CHAPTER 8
Comments and Responses on the Draft EIR/EIS

8.1 Introduction

On January 13, 2017, the CPUC and MBNMS (the CEQA and NEPA lead agencies, respectively, sometimes jointly referred to as the Lead Agencies) published and distributed the Notice of Availability (NOA) of the Draft EIR/EIS for the MPWSP, soliciting both written and oral comments on the Draft EIR/EIS by local, state, and federal agencies and by interested organizations and individuals for a 45-day public comment period starting January 13 and ending February 27, 2017. At the request of several agencies and members of the public, the Lead Agencies extended the comment period by an additional 30 days, and written comments on the Draft EIR/EIS were accepted through March 29, 2017. The Lead Agencies held a public hearing for the receipt of oral and written comments on the Draft EIR/EIS on February 16, 2017. The Lead Agencies received approximately 82 comment letters, plus 2 form letter submissions, sent through mail, hand-delivery, or email, as well as approximately 18 oral comments made to staff at the public hearing. On November 9, 2017, subsequent to the close of the Draft EIR/EIS comment period, Marina Coast Water District submitted additional comments to the Lead Agencies.

This chapter includes all written and oral comments received during the public comment period on the Draft EIR/EIS, and provides responses to all comments that address issues relevant to the EIR/EIS. Although several written comments were received late, they are responded to in this Final EIR/EIS.

This chapter fully complies with CEQA and NEPA provisions regarding response to Draft EIR/EIS comments. CEQA Guidelines Section 15088 requires lead agencies to evaluate comments on environmental issues and prepare a written response. According to Guidelines Section 15088(c), the "written response shall describe the disposition of significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections). In particular, the major environmental issues raised when the lead agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted. There must be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice."

40 CFR1503.4 establishes the following requirements for response to comments in a Final EIS:

(a) An agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively, and shall respond by one or more of the means listed below, stating its response in the final statement. Possible responses are to:

(1) Modify alternatives including the proposed action.

(2) Develop and evaluate alternatives not previously given serious consideration by the agency.

(3) Supplement, improve, or modify its analyses.

(4) Make factual corrections.

(5) Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.

(b) All substantive comments received on the draft statement (or summaries thereof where the response has been exceptionally voluminous), should be attached to the final statement whether or not the comment is thought to merit individual discussion by the agency in the text of the statement.

8.1.1 Responses to Comments Methodology and Organization

Responses to comments provided in this chapter address environmental issues raised during the review period. Responses are provided for each comment in the following sections. They are intended to provide clarification and refinement of information presented in the Draft EIR/EIS and, in some cases, to correct or update information in the Draft EIR/EIS. The text of the Draft EIR/EIS has been revised as appropriate in response to comments and to reflect new or updated information, and the revised text has been incorporated into the Final EIR/EIS in Chapters 1 through 7. Some of the text modifications are noted in Master Responses or individual responses to comments where necessary to discuss specific changes that have been made. Many places, the Master Responses or individual responses note that changes have been made to the text in Chapters 1 through 7, but the text of such changes is not set forth in the responses themselves.

8.1.1.1 Master Responses

Numerous comments on the Draft EIR/EIS raised common concerns or questions that are most appropriately answered or clarified in one comprehensive or “master” response. The Lead Agencies have provided Master Responses to address common concerns in Section 8.2. Individual comments related to these topics are referred to the pertinent Master Response. The Master Response topics include the following:

Master Response 1: EIR/EIS Authorship

Master Response 2: Source Water Components and Definitions

Master Response 3: Water Rights

Master Response 4: The Agency Act and Return Water

Master Response 5: The Role of the Hydrogeologic Working Group and its Relationship to EIR/EIS

Master Response 6: The Sustainable Groundwater Management Act

Master Response 7: The Deeper Aquifers of the Salinas Valley Groundwater Basin

Master Response 8: Project Source Water and Seawater Intrusion

Master Response 9: Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM)

Master Response 10: Environmental Baseline under CEQA and NEPA

Master Response 11: CalAm Test Slant Well

Master Response 12: The North Marina Groundwater Model (v. 2016)

