the state evaluates the potential for direct or indirect effects on these features as a result of construction activities. See response to comment Marina-71 for explanation of the study corridor that was evaluated. CEQA and NEPA require analysis of reasonably foreseeable effects; for wetlands and other waters, reasonably foreseeable effects are confined to resources within proximity to the proposed project. Furthermore, federal and state laws regulate the placement of fill within wetlands and other waters, which was considered as a potential direct effect of the project at locations where that would occur within the project study area. While state laws also regulate indirect effects on fish and wildlife habitat (California Fish and Game Code Section 1600 et seq.) and beneficial uses (Porter Cologne Water Pollution Control Act), the EIR/EIS concludes that the project would not result in lowering of groundwater such that wetlands and other waters would be adversely affected (see responses to comments MCWD-108 and MCWD-109).

MCWD-134 A formal delineation of waters of the U.S. has not been verified by the U.S. Army Corps of Engineers (USACE) and a delineation of waters of the State has not been verified by the Regional Water Quality Control Board (RWQCB) and the CCC. These formal determinations are not required for the CEQA/NEPA analysis. The EIR/EIS used the best available knowledge based on surveys conducted within the study area. As described in EIR/EIS Section 4.6.1.6, wetlands or waters potentially regulated by the USACE, RWQCB, and/or CCC were mapped in the project's study area during field surveys. A wetland delineation report, based on some of these field surveys, has been prepared and is referenced in the Final EIR/EIS. In the absence of a formal determination by these agencies, the EIR/EIS conservatively assumes that areas mapped during field surveys, included in the wetland delineation report, and included in the USFWS National Wetland Inventory, would be considered potentially jurisdictional by these agencies. Impacts to wetlands and waters were evaluated in Impact 4.6-3 and Impact 4.6-8 based on these assumptions. In response to this comment, Mitigation Measure 4.6-3 has been revised and clarified to include performance standards and compensatory mitigation requirements.

In response to this comment, and to clarify the assumptions in the EIR/EIS, the following text has been added to Section 4.6.1.6, Wetlands and Other Waters:

> <u>In the absence of a verified wetland delineation by the USACE, RWQCB, and CCC, this document assumes that all potential jurisdictional features identified in the surveys described above and by the NWI may be considered jurisdictional by the USACE, RWQCB, and CCC.</u>

MCWD-135 As described in EIR/EIS Section 4.6.5.2 on Draft EIR/EIS page 4.6-234, "because the location, nature, and extent of disturbance associated with future pipeline repairs cannot be predicted, it would be too speculative to analyze the potential site-specific adverse effects associated with future pipeline repairs at this time. However, certain pipeline repairs may be subject to future CEQA/NEPA review. For these reasons, only known, reasonably foreseeable, operational impacts are evaluated below." The EIR/EIS evaluates known, reasonably foreseeable impacts.

There is no possible way to predict the location or extent of work that may be required for possible future pipeline repairs and therefore no possible way to evaluate impacts on this unknown level of work. However, as the EIR/EIS states, certain pipeline repairs may be subject to future CEQA/NEPA review, which would be separate from this analysis, but many of the pipeline repairs would result in impacts similar to pipeline construction; those impacts and associated mitigation measures are addressed in this EIR/EIS, and the impacts would be less than significant.

MCWD-136 The analysis of potential impacts on western snowy plover in Impact 4.6-6 acknowledges that noise or disturbance from maintenance activities could significantly impact wintering plovers. The discussion of the nature of such impacts was provided in the subsection titled "Overview of Potential Construction Effects on Wildlife" in Impact 4.6-1 (see Draft EIR/EIS page 4.6-123). In response to this comment, the referenced text in Impact 4.6-6 has been revised to clarify that detailed discussion of the types of impacts that could result from maintenance-related noise and disturbance is provided under Impact 4.6-1.

MCWD-137 In response to this comment, Mitigation Measure 4.6-6 has been revised to change "should" to "shall."

As described in Impact 4.6-6, "Although it is unlikely that many birds would become sick or die at the brine storage basin annually, over the life of the project, some migratory waterfowl could become sick or die from use of the brine storage basin, a significant impact." As demonstrated at the adjacent MRWPCA Regional Wastewater Treatment Plant, use of bird deterrents has deterred most birds from its ponds. As described in Mitigation Measure 4.6-6, CalAm would be required to implement a monitoring and adaptive management approach to deter most birds from the Brine Storage Basin. If during monitoring, bird or wildlife deaths are detected at the Brine Storage Basin, then the type of bird deterrent shall be modified to ensure most birds are deterred from the Brine Storage Basin and thus the risk of death to migratory waterfowl is reduced to less than significant.

MCWD-138 In response to this comment, Mitigation Measure 4.6-1c has been revised to prohibit the use of photodegradable and other plastic mesh erosion control products. See the response to comment CDFW-9; also see response to Marina-77, in Section 8.5.1, for the revised mitigation measure.

MCWD-139 See responses to MCWD-108 and MCWD-109 and response to comment CURE-Owens-19 in Section 8.6.2.

MCWD-140 Responses to comments on the adequacy of the mitigation measures in Section 4.6 are provided in the responses to comments MCWD-111 through MCWD-113, MCWD-115 through MCWD-128, MCWD-131, MCWD-134, MCWD-137, and MCWD-142.

See the response to comment MCWD-114 regarding where the EIR/EIS describes how specific mitigation measures would reduce impacts to less than significant.

MCWD-141 As discussed in EIR/EIS Section 4.4.5.2, the slant wells proposed at the CEMEX site would draw groundwater levels down in the Dune Sand Aquifer and in the underlying 180-FTE Aquifer. The drawdown would be greatest (up to 29 feet) close to the coast surrounding a zone of groundwater capture created by pumping (see EIR/EIS Figures 4.4-13 and Figures 8.2.8-3 and 8.2.8-4 in Master Response 8, Project Source Water and Seawater Intrusion) and would be less pronounced (1 to 5 feet) in the area of influence that is projected to extend inland up to 3 miles beyond the capture zone (see EIR/EIS Figures 4.4-14 and 4.4-15). In order for the drawdown induced by MPWSP pumping to impact jurisdictional surface water features or wetlands, the groundwater in either the Dune Sand Aquifer or the 180-FTE Aquifer would have to interact with the ground surface such that a change in the groundwater level induces a response in the surface water feature/wetland.

The Dune Sand Aquifer is the unconfined, uppermost water-bearing unit and is the aquifer with the greatest likelihood of a hydraulic connection with the surface, while the 180-FTE Aquifer is deeper and semi-confined with water levels at even lower elevations. A groundwater-surface water interaction with the Dune Sand Aquifer would be evident if a surface water feature was created as an expression of the groundwater surface. This condition does not exist in the study area as evidenced by groundwater levels in eight Dune Sand and 180-FTE Aquifer monitoring wells measured by Cal Am since early 2015 (see EIR/EIS Section 4.4.4). If a groundwater-surface water interaction did exist with the Dune Sand Aquifer, water levels in the monitoring wells would be at or slightly below the ground surface. Nearly two years of groundwater monitoring has revealed that the groundwater surface of the Dune Sand Aquifer ranges in depths between 10 and 43 feet below the ground surface, with an average depth to water of 26 feet, depending on the location. Water levels in the 180-FTE Aquifer are consistently lower than those in the Dune Sand Aquifer. These groundwater surface depths only fluctuate by a few feet throughout the year. Lithologic logs of the monitoring well borings verify that there is a defined vadose (unsaturated) zone composed of sand and/or silty-clayey sand between groundwater of the Dune Sand Aquifer and the ground surface. EIR/EIS Appendix E3 provides water levels monitoring data and lithologic logs of monitoring well borings.

Hydrogeologic conditions demonstrate that the surface water features and wetlands of concerns are clearly perched at or just below the ground surface and likely fed, not by groundwater in the Dunes Sand Aquifer, but by sources of surface water that include precipitation, fog drip, surf spray, irrigation runoff, or seepage from locally perched saturated lenses in the younger sand dunes. Therefore, the Dune Sand and 180-FTE Aquifers are not in hydraulic connection with surface water features and the degree of their separation precludes direct surface drawdown effects and water quality changes (i.e., increased salinity in the capture zone) near the CEMEX site and throughout the area projected to be influenced by MPWSP pumping.

MCWD-142 According to the Fort Ord Reuse Authority (FORA) website, the HCP was expected to be released for public review by the end of 2017. At the time of publication of the Final EIR/EIS, the Installation-Wide Multispecies Habitat Conservation Plan (HCP) is currently in a draft form, and has not yet been released or adopted. Impact 4.6-8 analyzes whether the proposed project would "be inconsistent with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan during construction or operations." The EIR/EIS is not required to analyze whether the project would be inconsistent with a draft document. It is unknown exactly what measures would be included in the HCP once it is finalized and adopted, so it would be speculative to analyze potential inconsistencies with a document that has not been finalized and adopted.

Mitigation Measure 4.6-8 only applied to the Terminal Reservoir. Since the Terminal Reservoir has been removed from the proposed project, this comment is no longer applicable and Mitigation Measure 4.6-8 has been deleted.

MCWD-143 As explained in EIR/EIS Section 4.1.7.1, Approach to the Analysis of Cumulative Effects, the EIR/EIS engaged in a two-step process. The first step describes the effects of other past, present and reasonably foreseeable future projects in combination with the effects of the proposed project. Where the analysis finds that the cumulative effects of past, present and future projects plus the proposed project would be significant and adverse, the second step of the cumulative impact process identifies whether the proposed project's contribution to the overall adverse effect would be of a considerable nature (referred to as a "cumulatively considerable contribution" under CEQA) such that the project's contribution to cumulative effects in that area is deemed significant. In essence, it is only if the answer is affirmative in both steps of the analytical process that the project's contribution to the overall significant and adverse cumulative effect is deemed a significant effect associated with the project.

In response to this comment, Impact 4.6-C has been revised to clarify that, with implementation of the proposed mitigation measures, the residual project impacts would be minimal and would not be cumulatively considerable. The only exception is that the proposed project would conflict with the City of Marina's LCLUP, which would be a significant and unavoidable contribution to a significant cumulative impact.

The adequacy of the proposed mitigation measures is described in responses to comments MCWD-115 through MCWD-129, MCWD-131, and MCWD-134.

MCWD-144 As the commenter states, the Reclamation Plan for the CEMEX site requires reconstruction and revegetation of the "southerly slopes." Portions of the subsurface slant well site may result in temporary or permanent impacts to a small portion of the southern slope revegetation area. The EIR/EIS describes the majority of this area as central dune scrub, a sensitive natural community, and the entire subsurface slant well site as primary habitat as defined by the City of Marina's LCLUP. As described in Impact 4.6-2 and 4.6-7, impacts to sensitive natural communities and primary habitat will be reduced to less than significant by implementing various mitigation measures including Mitigation Measure 4.6-2b. The revised Mitigation Measure 4.6-2b requires that any temporarily impacted areas are restored to pre-construction conditions and any permanent impacts are compensated at a 2:1 ratio. With implementation of this measure, any areas that have been reclaimed and would be impacted would either be restored to their current condition or mitigated at an offsite location to ensure no net loss of this habitat.

MCWD-145 The list of cumulative projects described in EIR/EIS Section 4.1.7.2 includes projects for which detailed descriptions and expected impacts are known, as well as projects that have less defined impacts but may contribute to regional impacts. Therefore, the exact acreage and extent of all cumulative projects is unknown. In response to this comment, Impact 4.6-C has been revised to include a general description of the amount of sensitive habitat that may be disturbed by the cumulative projects. This analysis is based on a review of the environmental documents that have been prepared for some of the cumulative projects. Additionally, Impact 4.6-C has been revised to include the total acreage of impacts that the proposed project may have on sensitive habitat types.

MCWD-146 No citation or reference was provided to support the comment's assertion that the rate of erosion at the coastline at the CEMEX facility nearly doubled from 2014 to 2016 from 220,000 to 380,000 cubic yards per year. Nonetheless, as explained in EIR/EIS Section 4.2.1.3, Section 4.2.4.5, and Appendix C2, Sections 1 and 2, the rate of erosion varies each year and is the net result of seasonal changes, localized erosion (rip currents), long-term erosion, and sea level rise, relative to the annual sand supply (sand supplied from inland sources by rivers and streams and sand supplied from ocean sources during surges, which both supply the coastal sand drift). As explained in Appendix C2 on page 4, the modeling used a conservative approach that applied historic erosion rates, anticipated sea level rise and a 100-year storm event. The historic erosion rates used in the model input are linear erosion rates, not volume rates. This is because the modeling was conducted to estimate the year when the coastline is anticipated to have retreated back towards the well, not the volume of sand removed. The results are provided as erosion profiles showing the cross sectional view of coastal profiles at various times in response to coastal retreat. Over the modeled time period from 2012 to 2073, the annual *linear* rate of erosion varies from 7 to 9 feet per year.

The commenter asked if the 15 feet of scour observed around the outfall pipe during the winter storm surge in early March 2016 is consistent with the 2014 coastal retreat projections. It is important to note that the 15 feet of scour is an individual winter event *with a solid object (the outfall pipe) exposed on the beach*, followed by some backfill of the beach once the storm had passed. It is more important to note that the amount of scour was exacerbated because the outfall pipe was exposed. The presence of a solid object on the beach causes scour to increase as wave forces are concentrated around the solid object. As shown on EIR/EIS Figures 4.2-7 and 4.2-8, the amount of scour due to a 100-year storm event *without a solid object exposed on the beach* ranges from about 8 to 14 feet. The 15 feet of scour is not consistent with the modeled coastal retreat because of the presence of the outfall pipe.

In addition, the coastal retreat projections are the accumulation of the previously discussed multiple causes of coastal retreat. The existing test slant well head and the proposed slant well heads are located further inland behind the existing sand dunes. As discussed in Section 4.2.1.3, and in Appendix C2, the scour experienced at a given location is the result of several causes with a net result also controlled by the sand supply. Nonetheless and as shown on Section 4.2 Figure 4.2-7, coastal retreat is not anticipated to reach the test slant well until about 2060; the other proposed slant well locations would not be reached until well after 2060. Therefore, because Mitigation Measure 4.2-10 would result in monitoring coastal retreat and decommissioning of the well prior to exposure on the beach, the well would never be exposed to scour and would not exacerbate or accelerate coastal erosion.

The commenter states the coastal retreat modeling did not use "available computer-aided modeling as identified in Appendix C2." The commenter is referring to text on Page 7 of Appendix C2 that states: "Alternative estimates could be developed by computer-aided modeling of sand transport. For example, XBEACH and other available software can provide estimates of storm-induced profile erosion (USGS, 2009). Also, GENESIS and other available software can provide estimates of future shoreline positions. Such further analysis may enhance the ability to assess the likelihood of shore recession estimates presented herein."

However, as stated on Appendix C2, Page 4: "The potential inland shoreline retreat caused by sea level rise and the impact from a large storm event was estimated using the geometric model of dune erosion originally proposed by Komar et al (1999) and applied with different slopes to make the model more applicable to sea level rise (Revell et al, 2011). This method is consistent with the FEMA Pacific Coast Flood Guidelines (FEMA, 2005)."

While other modeling methods are available, the modeling method is consistent with FEMA guidelines. Furthermore, the model uses a conservative approach that maximizes the potential coastal retreat. As explained on Page 4 of Appendix C2, the representative coastal profiles conservatively used "…an extremely eroded profile (lower envelope) for each future time horizon."

In addition, to be conservative, the accretion of sand on to the beach was not included in the model, as noted on Page 6: "The overall linear regression shows accretion, but the shorelines have fluctuated historically, and the most recent shoreline (spring 2010) is more eroded than the spring 1998 post-El Nino LiDAR. For this reason, we conservatively do not include the accretion signal" and "North of the Salinas River, the shore is accreting and dune growth appears to be occurring but accretion was neglected in these locations as well."

In other words, an acceptable model was used with conservative input parameters to maximize the potential amount of coastal retreat.

MCWD-147 EIR/EIS Figure 4.2-7 accurately represents that the well head for the test slant well is about 30 feet above Mean Lower Low Water (MLLW) of the intertidal zone. Figure 4.2-8 shows the proposed slant well location at Profile 4b, which would pass just north of the well head for Proposed Slant Well Site WS-2 (see Figure 3-3a); Slant Well Sites WS-2 through WS-6s would all be located about the same distance from the shoreline. As discussed in EIR/EIS Section 4.2, Impact 4.2-10, the test slant well location would be the most likely to be affected by coastal retreat.

MCWD-148 The coastal retreat modeling described in EIR/EIS Section 4.2.4.5 was conducted to estimate the year when the coastline is anticipated to have retreated back towards the wells, and the potential for the exposed wells to exacerbate scour of the beach. The results are provided as erosion profiles showing the cross-sectional view of coastal profiles at various times in response to coastal retreat; see EIR/EIS Figures 4.2-7 and 4.2-8. The analysis indicates the test slant well could become exposed on the beach sometime around the year 2060; that would be about 45 years after the well was installed. Therefore, while 20 to 25 years as useful life for the slant wells may be inconsistently used in the EIR/EIS, the useful life of the slant wells is not relevant to Impact 4.2-10 and has no bearing on the significance conclusion. See also responses to comments MCWD-78, MCWD-79 and MCWD-82.

MCWD-149 Impact 4.2-10 explains that based on projections of sea level rise and anticipated coastal retreat, abandonment procedures are anticipated to begin prior to 2060 for the converted test slant well and after 2060 for the other nine slant wells, but would occur as needed based on monitoring required under Mitigation Measure 4.2-9, Slant Well Abandonment Plan. The implementation of this mitigation measure would eliminate, not merely reduce any erosion impact, by ensuring the slant well(s) would be decommissioned prior to exposure.

Mitigation Measure 4.2-9 has been revised to include annual reporting of the erosion rate to the agency that issues the Coastal Development Permit. The mitigation measure, and therefore, the annual reporting requirement, would be enforced by the CPUC as a component of its Mitigation Monitoring and Reporting Plan (MMRP) that the CPUC would adopt if and when it approves a project or alternative that includes slant wells (CEQA Guidelines Section 15091(d)). Thus, the revised mitigation measure and the third-party monitoring of the MMRP by the CPUC will provide for the appropriate public reporting requirements.

Special Condition 6 of the test slant well CDP states that the “Permittee shall cut off, cap, and bury the slant well head at least 40 feet below the ground surface, and shall completely remove all other temporary facilities approved by this coastal development permit.” Since EIR/EIS Figure 4.2-7 accurately represents that the well head for the test slant well is located at 30 feet above MLLW, this permit condition requires the well to be cut off 10 feet below MLLW.

With the implementation of Mitigation Measure 4.2-9, the section of well casing and pipelines at risk of exposure would be cut and removed to a depth of 5 feet below the 2060, 100-year lower profile envelope as determined by the 2014 Coastal Erosion Study (Appendix C2). Since the 2060, 100-year lower profile envelope would be at 10 feet below MLLW (see EIR/EIS Figure 4.2-7), that would require the casing to be removed to a depth of 15 feet below MLLW or 45 feet below the ground surface. This is consistent with, and in fact more aggressive than the Special Condition 6 that was placed on the test slant well by the CDP. See also Master Response 14, CEMEX Settlement, Section 8.2.14.2; with the closure of the Lapis Sand Plant in 2020 as a result of the Settlement Agreement, ongoing coastal erosion at this location is expected to slow compared to erosion rates that have occurred with sand mining. Therefore, the erosion profiles in the EIR/EIS likely overestimate the rate of future shoreline change, and the test slant well is likely to be exposed later than the EIR/EIS projects. The analyses and conclusions related to coastal erosion in the EIR/EIS have not been revised, and instead have been retained as conservative estimates of potential erosion-related impacts.

MCWD-150 EIR/EIS Section 4.1.5 explains the approach taken to the project consistency analysis. See response to comment Marina-94.

The Draft EIR/EIS concludes on page 4.6-224 that construction of the slant wells, the Source Water Pipeline, the new Desalinated Water Pipeline, the new Transmission Main and the staging area at Beach Road “would be inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, a significant and unavoidable impact.” As further explained on Draft EIR/EIS page 4.6-224, the CCC reached a similar conclusion in its review of the test slant well Coastal Development Permit application, on appeal. The CCC staff report noted that development of the test slant well in the proposed location would conflict with Coastal Act policies related to protection of ESHA (Coastal Act Section 30240). The CCC staff report for the test slant well states: “Although the project is proposed to be located in portions of the CEMEX site that have been subject to disturbance, the entire area in which the project would be located is primary habitat and ESHA under the LCP. The proposed project is not a resource dependent use, so it cannot be approved consistent with the LCP’s habitat protection policies.” (CCC, 2014)

The CCC was ultimately able to approve the project consistent with the Coastal Act, however, by relying upon Coastal Act Section 30260, which encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned.

EIR/EIR Table 4.8-3 presents a summary of land use and recreation impacts, and Impact 4.8-1 states, "Consistency with applicable plans, policies, and regulations *related to land use and recreation* that were adopted for the purpose of mitigating an environmental effect" (emphasis added). As stated in the second paragraph under Impact 4.8-1, "This section evaluates overall project consistency with applicable plans, policies, and regulations *pertaining to land use and recreation*" (emphasis added). Therefore, to be consistent with Table 4.8-3 and with the intent of the analysis in this section, the impact statement on Draft EIR/EIS page 4.8-34 has been revised as follows:

> **Impact 4.8-1: Consistency with applicable plans, policies, and regulations <u>related to land use and recreation</u> that were adopted for the purpose of mitigating an environmental effect.**

As noted above, the required analysis has disclosed that the proposed project, because it would be inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, would result in a significant and unavoidable impact. Nothing in this response to comment has triggered a need to recirculate the Draft EIR/EIS.

MCWD-151 As listed in EIR/EIS Table 4.7-1, there are no known active hazardous materials sites that are directly beneath any of the proposed project components. Nonetheless, the discussion in EIR/EIS Section 4.7.1 notes that the area has a long history of chemical use from commercial, industrial, agricultural, and military land uses, and various investigations and cleanups have been undertaken to address the releases. Consequently, although not expected, it is recognized that previously undiscovered chemical releases could be present and construction activities might encounter hazardous materials of previously undetected chemicals at unknown concentrations.

To address this possibility, Mitigation Measures 4.7-2a, Health and Safety Plan, and 4.7-2b, Soil and Groundwater Management Plan were identified in the EIR/EIS. Together, these mitigation measures are clear, enforceable and include appropriate performance standards as they would ensure that workers are apprised of the potential for soil and groundwater contamination, trained in the recognition of such possible contamination, and trained in the use of personal protective equipment and decontamination procedures, as needed. Further, upon discovery of contamination construction workers are required to stop work and notify the Monterey County Department of Environmental Health, followed by the retention of a qualified environmental firm to perform sampling and remediation. Construction workers would not perform the cleanup; cleanup would be conducted by environmental professionals trained to investigate, manage, and remediate hazardous materials. The environmental professionals would conduct sampling to identify risks, respond with the appropriate safety procedures and protective equipment, and remediate the site using screening levels, as discussed in EIR/EIS Section 4.7.2.

As discussed above, the specific kinds and concentrations of hazardous materials of previously undiscovered hazardous materials, if any, obviously remain unknown until construction activities uncover their presence. Because the known hazardous materials sites in the region have previously been cleaned up, construction activities are not expected to encounter contaminated soil or groundwater, or unexploded ordnance (UXO). However, the previous investigations and cleanups have identified the overall nature of historical chemical and hazardous materials used in the regional area, which is known to have included fuels, lubricants and oil, solvents, various volatile organic compounds (e.g., carbon tetrachloride, trichloroethene), pesticides and herbicides, metals (e.g., cadmium, chromium, copper, nickel, and lead), wood preservatives (e.g., creosote and less commonly copper, chrome, arsenic, and pentachlorophenol), or UXO. Consequently, the Health and Safety Plan and the Soil and Groundwater Management Plan would include procedures to address these specific hazardous materials.

Upon certification of the EIR/EIS and the approval of the various permits, CalAm would commence construction of the proposed project. Contractors engaged in work that would disturb soil or conduct dewatering of excavations would be required to prepare a Health and Safety Plan and the Soil and Groundwater Management Plan relevant to the work they are contracted to perform. The contract specifications would mandate full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials, including those encountered in excavated soil or dewatering effluent. This compliance would include notifying the appropriate regulatory agency of the release and acquiring the agency's concurrence that the newly discovered hazardous materials have been remediated to their satisfaction before work would continue in the affected location.

MCWD-152 The analysis under Impact 4.7-4 does not simply state; it explains that the risk of a release of hazardous materials near a school would be low, *because of the performance standards* imposed by the permitting requirements on the construction activities, *as discussed under Impact 4.7-1* [emphasis added]. EIR/EIS Section 4.7.2.2 addresses the Hazardous Materials Release Response Plans and Inventory Act - Health and Safety Code, Section 25500 et seq. Section 25532 of the Health and Safety Code (Pub. Resources Code, § 21151.4) states that: "An environmental impact report shall not be certified or a negative declaration shall not be approved for any project involving the construction or alteration of a facility within one-fourth of a mile of a school that might reasonably be anticipated to emit hazardous air emissions, or that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code, that may pose a health or safety hazard to persons who would attend or would be employed at the school… ." The code continues by providing conditions and exemptions. Hazardous air emissions are toxic air contaminants identified by the California Air Resources Board. Construction would result in the short-term emissions of diesel particulate matter (DPM), a toxic air contaminant, within 0.25 mile of schools. The risk of the handling or emissions of hazardous materials near a school or any other site is analyzed for Impact 4.7-4; based on a screening-level analysis discussed in EIR/EIS Section 4.10, Air Quality, DPM emissions would be less than the Monterey Bay Unified Air Pollution Control District's increased cancer risk threshold. Therefore, the proposed project would be in compliance with this code.

MCWD-153 As discussed above, Mitigation Measures 4.7-2a and 4.7-2b are not improperly deferred mitigation and adequately address the potential to encounter previously unknown soil and/or groundwater contamination. As discussed in Impact 4.7-C, cumulative projects would be subject to the same regulatory requirements as the MPWSP. These regulations would require cumulative projects that would include soil excavation and/or dewatering to prepare and implement health and safety plans, and soil and groundwater management plans to address the potential to encounter hazardous materials. These plans would be similar to the plans required under Mitigation Measures 4.7-2a and 4.7-2b, and would be subject to the same regulatory action levels. Implementation of these plans would reduce the risks from encountering hazardous materials to less than significant. No revisions were made in response to this comment.

MCWD-154 See response to comment USEPA-4 for the text of the revised Mitigation Measure 4.11-1, which would require that CalAm achieve net zero GHG emissions from operational electricity use. As a result of these revisions, GHG-related impacts are reduced to a less-than-significant level as described in Section 4.11 of the Final EIR/EIS. Revisions to Mitigation Measure 4.11-1 address the comment's concerns about improper deferral by providing specific measures CalAm must take to achieve the GHG emissions performance standard outlined in the measure, including the potential purchase and retirement of carbon offsets. With regard to MCWD comments on Mitigation Measure 4.18-1, see responses to comments MCWD-164 and MCWD-167.

MCWD-155 As explained in EIR/EIS Section 4.1.7.2 and Table 4.1-2, Project No. 31, RUWAP Desalination Element, it is speculative to assume that MCWD will implement a 2,700 afy desalination facility, or what the size, timing or configuration of that facility would be. Therefore, the EIR/EIS does not generally include the RUWAP Desalination Plant in the cumulative analysis. Making conservative assumptions, however, EIR/EIS Section 4.4.6 does analyze the development of a 1,000 afy desalination plant on MCWD land as a cumulative project, in the event that such an option is chosen to make up the shortfall needed to provide water to support the FORA Base Reuse Plan.

Regarding the comment that modeling based upon best available information is needed, see response to comment MCWD-102. As discussed in EIR/EIS Impact 4.4-4, the MPWSP would have a less-than-significant impact on groundwater quality, with regard to salinity, since the slant well pumping would retard the inland migration of the seawater intrusion front. This is further presented in EIR/EIS Figure 4.4-17. In addition, Table 4.4-10 presents the known active supply wells within vicinity of the proposed MPWPS slant wells. The table includes the MCWD municipal wells, but only in mention because the Wells 10, 11, and 12 are over 2 miles to the southeast, and are screened in the 900-Foot Aquifer, and the Ord Community Wells 29, 30, and 31 are located 5 plus miles to the southeast and are screened in the lower 180-Foot and the 400-Foot Aquifers. While the proposed location of the RUWAP Desalination Element wells is speculative at this time, EIR/EIS Section 4.4.6, discusses the potential cumulative groundwater effects if MCWD were to construct a 1,000 afy desalination plant. In this scenario, the MCWD wells would be located south of the CEMEX site at the MCWD property at Reservation Road. Groundwater at this location is already degraded by seawater intrusion/high salinity. The EIR/EIS concludes that if the MPWSP and RUWAP Desalination Element were to operate concurrently, there would be no significant cumulative impact to groundwater quality and the two projects could in fact, contribute to a beneficial effect to reduce seawater intrusion. Overall, the proposed project would not cause increased salinity levels at the proposed RUWAP Desalination Element wells, nor would it cause MCWD to install additional infrastructure for the treatment of source water or increased energy requirements.

MCWD-156 EIR/EIS Section 4.13, Table 4.13-4, includes average monthly flows of treated wastewater effluent from the MRWPCA Regional Treatment Plant, which includes treated effluent from MCWD's vested usage of the facility. Table 4.13-4 shows that the brine stream from the MPWSP when combined with the highest monthly effluent flows from the MRWPCA would be an estimated 34 mgd. The MRWPCA outfall has an overall capacity of 81.2 mgd, therefore there would be ample capacity for proposed discharges from a 1,000 afy RUWAP Desalination Element. In addition, the MPWSP would not adversely affect the 2009 Memorandum of Understanding between the MRWPCA and MCWD for the Planning for Use of MRWPCA Outfall for Brine Disposal, which provides priority right to the MCWD for the use of unused outfall capacity of up to 25 mgd of brine.

MCWD-157 See response to comment MCWD-26. Per the 2009 Wheeling Agreement between CalAm and MCWD, CalAm is permitted to use a portion of the capacity of MCWD's water conveyance facility for CalAm's ASR Project. The subject of the agreement is the conveyance that extends southwards from the inter-tie location within General Jim Moore Boulevard just south of Coe Avenue and includes all appurtenant devices and fittings on the main transmission pipe itself. The Wheeling Agreement is intended to provide the terms and conditions for construction, financing, operation and maintenance, scheduling, quality requirements, term, priorities, and fair compensation for CalAm's joint use of the Subject Facility. The

Subject Facility is the same pipeline that the New Transmission Main would connect to in order to convey MPWSP water to CalAm's existing water supply distribution system. The Wheeling Agreement would need to be revised to include MPWSP water. Pursuant to Water Code Sections 1810 through 1813, CalAm and MCWD are to determine the unused capacity required and available capacity in the Subject Facility for CalAm's and MCWD's proposed uses. On March 23, 2017, CalAm provided to MCWD an assessment of estimated pipeline capacities, including pressure assumptions, for proposed uses of the Subject Facility, including future supply from CalAm's proposed desalination facility. The assessment shows that there is ample capacity in the Subject Facility for projected future uses (CalAm, 2017). The Subject Facility is a pressurized system, in which all the water that is permitted to use the facility would mix and reach the intended destinations, regardless of the location of the source.

In response to this comment, EIR/EIS Table 3-1 has been revised to include the following description of the New Transmission Main:

> "This pipeline would convey desalinated water between the new Desalinated Water Pipeline at Reservation Road, crossing U.S. Army-owned property along General Jim Moore Blvd. to the existing Phase I ASR Facilities where it would connect to CalAm's existing water supply distribution system at the General Jim Moore Boulevard/Coe Avenue intersection."

In addition, EIR/EIS Section 3.2.3.4, New Transmission Main, has also been revised:

> "The new Transmission Main would continue east along Lightfighter Drive for approximately 0.4 mile to General Jim Moore Boulevard, turn south along the east side of General Jim Moore Boulevard to Normandy Road. South of Normandy Road the pipeline would be located along the west side of General Jim Moore Boulevard for approximately 1.9 miles, ending at the existing Phase I ASR Facilities ~~near General Jim Moore/Coe Avenue~~ (see **Figures 3-7** through **3-9a**) where it would connect to CalAm's existing water supply distribution system at the General Jim Moore Boulevard/Coe Avenue intersection."

MCWD-158 EIR/EIS Section 4.13, Impact 4.13-1 states that construction of the MPWSP could damage or interfere with existing water, sewer, stormwater drainage, natural gas, electric, or communication utility service lines, and construction could require the permanent relocation of these utility lines, potentially interrupting service if the relocation could not be avoided. Such impacts on utilities and utility services during project construction would be potentially significant. Therefore, implementation of Mitigation Measures 4.13-1a (Locate and Confirm Utility Lines), 4.13-1b (Coordinate Final Construction Plans with Affected Utilities), 4.13-1c (Safeguard Employees from Potential Accidents Related to Underground Utilities), 4.13-1d (Emergency Response Plan), 4.13-1e (Notify Local Fire

Departments), and 4.13-1f (Ensure Prompt Reconnection of Utilities) are required to reduce the impact to a less-than-significant level. Such impacts and mitigation measures would apply to any existing/planned MCWD utilities that may be within the MPWSP project area.

MCWD-159 As described in EIR/EIS Section 4.18.3, the evaluation criteria used to determine if the proposed project would result in a significant impact related to energy conservation are based on Appendix F of the CEQA Guidelines. The remainder of this introductory statement summarizes comments on the EIR/EIS energy conservation analysis conducted for the proposed project. Responses to MCWD-160 through MCWD-167 are provided below.

MCWD-160 EIR/EIS Mitigation Measure 4.11-1 for greenhouse gas (GHG) emissions has been revised to require CalAm to achieve net zero GHG emissions from operational electricity use through adherence to a specific loading order of four options, the first of which is to secure renewable energy from on-site solar photovoltaic (PV) panels and/or the adjacent Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility (see response to comment USEPA-4, in Section 8.3.5, for the revised text of Mitigation Measure 4.11-1). Implementation of this revised mitigation measure would ensure that renewable energy resources are incorporated into the design of the project to the extent feasible.

For consistency with revised Mitigation Measure 4.11-1, EIR/EIS Section 4.18.4.3, *Landfill-Gas-to-Energy Option*, has been revised as follows:

4.18.4.3 Landfill-Gas-to-Energy Option

~~Information regarding the potential use of methane gas as an alternative energy source is provided here for informational purposes only; t~~This EIR/EIS conservatively assumes that all proposed operational power requirements would be met via the existing PG&E power grid. ~~Although not evaluated in this EIR/EIS~~However, CalAm is actively pursuing a renewable energy source option with Monterey Regional Waste Management District (MRWMD) that would allow CalAm to meet a portion of the MPWSP Desalination Plant operational energy requirements with methane gas from the existing MRWMD landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site. The MRWMD LFGTE facility produces 5.07 Megawatts (MW) of continuous electricity that is sold to PG&E. MRWMD plans to increase the electric generation capacity of the LFGTE facility by 3.2 MW in two stages; the first phase of improvements would increase the capacity by 1.6 MW, followed by an additional 1.6-MW increase in six to eight years. Once the expansion is complete, the total generation capacity of the LFGTE facility would be 8.27 MW (ESI, 2014).

If this renewable energy source option is implemented, about half of the MPWSP Desalination Plant operational energy requirements could be met with methane gas from the LFGTE facility~~; the remainder would come from the local PG&E grid~~. Overhead powerlines, electrical transformers, metering devices, and switchgear would be needed to connect the MRWMD LFGTE facility with the MPWSP Desalination Plant. Implementation of this option and the construction of the associated interconnection improvements would require separate environmental review ~~and are not evaluated in this EIR/EIS~~.

MCWD-161 In the context of the EIR/EIS Energy Conservation analysis, indirect energy use refers to the energy used for extraction, manufacturing, and transportation of raw materials to make construction materials that would be used for the project (refer to the first paragraph of EIR/EIS Impact 4.18-1). Evaluation of these energy sources is outside the scope of this CEQA/NEPA review because the types, amounts, and processes associated with those energy sources is unknown. Nonetheless, the fourth paragraph of the EIR/EIS Impact 4.18-1 discussion contained an error in that it should not have indicated that the amounts of indirect energy that would be used associated with the extraction, manufacturing, and transportation of raw materials to make the construction materials for the project would not be expected to be substantial because information to make that determination is not available. However, compared to the direct energy consumption that would occur under the project, electricity use during construction would not be expected to be substantial because electric powered equipment would be a small fraction of the overall equipment used to construct the project. Therefore, the fourth paragraph of the EIR/EIS Impact 4.18-1 discussion has been revised as follows:

The amount of electricity ~~and indirect energy~~ consumption that would be associated with construction of the project is unknown and cannot be estimated as it would be too speculative given existing data; however, the amount~~s~~ would not be expected to be substantial.

MCWD-162 The energy usage associated with the Monterey Main System, Aquifer Storage and Recovery, Sand City Coastal Desalination Plant, and the Subsurface Intake System components of the proposed project were estimated by multiplying energy use factors [kilowatt-hours/acre-feet (kWh/af)] by the average annual water production (afy). It should be noted that CalAm also provided additional detailed data regarding how the energy use factor for the Monterey Main System was estimated. Those data showed a slightly lower average annual energy use factor of 913 kWh/af compared to 915 kWh/af as shown in the power table spreadsheet. Since the energy use factor is used to estimate both the existing conditions and future with project conditions, and the existing conditions involve a higher water production rate than future with-project conditions for the Monterey Main System, the lower energy use factor was used for a more conservative analysis. This explains why the energy usage disclosed in the EIR/EIS for the project is slightly higher than shown in the power table spreadsheet (i.e., CalAm, 2016b) referenced in the comment. That spreadsheet, which was available for review along with all materials referenced in the Draft EIR/EIS during the public comment period, includes notes that describe how the energy use factors were estimated.

MCWD-163 As described in Impact 4.18-2, while the proposed project would require a large amount of electricity each year to operate, it is necessary to provide drinking water to area residents to protect human health and safety. Further, the proposed project would not consume energy wastefully or inefficiently. The design and construction of the MPWSP Desalination Plant would incorporate various energy-efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand (e.g. variable speed pumps, energy recovery devices). Electricity consumed as a result of project operations would not be unnecessary, wasteful, or inefficient and the energy conservation impact related to the use of fuel and energy during project operations would be less than significant.

Although not required to reduce an energy conservation impact, implementation of Mitigation Measure 4.11-1, GHG Emissions Reductions Plan, would require CalAm to have a qualified professional prepare a GHG Emissions Reduction Plan that shall include a summary of state-of-the-art energy recovery and conservation technologies available for utility scale desalination facilities and shall include a commitment by CalAm to incorporate all available feasible energy recovery and conservation technologies; or, if CalAm finds that any of the technologies will not be feasible for the project, the Plan shall clearly explain why such technology is considered to be infeasible.

For discussion of the project’s potential use of electricity from the LFGTE expansion, refer to response to comments MCWD-160 and USEPA-4.

MCWD-164 Mitigation Measure 4.18-1 requires CalAm to prepare a Construction Equipment and Vehicle Efficiency Plan. The mitigation measure identifies several specific performance standards for the measures that CalAm and its construction contractors must implement to increase the efficient use of construction equipment to the maximum extent feasible and to ensure that construction activities are conducted in a fuel-efficient manner (see EIR/EIS Section 4.18, Impact 4.18-1). Therefore, Mitigation Measure 4.18-1 is not deferred mitigation. See also response to CURE-Fox-123. The amount of electricity and indirect energy consumption that would be associated with construction of the project is currently unknown and cannot be estimated as it would be too speculative given existing data (see Draft EIR/EIS, p. 4.18-15). More important, the precise plan of construction as to timing of elements, sequencing, and the precise exact types of construction equipment to be employed, etc., cannot be known until the project is approved, a contractor is hired, and construction-level plans are available. Therefore, although it is premature to prepare a fully-developed construction equipment efficiency plan at this time, preparation of the plan prior to implementation of construction would be feasible and implementation of the approved plan would ensure construction activities are conducted in a fuel-efficient manner for construction equipment and vehicles.

Since implementation of Mitigation Measures 4.18-1 and 4.10-1b, which limits equipment idling, would increase the efficient use of construction equipment to the maximum extent feasible and would ensure that construction activities are conducted in a fuel-efficient manner, the impact would be mitigated to a less-than-significant level. In addition, Mitigation Measure 4.10-1a has been revised to identify construction equipment that meets Tier 4 standards as opposed to Tier 3 standards (refer to response to comment MBARD-6). Tier 4 emission standards are the most stringent and efficient standards available for off-road construction equipment.

MCWD-165 As described in the Impact 4.18-2, the amount of gasoline and diesel required to fuel vehicles and equipment during operation and maintenance of the project would be relatively small. The vehicle trips would be necessary to support operation and maintenance of the proposed project and would be equivalent to approximately 0.01 percent of the total amount of gasoline and 0.02 percent total diesel fuel sold in Monterey County in 2012 (see Section 4.18.1.2, *Local Energy Systems*). The overall transportation energy use requirements during operation and maintenance would not be significant relative to the overall sales of transportation fuels in the county. Regardless, Mitigation Measure 4.18-1 has been revised to include a requirement that CalAm provide options for worker carpooling.