Master Response 13: Demand (Project Need) and Growth

Master Response 14: CEMEX Settlement Agreement

Master Response 15: Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario

8.1.1.2 Individual Responses

The Draft EIR/EIS comment letters, the public hearing transcript, and detailed responses to each comment are included in Sections 8.3 through 8.9, which organize comments and responses by category (Federal, State, and Local Agencies, Non-Governmental Organizations, Individuals, Form Letters, and oral comments received at the public hearing). Within each category, letters are listed alphabetically. The comment letters appear first within each category, followed by a comprehensive set of responses. Comments have been delineated and numbered consecutively within each comment letter. Each individual comment is marked in the margin with the number of the comment and correlative response. Attachments to the Draft EIR/EIS comment letters and other supporting contents from the Draft EIR/EIS comment letters (e.g. resumes, product sheets, repeat form letters, etc.) are included in Appendix M. Where an individual comment is addressed by information in one or more Master Responses, the response refers to the Master Response(s). Where an individual comment is addressed by another individual response, the reader is referred to such other response to avoid duplication.

8.1.2 List of Commenters

Table 8-1 lists all agencies, organizations and individuals who provided written or oral comments on the Draft EIR/EIS. The table is organized by category (federal, state, and local agencies, organizations, individuals, and oral comments) and the section number where the comment and responses are located in Chapter 8.

TABLE 8-1
COMMENTERS ON THE MONTEREY PENINSULA WATER SUPPLY PROJECT DRAFT EIR/EIS

Section Number	Commenter
Federal Agencies	
8.3.1	Department of the Army, Fort Ord Base Realignment and Closure Field Office (FOBRAC)
8.3.2	Department of the Army, U.S. Army Installation Management Command (USARMY)
8.3.3	Monterey Bay National Marine Sanctuary Advisory Council, Research Activity Panel (MBNMS RAP)
8.3.4	United States Army Corps of Engineers (USACE)
8.3.5	United States Environmental Protection Agency (USEPA)
State Agencies	
8.4.1	California Coastal Commission (CCC)
8.4.2	California Department of Fish and Wildlife (CDFW)
8.4.3	California Department of Parks and Recreation (CA Parks)
8.4.4	California State Lands Commission (CSLC)
8.4.5	State Water Resources Control Board (SWRCB)
Local Agencies	
8.5.1	City of Marina
8.5.2	Marina Coast Water District (MCWD)
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)
Organizations	
8.6.1	Ag Land Trust (ALT)
8.6.2	California Unions for Reliable Energy (CURE)
8.6.3	California-American Water Company (CalAm)
8.6.4	Carmel River Steelhead Association (CRSA)
8.6.5	Carmel River Watershed Conservancy (CRWC)
8.6.6	CEMEX
8.6.7	Citizens for Just Water (CJW)
8.6.8	Coalition of Peninsula Businesses (CPB)
8.6.9	Deep Water Desal, LLC (DWD)
8.6.10	Ecological Rights Foundation (ERF), the Center for Biological Diversity (CDB), and Our Children's Earth Foundation (OCEF)
8.6.11	Fort Ord Rec Users (FORU)
8.6.12	Just Water (JW)
8.6.13	Land Watch Monterey County (LWMC)
8.6.14	Pebble Beach Company (PBC)
8.6.15	Point Blue Conservation Science
8.6.16	Public Trust Alliance (PTA)
8.6.17	Public Water Now (PWN)
8.6.18	Salinas Valley Water Coalition (SVWC) and Monterey County Farm Bureau (MCFB)
8.6.19	Surfrider Foundation
8.6.20	Water Ratepayers Association of the Monterey Peninsula (WRAMP)

TABLE 8-1 (Continued)
COMMENTERS ON THE MONTEREY PENINSULA WATER SUPPLY PROJECT DRAFT EIR/EIS

Section Number	Commenter
Individuals	
8.7.1	Michael Baer
8.7.2	David Beech
8.7.3	Kathy Biala
8.7.4	William Bourcier
8.7.5	David Brown
8.7.6	Charles Cech
8.7.7	Bob Coble
8.7.8	Margaret-Anne Coppernoll
8.7.9	Herbert Cortez
8.7.10	Bruce Delgado
8.7.11	Myrleen Fisher
8.7.12	David Gorman
8.7.13	Jane Haines
8.7.14	Juli Hofmann
8.7.15	Clifton Herrmann
8.7.16	Thomas Moore
8.7.17	Hebard Olsen
8.7.18	Larry Parrish
8.7.19	Paula Pelot
8.7.20	Carol Reeb
8.7.21	Dick Rotter
8.7.22	Nancy Selfridge
8.7.23	Jan Shriner
8.7.24	Roy Thomas
Form Letters	
8.8.1	Form Letter 1 Commenters: Abbey, Linda; Anderson, Flora; Armstrong, Robert; Azama, Henry; Baer, Michael; Baker, Pamela; Barish, Gale; Barish, David; Baxter, Ron; Bayer, Nina; Bean, Beverly; Beech, David; Billig, Melanie; Billig, Charles; Book, David; Bradford, John; Braqq, B; Bricker, Marshall; Broffey, Bill; Brook-Kothlow, Jennifer; Brown, Judy; Brumm, Virdette; Burnis, James; Byrd, William; Canepa, Allan; Cardinalli, Sal; Cardinalli, Lynette; Cech, Charles; Chrislock, Melodie; Christensen, Sharon; Chudilowsky, Mishka; Cleyet, B.; Cline, Kay; Coble, Robert; Comstock, Katharine; Crompton, Michelle; Diesh, Andrew; Donnelly, Jean; Dunn, Phillip; Dziedzic, Mary Jane; Eastman, Patricia; Eckles, M.; Edwards, Phyllis; Emery, James; Epel, David; Epel, Lois; Evans, Robert; Feldman, Heidi; Fisher, Myrleen; Foley, Michael; Gabri, Suzie; Gray, Natalie; Haddad, Martha; Happ, Pamela; Harris, Patricia; Harris, Tamara; Harris, William; Hess, Anne; Holston, Christina; Hood, Barbara; Houston, Gladys; Jameson, Marge Ann; Jennings, Tammy; Johnson, David; Johnson, Karen; Johnson, Lynn; Jones, Jennifer; Jones, Shirmaine; Karas, Judith; Karnes, Gary; Kolisch, Christine; Kostakos, Shirley Bee; Lehman, Judith; Lernoud, Mabel; Lim, Yuensan; Locke, Karin; Malek, Safwat; Malek, Maha; Malek, Allyson; Markus, Katalin; Martin, Roland; Mason, Marilyn; Matterson, Betty; Maupin, Ellen; Moroh, Marsha; Myers, Roberta; Newman, Michael; Nolte, Glen; Norton, Richard; Oblander, CJ; Ogden, Karl; Ogden, Maria; Olsen, Hebard; Parkman, R.; Parrish, Larry; Parrish, Larry; Pearse, Vicki; Pearse, John; Pomeroy, Laura; Presser, Daniel; Reynolds, Stuart; Rigney, Hansi; Roden, Patricia; Rotter, Dick; Schwoerke, F.L.; Seese, Nancy; Selfridge, Nancy; Setinek, Carol; Shih, Sylvia; Silverman, S. Chavez; Smith, Ruth; Stephan, Gail; Stephan, Robert; Stephan, Ruth; Stern, Jeanette; Stevenson, Raymond; Stillwell, Richard; Stollorz, Carol; Stube, MaryAnne; Swartley, Bernice; Tharpe, Peggy; Trinkle, Heidi; Ushakoff, Walt; Venza, Patricia; Wanderman, Ken; Wanless, John; Warren, Richard; Warren, Barbara; Watson, Marquis; Weidemann, Stephen; Weidemann, Shannon; Weigle, Bill; Wellman, Phil; Wilhelm, Douglas; Williams, Vicki; Winfield, Robin; Wood, Kristen; Woods, Izabelle; Yaghowbian, Lynn; Yateman, DeAnna; Zamzow, Heidi; Zurkan, R.M.