MCWD-166 Operation of the proposed project would rely on electrical power supplied from Pacific Gas and Electric Company (PG&E)'s existing regional power grid. It is generally not possible to determine the exact generation source(s) of electricity on the power grid that would supply the proposed project regardless of its location relative to existing power generation plants, or whether or not the electricity would even be generated within Monterey County. Therefore, it is not reasonable to assume that the electricity required for the project would be generated at Moss Landing Power Plant.

The personal communication referred to in the comment was a phone call that occurred on September 9, 2016, between a PG&E Project Manager with Distribution Services, and the Environmental Science Associates EIR/EIS Energy Analyst. During that call, PG&E indicated that it is moving forward in its planning to service CalAm with 6 megawatts (MW) of electricity for the MPWSP. The project would be serviced by nearby distribution circuits and no electrical transmission upgrades would be needed. PG&E does not consider the MPWSP to be a large electrical load, and a "large load process" would not be necessary for PG&E to service the project. The large load process is designed to determine how PG&E customers with large energy requirements will be fed electricity. When asked if there is a specific MW threshold that triggers the large load process, the PG&E representative said that there is not and that it is based on the project location and what infrastructure is available to support the project in the area. From the perspective of serving electricity to the MPWSP, PG&E considers the MPWSP to be a "typical new service." Therefore, implementation of the proposed project could be accommodated by the existing local and regional energy supplies and the impact would be less than significant.

MCWD-167 As described in EIR/EIS Impact 4.18-C, Mitigation Measures 4.18-1 (Construction Equipment and Vehicle Efficiency Plan) and 4.10-1b (Idling Restrictions) would be implemented to ensure construction activities would be conducted in a fuel-efficient manner. Even if project construction were to occur simultaneously with other cumulative projects, the cumulative use of energy resources during construction would be consistent with normal construction practices and would comply with efficiency- and conservation-related policies and codes intended to address cumulative energy consumption statewide, such as the California Integrated Energy Policy and the California Green Building Standards Code (refer to EIR/EIS Section 4.18.2.2). As explained in EIR/EIS Section 4.1.7.1, Approach to the Analysis of Cumulative Effects, the EIR/EIS engaged in a two-step process. If the first step of the analysis finds that the cumulative effects of past, present and future projects plus the proposed project would be significant and adverse, the second step identifies whether the proposed project's contribution to the overall adverse effect would be of a considerable nature such that the project's contribution to cumulative effects in that area is deemed significant. Therefore, after mitigation, project construction would not have a cumulatively considerable contribution to a significant cumulative impact on the supply and/or availability of these fuel sources during construction. Further, Mitigation Measure 4.18-1 is not deferred mitigation (see response to comment MCWD-164).

EIR/EIS Impact 4.18-C also discloses that the anticipated increase in electricity consumption for the proposed project would represent approximately 2 percent of Monterey County's annual usage, and an even smaller percentage of PG&E's overall service area usage (0.05 percent). And given that PG&E purchases wholesale electric energy and capacity from generators and suppliers and periodically conducts solicitations / requests for offers for additional supplies of conventional and renewable electricity, in the event that many other cumulative projects would be high demand electricity users and would request electrical service from PG&E, additional wholesale electric energy may need to be purchased by PG&E and it would be received through its existing electricity grid. There may need to be local distribution line upgrades to connect some of the cumulative projects to the electricity grid (e.g. DeepWater Desal), but any such upgrades would be minor. Therefore, the proposed project would not have a cumulatively considerable contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy during operation, and the operational cumulative impact would be less than significant.

MCWD-168 See responses to comments MCWD-2 and Marina-140. As stated in EIR/EIS Section 5.1.1, the selection of alternatives followed the CEQA Guidelines Section 15126.6 and NEPA requirements in 40 CFR Sections 1502.13 and 1502.14, including identifying the feasibility of the various alternatives selected for analysis, as defined in CEQA Guidelines Section 15126.6(f) as alternatives capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. An extensively robust and detailed screening of components was provided in EIR/EIS Section 5.3, and included the screening and evaluation of intake, outfall, and desalination plant site options in Sections 5.3.3, 5.3.4, and 5.3.5, respectively. The EIR/EIS also evaluates a total of eight whole alternatives, including the proposed project, the No Project Alternative, and Alternatives 1 through 5b in EIR/EIS Section 5.5.

With the revisions to GHG Mitigation Measure 4.11-1 (see response to comment USEPA-4, in Section 8.3.5), and the related revision to the conclusion of Impact 4.11-1 (incremental contribution to climate change from GHG emissions) to less than significant with mitigation, the EIR/EIS does not identify any unavoidable significant impact for any resource that would require inclusion of a downsized alternative as mitigation. See also response to comment Surfrider-6.

MCWD-169 No new significant impacts or substantially more severe significant impacts have been identified as a result of these comments or the associated responses that would trigger a requirement to recirculate the Draft EIR/EIS.

MCWD-170 EIR/EIS Chapter 5 provides a robust and comprehensive alternatives analysis. See response to comment MCWD-168. CEQA Guidelines Section 15126.6(a) acknowledges that an EIR "need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation."[9] Here, EIR/EIS Section 5.2 first considers alternatives not evaluated in detail, including the New Los Padres Dam and Reservoir, Plan B, the Coastal Water Project, the Interlake Tunnel, and Pure Water Monterey GWR. EIR/EIS Section 5.3 then discusses and considers intake, discharge and plant location options. As noted in Section 5.3.3, thirteen intake options were identified and screened for fatal flaws; six of the thirteen were not carried forward. The seven intake options that were determined to be feasible were carried forward for evaluation (see EIR/EIS Section 5.3.3.14). The next step in the alternatives process (see EIR/EIS Section 5.3.6) compares the impacts of each intake option against the proposed slant wells at CEMEX to determine if any adverse impacts would be reduced. Of the seven intake options evaluated, for reasons

[9] The point behind the case holding cited by the commenter, *Watsonville Pilots Assn. v. City of Watsonville* (2010) 183 Cal. App. 4th, 1059, 1087, is that even if an alternative considered in an EIR is ultimately determined by the decision-makers to be infeasible, that alternative may still be counted as within the reasonable range of alternatives required by CEQA to be included in an EIR. Thus, the case does not advance the commenter's position or undermine the validity of the EIR/EIS alternatives analysis.

described in Table 5.3-4, two intake options -- Option 3, Slant Wells at Potrero Road, and Option 9, Open-water Intake at Moss Landing -- were carried forward into the development of whole alternatives that are described in Section 5.4 and analyzed in Section 5.5.

The Lead Agencies did not use the scoping process to narrow the range of potential alternatives. While additional intake options were originally considered, EIR/EIS Appendix I2 describes the facts and rationale for rejected component options.

MCWD-171 The EIR/EIS Appendix I explains that horizontal wells were not evaluated further for the reasons cited by the comment. Nothing in this comment letter or the associated responses has caused the Lead Agencies to revise that conclusion. No revisions were made to the conclusion in EIR/EIS Appendix I1 regarding HDD wells.

CEQA Guidelines Section 15126.6(a) states "there is no ironclad rule governing the nature or scope of the alternatives to be discussed." Furthermore, CEQA Guidelines Section 15126.6(f) states: "The range of alternatives required in an EIR is governed by a 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project." Furthermore, Lead Agencies do not need not to consider every conceivable alternative to a project and this EIR/EIS provides a robust and comprehensive analysis of component options as well as whole alternatives, as described in response to comment MCWD-170.

However, as noted by the Huntington Beach Independent Scientific Technical Advisory Panel (HB ISTAP, 2014): "The performance of the HDD systems will be suboptimal in granular materials (sands) as opposed to lithified strata (limestone) . . . and . . . [t]here is inadequate data on the long-term reliability and maintainability of the HDD wells/drains at this time. This subsurface intake design option is considered technically infeasible at the Huntington Beach site because of a high performance risk. There is too great uncertainty that a system could be constructed that would reliably provide the required water volume over the operational life of the desalination facility." The HB ISTAP 2014 further explains that "The largest capacity system in Spain is currently not operating at its original design capacity."

See also response to comment MCWD-IW-9, MCWD-IW-10 and MCWD-IW-11. Note that the possible use of HDD wells was not dismissed on the basis of comparative cost concerns. While cost was mentioned in the EIR/EIS, HDD wells were eliminated on other feasibility grounds, including technological, ability to meet the project objectives and failure to reduce significant impacts.

MCWD-172 Vertical wells were not considered in the EIR/EIS Section 5.3 component screening and evaluation. Because vertical wells would have to be located at the same location or farther inland than the proposed slant wells at CEMEX to avoid coastal erosion, they would likely have a greater effect on SVGB water quality and groundwater levels than the proposed slant wells, given the more inland locations of the well screens within the aquifers. Furthermore, while the CPUC approved vertical wells as part of the Regional Project, see response to comment MCWD-12, specifically, Footnote 2 which explains that 24 vertical wells would be needed over a linear distance of at least one mile to support a 9.6 mgd desalination plant, and 16 vertical wells would be needed over a linear distance of almost one mile to support a 6.4 mgd desalination plant. The reverse osmosis system proposed by CalAm, described in EIR/EIS Section 3.2.2.2, would be modular and would comprise six active and one standby module, each capable of producing 1.6 mgd of desalinated water. The EIR/EIS did not identify any impacts that would need to be lessened or avoided by using packaged desalination systems.

MCWD-173 While the Huntington Beach ISTAP Phase 1 Feasibility Report (HB ISTAP, 2014) concluded that an infiltration gallery was a feasible subsurface option, the Phase II Feasibility Report (HB ISTAP, 2015) concluded that the beach infiltration gallery is infeasible at the Huntington Beach location and several factors led to that conclusion. First, the additional engineering design assessment concluded that a substantially larger gallery would likely be required compared to the considerations in Phase 1. Second, the ISTAP further considered the periodic beach re-nourishment schedule, which means that the surf zone migrates following nourishment cycles, reducing the effectiveness of the intake filtration through the sand. Third, construction of a larger-than-anticipated gallery would require many years to construct due to construction constraints on a highly used public beach.[10]

In Monterey, the concern is exacerbated. EIR/EIS Appendix I1 explains that approximately 222,000 square feet (or about 5 acres) of the seabed in Monterey Bay would need to be excavated at a depth of 6 to 8 feet to install an active infiltration bed for the 9.6 mgd desalination plant; a 6.4 mgd plant would require approximately 145,000 square feet or about 3.3 acres. An infiltration gallery would have a greater impact on marine biological resources in MBNMS than slant wells. Based on the extent of temporary and permanent disturbance that an infiltration gallery would have on the sand dunes and marine habitat in MBNMS, this technology is considered infeasible at this location. Furthermore, the EIR/EIS concludes that the project would not have significant impacts on groundwater resources, including the SVGB, so no such option is necessary to ensure less than significant groundwater impacts.

MCWD-174 Slant wells are indeed a new, evolving technology. See response to comment Marina-11 and Master Response 11, CalAm Test Slant Well, Section 8.2.11.7. The HB ISTAP's 2014 conclusions were made for subsurface intake technologies at the

[10] On October 4, 2017, the CA State Lands Commission issued a Notice of Availability and Intent to Consider Certification of the Final Supplemental EIR for the Seawater Desalination Project at Huntington Beach. The Final EIR considered a lease modification that would allow Poseidon to install wedgewire screens on an existing open water intake that would provide almost 107 mgd of feedwater.

Huntington Beach site for a potential 100 to 127 mgd desalination project. The test slant well at CEMEX today is demonstrating the technology works at this location under these conditions for this application. See EIR/EIS Appendix E3.

The CPUC does not have a representative on the HWG; Dr. Williams and Geoscience represent CalAm; see Master Response 5, The North Marina Groundwater Model (v. 2016), Section 8.2.5.2. Both the HB ISTAP 2014 and Geosciences 2012 reports were included as references to the EIR/EIS.

See responses to comments MCWD-HGC. The commenter presents a speculative condition predicated on unsubstantiated risk that speaks to the project's feasibility and not an environmental impact of the proposed project. CEQA Guidelines Section 15370 defines mitigation as avoiding, minimizing, rectifying, reducing or eliminating, or compensating for impacts, and the EIR/EIS found no impacts from operation of the slant wells that would require the mitigation described in the comment. The project includes the return water component as an integral element of the project; thus, even if the MPWSP were less efficient than expected, the fresh water component of the source water would be subject to return. See also response to comment MCWD-82. Alternatives to slant wells are discussed in EIR/EIS Section 5.3.6.1.

MCWD-175 EIR/EIS Section 5.2.1 explains that the MPWSP is the result of a multi-year planning effort. Since 1989, various entities have proposed several options intended to meet the water supply needs of the Monterey Peninsula and address the impacts on the Carmel River that are underlying SWRCB Order 95-10. Several of those options generated their own environmental review documents, which in turn contained many alternatives, some of which are still relevant here. As part of the 2009 Coastal Water Project EIR, the CPUC reviewed these previously prepared documents, including the Monterey Peninsula Long-Term Water Supply Contingency Plan (Plan B) Component Screening Report and the CPUC Carmel River Dam Alternative Plan B Project Report (see Section 5.2.1 for citations of these reports), to determine what projects and alternatives had already been considered and eliminated since SWRCB Order 95-10 was issued. The conclusion that no viable alternatives have been identified that would supply water without a desalination plant is consistent with the history of the multi-year planning effort.

The Coastal Water Project, a prior iteration of the MPWSP, is discussed in EIR/EIS Section 1.4. See also responses to comments MCWD-5, MCWD-10, and MCWD-170.

MCWD-176 See responses to comments MCWD-5, MCWD-10, MCWD-12, and MCWD-170; Master Response 3, Water Rights; and Master Response 4, The Agency Act and Return Water. See also EIR/EIS Section 4.4.5.2 for Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage.

MCWD-177 See response to comment MCWD-15 regarding CalAm's objective of meeting peak monthly demand. See also response to comments MCWD-20 through MCWD-49 for a discussion of alternatives and project objectives.

EIR/EIS Section 5.2.6 explains that the CPUC authorized CalAm to enter into a Water Purchase Agreement in Decision 16-09-021 on September 15, 2016, which provides that the MRWPCA will sell purified water from its advanced treated Pure Water Monterey GWR Project to the MPWMD, which in turn will sell it to CalAm for distribution to ratepayers in the Monterey District service area. The GWR Project is also, therefore, included in the No Project/No Action alternative described in EIR/EIS Section 5.4 because it is not reliant upon approvals considered in this EIR/EIS and could (and likely would) become operational under the No Project/No Action alternative. Essentially, the comment advocates consideration of the No Project/No Action Alternative, which is indeed thoroughly evaluated in the EIR/EIS. The GWR Project would not be relevant in the context of the proposed project or any alternative that includes a 9.6 mgd or greater desalination plant (i.e., Alternatives 1, 2, 3, and 4) because, if the GWR Project is implemented, CalAm would not need to construct a 9.6 mgd desalination plant (the proposed project); instead, it would propose to construct the 6.4 mgd plant as described in Alternatives 5a and 5b, or enter into a purchase agreement with an alternative desalinated water provider for an amount equivalent to the output of a 6.4 mgd plant (i.e., under Alternatives 3 or 4). Therefore, the analysis of a 9.6 mgd desalination plant is predicated on an assumption that the GWR Project would not be successfully implemented and, therefore, this water would not become available to CalAm. The Lead Agencies acknowledge that as the GWR Project progresses in its implementation, this scenario will become more remote. The analyses of Alternatives 5a and 5b in combination with the GWR Project adequately address the increasingly likely outcome that the GWR Project will deliver water for CalAm use. See also EIR/EIS Table 5.5-1 and Master Response 15, Alternative Desalination Project – Status, Information Sources, and Cumulative Scenario, Section 8.2.15.3.

MCWD-178 EIR/EIS Appendix I2 evaluated Intake Option #11, Ranney Wells in Seaside/Sand City because this intake option was included in public comments received during the MPWSP EIR scoping process, requesting that the CPUC consider subsurface intakes located outside of the Salinas Valley Groundwater Basin; the Monterey Peninsula Water Management District 95-10 Project Constraints Analysis (referred to herein as the 2008 Constraints Analysis) (ICF et al., 2008) was attached to the comment.

As explained in Appendix I2, the "preferred" wells identified in the 2008 Constraints Analysis are located within the Salinas Valley Groundwater Basin, since they are located north of the northernmost extent of the divide between the Seaside and Salinas Valley Groundwater Basins. Since the former Fort Ord Wastewater Treatment Plant site and former Stillwell Hall site are both located in the Salinas Valley Groundwater Basin, the investigation focused on the Bunker site, to be true to the scoping comment, because the Bunker site is located in the Seaside Groundwater Basin.

Subsurface investigation of the Bunker site (ICF et al., 2008) revealed the presence of clay layers in some of the borings and not in others. Low-permeability strata encountered were discontinuous and occurred at differing elevations. The investigation concluded that even if there were evidence of an extensive low-permeability layer between the shallow aquifer system and the underlying aquifers, the siting constraints of both the CCC and the CA State Parks, combined with the relatively low-permeability sands at this site, limit the potential amount of feedwater that could be developed from a subsurface intake at the Bunker site to about 2,000 afy (Feeney, 2009). Therefore, Intake Option #11 was eliminated from further consideration.

EIR/EIS Section 5.3.3 did consider Ranney Wells at CEMEX. As described in EIR/EIS Section 5.3.3.13, each caisson would be 12 feet in diameter, and would be buried approximately 50 feet into the sand, with the top of the caisson flush with the beach surface. Each of the four Ranney wells would be equipped with five screened laterals that would draw groundwater from the shallow Dune Sands Aquifer, and not from the deeper aquifers as claimed by the comment. EIR/EIS Table 5.3-4 provides preliminary environmental impacts comparisons of the intake alternatives that were carried forward, against the proposed project slant wells. EIR/EIS Section 5.3.6.1 concludes that, “Ranney wells (Intake Option 13) were shown to result in similar environmental effects compared to the proposed slant wells, resulting in neither increased or decreased impacts; Ranney wells do offer an opportunity to replace slant well technology at either the CEMEX or the Potrero Road site if necessary.”

See also response to comment MCWD-170 and MCWD-IW-12.

MCWD-179 The EIR/EIS does analyze the potential effects of the No Project Alternative based on what is reasonably expected to occur. See, for example, Sections 5.5.3.3 and 5.5.6.3, which describe the beneficial effects of increased streamflows in the Carmel River. The decommissioning of the test slant well would be a reasonably foreseeable occurrence under this scenario, but already has been analyzed in the separate CEQA and NEPA documents prepared for the test slant well. The EIR/EIS did not revise its conclusion about Stage 4 Water Rationing not being needed if the No Action Alternative with GWR meets 89 percent of estimated demand, because as stated in Section 5.4.2.4 and reiterated in the comment, the No Action alternative could meet “89 percent of estimated demand after implementation of foreseeable demand management and offset programs described in Section 5.4.2.3, ***including*** [emphasis added] Stage 3 Water Conservation, and possibly Stage 4 Water Rationing to meet the supply shortfall. Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.3 explains the GWR Project will make 3,500 afy available to CalAm, not 3,700 afy. Therefore, the total with the GWR Project supply under the No Project Alternative would be 9,880 afy, as stated in the EIR/EIS, and not 10,080 afy as claimed in the comment. See Master Response 13 regarding the demand that needs to be met by feasible project alternatives.

MCWD-180 Alternative 1 (Slant Wells at Potrero Road) is described in detail in EIR/EIS Section 5.4.3, which explains, as does Table 5.4-1, that Alternative 1 would produce the same amount of desalinated water as the proposed project, 9.6 mgd. The conclusion in EIR/EIS Section 5.4.3.4 that Alternative 1 would not provide sufficient supplies to serve existing legal lots of record is described in EIR/EIS Section 5.5.21.4: In the event that the return water obligation is determined to be 12 percent (the highest return value simulated), after meeting existing demand and entitlements, only 209 afy would be available for other uses, and, therefore, Alternative 1 would not fully meet the project objective/need for water, some of which was to support limited growth (e.g., legal lots of record).

The analysis of impacts on groundwater resources from slant wells located at Potrero Road is provided in Section 5.5.4.4and provides a summation of the groundwater modeling results from operation of the slant wells and figures of the resulting cone of depression predicted by the $NMGWM^{2016}$. Details of the modeling approach and results are presented in EIR/EIS Appendix E2. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information on the adequacy of the NMGWM.

As stated in the analysis, the operation of Alternative 1 could result in drawdown in the SVGB aquifers so as to require the return of up to 12 percent of the source water that originated in the SVGB, to the SVGB. Different drawdown areas were shown for the three aquifers on EIR/EIS Figures 5.5-2 through 5.5-4, based on the amount of return water and sea level rise. While the cone of depression is much larger for Alternative 1 than for the proposed project, the impact conclusion would be the same as the proposed project impact on groundwater: less than significant. In addition, as stated in EIR/EIS Section 5.5.4.4, Alternative 1 would include Applicant-Proposed Measure 4.4-3 (Groundwater Monitoring and Avoidance of Well Damage) to provide continued verification that project pumping would not adversely impact neighboring wells or contribute to seawater intrusion within the SVGB. However, the cone of depression associated with Alternative 1 would extend to Elkhorn Slough, unlike the proposed project’s cone of depression that does not intersect either the Salinas River or the Tembladero Slough. Potential impacts on marine biological resources in Elkhorn Slough that could result from Alternative 1 and Alternative 5b are presented in EIR/EIS Sections 5.5.5.4 and 5.5.5.8, respectively. Potential impacts on terrestrial biological resources in Elkhorn Slough that could result from Alternative 1 and Alternative 5b are presented in EIR/EIS Sections 5.5.6.4 and 5.5.6.8, respectively.

MCWD-181 As explained in EIR/EIS Section 5.4.7.1, CalAm is seeking authorization to implement Alternative 5a (reduced size desalination system) if it becomes clear that the GWR Project will be completed and on line in a timeframe that can supply water to meet the proposed project's objectives. If the GWR Project cannot supply water within that timeframe, then CalAm seeks authorization to implement the proposed project. The other 9.6 mgd-equivalent alternatives analyzed in Chapter 5 also could be downsized (e.g., through a smaller water purchase agreement from the DeepWater Desal Project under Alternative 3) if GWR Project water becomes available. Presenting two alternatives as environmentally superior under these possible outcomes provides the decision-makers with options to choose from during the project approval process. The presentation of two reasonable environmentally superior alternatives, the choice between which is reliant on actions not within the scope of this EIR/EIS (i.e., successful implementation of the GWR Project), is not inconsistent with CEQA or NEPA.

In addition, CalAm's project application was submitted, and the EIR/EIS was begun, long before the GWR Project was approved by MRWPCA and the associated Water Purchase Agreement for CalAm to secure GWR water was subsequently approved by the CPUC. The framing of the EIR/EIS structure and alternatives analysis was reasonable and logical at the outset, and remains so in light of continued uncertainties and to ensure flexibility for the decision-makers.

MCWD-182 See responses to comments Surfrider-6, MCWD-171 (HDD wells) and MCWD-178 (Ranney wells).

MCWD-183 See response to comment MCWD-180.

MCWD-184 See response to comment Surfrider-6. Response to comment MCWD-HGC and Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.2, explain that the "Marina Subarea" is not a DWR-recognized groundwater basin. See also Master Response 3, Water Rights, and Master Response 4, The Agency Act and Return Water. See responses to comments MCWD-168 through MCWD-173 regarding alternative components, response to comment MCWD-171 regarding HDD wells, and response to comment MCWD-178 regarding Ranney wells. No alternatives were deemed infeasible solely on the basis of cost. Response to comment MCWD-150 explains the inconsistency of the proposed project with Marina's LCLUP and how the CCC was ultimately able to approve the slant test well project by relying upon Coastal Act Section 30260, which encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned; the Marina LCLUP did not need to be amended. Response to comment MCWD-190 addresses the issue of recirculation.

MCWD-185 This comment offers the commenter's opinion and preference, and does not address the adequacy of the EIR/EIS. Decision-makers will consider this comment during the project approval process.

MCWD-186 Master Response 13, Demand (Project Need) and Growth, Section 8.2.13.2 provides a discussion of Supply for Peak Demands. The analysis in EIR/EIS Section 5.5 assumes that both the 6.4 mgd desalination plant and the GWR project would be implemented under Alternatives 5a or 5b; see response to comment MCWD-15. MBNMS is the NEPA Lead Agency for this EIR/EIS, consistent with actions identified in the MBNMS Final Management Plan, to ensure opportunity for input from local jurisdictions and the interested public regarding implementation of desalination plants and facilitating assessment and analysis of the potential growth inducing impacts of desalination plants, among other actions described under Strategy DESAL-1: Develop and Implement Regional Desalination Program in Section 2, Coastal Development, of the Management Plan. EIR/EIS Section 6.3 evaluates the impacts of growth that would be induced by the proposed project. See also Master Response 13, Section 8.2.13.3. As described in EIR/EIS Section 6.3, the impacts of growth have been evaluated in the general plan CEQA documents of jurisdictions in CalAm's service area. Those jurisdictions located in the coastal zone have also adopted local coastal program land use plans to guide development in coastal areas. Growth provided for in general plans would be required to be consistent with provisions of local coastal programs and plans. The demand estimates provided by CalAm and others throughout this CEQA/NEPA process have been independently reviewed and assessed by the Lead Agencies. Spreadsheet models of various supply and demand scenarios have been prepared and are included in the Final EIR/EIS as Appendix L.

MCWD-187 EIR/EIS Section 4.4.5.2, Impact 4.4 provides an analysis of the potential water quality effects that could impact or harm other groundwater users, otherwise degrade groundwater resources, and exacerbate seawater intrusion; the impacts were determined to be less than significant. The analysis employed groundwater modeling particle tracking to assess changes to the MCWRA-defined seawater intrusion front. Results of the modeling indicate that slant well pumping would retard the migration of saltwater into the southern portion of 180-Foot Aquifer that would have otherwise contributed to the advancement of the seawater intrusion front; slant well pumping would have little to no effect on future saltwater intrusion in the 400-Foot Aquifer. Supplemental discussion of the hydrogeological characteristics, graphic representation of the slant well capture zone, and supplemental discussion of water quality impacts are provided in Master Response 8, Project Source Water and Seawater Intrusion. See also response to comment MCWD-141. Response to comment MCWD-HGC and Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.2, explain that the "Marina Subarea" is not a DWR-recognized groundwater basin. See also response to comment MCWD-EKI.

EIR/EIS Section 6.4, the assessment of project conformity with guidelines for desalination plants in MBNMS, accurately summarizes the Guidelines for Entrainment and Impingement contained in Section D.3, page 6 of the Guidelines for Desalination Plants in the MBNMS (NOAA, 2010). The conclusion that the proposed project would be consistent with this guideline has not changed.

MCWD-188 See response to comment MCWD-6 regarding the issue of public versus private ownership. EIR/EIS Section 6.4 lists the NOAA Guideline (page 4 of the MBNMS Desalination Guidelines) stating that, "Desalination plant proponents should pursue collaborations with other water suppliers and agencies currently considering water supply options in the area to evaluate the potential for an integrated regional water supply project," and it has been determined to be addressed by the scope of the overall EIR/EIS analysis. Furthermore, the CalAm project would be considered regional because it addresses the needs of multiple cities and has been coordinated with other agencies (MRWPCA). The MBNMS Management Plan (see page 82) refers to the CalAm project as a "larger multi-city regional project."

The comment does not include the full NOAA Guideline (from page 4), which states that proponents "should include an evaluation of other potential desalination locations and alternatives, as well as other forms of water supply." EIR/EIS Sections 5.1 through 5.3 screen and analyze a thorough selection of intake, outfall, and desalination plant options and include analyses of several different intake locations, desalination plant locations, larger projects and reduced project sizes (see also EIR/EIS Section 5.4). Each alternative, regardless of whether the intakes and desalination plant would be operated by CalAm, would provide water to CalAm's service area, and in some instances, would provide water to an extended regional water supply area (e.g., see Alternative 3 in EIR/EIS Section 5.4.5). Furthermore, Alternatives 5a and 5b would include a reduced capacity desalination plant of 6.4 mgd, with an additional 3,500 afy of recycled water from the GWR Project purchased by CalAm. These alternatives represent collaboration with other water suppliers; furthermore, Alternative 5a was determined to be the Environmentally Superior Alternative/Preferred Alternative in the EIR/EIS. Thus, the EIR/EIS has considered more than just the CalAm "go-it-alone" or open water intake.

MCWD-189 Figure 5.1 in Appendix E2 represents the cells of the NMGWM^{2016} that were modified to include the re-distribution of constant head values associated with sea level rise, and is not presented to indicate impacts from flooding; EIR/EIS Figure 4.3-3 presents the areas subject to flooding from sea level rise in the year 2100. See also response to Shriner-6.

MCWD-190 As noted in several responses, nothing in the Final EIR/EIS represents significant new information that would trigger recirculation of the Draft EIR/EIS. As noted in Master Response 6, The Sustainable Groundwater Management Act, Section 8.2.6.2, for example, the Marina Subarea is not a DWR-recognized designation, and the hydrogeological conditions do not justify this designation. See response to comment MCWD-84.

The commenter refers to CEQA's requirements to recirculate a draft EIR for an additional round of public review and comment, and urges that the Draft EIR/EIS be recirculated. While some new information has indeed been added to the EIR/EIS in order to amplify or clarify the data within the Draft EIR/EIS, none of such new data implicates new or substantially more severe significant environmental impacts than were shown in the Draft EIR/EIS, nor does it indicate that there are feasible alternatives or mitigation measures available that would minimize significant effects but that the project proponent declines to embrace. In addition, the Draft EIR/EIS was comprehensive and robust, and the Lead Agencies do not believe that it was fundamentally flawed in any way. For these reasons, recirculation of the Draft EIR/EIS is not required. Furthermore, the Draft EIR/EIS was itself a revised, updated and enhanced version of the Draft EIR that was published by the California Public Utilities Commission for the MPWSP in April, 2015. The environmental review for the MPWSP has entailed a lengthy process with multiple opportunities for public review and comment.

MCWD-191 See all the previous responses to comments MCWD-1 through MCWD-190 that address the comment.

8.5.2.2 Responses to Comments from MWCD – Hopkins Groundwater Consultants (HGC)

These responses address comments provided by Hopkins Groundwater Consultants, Inc. (HGC) on the Groundwater Resources section of the MPWSP EIR/EIS, dated March 29, 2017. Due to the organization and format of the HGC Technical Memorandum, and the amount of repetition in the HGC comments, these responses have been arranged thematically based on several primary topic areas. The HGC-identified comment numbers that pertain to the topic area, are listed within the response to each relevant topic area.

MCWD-HGC-1 ***Water Rights, Return Water, SGMA***

HGC submitted several comments on CalAm water rights, return water, Agency Act, the method that return water was calculated, and the Ocean Water Percentage (OWP) in the feedwater. Supplemental information to clarify these topics has been prepared and is available in several Master Responses and in EIS/EIR Appendix E3, as listed below:

- **Master Response 3, Water Rights,** among other topics, addresses comments regarding the legal framework of return water, harm and injury, effects of the proposed MPWSP on MCWD, the Annexation Agreement, Agency Act/Ordinance 3709, surplus water, and legal considerations regarding the quality of basin water. Pertains to HGC comments 1, 2, 4-6, 8-10, 12, 24, 30, and 40;
- **Master Response 4, The Agency Act and Return Water,** provides further clarification regarding the Agency Act and location of return water, return water quantities, the Ocean Water Percentage (OWP) calculations, and legal aspects of the return water. Pertains to HGC comments 3, 4, 10, 11, and 22;
- **Master Response 6, The Sustainable Groundwater Management Act (SGMA)**, provides clarification regarding the SGMA and its application to

the MPWSP. Pertains to HGC comments 1, 7, 8, 22, 27, 35, 36, 39, and 42, and;

- **EIR/EIS Appendix E3, Hydrogeologic Investigation Report**, provides a description and technical justification for the calculation of the OWP as it applies to return water. Pertains to HGC comments 1, 3, 9, 22, and 29**.**

MCWD-HGC-2

Existing Seawater Intrusion in the Salinas Valley Groundwater Basin (SVGB)

Pertains to HGC comments 3, 16, 20, 29, and 41. HGC repeatedly asserts that the EIR/EIS mischaracterizes the existing seawater intrusion in the SVGB that was identified in the 1940s and has been monitored for many years by the Monterey County Water Resources Agency (MCWRA). Contrary to HGC's assertion (Page 2 of HGC TM), the EIR/EIS does not suggest that "the shallow aquifers along the coastline around the CEMEX site are fully intruded by seawater and the groundwater in the project area of the SVGB consists almost entirely of highly saline seawater that extends up to 8 miles inland." EIR/EIS Section 4.4.1.4 describes current seawater intrusion in the coastal area of the SVGB and explains that brackish to saline groundwater can contain concentrations of total dissolved solids (TDS) that range from 33,500 milligrams per Liter (mg/L) at the coast to 500 mg/L near the inland seawater intrusion front and that brackish water in the 180-FTE aquifer near the proposed MPWSP ranges from 5,000 mg/L to 29,000 mg/L. These ranges of TDS concentration do not describe "fully intruded" shallow aquifers with "highly saline seawater that extend up to 8 miles inland." The analysis of seawater intrusion in the EIR/EIS is based on the annual MCWRA monitoring program and resulting seawater intrusion maps that show the inland advance of the seawater intrusion front. These maps are provided in the EIR/EIS as Figures 4.4-10 and 4.4-11. The analysis recognizes that localized areas of lower TDS concentrations would be expected in areas predominantly intruded by seawater due to the heterogeneity of the water transmitting and storage properties of the sediments. EIR/EIS Section 4.4.5.2, correctly concludes that the MPWSP would extract primarily seawater and a smaller volume of brackish groundwater from a zone that has been degraded by seawater intrusion (over 23,000 mg/L) and therefore, would not be suitable as a potable supply due to the high salinity. This topic is discussed further in the section below that discusses the purported areas of fresh groundwater in the Dune Sand and 180-FTE Aquifer.

Additional clarification of this topic is in Master Response 8, Project Source Water and Seawater Intrusion, which discusses the water chemistry in the feedwater capture zone. Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), Section 8.2.9.3, provides additional discussion regarding the findings from the May 2017 AEM survey conducted for MCWD by Stanford University's Dr. Rosemary Knight. AEM survey results help interpolate between control points provided by the MPWSP monitoring network and confirms the work completed for the MPWSP hydrogeologic investigation. EIR/EIS

Appendix E3, Hydrogeologic Investigation Report, Section 1.4.5, provides additional discussion of the seawater intrusion and use of intruded groundwater as feedwater for the MPWSP slant wells.

MCWD-HGC-3

"Marina Sub Area"

MCWD and HGC make repeated references to the "Marina Subarea." HGC acknowledges in its comment letter that this is not a DWR-recognized designation but claims that the hydrogeological conditions justify such designation for their discussion purposes: while the physical boundaries of the "Marina Subarea have not been mapped, in MCWD's characterization, it is the combined area that includes portions of the 180-Foot and 400-Foot Aquifer Subbasin (DWR Basin 3-004.01) located south of the Salinas River and the northwest portion of the Salinas Valley Monterey Subbasin (Basin 3-004.10)." MCWD and HGC claim that the "Marina Subarea" is the coastal subarea north of the over-drafted SVGB and the area that would be directly impacted by the MPWSP slant well pumping. However, the hydrogeological conditions of the area potentially affected by the MPWSP, as described in EIR/EIS Section 4.4, Groundwater Resources, do not justify or support this designation. The term "Marina Subarea" as defined by HGC is not based on or consistent with the accepted definitions of basins in the SVGB and its identification as a distinct groundwater basin appears to have originated with HGC. In a hydrogeologic sense, the area identified as the Marina Subarea is simply part of a continuous, hydraulically connected portion of the 180/400-Foot Aquifer subbasin of the SVGB. The "Marina Subarea" and its relationship to the MPWSP project are discussed further in Master Response 6, The Sustainable Groundwater Management Act.

MCWD-HGC-4

Slant Well Screen Length

Pertains to HGC comments 11, 12, 14, and 23. HGC asserts that the proposed MPWSP slant wells would need to extend under the ocean to be effective at extracting a high percentage of seawater. HGC attributes the length of the test slant well, which was shorter than planned, to drilling problems. Both assertions are incorrect. The well screens beneath the beach would be as effective in extracting a high percentage of seawater as wells screened a couple of hundred feet further under the ocean. As explained in EIR/EIS Appendix E3, while placement of production well screens closer to or under the ocean may achieve the maximum OWP in the first few months and a very slight increase in the medium-term OWP, a difference of a few hundred feet in screen placement relative to the ocean boundary would have minimal overall effect on OWP because of the volume of seawater at the recharge boundary. The proposed MPWSP slant wells would extend as far offshore as possible, while keeping the well screen above the 180/400-Foot Aquitard; see EIR/EIS Section 3.2.1.1, Table 3-2 and Figure 3-3b. In the Dune Sand Aquifer, the slant wells would be placed at 14 degrees below horizontal through a vertical saturated thickness of 60 feet and would penetrate about 250 lineal feet. Assuming a well efficiency of 70 percent and a drawdown of 35 feet below static level, the Dune Sand Aquifer screen interval should produce 600 to 1,000 gallons per minute (gpm). The proposed MPWSP slant well screens in the 180-FTE Aquifer would transect a vertical thickness of approximately 100 feet in the 180-FTE Aquifer, achieving a completion length of over 400 feet, with an anticipated production rate of 1,200 gpm at a 70 percent well efficiency (HWG, 2017). This is discussed in detail in EIR/EIS Appendix E3, Section 4.0.

CalAm initially proposed to drill the test slant well a total length of 1,000 lineal feet at an angle of 19 degrees below the horizontal. The drilling methodology selected was appropriate and capable of reaching the target depth. A decision was made by CalAm to end the pilot hole drilling at a final target length of 724 feet, to allow enough time to complete well construction and development before equipment was required to be removed prior to the Snowy Plover nesting season. It is important to note that at 724 feet, the dual-rotary drilling and casing advancement was proceeding smoothly and could have continued, barring environmental permit scheduling constraints (EIR/EIS Appendix E3). Details of the test slant well permitting, construction and operation are provided in Master Response 11, CalAm Test Slant Well.

MCWD-HGC-5

"Protective" Groundwater Flows

Pertains to HGC comments 5, 15, 16, 18, 24, and 29. Inherent in the comments presented by HGC is the claim that the MPWSP would interfere with and negatively impact the ability of "fresh" groundwater to continue to "protect" the Dune Sand and 180-Foot Aquifers from seawater intrusion. HGC proposes the theory that shallow perched/mounded "freshwater" that flows atop the Fort Ord-Salinas Valley Aquifer and waterfalls into the Dune Sands Aquifer and 180-Foot Aquifer provides fresh groundwater that protects these aquifers from seawater intrusion. However, this is unsupported because these freshwater flows from the shallow perched/mounded aquifers have been occurring for many years and seawater intrusion has continued to advance inland, regardless. Secondly, the shallow groundwater perched/mounded in the Fort Ord area is high in Total Dissolved Solids (TDS), high in nitrate, and is in limited quantity in terms of water supply. Furthermore, the claim by HGC that the proposed MPWSP pumping at the CEMEX site would hinder the ability of this "protective flow" to reduce seawater intrusion is unfounded because the area where these freshwater flows enter the Dune Sand Aquifer and/or the 180-FTE Aquifer is 1.5 miles inland of the MPWSP slant wells; too far inland to be affected by the slant well capture zone of the proposed MPWSP. See Master Response 8, Project Source Water and Seawater Intrusion.

MCWD-HGC-6

Conservation and Restoration Efforts in 180-Foot Aquifer

Pertains to HGC comments 3 and 29. HGC refers to conservation and groundwater restoration efforts in the 180-Foot Aquifer in what it refers to as the "Marina Subarea" (discussed above) and suggests that groundwater quality has been restored with protective groundwater levels due to the "prohibition of pumping along the coastal portion of the SVGB." Ceasing groundwater pumping in the 180-Foot Aquifer and transferring MCWD pumping to the deeper aquifers was done out of necessity (see Master Response 7, Deep Aquifers of the SVGB, Section 8.2.7.1) and was not, as HGC suggests, a deliberate effort by MCWD to restore that aquifer. MCWD began pumping the 180-Foot Aquifer, but stopped when those wells became intruded by seawater. It then tapped into and pumped from the 400-Foot Aquifer until those wells became intruded by seawater. MCWD was then forced to explore the water bearing sediments of the deeper aquifers to find a fresh groundwater source (Feeney and Rosenberg, 2003). The proposed MPWSP would extract highly brackish to saline water from the slant well capture zone at the coast, which would be recharged by seawater infiltrating through the coastal terrace deposits. The slant wells would not draw groundwater from inland groundwater sources beyond its capture zone.