TABLE 8-1 (Continued)
COMMENTERS ON THE MONTEREY PENINSULA WATER SUPPLY PROJECT DRAFT EIR/EIS

Section Number	Commenter
Form Letters (cont.)	
8.8.2	Form Letter 2 Commenters: Abulencia, Rolondo; Aguirre, Luis A.; Argueza, Gloria; Aulencia, Thelma; Auria, Justin; Auria, Fannie; Auria, Louis; Auria, Claudine; Auria, Louis; Auria, Lino; Baer, Michael; Ball, Chelsea; Barrett, Esther; Beck, Susan; Bertone, Michael Allen; Bhatti, Robina; Biala, Henry; Biala, Kathy; Billingsky, Elizabeth; Blanton, Cheyenne; Blanton, Laura; Blanton, William J.; Blanton, Colleen; Bowers, Dwayne; Boyle, Clinton J.; Bradshaw, Patti; Britzman, Tom; Brown, Wendell; Bucharelli, Molly; Cameron, Kris; Carley, Patrick; Cavalier, Betty; Chalfant, Ashley; Clark, Peter R.; Coble, Robert W.; Collier, R.; Collins, Darrell; Conley, Luana; Copperell, M.A.; Cortez, Herbert; Cowan, James; Cowan, James A.; Cullers, Julia; Dagdigian, James; Daus, Margaret; Deering, Marc; Deerling, Kathleen; Delano, Devan; Dimaggio, Tom; Dingess, John F.; Doherty, Ed; Doherty, Eugene & Margaret; Echart, Mark; Ehle, Joshua; Eisenhauer, Mark. D.; Eugenio, R.M.; Falkovskaia, Elena; Fearnside, Janet; Fearnside, Doug; Fisher, Myrteen; Franklin, Derrick; Galatina, Joshua; Gastelum, Bailey; Gill, Linda; Goltz, Tyanne A.; Goltz Sr., Dennis; Gomes, Dela A.; Gomes, Edmond; Gomes, Monda; Graham, John; Graham, Cynthia; Grantham, Michael; Green Jr., Bernard; Greenbaum, William A.; Hainullau, Igor; Hammond, Kelly; Harry, Evan; Hauge, Meheen; Hauge, Evan; Haye, Wesley; Hearndon, Kim Ann; Heller, Leon & Patricia; Herdon, Kim Ann; Hochuli, Steffanie; Hoffman, Juli; Ibrahim, Danyal; Jablonski, Judy; Jablonski, Gaely; James, Young Cha; Janamillo, Lorenzo; Jason, Grantham; Jessen, Phaedra; Johnson, Gainell; Johnson, Brian; Johnson, Sara; Jones, Rhonda J.; Juncd, Maxamina; Juskiewicz, Jerzy; Keim, Edgar; Keim, Candice; Kim, Sun; Kittlitz, Megan; Kittutz, Danna; Klein, Candice; Klein, Edgar; Knauf, Thomas; Knauf, Tim; Kneeland, Will; Kollerer, Therese; Kopp, John & Cheryl; LaMountain, Moira; Lebda, Terry E.; Leken, Joel; Lidyoff, M.; Lomboy, Edward S.; Lynn, Sean; Maguire, Lisa; Mantgubet, Ernie; Manuel, Paul; Manuel, Amanda; Mar, Betty; Martinez, Ashley; Mast, Michael L.; Matta, Carleen; McCallon, Kevin; McCallon, Rebecca; Meachum, Catherine & Ed; Morrison, Agnes K.; Nader, Angie; Naidu, Latchmi Radha; Nakagawa, Jeanne; Neptune, Diana; Neptune, James; Nohr, Judy; Nohr, Fred; Nolan, B.; Nolan, Nancy; O'Connell, Linda M.; O'Dell, Janice; O'Dell, Harry E.; Ontiveros, Daniel; Oxley, Dustin; Paez, Elias; Parish, Larry; Pellegrini, Michael A.; Pellegrini, Yong L.; Pendleton, Chrystal; Pineda, Jose; Pooler, Johanna; Potter, Fred H.; Powell, Curtis; Powell, Tug S.; Quick, Timothy; Quidley, Rudy & Virginia; Raymer, Duane J.; Rebecca, McCallon; Riddle, Steve; Ridler, Darlena; Righello, Charles; Righello, Mary; Roberts, Carol; Sachs, Edward T.; Sak, Pendleton; Santella, Ray; Sedarous, Magda; Sheppard, Adala K.; Shriner, Janet; Shrum, Nam Y.; Silva-Santella, Grace; Simmons, Brian; Simmons, Melva; Sixberry, Mali; Smith, Jennifer; Smith, James L.; Smith, Kerry T.; Smith, Linda D.; Souix, Cheryl; Stahl, John; Steel, Brandi; Sturges, Mary J.; Svetlik, Barbara; Sweet, Debbie; Swix, Cheryl; Tantilla, Laura Simon; Tenves, Oscar; Thomas, Susan; Torres, Oscar; Tu, Vivian; Upshau, Marilyn; Valdez, Val; Valdez, Paul; Valencia, Joe; Villagrath, Michael; Voltierra, Patricia; Walton, Audra; Ware, D.M. and Linda; Warner, Un Cha; Warner, Charles; Weston, River; Wickins, Alfrieda; Wilkinson, Charles D.; Williams, Virginia; Woodson, Karen; Wustrack, Nora
Public Hearing Comments	
8.9	Cursio, Gary; Coppernoll, Margaret Ann; Tilley, John; Billingsley, Elisabeth; Biala, Harvey; Biala, Kathy; Olsen, Hebard; McMahon, Tom; Mounteer, Peter; Leneve, Brian; Poskoff, Rene; Hansen, Jody; Baer, Michael; Shriner, Jan; Cortez, Herbert; Hofmann, Juli; Riley, George

8.2 Master Responses

8.2.1 Master Response 1: EIR/EIS Authorship

COMMENTS ADDRESSED IN MASTER RESPONSE 1

Ag Land Trust	Kathy Biala
California Unions for Reliable Energy (CURE)	Margaret-Anne Coppernoll
Citizens for Just Water	Juli Hofmann
Ford Ord Rec Users	

Several comments received on the Draft EIR/EIS appear to refer to CalAm as the author of the EIR/EIS, or represent that CalAm provided the analysis contained therein. For example, commenters assert that "CalAm erroneously represents," or that "CalAm states," or that "CalAm concludes" when referencing the EIR/EIS. This Master Response has been prepared to clarify that this EIR/EIS was prepared by the California Public Utilities Commission (CPUC) as the CEQA Lead Agency, by NOAA's Monterey Bay National Marine Sanctuary (MBNMS) as the NEPA Lead Agency, and by independent consultants under contract with these agencies, and not by CalAm, the project applicant.

CEQA Guidelines Section 15051(b) explains that if the proposed project is to be carried out by a non-governmental person or entity (like CalAm), the lead agency shall be the public agency with the greatest responsibility for supervising or approving the project as a whole. Under NEPA, the role of a federal lead agency is similar to the lead agency role under CEQA. See 40 CFR 1501.5. As explained in EIR/EIS Executive Summary Section ES.1, this EIR/EIS was prepared in accordance with CEQA (Cal. Pub. Res. Code §21000 et seq.), the CEQA Guidelines (Cal. Code Regs., Tit. 20, Div. 6, Ch. 3, §15000 et seq.), NEPA (42 U.S.C. §4321 et seq.,) and the NEPA implementing regulations (40 CFR Parts 1500-1508).

The analyses and conclusions in the EIR/EIS were prepared by the consultants on behalf of the Lead Agencies and were independently evaluated, reviewed, and revised by Lead Agency staff. See EIR/EIS Section 7.2 for a list that identifies consulting firms and individuals and their specific roles in the preparation of the EIR/EIS. Use of contractors is expressly approved under the NEPA regulations (40 CFR 1506.5). The analyses and conclusions in the EIR/EIS reflect the independent judgment of the Lead Agencies, and therefore, the CPUC and MBNMS are responsible for the scope, content, adequacy, and objectivity of the EIR/EIS.

8.2.2 Master Response 2: Source Water Components and Definitions

COMMENTERS ADDRESSED IN MASTER RESPONSE 2

City of Marina	David Beech
Marina Coast Water District	Kathy Biala
Monterey Peninsula Regional Water Authority	Margaret-Anne Coppernoll
Ag Land Trust	Myrleen Fisher
Citizens for Just Water	Juli Hofmann
Fort Ord Rec Users	Form Letter 2
Public Water Now	Public Meeting Verbal Comments
Water Ratepayers Association of the Monterey Peninsula	

Commenters have questioned the specifics of how the EIR/EIS uses key terms associated with and comprising the source water for the proposed desalination plant. This Master Response clarifies those definitions. The definitions also have been consolidated in Section 3.1, the introduction to the project description, to assist the reader.