MCWD-HGC-7

Cone of Depression versus the Capture Zone

Pertains to HGC comments 5-7, 15, 29, 30, 34, and 36. HGC incorrectly compares water quality impacts of the MPWSP with the area exhibiting groundwater level changes within the cone of depression (also referred to as the area of influence), as projected by the NMGWM^{2016}. The cone of depression created by the proposed slant well pumping, as discussed in EIR/EIS Section 4.4.5.2, is the area delimited by groundwater level draw down of 1-foot or more. There is a considerable difference between the cone of depression and the "capture zone" of the project, as explained in Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1. Groundwater level impacts depend on the size and geometry of the cone of depression, while groundwater quality impacts are dependent on the capture zone. The MPWSP would be drawing source water through the slant wells from an area close to the coast. The extent of the capture zone would be confined to an area adjacent to the coast of Monterey Bay (generally west of Highway 1), as discussed in Master Response 8 and shown in Figures 8.2.8-1 and 8.2.8-2. No negative groundwater quality impacts would occur within the portion of the cone of depression that is beyond and inland of the capture zone because incoming seawater would be providing the majority of the feedwater to the MPWSP slant wells.

HGC incorrectly suggests that drawdown in the onshore portion of the aquifer beyond and inland of the MPWSP slant well capture zone would be a cumulative effect that would contribute to a greater onshore gradient and increase the seawater intrusion into those portions of the SVGB. The North Marina Groundwater Model version 2016 ($NMGWM^{2016}$) particle-tracking results presented in EIR/EIS Appendix E2, Figure 5.7 and Figures 8.2.8-1 and 8.2.8-2 presented in Master Response 8, show that onshore drawdown has the opposite effect; it reduces the onshore gradient beyond the capture zone, which retards the inland movement of the saltwater intrusion front. In other words, particle tracking results indicate that, in relation to present-day conditions, gradients would decrease east of the capture zone, eastward moving groundwater would slow, and the rate of seawater intrusion would decrease as a result of proposed project pumping. It is important to note that the capture zones shown in Figure 5.6 of Appendix E-2 include a range of inland gradients based on measured water levels. These capture zones consider the inland gradient, and, therefore, delineate that area along the coast where seawater intrusion would be intercepted and captured by the pumping wells.

MCWD-HGC-8

Characterization of Dune Sand Aquifer

Pertains to HGC comments 16-18, 37, and 38. As discussed in the EIR/EIS Appendix E3, Section 2.1.7, there are important distinctions between the Dune Sand Aquifer and its equivalents (-2-Foot Aquifer encountered in the Monterey Peninsula Landfill area and the “Perched A’ in the Salinas Valley), described in the EIR/EIS, Section 4.4.1.2, as opposed to the 35-Foot Aquifer in the Monterey Peninsula Landfill area and the A-Aquifer in the Fort Ord Area (hereafter referred to as the shallow perched/mounded aquifers). The shallow perched/mounded aquifers in the Fort Ord area overlie the Fort Ord-Salinas Valley Aquitard (FO-SVA). Wells from the Dune Sand Aquifer and its equivalents cannot be considered correlative with wells from the shallow perched/mounded aquifers because these are two separate and disconnected aquifers. The shallow perched/mounded aquifer is of limited extent, which results in the water from that aquifer flowing over the edge of the underlying clay layer (similar to a waterfall) into the deeper Dune Sand Aquifer and equivalents, or the 180-Foot Aquifer, depending of the hydrostratigraphy at the particular location. This effect is the same as described in the *Protective Groundwater Flows* section above. However, this occurs about 1.5 miles inland of the coast and, therefore, would not be affected by the proposed MPWSP pumping.

HGC apparently interprets the local hydrogeology at monitoring well MW-5S by inferring that the Dune Sand Aquifer is perched on a regional clay layer and that MW-5S is screened in the Dune Sand Aquifer. But monitoring well MW-5S is screened in a perched aquifer and not the Dune Sands Aquifer; it is screened in a localized water bearing zone underlying the Monterey Peninsula Landfill, referred to as the 35-Foot Aquifer. MW-5S was completed in the uppermost saturated unit but, at that location, the uppermost saturated unit is at a higher elevation and is not correlative with the shallow interval in the other MPWSP monitoring wells. That is why monitoring well MW-5S is identified as MW-5S(P), with the “P” indicating that the well is monitoring an upper perched/mounded aquifer.

HGC states that CalAm's monitoring well MW-5S has a water surface of approximately 35 feet above sea level. However, it is not possible for seawater intrusion to flow uphill at that location. This statement confirms the argument that any fresh water from the shallow perched/mounded aquifer in the Fort Ord A-Aquifer or the 35-Foot Aquifer at the landfill would not be impacted by MPWSP pumping and would continue unimpeded to its final destination.

HGC prepared a groundwater elevation contour map of the Dune Sand Aquifer as Figure 6 in the March 27, 2017 TM. In preparing the groundwater contour map, HGC apparently combined groundwater elevation data from the Dunes Sand Aquifer (MW-1S, MW-3S, MW-4S, MW-7S, MW-8S, and MW-9S), its equivalents (-2-Foot Aquifer encountered in the Monterey Peninsula Landfill area and the "Perched A' in the Salinas Valley), the 35-Foot Aquifer in the Monterey Peninsula Landfill area, and the shallow perched/mounded aquifers. The contour map produced by combining these data points implies that the Dune Sand Aquifer and the perched aquifers form one single aquifer mounded on the FO-SVA and that groundwater flows out toward the Monterey Bay to the west and the Salinas River to the east. Proper contouring using corresponding groundwater elevation data would result in accurate contours that show groundwater in the Dune Sand Aquifer flowing inland from the Monterey Bay. The HGC contour map misrepresents the available groundwater data and appears contrary to the hydrogeologic conceptual model for this area, developed and agreed upon by the community of hydrogeologists, including the experts in the Hydrogeologic Working Group.

MCWD-HGC-9

Purported Existence of Fresh Water in "Marina Subarea"

Pertains to HGC comments 3-5, 9, 10, 15, 16, 18, 19, 22, 29, 34, and 36. HGC asserts that the EIR/EIS inaccurately characterizes the groundwater quality in the area affected by the proposed MPWSP slant wells. HGC contends that there are areas of "fresh" groundwater within what is referred to as the "Marina Subarea" (discussed above), which the proposed MPWSP would impede upon and degrade. HGC relies on groundwater chemistry data CalAm collected from its eight groundwater monitoring wells in February 2015. This section addresses HGC's apparent misconception that lower chloride and TDS concentrations identified in CalAm's wells can be equated with the areas of "freshwater," as shown in Figures 1 and 2 of the HGC Technical Memorandum, dated March 29, 2017. HGC appears to have been selective in using the groundwater quality data points from five groundwater well locations spaced a mile or more apart, and randomly extrapolated regions claiming there are areas of "fresh" groundwater without any consistent correlation to the available groundwater quality data. These regions of purported "fresh" groundwater are located between Highway 1 and the Salinas River on Figures 1 and 2 of the HGC TM and are labelled as "Areas of [Dune Sand Aquifer]/[180-Foot Aquifer], Filled With Freshwater." As explained below, HGC characterization of areas of "freshwater" is inaccurate and misrepresents the available groundwater quality data.

Accurate interpretation of groundwater chemistry data for characterization of seawater intrusion requires an understanding of the changes that occur to chloride, sodium, and calcium concentrations in the groundwater. Seawater contains high concentrations of chloride and elevated or steadily increasing chloride concentrations are a common indicator of the onset of seawater intrusion. However, at low chloride concentrations, trends must be considered as well as absolute concentrations because it is a prolonged process and takes time for chloride concentrations to increase and trends to be recognizable (HydroMetrics, 2016). Seawater contains more sodium than calcium. During the early stages of seawater intrusion, the concentrations of calcium can increase because sodium attaches to the geologic materials in the aquifer and replaces calcium (a process called cation exchange), thereby removing sodium from the groundwater. The exchange of sodium for calcium lowers the sodium/chloride ratio as the seawater front progresses inland. Therefore, low concentrations of chloride may not necessarily indicate groundwater that has not been intruded with seawater, but could indicate incipient seawater intrusion as the front approaches. The latter is the case in the MPWSP project area.

HGC chose to use CalAm monitoring well clusters MW-5, MW-6, MW-7, and MW-8 as indicator wells to establish the areas of “fresh” groundwater. The monitoring well locations are shown in EIR/EIS Figure 4.4-9. HGC also used two Monterey Regional Water Pollution Control Agency (MRWPCA) wells as a data point representing water quality in the 180-Foot Aquifer. HGC reported average concentrations of chloride in the shallow and mid-range monitoring wells in each cluster. The chloride concentrations used by HGC to support “fresh” groundwater range from 67 milligrams per Liter (mg/L) in monitoring well MW-6S to 387 mg/L in the monitoring well MW-7S. Chloride data was not available for the MRWPCA well. As discussed in EIR/EIS Section 4.4.1.4 and Master Response 8, Project Source Water and Seawater Intrusion, the California Secondary Maximum Contaminant Level (MCL) for chloride is 250 mg/L (Cal. Code Regs., tit. 22, § 64449). Of the monitoring wells sampled by CalAm in February through June 2015, only five monitoring wells (MW-5M, MW-6S, MW-6M, MW-8D, and MW-9D) had concentrations of chloride below California’s Secondary MCL of 250 mg/L. All other monitoring wells, 18 in total, within and proximate to the MPWSP capture zone exceeded the 250 mg/L chloride threshold. The data does not indicate areas of “fresh” groundwater as HGC asserts; rather, it shows, as discussed below, that certain wells are located within groundwater zones of varying stages of seawater intrusion.

As discussed above, seawater intrusion is a prolonged process and the concentrations of sodium, calcium, and chloride can be an indicator of incipient or established seawater intrusion. CalAm monitoring wells MW-1S, MW-1M, MW-3S, MW-3M, MW-4S, MW-4M, MW-8D, MW-8M, MW-9S and MW-9M have elevated sodium and chloride concentrations that suggest middle to late stages of seawater intrusion. CalAm monitoring wells MW-6M(L), MW-7S, and MW-7M exhibit calcium and chloride concentrations indicative of the early to mid-stages of seawater intrusion. As discussed above, monitoring well MW-5S(P) is screened in a shallow perched aquifer, and is not correlative to conditions in the Dune Sands Aquifer. Sample results for monitoring well MW-5M showed relatively low concentrations of calcium and chloride. This is not, as implied by HGC, indicative of fresh water but more likely due to one or all of the following: 1) well screen length and placement; 2) differences in hydraulic heads resulting in ambient groundwater flow from the top of the screen to lower portions of the wells, and; 3) the shape of the seawater intrusion wedge and more saline conditions deeper in the aquifer zone.[11] Lower to moderate chloride concentrations reported in MW-6S and MW-6M are likely due to the location of the monitoring well ahead of the leading edge of the seawater intrusion wedge in the 180-Foot Aquifer. This is supported by the more elevated chloride concentration in the deeper well of the cluster [MW-6M(L)].

HGC also correlated TDS concentrations in the select monitoring wells to support the claim that "fresh" groundwater was present in the area between the MPWSP slant well site and the Salinas River. As was the case with chloride concentrations, the TDS concentrations were averages obtained from CalAm's 2015 sampling of groundwater monitoring wells (MW-5, MW-6, MW-7, and MW-8) and two MRWPCA wells. The TDS concentrations cited by HGC ranged from 350 mg/l TDS in one of the MRWPCA wells to 1,200 mg/L TDS in MW-4S. As discussed in EIR/EIS Section 4.4.1.4 and Master Response 8, Project Source Water and Seawater Intrusion, the California Secondary MCL for TDS is 500 mg/L (Cal. Code Regs., tit. 22, § 64449). Only the one groundwater sample from the MRWPCA well is under the 500 mg/L, all other TDS concentrations in the Dune Sand Aquifer and 180-FTE Aquifer in HGC's purported area of fresh groundwater, exceed the State Threshold. As discussed above for chloride, the concentrations of TDS detected in the CalAm monitoring wells do not indicate the presence of areas with "fresh" water, as HGC asserts, but indicate incipient seawater intrusion.

Furthermore, it is important to note that the proposed MPWSP slant wells would affect water quality within the capture zone but not in the larger cone of depression, as discussed in Master Response 8, Project Source Water and Seawater Intrusion. Consequently, even if the purported areas of "fresh" groundwater identified by HGC east of Highway were actually viable sources of potable water, they would not be impacted by slant well pumping because they are inland of the capture zone.

[11] Seawater intrusion typically advances inland in a "wedge" shape where the denser, more saline water is deeper in the aquifer zone and advances forward of the less dense saline water toward the top of the aquifer zone. For this reason, incipient seawater intrusion is commonly first detected in the deeper wells of an aquifer, before the shallower wells are impacted.

MCWD-HGC-10 ***Test Slant Well Salinity and CEMEX Wash Water***

Pertains to HGC comments 15, 19, 33, and 36. HGC asserts that test slant well salinity is artificially increased due to CEMEX wash water recharging in nearby ponds. However, the opposite effect on the test slant well is occurring. Recharge water causes the salinity in the test slant well to decrease because dredge sand is processed with well water, which has a significantly lower salinity than the seawater, although it is still highly brackish. Consequently, the average TDS of the water recharging the groundwater near the test slant well is much lower in TDS than the seawater. In addition to sand washing operations, infiltration of precipitation also causes the salinity in the test slant well to decrease, as discussed in EIR/EIS Appendix E3, Section 2.1.7.4.

MCWD-HGC-11 ***Groundwater Cumulative Analysis***

Pertains to HGC comments 31, 34, 35, and 39. See responses to comments MCWD-106, and LWMC-14 through LWMC-19 in Section 8.6.13 regarding the cumulative analysis of groundwater resource impacts of the MPWSP.

MCWD-HGC-12 ***HGC Comments on Mitigation Measures Prescribed in EIR/EIS Section 4.4***

Pertains to HGC comments 7, 8, 10, 34, 35, 37, 38, and 40. See responses to comments MCWD-103 and MCWD-104, as well as CEMEX-11 and CEMEX-12 in Section 8.6.6.

MCWD-HGC-13 ***Application of the NMGWM^{2016}***

Pertains to HGC comments 1, 4-6, 15, 25, 26, 28, 30-32, 34, 35, 38, 39, 41, and 42. HGC had several comments on the application and use of the NMGWM^{2016} as an analytical tool to evaluate impacts of the MPWSP. The groundwater model is described in EIR/EIS Section 4.4.4.2 and Appendix E2; additional information and clarification on the application of this model is in Master Response 12, The North Marina Groundwater Model (v. 2016).

The NMGWM^{2016} and the Use of Superposition

The calibrated NMGWM^{2016} was not "abandoned and replaced with the inferior superposition model" because of "technical problems," nor was it poorly calibrated. HGC claims that the purported "technical problems" stemmed from a lack of data on the hydrogeology and aquifer recharge mechanisms used by the U.S. Geological Survey in the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM); the U.S. Geological Survey did not develop the SVIGSM. The "superposition model," as referred to by HGC and utilized for the MPWSP analysis, is an application of the NMGWM^{2016}. Superposition is a scientifically valid, well-documented and routinely employed tool for solving complex problems, and enabled the efficient simulation of slant well pumping drawdown without having to correct the problems associated with pumping and recharge inputs derived from SVIGSM. The method of superposition was implemented to remove model bias due to deficient input data inherited from the SVIGSM, to calculate slant well pumping drawdown directly, and to provide for more transparent model results. The superposition approach is widely used (see Draft EIR/EIS Appendix E2, Section 5.2, Footnote 82, for examples of the use of superposition for solving groundwater problems), and the outputs it provided are the model-calculated water level and flow changes due solely to slant-well pumping. Superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the slant wells. These changes are additive to future changes that would occur as the net result of all other recharge and discharge processes in the basin. In other words, the superposition model results are simply added to the net effects from all other recharge and discharge processes in the basin to calculate the cumulative effect.

HGC incorrectly asserts that the superposition model fails to evaluate potential future cumulative conditions and that it would not be possible to evaluate impacts on wells tied to the MPWSP. Additionally, HGC states that the $NMGWM^{2016}$ cannot determine the impact of the project on future basin management efforts planned to improve the groundwater conditions in the SVGB. As noted above, superposition is employed to isolate the expected changes and these changes are additive to future changes that occur as the net result of all other recharge and discharge processes in the basin. Any model-calculated drawdown due to proposed slant well pumping can be overlain or integrated with future basin management scenarios. Monitoring can provide information about the impact on future basin management efforts. For example, Figure 4.6 in Appendix E2 is an example of where superposition model results are compared to measured water levels collected in real-world monitoring wells. Figures 3.3a, 3.3b, and 3.3c in Appendix E2 show that aquifer parameters in the Fort Ord vicinity fall within the reported range of values from other sources. See Master Response 12, The North Marina Groundwater Model (v. 2016).

Applicability and Reliability of the $NMGWM^{2016}$

There are several instances where HGC claims that the $NMGWM^{2016}$ is not an adequate groundwater model because it does not predict changes in water quality. The $NMGWM^{2016}$ was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The use of equivalent freshwater head to represent seawater, and the constant groundwater density assumption to calculate the drawdown extent is a reasonable and appropriate approach and the error these approximations introduce is small relative to the uncertainty in other more influential factors like the specified pumping rates, return water volumes, projected sea levels, aquifer parameter values, and the relative contributions of multiple aquifers to total slant well production (see EIR/EIS Appendix E-2, Section 6.0 Uncertainty, and Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

HGC claims that the NMGWM^{2016} is unreliable, which appears to be based on a misunderstanding of the NMGWM^{2016} and the use of superposition. As described below, HGC incorrectly assumes that modelers attempted to incorporate a “semi-perched layer of fresh water” in the Dune Sand Aquifer but were unsuccessful. Furthermore, HGC is incorrect in its assessment that the comparison between simulated results with observed groundwater level elevations produced model error in the Dune Sand Aquifer (Model Layer 2) on the order of 30 percent. The A-Aquifer (Model Layer 2 above the FO-SVA) was incorporated into the NMGWM^{2016} and improved model performance at MW-5S. Figure 4.2 in Appendix E2 shows the water level at MW-5S calculated by the NMGWM^{2015} (approximately 0 feet above mean sea level), is greatly improved following the update to the NMGWM^{2016} (approximately 29 feet, which is much closer to the measured value of 35 feet). The available data suggest that perched groundwater conditions and the corresponding poor model performance is limited to the southernmost portions of the Fort Ord area, whereas model performance is acceptable in the other portions of the Fort Ord area and where vertical gradients are less steep. Appendix E2 reported a Root Mean Square Error (RMSE) of 30.2 feet in Model Layer 2, and that included two perched wells (MW-BW-01-A and MW-OU2-29-A). As explained in Draft EIR/EIS Appendix E2 (pages 20-21), vertical gradients greater than 1.0 between Model Layer 2 and Model Layer 4 likely indicate an unsaturated zone between two saturated units. When these wells are excluded from the error statistics, the RMSE for Model Layer 2 decreases from 30.2 feet to 10.1 feet (the relative error decreases from almost 63 percent to about 16 percent).

HGC asserts that the EIR/EIS fails to evaluate the project’s impacts on the semi-perched groundwater conditions within the Dune Sand Aquifer and the semi-confined conditions in the -2-Foot Dune Sand Aquifer and describes the failure as fatal to the ability of the EIR/EIS to adequately evaluate project impacts on groundwater. The area where perched groundwater conditions occurs appears to be of limited extent, and the model performs well in the remaining areas. The model’s inability to simulate these conditions is therefore, not “fatal,” and in fact the model performs well in the other areas. Furthermore, the primary purpose for the NMGWM^{2016} was to calculate drawdown in response to pumping, which depends primarily on the pumping rate, the water transmitting and storage properties of the aquifer, and any change in groundwater recharge or discharge that occurs solely as a result of that drawdown. The modeled and reported water transmitting and storage properties of sediments in the model domain compare favorably, and therefore, provide confidence in the drawdown calculated by the model. Indeed, the measured and model-calculated drawdown due to test slant well pumping plotted in Figure 4.6 of Appendix E2 agree well, and provide confidence in model performance. Lastly, the hydraulic conductivity values in the NMGWM^{2016} are successful, as shown by the relatively low RMSE for the non-perched wells in Model Layer 2. These hydraulic conductivity values were developed from extensive review of the available hydrologic and geologic data.

HGC states that the recalibrated NMGWM^{2016} was not successful at providing shallow groundwater responses and is less representative of real world conditions than the NMGWM^{2015}. The NMGWM^{2016} successfully simulated the measured, real-world shallow groundwater response to test slant well pumping (see EIR/EIS Appendix E2, Figure 4.6). Moreover, in every test that compared model-calculations and "real-world" measurements, the NMGWM^{2016} was shown to be superior to the NMGWM^{2015}. The improvement is attributed to its better representation of "real world" conditions because of the substantial new borehole, water level, and aquifer test data considered and incorporated into the updated, NMGWM^{2016}. For example, Model Layer 2 represents the "Dune Sand Aquifer," "A-Aquifer," "Perched Aquifer," "Perched 'A' Aquifer," "35-Foot Aquifer," and "-2 Foot Aquifer." Similarly, Model Layer 3 incorporated the FO-SVA, and Model Layer 4 represents the "180-FT Aquifer," "180-FTE Aquifer," "Upper and Lower 180-Foot Aquifer," and "Pressure 180-Foot Aquifer." The geographic and hydrogeologic characteristics of these water bearing units are represented in the NMGWM^{2016} by almost 20 different zones assigned unique values for the water transmitting and storage property values derived from an extensive review and analysis of the existing data.

EIR/EIS Appendix E2, Section 4.0, explains model limitations which particularly influenced the discrepancies between measured and model-calculated water levels in the historical 1979-2011 run. The historical 1979-2011 run is another application of the NMGWM^{2016}. The history matching run (1979-2011) utilized all available wells within the model domain having historical water level measurements; south of the Salinas River, there are potential wells with data located in the Fort Ord Area, and monitoring well cluster sites having the longest water level data records were also utilized in the history matching run (cluster sites are where multiple wells monitor conditions in different aquifers). Additional well boring and aquifer test data were also incorporated into the conceptual hydrogeologic understanding of conditions south of the river and represented by the NMGWM^{2016}.

HGC claims that the NMGWM^{2016} was constructed with a landward gradient in the 180-Foot Aquifer and does not simulate the -2-Foot-Aquifer underlying the perched portion of the Dune Sand Aquifer. The NMGWM^{2016} does not contain a specific layer for the -2-Foot-Aquifer. Appendix E2, Table 2.1, shows that Model Layer 2 represents the shallow water-bearing sediments referred to as "Dune Sand Aquifer," "A-Aquifer," "Perched Aquifer," "Perched 'A' Aquifer," "35-Foot Aquifer," and "-2 Foot Aquifer." Model Layer 3 is utilized to represent the confining layer that separates these units from the underlying "180-FT Aquifer" or the equivalent units represented by Model Layer 4. Appendix E2 shows particle-tracking results calculated with the superposition NMGWM^{2016} and three imposed gradients based on measured water levels (see Appendix E2, Figure 5.6, which delineates the area where particles placed beneath the coast line pass as they move to the slant wells).

HGC asserts that the EIR/EIS and modeling grossly understates the project's impacts using the superposition model and that a well-calibrated model is required to evaluate the impacts. Specifically, HGC asserts that it would be preferable to use a dual density model that uses components of the older Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM) that can represent the "Marina Subarea". As discussed in Appendix E2, Section 4.1, the NMGWM^{2016} is comprised of 8 model layers and represents an approximately 149 square mile area that includes the City of Marina. The NMGWM^{2016} reasonably reproduces historical measured water levels throughout the model area, and utilizes all the recharge and discharge components from the older SVIGSM. The NMGWM^{2016} also included details to better represent hydrogeologic conditions south of the Salinas River and data collected for the test slant well project. None of this detailed information is lost when calculating the changes in water levels and groundwater flow using the NMGWM^{2016} and superposition approach. This is explained in further detail in Master Response 12, The North Marina Groundwater Model (v. 2016).

CEMEX Groundwater Model

HGC states that the modeling completed for the EIR/EIS relies on the CEMEX Model Update completed by Geosciences in 2016, and that its assumptions are unsupported and are based on the lack of available data. However, HGC does not specify the "unsupported assumptions" in the 2016 CEMEX Model Update. The NMGWM^{2016} update modified some parameter zones based on mapped geologic units associated with the dune sand, the older dune sand, and the clay zones associated with the FO-SVA. The parameter values for the modified zones are based on the 2016 CEMEX Model Update. Appendix E-2, Figure 4.6, shows a reasonable comparison between measured and model-calculated drawdown from the slant test well, and provides confidence in the updated zones and parameter values.

HGC states that the CEMEX model is too small to be used to project aquifer parameters across the NMGWM domain. The updated 2016 CEMEX model was not used to simulate regional effects. However, parameter values updated based on slant test well results were considered as part of the NMGWM^{2016} update. This is explained in EIR/EIS Appendix E2.

HGC claims that SVIGSM is inappropriately constructed in the project area and did not include boundary recharge into the Dune Sand Aquifer or the existence of the FO-SVA and cannot be used to feed realistic input into the NMGWM^{2016}. EIR/EIS Appendix E2 identifies the deficiencies of the SVIGSM, and explains how the NMGWM^{2016} was updated and superposition approach was employed to remove these deficiencies. See Master Response 12, The North Marina Groundwater Model (v. 2016), for additional discussion.

HGC incorrectly states that there is limited regional data for model construction south of the Salinas River in the vicinity of the CEMEX site and that the initial field work and aquifer testing conducted for the Test Slant Well project has provided hydrogeological data indicating conditions that were not anticipated during construction of the model such as the semi-confinement of the 180-FTE Aquifer, mounded water in the Dune Sand Aquifer, confinement of the Dune Sand Aquifer along the river, and freshwater present in the 180-FTE Aquifer at MW-5. The updated NMGWM^{2016} utilized a substantial amount of available data south of the Salinas River near the CEMEX site, and the initial field work and aquifer testing conducted for the test slant well data. See Master Response 12, The North Marina Groundwater Model (v. 2016), for additional clarification.

Surface Water Features

HGC asserts that the impact assessment of surface water losses from the Salinas River and the Tembladero Slough/Reclamation Ditch are general and compared to annual conditions, and do not consider seasonal or climatic dry periods. HGC also states that EIR/EIS conclusions regarding the potential impacts on the Salinas River and the Tembladero Slough are inconsistent with its treatment of Elkhorn Slough in EIR/EIS Chapter 5, Alternatives. As described in the EIR/EIS Appendix E2, groundwater interaction with the Salinas River and the Tembladero Slough/Reclamation Ditch is simulated using the MODFLOW River Package. The River Package was used to simulate changes in river gains and losses in response to slant well pumping. The results from the superposition calculations are essentially independent of flow conditions – unless those flow conditions are such that the Salinas River and Tembladero Slough are dry. These effects are minor relative to the large stress of slant well pumping and likely have a minimal effect on the drawdown calculations. In contrast, Elkhorn Slough was appropriately simulated using general-head boundaries based on the understanding of the subsurface lithology. The general-head boundary in the NMGWM^{2016} has a modest effect on the model-calculated cone of depression, but that effect is insignificant for making drawdown comparisons between the CEMEX and Potrero Road Sites. See Attachment 2 of Appendix E2, and Master Response 12, The North Marina Groundwater Model (v. 2016), for additional explanation.

Miscellaneous Concerns Regarding Modeling

HGC claims that the NMGWM^{2016} cannot quantify the amount of seawater or fresh groundwater that will be produced and that hydraulic conductivity values assigned in the NMGWM^{2016} are not reliable. The hydraulic conductivity values assigned in the NMGWM^{2016} are based on extensive review and analysis of available data and therefore, considered reliable. The NMGWM^{2016}, therefore, provides a reasonable representation of "real world" conditions because it is based on substantial borehole, water level, and aquifer test data.

HGC claims that based on work informed by analysis performed by GeoHydros, the proposed MPWSP would draw a substantial portion of groundwater during the first year and would significantly reduce groundwater storage within the "Marina Subarea." HGC states that the EIR/EIS must disclose the amount of groundwater that the MPWSP would deplete from the "Marina Subarea." The water extracted from any well would initially come from aquifer storage. The resulting decline in water levels (drawdown) is determined by the water transmitting and storage properties of the aquifer and changes in groundwater recharge or discharge that occurs solely as a result of that drawdown. In the situation where slant wells are employed near the ocean, that drawdown changes recharge and discharge conditions associated with the ocean, which represents a substantial source of recharge to the well. Hence, as time increases, the proportion of water extracted by the well that comes from aquifer storage diminishes substantially. See Master Response 8, Project Source water and Seawater Intrusion, for additional clarity on the MPWSP capture zone and source water. Furthermore, conclusions based on GeoHydros depletion analysis are based on a flawed application of superposition and an incorrect application of its results. See response to comments MCWD-GeoHydros, for additional information regarding the GeoHydros review of the HydroFocus modeling. Also, refer to Master Response 12, The North Marina Groundwater Model (v. 2016), and Master Response 4, The Agency Act and Return Water, and EIR/EIS Appendix E3 for information on the calculation of OWP in the MPWSP feedwater.

HGC questions the validity of the vertical hydraulic conductivity used in the $NMGWM^{2016}$ at the Potrero Road site and states that it is untested and not substantiated by production test data and is "2 orders of magnitude less than the CEMEX site estimate." HGC also states that while the horizontal hydraulic conductivity value was estimated at 2 times greater than the modeled value at the CEMEX site, the reduced vertical hydraulic conductivity indicates a confined/semi-confined condition. HGC claims that simulated aquifer parameter estimations by the $NMGWM^{2016}$ result in a reduced vertical flow from the ocean and reduced seawater infiltration, and therefore, the higher horizontal hydraulic conductivity, combined with reduced vertical flow, results in more groundwater production. Sediment texture graphs (see Figures 46 and 47 in EIR/EIS Appendix C3) suggest that the vertical hydraulic conductivity of the Dune Sand/Perched "A" Aquifer near Potrero Rd and Moss Landing range from 0.04 to 1.52 ft/d. The vertical hydraulic conductivity (K) value specified for the Model Layer 2 parameter zone that contains the Potrero Rd site (0.1602 ft/d) falls within this range. More detailed data at the Potrero Road site was not available. Additionally, the sensitivity tests reported in Appendix E2 both increased and decreased the anisotropy of this parameter zone by dividing and multiplying the vertical hydraulic conductivity value by 5. Hence, the anisotropy range included vertical hydraulic conductivity values that ranged from 0.03 to 0.8 ft/d. The "groundwater production" simulated by the model was fixed by the proposed pumping rates defined by the operating scenarios and was not determined by the modeled hydraulic conductivity values. The results of those sensitivity runs are included in Appendix E2, Figure 6.4a and 6.4b, and show that the model-calculated cone-of-depression consistently extends a smaller distance offshore relative to the portion that extends inland, thereby indicating substantially more recharge occurs from seawater infiltration than from inland groundwater. The offshore extension beneath the ocean is consistently greater than the range for results mapped for the sensitivity tests conducted on the CEMEX site.

8.5.2.3 Responses to Comments from MWCD – GeoHydros

MCWD-GH-1 EIR/EIS Appendix E2, Table 3.1 summarizes modifications that were made to the NMGWM^{2015} to improve overall model functionality and its correspondence with the conceptual model described in Appendix E2, Section 2.1; that model is herein referred to as NMGWM^{2016} and was used in the EIR/EIS analysis. As explained in EIR/EIS Appendix E2, Section 3.0, updates to the NMGWM^{2015} included adding the Fort Ord Salinas Valley Aquitard (FO-SVA), modifying aquifer parameter zones based on new boring and test slant well pumping data, and borehole and water level data available from Fort Ord documents. These changes did not "favor" the conceptualized flow, but were based on cross sections and monitoring well data points.

The NMGWM^{2016} was used to calculate changes in groundwater levels (drawdown), and to delineate the area where drawdown (cone of depression) would be 1-foot or greater in response to proposed slant well pumping. Scenarios were developed to calculate drawdown and to assess its sensitivity (uncertainty) to model input and model assumptions. Groundwater "capture zone" boundaries were delineated using NMGWM^{2016} steady-state flow condition results and particle tracking using the MODFLOW computer code post-processer MODPATH.

MCWD-GH-2 The commenter states that the "model boundaries are arbitrary and do not represent natural hydrologic divides therefore the model simulates flow across the external boundaries that cannot be verified from data." However, the NMGWM^{2016} is based on the telescopic mesh refinement approach, where the model boundaries correspond with internal portions of the regional model; the regional model boundaries are defined by the physical limits of the aquifer. Hydraulic continuity is maintained between the two models using fixed heads. Specifically, the water levels simulated by the regional model along the internal boundaries corresponding to the outer edge of the NMGWM^{2016} are extrapolated and assigned to the head-dependent flux boundaries at the outer edge of the NMGWM^{2016}. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

The model simulates flow across external boundaries which can be verified from data. The NMGWM^{2016} is bounded on the west by the Pacific Ocean, and inland the model is bounded by adjacent portions of the Salinas Valley Groundwater Basin (Appendix E2, Figure 2.3). As described in EIR/EIS Section 4.4.4.2 (see EIR/EIS Figure 4.4-12), the model includes Elkhorn Slough to Prunedale on the north side, Prunedale to south of Salinas on the east side, south of Salinas to just north of the Fort Ord Dunes State Park on the south side, and extending approximately 5 miles into Monterey Bay to coincide with the western boundary of the SVIGSM (see EIR/EIS Appendix E2 Figure 2.2) since the Dune Sands Aquifer, the 180-Foot/FTE Aquifer and the 400-Foot Aquifer daylight a few miles offshore (see EIR/EIS Appendix C2, Figure 7a). The ocean boundary is represented using specified water levels equal to sea level which is easily verifiable. The specified water levels are referred to as "constant head boundaries" because they allow the model to simulate unlimited water flow in or out of these cells to maintain constant water levels throughout the simulation.

The movement of groundwater across the inland NMGWM^{2016} boundaries is represented by "head-dependent flow boundaries" (denoted as general-head boundaries in Appendix E2, Figure 2.3). Head-dependent flow boundaries allow for water flow in or out of the model in proportion to the model-calculated water level at the boundary, a specified monthly water level external to the model boundary, and the specified subsurface water-transmitting properties. The specified external water levels at the NMGWM^{2016} head-dependent flow boundaries were extrapolated from the distribution of monthly model-calculated water levels from the SVIGSM. These boundaries can also be verified with data.

MCWD-GH-3 The NMGWM^{2015} and NMGWM^{2016} both utilized equivalent freshwater heads, which are non-zero constant head values specified in the model. See Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-4 EIR/EIS Appendix E2 Section 4.3 explains the NMGWM^{2016} was developed using the MODFLOW computer code, which does not consider variable density effects. The NMGWM^{2016} employed equivalent freshwater heads to simulate the density contrast between seawater and the underlying groundwater. Using equivalent freshwater head is a common approach to mimic the water density contrast near ocean boundaries. Equivalent freshwater heads increase the water level in constant density models to account for the greater density of seawater. Comparisons between MODFLOW calculated water level changes and calculations using a variable density flow model (SEAWAT) indicated slight differences in calculated water levels (approximately one foot). These differences exist nearest the coast, where there is a measured difference in groundwater salinity ranging from seawater to freshwater. Near the coast, and where density effects are greatest, slant well pumping will have a much greater influence on water level changes and flow than the spatial differences in salinity and water density. However, as the salinity concentration decreases with increasing distance from the coast, the differences in model calculated water levels diminish and become insignificant. The effects of variable density flow on NMGWM^{2016} model results were therefore, considered negligible, and a dual density model is not necessary. See also response to comment MCWD-87 and Master Response 12, The North Marina Groundwater Model (v. 2016).

EIR/EIS Appendix E2 Section 5.3 explains that slant well pumping effects on the inland movement of saltwater was assessed using the NMGWM2016 and MODPATH. Particles were placed along the edge of the inferred 2013 seawater intrusion front in the 180-FT Aquifer (Model Layer 4) and 400-FT Aquifer (Model Layer 6), as reported by MCWRA. Forward particle-tracking was then employed to show the change in front location after 63 years of slant well pumping. Without slant well pumping, the particles representing saltwater would continue to migrate inland. With slant well pumping, the movement of saltwater is in response to the regional background gradient and drawdown created by slant well pumping. We therefore utilized the superposition NMGWM2016 without the regional gradient to isolate changes in saltwater movement due solely to slant well pumping. The change in particle locations initially placed at the seawater interface represent the change in saltwater location relative to its inland location due to continued background recharge, pumping and regional gradients (e.g., the acceleration or retardation of existing saltwater intrusion).

MCWD-GH-5 The NMGWM^{2016} is based on the telescopic mesh refinement approach, where a relatively coarse model grid is utilized to represent the regional groundwater system defined by the physical limits of the aquifer, and a second model having a relatively fine grid is utilized to represent a sub-region of the aquifer. Continuity between the two models is maintained using either specified heads, or fluxes. The NMGWM^{2016} is a more accurate representation of the hydrostratigraphic framework in the Fort Ord area than the NMGWM^{2015} and SVIGSM, since it includes the A-Aquifer and Fort Ord Salinas Valley Aquitard (FO-SVA). As noted in Appendix E2 Section 4.1, the discrepancies in model-calculated water levels in Model Layer 2 are attributed primarily to deficiencies in SVIGSM initial water levels specified at the NMGWM^{2016} boundaries rather than the hydrostratigraphy represented by the model. The discrepancy in initial water levels that was introduced by SVIGSM and other problems inherited from the SVIGSM were removed by the use of superposition, and have no effect on superposition model results and simulation of the drawdown effects of slant well pumping. Errors in the vertical gradients between model-calculated water levels are attributed to limitations in MODFLOW's ability to simulate perched conditions. For more information, see Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-6 EIR/EIS Appendix E2, Section 4.0, documents that the NMGWM^{2016} utilized calibration wells in all four aquifers, and the NMGWM^{2016} reasonably represents the magnitudes, seasonal trends, and longer term trends in the measured water levels (see Appendix E2, Figures 4.1a and 4.1b). The NMGWM^{2016} recharge and pumping input files from the History Matching Assessment (see EIR/EIS Appendix E2, Section 4.1) include the historical river losses and gains due to the hydraulic interactions between groundwater, the Salinas River, and Tembladero Slough. In order to account for the changes in river gains and losses, the NMGWM^{2016} was modified as explained in EIR/EIS Appendix E2 Section 5.3. But the GeoHydros approach failed to account for these changes in groundwater-surface water interactions, and therefore, failed to account for the surface water losses that occur in response to the new pumping stress introduced by the slant wells. Therefore, the drawdown calculated by the GeoHydros approach is greater than reported in Appendix E2 and Figures 6-9 provided by the comment are not correct. Hence, the NMGWM^{2016} yields plausible hydraulic conditions in all four aquifers and the GeoHydros results are flawed and therefore, not credible for assessing the adequacy of the NMGWM^{2016} and the superposition approach. See Master Response 12, The North Marina Groundwater Model (v. 2016) and EIR/EIS Appendix E3.

MCWD-GH-7 Model Layer 2 (Dune Sand Aquifer) is not dry at the start of the simulation; therefore, it is “present.” As identified in EIR/EIS Appendix E2, the initial heads inherited from the SVIGSM are too low in Model Layer 2. However, Model Layer 2 water levels increase to appropriate levels by the end of the calibration run, confirming the water storage and transmitting properties are reasonable. The superposition modeling approach utilizes the same water transmitting properties as the calibrated NMGWM^{2016}. For more information, see Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-8 See response to comment MCWD-GH-1. The NMGWM^{2015} did not include the FO-SVA, where in the real world, localized perching in the A-Aquifer (Model Layer 2 in the Fort Ord vicinity) can exist. Therefore, it is not unexpected for the simulated groundwater surfaces in Model Layer 2 to be different between NMGWM^{2015} and NMGWM^{2016}, otherwise there would be no reason to refine the modeled stratigraphy in this portion of the model. By the end of the historical model run, there is a mound beneath the Fort Ord area that slowly flattens into the CEMEX area. Groundwater-level contours generated from the A-Aquifer Fort Ord monitoring wells show similar mounding and gradients. The water levels inherited from the SVIGSM and specified for the southern-most general head boundary conditions are too low, and were removed for the slant well analysis using the method of superposition. For more information, see Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-9 The 400-Foot and 900-Foot/Deep Aquifers are hundreds of feet below the bottom of the ocean, and therefore, eastward (inland) groundwater movement in offshore portions of these aquifers is not derived in part from groundwater in storage and not directly from ocean water recharge. Groundwater also flows into the model from north and south inland areas, and an eastward gradient does not indicate that all inland freshwater has been replaced by saltwater. Appendix E2, Figure 4.1b, shows that the NMGWM^{2016}-calculated water levels generally agree with measured water levels in Model Layer 6 (400-Foot Aquifer) and Model Layer 8 (900-Foot/Deep Aquifer). Since these wells measure real world conditions, and model-calculated water levels generally agree with the real world, the model provides an adequate representation of measured water levels, gradient and direction. Using the model-calculated gradients and an estimated porosity of 0.1 for the 400-Foot and 900-Foot/Deep Aquifers, the calculated representative flow velocities are low and indicate a slow inland advancement of the submarine groundwater. For example, after 32 years the model-calculated submarine groundwater would advance a maximum of only 3,500 feet. Moreover, saltwater intrusion is a dynamic process, and although it has been occurring for decades in the basin, the intrusion process has not likely occurred uniformly in all aquifers. There are several examples from the scientific literature that describe the non-homogeneous nature of sea-water intrusion (e.g., Werner et al., 2013; Nishikawa et al., 2009; and Venhuizen, K.D., 1991).

MCWD-GH-10 The evaluation of model error described in Appendix E2 Section 4.1, utilized six (6) tests, and the tests are widely used and accepted within the groundwater modeling community. The decision to accept or reject a model depends in part on its performance under these multiple tests and also the intended application for which the model was created. A valid error comparison between two models must utilize the same wells and water level data. When the same wells and water level data are utilized, the summary of error statistics shows that the NMGWM^{2016} performance is superior to the NMGWM^{2015}. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

MCWD-GH-11 The Root Mean Square Error, or RMSE, of 30.2 feet in Model Layer 2 (see Appendix E2, Figure 4.3b) included the results from two Fort Ord wells that appear to be affected by perched conditions. As stated in Appendix E2, Section 4.1, "Errors at this model location are attributed to limitations in MODFLOW and its inability to simulate steep vertical gradients and perched conditions. This limitation appears to be localized, and model performance is acceptable in other portions of the Fort Ord Area where the vertical gradients are less steep." When these wells are excluded, the RMSE for Model Layer 2 becomes 10.1 feet.

A valid error comparison between two models must utilize the same wells and water level data. When properly conducted, RMSE comparisons indicate that the

NMGWM^{2016} is an improvement relative to the NMGWM^{2015}. Model performance improves in part because the NMGWM^{2016} is a more accurate representation of the hydrostratigraphic framework in the Fort Ord area than the NMGWM^{2015} and SVIGSM. The NMGWM^{2016} includes the A-Aquifer and the FO-SVA.

Problematic boundary and initial conditions were identified in Appendix E2 and their influence was removed by using the method of superposition. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-12 The errors at a specific location in the Fort Ord area are localized and model performance is acceptable in other parts of the Fort Ord area. Figure 4.1a in Appendix E2 confirms that the NMGWM^{2016} reasonably simulates water level changes in the Layer 2. The hydraulic conductivity values in the Fort Ord area fall within the range of reported values from multiple sources, including reported values from Fort Ord Area studies (see Appendix E2, Figure 3.3). This includes over 25 horizontal hydraulic conductivity estimates for the A-Aquifer (Model Layer 2) and six (6) vertical hydraulic conductivity values for the FO-SVA (Model Layer 3).

MCWD-GH-13 When employing a model to predict future conditions, the parameter sensitivity analysis identifies the hydraulic conductivity and storativity values that have the most influence on the predicted water level changes (parameter prediction sensitivity). Because the proposed project pumping would be an entirely new stress, the most sensitive prediction parameters are not necessarily going to be the same as the most sensitive calibration parameters (most often they are not). Hence, the prediction parameter sensitivity results provide little to no information about the reliability of the model calibration. The range of values employed for the sensitivity analysis provided conservative estimates of the possible range in model-calculated drawdown by slant well pumping, and the results provide little to no information about model calibration reliability. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-14 The historical model-calculated water budget (Appendix E2, Figure 4.5) shows that there is inflow into the model across the south boundary. The superposition approach sets the specified water levels at the boundaries to zero and calculates the change in inflow as a result of slant well pumping. Therefore, the relative differences in inflow from the northern, eastern, and southern boundaries are due entirely to the modeled water transmitting and storage properties of the aquifer materials and the new stress (slant well pumping). Model-calculated inflow in Model Layer 2 along the southern boundary is most influenced by the conductivity values for the A-Aquifer, which was specified based on reported values from other studies in the Fort Ord area (see Appendix E2, Figure 3.3). See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-15 The NMGWM^{2016} was employed to calculate the water level decline (drawdown) in response to proposed project pumping, and was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The error introduced by the constant groundwater density assumption is relatively small because pumping has a much greater influence on water level changes (drawdown) than spatial differences in water density. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-16 The superposition method increases confidence in the predictions relative to previous modeling efforts. A key advantage of the superposition approach is the simulation of effects of one stress when other stresses are not well quantified. In this case, pumping and recharge are not well quantified for the Salinas Valley Groundwater Basin, and future climate, pumping, and recharge are predicted with even less accuracy. Thus, superposition is a superior approach compared to attempts at calibrating a regional model because the simulation of these unquantified stresses is unnecessary and the superposition approach can provide reliable information about the effects solely due to pumping. See response to comment MCWD-GH-17, and Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-17

(1) Superposition modeling does not preclude evaluation of changes to the water budget associated with the proposed pumping. As explained in EIR/EIS Appendix E2, Section 4.1, the computer code ZONEBUDGET was used to extract model simulated volumetric fluxes; monthly fluxes are summarized and reported as average annual water budget components for 1979-2011 in Figure 4.5. The water budget components from superposition modeling represent the net change in inflow and outflow of water within the boundaries and at the edges of the NMGWM^{2016}.

(2) Model-calculated drawdown due to slant-well pumping can be compared to measured drawdown to validate model predictions. EIR/EIS Appendix E2, Figure 4.6, shows measured vs. model calibrated drawdown in CEMEX monitoring wells during slant well pumping.

(3) The calibrated NMGWM^{2016} contains deficiencies in initial water levels, specified recharge and pumping, and boundary conditions that limit it from effectively performing and providing the information necessary for evaluation of this project. See response to comment MCWD-GH-5

(4) Appendix E2 Section 3.0 describes necessary revisions to the Geoscience model (NMGWM^{2015}) to improve agreement with existing information. Those improvements include modified aquifer parameter values, layering, and an update to the conceptual model in the Fort Ord area. Therefore, the

Geosciences model was not the best option for this analysis since it does not represent the most up-to-date conceptual model.

(5) The drawdown from proposed slant well pumping can be isolated by subtracting two model runs, one run with the new stress and a second run without the stress, or directly using superposition. For example, in their report to Marina Coast Water District, GeoHydros employed the superposition method to isolate the model-calculated drawdown due to slant well pumping using the NMGWM^{2016}. If correctly implemented, the results from the two approaches must be identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, GeoHydros employed the theory of superposition, but chose to use the approach of subtracting two model runs to isolate the drawdown due solely to the proposed slant well pumping rather than calculate it directly using a superposition model as reported in Appendix E2. If correctly implemented, the results from the two approaches would be identical. But the flawed results are different from the results reported in EIR/EIS Appendix E2; see response to comment MCWD-GH-6.

MCWD-GH-18 The NMGWM^{2016} results are reliable because the superposition method resolves discrepancies with the boundary conditions, and the drawdown due to proposed pumping is determined primarily by the water transmitting and storage properties of the aquifer sediments. However, the GeoHydros analysis referenced in the comment was not conducted correctly; see response to comment MCWD-GH-6.

MCWD-GH-19 These results are generally consistent with the superposition model showing drawdown in Model Layers 2, 4, and 6 but none in Model Layer 8. See EIR/EIS Appendix E2, Figures 5.3 and 5.4.

MCWD-GH-20 Figures 18-21 provided in the comment are results from the method of superposition. However, the mapped changes are calculated by subtracting two model runs rather than calculating them directly as was done in EIR/EIS Appendix E2. If correctly implemented, the results from the two approaches must be identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, the analysis reflected in Figure 18-21 was not conducted correctly; see response to comment MCWD-GH-6. Therefore, the flawed results are different from the results reported in Appendix E2. EIR/EIS Appendix E2, Figures 5.3 and 5.4, shows that Model Layer 8 (the 900-FT aquifer) has less than one foot of drawdown. See Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-21 The water budget results are from the method of superposition. However, the changes are calculated by subtracting two model runs rather than calculating them directly; if correctly implemented, the results from the two approaches must be identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, the analysis employed by the commenter to develop the water budget numbers was not conducted correctly; see response to comment MCWD-GH-6. Furthermore, the method 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 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. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-22 When properly conducted using the same well dataset, RMSE comparisons indicate that the NMGWM^{2016} is an improvement relative to the NMGWM^{2015}. Additionally, the use of equivalent freshwater heads had negligible effect on the history matching results and model calibration. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-23 A valid error comparison between two models must utilize the same wells and water level data. When the same wells and water level data are utilized, the summary of error statistics shows that the NMGWM^{2016} performance is superior to the NMGWM^{2015}. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-24 Hydraulic conductivity values used in the NMGWM^{2016} are within the referenced range of measured values for each stratigraphic unit (see Appendix E2, Figures 3.3a and 3.3b). Additionally, Appendix E2, Figure 4.6, indicates good agreement between measured and model calibrated drawdown in Dune Sand during test slant well pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-25 See response to comment MCWD-GH-9.

MCWD-GH-26 The NMGWM^{2016} was employed to calculate the water level decline (drawdown) in response to proposed project pumping. The NMGWM^{2016} was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The model was also utilized to provide insight into the change in groundwater-flow directions in response to pumping, from which changes in the extent of saltwater intrusion are inferred (see EIR/EIS Appendix E2, Section 5.3, Saltwater Intrusion).

MCWD-GH-27 The NMGWM^{2016} employed equivalent freshwater heads to simulate the density contrast between seawater and the underlying groundwater. The use of equivalent freshwater heads had negligible effect on the model calibration. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more information.

MCWD-GH-28 See response to comment MCWD-GH-15.

MCWD-GH-29 See response to comment MCWD-GH-5.

MCWD-GH-30 Superposition modeling is appropriate for this evaluation because:

(1) The NMGWM^{2016} was employed to calculate the water level decline (drawdown) in response to proposed project pumping, and was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. Furthermore, identification of source water contributions to the proposed extractions is not essential for estimating effects on groundwater levels. Appendix E2, Figures 5.6 and 5.12 show the oceanic capture zones from slant well pumping, which identifies the areas of groundwater captured from proposed slant well pumping using the NMGWM^{2016}. See also Master Response 8, Project Source Water and Seawater Intrusion, including Figures 8.2.8-1, 8.2.8-2 and 8.2.8-3.

(2) Model-calculated drawdown due to slant-well pumping can be compared to measured drawdown to validate model predictions. EIR/EIS Appendix E2, Figure 4.6, shows measured vs. model calibrated drawdown in CEMEX monitoring wells during slant well pumping.

(3) The NMGWM^{2016} results are reliable because superposition method resolves discrepancies with the boundary conditions, and the drawdown due to proposed pumping is determined primarily by the water transmitting and storage properties of the aquifer sediments.

(4) The drawdown from proposed slant well pumping can be isolated by subtracting two model runs, one run with the new stress and a second run without the stress, or directly using superposition. For example, in their report to Marina Coast Water District, GeoHydros employed the superposition method to isolate the model-calculated drawdown due to slant well pumping using the NMGWM^{2016}. If correctly implemented, the results from the two approaches must be identical, as was shown by the example problem in Attachment 1 to Appendix E2. However, the GeoHydros analysis was not conducted correctly; see response to comment MCWD-GH-6.

MCWD-GH-31 See response to comment MCWD-GH-21.

MCWD-GH-32 These predicted drawdowns provided in the comment are generally similar to those calculated by superposition and shown in Appendix E2, Figures 5.2, 5.3, 5.4, and 5.8. The results are not identical because the analysis conducted by the commenter and described above is flawed; see response to comment MCWD-GH-6.

MCWD-GH-33 See response to comment MCWD-GH-15. Extreme values do not indicate that the values used in the calibrated model are wrong nor does this sensitivity testing provide any support for the importance of achieving better calibration. See Master Response 12, The North Marina Groundwater Model (v. 2016), for more details.

MCWD-GH-34 The NMGWM^{2016} was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater, and the pumping stress and aquifer properties have a much larger effect on the model-calculated drawdown than variations in water quality and density. For more information, see Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-GH-35 Scientific support for the simulation of the MPWSP's groundwater impacts has been documented thoroughly in EIR/EIS Appendix E2. Specifically:

- Appendix E2 summarizes and provides extensive technical detail about the NMGWM^{2016} in relation to the hydrogeology, model construction, assessment of model inputs and output, revisions to the NMGWM^{2015} and its application to calculate drawdown using superposition.
- Model inputs are based on thorough scientific review of available data.
- The applicability of the equivalent fresh-water heads is well documented in Appendix E2, Master Response 12, and the scientific literature.
- Comparisons between MODFLOW (constant density model) calculated water level changes and calculations using SEAWAT (variable density model) indicated slight differences in calculated water levels.
- The model adequately simulates measured water levels and seasonal trends, which demonstrates scientific validity.
- The model adequately simulates measured drawdown in response to test slant well pumping, which demonstrates its scientific validity.
- RMSE comparisons and evaluation of other model performance criteria demonstrate that the NMGWM^{2016} is an improvement relative to the NMGWM^{2015} and model errors and uncertainty minimally influence model output.

- The use of sensitivity analysis to provide a range of water-level drawdown is well documented and based on extensive data for hydraulic conductivity.
- The use of superposition is well documented in the scientific literature and, as explained in EIR/EIS Appendix E2, is a logical and technically valid approach for determining the effects of slant-well pumping. It also overcomes the influence of deficiencies in quantifying initial conditions, pumping and recharge inherent in the SVGSM. The superposition approach provides substantial benefit in terms of reliability over the calibrated version of the model.

In contrast, GeoHydros' comments were based on their flawed application of superposition and therefore, a lack of scientific validity. Specifically, GeoHydros employed the theory of superposition, and chose to use the approach of subtracting two model runs to isolate the drawdown due solely to the proposed slant well pumping rather than calculate it directly using a superposition model as reported in Appendix E2. If correctly implemented, the results from the two approaches would be identical. But the GeoHydros analysis was not conducted correctly since it did not account for changes in groundwater-surface water interactions; see response to comment MCWD-GH-6.

8.5.2.4 Responses to Comments from MWCD – EKI

MCWD-EKI-1 EIR/EIS Section 2.6 examines whether, based upon the evidence currently available, the CPUC could conclude that there is a sufficient degree of likelihood that CalAm will possess rights to the water that would supply the desalination plant such that the proposed project can be deemed to be feasible. By letter dated September 26, 2012, the CPUC asked the SWRCB to assist the CPUC, and issue an opinion as to whether CalAm has a credible legal claim to the supply water for the MPWSP. The SWRCB carefully considered the then-available facts and evidence concerning the MPWSP, prepared a draft report on water rights, circulated that draft for public comments and ultimately issued its July 31, 2013, Final Review of CalAm's MPWSP (Report). The Report is attached to this EIR/EIS as Appendix B2. EIR/EIS Section 2.6 addresses the issue of *harm and injury* and CalAm's water rights, as they apply to the proposed MPWSP. See also Master Response 3, Water Rights.

As discussed in EIR/EIS Section 4.4.4.3, the SWRCB evaluation of the proposed project was considered as guidance for the analysis of groundwater impacts because it elucidates and provides context for the nexus between the thresholds of significance used in this section and recommendations and considerations of the SWRCB relative to water rights. Section 4.4.5.2 explains the feedwater for the proposed MPWSP slant wells would be drawn from a capture zone adjacent to the coast where the groundwater has been documented to far exceed the 3,000 mg/L Total Dissolved Solids (TDS) threshold that the SWRCB identifies in its Resolution No. 88-63, discussed below. The MPWSP slant wells would not draw groundwater from inland sources into the capture zone, and thus would not encroach on beneficial groundwater sources or on supplies of other users.

MCWD-EKI-2 See response to MCWD-EKI-1 regarding water rights and SWRCB compliance. EIR/EIS Section 4.4.5.2 concluded that the proposed MPWSP would not violate or degrade groundwater quality in the Dune Sand Aquifer or the 180-FTE Aquifer. The conclusion was based on the understanding that the existing groundwater quality near the proposed MPWSP slant well pumping is highly brackish to saline. See also Master Response 8, Project Source Water and Seawater Intrusion. SWRCB Resolution No. 88-63 (Appendix A-9 of the Water Quality Control Plan for the Central Coastal Basin [Basin Plan]) resolves that "[a]ll surface and groundwater of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of: *Surface and groundwater where the total dissolved solids exceed 3,000 mg/l and it is not reasonably expected by Regional Boards to supply a public water system*" *(*emphasis added). The groundwater underlying the capture zone of the proposed MPWSP slant wells is: 1) an order of magnitude more brackish (23,400 mg/L to 30,900 mg/L) than the Basin Plan threshold; 2) does not currently support a public water system or individual users, and; 3) other than its potential use for desalination, would not be reasonably expected to supply a public water system. As discussed in EIR/EIS Section 4.4.5.2, while the groundwater in the projected MPWSP capture zone may become more saline because of MPWSP pumping (seawater would eventually replace the ambient highly brackish water), it would not degrade a groundwater source considered by the SWRCB to be a suitable municipal or domestic water supply under the Basin Plan. The proposed MPWSP slant well pumping water quality effects would be confined to a localized capture zone that would not extend inland from the coast or draw less brackish groundwater from inland regions of the Dune Sand and 180-FTE Aquifer, as explained further below and in Master Response 8, Project Source Water and Seawater Intrusion.

MCWD-EKI-3 CalAm constructed eight monitoring well clusters and operated and monitored a test slant well to evaluate and characterize the groundwater response and the water quality changes from the test slant well and the proposed MPWSP slant well pumping. These wells adequately represent the MPWSP area of groundwater influence as they include the capture zone and projected cone of depression. The groundwater investigative work and findings are described in the EIR/EIS, Section 4.4.4 and Appendix E3, Hydrogeologic Investigation Technical Report. The 300 plus Fort Ord wells mentioned in the comment are located inland of the MPWSP area of influence and capture zone, and are completed in a perched/mounded aquifer that is not hydraulically connection to the Dune Sand Aquifer. Therefore, analysis of water quality data from these wells was not necessary for the environmental setting in the EIR/EIS and it does not represent a data gap in the analysis. However, the Fort

Ord area monitoring well data were incorporated into the analysis presented in the EIR/EIS analysis through refinements to the North Marina Groundwater Model, version 2016 ($NMGWM^{2016}$), a key tool used to analyze the environmental impacts of the MPWSP on groundwater resources. The refinements to the $NMGWM^{2016}$ included additional water level calibration points from the CEMEX and Fort Ord areas; see EIR/EIS Appendix E2, Section 3, including Table 3.1. Additionally, aquifer parameter zones were added and refined to include the former Fort Ord area wells. The $NMGWM^{2016}$ was improved by making adjustments to the water transmitting and storage properties in the coastal parameter zones and by modifying the conceptual geologic framework in the Fort Ord Area (see Master Response 12, The North Marina Groundwater Model, (v.2016)). Groundwater contour maps using Dune Sand and 180-FTE Aquifer groundwater elevations from the eight CalAm monitoring well clusters and the Fort Ord area wells were developed and presented to assess the regional groundwater conditions. These contour maps are presented in EIR/EIS Appendix E3.

Baseline groundwater elevations and water quality data have been gathered continuously from the monitoring wells and test slant well since early 2015; see Master Response 11, CalAm Test Slant Well, Section 8.2.11.4. The baseline data collected was adequate to inform the $NMGWM^{2016}$ and the EIR/EIS analysis of potential groundwater resource impacts. Please refer to response to comment MCWD-97 regarding establishing water level and water quality baseline data.

The comment asserts that the $NMGWM^{2016}$ does not accurately characterize baseline water level conditions in the Dune Sand and 180-FTE aquifer zones due to limited information included in the EIR/EIS for this area and extremely poor model calibration results that are reported for the Dune Sand Aquifer. It should be noted that Model Layer 2 of the $NMGWM^{2016}$ represents the shallow water-bearing sediments referred to as “Dune Sand Aquifer,” “A-Aquifer,” “Perched Aquifer,” “Perched ‘A’ Aquifer,” “35-Foot Aquifer,” and “-2-foot Aquifer.” Similarly, Model Layer 4 represents the “180-foot Aquifer,” “180-foot Equivalent Aquifer,” “Upper and Lower 180-foot Aquifer,” and “Pressure 180-foot Aquifer.” The geographic and hydrogeologic characteristics of these water bearing units are not equivalent. It is therefore, erroneous to use model results for an entire model layer to make global conclusions regarding one of these units, such as the Dune Sand Aquifer.

In response to the assertion of poor $NMGWM^{2016}$ calibration, it is important to note that the Root Mean Square Error (RMSE) of 30.2 feet in Model Layer 2 included the results from two Fort Ord wells that appear to be affected by perched conditions; see EIR/EIS Appendix E2, Figure 4.3b. As stated in EIR/EIS Appendix E2, “Errors at this model location are attributed to limitations in MODFLOW and its inability to simulate steep vertical gradients and perched conditions. This limitation appears to be localized, and model performance is acceptable in other portions of the Fort Ord Area where the vertical gradients are less steep.” When these wells are excluded, the

RMSE for Model Layer 2 becomes an acceptable 10.1 feet. Furthermore, Dune Sand Aquifer monitoring well data collected during test slant well pumping was available and utilized to adjust aquifer parameter zones and parameter values in Model Layer 2 and Model Layer 4 (see EIR/EIS Appendix E2, Section 3.2, Aquifer Parameter Zones). Appendix E2, Figure 4.6 shows generally good agreement between the model-calculated and measured timing of water level drawdown and recovery in Dune Sand Aquifer monitoring wells, and demonstrates that the model can be employed to reliably project water level drawdown in the CEMEX area in response to proposed slant well pumping. See Master Response 12, The North Marina Groundwater Model (v. 2016), for additional information.

MCWD-EKI-3.1 Contrary to the assertion in the comment, the hydrogeologic conditions in the Dune Sand Aquifer and the 180-FTE/180-Foot Aquifer are supported by a comprehensive hydrogeologic conceptual model that is verified by nearly two years of test slant well pumping and baseline groundwater level and quality monitoring. Groundwater conditions presented in the EIR/EIS were based on the eight MPWSP monitoring well clusters and other private production wells located east of CEMEX (i.e., wells owned by the MRWPCA, Monterey Landfill and Bill Bailee, see EIR/EIS Table 4.4-10). However, prior to the completion of the MPWSP monitoring wells, there were only a few existing wells near CEMEX due to seawater intrusion along the coast, and therefore, scant historical groundwater level and hydraulic gradient data were available for this area. The MPWSP monitoring well network supplements the available groundwater data and provides a basis for groundwater flow and gradient mapping. The 300 plus Fort Ord wells mentioned in this comment and comment MCWD-EKI-3, above, are located south and outside of the MPWSP area of influence (shown in EIR/EIS Figures 4.4-14 through 16). While these wells provided data for the refinement of the NMGWM^{2016}, they are beyond the area of MPWSP influence and would not be affected by the MPWSP slant well pumping. This is especially the case for the Fort Ord wells completed in the upper perched/mounded aquifer, which is not hydraulically connected to the Dune Sand Aquifer. Groundwater contouring, based on fall and spring 2015 data, for the Fort Ord perched/mounded aquifer, the Dune Sand Aquifer, and the 180 FTE/180-foot Aquifer, and the 400-Foot Aquifer are shown in EIR/EIS Appendix E3 [Technical Memorandum (TM-2)].

Contrary to the comment, the groundwater contouring provided in TM-2 (see EIR/EIS Appendix E3) does not "further complicate or obscure the continuity of groundwater flow;" rather, it correctly distinguishes the aquifer zones that are in hydraulic connection and describes the groundwater flow and hydraulic gradients based on available data. As discussed in the EIR/EIS Appendix E3, the Dune Sand Aquifer is in hydraulic connection with the -2-Foot Aquifer at the Monterey Peninsula Landfill and Perched "A" Aquifer in the Salinas Valley. These are separate and disconnected from the shallow perched/mounded aquifers that exist at the location of CalAm monitoring well MW-5S(P), the 35-Foot Aquifer in the

Monterey Peninsula Landfill area, and the A-Aquifer in the Fort Ord Area, which flows over the Fort Ord-Salinas Valley Aquitard (FO-SVA). Therefore, the contouring map provided as Figure 5 in the EKI comment letter is in error because it included the groundwater elevation in MW-5S(P), which is now understood to represent the water level in the perched/mounded aquifer (35-Foot Aquifer in the landfill area and the A-Aquifer near Fort Ord) and not the Dune Sand Aquifer represented by the shallow completions of the MPWSP monitoring wells. Using well MW-5S(P) results in an erroneous seaward (west) gradient. Furthermore, the groundwater contour maps developed by EKI shows groundwater elevation contours where there is no groundwater data to support them.

Understanding the hydrogeologic characteristics of the Dune Sand Aquifer, there are two important considerations. First, wells from the Dune Sand Aquifer (and equivalents) cannot be contoured with wells from the shallow perched/mounded aquifers to develop contour maps because these are two distinct and hydraulically disconnected aquifers. Second, the primary “connection” between the two, distinct water-bearing zones is that the areal extent of the shallow perched/mounded aquifers, including the A-Aquifer underlying Fort Ord, is limited, which results in perched/mounded water flowing over the edge of the perching clay layer (similar to a waterfall) into the underlying Dune Sand Aquifer (and equivalents) or 180-FTE Aquifer. The edge of the perched clay layer occurs about 1.5 miles inland of the ocean shoreline. Please see response to the comment letter MCWD-HGC and EIR/EIS Appendix E3, Section 2.4.5.2, for additional clarification regarding the hydrogeologic connection of the Dune Sand Aquifer, the 180-FTE Aquifer, and the shallow perched/mounded aquifer.

The comment appears to support the theory that the fresh groundwater that waterfalls (also described as “U-turns”) and enters the Dune Sand Aquifer and/or 180-Foot Aquifer protects these water bearing units from seawater intrusion. However, the flows from the shallow perched/mounded aquifers are limited in quantity and it is unlikely that these flows have created the barrier to seawater intrusion because monitoring well data have shown that seawater intrusion has continued to migrate inland for the last several decades regardless of these perched flows. However, whether or not this natural process is an actual barrier to seawater intrusion is no consequence to the proposed MPWSP because the slant well capture zone would be located 1.5 miles to the west at the coast, and would not encroach on this natural process, thereby allowing it to continue into the future unimpeded after onset of MPWSP pumping.

MCWD-EKI-3.2 A detailed discussion of the local groundwater chemistry and purported fresh water zones in the Dune Sand and 180-FTE aquifer is provided in response to comment MCWD-HGC. There is adequate evidence to verify that the groundwater underlying the CEMEX site and further inland has been impacted by seawater intrusion for decades. EIR/EIS Section 4.4.1.4 references the MCWRA monitoring data that have been collected through an ongoing program for decades and was considered a reasonable benchmark to assess regional groundwater quality for the impact analysis in the EIR/EIS. See EIR/EIS Figures 4.4-10 and 4.4-11.

The monitoring wells installed by CalAm to support the MPWSP, and the Monterey Peninsula Landfill supply wells sampled as part of CalAm's program, also confirm the presence of seawater intrusion inland of the coast. Monitoring wells at the CEMEX site where the MPWSP slant wells would be drawing source water is considered highly brackish to saline while samples from monitoring wells inland of the capture zone indicate brackish water (considered for the purposes of this analysis to range between 500 mg/L to 33,500 mg/L TDS).

The comment attempts to draw a connection between length of monitoring well screens and depth of lower and higher salinity in the monitoring wells. The comment states that TDS concentrations detected in wells with long screen intervals, such as those constructed by CalAm for the MPWSP, likely reflect a mix of lower salinity (fresh) water from the upper portions of the 180-FTE Aquifer and more saline water from the deeper portion of the aquifer. The comment concludes that data from these wells is difficult to interpret and inadequate for characterizing salinity within the upper portions of the 180-FTE Aquifer.

It is first worth noting that the CalAm monitoring wells were constructed as clustered wells where each of the three wells in the cluster represents and monitors a distinct groundwater zone: the Dune Sand Aquifer (S), the 180-FTE Aquifer (M), and the 400-Foot Aquifer (D). Because of this, these wells were not constructed with particularly long screens; well screens in most of the CalAm monitoring wells range from 30 to 90 feet. The exception is MW-5M with a well screen of 210 feet (this is the only CalAm well cited by EKI in the comment).

As discussed in response to comment MCWD-HGC, the relatively low to moderate salinity measured at MW-5M is likely due to: 1) the relatively long screen interval that extends up to shallower elevations; 2) ambient groundwater inflow (with lower TDS) through the shallower screened section to lower portions of the monitoring well screen; and 3) typical seawater intrusion wedge, which results in denser seawater concentrations in the lower portion of the aquifer zone. Alternatively, the lower salinity observed at MW-5M could reflect the combined effects of inland groundwater pumping and aquifer heterogeneity.

Contrary to the comment's interpretation of TDS concentrations in the MPWSP monitoring wells, the salinity differences in the water column are more likely due to the various stages of seawater intrusion throughout the area. As evaluated and discussed in response to comment MCWD-HGC, elevated calcium and chloride levels in three of the MPWSP monitoring wells indicate early to middle stage seawater intrusion (MW-6M(L), MW-7S, and MW-7M). In other MPWSP monitoring wells screened in the Dune Sand and 180-FTE Aquifer (MW-1S,

MW-1M, MW-3S, MW-3M, MW-4S, MW-4M, MW-8S, MW-8M, MW-9S, and MW-9M), elevated sodium and chloride indicate later stage seawater intrusion. The relatively low to moderate salinity reported at well MW-6M is likely due to its proximity to the leading edge of seawater intrusion in the 180-FTE Aquifer, and the shape of the seawater intrusion wedge relative to the screened interval of MW-6M. The much higher chloride concentration (814 mg/L) in MW-6M(L), compared to the chloride concentration in MW-6M (167 mg/L), demonstrates the presence of the seawater intrusion wedge at this location. See EIR/EIS Appendix E3 for additional details.

The comments assert that not considering groundwater data from the monitoring wells in the Fort Ord Area leads to an incomplete understanding of the hydrogeologic conditions and the importance of the Dune Sand Aquifer. The wells in the Fort Ord Area monitor groundwater in the shallow perched/mounded aquifer (also referred to as the Fort Ord A-Aquifer) and not the Dune Sand Aquifer, and the connection of these two zones is described in the response to comment MCWD-EKI-3.1. To reiterate from the discussion above, the connection between the Fort Ord shallow perched/mounded aquifer zone and the Dune Sand/180-FTE Aquifers is considered to be located 1.5 miles inland from the MPWSP capture zone and thus, the MPWSP would not impact the purported barrier to seawater.

Furthermore, contrary to the assertion in the comment, the EIR/EIS does not dismiss the beneficial use and condition of the local groundwater system but does conclude that the ambient groundwater and eventual mix of seawater created in the MPWSP slant well capture zone would not harm other users, would not impact production wells, or would not degrade water quality because this groundwater currently far exceeds the 3,000 mg/L threshold set forth for suitable municipal or domestic supply by the RWQCB Basin Plan and SWRCB Resolution 88-63. See discussion in response to comment MCWD-EKI-2.

MCWD-EKI-4 The comment claims that construction and operation of the proposed project would limit recharge of fresh water from the Dune Sand Aquifer into the upper 180-FTE Aquifer, influence this natural hydraulic barrier and decrease the existing freshwater zone within a portion of MCWD's service area. These assertions are inaccurate. The comment is somewhat unclear as to where the "recharge" of fresh water from the Dune Sand Aquifer to the 180-FTE Aquifer is thought to occur but based on the previous comments, it is assumed that the comment is referring to the inland groundwater zone where groundwater from the shallow perched/mounded aquifer "waterfalls" into the Dune Sand Aquifer and/or 180-FTE Aquifer about 1.5 miles inland from the projected MPWSP capture zone; see response to comment MCWD-EKI-3.1. Since recharge from the shallow perched/mounded aquifer is occurring 1.5 miles inland from the capture zone of the MPWSP slant wells, the proposed MPWSP wells would not impact this process.

The comment asserts that the proposed MPWSP project pumping would cause brackish groundwater in the capture zone to become more saline and states that no current water quality data exists in the southern portion of these capture zones, an area close to MCWD's Service Area where non-saline water may currently exist. The projected capture zones of the proposed MPWSP slant wells are shown in Master Response 8, Project Source Water and Seawater Intrusion, Figures 8.2.8-1 and 8.2.8-2, EIR/EIS Appendix E2 Figure 5.6, and the EIR/EIS, Figure 4.4-13b.

EIR/EIS Appendix E2 presents three capture zones that were projected by the NMGWM^{2016} using estimated inland gradients of 0.0004, 0.0007, and 0.0011. Measurements of local gradients reveal that the highest gradient used in this analysis (0.0011) is more representative of the average local gradient and the 0.0007 gradient is more representative of the minimum local gradient. Therefore, the smallest capture zone shown on EIR/EIS Appendix E2 Figure 5.6 would be more typical of the capture zone created by the proposed MPWSP slant well pumping and the capture zone shown on Figures 8.2.8-1 and 8.2.8-2 can be considered worst case (or largest of the projected capture zones) because they are based on a gradient of 0.0007.

These capture zones would occupy an area that monitoring wells have identified as containing brackish water in the early to later stages of seawater intrusion, to highly brackish/saline groundwater, most with TDS concentrations exceeding 3,000 mg/L. While there may not be monitoring well data to confirm water quality in the northern and southern extremities of the projected slant well capture zones, it is reasonable to assume that similar groundwater quality exists throughout the capture zone due to its proximity to the coast. This is verified by data gathered during the Airborne Electromagnetics (AEM) survey conducted in May 2017 by Stanford University and MCWD that show a significant band of highly brackish groundwater extending inland from the coast up to 2,000 feet to include the area where the projected slant well capture zone would form. Evaluation of the data and findings from the AEM survey is provided in Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM), and EIR/EIS Appendix E3, Section 3.1.8. Considering that the capture zone under a regional gradient between 0.0007 and 0.0011 would only extend a few thousand feet into the Monterey Subbasin, additional characterization of groundwater quality to confirm the presence of seawater-intruded groundwater this close to the coast would likely not be warranted.

One central concept that appears to be misinterpreted in the comment is the relationship between the projected area of influence from the proposed MPWSP slant well pumping (also referred to as the cone of depression) and the projected slant well capture zone. The cone of depression that forms from groundwater pumping and the capture zone that provides feedwater to the slant wells are not the same. As discussed in EIR/EIS Section 4.4.4, Master Response 8, Project Source Water and Seawater Intrusion (Section 8.2.8.1) and EIR/EIS Appendix E3

(Section 3.26), the fundamental difference between the capture zone, which is supplying the water to the slant wells, and the cone of depression, which forms in response to pumping, is that the groundwater entering the slant wells would originate only from within the capture zone, while the regional gradient controls the groundwater flow beyond the capture zone. Because of this, while the area of influence (shown by the 1-foot drawdown line in EIR/EIS Figures 4.4-14 through 16) may extend inland up to 4-miles, the groundwater drawn into the slant well would only be occurring in the capture zone, which is a confined area adjacent to the coast around the slant wells, as shown in Master Response 8, Figures 8.2.8-1 and 8.2.8-2. Therefore, the assertion in the comment that the proposed project would hinder MCWD's ability to implement groundwater recharge augmentation at Armstrong Ranch is unfounded because the proposed MPWSP slant wells would not draw water from the inland sources, especially as far inland as the groundwater recharge augmentation site proposed by MCWD at Armstrong Ranch.

MCWD-EKI-5 EIR/EIS Appendix E2, North Marina Groundwater Model Review, Revision, and Implementation for Future Slant Well Pumping Scenarios, provides documentation of the groundwater modeling inputs and outputs. Appendix E2, Figure 4.1 shows measured and model-calculated water levels by model layer with corresponding well locations – gradients are readily calculated with this data. The drawdown due to proposed pumping is determined primarily by the water transmitting and storage properties of the aquifer sediments. There is ample documentation in Appendix E2, Section 3 of hydraulic conductivity values, storativity (Figure 3.3 provides values and sources of parameter values), and boundary conditions. Appendix E2 Section 5.0 shows by way of particle tracking, the projected groundwater flow paths after project implementation. See also Master Response 12, The North Marina Groundwater Model (v. 2016), for further clarification on NMGWM^{2016} construction, calibration and output.

Superposition modeling provides estimates of changes in flow direction and groundwater levels due to slant well pumping. The superposition method is routinely employed for solving complex problems and is useful in saving time and effort and eliminating uncertainty. Its usefulness is well documented in the peer-reviewed literature (see Master Response 12, Section 8.2.12.4 "Superposition"). Because superposition isolates the drawdown directly, it does not "obscure model deficiencies." In fact, rather than provide results obscured by other factors that cannot be predicted, such as future climatic conditions and water use practices, superposition provides the results directly.

The changes calculated with superposition are additive to future changes that occur as the net result of all other factors like climate, background pumping, background recharge, and land use changes that cannot be predicted with certainty. Accordingly, validating the future drawdown calculated by the superposition modeling approach, which corresponds to validating the change in future water levels due solely to proposed project pumping, is in practical terms less difficult than validating model projections that include the additional complexity of assumed climate, water use, and land use changes which are not known with certainty. See Appendix E2, Section 4.2, Test Slant Well Pumping, for an example where real-world monitoring data is utilized to compare measured drawdown with the drawdown calculated with the superposition model.

The NMGWM^{2016} was employed to calculate the water level decline (drawdown) in response to proposed project pumping, and was not constructed or employed to calculate changes in water quality and water density due to the mixing of ocean water and groundwater. The error introduced by the constant groundwater density assumption is relatively small because pumping has a much greater influence on water level changes (drawdown) than spatial differences in water density. See Master Response 12 for more details.

MCWD-EKI-6 Contrary to the statement in the comment, the EIR/EIS does not conclude that the proposed MPWSP slant wells would draw water from the Dune Sand Aquifer and 180-FTE Aquifer 1.5 to 4.5 miles inland. The maximum (worst case) projected influence from slant well pumping would result in a 1-foot drawdown in the 180-FTE Aquifer up to 4 miles inland under the 0 percent return water scenario and current sea level rise. As stated in the response to comment MCWD-EKI-4, groundwater and seawater would only be drawn into the MPWSP slant wells from within the capture zone adjacent to the coast, which would eventually be recharged by seawater. The slant wells would not have an influence on inland groundwater sources beyond the eastern extent of the capture zone.

The EIR/EIS does not dismiss the beneficial uses of the groundwater in the Dune Sand and 180-FTE Aquifer but it does conclude that the groundwater that would be drawn from the capture zone of the slant wells would be a highly brackish to saline mix of groundwater and seawater that far exceeds the SWRCB threshold (3000 mg/L TDS) for groundwater that is considered suitable or potentially suitable for municipal or domestic water supply.

The EIR/EIS concluded that there would be no significant environmental impacts on groundwater resources from the proposed MPWSP slant well pumping, and therefore, no mitigation was necessary. Contrary to the comment, there is no evidence that the MPWSP would harm MCWD's water rights (see EIR/EIS Section 2.6, and Master Response 3, Water Rights, Section 8.2.3.7) or preclude MCWD from utilizing the Dune Sand Aquifer for storage and augmentation at Armstrong Ranch. However, as an Applicant-Proposed Measure (see EIR/EIS, Section 4.4.4.5, Applicant-Proposed Measure 4.4-3), CalAm would work with MCWRA to expand the existing regional groundwater monitoring program to include new and existing private wells through a voluntary monitoring program in the area where groundwater elevations are anticipated to decrease by 1 foot or more. CalAm has proposed returning water to the basin not as a mitigation measure needed to reduce groundwater impacts; rather, the return water would ensure that the proposed project remains in compliance with the Agency Act. This is discussed in detail in Master Response 4, The Agency Act and Return Water, Sections 8.2.4.1 and 8.2.4.2.

MCWD-EKI-7 Contrary to the comment, the EIR/EIS demonstrates that the proposed MPWSP would not harm or cause injury to other basin users. However, as discussed in EIR/EIS Applicant Proposed Measure 4.4-3, CalAm would work with MCWRA to fund and develop a groundwater monitoring and reporting program that expands the current regional groundwater monitoring network to include the area near the proposed slant wells. As noted in response to comment MCWD-EKI-4, data gathered during the AEM survey conducted in May 2017 verifies that the baseline water quality conditions in the Dune Sand and 180-FTE aquifers include a significant band of highly brackish groundwater extending inland from the coast up to 2,000 feet to include the area of the projected slant well capture zone. Installation of new monitoring wells at appropriate locations near the boundary of the MPWSP area of influence would complement the existing monitoring well network, which would monitor drawdown due to the MPWSP pumping throughout the life of the project.

See response to comment MCWD-EKI-7; groundwater and seawater would only be drawn into the MPWSP slant wells from within the capture zone adjacent to the coast, which would eventually be recharged by seawater. The slant wells would not have an influence on inland groundwater sources beyond the eastern extent of the capture zone. The groundwater modeling does not, therefore, need to be expanded to demonstrate the proposed project would not degrade groundwater quality in the MCWD Service Area. See Master Response 3, Water Rights, Sections 8.2.3.8 and 8.2.3.9.

Applicant-Proposed Measure 4.4-3 requires that CalAm, working with MCWRA, shall fund and develop a groundwater monitoring and reporting program that expands the current regional groundwater monitoring network to include the area near the proposed slant wells. Once expanded, the program will monitor groundwater levels and water quality within the area where groundwater elevations are anticipated to decrease in the Dune Sand Aquifer and the 180-FTE Aquifer and within at least 1 mile outside of the predicted radius of influence. The Applicant-Proposed Measure describes additional elements proposed under this measure.