To begin with, groundwater and ocean water can be described in simple geographic, locational terms as follows:

Groundwater: water located beneath the earth's surface

Ocean water: water located above the seafloor

In the context of the proposed MPWSP and for purposes of this EIR/EIS, of most importance is the chemical composition of any affected water. The reason for this is that the water chemistry indicates where the water came from (i.e., whether it started as groundwater or ocean water) and how usable it is for domestic and other purposes. The source water components are defined and used in the EIR/EIS as follows:

Fresh water: water that originated in a groundwater basin through precipitation or rivers and streams; in the context of the MPWSP, fresh water is water that originated within the Salinas Valley Groundwater Basin, identified as containing total dissolved solids (TDS) concentrations of less than 500 milligrams per liter (mg/L), consistent with the secondary drinking water standards established by the SWRCB in Title 22 California Code of Regulations, section 64449, as recommended levels of TDS.[1] TDS is the quantity of dissolved materials in a water sample and is used to quantify the amount of salts in a sample (it is a test for salinity).

Seawater: water that originated in the ocean, identified as containing 33,500 mg/L of TDS, which represents current salinity levels in Monterey Bay.

[1] "Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance." 22 Cal.Code Regs. 64449(d)(1).

Brackish water: water that is a combination of seawater and fresh water, and thus contains TDS levels between 500 mg/L and 33,500 mg/L.

Source water (also referred to as feed water): water that would be drawn into the proposed project slant wells and conveyed to the desalination facility. This water would be a combination of brackish groundwater representing the ambient conditions in the water-bearing sediments of the Dune Sand and 180-FTE Aquifers at the coast, and the seawater that is drawn in through the aquifer sediments to recharge the capture zone. The capture zone is the localized region that would contribute source water to the slant wells. (See Master Response 8, Source Water and Seawater Intrusion.)

The categories of fresh water, seawater, brackish water, and source water are consistent with the SWRCB's *Final Review of California American Water Company's Monterey Peninsula Water Supply Project*, included as EIR/EIS Appendix B2, which states on page 35 that "CalAm's proposed MPWSP would pump seawater, brackish water, and possibly a fresh water component."

8.2.3 Master Response 3: Water Rights

COMMENTS ADDRESSED IN MASTER RESPONSE 3

City of Marina	Kathy Biala
Marina Coast Water District	David Brown
Ag Land Trust	Bob Coble
California American Water Company	Margaret-Anne Coppernoll
CEMEX	Myrleen Fisher
Citizens for Just Water	David Gorman
Fort Ord Rec Users	Jane Haines
Just Water	Juli Hofmann
Land Watch Monterey County	Thomas Moore
Public Trust Alliance	Hebard Olsen
Public Water Now	Nancy Selfridge
Salinas Valley Water Coalition and Monterey County Farm Bureau	Form Letters 1 & 2
Water Ratepayers Association of the Monterey Peninsula	Public Meeting Verbal Comments
Michael Baer	

This Master Response addresses comments concerning the likelihood that CalAm would possess water rights to support the proposed project. While the topic of water rights is a legal issue, a fact-based analysis is key to the ultimate legal conclusion of whether, under the developed water doctrine, CalAm could have appropriative rights to the portion of project source water that would be drawn into the slant wells from the Salinas Valley Groundwater Basin (SVGB or Basin). The EIR/EIS explored in detail the law and the pertinent facts as they have been amassed to date in Section 2.6, Water Rights, concluding that the Lead Agencies could determine that there is a sufficient likelihood of CalAm having rights to water for the project for the purpose of determining project feasibility. Many comments on the EIR/EIS addressed such subjects as the water rights legal framework, the facts to support the conclusions reached in EIR/EIS Section 2.6, and the conclusions as to whether the project would cause harm or injury to Basin water users. Given the wide variety of comments on water rights, the comments are summarized throughout this Master Response as to particular topics for ease of organization and clarity. In addition to this Master Response, also see Final EIR/EIS Section 2.6, Water Rights, which has been updated and refined in further response to comments on the topic. For a full understanding, this Master Response should also be read in conjunction with Final EIR/EIS Section 4.4, Groundwater Resources, and Master Responses 2, Source Water Components and Definitions; 4, The Agency Act and Return Water; 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin; and 8, Project Source Water and Seawater Intrusion.