8.5.2.5 Responses to Comments from MWCD – IntakeWorks

MCWD-IW-1 References cited in the EIR/EIS continue to be publicly available at https://tinyurl.com/MPWSPRefs. The EIR/EIS did not conclude that slant wells were the only potentially feasible subsurface intake system for the MPWSP. As explained in EIR/EIS Section 5.3.6.1, "Ranney wells (Intake Option 13) were shown to result in similar environmental effects compared to the proposed slant wells, resulting in neither increased or decreased impacts. Ranney wells do offer an opportunity to replace slant well technology at either the CEMEX or the Potrero Road site if necessary."

MCWD-IW-2 EIR/EIS Chapter 5 provides a robust and comprehensive alternatives analysis; see response to comment MCWD-168 and MCWD-170. CEQA Guidelines Section 15126.6(a) acknowledges an EIR "need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation."

EIR/EIS Section 5.3 describes the process employed to develop, screen and evaluate potential alternative components, and develop whole alternatives for analysis. Section 5.3.1 describes the regulatory considerations applicable to the successful implementation of a desalination project and Section 5.3.2 describes the screening and evaluation process for components of whole alternatives. Components that are not carried forward are described, with the reason for their dismissal, in Appendix I1, which is the stated focus of this comment letter.

The components that are carried forward from the first screening (EIR/EIS Section 5.3.2) are evaluated against each other in Section 5.3.6. Components that are considered to be the least environmentally damaging are then combined into "whole" alternatives in Section 5.4, which are evaluated in Section 5.5.

MCWD-IW-3 The comment is correct; open water intakes should be cleaned more often than every 3-5 years. As noted in EIR/EIS Section 5.4.5.3, the screened open water intake associated with Alternative 3 would be cleaned annually by divers and pipelines would be pigged. Appendix I1 has been revised accordingly; the revision does not change any conclusion in the EIR/EIS.

MCWD-IW-4 This comment addresses statements in the EIR/EIS that were cited from WateReuse, 2011, and is not a comment on the EIR/EIS. The potential for impingement of marine organisms or organic material on the seafloor as a result of the proposed project subsurface intakes is evaluated in EIR/EIS Section 4.5.5.2.

MCWD-IW-5 This comment acknowledges there are significant advantages of using subsurface intakes for obtaining desalination source water, which are discussed in EIR/EIS Appendix I1. See responses to the following specific comments regarding subsurface intakes.

MCWD-IW-6 Vertical wells were not considered in the EIR/EIS Section 5.3 component screening and evaluation; see response to comment MCWD-172.

The analysis in EIR/EIS Appendix I1 concluded that other alternative subsurface intake technologies would have a smaller construction footprint and permanent footprint because other subsurface intakes would require fewer wells to generate the same volume of source water. The number of vertical wells that would be needed to provide a reliable source water flow to the desalination plant is considered infeasible, both from a construction and operational perspective and in terms of economic, legal (permitting) and environmental factors. Therefore, vertical wells are not considered further.

MCWD-IW-7 EIR/EIS Section 5.2.3 discusses the implementation of Assembly Bill 1182 (Keeley) and the development of the CPUC Plan B. As noted in Footnote 1 in that section, the Plan B report determined that a desalination plant at Sand City would be less appropriate for the desired scale of production than a desalination plant at Moss Landing. A desalination plant at Moss Landing was proposed by CalAm; the Coastal Water Project is described in EIR/EIS Section 5.2.4. See response to comment MCWD-IW-2 and MCWD-172. See also response to comment Surfrider-6; the EIR/EIS has not identified a significant unavoidable impact for any resource that would require an alternative to avoid or lessen a potentially significant impact.

MCWD-IW-8 The Huntington Beach ISTAP Phase 1 Feasibility Report (HB ISTAP, 2014) concluded that an infiltration gallery was a feasible subsurface option at Huntington Beach, but the Phase II Feasibility Report (HB ISTAP, 2015) concluded that the beach infiltration gallery is infeasible at the Huntington Beach location. Furthermore, on October 4, 2017, the CA State Lands Commission issued a Notice of Availability and Intent to Consider Certification of the Final Supplemental EIR for the Seawater Desalination Project at Huntington Beach; the Final EIR considers a lease modification that would allow Poseidon to install wedgewire screens on an existing open water intake that would provide almost 107 mgd of desalination feedwater. EIR/EIS Appendix I1 explains that an infiltration gallery within MBNMS would have a greater impact on marine biological resources than slant wells. Based on the extent of temporary and permanent disturbance that an infiltration gallery would have on the sand dunes and marine habitat in MBNMS, this technology is considered infeasible at this location. See response to comment MCWD-173.

MCWD-IW-9 The Lead Agencies appreciate the background provided by the comment on horizontal wells using Neodren or other horizontal well technology for subsurface intake systems. EIR/EIS Appendix I1 has been revised to provide the following additional information about the Neodren™ intake technology:

The Neodren™ HDD intake technology is patented by the Spanish company Catalana de Perforacions. This technology has been used for over ten years in several small and medium-size seawater desalination plants in Spain, but does not have any applications in the United States. One of the largest seawater desalination plants using HDD wells in operation is the New Cartagena Canal (San Pedro de Pinatar) plant. It is located in Almeria, Spain and has a capacity of 17 mgd. The individual intake wells are between 1,650 and 1,980 feet long and are 14-inches in diameter. Each well produces between 2.3 and 3.1 mgd and the desalination plant operates at 45 percent recovery. The water is collected in a large wet well (located under a parking lot to reduce visual impacts) located underground and pumped to the plant using submersible pumps.

Experience with the use of HDD wells at this plant, indicates that the plant intake has encountered significant “technical issues and limitations” causing the plant’s owner to switch to an open water intake system for the plant’s Phase-2 expansion (Shea, 2007). Four of the wells lost over 40 percent of their production capacity within the first nine months of plant operation; furthermore, the capacity of the other wells has continued to diminish over time. Such productivity reduction triggered the need to install additional intake wells and ultimately to build open intake for the second phase of the plant expansion.

When HDD wells were introduced on the market in late 1998, they initially received acceptance in Spain and have been considered a viable intake alternative for a number of other countries. However, after five years of operational experience, many of the plant intakes have faced production reliability challenges (loss of productivity due to blockage of the perforated piping). As a result, HDD wells have not been used for full-scale desalination projects worldwide since 2010. An HDD intake system that would be capable of collecting source water needed for the MPWSP desalination plant would consist the same number of wells proposed by the MPWSP, and would collect water into a common wet well located inland from the beach.

Based on experience with other forms of infiltration galleries, HDD intake maintenance maybe challenging due to their historical tendency to clog. Furthermore, experience shows that once the intake collectors become plugged and the productivity of the individual collectors' decreases, it is impossible to recover the original full capacity (Rachman, 2014).

The construction of HDD intake systems would involve the use a drill rig launched from an onshore location to drill a pilot bore. The drill rig would be positioned over the bore hole centerline a sufficient distance behind the entry point to allow the drill bit to enter the ground at the correct location and angle. Depending on the rig size and entry angle, this distance may be 3 feet to 20 feet behind the entry point. The entry angle usually is between eight degrees and 16 degrees, although entry angles of up to 20 degrees have been used on some large diameter projects. A small pit is usually excavated over the entry point, using a backhoe or shovel. When performing HDD in an unconsolidated media like sand, it will be necessary to pressurize the bore hole and stabilize the walls by coating them with drilling mud (e.g., bentonite) or another similar drilling fluid. Because of the pressure involved to coat the hole walls with mud, frac-out of the drilling mud has occurred in other HDD operations. Such a prospect would result in the potential release of drilling fluid into the ocean environment.

The pilot bore would be enlarged by one or more back reamers to the size required for the intake pipe; the pipes would be assembled on barges, lowered to the seafloor and pulled back through the borehole (float-and-sink method) during the final reaming process. Daylighting the drill offshore could result in the release of drilling fluid to the ocean. Neodren™ claims that they have a new technique that avoids daylighting the drill offshore (“push” method) and this was the technique assumed for the MPWSP. However, as of late 2015, the push method of construction has yet to be demonstrated successfully for an intake well. The area required for construction and the associated impacts will likely be similar to slant wells, but for the off-shore support services, e.g. barges, that would be associated with assembling and pulling the HDD pipe through the borehole.

MCWD-IW-10 EIR/EIS Appendix I explains that horizontal wells installed with HDD technology were not evaluated further for the reasons correctly cited by the comment, and nothing in this comment letter or the associated responses has caused the Lead Agencies to revise that conclusion. However, based on information provided by this comment, EIR/EIS Appendix I1 has been revised as follows:

> Horizontal wells are not evaluated further for the following reasons: (1) the amount of pipeline that would be pushed under the seafloor (upwards of 2,500 feet) would be challenging in terms of ~~construction time,~~ physical limitations ~~and the disposal of drilling sludge (and consequently much more expensive than other options)~~; and (2) ~~installing artificial filter packs to stabilize unconsolidated formations like those found in the project area has yet to be demonstrated successfully and on a consistent basis, and; (3)~~ HDD would not avoid or minimize any of the impacts associated with the proposed action.

The Lead Agencies acknowledge that HDD construction techniques are feasible for installing pipe over distances greater than 2,500 feet (float-and-sink), but it would be challenging to “push” that length of pipe as concluded in Appendix I1 for installing HDD intake system. As noted in EIR/EIS Section 5.4.5.1, seawater would be conveyed through approximately 3,600 feet of 42-inch diameter pipeline from the DeepWater Desal intake structure to an onshore pump station, and the discharge pipeline would extend approximately 3,400 feet offshore into Monterey Bay. Both the intake and discharge pipelines proposed by Deepwater Desal, and evaluated in EIR/EIS Section 5.5, would be installed using HDD techniques, and would use the float and sink method to pull pipes through the seafloor; see EIR/EIS Section 5.4.5.2.

The off-shore support services associated with the float and sink method would result in greater impacts to the marine environment in MBNMS than the proposed slant wells, and this technique was not considered for the MPWSP in EIR/EIS Appendix I1. As noted in response to comment MCWD-IW-9, while pipes can be pulled through the borehole from offshore, the push method of construction, the assumed HDD technique for installing HDD wells, has yet to be demonstrated successfully for an intake well. Some of the projects listed by the comment in Table 2 exceed 2,500 feet, but they were each installed using the float and sink method. No HDD intake wells (or, drain) shown in the examples provided by/attached to the Intake Works comment letter however, exceed 600 meters (1,968 feet) in length, which supports the conclusion in the EIR/EIS that the amount of pipeline required to be pushed for HDD wells for the MPWSP would be challenging.

The San Diego County Water Authority (SDCWA) is indeed proceeding with a pilot project that would compare the pre-treatment requirements (and associated costs) for an open water intake and for a subsurface intake. The SDCWA has selected a Neodren system to test the subsurface intake requirements. The 20 gallon per minute pilot project, including an 800 to 1,000-foot long, 8-inch diameter HDPE subsurface intake pipe, is still in the permitting phase, with construction expected to begin in early 2019; the installation will utilize the float-and-sink technique (Jeremy Crutchfield, SDCWA personal communication, November 27, 2017).

As noted earlier in this response, the disposal of drilling sludge and the cost of HDD have been removed from the EIR/EIS Appendix I1 text, but does not change the conclusion. HDD wells would not eliminate the need for the Castroville Pipeline; see also response to comment MCWD-IW-11 regarding the Salinas Valley Return Water.

Also as noted above in this response, the text regarding artificial filter packs has been removed from EIR/EIS Appendix I1, but does not change the conclusion.

No revisions were made to the conclusion in EIR/EIS Appendix I1 regarding HDD wells. See also response to comment MCWD-IW-2 and MCWD-IW-11.

MCWD-IW-11

The slant well heads as proposed, would be located approximately 900 feet (275 meters) inland of the Mean High Water (MHW) line; see EIR/EIS Figure 3-3b. If an HDD system "could be located well further inland" as the comment suggests, "outside any endangered species habitat and avoiding endangered species along the coast," that would locate the HDD wells somewhere inland of the CEMEX property. The CEMEX entrance/parking lot is located approximately 2,200 feet (670 meters) inland of MHW. As noted in response to comment MCWD-IW-10, no one single HDD intake well (or, drain) shown in the examples provided by/attached to the comment, exceed 600 meters, and the subsea geology of the largest project, San Pedro del Pinatar, was permeable fractured rock material, not sand and gravel like at

CEMEX. Therefore, HDD wells at CEMEX would be drilled into the Dune Sands Aquifer -- or the 180-FTE depending on the depth, see EIR/EIS Figure 4.2-3 -- for their entire length, and would not reach any further under the ocean than the proposed slant wells. HDD wells at CEMEX, like the slant wells, would draw source water that originated in the SVGB, and a Salinas Valley return water obligation would still be required, as would the return water (Castroville) pipeline.

As shown on EIR/EIS Appendix C3, Figure 8, HDD wells at the Potrero Road site would also penetrate the Dune Sands Aquifer. Therefore, HDD wells at Potrero Road, like the proposed slant wells, would also draw source water that originated in the SVGB, and the return water obligation (and Castroville Pipeline) would still be required.

HDD wells could potentially be located closer to the CalAm Service Area, but the source water would still need to be piped to the desalination plant, making the alternative impractical and excessively expensive.

MCWD-IW-12 EIR/EIS Section 5.3.3 explains that open water intakes and subsurface intakes have different site requirements, design features, and construction techniques, and the two intake technologies are described in Appendix I1. Thirteen intake options were identified and screened for fatal flaws (see response to comment MCWD-IW-2) and are shown on EIR/EIS Figures 5.3-1 and 5.3-2, and in Table 5.3-1. Three of the 13 intake options evaluated include Ranney Wells: at Moss Landing (Intake Option-5), at Seaside/Sand City (Intake Option-11) and at CEMEX (Intake Option-13); see EIR/EIS Sections 5.3.3.5, 5.3.3.11, and 5.3.3.13. As described in EIR/EIS Section 5.3.3.13, each caisson (referred to as a shaft in the comment) at CEMEX would be 12 feet in diameter, and would be buried approximately 50 feet into the sand, not 90 to 260 feet deep as stated by the comment.

Six of the 13 intake options were not carried forward for further analysis, and they are described in EIR/EIS Appendix I2, along with an explanation for their elimination (Intake Option-5 and -11 were eliminated). Options that were retained are evaluated against the proposed project's slant wells at CEMEX in EIR/EIS Section 5.3.6. Table 5.3-1 presents the intake options, and summarizes the results of the screening process.

Intake Option-13, Ranney Wells at CEMEX, was carried forward; see EIR/EIS Table 5.3-4, and response to comment MCWD-IW-1.

MCWD-IW-13 The Monterey Peninsula Water Management District 95-10 Project Constraints Analysis (referred to herein as the 2008 Constraints Analysis) (ICF et al., 2008) identified 25 individual well locations for using HDD (e.g., slant wells), radial wells (e.g., Ranney collector wells), or conventional wells; see response to comment MCWD-178.

The 2008 Constraints Analysis did not look at any alternatives south of Seaside/ Sand City. The EIR/EIS also did not consider alternative intake locations south of Seaside/Sand City (Intake Option-11, Ranney Wells at Seaside/Sand City. The Carmel River State Beach is located about 10 miles south of Sand City and would require a 20-mile source water pipeline, making this alternative impractical, if not excessively expensive; see response to comment MCWD-IW-2. CalAm would utilize a diverse portfolio of water supplies (see EIR/EIS Section 2.4) to manage supply uncertainties.

MCWD-IW-14 See response to comment MCWD-174 regarding slant well technology, and response to comment MCWD-82 regarding slant well replacement.

MCWD-IW-15 Chemical parameters reported from the test slant well are presented in EIR/EIS Table 4.4-4, and a more extensive summary of test slant well laboratory water quality results are presented monthly by CalAm; results continue to be made publicly available at https://www.watersupplyproject.org/test-well. EIR/EIS Section 4.4 referenced Geoscience, 2016b, which is Monthly Monitoring Report No.7; see Table 3 therein for the full suite of water quality constituents.

MCWD-IW-16 EIR/EIS Section 3.2.2.2 describes the configuration of the proposed MPWSP desalination plant RO system, Section 5.4.5.1 describes the similar RO system for Alternative 3 (DeepWater Desal) and Section 5.4.6.1 describes the similar RO system for Alternative 4 (People's Project).

MCWD-IW-17 EIR/EIS Section 3.4.1 describes that during maintenance of the slant wells, workers would access the well from the wellhead, and would lower mechanical brushes into the wells to clean the screens. If chemical cleaning products are needed for maintenance, only environmentally inert products would be used. The periodic well maintenance procedures are also described in the 2013 Hydrogeologic Investigation Work Plan (see Appendix B to EIR/EIS Appendix E3), and include simultaneously swabbing and airlifting the screened interval to dislodge and remove materials collected on the well screen, and aggressively pumping and surging the well until fluids removed are effectively free of sand, sediment, and other material. Contrary to the comment, the casing would not be withdrawn.

MCWD-IW-18 EIR/EIS Section 4.18.4.2 explains that the proposed RO system would incorporate an energy recovery system that utilizes pressure exchange technologies to recover energy from the high-pressure waste stream and reduce overall pumping power requirements (and energy consumption) for the RO modules.

MCWD-IW-19 See responses to comments MCWD-IW-2 through MCWD-IW-14.

8.5.2.6 Responses to Comments from MCWD – Hopkins Groundwater Consultants2

These responses address September 29, 2017 comments submitted by Hopkins Groundwater Consultants, Inc. (HGC) to the Marina Coast Water District (MCWD) regarding estimates of return water volumes associated with Monterey Peninsula Water Supply Project (MPWSP).[12] HGC considers the September 29, 2017 memorandum an update of its January 22, 2016 report to the MCWD regarding the MPWSP return water proposal that was submitted to the California Public Utilities Commission (CPUC) with the direct testimony of Curtis Hopkins dated January 22, 2017. In the September 29, 2017 memorandum, HGC supplements the analysis presented in its January 22, 2016 report and provides its professional opinion on the MPWSP Return Water Settlement Agreement. HGC asserts that providing return water to the Castroville area, as proposed, would not address or mitigate the adverse groundwater impacts caused by the proposed MPWSP in the North Marina Area of the 180-400 Foot Aquifer Subbasin within the Salinas Valley Groundwater Basin (SVGB). Additionally, the HGC September 29, 2017 memorandum claims to address new evidence, including the recent Airborne Electromagnetics (AEM) survey data collected by Dr. Rosemary Knight and her team from Stanford University, that supports HGC's original hypothesis that extensive groundwater resources in the shallow aquifers along the coastline around CEMEX would be adversely impacted by the MPWSP.

Many of the comments in HGC's September 29, 2017 memorandum repeat or are similar to those received from HGC in its March 27, 2017 letter to MCWD regarding the MPWSP Draft EIR/EIS, which have been responded to in response to comment MCWD-HGC in Section 8.5.2.2. While some of the comments in HGC's September 29, 2017 memorandum address the Draft EIR/EIS, many address the MPWSP Return Water Settlement Agreement and HGC's assessment of the regional hydrogeology. This response generally focuses on the HGC comments that address the adequacy of the Draft EIR/EIS and is subdivided based on general topics. The September 29, 2017 HGC memorandum presents no new data, information, or findings that change the conclusions of the impact analyses presented in the Draft EIR/EIS.

MCWD-HGC2-1 ***Return Water***

The assertions in the September 29, 2017 HGC memorandum suggest a general misunderstanding of the purpose and need of the return water proposed under the MPWSP. The return water is not intended to mitigate adverse impacts on groundwater resources in the SVGB that would be caused by the MPWSP. As

12 Section 8.5.2.2 provides responses to technical comments dated March 27, 2017, that HGC provided on the MPWSP Draft EIR/EIS, on behalf of MCWD.

analyzed and discussed in EIR/EIS Chapter 4.4, impacts on groundwater resources in the SVGB were determined to be less than significant and, therefore, mitigation to restore aquifer groundwater levels or groundwater supplies for other users is not required. The EIR/EIS concludes that the proposed MPWSP pumping from the intake wells on the CEMEX property would not cause harm or cause injury to groundwater users in the SVGB. The return water is the amount of desalinated groundwater that CalAm has agreed, as part of the MPWSP Return Water Settlement Agreement (see response to comment MCWD-84), to return to the SVGB to comply with the Monterey County Water Resources Agency (MCWRA) Act (see Master Response 4, The Agency Act and Return Water), which prohibits groundwater from being exported out of the SVGB. The volume of groundwater that CalAm must return under the agreement would be determined annually by an agreed upon calculation of the Ocean Water Percentage (OWP) in the MPWSP feedwater. The return water would then be conveyed to the Castroville Community Services District (CCSD) and the Castroville Seawater Intrusion Project (CSIP) to be used in lieu of pumping an equal amount of groundwater. HGC opines that by delivering the required return water to the CCSD and CSIP, it would not be benefiting the groundwater aquifers affected by the MPWSP slant well pumping located south of the Salinas River in an area it refers to as the "Northern Marina Subarea" (discussed below). Not only is delivery of water south of the Salinas River not necessary as mitigation due the projected less-than-significant effects on the SVGB by MPWSP proposed pumping, but the Agency Act concerns itself with the SVGB as a whole and does not regulate use of SVGB water based upon any geographic locale or administrative jurisdiction within the overall SVGB. For more information about the Agency Act and the proposed return water, see Master Response 4, The Agency Act and Return Water.

HGC asserts that the Draft EIR/EIS did not provide discussion to explain or support the range of return water, which was estimated for the purposes of the EIR/EIS as between 0 percent and 12 percent. When the Draft EIR/EIS was prepared, the estimate of the OWP in the source water was not finalized but based on monitoring work at the test slant well at CEMEX, it appeared that the actual Ocean Water Percentage (OWP) necessary to gauge return water amounts would range between 0 and 12 percent. This range was supported by the observation that the test slant well at the time (November 2015) was extracting water reported to be in the range of 29,800 mg/L (see Table 3 in Geoscience, 2016a), or 12 percent of ocean water salinity (33,500 mg/L), suggesting 12 percent was a reasonable upper limit.

Projecting return water volumes based on OWP projection has since been refined by the HWG by employing a dual methodology consisting of an analytical equation (analytical mixing model), a numerical modeling using the existing CEMEX Model (variable solute transport model), and actual field data. Results of the analytical/ numerical methods indicate that the OWP would range from 88 to 92 percent the first year, increase to 93-97 percent after two years, and exceed 94 percent over the long term. This is consistent with two years of field data from the test slant well that indicated OWP ranging from 92 to 95 percent in the first year and 90 to 92 percent in year 2.[13] These methodologies and results are discussed in Master Response 4, Agency Act and Return Water, and are described in detail in EIR/EIS Appendix E3, the Hydrogeologic Working Group (HWG) Hydrogeologic Investigation Technical Report. The combined analytical and numerical methodology plus the actual field data adequately support the estimated OWP range of 0 to 12 percent used in the Draft EIR/EIS. Given the data acquired to date, it is unlikely that a greater volume of return water would be required in the years following the start-up of MPWSP pumping.

In the September 29, 2017 letter, HGC focuses on the stated value of 7 percent return water that Mr. Ian Crooks of CalAm provided during his direct testimony on September 15, 2017. In reviewing the direct testimony, it appears that Mr. Crooks used 7 percent return water value merely as an estimate in a system supply/demand comparison. Nonetheless, 7 percent return water is not an unreasonable estimate based on the OWP estimates developed through analytical/numerical modeling and field data.

MCWD-HGC2-2 ***Current Seawater Intrusion***

EIR/EIS Section 4.4.1.4 references the MCWRA seawater intrusion monitoring data (see EIR/EIS Figures 4.4-10 and 4.4-11) that have been collected for decades through an ongoing program that was considered a reasonable benchmark to assess regional groundwater quality for the impact analysis in the EIR/EIS. It is important to reiterate that Draft EIR/EIS Section 4.4 states that based on estimates from the MCWRA, seawater has intruded within the 180-Foot and 400-Foot Aquifers by approximately 8 miles and 3.5 miles inland, respectively, based on chloride concentrations greater than 500 mg/L. There is adequate evidence to verify that the groundwater underlying the CEMEX site and further inland has been impacted by seawater intrusion for decades. The Draft EIR/EIS or the modeling completed to analyze the impacts of the MPWSP, did not assume that “groundwater comparable to that of seawater occurs up to 8 miles inland.” It is also important to note that 2 percent ocean water (98 percent groundwater) equates to groundwater quality with 250 to 500 mg/L chloride and between 1,000 and 1,500 mg/L TDS, which as described below, are California’s secondary drinking water Maximum Contaminant Levels for chloride and TDS. Figure 13, presented by HGC on page 18 of the September 29, 2017 memorandum, therefore, is not an effective way to interpret or demonstrate the extent of seawater intrusion. A detailed discussion of the local groundwater chemistry and purported fresh water zones in the Dune Sand and 180-FTE aquifer is provided in response to comment MCWD-HGC-9.

[13] The decrease in salinity in Year 2 can be explained by the infiltration of fresh rainwater during an above normal rainfall year and percolation of fresh water during sand washing operations at CEMEX.

MCWD-HGC2-3 ***NMGWM^{2016} Modeling***

HGC reasserts that the modeling performed for the Draft EIR/EIS is inadequate to evaluate the direct and cumulative impacts from the MPWSP on groundwater resources in the SVGB. These comments reflect those same comments that HGC provided in its March 27, 2017 letter to MCWD on the Draft EIR/EIS. Responses to comments on the development and calibration of the NMGWM^{2016} model, its applied use to project groundwater response in the SVGB from the MPWSP, and its effectiveness to evaluate environmental impacts of that groundwater response have been addressed in detail and are presented in response to comment MCWD-HGC-13, and Master Response 12, The North Marina Groundwater Model (v. 2016).

MCWD-HGC2-4 ***Northern Marina Subarea and Protective Groundwater Levels***

HGC contends that the return water component of the MPWSP be sufficient to maintain "protective groundwater levels" in the Northern Marina Subarea to prevent seawater intrusion. The "Northern Marina Subarea"[14] and purported "protective groundwater levels" are summarized here and discussed in further detail in response to comments MCWD-HGC-3, -5, and -9. The term "Northern Marina Subarea" as defined by HGC is not based on or consistent with the accepted definitions of basins in the SVGB and the term appears to have been created by HGC to describe an area which it appears to believe possesses unique hydrogeology. The area considered by HGC as the Northern Marina Subarea is simply part of a continuous, hydraulically connected portion of the 180/400-Foot Aquifer subbasin of the SVGB.

"Protective groundwater levels," discussed in the September 29, 2017 HGC letter and in other comments provided previously by HGC, apparently refer to purported areas of "freshwater" in the perched/mounded Fort Ord Salinas Valley Aquifer. HGC theorizes that groundwater in these perched/mounded aquifers flow westward and "waterfalls" into the Dune Sands and 180-Foot Aquifer creating a barrier to seawater intrusion. If these flows are present, they are hydraulically disconnected and located 1.5 miles inland of CEMEX, beyond the influence of the capture zone that would be created by MPWSP pumping. Furthermore, the ability of these flows to reduce seawater intrusion appears to be unsupported considering seawater intrusion has been documented along and inland of the coast for decades. For this reason, assertions such as (Page 29) "unique groundwater recharge condition creating shallow mounding in the Northern Marina Area will be removed by the project . . ." are a mischaracterization of the conceptual model of the SVGB that

[14] The March 29, 2017 HGC technical memorandum, which provided its technical comments to the MCWD on the MPWSP Draft EIR/EIS, referred to the "Northern Marina Subarea" as the "Marina Subarea". It is assumed that the two names refer to the same areas.

has been put forth by the HWG and by this EIR/EIS and misrepresents the dynamics of groundwater gradients and flow in this area.

MCWD-HGC2-5

Reliance on Recent AEM Survey Data

HGC references the preliminary findings from the May 2017 Airborne Electromagnetic (AEM) Survey conducted by Dr. Rosemary Knight and her team from Stanford University to support its theory that there is a substantial freshwater resource in the “Northern Marina Subarea.” Dr. Knight and her team released a preliminary report of the May 2017 AEM survey on June 16, 2017, the final report is under way and is expected in spring 2018. The 2017 AEM survey and its value in interpreting the groundwater conditions in the coastal area of the SVGB is discussed in detail in EIR/EIS Section 4.4, Groundwater Resources, in Master Response 9, Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM) and in Final EIR/EIS Appendix E-3.

It appears that HGC interprets the preliminary AEM data presented in the June 2017 report to assert that groundwater with 3,000 milligrams per Liter (mg/L) TDS is fresh water. However, groundwater quality data from the MPWSP monitoring wells indicate that the groundwater with 3,000 mg/L TDS contains over 1,000 mg/L of chloride. As stated in the Final EIR/EIS Section 4.4, the State of California secondary maximum contaminate level in drinking water for TDS is 500 mg/L (recommended with 1,000 mg/L maximum) and 250 mg/L for chloride as per the California Code of regulations.[15] Therefore, HGC’s assertion that groundwater with 3,000 mg/L TDS is freshwater is not an accurate way to translate this state threshold to represent the presence of a fresh groundwater resource.

HGC further misinterprets the AEM resistivity data because it presents the data as groundwater quality (fresh water to brackish water) when, in actuality, the preliminary AEM resistivity profiles represent the combined (bulk) resistivity of the water bearing sediments and the pore water in those sediments, rather than just the groundwater alone. This interpretation can lead to confusion because until the data are presented in such a way that distinguishes between the bulk resistivity and the resistivity/conductivity in the groundwater itself, the use of the preliminary AEM findings and the cross sections developed from the data to describe the current groundwater conditions is a misrepresentation of the data. Furthermore, the preliminary data is just that, and should not be used to draw conclusions or support previous assertions on whether or not significant freshwater pockets exists inland from the coast. For these reasons, many of HGC’s assertions in the September 29, 2017 memorandum regarding groundwater flow, occurrence, and quality, which are based on the preliminary AEM data, are inaccurate and not discussed further.

[15] California Code of Regulation Title 22. Division 4. Environmental Health Chapter 15. Domestic Water Quality and Monitoring Regulations Article 16. Secondary Water Standards, May, 2006.

MCWD-HGC2-6 *Purported Presence of Fresh Groundwater in Dune Sand and 180-FTE Aquifers*

HGC asserts in the September 29, 2017 letter, as it did in its March 27, 2017 memorandum, that there are areas in the Dune Sand Aquifer and 180-FTE Aquifer that contain significant quantities of fresh groundwater. HGC asserts that this contradicts the findings in the Draft EIR/EIS that indicate this area has been historically intruded by seawater. This issue is discussed in detail in response to comment MCWD-HGC-9. On Page 11 of the September 29, 2017 letter, HGC states that, "[g]iven the potential magnitude of the increased groundwater production in the Dune Sand Aquifer and the 180-foot aquifer, the impacts to the SVGB, in particular the North Marina Subarea are grossly understated by the MPWSP modeling to date." There is not now nor has there historically been water supply pumping from the Dune Sand Aquifer, due to low quantity and quality. The Dune Sand Aquifer and the 180-FTE Aquifer in the vicinity of CEMEX, in the area projected to be impacted by the project, is documented as containing highly brackish to saline water due to historic seawater intrusion. If there are localized areas of less brackish groundwater in the Dune Sand Aquifer, they are likely discontinuous and would become more brackish or saline once proposed project pumping began. Figures 9 and 10 presented in the September 29, 2017 letter are the same figures presented in its March 29 letter. These figures misrepresent the extent of the so-called fresh water because HGC fails to adequately consider the mechanics of seawater intrusion, bases the extent of the fresh water on only a select number of data points, and relies on an unrealistic threshold of freshwater (1,000 to 3,000 mg/L). Please refer to response to comment MCWD-HGC-9 for a complete discussion.

MCWD-HGC2-7 *Salinity Effects of CEMEX Operations*

HGC claims that CEMEX operations influence the salinity of the feedwater, and that CalAm's return water estimates fail to address how CEMEX operations impact the test slant well discharge and whether similar effects would occur for the proposed MPWSP production wells. HGC also states that there are local sources of saline water (namely, the dredge pond and percolation ponds) at CEMEX that are not located elsewhere, particularly where the MPWSP production wells are proposed, and implies that without these sources, the actual OWP in the MPWSP feedwater would be lower.

The dredge pond and percolation ponds do not create a unique source of saline water that influences salinity in the shallow groundwater. The dredge pond is excavated to a depth that exposes the groundwater surface so the water in the dredge pond is representative of the quality of groundwater beneath the CEMEX site. CEMEX uses dredge pond water and well water in its sand rinsing and sorting operations and conveys it through a flume to a percolation pond for disposal. The percolation pond is adjacent to the dredge pond. When the dredge is operating (approximately 8 to 10 hours per day), the water in the flume is a mixture of brackish well water [approximate conductivity of 19,000 microseimens per centimeter (µs/cm)] and dredge pond water (conductivity of about 48,000 µs/cm). During the remainder of the time, only lower salinity well water is conveyed to the percolation pond. In essence, all that CEMEX is doing in its operation is transferring saline water from the dredge pond, mixing it with lower salinity well water during sand rinsing, and conveying that brackish-saline mixture back to the percolation pond where it infiltrates back into the shallow aquifer.

Conductivity in the test slant well and monitoring wells decreased in the winter-spring of 2017 due to the percolation of rainwater into the Dune Sands Aquifer. The winter of 2016-2017 was a record year for rainfall in Monterey County. Conductivity also decreased due to the disposal of rinse water to the percolation pond, as described above. Consequently, the average TDS of the water recharging the groundwater near the test slant well was much lower in TDS than the seawater. Precipitation and introduction of wash water can reduce conductivity in the test slant well but this condition is unique to the area overlying the dredge pond and CEMEX sand washing operations. The proposed MPWSP wells would be located south of the CEMEX operations and beyond the influence of the percolation pond infiltration. Rainfall infiltration would still contribute to the MPWSP feedwater and that is considered in the OWP calculation as it accounts for annual average precipitation occurring over the projected capture zone of the MPWSP production wells. Refer to Appendix E-3, Sections 3.1.7.3 and 3.2.3 for a detailed analysis of freshwater contributions to the test slant well discharge and OWP calculations.

MCWD-HGC2-8

Responses to Figures in the September 29, 2017 HGC Letter

Page 8, **Figure 5** (Water Level Elevation and Shoreline Proximity), is a confusing and somewhat misleading representation of groundwater data and is not considered by experts in hydrogeology as a standard method of representing groundwater flow. Groundwater flow in this region is shown accurately on groundwater contour maps presented in Appendix E-3 (*Appendix E, MPWSP Well Completion Report and CEMEX Update, TM2*).

Page 9, **Figure 6** (Resistivity Profile B-B’ groundwater Flow direction) shows an inferred groundwater flow direction but there is no correlation with known lithology or basis for the flow paths. Also, because the colors represent bulk resistivity, the actual groundwater TDS concentrations are not represented. Therefore, this figure does not support HGC’s assertions of freshwater inland from the coast.

8.5.2.7 Responses to Comments from MWCD – EKI2

These responses address comments that EKI provided to Marina Coast Water District (MCWD) in a memo report dated June 22, 2017. In that memo report, EKI outlines the groundwater remedial actions and establishment of remedial goals in the Dune Sand Aquifer (identified as the A-Aquifer) and the 180-Foot Aquifer at Fort Ord. EKI acknowledges in its memo report that MCWD and its counsel intend to meet with the Central Coast Regional Water Quality Control Board (CCRWQCB) to discuss the potential environmental impacts of the proposed Monterey Peninsula Water Supply Project (MPWSP).

EKI states that the MPWSP has the potential to degrade groundwater water quality and impact the beneficial uses of groundwater within the Dune Sand Aquifer and the 180-Foot Aquifer underlying MCWD's service area. EKI asserts the MPWSP Draft EIR/EIS characterized the Dune Sand Aquifer and the 180-Foot Aquifer as having "poor water quality" and that these aquifers are impacted by salt water intrusion. EKI also states the Draft EIR/EIS did not acknowledge that further degradation of the groundwater quality in these aquifers would violate the Water Quality Control Plan for the Central Coast Basin (Basin Plan), which designates all groundwater within the Salinas Valley Groundwater Basin (SVGB) as a potential drinking water source. Furthermore, EKI states that the Draft EIR/EIS findings contradict the restoration efforts that have been completed and continue to be completed to clean-up groundwater to drinking water standards in the aquifers underlying the former Fort Ord and that CalAm should be held to the same groundwater restoration standards as those required at Fort Ord.

The responses to EKI's comments are provided below and focus on the comments that address the adequacy of the Draft EIR/EIS. The responses are organized based on general topic areas. Many of the comments are similar to, or reflect those previously provided by HGC and EKI (see Sections 8.5.2.2 and 8.5.2.4, respectively).

The June 22, 2017 EKI memo report presents no new data, information, or findings that would cause a change in the conclusions of the impact analyses presented in the Draft EIR/EIS.

MCWD-EKI2-1 ***Characterization of Seawater Intrusion in the MPWSP EIR/EIS***

The MPWSP Draft EIR/EIS, Section 4.4 did not use the term "poor water quality" to describe the groundwater in the Dune Sand Aquifer and 180-Foot Aquifer but it does acknowledge that these aquifers have been subject to years of seawater intrusion. The EIR/EIS references the Monterey County Water Resources Agency (MCWRA) seawater intrusion monitoring data (see EIR/EIS Figures 4.4-10 and 4.4-11) that have been collected from the 180-Foot Aquifer and the 400-Foot Aquifer for decades through its ongoing seawater intrusion monitoring program, and thus, was considered a reasonable benchmark to assess existing regional groundwater quality for the analysis in the EIR/EIS. EIR/EIS Section 4.4 states that, based on estimates from the MCWRA, seawater has intruded within the 180-Foot Aquifer and 400-Foot Aquifer by approximately 8 miles and 3.5 miles inland, respectively, based on chloride concentrations greater than 500 mg/L. There is adequate evidence to verify that the groundwater underlying the CEMEX site and further inland has been impacted by seawater intrusion for decades. There is not now, nor has there historically been water supply pumping from the Dune Sand Aquifer, due to low quantity and quality. It is documented through groundwater monitoring that the Dune Sand Aquifer at CEMEX contains highly brackish to saline water due to historic seawater intrusion. If there are localized areas of less brackish groundwater in the Dune Sand Aquifer, they are likely discontinuous and would become brackish or saline once proposed project pumping began.

MCWD-EKI2-2

Impacts on Groundwater Quality from the MPWSP

The proposed MPWSP slant well pumping would be confined to a localized capture zone at the coast that would not extend inland from the coast or draw less brackish groundwater from inland regions of the Dune Sand and 180-FTE Aquifer. EIR/EIS Section 4.4 concluded that the proposed MPWSP would not violate or degrade groundwater quality in the Dune Sand Aquifer or the 180-FTE Aquifer. The conclusion was largely based on the understanding that the groundwater quality near the proposed MPWSP intake wells was highly brackish to saline. SWRCB Resolution No. 88-63 [Appendix A-9 of the Water Quality Control Plan for the Central Coastal Basin (Basin Plan)] resolves that “[a]ll surface and groundwater of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of: *Surface and groundwater where the total dissolved solids exceed 3,000 mg/l and it is not reasonably expected by Regional Boards to supply a public water system” (*emphasis added). The groundwater underlying the capture zone of the proposed MPWSP slant wells is: 1) an order of magnitude more brackish (23,400 mg/L to 30,900 mg/L) than the Basin Plan threshold; 2) does not currently support a public water system or individual users, and; 3) other than its potential use for desalination, would not be reasonably expected to supply a public water system. As discussed in EIR/EIS Section 4.4, while the groundwater in the projected capture zone may become more saline because of MPWSP pumping (seawater would eventually replace the ambient highly brackish water), it would not degrade a groundwater source considered by the SWRCB as a suitable municipal or domestic water supply under the Basin Plan.

MCWD-EKI2-3

Relationship between the A-Aquifer at Fort Ord and the Dune Sand Aquifer at CEMEX

The Dune Sand Aquifer includes the -2 Foot Aquifer at the Monterey Peninsula Landfill and Perched “A” Aquifer in the Salinas Valley. These are separate from the shallow perched/mounded aquifers that include the 35-Foot Aquifer in the Monterey Peninsula Landfill area, and the A-Aquifer in the Fort Ord Area, which flows over the Fort Ord-Salinas Valley Aquitard (FO-SVA).

With this understanding, there are several important distinctions. First, the Dune Sand Aquifer (and equivalents) and the shallow perched/mounded aquifers are two distinct and hydraulically disconnected aquifers. Second, the primary “connection” between the two distinct water-bearing zones , is that the areal extent of the shallow perched/mounded aquifers, including the A-Aquifer underlying Fort Ord, is limited, which results in perched/mounded water flowing over the edge of the perching clay layer (similar to a waterfall) into the underlying Dune Sand Aquifer (and equivalents) or 180-FTE Aquifer. The edge of the perching clay layer occurs about 1.5 miles inland of the CEMEX site and the proposed MPWSP pumping. HGC and EKI have described the condition where freshwater “U-turns” from the perched/mounded A-Aquifer at Fort Ord and enters the Dune Sand Aquifer and/or 180-Foot aquifer and claim that these freshwater flows somehow develop a natural protection against seawater intrusion. However, the flows from the shallow perched/mounded aquifers are limited in quantity and it is unlikely that these flows have created the barrier to seawater intrusion because MCWRA monitoring data have shown that seawater intrusion has continued to migrate inland for the last several decades. However, whether or not this natural process is an actual barrier to seawater intrusion is of no consequence to the proposed MPWSP because the slant well capture zone would be located at the coast, 1.5 miles west, and would not encroach on this natural process, thereby allowing it to continue on into the future unimpeded after onset of MPWSP pumping. EKI states that the purported natural barrier to seawater intrusion “. . . appears to have been undermined north of Fort Ord through groundwater extraction and/or salt water discharges into the Dune Sand Aquifer at the CEMEX sand mining site and would likely be further disturbed by the Cal Am project.” It is unclear what EKI is intending to convey by its claim that groundwater pumping north of Fort Ord and salt water discharges at CEMEX have undermined this natural barrier to seawater intrusion. While the groundwater beneath CEMEX is highly brackish to saline, CEMEX does not discharge saltwater. CEMEX discharges a mixture of brackish well water and dredge pond water to percolation ponds as part of its sand rinsing operation. Therefore, the water released to the percolation ponds has salinity less than that of seawater. In response to EKI’s assertion that the proposed MPWSP would further disturb the “natural barrier” it is reiterated that if the flows from the perched/mounded A-aquifer near Fort Ord indeed create a freshwater barrier to seawater intrusion, it is occurring at least a mile and a half inland beyond the projected influence of the MPWSP capture zone.

MCWD-EKI2-4

MPWSP EIR/EIS Consideration of Ongoing Fort Ord Remediation

EIR/EIS Section 4.7.1.1 describes the three groundwater plumes at the Fort Ord Army Base that contain the contaminate carbon tetrachloride, which are identified as OUCTP A-Aquifer Plume, OUCTP Upper 180-Foot Aquifer Plume, and the OUCTP Lower 180-Foot Aquifer Plume (Figure 4.7-1). EIR/EIS Section 4.4

(Impact 4.4-4) considers whether the cone of depression, as projected by groundwater modeling (NMGWM^{2016}), would interfere with these plumes.

As discussed in EIR/EIS Impact 4.4-4, the OUCTP A-Aquifer Plume is located about 2 miles southeast of the proposed slant wells that is currently being treated using enhanced in situ bioremediation in the A-Aquifer, pump and treat in the Upper 180-Foot Aquifer, and natural attenuation in the Lower 180-Foot Aquifer. The EIR/EIS considers the consequence of the expanding MPWSP cone of depression reaching the western portion of the OUCTP A-Aquifer Plume and concludes that if it did, the projected decline in groundwater elevations could possibly spread contamination to areas currently not impacted by the plume. At 2 miles, the accuracy of the NMGWM^{2016} decreases and thus, the projected 1 to 2-foot groundwater elevation is less certain to extend that far. The EIR/EIS considers the potential for the cone of depression of the MPWSP pumping to intersect the OUCTP A-Aquifer Plume a significant impact. Mitigation was proposed (Mitigation Measure 4.4-4) that would monitor changes in the groundwater surface elevation caused by MPWSP pumping near the OUCTP plumes. If it is determined that MPWSP pumping could interfere with the Fort Ord plumes, the mitigation measure requires CalAm to take necessary actions so the plumes do not expand and contaminate other areas, such as reimbursing the US Army for work necessary to change the plume flow direction, arrest migration of the plumes, and/or to remediate areas of new contamination created by MPWSP pumping. The EIR/EIS considers the impacts from the MPWSP on the OUCTP Upper and Lower 180-Foot Aquifer plumes less than significant. However, the mitigation measure referenced above would monitor the three plumes, as noted.

MCWD-EKI2-5

Remedial Actions and CCRWQCB Oversight

EKI suggests that CalAm should be held to the same groundwater remediation standard as those at Fort Ord because they claim the MPWSP would impact beneficial uses of groundwater in the Monterey Subbasin. Further, EKI opines that the modeling conducted to analyze the impacts of the proposed MPWSP does not adequately assess salinity impacts on the groundwater near the MPWSP.

There was no evidence, developed either through groundwater modeling or from available groundwater data, to conclude that the proposed MPWSP would impact the beneficial uses of groundwater in the SVGB. This is detailed in EIR/EIS Section 4.4. Salinity underlying the CEMEX property, where the proposed MPWSP slant wells would extract a mixture of brackish groundwater and seawater, is well documented through over two years of groundwater monitoring and operation of the test slant well. This work has verified the availability of brackish to saline groundwater for the MPWSP and confirmed it is feasible to extract it; see EIR/EIS Appendix E3. The feedwater for the proposed MPWSP would be extracted from a capture zone located adjacent to the coast, which contains groundwater that exceeds, by an order of magnitude, the State of California's upper threshold for beneficial use of groundwater (3,000 mg/L TDS). The MPWSP groundwater wells would draw highly brackish groundwater from the capture zone, which over time would draw in a greater quantity of seawater. The inland flow to the proposed MPWSP slant wells would occur only within the localized capture zone and the slant wells would not initiate inland groundwater flow beyond the influence of the capture zone. Groundwater level response in the Dune Sand and 180-Foot Aquifers from the slant well pumping has been conservatively modeled; the modeling determined that the pumping would not impact other groundwater users in the SVGB.

The groundwater monitoring network developed for the test slant well adequately monitored groundwater levels and quality at and near the test slant well extraction. Additional monitoring wells in the Dune Sand Aquifer, 180-Foot Aquifer, the 400-Foot Aquifer and the Deeper Aquifer (see Applicant Proposed Measure 4.4-3, Groundwater Monitoring and Avoidance of Well Damage) would supplement the existing monitoring well network, which would monitor water levels prior to and at the onset of full-scale pumping. Additional monitoring wells would be placed based on the area of influence as it migrates away from the capture zone. Additional discussion of the conclusions derived from monitoring and test slant well operations and recommendations for continued monitoring is provided in EIR/EIS, Appendix E3.

There has been considerable effort to respond to comments on the adequacy of the groundwater modeling conducted for the EIR/EIS analysis, so it is not repeated here. Refer to EIR/EIS Section 4.4, response to comments MCWD – HGC, response to comments MCWD – EKI, and Master Response 12, North Marina Groundwater Model (v. 2016), for a detailed description of the development, calibration, assumptions, and results of the NMGWM^{2016}.

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8.5.3 Responses to Comments from Monterey Bay Air Resources District

MBARD-1 To further reduce exhaust emissions that would be associated with project construction, Mitigation Measure 4.10-1a identified in EIR/EIS Section 4.10 has been revised as follows to include requirements for construction equipment powered by electricity or natural gas. For the context of the other revisions to the mitigation measure, refer to responses to comments MBARD-3 and MBARD-4, below.

Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards.

For diesel-fueled off-road construction equipment of more than 50 horsepower, CalAm and/or its construction contractor shall make a good faith effort to use available construction equipment that meets the highest USEPA-certified tiered emission standards or is alternatively powered (e.g., with electricity, natural gas, propane, methanol and ethanol blends, or gasoline) construction equipment. For all pieces of equipment that would ~~not~~ neither meet ~~at least~~ Tier ~~3~~ 4 emission standards nor be alternatively powered, CalAm or its construction contractor shall provide to the CPUC documentation from two local heavy construction equipment rental companies that indicate~~s~~ that the companies do not have access to higher-tiered equipment or alternatively powered equipment for the given class of equipment. Such documentation shall be provided to the CPUC at least two weeks prior to the anticipated use of those pieces of equipment.

MBARD-2 The following paragraph has been added to the end of EIR/EIS Section 4.10.2.2, Regional Agencies and Regulations, to acknowledge that if asbestos-containing pipes or materials are encountered during open trenching for pipeline installations, the requirements of air district Rule 424 and National Emissions Standards for Hazardous Air Pollutants could be triggered.

Asbestos Program

The purpose of the Asbestos Program is to protect the public from uncontrolled emissions of asbestos through enforcement of the federal Asbestos Standard and Air District Rule 424. The program covers most renovations and demolition projects and may be triggered if asbestos-containing pipes or materials are encountered during open trenching for pipeline installations. Elements of the program include survey and notification requirements prior to beginning a project, as well as work practice standards and disposal requirements. The program operates on a “cradle to grave” basis through the regulation of all aspects related to the handling of asbestos materials from discovery and removal, through transportation and disposal (MBUAPCD, 2017).

MBARD-3 To further reduce exhaust emissions of NO_x that would be associated with project construction, Mitigation Measure 4.10-1a has been revised to identify construction equipment that meets Tier 4 standards as opposed to Tier 3 standards. For the revised mitigation measure, see response to comment MBARD-1.

MBARD-4 Mitigation Measure 4.10-1a has been revised to include the use of non-diesel powered equipment where feasible. For this revision, see response to comment MBARD-1.

MBARD-5 State Water Resources Control Board (SWRCB) Order 2016-0016 requires CalAm to terminate its water diversions from the Carmel River in excess of its legal entitlement by December 2021. To ensure a continuous water supply, the project must be completely constructed, tested, and operational by December 2021. The proposed project facilities are expected to be completely constructed by June 2020 (see Final EIR/EIS Section 3.3.9, Construction Schedule). Using measures to limit simultaneous construction activities would affect project schedule. Extending the construction schedule by too many months to avoid multiple simultaneous construction activities during the May-October ozone season may cause CalAm to violate the terms of SWRCB Order 2016-0016 (indeed, there is no feasible construction phasing schedule that could reduce construction NO_x impacts to a less-than-significant level). However, some construction scheduling to reduce overlapping high-emitting construction activities may be feasible. For example, Mitigation Measure 4.6-1d (Protective Measures for Western Snowy Plover), Subpart 2, restricts construction work at the slant well heads and along the segment of the Source Water Pipeline located west of the CEMEX processing plant to between October 1 through February 28 unless otherwise approved by the USFWS. Thus, construction activities accounting for approximately 13 percent of the estimated maximum daily construction emissions in Table 4.10-5 would likely occur mostly outside of the May-October ozone season. Similarly, Mitigation Measure 4.6-1h (Avoidance and Minimization Measures for Western Burrowing Owl), Subpart 5, may restrict some construction of the Source Water Pipeline, new Desalinated Water Pipeline, and new Transmission Main to between October 15 and April 1; together, the Source Water Pipeline and new Transmission Main account for approximately 17 percent of the estimated maximum daily construction emissions in Table 4.10-5. Therefore, to the extent feasible and anticipated to be required by wildlife permitting agencies, construction scheduling limitations would coincide with the May-October ozone season to reduce overlap among project components.

As noted above, further adjusting the construction schedule to reduce construction NO_x emissions would pose practical and economic constraints that do not meet the CEQA Guidelines feasibility criteria. Construction scheduling flexibility would be reduced as would CalAm's ability to manage unforeseen changes in field conditions. Because unexpected delays in contractor and materials availability would be more likely to occur when using a prolonged and phased construction schedule, the total construction period could be extended beyond 42 months, in which case CalAm would be unable to meet its obligations under SWRCB Order 2016-0016. Therefore, mitigation to impose phased construction schedule requirements in order to reduce NOx emissions to a greater extent than described above is considered infeasible for this project.

MBARD-6 The representative of the Lead Agencies contacted the MBARD to determine the feasibility of funding an off-site mitigation program to mitigate the impact of construction-related NO_x off-site mitigation to offset construction-related impacts associated with emissions of NO_x.

The MBARD confirmed that it has worked with other project applicants to fund off-site mitigation programs for significant impacts under CEQA. In these cases, the emissions to be offset were typically long-term operational emissions, as opposed to short-term construction emissions. One exception is a housing development project that is being constructed over a number of years. For that project, the MBARD developed a mitigation fee per housing unit based on an annual fee per ton-year paid by the developer to be spent on various emissions offset ventures, including converting diesel-powered farm engines to run on electricity or an alternative fuel, development of electric vehicle infrastructure, and/or diesel school bus retrofits (MBARD, 2017a).

The MBARD indicated that one challenge for off-site mitigation programs to offset short-term construction emissions is that their implementation can be delayed due to uncertainties, such as securing third-party agreements. In addition, there is considerable front-end research required by MBARD staff that has posed some staffing challenges to administer the programs. For these reasons, the MBARD prefers mitigation to be on-site, but if impacts are not reduced to less than significant with incorporation of on-site mitigation, the MBARD indicated its planners would work with CalAm on an off-site mitigation program for the proposed project (MBARD, 2017a).

In order for a similar off-site mitigation program to effectively reduce construction-related impacts associated with the proposed MPWSP, the off-site mitigation program offsets would have to occur contemporaneously with project construction. This may or may not be feasible depending on the timing of the initiation of the offsets. In addition, the CEQA and NEPA Lead Agencies would have no ability to ensure that any third-party agreements that may be needed to initiate an off-site mitigation program would be successfully negotiated. Nonetheless, because air quality impacts associated with construction activities would not be reduced to a less-than-significant level with implementation of on-site mitigation, such as Mitigation Measure 4.10-1a, Mitigation Measure 4.10-1e, Off-site Mitigation Program, and related discussion has been added to the Final EIR/EIS (see below). It should be noted that since we cannot substantiate at this time that off-site mitigation in the form of emissions offsets are feasible, the impact continues to be significant and unavoidable.

The following sentences have been revised in the EIR/EIS Gaseous Criteria Pollutant Emissions discussion of Impact 4.10-1 (see Air Quality Section 4.10.5.1, Construction Impacts).

> Implementation of **Mitigation Measures 4.10-1a (Equipment with High-Tiered Engine Standards)**, ~~and~~ **4.10-1b (Idling Restrictions)**, and **4.10-1e (Off-site Mitigation Program)** would reduce NO_x emissions by requiring CalAm and/or its construction contractor(s) to make a good faith effort to use construction equipment that meets the highest USEPA-certified tiered emission standards, ~~as well as~~ to ensure on-road and off-road equipment idling is minimized, and to fund an off-site mitigation program.

The following sentence has been added to the EIR/EIS Gaseous Criteria Pollutant Emissions discussion of Impact 4.10-1 (see Air Quality Section 4.10.5.1, Construction Impacts).

> In addition, it cannot be substantiated at this time that off-site mitigation in the form of emissions offsets is feasible given the schedule of proposed construction activities and schedule uncertainties associated with implementing such a program; therefore, off-site emission reductions that would be associated with this Mitigation Measure 4.10-1e cannot be quantified.

The following mitigation measure has been added to the EIR/EIS discussion of Impact 4.10-1 (see Air Quality Section 4.10.5.1, Construction Impacts).

> *Mitigation Measure 4.10-1e applies to all of the proposed project components.*
>
> **Mitigation Measure 4.10-1e: Off-site Mitigation Program.**
>
> CalAm shall work with the Monterey Bay Air Resources District (MBARD) and put forth a good faith effort to fund an off-site mitigation program that would be contemporaneous with project construction to offset construction-related NO_x. CalAm shall provide to the Lead Agencies documentation showing that it has reached an agreement with MBARD to fund an off-site emissions mitigation program that shall include offsets to be executed during construction of the project. If such a program is determined by CalAm and MBARD to be infeasible given the construction schedule of the project, CalAm shall provide documentation to the Lead Agencies that substantiates such a determination. All documentation shall be provided to the Lead Agencies at least two weeks prior to the commencement of construction.

MBARD-7 Operational NOx emissions would not exceed the applicable significance threshold (see Table 4.10-7); therefore, as described in Impact 4.10-4, no mitigation for NOx during operation is required. There would be no vehicle fleet associated with project operations.

MBARD-8 The first bullet item of Mitigation Measure 4.10-1c, Construction Fugitive Dust Control Plan, has been revised to include more frequent (three times daily) watering (see Air Quality Section 4.10.5.1, Construction Impacts).

As described below, modulating dust producing activities along populated corridors would not provide a meaningful reduction in the overall construction PM_{10} emissions.

The majority of the construction activities that would occur along populated corridors would be associated with installation of the proposed pipelines, which would occur at rates of 150 to 250 feet per day. The fugitive dust emission estimates assume that all six pipelines that would be constructed at various locations throughout Monterey County would be constructed concurrently. Concurrent construction of all pipelines combined with implementation of Mitigation Measure 4.10-1c, Construction Fugitive Dust Control Plan, is estimated to result in a maximum of 2 pounds per day of fugitive dust in the form of PM_{10} (see Final EIR/EIS Appendix G1.7). This equates to an average of about 0.3 pound per day per pipeline, and thus the emissions near specific sensitive receptors would be less than the total estimated daily emissions. There would also be earth moving associated with the ASR wells and Carmel Valley Pump Station in the vicinity of sensitive receptors; however, these activities would be limited to areas of 0.25 acre and 0.08 acre respectively, which would result in mitigated emissions of 1.8 pounds and 0.6 pound per day respectively. Therefore, even if fugitive dust emissions could be reduced by an additional 50 percent by modulating dust-producing activities in the vicinity of sensitive receptors, the resulting reductions would equate to less than 1 pound per day at any given location, which would not equate to a meaningful reduction, and would not be necessary to achieve a less-than-significant impact.

8.5.4 Responses to Comments from Monterey County Resource Management Agency

MCRMA-1 EIR/EIS Section 4.14 evaluated impacts of the proposed project on aesthetic (visual) resources. The visual setting at the desalination plant site is described in EIR/EIS Section 4.14.2.3; conformance with applicable Monterey County General Plan policies is described in Table 4.14-2. Construction impacts at the desalination plant site are addressed in Section 4.14.6.1. Operational and facility siting impacts at the desalination plant location, including consideration of effects on public views and visual compatibility with surrounding land uses, are addressed in Section 4.14.6.2 (see also Figure 4.14-4).

MCRMA-2 The text in EIR/EIS Section 4.8.2.3 has been revised to read: "*~~2010~~1982 Monterey County General Plan*." Additionally, a footnote has been added to clarify that for purposes of implementation of the LCP, the relevant 1982 General Plan policies currently remain applicable, although a comprehensive update was adopted in 2010.

MCRMA-3 The text in EIR/EIS Table 4.8-2 has been revised as follows:

> Lands with a General Plan land use designation of Permanent Grazing may need to be redesignated to accommodate the proposed MPWSP Desalination Plant unless the County issues a Use Permit, which~~. As necessary, such conversion~~ would occur through the requisite local planning and permit review processes. The proposed MPWSP Desalination Plant would be compatible with the adjacent Monterey County Landfill and the MRWPCA Regional Wastewater Treatment Facility.

MCRMA-4 The text in Draft EIR/EIS Table 4.8-2 has been revised as follows:

> Potentially Inconsistent: Impacts related to cultural, agricultural, and biological resources and water quality, are discussed in EIR/EIS Sections 4.15, 4.16, 4.6, and 4.3, respectively. Specifically, please refer to Tables 4.15-6, 4.16-2, 4.6-2, and 4.3-5 for additional discussion of the project's conformity with applicable North County Land Use Plan policies related to cultural, agricultural, terrestrial biological resources, and water quality ~~these resource areas~~, respectively. In all but one instance related to compatibility with established land use policies regarding biological resources (i.e., Impact 4.6-4), potential land use policy and regulation conflicts are resolvable with the implementation of recommended mitigation. Because this policy pertains to topics other than land use and recreation and is addressed elsewhere in the EIR/EIS, it is not discussed further in Section 4.8.

MCRMA-5 As noted in Draft EIR/EIS Section 4.16.2.1, the Farmland Protection Policy Act (FPPA) seeks to protect Prime Farmland, Unique Farmland, Farmland of Statewide Importance, and Farmland of Local Importance from conversion to non-agricultural uses (7 USC §4201(c)(1)). As described in Section 4.16.5, Direct and Indirect Effects of the Proposed Project, the proposed project would not irreversibly convert any of these farmland designations to non-agricultural use. The conversion of land designated or zoned as grazing land, such as would occur due to construction of the MPWSP Desalination Plant on the 25-acre parcel designated Grazing Land and zoned for Permanent Grazing, would not conflict with the FPPA. The text in the last paragraph of Section 4.16.2.1 has been clarified as follows:

> The proposed project would not be subject to FPPA requirements because the project would not irreversibly convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance ~~farmland~~ to non-agricultural use.

As described in Section 4.16.3, there are two impact significance criteria related to the conversion of farmland (or other agricultural land) to non-agricultural use: 1) involves changes in the existing environment that, due to their location or nature, could result in the conversion of farmland to non-agricultural use; or 2) converts Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP, to non-agricultural use. The land on which the MPWSP Desalination Plant would be located is not designated as Prime, Unique, or Farmland of Statewide Importance by the FMMP, and thus would not result in a significant impact under the second criterion.

With respect to the first criterion, Impact 4.16-1 concludes that construction of the MPWSP Desalination Plant would have a less-than-significant impact with respect to conversion of agricultural land to non-agricultural uses because no agricultural uses currently are present in this location. CEQA Guidelines Section 15126.2(a) states that "In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published…" The physical conditions on the proposed MPWSP Desalination Plant site are described in Section 4.16.1; the land has not been used for grazing for at least several decades. Because the land does not and has not sustained agricultural use for many years, constructing the MPWSP Desalination Plant would not be responsible for converting this land to non-agricultural use; thus, it would not result in a significant impact. According to CEQA Guidelines Section 15126.4(a)(3), mitigation measures are not required for effects which are not found to be significant. See also response to comment Marina-125 in Section 8.5.1 for further explanation regarding the conclusion that the proposed MPWSP would have a less-than-significant impact on the conversion of farmland to non-agricultural use.

Notwithstanding this limitation on the CPUC's ability under CEQA to impose mitigation on CalAm for the use of land zoned for grazing, CEQA does not affect any agency's authority to condition permit approval in any way consistent with that agency's statutory and constitutional powers. If Monterey County would like to consider requiring additional mitigation for this use of the 25-acre site in the context of its issuance of a conditional use permit for the proposed project, CEQA would not prohibit it from doing so. It would be the responsibility of CalAm to consult with the appropriate entities (which could include the Ag Land Trust) regarding such issues at that time.

MCRMA-6 Mitigation Measure 4.16-1, Minimize Disturbance to Farmland (on Draft EIR/EIS page 4.16-14) lists several measures that CalAm and its construction contractors shall incorporate into construction plans and specifications for all construction activities located in farmland areas to minimize adverse impacts on farmland. Such measures apply to the proposed alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline north of Charles Benson Road. Included in Mitigation Measure 4.16-1 is the requirement that CalAm shall notify affected property owners at least 90 days prior to initiating construction activities that have the potential to interfere with agricultural operations. The mitigation also includes several other measures to minimize disturbance to farmland.

In response to this comment, the second bullet point under Mitigation Measure 4.16-1 has been revised to require CalAm and its construction contractors to consult with affected property owners to determine the best construction schedule for their operations:

- Construction contractor(s) shall minimize the extent of the construction disturbance, including construction access, in agricultural areas to the maximum extent feasible. <u>Minimization efforts shall include, but not be limited to, consulting with affected property owners to schedule construction activities to minimize impacts during planting, growing, and/or harvest seasons.</u>

See response to comment MCRMA-5 regarding the County's authority to further condition permit approval, including by requiring that the project be reviewed by the County Agricultural Commissioner's Ag Advisory Committee.

8.5.5 Responses to Comments from Monterey County Water Resources Agency

MCWRA-1 MCWRA's review of the EIR/EIS, and general comments on Chapter 2 (Water Demand, Supplies and Water Rights), Section 4.3 (Surface Water Hydrology and Water Quality), Section 4.4 (Groundwater Resources) and Appendix E2 (updated Groundwater Modeling) are acknowledged. See responses to the more specific comments MCWRA-2 through MCWRA-8.

MCWRA-2 The text corrections have been made in EIR/EIS Section 4.2.1.3.

MCWRA-3 The Department of Water Resources' (DWR) 2016 Bulletin 118 Interim Update responds to the Sustainable Groundwater Management Act (SGMA), which is discussed in Master Response 6, The Sustainable Groundwater Management Act. Section 8.2.6.2 of Master Response 6 provides a discussion of basin name designations including the current basin and subbasin boundaries, and notes that the designation of basin names and boundaries may change. Regardless of where the boundaries will eventually be established and named, the EIR/EIS hydrogeologic and groundwater investigations used the names described in this EIR/EIS, although the groundwater models further subdivided the areas into cells that used input parameters specific to that individual cell, as explained in Section 4.4.4.2, Groundwater Modeling. Therefore, to maintain consistency throughout the EIR/EIS, and the hydrogeologic and groundwater modeling (Appendices B2, C3, E1, and E2), the names of the basins have not been changed in Final EIR/EIS Figure 4.4-1.

MCWRA-4 In response to this comment, the discussion of the Seaside Groundwater Basin and Aquifers in Section 4.4.1.2 (Draft EIR/EIS page 4.4-12) has been clarified as follows:

> The Seaside Groundwater Basin (SGB), as defined by the California Department of Water Resources, the Seaside Watermaster, and the Monterey Peninsula Water Management District, encompasses approximately 24 square miles at the southwest corner of the Salinas Valley adjacent to the Pacific Ocean (Yates et al., 2005). The Seaside Watermaster ~~SGB is~~ further subdivided the SGB into the Northern and Southern Subbasins by the Laguna Seca Anticline and a segment of the Ord Terrace Fault, which restrict groundwater flow between the subbasins (HydroMetrics, 2009a). The two subbasins are further subdivided into coastal and inland subareas with the division boundary just west of General Jim Moore Boulevard.

All references in the EIR/EIS to the Seaside Groundwater Basin (SGB) refer to the basin defined in the above-cited paragraph and not to the "Seaside Area Subbasin" referenced in the comment.

MCWRA-5 In the process of further evaluating basin names and boundaries in response to the SGMA, the California DWR has recently renamed the area in between the southern boundary of the Pressure Area and the adjudicated Seaside Groundwater Basin shown on Figure 4.4-1. In response to this comment, the following new language has been inserted into EIR/EIS Section 4.4.1.2, at the end of the subsection titled Salinas Valley Groundwater Basin (Draft EIR/EIS page 4.4-5):

> The boundaries and names of the basins have been updated to reflect the currently available information, as shown on **Figure 4.4-1**. This figure illustrates the updated basin boundaries in the western part of the SVGB, which were used in the modeling for the proposed project (HydroFocus, 2016). <u>Subsequent to the publication of the Draft EIR/EIS, the California Department of Water Resources made further changes by designating the area in between the Pressure Area (now called Salinas Valley Basin, Subbasin 180/400 Foot Aquifer) and the adjudicated Seaside Groundwater Basin as the Monterey Subbasin of the SVGB.</u> In this EIR/EIS, the primary area of study within the SVGB is within the Pressure Area.

MCWRA-6 Draft EIR/EIS page 4.4-19 incorrectly states that the 2015 Brown and Caldwell report was prepared for the MCWRA, when it was actually prepared for the Monterey County Resource Management Agency (MCRMA). The text in has been revised accordingly in the Final EIR/EIS.

MCWRA-7 The referenced text in the section on Groundwater Enhancement Programs in the SVGB in Section 4.4.1.3, Groundwater Flow and Occurrence has been revised to clarify that the CSIP is operated in tandem with the SVRP.

MCWRA-8 The text on Draft EIR/EIS page 4.4-28 discusses the extent of seawater intrusion as measured by the concentration of Total Dissolved Solids (TDS), which can also be measured using chloride concentrations. Both measurement methods would result in delineating the same extent of seawater intrusion, shown on Figures 4.4-10 and 4.4-11. However, in the section on Seawater Intrusion in Section 4.4.1.4, Groundwater Quality, the text has been revised to clarify that the MCWRA uses chloride measurements.

8.5.6 Responses to Comments from Monterey Peninsula Regional Water Authority

MPRWA-1 The Lead Agencies acknowledge the Monterey Peninsula Regional Water Authority's commendation of the Draft EIR/EIS.

MPRWA-2 As described in detail in EIR/EIS Section 4.3.5.2, the assessment of impacts and regulatory compliance related to the discharge of brine via the existing MRWPCA outfall diffuser is based on model analyses that incorporate conservative (i.e., worst-case) assumptions regarding effluent and receiving water density, dilution and mixing dynamics, and concentrations of water quality constituents. Consistent with such an approach, the model analyses utilized a combination of water quality characteristics for the desalination brine and receiving water, such as temperature and salinity, that resulted in the maximum density, and thus the most conservative (lowest) dilution results specific to each assessed discharge scenario.

As discussed in Master Response 8, Project Source Water and Seawater Intrusion, Section 8.2.8.1, the groundwater entering the slant wells would originate only from within the capture zone and after the ambient groundwater is extracted from the capture zone, the capture zone would continue to be recharged by ocean water. As explained in Master Response 4, The Agency Act and Return Water, Section 8.2.4.3, the steady-state water inflows to the capture volume would be seawater inflow from Monterey Bay and recharge from precipitation on the land surface overlying the capture zone.

Increasing the temperature of the brine, as suggested, based on monitoring data from the test well and/or from the desalination process (which would not add heat)[1] would result in slightly decreased assumed brine density and a subsequent slight increase in the assessed dilution; increased dilution would further reduce potential water quality impacts associated with operational discharges reported and discussed in the EIR/EIS. Therefore, using ocean water temperature without heat gain from the treatment process remains a reasonable and conservative assumption.

MPRWA-3 Whereas the April 2015 Draft EIR did not directly address hypoxia or the Coanda effect (sometimes referred to as the Coanda attachment, see also Appendix Section 4.3), this EIR/EIS addresses both in EIR/EIS Section 4.3.5.2. The dilution modeling conducted for this EIR/EIS considered the near-field to be limited to the edge of the Zone of Initial Dilution (ZID), which is the point at which the plume would no longer driven by the dynamics of the discharge port, and dilution would become influenced by the ocean waves and currents; this distance would range between 10 and 39 feet from the diffuser ports (see Table 4.3-13). The far-field is

[1] See EIR/EIS Section 4.3.3: "There would be no heating mechanism or any process that would increase the temperature of the source water as it passes through the treatment units."

considered to be the area between the edge of the ZID and the edge of the regulatory BMZ at 100 meters (328 feet). EIR/EIS Table 4.3-13 shows that for the most-dense operational scenario modeled (brine-only, Scenario 2), salinity at the edge of the BMZ would be 1.34 ppt above ambient. Since the salinity increment above ambient would be low, and the Coanda attachment would not occur, hypoxia would not occur, consistent with the conclusion found by Geosyntec using the mass balance analysis. In response to the comment, the second paragraph on p. 4.3-84 of the Draft EIR/EIS has been revised as follows:

> Comments specifically expressed concern that, due to sediment oxygen demand and potential limited mixing due to dense discharges forming Coanda attachments, limited dilution and mixing could restrict oxygen supply. As described above, Coanda attachments would not occur, and modeled salinity levels are less than 2 ppt above ambient salinity at the edge of the ZID. Further, to evaluate the potential for hypoxia, Geosyntec (2015) performed a mass-balance analysis (a mass-balance analysis accounts for a given material entering and leaving a system)<u> based on dilution and dispersion analyses for operational discharges completed by ESA (ESA, 2015)</u>. The analysis applied a mass-balance approach to a conservative areal extent of a brine-only plume (i.e., the most-dense of the proposed operational discharges) to derive estimates of oxygen demand in local sediments (70 to 180 kilograms/day) and estimates of oxygen supplied (less than 5,600 kilograms/day) by the operational discharges (including entrained seawater). Based on the results of the mass-balance analysis, the amount of oxygen supplied to the discharged plume by ambient seawater entrained during turbulent mixing and dilution is more than 30 times greater than that consumed by the sediments. As such the concentration of dissolved oxygen in receiving ocean waters would not become depressed by more than 10 percent from that which occurs naturally, hypoxia is unlikely to occur as a result of proposed operational discharges and impacts would be less than significant.

MPRWA-4 The total annual net project energy demand used to estimate project greenhouse gas (GHG) emissions includes consideration of a net reduction of 8,100 acre-feet per year (afy) of product water pumping in the existing Monterey Main System, which includes facilities in Carmel, Seaside, Ryan Ranch, Bishop, and Hidden Hills. However, for a conservative analysis, it was assumed that no CO_2 degassing currently occurs due to groundwater pumping for the Monterey Main System due to the relatively shallow depths of the existing Carmel Valley wells.

In addition, the project GHG emissions estimates identified in the EIR/EIS do not include consideration of the 800 afy of reduced groundwater pumping by the Castroville Community Services District (CCSD) from the Salinas Valley Groundwater Basin. However, assuming the same energy use factor that was used for estimating the existing Monterey Main System (i.e., 913 kWh per acre-foot of water produced), and the same groundwater degassing rate as estimated for the project (i.e., 735 metric tons CO_2 per 23,219 acre-feet water pumped), the reduced groundwater pumping by the CCSD would result in a net reduction of project-related GHG emissions of about 120 metric tons CO_2e per year. Compared to the amortized emissions of the project presented in the Final EIR/EIS (i.e., 8,365 metric tons CO_2e per year), the reduction would represent approximately 1.5 percent of the GHG emissions estimated for the project and this potential reduction in GHG emissions is considered negligible.

MPRWA-5 Subsequent to the release of the Draft EIR/EIS, Mitigation Measure 4.11-1 has been revised to include a net zero indirect operational GHG emissions requirement for the project (see Impact 4.11-1 discussion in Final EIS/EIR Section 4.5.11). One of the items identified in the revised measure's emission reduction loading order is to procure renewable energy from off-site sources within California via purchases from one or more of a variety of specified sources, including Monterey Bay Community Power.

MPRWA-6 Text has been revised to clarify that the offshore portion of the outfall consists of 60-inch and 48-inch diameter pipe (E2 Consulting Engineers, 2014).

MPRWA-7 Figure 10 in Appendix D1 is a reproduction of a figure presented in the study referenced in the figure title and is accurately labeled.

MPRWA-8 In response to the comment, the last bullet on page 4.3-73 of the Draft EIR/EIS has been revised as follows:

> Estimate regions within the BMZ where salinity would exceed 2 ppt <u>above background salinity</u>.

References

E2 Consulting Engineers, 2014. Basis of Design Report for Proposed Brine Mixing Facility – Section 4. January. Prepared for MRWPCA.

8.5.7 Responses to Comments from Monterey Peninsula Water Management District

MPWMD-1 EIR/EIS Table 3-8, Anticipated Permits and Approvals, includes the Monterey Peninsula Water Management District (MPWMD) Water System Expansion permit under Ordinance 96 of the MPWMD Board of Directors. Ordinance 96 includes Rule 20-A, which describes permits to create/establish a water distribution system.

MPWMD-2 The referenced sections, including EIR/EIS Section 3.2.3.5, have been revised; Terminal Reservoir has been removed from the description of the proposed project, from Figure 3.3-9b and from all sections of the EIR/EIS that evaluated the component. The treated water storage tanks were properly described in Draft EIR/EIS Section 3.2.3.1.

MPWMD-3 In response to this comment, the first paragraph of EIR/EIS Section 2.2.1 has been revised to include the Monterey Peninsula Airport District. This does not change the analysis or conclusions presented in the EIR/EIS, which recognized that the airport district is within the area served by the project.

MPWMD-4 In response to this comment, the 2016 Cease and Desist Order (CDO) has been added to the referenced sentence in EIR/EIS Section 2.1.

MPWMD-5 In response to this comment, the referenced text in EIR/EIS Section 2.2.1.1 has been revised as shown:

> The majority of the Monterey District water supply comes from 21 extraction wells screened in the upper alluvial deposits of the Carmel River in Carmel Valley known as the Carmel Valley Alluvial Aquifer. CalAm's <u>supply also includes</u> ~~Carmel River supplies are supplemented, especially during the summer high-demand season, by~~ groundwater production wells in the Seaside Groundwater Basin.

Furthermore, as a result of the September 2016 Phase 2 decision that authorized the construction of the Monterey Pipeline, text at the end of EIR/EIS Section 2.2.1.1 that references the hydraulic trough has been deleted.

MPWMD-6 The existing interconnections are emergency interconnections according to the Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Plan (MPWMD and Denise Duffy & Associates, 2014). In response to this comment, the EIR/EIS text has been revised, but these revisions do not change the analysis or conclusions presented in the Draft EIR/EIS. The revisions include the addition of a footnote in Section 2.2.1:

> Because the Toro and Ambler areas would not be served by the proposed project, these areas are not included in the proposed project's demand and supply assumptions.[4]
>
> [4] There is an existing emergency interconnection between the Toro and Hidden Hills systems; the project would not change the use of this emergency interconnection.

In addition, the second and third paragraphs of EIR/EIS Section 2.2.2.2 have been revised for clarity.

MPWMD-7 In response to this comment, the footnote on Draft EIR/EIS page 2-4 (now footnote 7 in the Final EIR/EIS due to other revisions) has been revised to include the sentence,

> "In January 2017, the MPWMD approved a contract for preparation of an alternatives study for Los Padres Dam and sediment management in the reservoir (MPWMD, 2017)."

MPWMD-8 The description of the Monterey Peninsula Water Resources System presented on page 2-5 of the Draft EIR/EIS is based on information in the MPWMD comment letter that was submitted on the 2015 MPWSP Draft EIR, which stated in relevant part, regarding the corresponding section of Chapter 2 in the 2015 Draft EIR, "The District's jurisdiction extends throughout its entire boundary; however, *MPWMD has defined the sources of supply to the CalAm system as the MPWRS*. Amendments to the MPWRS are made through ordinances such as Ordinance No. 135, which changed the definition of the MPWRS to include all of the Seaside Groundwater Basin, including the Laguna Seca Subarea…." (MPWMD 2015, page 2, emphasis added.)

Neither MPWMD's 2015 comment on the Draft EIR cited above, nor the current Draft EIR/EIS text cited in the current comment, state or imply that CalAm's sources of supply are for CalAm's exclusive use. To clarify the text in response to this comment, the paragraph under Section 2.2.2.3, Allocation Program has been revised as follows:

> The MPWMD augments, manages, and regulates surface and groundwater resources in the Carmel Valley and the greater Monterey Peninsula. MPWMD's jurisdiction includes the area served by CalAm's Monterey District (shown in **Figure 3-1** in Chapter 3, Description of the Proposed Project) and CalAm's sources of supply (the Seaside Groundwater Basin and Carmel Valley Alluvial Aquifer), which MPWMD defines as the Monterey Peninsula Water Resource System (MPWMD, 2015b). The Monterey Peninsula Water Resource System includes supplies for non-CalAm pumpers in the Seaside Groundwater Basin and Carmel Valley Alluvial Aquifer, as well. The MPWMD was established…

MPWMD-9 In response to this comment, the text in the first paragraph of EIR/EIS Section 2.2.2.4 has been revised to include Order 2016-0016.

MPWMD-10 In response to this comment and consistent with Section 3(b)(viii) of Cease and Desist Order 2016-0016, the text in the last paragraph on page 2-7 of the Draft EIR/EIS is revised as follows:

> …. If CalAm fails to meet a milestone, the Revised CDO specifies that the annual diversion limit will be reduced by 1,000 afy. The revised CDO also provides that "[i]f the State Water Board determines that the cause [for failing to achieve a milestone] is beyond Applicants' control, it may suspend any corresponding reductions under [the specified CDO condition] until such time as the Applicants can reasonably control progress towards the Milestone."[13] Section 5.4.2, No Project / No Federal Action, provides further discussion on the CDO and the milestones.
>
> [13] Order WR 2016-0016 Schedule and Condition 3(b)(viii).

MPWMD-11 EIR/EIS Table 2-3, Other Demand Assumptions, accurately presents the demand assumptions identified by CalAm in its Application A.12-04-019 to the CPUC for approval of the MPWSP, and does not explicitly identify a timeline associated with Pebble Beach water entitlements or legal lots of record. In response to this and other comments, as well as the SWRCB's recognition of the Pebble Beach water entitlements in the CDOs, the discussion of Pebble Beach Water Entitlements throughout the EIR/EIS has been revised to show that the Pebble Beach entitlements are considered existing service area demand that CalAm is obligated to serve, with or without the proposed project. See EIR/EIS Section 1.6.2. Therefore, given that "Service Area Demand" now includes the demands of existing service area customers as well as the existing Pebble Beach entitlements, EIR/EIS Table 2-3 and the corresponding Table 6.3-1 in EIR/EIS Section 6.3 have been revised to qualify the term as follows:

> "Existing Annual Service Area Demand."

Please also see responses to comments MPWMD-21, MPWMD-57, and MPWMD-59.

MPWMD-12 Draft EIR/EIS Section 2.3.3.3 (Final EIR/EIS Section 2.3.2.2) discusses the two preliminary MPWMD estimates and describes MPWMD's opinion that CalAm's estimate of supply needed to serve lots of record is not a valid number. The comment augments information presented in Draft EIR/EIS Section 2.3.3.3 on the lots of record estimates, noting that additional development has occurred in the service area since the preliminary estimates MPWMD prepared in the early 2000s, and implying that there are likely now fewer vacant legal lots of record than when MPWMD's estimates were prepared. As described in Draft EIR/EIS Section 2.3.3.3, the more recent of MPWMD's two estimates (1,211 afy), from 2002, was greater than CalAm's estimate even though the 2002 estimate did not include vacant lots on improved parcels in unincorporated Monterey County. MPWMD testified in 2013 (Stoldt, 2013) that CalAm's estimate may therefore, underestimate demand associated with lots of record. This comment observes that some vacant lots on unimproved parcels may never be split from those parcels and developed.

The EIR/EIS discloses the uncertainty of the estimates of water demand associated with lots of record, noting that MPWMD adopted neither of the estimates it had commissioned due to their shortcomings. The analysis of potential growth inducing impacts in EIR/EIS Section 6.3 compares the water supply that would be provided by the proposed project to serve additional development (such as lots of record) with the updated estimate of demand associated with general plan buildout that MPWMD prepared in 2006 in consultation with service area jurisdictions (see Draft EIR/EIS Section 2.5.3.4, pages 6-35 through 6-37).

To explicitly recognize that development has occurred in the service area since the estimates were prepared and update the EIR/EIS discussion pursuant to this comment, the third and fourth paragraphs in Final EIR/EIS Section 2.3.2.2 (which had been Draft EIR/EIS Section 2.3.3.3) has been revised as follows:

> The summary identifies two reports on the topic of lots-of-record water demand that were prepared for the MPWMD in 2000 and 2002, and notes that the 2001 estimate cited in CalAm's 2006 Management Plan was from an interim period between these two reports. The 2000 report, which had identified demand of 1,166.3 afy for vacant lots and remodels, was not adopted by the MPWMD Board because it did not include estimates for the city of Monterey or the unincorporated county; the revised 2002 report, which identified demand of 1,211 afy, included estimates for the city of Monterey but not for the unincorporated county (MPWMD, 2013c). The MPWMD's direct testimony to the CPUC in February 2013 reiterated these observations, stating that the MPWMD does not consider the 1,181 afy estimate a valid value and that the higher 2002 estimate did not account for vacant lots on improved parcels in the unincorporated areas (Stoldt, 2013). While MPWMD testified that ~~Thus,~~ CalAm's estimate may therefore underestimate the actual demand for lots of record (Stoldt, 2013),~~.~~ MPWMD observed in 2017 that development of lots of record has occurred since the estimates were prepared in the early 2000s and that some vacant lots on improved parcels that were included in MPWMD's vacant lot study may never be split from the main property and developed (MPWMD, 2017). Whether development of lots of record since the early 2000s has offset, or more than offset, the number of uncounted lots that should have been included in the 2002 study, and by how much, cannot be determined from available data.

> ~~On the other hand,~~ Another factor affecting the estimate of demand associated with lots of record is water use rates. ~~c~~Comment on the 2015 MPWSP Draft EIR suggested that water demand per lot has likely decreased in years since those reports were prepared. It may be the case that per-lot water demand is somewhat lower than 15 years ago, considering the general trend in lower per capita demand in the service area and throughout the state; however, the extent of such reductions may not be quantifiable based on available data~~ and, more important, water demand for lots in the unincorporated part of the service area had not been estimated at all in the 2000 study and were only partly taken into account in the 2002 study, as stated in the MPWMD testimony~~. (Refer to Section 6.3, Growth Inducement, for additional discussion of this demand component.)

The first paragraph under "Vacant Lots of Record" in Section 6.3.5.1, Proposed MPWSP Water Service Capacity, has been revised as follows:

> …The District never adopted this estimate because it did not include demand associated with vacant lots on improved parcels in the unincorporated County areas (Stoldt, 2013). While MPWMD testified in~~In~~ 2013~~, the MPWMD testified~~ that CalAm's estimate of 1,181 afy may therefore underestimate demand associated with lots of record (Stoldt, 2013), in 2017 MPWMD observed that development has occurred since those estimates were prepared in the early 2000s and that some vacant lots on improved parcels that were included in MPWMD's vacant lot study may never be split from the main property and developed (MPWMD, 2017). MPWMD's most recent estimate of future service area demand, prepared…

The new reference added in Section 6.3.5.1 (MPWMD, 2017) is shown in response to comment MPWMD-7. Nothing in this comment or response would result in a revision to the EIR/EIS analysis or conclusions.

MPWMD-13 Draft EIR/EIS Section 2.3.4.2 (changed to Section 2.3.3.2 in the Final EIR/EIS), to which this comment refers, accurately summarizes information presented in CalAm's 2010 Urban Water Management Plan (UWMP), including its non-revenue demand estimates and projections, and no changes to that section are warranted in response to this comment.

Draft EIR/EIS Section 2.5.3.3, Non-revenue Water Reduction, provides more current information on CalAm's non-revenue water than is included in the 2010 UWMP. EIR/EIS Section 2.5.3.3, which includes information from quarterly reports CalAm submits to the SWRCB in compliance with the 2009 CDO, shows that since 2009 CalAm has substantially reduced non-revenue water (referred to as unaccounted-for water in the reports), consistent with this comment. The quarterly reports show 12-month running averages of unaccounted-for water (e.g., for the periods January 2015-December 2015, February 2015-January 2016, etc.).

Quarterly reports in 2016 show that non-revenue water for the period January-December 2015 (i.e., the calendar year) was 247 af, consistent with the information cited in this comment. (The quarterly reports do not provide total production data with which the percentage of non-revenue water might be calculated.) The 12-month running averages show that the amount of system losses fluctuates from period to period, and occasionally show anomalous results, which is why the Draft EIR/EIS showed the average trends over several years. In general, non-revenue water has continued to decrease, as indicated in the EIR/EIS and this comment. For example, in most of the 12-month running averages reported since January-December 2015, non-revenue water has totaled less than 200 af, although for the period April 2016 to March 2017 non-revenue water was slightly higher than for January-December 2015 (271 af compared to 247 af) (CalAm 2016; 2017). In response to this comment, the text in EIR/EIS Section 2.5.3.3 has been revised to update the information on non-revenue water, as follows:

> CalAm submits quarterly compliance reports to the State Water Board under the CDO (CalAm, 2011, 2012b, 2013, 2014, 2015~~.~~). ~~In t~~Those reports show~~,~~ ~~CalAm states~~ that between the 2011 and 2015 water years, CalAm ~~the company has~~ reduced system losses by an average of 506 afy~~,~~ compared to the base year system losses in water year 2009, and that by the end of this period the reductions in water losses exceeded the reduction target of 549 afy that had been established in the 2009 CDO:~~. Further, for the last three years,~~ the reduction in system losses ranged from 752 af in water year 2013 to 919 af in water year 2015~~, which exceeds the 549 afy target established in the CDO~~. System losses (i.e., the amount of non-revenue or unaccounted-for water), as opposed to the *reduction* in losses, for the period October 2014 through September 2015 (water year 2015) totaled 357 af and system losses for the period January through December 2015 (calendar year 2015) totaled 247 af (CalAm, 2016d). Since then, through March 2017, system losses were less than 200 afy in all 12-month periods except one (April 2016-March 2017), when non-revenue water totaled 271 af. CalAm notes that the actual components of unaccounted-for water are difficult to identify because unaccounted-for water represents a combination of system leaks and unmetered water use. Savings from system repairs and line replacements and the like through 2015 ~~would be~~are reflected in CalAm's system demands data ~~for those years, as part of the 10 years of demand data~~ discussed in Section 2.3.1.

The following references have been added in Section 2.5:

California American Water (CalAm), 2016d. Letter report to Leslie Grober, Deputy Director, Division of Water Rights, SWRCB, Re: SWRCB Order WR 2009-0060, 4th Quarterly Report for the 2015-2016 Water Year Addressing Operations for the Period of July 1, 2016 to September 30, 2016. November 3, 2016. Available:

https://amwater.com/caaw/customer-service-billing/billing-payment-info/water-rates/monterey-district.

California American Water (CalAm), 2017. Letter report to Barbara Evoy, Division Chief, Division of Water Rights, SWRCB, Re: SWRCB Order WR 2009-0060, 2nd Quarterly Report for the 2016-2017 Water Year Addressing Operations for the Period of January 1, 2017 to March 31, 2017. Dated May 1, 2017. Available: https://amwater.com/caaw/customer-service-billing/billing-payment-info/water-rates/monterey-district.

MPWMD-14 The Monterey Pipeline referenced in this comment was evaluated and approved as part of the CPUC's September 2016 Phase 2 GWR decision. Attachment 1 referenced in this comment is a table entitled "Effects of the Monterey Pipeline on ASR Yields by Water Year Type" and shows Carmel Valley well field capacity and permitted diversions for both ASR Phase 1 and ASR Phase 2 projects (Permits 20808A and 20808C, respectively). MPWMD's estimate of the long term annual yield for ASR Phases 1 and 2 and additional CalAm improvements noted in this comment is similar to the estimate of 1,920 afy for ASR Phases 1 and 2 that was presented in an Addendum prepared for the ASR project (Denise Duffy & Associates, 2012), as cited on page 2-19 of the Draft EIR/EIS. However, based on the information presented in Attachment 1, the yield of the two phases appears to be about 1,600 afy with the Monterey Pipeline in place in normal rainfall years. In addition, since the time that Attachment 1 was provided with this comment, MPWMD has added three new columns to the table (Stoldt, 2017) that show the weighted average yields based on the relative frequency of different water year types. As shown in the table below, the weighted average increased yield from adding the Monterey Pipeline is 714 afy and the weighted average total yield of the Phase 1 and 2 ASR projects is 1,641 afy or about 1,600 afy.

	Operational Days		**Project Yield (AF)**			**Percent of Time**	**Weighted Increased Yield**	**Weighted Total Yield**
	20808A	**20808 C**	**Without Pipeline**	**With Pipeline**	**Increased Yield**			
Critically Dry	4	3	53	86	33	12.5%	4.1	10.8
Dry	18	14	239	393	154	12.5%	19.3	49.2
Below Normal	41	33	545	908	363	12.5%	45.4	113.5
Normal	69	62	918	1,600	682	25.0%	170.5	399.9
Above Normal	94	102	1,357	2.372	1,016	12.5%	127.0	296.5
Wet	115	114	1,530	2,784	1,254	12.5%	156.8	347.9
Extremely Wet	139	140	1,862	3,389	1,527	12.5%	190.8	423.6
						Weighted Average:	713.8	1,641.46

SOURCE: Stoldt, 2017

As discussed in EIR/EIS Section 2.4.3, because of the variability of precipitation and instream flow levels and because diversions allowed under the ASR permits are contingent on maintaining instream flows, CalAm assumes a more conservative yield – 1,300 afy – from the ASR Phase I and II projects and the proposed MPWSP ASR-5 and ASR-6 wells. Given the low yields during dry years and critically dry years (53 to 239 af per year without the Monterey Pipeline and 86 to 393 afy with the pipeline, respectively), the recent severe five-year drought, and that more frequent and severe droughts will occur in the state in coming years due to climate change,[1] CalAm's lower estimate of long term reliable yield from the ASR is not unreasonable. Estimates in this EIR/EIS of supply provided by the MPWSP in conjunction with other sources assume operation of the proposed desalination plant at or close to 100 percent capacity. Should the MPWMD's current estimate prove more accurate than CalAm's, and the ASR system thereby provides more supply than CalAm currently expects, CalAm could operate the desalination plant at a less intensive level, as discussed in Master Response 13, Demand (Project Need) and Growth. The difference between MPWMD's and CalAm's ASR's yield estimates, 700 afy, is equivalent to about 0.6 mgd. Assuming ASR provides 700 afy more than was assumed for the MPWSP, a 9.6 mgd desalination plant could operate at 93 to 94 percent capacity, rather than 100 percent, to produce about 9 mgd of product water.

The discussion under "Water Available for Growth" in Master Response 13, Section 8.2.13.3, considers other possible supply and demand scenarios. If supply from the Carmel River ASR system provided either 1,300 or 1,600 afy, in combination with the other assumed supplies, the desalination plant could be reduced by one or two 1.6-mgd reverse osmosis units, depending on the particular demand scenario. See Master Response 13 for more information.

MPWMD-15 The typographical errors in the numbers of the two water rights permits in the paragraph at the bottom of page 2-20 and top of page 2-21 of the Draft EIR/EIS have been corrected.

MPWMD-16 The text in EIR/EIS Section 2.4.6.2, Malpaso Water Company LLC, is primarily based on information presented in the Findings in MPWMD Ordinance 165, as indicated in the cited references, which uses the term "Malpaso Water Company Water Use Permit subscribers" several times (e.g., in Findings No. 3, No. 6, and No. 8). Text in Section 2.4.6.2 has been revised to adhere to the term used in the Findings of Ordinance 165 and to clarify the use of "subscribers."

MPWMD-17 In response to this comment, the discussion under "Los Padres Reservoir" in EIR/EIS Section 2.5.2.1 has been updated as follows:

[1] For example, at the same time the California governor directed the State Water Resources Control Board to lift specific provisions of the drought emergency in April 2017, he also proposed legislation to establish long-term water conservation measures and "improved planning for more frequent and severe droughts" (SWRCB, 2017).

> …Based on the 2008 study, MPWMD estimated~~s~~ that the long-term sedimentation rate of the reservoir was~~is~~ 21 afy and that more than 510 af of replacement supply would likely be needed to offset the lost capacity (MPWMD, 2015b). A 2016 resurvey conducted for MPWMD determined that although the reservoir can hold up to 1,810 af at the spillway level, the safe usable storage was less than 1,400 af due to concerns about releasing anoxic water or water with hydrogen sulfide in the lowest portion of the reservoir (MPWMD, 2017). MPWMD currently estimates that sedimentations rates could range from 11 to 19 afy. Based on the 2016 resurvey and changes in reservoir operation, MPWMD currently believes that the previous estimate of needed replacement supply may be low. However, because the need for this replacement supply is long-term, MPWMD believes that water supply available from the Seaside Groundwater Basin at the end of CalAm's in-lieu replenishment period (discussed in Section 2.2.4) may be adequate to offset losses in supply from the Los Padres Dam and Reservoir (MPWMD, 2017).[30] As noted in Section 2.2.2, MPWMD and CalAm are currently studying the long term options for the Los Padres Dam and Reservoir.
>
> 30 The estimate of safe useable reservoir capacity based on the 2016 resurvey is 779 af less than the capacity identified in Order 95-10 (2,179 af), and an additional 700 afy will be available to CalAm at the end of the Seaside Groundwater Basin in-lieu replenishment period.

The new reference added in Section 2.5.2.1 (MPWMD, 2017) is shown in response to comment MPWMD-7.

MPWMD-18 The completion date shown in the Draft EIR/EIS is based on the cited reference, MPWMD Ordinance 168 (specifically, Item 5 on page 2 of the ordinance). In response to this comment, however, the second paragraph in EIR/EIS Section 2.5.3.1 has been revised and this comment letter is cited as a reference. See response to comment MPWMD-7 for the new reference.

MPWMD-19 Please see the response to comment MPWMD-13, which addresses the discussion of non-revenue water presented in Section 2.5.3.3.

MPWMD-20 EIR/EIS Table 2-5 presents the estimates of future water supply need (demand) prepared by MPWMD in consultation with service area jurisdictions in 2006 and revisions to some of those estimates based on more recent information. The revisions included an updated estimate for Monterey County based on the 2030 water demand estimate presented in Monterey County General Plan Final EIR Table 4.3-9e, Carmel River/Seaside Aquifer Existing and 2030 Estimated Water Demand. Table note "h" at the updated county estimate in EIR/EIS Table 2-5 explains that the updated estimate is "for the unincorporated county areas served by the Carmel River and Seaside Basin aquifer;" therefore this demand estimate would not include demand for the city of Marina. In addition, a review of the

Monterey County General Plan land use plans for the Greater Monterey Peninsula and Carmel Valley Master Plan planning areas shows that the areas south and east of CalAm's service area largely consist of lands designated as "rural grazing" and "resource conservation," which are unlikely to generate much water demand. The same Table 2-5 without further revisions is included in EIR/EIS Chapter 2.

The only reference to the "Greater Monterey Peninsula" on the page cited in this comment is Footnote 31, which is part of a discussion of several updates to the projection of future water supply needs associated with general plan buildout that had been prepared by MPWMD in 2006. Footnote 31 explains that because the Monterey County General Plan Final EIR used a higher per capita demand rate than currently assumed, and because the population estimate assumed in the General Plan EIR was higher than what AMBAG more recently projects, the EIR/EIS used the General Plan Final EIR estimate of 2030 demand (1,005 afy) rather than the estimate of buildout demand (4,439 afy).

The commenter's opinion of the County General Plan estimates of future demand and population are acknowledged The revised estimate of future supply needs in EIR/EIS Table 2-5 represents the most current data available on demand anticipated by the adopted general plan for the area that most closely conforms to the area served by CalAm, and table note "h" discloses the breakdown of demand for subareas within that portion of the unincorporated county that are included in the estimate. The future demand estimates presented in this table were not the basis for sizing the MPWSP but are presented to provide a general comparison of demand associated with anticipated development under adopted general plans with the proposed project water supply that would be available to serve additional development. Please note that the revised county estimate in EIR/EIS Table 2-5 *reduces* MPWMD's own estimate, which was prepared in consultation with the county for the area served by CalAm.

Finally, in comment MPWMD-62, the commenter endorses the revised estimate of 3,526 afy shown in EIR/EIS Table 2-5 (and Table 6.3-8), of which the county estimate is part, suggesting at least general agreement with the revised estimate. See also EIR/EIS Appendix L, which considers several other possible supply and demand scenarios. The results of these scenarios are summarized in Master Response 13, Section 8.2.13.5.

MPWMD-21 This comment confirming that the MPWMD has not determined how water provided by the MPWSP may be allocated and suggesting how it may be allocated or reserved is noted. Absent definitive information about the allocation, it was necessary to make assumptions for purposes of the growth inducement analysis presented in EIR/EIS Section 6.3. The discussion in EIR/EIS Section 2.5.4 discloses the EIR/EIS *assumptions*, as opposed to presenting more definitive information, as indicated in the section heading, "Assumptions about the Allocation of MPWSP Water," and section text. The assumption that water provided by the project that is not needed for existing demands or Salinas Valley return water would be used to meet demand associated with future development is an appropriately conservative assumption for the impact analysis, in the absence of verifiable commitments that project water would not be so used. The assumption that water not needed for existing demand or return water obligations would be distributed in general proportion to projected planned growth in the CalAm service area is also appropriate, in the absence of definitive information on any MPWMD plans to the contrary.

Regarding the statement that MPWMD "may" maintain a reserve to offset Pebble Beach water entitlements, note that based on comments by the Pebble Beach Company, other comments by MPWMD, and the SWRCB's recognition of the Pebble Beach water entitlements, the EIR/EIS has been revised to characterize the Pebble Beach entitlements as an "existing" demand. Thus the EIR/EIS assumes that water supply provided by the MPWSP or other sources water would be retained – by whatever means the MPWMD determines – to offset the Pebble Beach entitlements (see, e.g., responses to comments MPWMD-11 and MPWMD-57).

In response to this comment, the text of the second paragraph of Draft EIR/EIS Section 2.5.4 on page 2-30 has been revised to expand the discussion of MPWSP water allocation, as follows:

> One of the MPWMD's key functions is to allocate water supply within its boundaries. The water supply that the proposed project would provide, along with other existing and planned supplies, would continue to be subject to MPWMD's allocation program. Although MPWMD has not yet begun to address allocation of the proposed MPWSP supply, this analysis assumes that the same considerations that informed the past and current allocations will be relevant to the allocation of the MPWSP supply. This EIR/EIS assumes for purposes of the impact analyses presented in Chapters 4 through 6 that water provided by the proposed project will be used to ~~allocated to~~ meet existing demand and that any water left over would be allocated in general proportion to projected planned growth in the CalAm service area jurisdictions. MPWMD recently confirmed that the future allocation process has not been defined and that MPWMD will update its 1990 Allocation Program EIR only when it is clear that CalAm will complete construction of a project to provide replacement supplies [for the reductions that resulted from SWRCB Order 95-10 and related CDOs and the Seaside Basin adjudication] (MPWMD, 2017). MPWMD indicates that it may not allocate all the water, choosing instead to retain some for future allocation to jurisdictions, "as general plans change over time," or to "retain a reserve for public benefit projects, maintain a reserve to offset Pebble Beach entitlements, maintain a buffer for fluctuating demand due to economic or climate issues, or retain allocable water to allow a lower plant capacity factor for operations" (MPWMD, 2017). In the absence of

> definitive commitments as to how water provided by the project would be allocated (or not), the assumption that water provided by the project and not needed for existing demands or Salinas Valley return water would be used to meet demand associated with additional development, distributed in general proportion to projected planned growth in the CalAm service area, is a reasonable and appropriately conservative assumption for the EIR/EIS impact analysis.

The new reference added in Section 2.5.4 (MPWMD, 2017) is shown in response to comment MPWMD-7.

MPWMD-22 The referenced footnote in EIR/EIS Chapter 2, Water Demand, Supplies, and Water Rights) has been revised as requested in this comment.

MPWMD-23 EIR/EIS Figure 3-1 has been revised to include the Toro portion of CalAm's Service Area.

MPWMD-24 See response to comment USARMY-7 in Section 8.3.2.

MPWMD-25 EIR/EIS Table 4.1-2 has been revised to reflect the addition of two new extraction wells by CalAm at the Sand City Desalination Plant.

MPWMD-26 Project No. 17 has been removed from the cumulative analysis.

MPWMD-27 In response to this comment as well as comment MPWMD-40, the first paragraph on page 4.3-63 of the Draft EIR/EIS has been revised to remove the reference to the prior use of the depression during the development of ASR-3 and ASR-4 wells.

MPWMD-28 This comment is addressed in Master Response 6, Sustainable Management Act, which includes a discussion of basin boundaries.

MPWMD-29 The referenced text has been corrected in Section 4.3, Surface Water Hydrology and Water Quality, to state that the capacity of Los Padres Reservoir has been reduced by about 60 percent capacity, as opposed to 2 percent capacity.

MPWMD-30 This comment is addressed in Master Response 6, Sustainable Management Act, which includes a discussion of basin boundaries.

MPWMD-31 As noted on Draft EIR/EIS page 4.4-25, Pueblo Water Resources 2016 was the reference, and the cited text has been revised to reflect Water Year 2015, as follows:

> For the 2015~~2013~~ water year, groundwater in Well PCA-E was estimated to contain about~~22 to~~ 30 percent injected potable water.

MPWMD-32 The reference to the Seaside Ozone Treatment Plant in Section 4.4.1.4 has been revised to “Santa Margarita Chemical Building.”

MPWMD-33 The referenced text in Section 4.8.2.4, Special Districts, has been clarified to reference “an amendment to [CalAm’s] Water Distribution System Permit” rather than “a Water System Expansion Permit.”

MPWMD-34 A footnote has been added to Section 4.4.2.2 to clarify that “The RWQCB regulates ASR operations throughout California under SWRCB Order 2012-0010 General Waste Discharge Requirements for Aquifer Storage and Recovery Projects that Inject Water into Groundwater. However, the MPWMD operates the Seaside Basin ASR wells under Permit 20808C, which predates the statewide order.”

MPWMD-35 The discussion of Division of Water Rights Permit 20808C – Amended Permit for Diversion and Use of Water in Section 4.4.2.2 has been updated as follows:

> ***Division of Water Rights Permit 20808~~C~~ – Amended Permit for Diversion and Use of Water***
>
> In 1995, the State Water Resources Control Board (SWRCB) issued Permit 20808 to the Monterey Peninsula Water Management District (MPWMD) for the proposed Los Padres Reservoir project. The permit was later split and modified several times, and now addresses additional requirements for the diversion of surface and under stream flow from the Carmel River, protection of the Carmel Lagoon and fish habitat, and the injection and storage of Carmel River water in the Seaside Basin using the ASR injection/extraction wells. The MPWMD and CalAm now jointly own Permits 20808A and 20808C, which total 5,326 acre feet per year. The ASR project that diverts excess water off of the Carmel River operates under Permits 20808A and 20808C.
>
> The requirement to limit recovered water to 1,500 acre feet in any given year is associated with a side agreement between MPWMD, CalAm, and the California Department of Fish and Wildlife (CDFW) concerning recovery of water injected into the Seaside Basin under Permit 20808A. The Quarterly Water Budget Group which was set up to determine how the CalAm system should be operated can decide to extract less. This agreement does not include water recovered under Permit 20808C. However, Condition 7 in the Cease and Desist Order (CDO) (see Section 2.2.3 State Water Board Order 95-10 and Cease and Desist Order 2009-0060 for discussion) requires that all water injected under either Permit 20808A or 20808C be recovered in the same year, unless the CDFW and the National Marine Fisheries Service (NMFS) agree to an alternate recovery plan. Under the CDO, the first 600 acre feet per year of water diverted to ASR in

any water year must go toward offsetting Carmel River diversions in the water year it is diverted.

These requirements and others placed by the SWRCB on ASR recovery will be lifted once the CDO is met; thus, these limits will not be an operational or budgetary limit after replacement supplies are operational and CalAm has reduced its Carmel River diversions to authorized amounts.

MPWMD owns Permit 20808B for 18,674 acre feet per year, which is referred to as the “remainder” permit and is associated with a project to build a new main stem reservoir on the Carmel River downstream of the existing Los Padres Dam. That permit has a different set of instream flow requirements that were fixed to the permit by the SWRCB in 1995 prior to NMFS listing steelhead as a threatened species. No water has been diverted under Permit 20808B to date.

~~Permit 20808C set requirements for the ASR system and established a maximum annual Carmel River diversion of 2,900 afy for injection and storage in the Seaside Basin, timing and monitoring requirements for diversion, fish protection measures, and rules for the recovery of the stored water. The current annual volume of stored water that can be recovered is 1,500 afy, plus unrecovered carryover water from previous years, if available. In addition, the volume of recovered water may not exceed 1,500 af for a given year if the volume of water injected that year, plus carryover from previous years, does not equal 1,500 af. In that case, only the volume of water injected that year, plus whatever carryover water is available may be recovered.~~ Implementation of the proposed project would allow CalAm to more effectively utilize its Carmel River water rights by increasing its capacity to inject water for storage when river flows are sufficiently high to allow for diversion. CalAm is presently operating within the terms of the permit and nothing about the proposed project would change its ability to operate consistent with the permit.

MPWMD-36 See Master Response 4, Agency Act and Return Water, Sections 8.2.4.1 through 8.2.4.3 for additional information on the return water calculations and input from the Hydrogeologic Working Group (HWG).

MPWMD-37 The Proposed Return Water Settlement mentions there may be limitations in the capacity of the CSIP to accommodate **all of the return water** under some conditions [emphasis added]. EIR/EIS Section 3.2.3.7 articulates that “the first 800 afy would go to CCSD and the remaining water would go to the CSIP.” There are no indications or reasons to believe that the CSIP could not feasibly accept the balance of the return water.

MPWMD-38 The referenced text has been revised to clarify the relationship between the SEAWAT model and the Seaside Groundwater Basin Modeling.

MPWMD-39 See EIR/EIS Section 3.4.2, Operation of the ASR System, which explains that the Seaside Groundwater Basin annual monitoring reports prepared by the Seaside Groundwater Basin Watermaster would be reviewed yearly to identify the current location of the groundwater depression in the Santa Margarita Formation, the aquifer unit where the ASR system water would be banked.

MPWMD-40 See response to comment MPWMD-27.

MPWMD-41 The requested clarification has been made.

MPWMD-42 The requested clarification regarding the ASR source aquifer (i.e., the Santa Margarita Sandstone) has been made in EIR/EIS Section 4.4.5.2.

MPWMD-43 EIR/EIS Section 3.2.4 explains that CalAm proposes to expand the existing Seaside Groundwater Basin ASR system to provide additional injection/extraction capacity for both desalinated product water and Carmel River supplies, and to increase system reliability. EIR/EIS Table 3-8 has been revised to reflect the need for CalAm to file a Petition for Change with the SWRCB in order to use ASR-5 and ASR-6 wells for the injection and extraction of Carmel River water.

MPWMD-44 The EIR/EIS Section 4.4.5.2 text referred to in this comment has been revised to make the clear distinction between in lieu recharge and delivered water. See also response to comment Thomas-10 in Section 8.7.24.

MPWMD-45 The reference to Figure 4.7-2 in the subsection "Interference with Existing Groundwater Remediation Systems" has been revised to include reference to Figure 4.7-1 as well. Together, these two figures show the entire project area; therefore, while the ASR wells are visible on Figure 4.7-2 only, there are several nearby sites that are shown on Figure 4.7-1 that are located north of the ASR well area.

MPWMD-46 Carbon dioxide (CO_2) would have the opportunity to be released once the seawater concentrate reaches the brine equalization basin where it would first be exposed to the atmosphere; however, this does not change the amount of CO_2 estimated to be released.

The following revisions to the Brine Degassing Emissions discussion in EIR/EIS Section 4.11.4.2 have been incorporated as shown below:

> The remaining 57 percent would be discharged to the brine storage basin where it would temporarily be stored ~~prior to being discharged back into the ocean where it would~~ and have the opportunity to come to equilibrium with the atmosphere ~~and~~ thereby releasing CO_2 ~~would be released~~.

MPWMD-47 Although EIR/EIS Table 4.19-1 accurately reflects the DOF's estimates of the increase in housing units for the individual service area cities and unincorporated county, the total number of housing units shown for the Monterey District Service Area in 2015 contains a transcription error. The correct total is 43,053 units (not 43,858), an increase of 195 units since 2010. Table 4.19-1 has been revised accordingly. The Department of Finance is an established, standard source of demographic estimates and projections in California. (Another potential source of 2015 estimates, the U.S. Census Bureau's American Community Survey, shows a greater increase in the number of units in most service area cities compared to the DOF estimates.)

MPWMD-48 The referenced text in Section 5.2.5 has been changed to read as follows,

> "… and the Monterey County Agency Act prohibition on out- of-basin transfers <u>of groundwater</u>…"

MPWMD-49 The EIR/EIS has been revised to include Pebble Beach entitlements as a component of existing demand, as stated in the response to comment MPWMD-11 and related responses. Accordingly, the first and last paragraphs under "Supply Shortages" and first paragraph under "Monterey Peninsula Water Conservation and Rationing Plan Actions" in EIR/EIS Section 5.4.2.3 have been revised to show that baseline demand under the No Project Alternative is 12,595 afy, rather than 12,270 afy, and that available supplies under the No Project Alternative represent 51 percent, rather than 52 percent, of baseline demand.

While some economic rebound at existing properties theoretically could occur under the No Project Alternative, it is not reasonably foreseeable. Considering the adverse socio-economic impacts of the No Project Alternative identified in EIR/EIS Section 5.5.20, Socioeconomics and Environmental Justice, and the shortfall that would exist for serving existing demands, an assumption that economic rebound would not occur and could not be served under this alternative is reasonable. MPWMD itself stated in comments to the State Water Board on the 2016 extension of the CDO, regarding reduced diversions from the Carmel River then under consideration, that the reduced diversion amount "will likely undermine the local economy" (MPWMD, 2016); the reduced Carmel River diversion amount then being considered was greater than combined total supplies that would be available under the No Project Alternative. MPWMD also anticipates adverse socioeconomic impacts under this alternative according to comment MPWMD-52.

A footnote has been added to the first paragraph under "Supply Shortages" in EIR/EIS Section 5.4.2.3 to clarify the reason demand associated with economic recovery at existing businesses is not assumed as part of baseline demand under the No Project Alternative:

> …Because the MPWSP or an alternative new water supply would not be implemented, this scenario assumes that potential demands associated with hospitality industry rebound[2] and legal lots of record….
>
> [2] Increased demand that resulted from economic recovery at existing businesses would not require new water connections or permits to be served. However, given the constrained supply that would result under the No Project Alternative, economic rebound resulting in increased demand at existing water customers is not considered reasonably foreseeable under this alternative. Therefore, additional demand at existing businesses resulting from economic recovery is not considered part of the baseline service area demand for this analysis. (See also Section 5.5.20 regarding anticipated socioeconomic impacts of the No Project Alternative, and the discussion of this demand component in Section 6.3, which assumes that a degree of economic rebound identified by CalAm in its application as future demand has already occurred and is therefore reflected in existing annual demand.)

In addition, the footnote in the first paragraph under "Monterey Peninsula Water Conservation and Rationing Plan Actions" has been revised to clarify that the comparisons of supply and demand under the No Project Alternative do not include demand associated with vacant legal lots of record or economic recovery.

MPWMD-50 The assumption in EIR/EIS Section 5.4.2.3 that reductions in Carmel River diversions would occur under the No Project Alternative due to failure to meet milestones required in the CDO does not presume that CalAm is "at fault" or "chooses" not to execute the project. However, neither does it presume to know how the SWRCB would interpret its CDO and the failure to meet CDO milestones.

According to the language in the CDO, suspension of reductions is not automatic but at the Water Board's discretion, it "may" suspend any corresponding reduction. The key result of the No Project Alternative is that the service area would experience a serious reduction in water supply. Whether the supply reduction would begin somewhat gradually in 2018 due to a missed milestone, as assumed in the description of the No Project Alternative, or occur at once at the end of the CDO extension in 2022 (illustrated as a supply gap "cliff" in some MPWMD presentations) may be debatable, but it is not unreasonable to assume that reductions would occur if milestones established in the CDO to ensure progress were missed.

The CDO also includes schedule and condition number 15, which states that "[t]he conditions of this Order, State Water Board Order WR 2009-0060 and State Water Board Order 95-10 shall remain in effect until (a) CalAm certifies, with supporting documentation, that it has obtained a permanent supply of water that has been substituted for the water illegally diverted from the Carmel River and (b) the Deputy Director for Water Rights concurs, in writing, with the certification." By the reasoning in this comment, this could be interpreted to mean that if CalAm fails to obtain a new permanent supply, but CalAm is not responsible for that failure, that the SWRCB would allow the level of illegal river diversions established for 2016 in the CDO to continue indefinitely. The 2009 and 2016 CDOs are intended to ensure progress toward obtaining a replacement supply and stop illegal diversions as required in Order 95-10, and it does not seem reasonable that the SWRCB would allow (such as under a No Project Alternative scenario) illegal diversions to continue indefinitely.

MPWMD-51 As noted above in responses to comments MPWMD-11, MPWMD-49, and others, the EIR/EIS has been revised to recognize that CalAm is obligated to serve Pebble Beach entitlements with or without the project and that these entitlements are appropriately considered a category of existing demand. Text in EIR/EIS Section 5.5.21.2 and Table 5.5-18 have been revised accordingly, showing that demand associated with existing annual service area demand, existing water entitlements, and existing land uses under an improved economy totals 12,845 afy, rather than 12,520, and that demand associated with new development totals 1,430 afy, rather than 1,755 afy. EIR/EIS Section 5.5.21.2 text and Table 5.5-19 have been revised to show that the quantity of supply available after meeting the aforementioned existing demands and a 6 percent or 12 percent SVGB return water obligation would total 1,845 afy or 209 afy, respectively.

Provision of water to develop vacant lots of record meets the definition of a growth inducing effect described in CEQA Guidelines Section 15126.2(d), which is presented in Section 6.3.3, Regulatory Framework, of the EIR/EIS growth inducement analysis. Vacant lots of record cannot currently be served water; with the project, water supply would be available that would allow their development. Therefore, the project would remove water supply constraints as an obstacle to growth, consistent with the CEQA Guidelines definition of a growth inducing effect. The analysis in Section 6.3 concludes that the growth that would be supported by the MPWSP would be consistent with growth planned by cities and the county in the CalAm service area. The analysis also recognizes, in Section 6.3.6, Secondary Effects of Growth, that even planned growth would have environmental impacts, and discloses the impacts of growth that would be supported, in part,[2] by the project. The identified impacts are based primarily on the EIRs prepared for the General Plans and General Plan elements of jurisdictions in CalAm's service area. Some of those impacts are significant and mitigable and some are significant and unavoidable. Growth supported by the project – e.g., development of currently vacant lots – is therefore expected to result in at least some of the impacts expected from development under adopted land use plans of service area jurisdictions.

The degree to which a vacant legal lot of record that would be served by the project has undergone environmental review is uncertain. Arguably, some lots are likely to have been created before environmental review was required for a division of land. More to the point, however, is that CEQA specifically requires consideration of a project's potential to remove an obstacle to growth in its growth inducement analysis, as noted above. In the CalAm service area, water supply constraints have been such an obstacle. The effect a vacant parcel has on the

[2] While water service is only one of many factors affecting the growth potential of a community, it is one of the chief public services needed to support urban development.

environment is different from the effect of a developed parcel. Consistent with the CEQA Guidelines, the analysis did not assume that growth in the CalAm service area was necessarily beneficial, detrimental, or of little significance to the environment; as noted above, the analysis identified growth-related impacts based on the environmental documents prepared for city and county General Plans.

MPWMD-52 Consistent with CEQA and NEPA requirements presented in Section 6.3.3, the growth inducement analysis in Section 5.5.20 focuses on the ways and extent to which the proposed project or alternatives (including the No Project Alternative) would foster economic or population development, including by removing an obstacle to such development. The "negative growth" factor associated with the No Project Alternative, which is noted in the comment, is addressed in the socioeconomic and environmental justice effects in Section 5.5.20.3. The analysis concludes that the socioeconomic and environmental justice impact of the No Project Alternative would be significant and unavoidable.

MPWMD-53 The commenter's opinion about the significance of the impact of the proposed project and the No Project Alternative is acknowledged. See responses to comments MPWMD-51 and MPWMD-52.

MPWMD-54 The bullet referenced in this comment is part of EIR/EIS Section 6.1, Significant and Unavoidable Environmental Effects. The analysis conclusion summarized in this bullet is consistent with NEPA and CEQA requirements for the analysis of growth inducing impacts and the analysis of the project's growth inducing impact presented in Section 6.3. See also response to comment MPWMD-51.

MPWMD-55 In response to this comment, the seventh sentence in the first paragraph of EIR/EIS Section 6.3.1 has been revised to include the Monterey Peninsula Airport District.

MPWMD-56 The referenced description of MPWMD was based on information at its former (now replaced) website. In response to this comment the text and bullets in EIR/EIS Section 6.3.2.3 have been revised as requested.

MPWMD-57 As noted in response to comment MPWMD-11, the discussion of the Pebble Beach entitlements has been revised to show that they represent existing service area demand that CalAm is obligated to serve with or without the project. The text under "Pebble Beach Entitlements" in EIR/EIS Section 6.3.5.1 has been revised as follows:

> … Because the recently issued permits may not immediately translate to water connections or water use that is reflected in existing demand data, 325 afy is a reasonable estimate of ~~future~~ demand associated with these entitlements.

> The remaining entitlements represent an existing commitment by MPWMD to issue water permits to entitlement-holders and, as stated by the SWRCB in the CDO (SWRCB, 2016), the total entitlements represent less water than historically had been diverted from the Carmel River to serve areas now served by the wastewater project. Given that the Pebble Beach entitlements represent an existing commitment by MPWMD and duty to serve by CalAm whether or not the MPWSP is implemented, water supply limitations are not considered an obstacle to the development of the Del Monte Forest properties associated with these entitlements. Therefore, the Pebble Beach water entitlements are considered part of CalAm's existing demand and project water supply used to serve these entitlements would not be growth-inducing under CEQA or NEPA. ~~but the entitlements do not represent existing demand or development. Supply provided by the MPWSP would enable remaining entitlement holders to convert the entitlements to actual water permits – and water – to serve the development of properties in the Del Monte Forest. MPWSP supply used to serve the Pebble Beach entitlement-holders would remove water supply limitations as a constraint on that development, and would therefore, induce growth.~~

Regarding economic rebound, the comment that increased demand associated with economic rebound would occur at existing properties and would not be growth inducing is acknowledged and consistent with the EIR/EIS analysis. The EIR/EIS growth inducement analysis considers project water supply used to serve increased demand at existing businesses under improved economic conditions to be a component of existing demand, and not growth-inducing. The Draft EIR/EIS states (page 6-17): "This rebound in demand is assumed to occur due to increased occupancy rates without any expansion in physical capacity. Because no development or expansion of physical capacity would cause those demand increases, water supply provided to meet such increases would not be considered growth-inducing under CEQA or NEPA." The analysis does, however, conclude that CalAm's estimate of the amount of supply needed to serve economic recovery within the existing hospitality sector may be overstated. The proposed MPWSP would be capable of producing a given quantity of product water, and as stated in Draft EIR/EIS Section 2.5 (page 2-29), future demands cannot be predicted with absolute certainty. If less water supply than CalAm estimated was needed to meet demand at existing land uses due to economic rebound, more water (i.e., the difference between the estimated 500 afy and the amount actually needed, if it turns out to be less) would be available for other purposes. Absent a known, enforceable allocation or other mechanism to limit the proposed water supply to the uses specified in CalAm's application, it is appropriate for the EIR/EIS growth inducement analysis to consider that if some of the water supply identified for economic rebound is not used for that purpose it could be used to support development in the service area.

The EIR/EIS evaluates the project proposed by CalAm. To assess the potential increased water demand that could result from economic rebound of the hospitality industry (a major industry in the service area), the EIR/EIS reviews changes in commercial sector water consumption before and since the recession started; this approach is also consistent with MPWMD's approach as described in the document "MPWMD Analysis of Hospitality Bounce-Back" (cited as MPWMD, 2013b in EIR/EIS Chapter 2). In response to this comment, water consumption data for the industrial and public authority sectors were also reviewed to consider how the recession may have affected water consumption in those sectors. This additional review is described under "Economic Recovery" in Section 8.2.13.1 of Master Response 13, Demand (Project Need) and Growth.

The first three paragraphs under "Hospitality Industry Rebound" in EIR/EIS Section 6.3.5.1 have been revised to clarify the comparisons of commercial sector water use before and after the recession started and the basis for the EIR/EIS conclusion that demand associated with hospitality industry economic rebound may be less than CalAm's estimate, as shown below. The purpose of evaluating CalAm's estimate is to ensure that water supply provided by the project that may not be needed to serve these existing customers was appropriately considered in the growth inducement analysis.

> …MPWMD performed several comparisons of recent commercial sector water demand with earlier levels of demand, considering the years 1998 through 2011, and determined that recent demand ~~ranged from~~was 194, 236, ~~to~~or 440 afy lower than in previous years, depending on the years compared and the methodology used….
>
> … For example, consumption in 2003 was 980 af higher than in 2015.~~,~~ ~~whereas the~~ Average annual consumption for the four years before the recession (water years 2004 through 2007) was 233 af higher than average annual consumption for the four years after the recession started (2008 through 2011) and average annual consumption for the five years before the recession (water years 2003 through 2007) was 289 af higher than for the average of the five years after it started (2008 through 2012). Considering all 13 years shown, average annual consumption for the five ~~first seven~~ years prior to the recession ~~(water years 2003 through 2009)~~ was 434~~467~~ af higher than average annual consumption for the eight ~~in the last six~~ years since (water years 2008~~19~~ through 2015), which included four drought years. Consumption in the last year before the recession (water year 2007) was higher than the year before and any year since. Since the region was experiencing a serious drought during the last four years of the~~is~~ 13-year record shown in Table 6.3-2, at least some of the reductions in demand shown in these years may reflect short term behavioral water conservation practices that may not be sustained during normal rainfall years.

> … ~~In addition,~~ MPWMD's analysis of occupancy levels and commercial sector water consumption indicated that, based on four hospitality-industry businesses in Monterey and one in downtown Carmel, occupancy levels in 2011 were about 7 percent lower than the average occupancy levels for the years 1998 to 2001. Based on this difference, and on commercial sector water consumption data, MPWMD calculated that a 7 percent increase in the average annual commercial water demand for years 2009 to 2011 would increase annual demand by about 194 af. The greatest difference MPWMD found in its analysis, which compared average commercial water use for water years 2009 through 2011 with water use in the year 2000, was 440 afy; commercial water use was 3,207 af in the year 2000, which is higher than most years shown in Table 6.3-2. Of the comparisons presented above, the greatest differences are in the comparisons that include more distant pre-recession years or include post-recession years influenced by the recent drought.
>
> Given the permanent reductions in water consumption achieved by ongoing conservation programs and the fact that the recent severe drought was not a factor constraining water use in the year CalAm used to represent existing annual water demand, the less extreme pre-and post-recession differences found in the above comparisons seem more likely indicators of the increased commercial sector water use that could occur in a fully recovered post-drought economy than do the more extreme differences. Therefore, based on the~~is~~ above considerations ~~comparison~~, increases in demand at area restaurants, lodging, and other commercial businesses from a rebounding economy ~~and hospitality industry~~ may more likely be on the order of 200 or 300 afy, rather than CalAm's estimate of 500 afy.

The commenter's opinion that economic rebound could occur with or without the project is acknowledged. Without the project or another water supply project to replace Carmel River and Seaside Basin supplies that are being reduced, it is reasonable to assume the resulting water supply shortage would constrain the local economy compared to existing conditions and make additional economic rebound less likely; refer to response to comment MPWMD-49. Regarding the evaluation of water supply for legal lots of record in the growth inducement analysis, see the last two paragraphs of response to comment MPWMD-51.

MPWMD-58 See response to comment MPWMD-57.

MPWMD-59 Draft EIR/EIS Section 2.3.3.2 (Final EIR/EIS Section 2.3.2.1) describes the analysis MPWMD prepared of commercial sector water consumption before and since the onset of the recession in 2008, in reference to CalAm's estimate of the additional water that would be needed (above existing service area demand) to serve the existing hospitality industry in a recovered economy. The MPWMD memo cited in Draft EIR/EIS Section 2.3.3.2 summarizes three comparisons of demand before and since the recession started. The comparisons found that recent demand was 194, 236, or 440 afy lower than in years prior to the recession, depending on the years compared and the methodology used; Draft EIR/EIS Section 2.3.3.2 provides additional details about these comparisons.

Selectively focusing on any of these three results could be misleading by suggesting that one particular result was definitive. The MPWMD memo does not indicate that any one comparison was definitive or more compelling than the others. EIR/EIS Section 6.3.5.1 describes additional analysis of commercial sector consumption data prepared as part of the EIR/EIS evaluation; see response to comment MPWMD-57, above, for revisions clarifying that Draft EIR/EIS analysis. In addition, see Master Response 13, Section 8.2.13.1 regarding a review of water consumption data before and since the recession that also includes the industrial and public authority sectors. (Note also that while this comment refers to 440 afy for “CII demand” – indicating that the 440 afy referred to a change in commercial, industrial, and institutional sector demand – the MPWMD memo cited in Chapter 2 focuses on the rebound of the hospitality industry and refers to commercial sector demand.)

As stated in the first paragraph of Chapter 2, the chapter is descriptive: it describes water demand and supply information and assumptions included in CalAm’s application and provides supplemental information about water supply and demand and factors affecting them in the CalAm service area. The growth inducement impact analysis presented in Section 6.3 takes a closer look at CalAm’s assumptions to ensure the potential growth inducement potential of the project is adequately disclosed and analyzed.

MPWMD-60 The discussion of the Pebble Beach entitlements has been revised to show that they are considered existing service area demand that CalAm is obligated to serve with or without the project, and EIR/EIS text and tables have been revised accordingly.

The EIR/EIS does not assume that water in excess of the amount needed to meet demand associated with economic rebound, if less than the proposed 500 afy, would “automatically” go to the jurisdiction or that it would not be subject to the MPWMD allocation program. However, the EIR/EIS does assume that MPWMD *could* allocate such water supply to the jurisdictions. The information provided in this comment and comment MPWMD-21 on how MPWMD may retain or allocate project water, and some of the considerations MPWMD will weigh, is of interest; however, as these two comments indicate, MPWMD has not yet determined how project water available to its allocation program would be allocated. In addition, regarding the statement that “to assume the 500 afy is in excess is an unprovable assumption,” the EIR/EIS does not assume that none of the 500 afy CalAm proposed to provide to meet economic recovery would be needed for that purpose. There is a degree of uncertainty associated with this estimate, and arguably the contrary is also “unprovable.” See the discussion of economic rebound and associated text revisions in response to comment MPWMD-57 for additional discussion of the EIR/EIS assessment of the estimate of water supply needed for this demand component.

In response to this comment, the first paragraph under "Assumptions Regarding Allocation and Use of MPWSP Water Service Capacity" in EIR/EIS Section 6.3.5.1 has been revised to state the assumption that supply provided by the proposed project would be "used" rather than "allocated" to meet existing demand within the CalAm service area, and the remainder of this section has been revised as follows:

> ~~This analysis also recognizes that the MPWMD could choose not to allocate to the County the approximately 325 afy proposed to serve Pebble Beach water entitlement-holders, to ensure that adequate water supply would be available when development associated with those entitlements was proposed. If, on the other hand, the MPWMD did allocate this water to the County, the County could then elect to allocate at least a portion of the 325 afy to other development – if, for example, other development was proposed first or the County determined that the entitlement-holders were unlikely to use the full amount. In either case, this portion of the proposed MPWSP supply would be used to serve new development.~~
>
> Similarly, because at present there is no guarantee that the 500 afy proposed to meet demand associated with hospitality industry rebound would be reserved for ~~will actually go to~~ that use, this analysis assumes that either the MPWMD or the local jurisdictions could elect not to set aside 500 afy exclusively for use by existing businesses. Therefore, some portion of this 500 afy could actually serve new development within the service area.
>
> As discussed in Section 2.5.4, MPWMD recently confirmed that the future allocation process has not yet been defined; refer to Section 2.5.4 regarding options MPWMD would consider regarding the allocation or reservation of MPWSP water, once the MPWSP was approved and it is clear that the project would be constructed. These considerations do not change the allocation assumptions described above for this analysis.

Tables 6.3.3 and 6.3.4 have been revised to show that demand associated with existing land uses and water entitlements totals 12,845 afy (rather than 12,520 afy) and that demand associated with anticipated development totals 1,430 afy (rather than 1,755 afy) along with associated changes to the "Surplus (or Deficit)" shown in Table 6.3-4. Similarly, the discussion in EIR/EIS Section 6.3.5.1 under "Conclusion: MPWSP Water Service Capacity" has been revised to clarify that demand associated with the Pebble Beach water entitlements is considered a component of existing demand.

MPWMD-61 The commenter's opinion on the AMBAG projections is noted. AMBAG prepared the projections with substantial feedback from jurisdictions in the AMBAG region, and the projections were adopted in 2014. The projections supplement information from the jurisdictions' general plans and CalAm's anticipation of development of lots record and indicate that a degree of growth is anticipated in the region, including the CalAm service area. Obviously most of the growth in CalAm's service area would be limited to the period after the moratorium on new connections was lifted. As the commenter points out in comment MPWMD-12, some development associated with water rights not affected by the 2009 CDO has occurred since the CDO was issued.

MPWMD-62 The commenter's opinion that Water Code requirements that would reduce estimated future demands by an additional 20 percent would not apply to the CalAm service area is noted. The future demand estimates presented in EIR/EIS Table 6.3-8 were not the basis for sizing the MPWSP (which is described in EIR/EIS Sections 2.3.1 through 2.3.3), but are presented to provide a general comparison of demand associated with anticipated development under adopted general plans with the future demand that CalAm proposes for the project to meet.

The Draft EIR/EIS does not assume that the Water Code Section 10608 requirements necessarily would apply; indeed, the text and Table 6.3-8 note "b" point out that CalAm's 2010 UWMP showed that CalAm's Monterey District was already in compliance with the 20 percent reduction requirements. Ultimately, however, that determination is not for the Lead Agencies to make. In addition, as the comments in this letter and responses indicate, there is some uncertainty associated with projections of various components of future supplies and demands. For example, comment MPWMD-20 suggests that estimated demand for unincorporated Monterey County, which is part of the service area estimate of 3,526 afy that this comment endorses, is high. Including the revised estimate (3,526 afy) further reduced by 20 percent shows that the water supply the MPWSP proposes to provide for additional development (e.g., to serve legal lots of record) would be consistent with (that is, would not exceed) even this constrained estimate of future supply needs associated with development under adopted general plans. Showing the estimate of 2,080 afy in Table 6.3-8 does not imply, nor is it intended to imply, that it necessarily supersedes the revised 3,526 afy estimate, which is also shown. Regarding the uncertainty associated with the supply and demand projections, see also the discussion under "Water Available for Growth" in Master Response 13, Section 8.2.13.3, which considers several other possible supply and demand scenarios.

MPWMD-63 The first sentence of the fourth paragraph under "Local Programs" in EIR/EIS Appendix K has been revised to say,

> "… properties that have not already been retrofitted be retrofitted upon change of ownership<u>, remodel, or change of use</u>."

Table K-1 and related text in Appendix K have been revised to include MPWMD's mandatory water retrofit requirements and to show the revised total of quantifiable estimated savings.

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8.5.8 Responses to Comments from Monterey Regional Waste Management District

MRWMD-1 The Lead Agencies acknowledge MRWMD's support for the proposed alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline.

MRWMD-2 The 0.8-mile-long segment of the optional alignments of the Source Water Pipeline, new Desalinated Water Pipeline, and Castroville Pipeline along Charles Benson Road would be installed within the paved Charles Benson Road right-of-way.

Impact 4.9-2 in EIR/EIS Section 4.9.5.1 addresses impacts related to temporary lane closures. The analysis conservatively assumes that all pipelines could require construction within or adjacent to vehicle travel lanes and could require temporary lane closures and/or detours. Due to the width of Charles Benson Road (approximately 28 feet), temporary lane closures with one-way traffic control could be required during installation of these pipelines if the optional alignment is implemented. At a rate of 150 to 250 feet of pipeline installation per day, the lane closure along the portion of Charles Benson Road under construction could last approximately 16 to 27 days. With implementation of Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan), which includes measures to minimize the adverse effects of roadway construction and detours, these impacts would be reduced to a level that is considered less than significant.

However, the Lead Agencies acknowledge MRWMD's concern that one-way traffic controls for a period of up to one month would not be compatible with the volume and type of traffic on Charles Benson Road, and could disrupt daily operations. As a result of this comment, EIR/EIS Section 3.2.1.2 (Source Water Pipeline – optional alignment), Section 3.2.3.3 (New Desalinated Water Pipeline – optional alignment) and Section 3.2.3.6 (Castroville Pipeline – optional alignment 2) have been revised to acknowledge that construction of these optional alignments would be limited to after hours/nighttime construction-only, since the Waste Management District shuts down operations and closes the gate on Charles Benson Road daily at 4 p.m.

8.5.9 Responses to Comments from Monterey Regional Water Pollution Control Agency (MRWPCA, now named Monterey 1 Water)

MRWPCA-1 The EIR/EIS, beginning in Chapter 1 on page 1-2, describes the two options put forth by CalAm in its application to the CPUC to meet estimated service area demand of 15,296 afy: the proposed 9.6 mgd desalination plant, or a reduced-size (6.4 mgd) desalination plant in combination with a water purchase agreement for 3.2 mgd (3,500 afy) from the Groundwater Replenishment (GWR) Project. (The commenter refers to the "Pure Water Monterey (PWM) Project," which is the same and merely an updated name for the GWR project analyzed in the EIR/EIS.) EIR/EIS Table 4.1-1 presents an overview of alternatives evaluated in detail, and shows that, because the GWR project has been approved, a Water Purchase Agreement for GWR project water would be a component of the No Action Alternative, as well as Alternative 5a and 5b. EIR/EIS Section 1.1. explains that presenting and evaluating both desalination capacity options allows the fullest consideration of the scope of the potential project and alternatives that may be feasible to meet project objectives under various scenarios, and furthers public transparency of the analysis of the options proposed in CalAm's applications to the CPUC and MBNMS. Footnote 2 on Table 4.1-1 explains, "The GWR project is not considered for cumulative impacts in conjunction with the proposed project or Alternatives 1, 2, or 4 because if a desalination option is selected that is of a size sufficient to fully satisfy the project objectives in terms of water supply, such choice would presumably mean that the GWR project was not successful in securing funding, completing construction and undertaking operations. The GWR project is conservatively considered for cumulative impacts with Alternative 3 because under that option, CalAm could meet its full project water supply objectives via the DeepWater Desal project, or could obtain water from a combination of the DeepWater Desal project and the GWR Project." The approach to evaluating cumulative scenarios is explained in Section 4.1.7 and the approach to evaluating alternatives is described in Section 5.5.1.

With respect to the need for MRWPCA to rely on an analysis that includes impacts of the combined MPWSP and GWR Projects, the analysis of Alternatives 5a and 5b throughout Sections 5.5 and 5.6 does include impacts of both the reduced-size MPWSP desalination plant and the GWR Project, in part by referencing the stand-alone certified EIR for the GWR Project. See also responses to comments MRWPCA-7 and MRWPCA-9.

MRWPCA-2 EIR/EIS Section 4.13.5.2 identified the potential for the proposed project to increase corrosion of the MRWPCA outfall and diffuser as a result of brine discharge. Based on studies provided by the MRWPCA (E2 Consulting Engineers, 2015), Impact 4.13-5 determined the proposed project could accelerate corrosion of a nearshore portion of the offshore segment, as well as the land segment, of the outfall. The Draft EIR/EIS concluded the impact could be significant and included Mitigation Measures 4.13-5a and 4.13-5b, which would apply to the offshore segment and the land segment, respectively.

The Lead Agencies acknowledge receipt of the Enclosure 3 (Brown and Caldwell Technical Memorandum: Land Outfall Pipeline Evaluation and Protection Measures, January 9, 2017) with its March 2017 comment letter on the Draft EIR/EIS that describes revised options to protect the land segment of the outfall from corrosion. Impact 4.13-5 and Mitigation Measure 4.13-5b has been revised in Final EIR/EIS Section 4.13.5.2 to incorporate this refinement. The changes do not implicate any new or more severe significant environmental impacts than were identified in the Draft EIR/EIS.

MRWPCA-3 A description of the proposed Brine Mixing Box and appurtenances has been included in Final EIR/EIS Section 3.2.2.5. The description is similar to the Brine Mixing Facility that is described and evaluated in the January 2016 GWR Consolidated Final EIR. The environmental impacts of the proposed Brine Mixing Box and appurtenances have been discussed and are analyzed throughout the resource sections of Final EIR/EIS Chapter 4. The inclusion of the Brine Mixing Box does not alter the environmental impact analysis, and none of the significance conclusions of the Draft EIR/EIS have been altered as a result of this new component.

MRWPCA-4 The MRWPCA is required to replace the exposed Beach Junction Structure and outfall components under an order from the California Coastal Commission, independent from and as a project separate from the MPWSP. Therefore, the replacement of the Beach Junction Structure is a cumulative project considered in the cumulative scenarios relevant to the MPWSP; see Table 4.1-2. The Final EIR/EIS analysis has assumed that this separate project would be completed prior to the start of operation of the MPWSP Desalination Plant. See also responses to comments MRWPCA-5 and MRWPCA-10, below.

MRWPCA-5 As explained on page 2 of Enclosure 3 that was provided with this comment, the MRWPCA engaged a diving contractor in 1990/1991 to install over 20 seals and stainless steel clamps at joints inside the outfall that had started to leak following the 1989 Loma Prieta earthquake. Brown and Caldwell (January 9, 2017) determined that since the clamps are over 20 years old and are susceptible to chloride corrosion, they should be replaced prior to using the outfall to discharge brine from the proposed project. Impact 4.13-5 and Mitigation Measure 4.13-5a have been revised in Final EIR/EIS Section 4.13, Public Services and Utilities, to include a description of the WEKO band seal replacement process and to consider potential secondary impacts. This revised analysis does not identify any new significant effects or substantially more severe significant effects than were addressed in the Draft EIR/EIS.

MRWPCA-6 Impact 4.3-5 in EIR/EIS Section 4.3.5 has been revised to reflect the concern that the existing outfall diffuser end gate may need to be modified in order for operational discharges from the proposed project to comply with Ocean Plan and NPDES permitting requirements. The model analyses assessing dilution, regulatory compliance, and water quality at the discharge diffuser were revised and expanded to include a description of the end gate modification design, an assessment of outfall hydraulics with a modified end gate, and calculation of the discharge dilutions associated with implementation of a modified end gate to assess, in part, whether overall dilution from the outfall diffuser ports would be reduced following modification of the end gate. The supporting model-based analyses are presented in Appendix D1 (see Roberts, 2017, Supplemental Report). The findings of the revised analyses have been incorporated into the assessment of impacts for the proposed project and alternatives presented in Sections 4.3 and 5.5.3 of the EIR/EIS respectively; the impacts remain less than significant with the implementation of Mitigation Measures 4.3-4 and 4.3-5. Further, an analysis of potential secondary impacts associated with constructing and operating a modified end gate has been added to EIR/EIS Section 4.3.5.4. This additional analysis does not identify any new significant effects or substantially more severe significant effects than were addressed in the Draft EIR/EIS. See Section 4.3 for further discussion regarding updated modeling, updated Ocean Plan constituent compliance analysis, and updated impacts considerations.

The end gate, described in detail under Impact 4.3-4 and in Appendix D1, is an opening about two inches high at the end of the diffuser pipe from which approximately 5 percent of total operational discharge flows exit for flushing purposes. Mitigation Measure 4.3-5 has been revised to include a specific design, developed in collaboration with MRWPCA staff, for modifying the end gate, if needed, to increase dilution and ensure compliance with Ocean Plan requirements and NPDES provisions relating to operational discharges and water quality. The feasibility for such a modification to meet Ocean Plan salinity requirements was assessed in detail in a supplemental dilution model analysis (see Appendix D1).

In summary, the minimum dilution of discharges exiting the end gate would be substantially increased by modifying the existing 2-inch opening with a Tideflex check valve installed at an upward angle to maximize dilution of dense discharges. As modeled by Roberts (Appendix D1), modifying the end gate with an inclined check valve would slightly reduce flow volume and increase exit velocity, resulting in substantially increased dilution at the end gate, as compared to existing conditions. As described in detail in Appendix D1 Section 3.1, any upward angle greater than 20 degrees would result in dilutions that meet the Brine Mixing Zone (BMZ) salinity requirements, with 60 degrees calculated as being an optimum angle to maximize dilution (see Figures 2 and 3, in Appendix D1).

As described in EIR/EIS Section 4.3.5.4, modification of the end gate would have minimal effect on the flow distribution between the 129 horizontally-oriented diffuser ports and minimal effect on head loss, and would not reduce dilution from the outfall diffuser ports for the assessed discharge scenarios (for details see Section 3.2 of Appendix D1). The end gate check valve would decrease the flow from the end gate and increase the flow from the 2-inch ports, altering overall dilution by less than 1 percent (i.e., no effect on dilution when rounded to a whole number).

MRWPCA-7 Implementation of the proposed project (as discussed in EIR/EIS Section 4.3.5.2), as well as Alternatives 1 and 2, and Alternative 5 (reduced size desalination facility implemented in combination with the Pure Water Monterey GWR Project, discussed in Section 5.5.3) could result in exceedances of Ocean Plan water quality objectives, resulting in potentially significant impacts related to water quality standards, waste discharge requirements and water quality of receiving waters in Monterey Bay. As described in detail in EIR/EIS Sections 4.3.5.2 and 5.5.3, potentially significant impacts related to water quality would be reduced to a less-than-significant level by implementing Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives).

Mitigation Measure 4.3-5 requires that, prior to implementing operational discharges via the existing outfall, CalAm must perform an extensive water quality assessment using protocols defined in Appendix II “Minimum Levels” of the 2015 California Ocean Plan to demonstrate compliance with Ocean Plan water quality objectives and minimum initial dilution requirements. If the water quality assessment shows that releases via the existing outfall would exceed Ocean Plan water quality objectives, then additional design features, engineering solutions, and/or operational measures, would be implemented to reduce the concentration of water quality constituents in the operational discharges such that they conform with regulatory standards and objectives. Possible additional engineering measures and operational protocols needed to achieve compliance with regulatory standards, should any or all of them be required, are described in detail as part of Mitigation Measure 4.3-5. The feasibility for each of the engineering and/or operational protocols to achieve Ocean Plan and NPDES requirements is fully assessed and discussed in detail in Section 4.3.5.2 under the section titled “Determination of Efficacy of Mitigation Measures.” Furthermore, the potential for secondary environmental impacts to result from implementation of the engineering and operational protocols detailed under Mitigation Measure 4.3-5 is comprehensively assessed in Section 4.3.5.4 of the EIR/EIS under the section titled “Secondary Impacts of Mitigation Measure 4.3-5.”

Subsequent to the publication of the Draft EIR/EIS, in response to concerns raised by the MRWPCA with regards to the NPDES permitting of the Pure Water Monterey GWR Project, the EIR/EIS analyses assessing dilution, regulatory compliance, water quality at the discharge diffuser, feasibility of mitigation to achieve regulatory requirements, and secondary impacts resulting from implementation of Mitigation Measure 4.3-5 were revised and expanded in Impacts 4.3-4 and 4.3-5; for additional details, see responses to comments MRWPCA-9 and MRWPCA-20, as well EIR/EIS Appendix D1. The revised and expanded analyses support the impact assessments and impact conclusions presented in the Draft EIR/EIS and were conducted in collaboration with MRWPCA staff specifically to ensure that the EIR/EIS contains adequate detail to enable MRWPCA and other responsible agencies to rely on the document for subsequent permit approvals. Although the revised analyses resulted in a revised Ocean Plan compliance analysis, the modeling indicated that potential constituent exceedances could be fully mitigated by implementing a diffuser retrofit with inclined jets, or other mechanisms as explained in Mitigation Measure 4.3-5. The additional analyses do not identify any new significant effects or substantially more severe significant effects than were addressed in the Draft EIR/EIS and the conclusions of the Draft EIR/EIS are unchanged.

Regarding the concerns related to other specific mitigation approaches that are described in Mitigation Measure 4.3-5, the addition of up to 5 mgd of freshwater has been demonstrated by Dr. Phil Roberts in EIR/EIS Appendix D1, Section 7.1 to be a technically feasible method for increasing dilution of dense and moderately dense brine discharges. Such an operational protocol is presented as one of a number of potential mitigation strategies that may be employed independently or in combination with other engineering or operational strategies to reduce potential impacts. It is not required to be implemented, but is included as an optional measure to ensure flexibility for implementing mitigation strategies over the lifetime of the project. While having up to 5 mgd of freshwater for dilution may not be feasible currently due to the lack of reliable availability of wastewater or another fresh water source, it is possible that additional flows may become available in the future. For this reason, the option for flow augmentation remains a part of Mitigation Measure 4.3-5. However, should flow augmentation remain impossible to implement due to a lack of availability of fresher water for blending, a variety of other mitigation solutions remain available to successfully increase dilution and/or reduce pollutant concentrations.

The option involving installation of a 20-inch pipe through the side of the MRWPCA outfall to convey brine to a dedicated brine diffuser is described in EIR/EIS Section 5.3.4.1. As explained in Section 5.3.6.1, all of the optional outfalls evaluated would have greater impacts than the proposed use of the MRWPCA outfall (Draft EIR/EIS page 5.3-55) and this alternative outfall configuration was not carried forward as part of the proposed project or any of the alternatives that are described and evaluated in Sections 5.4 and 5.5. Accordingly, no changes were made to the EIR/EIS in response to this comment.

MRWPCA-8 Text has been added to EIR/EIS Section 3.3.2.1, Subsurface Slant Wells, to indicate CalAm would need to obtain permission from the MRWPCA to accept well development water into the outfall.

MRWPCA-9 As described in EIR/EIS Sections 4.3 and 5.5.3, under certain operating scenarios, operational discharges associated with the proposed project, Alternatives 1, 2, and 5, could result in exceedances of Ocean Plan water quality objectives when various effluents are co-mingled (i.e., with MRWPCA secondary treated wastewater, brine, and/or GWR effluent), resulting in a potentially significant impact related to water quality that can be reduced to less-than-significant impact with the implementation of Mitigation Measures 4.3-4 (and 4.3-5, if necessary).

In response to concerns that were raised in this comment and comment MRWPCA-17, the dilution analyses presented in Appendix D1 of the EIR/EIS assessing minimum dilution at the outfall were revised and expanded. Discharge scenarios involving higher volumes of desalination brine and higher GWR effluent flows (only associated with Alternative 5) were modeled for the proposed project and alternatives to determine minimum dilution values and to assess impacts on water quality and regulatory compliance. Furthermore, discharge scenarios involving a wider variety of MRWPCA secondary effluent flows were modeled to support the assessment of potential water quality impacts at a higher degree of resolution. For example, water quality impacts were assessed for operational discharges involving MRWPCA secondary effluent flows, increased at 1 mgd increments.

As described in EIR/EIS Section 3.4.1, following a shutdown of the desalination facility for repair or routine maintenance, CalAm may temporarily (up to 11 days) operate the desalination facility with one additional reverse osmosis module in service to catch up on production; however, the total annual production would not be increased. Such an increase in production would result in temporary brine discharges of 16.31 mgd (as compared to 13.98 mgd under typical operations) for the proposed project (and Alternatives 1 and 2). For Alternatives 5a and 5b (reduced scale desalination facility), 11.24 mgd of brine would temporarily be produced following a shutdown (as compared to 8.99 mgd under typical operations). To reflect this operational scenario, the dilution modeling was revised to include higher brine flows following a shutdown of the desalination facility for the proposed project and relevant Alternatives (see Appendix D1). The analysis was also revised to include 0.1 mgd of trucked brine (see response to comment MRWPCA-14 for details).

Impact discussions for Impact 4.3-4 in EIR/EIS Sections 4.3.5.2 and 5.5.3 were revised to incorporate the results of the additional dilution analyses into the assessment of water quality impacts related to salinity concentrations and other water quality constituents; the revised analyses support and reinforce the conclusions in the Draft EIR/EIS and impacts would continue to be less than significant with mitigation.

Summarizing key findings, when considering the increased brine flows following a shutdown, salinity levels associated with the proposed project and Alternatives 1, 2, and 5 are projected to continue to meet Ocean Plan salinity and dissolved oxygen standards. As was concluded for Impact 4.3-4 in the EIR/EIS, although impacts related to water quality from increased salinity have been determined to be less than significant, Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance) continues to be required to ensure compliance with the Ocean Plan monitoring requirements and consistency with MBNMS guidelines.

The analysis to determine Ocean Plan Compliance for the proposed project and Alternatives for higher brine discharges following a shutdown, including for cumulative scenarios involving GWR effluent flows, has also been revised and expanded (see revised Appendix D3 of the EIR/EIS). The revised analysis was incorporated into the assessment of potential impacts in EIR/EIS Sections 4.3.5.2 and 5.5.3 related to water quality standards, waste discharge requirements, and numeric water quality objectives defined in the Ocean Plan. The analyses were also revised and expanded to assess potential water quality impacts related to a greater number of operational scenarios for typical operations to provide higher resolution water quality analysis, similar to that described for salinity, above.

None of the revisions made in response to this comment identified any new significant impact, or any substantially more severe significant impact, than previously evaluated and described in the Draft EIR/EIS.

MRWPCA-10 Table 4.1-1 in EIR/EIS Section 4.1 has been revised to include the Brine Mixing Structure and the Ocean Outfall End Gate Modification. However, the land outfall corrosion protection, and the WEKO Seal Band replacement have not been included in the table as components of the proposed project because they are mitigation measures in response to potential impacts resulting from the operation of the proposed project; although these mitigation measures are not part of the proposed project as submitted by Cal Am, these mitigation measures will be included in the Mitigation Monitoring and Reporting Plan (MMRP) and will therefore, become conditions of project approvals. The Outfall Protection Project (re-location of the Beach Junction Box), as explained in response to comment MRWPCA-4, is a cumulative project that has been added to EIR/EIS Table 4.1-2, and has been considered in the cumulative analyses. Response to comment MRWPCA-1 explains why the Pure Water Monterey GWR Project Water Purchase Agreement would not be in effect and why GWR would not be operating under all scenarios; SWRCB Order 2016-0016 will expire in 2021; no such change has been made to Table 4.1-2.

MRWPCA-11 The Ocean Outfall Manhole Protection project, also known as the Beach Junction Structure, has been added to Table 4.1-2 since it is a project separate from the proposed project that will be undertaken with approval of separate environmental review, while the other listed projects do not qualify as cumulative projects because they are either project components or mitigation measures designed in response to potential impacts resulting from operation of the proposed project. See responses to comments MRWPCA-1 (regarding the GWR Project), MRWPCA-2 (regarding the land segment outfall protection project), MRWPCA-3 (regarding the brine mixing structure), MRWPCA-4 (regarding the Ocean Outfall Manhole Protection project), MRWPCA-5 (regarding the WEKO band seal protection), and MRWPCA-6 (regarding the ocean outfall end gate correction/modification).

MRWPCA-12 In response to this comment, changes have been made to EIR/EIS Table 4.1-2.

MRWPCA-13 Table 4.3-9 in EIR/EIS Section 4.3.5.2 summarizes the average monthly MRWPCA wastewater flows for the years 1998-2012. As shown in Table 4.3-9, and discussed as part of the water quality impact assessments, the treated MRWPCA wastewater flow varies throughout the year. The highest flows are observed during the non-irrigation season (November through March) and the lowest flows are observed during the irrigation season (April through October), when the treated wastewater is processed through the Salinas Valley Reclamation Plant for tertiary treatment and distributed to irrigators through the Castroville Seawater Intrusion Project (CSIP).

To ensure the most recent data are accurately disclosed, Table 4.3-9 has been revised to include the recent data related to baseline wastewater flows provided by MRWPCA in its comment letter on the Draft EIR/EIS. Regarding the range of discharge scenarios modeled as part of dilution analyses to support impact assessments under CEQA and NEPA and additional model work conducted subsequent to the publication of the Draft EIR/EIS to support NPDES permitting of the Pure Water Monterey GWR Project, see response to comment MRWPCA-9. Regarding Table 4.3-10, see response to comment MRWPCA-14.

MRWPCA-14 See response to comment MRWPCA-1 regarding the GWR Project. The Pure Water Monterey GWR Project is assumed to be operational and is assessed in combination with desalination operations (Alternatives 5a and 5b) in detail for water quality impacts and regulatory compliance in EIR/EIS Section 5.5.3.8 and for marine biological resources in Section 5.5.5.8. Section 5.5.3.8 has been revised to consider a wide range of operational scenarios that include varying volumes (high/low) of GWR concentrate and varying volumes of MRWPCA wastewater being discharged via the existing ocean outfall along with desalination brine. In response to the comment, the dilution model analysis supporting water quality and regulatory compliance impact assessments for the proposed project and relevant Alternatives has been revised to include trucked brine. Detailed discussion and updated results are available in Appendix D1 and the impact analyses presented in Sections 4.3 and 5.5.3 of the EIR/EIS have been revised accordingly.

EIR/EIS Section 5.5.5.8 uses the water quality impact assessment presented in Section 5.5.3.8 to assess impacts on marine biological resources from operational discharges from implementation of Alternative 5, which includes detailed assessment of water quality in the vicinity of the outfall diffuser from discharges that include effluent from the GWR project.

See also responses to comments MRWPCA-9 (regarding operation of GWR and revisions to the model analyses) and MRWPCA-13 (baseline MRWPCA wastewater flows to the existing ocean outfall diffuser).

MRWPCA-15 See response to comment MRWPCA-6 for concerns related to the outfall diffuser end gate.

MRWPCA-16 See responses to comments MRWPCA-1, MRWPCA-6, and MRWPCA-9.

MRWPCA-17 See response to comment MRWPCA-9. EIR/EIS Tables 4.3-15 and -16 have been revised to reflect the results of the additional and revised modeling of operational discharge scenarios associated with varying the volumes of co-mingled flows.

MRWPCA-18 The EIR/EIS includes comprehensive quantitative model analyses, presented in Appendix D3, that assess operational discharges associated with the proposed project and Alternatives for compliance with Ocean Plan water quality standards and numeric water quality objectives (WQO). The results of the model analyses presented in Appendix D3 are incorporated into the assessment of water quality impacts for operational discharges associated with the proposed project, Alternatives 1 and 2, and Alternative 5 (reduced size desalination facility implemented in combination with PWM/GWR Project) in EIR/EIS Section 4.3.5.2 and Section 5.5.3. See response to comment MRWPCA-7 for a detailed discussion of these impacts and associated mitigation measures.

Regarding additional assessment of the mitigation component involving retrofitting the outfall diffuser with inclined jets to increase dilution, see response to comment MRWPCA-20, which also provides details related to the assessment of potential secondary impacts on MRWPCA compliance with NPDES and Ocean Plan requirements from inclined jets when brine is absent (such as when the desalination facility is offline during repairs or routine maintenance).

MRWPCA-19 Advanced oxidation, additional filtration, and Granular Activated Carbon treatment methodologies have been demonstrated to be technically feasible methods for reducing the concentrations of certain constituents when used as part of a water quality treatment process. While none of these treatment methods would independently reduce the concentrations of all constituents regulated under the California Ocean Plan, such treatment options are included as part of Mitigation Measure 4.3-5, Implement Protocols to Avoid Exceeding Water Quality Objectives, as components of a suite of potential mitigation strategies, both operational and engineering related measures, that may be employed independently or in combination with other mitigation component strategies to reduce identified constituent concentrations in operational discharges to ensure conformance with regulatory requirements. The various methodologies are included to ensure flexibility for implementing successful mitigation strategies over the lifetime of the project. In response to the comment, the inclusion of Biologically Active Filtration has been removed from Mitigation Measure 4.3-5.

MRWPCA-20 EIR/EIS Appendix D1 and Appendix D3 have been revised/supplemented to include a comprehensive analysis of inclined jets, such as included in Mitigation Measure 4.3-5, for operational discharges associated with the proposed project, Alternative 5, and the Alternative 5 cumulative scenario (i.e., with GWR effluent included). The analyses assessed changes to dilution, salinity, and Ocean Plan compliance associated with inclined jets for all ocean conditions and for a range of inclined angles to identify the optimum angle for meeting Ocean Plan water quality standards. Additionally, the assessment of Ocean Plan compliance (EIR/EIS Appendix D3) was revised to assess the potential for inclined jets to cause secondary impacts by preventing MRWPCA from meeting NPDES discharge requirements (for a buoyant discharge) when the desalination facility is offline. The results of the additional analyses have been incorporated into EIR/EIS Sections 4.3 and 5.5.3. As demonstrated by the revised analyses presented in Appendix D3 and incorporated into the assessment of impacts in EIR/EIS Sections 4.3 and 5.5.3, inclining the outfall diffuser jets increases dilution sufficiently to ensure that operational discharges would meet Ocean Plan standards and other regulatory requirements without causing secondary impacts to MRWPCA or cumulative scenarios (i.e., with GWR assumed to be operational). The revised and expanded analyses support the impact assessments and impact conclusions presented in the Draft EIR/EIS and were conducted in collaboration with MRWPCA staff specifically to ensure that the EIR/EIS contains adequate detail to enable MRWPCA and other responsible agencies to rely on the document for subsequent permit approvals. The additional analyses do not identify any new significant effects or substantially more severe significant effects than were addressed in the Draft EIR/EIS and the conclusions of the Draft EIR/EIS are unchanged.

MRWPCA suggests alternate mitigation, such as reducing the number of open ports on the outfall diffuser, reducing the diffuser size, and/or the removal or modification of the Tideflex duckbill diffuser nozzles to increase dilution. Altering the number of open ports was assessed by Roberts (2016) in EIR/EIS Appendix D1 and the approach was found to have only a negligible effect on dilution. Additionally, reducing the size of the ports could result in reduced head pressure, which would require discharges to be pumped under pressure rather than flow by gravity as it currently operates, which would require the construction of a new pump station, potentially resulting in additional environmental impacts, and increased operating costs. For these reasons, the suggested mitigation strategies have not been added to Mitigation Measure 4.3-5.

MRWPCA-21 See response to comment MRWPCA-7.

MRWPCA-22 As discussed in EIR/EIS Section 4.4.1.2, Local and Regional Hydrogeology, the aquifers in the area near the subsurface intake system consist of the Dune Sand, 180-FTE, 400-Foot, and Deeper Aquifers. These aquifer names are based on the general depth at which the aquifers are encountered (see Master Response 7 regarding the clarification that what the Draft EIR/EIS referred to as the “900-Foot Aquifer” is more properly termed the “Deeper Aquifers” of the SVGB). However, the actual depth of each aquifer can vary depending on the location. The MRWPCA has three wells located at the Regional Wastewater Treatment Plant, but the well screen depth intervals do not precisely fit into the 180-FTE, 400-Foot, and Deeper Aquifer depth intervals as listed below.

Well	Screen Depth Interval below Ground Surface (feet)
14S/02E-20B01	260 to 340
14S/02E-20B02	260 to 290 and 300 to 340
14S/02E-20B03	670 to 730 and 785 to 805

Well 14S/02E-20B03 has depth intervals that are in between the 400- and 900-foot depth intervals. This well was assigned to the 900-Foot Aquifer (now Deeper Aquifers) since the well screen is in the Paso Robles Formation, which is the geologic unit below the Aromas Sand to which Deeper Aquifer wells are typically assigned.

Further examination of the geologic cross section on Draft EIR/EIS Figure 4.4-3 indicates that Wells 14S/02E-20B01 and 14S/02E-20B02 should be assigned to the 180-FTE Aquifer. These two wells have been deleted from Figure 4.4-16 (the proposed action response in the 400-Foot Aquifer) and added to Figure 4.4-15 (the proposed action response in the 180-Foot Aquifer). In addition, Table 4.4-10 has been revised.

MRWPCA-23 See responses to comments MRWPCA-1 and MRWPCA-14.

MRWPCA-24 See responses to comments MRWPCA-4, MRWPCA-5, and MRWPCA-6, which address revisions to the Draft EIR/EIS regarding descriptions and analyses of the construction and operation of the proposed protective measures for the Ocean Outfall, including the Beach Structure Evaluation and Protective Measures, the WEKO seal replacement and protection measures, and the End Gate protection measures.

In addition, see responses to comments MRWPCA-2, which addresses the land outfall protection mitigation, and MRWPCA-3, which addresses construction and operation of the Brine Mixing Facility.

MRWPCA-25 See response to comment MRWPCA-7.

MRWPCA-26 Text revisions have been made throughout the EIR/EIS regarding the correct phrasing of the Groundwater Replenishment Project and spelling of Trussell. With regards to use of the term “CSIP Pond” versus “Salinas Valley Reclamation Project” (SVRP), the following text revision has been made in EIR/EIS Section 1.4.4:

5. The preferred method of returning water to the Salinas Valley now includes a new 5-mile-long pipeline to the city of Castroville, with connections to the Castroville Community Services District (CCSD) and <u>Salinas Valley Reclamation Project Storage Pond (hereafter referred to as</u> Castroville Seawater Intrusion Project [CSIP<u>] pond)</u> distribution systems.