8.2.3.1 Purpose of EIR/EIS Water Rights Section

The water rights analysis in the EIR/EIS provides the Lead Agencies and members of the public with data upon which to assess the likelihood that CalAm will possess water rights because, if it appeared more likely that CalAm would not have such rights, then the project may be deemed infeasible. The function of the EIR/EIS analysis of water rights is not to definitively decide whether there are water rights to support the project, nor would a decision to approve the project function as a binding decision on CalAm's water rights. As stated in the Draft EIR/EIS on page 2-30:

> 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. Naturally, however, if CalAm does not have the right to the supply water for the proposed project, the proposed project could not proceed and would thus prove infeasible. This section 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.

Numerous commenters state that CalAm would be unable to meet its burden of proof to establish water rights for the project in a court of law, and several commenters (opining both that CalAm does and does not have sufficient water rights) have included lengthy legal analyses on the water rights topic. In developing this Master Response and other responses to comments, as well as in refining EIR/EIS Section 2.6, the Lead Agencies have reviewed and considered all authorities cited. At the same time, the level of detail and certainty for a feasibility analysis within an EIR/EIS is not the same as the more exacting level of detail, proof and legal arguments that would pertain in a court challenge on water rights. In an EIR/EIS, there is room for disagreement among experts, with the Final EIR/EIS still concluding that the project can be deemed feasible for current purposes on a water rights basis due to substantial evidence that CalAm will possess rights to the water that would supply the desalination plant.

Some commenters urge that CalAm should have a burden of proof now to establish by a preponderance of the evidence that it will possess water rights sufficient to make the project feasible. Other commenters ask what standard applies to the question within the EIR/EIS as to whether CalAm will possess water rights for the project, and seek identification of the criteria that the Lead Agencies will use to determine whether the project is feasible as to water rights. The criteria for the feasibility analysis are set forth within EIR/EIS Section 2.6. The standard of review that the decision-making bodies would apply to the conclusion of the Final EIR/EIS on this project feasibility matter is whether substantial evidence in the record supports the water rights findings. This standard of review may be different than a standard of review in any judicial challenge to the water rights of CalAm to support the project.

8.2.3.2 Sequence of Approvals Vis-à-vis Water Rights

Numerous commenters express concern that the MPWSP project review and consideration process is proceeding without CalAm having secured water rights for the project, urging that water rights should first be established before the Lead Agencies consider approval of the project.

This position may reflect a misunderstanding of the nature of an appropriative right to "developed water" under water rights law. As explained in Draft EIR/EIS Section 2.6, on page 2-29, "no government agency will formally grant water rights to CalAm for the project." There is no state or local agency with authority to approve CalAm's water rights for the MPWSP. As stated on page 35 of the State Water Resources Control Board (SWRCB) report on water rights for the MPWSP (EIR/EIS Appendix B2, referred to as the "Report"), "No permit is required by the State Water Board to acquire or utilize appropriative groundwater rights." The rights to pump and use groundwater in California in a non-adjudicated basin (such as the SVGB) are established by actual diversion, pumping and use, and are governed by a long line of court cases. In the event that one or more parties believe that the extraction and use of groundwater by another party is inconsistent with the law, the concerned parties may initiate a civil action against the extracting party to contest the right of that party to take and use groundwater. As applied here, someone could bring a legal action against CalAm challenging the right of CalAm to use SVGB groundwater incidentally withdrawn by the slant wells for the desalination project. The substance of CalAm's legal claim to water rights is addressed in EIR/EIS Section 2.6, and in this Master Response in Section 8.2.3.4, below. Since under the legal construct, an appropriative right to developed water is a right that exists based upon the facts at hand, and need not be formally established in advance, there is no possibility for the Lead Agencies to insist that CalAm obtain or perfect water rights prior to project approval.

Commenters point out that the uncertainty concerning project water rights could inhibit MPWSP construction or operation, and possibly even make the project infeasible in the end. It is true that a water rights judicial challenge, if one were to ensue, could indeed impair the ability of the project to move forward and timely meet the project objectives. It would at this juncture be speculative for the Lead Agencies to forecast whether such a judicial challenge would be filed, when it would occur, whether an injunction would be issued to halt project progress, how long resolution of it would take and what the outcome may be of such an action. Any development project, and certainly any complex project such as the MPWSP, is subject to myriad legal hurdles on the permitting and judicial fronts. It is precisely because the Lead Agencies understand that water rights is a topic of considerable interest for the MPWSP that the EIR/EIS includes a robust discussion of water rights in an effort to ascertain whether it appears likely based on the evidence in the record that CalAm will have water rights such that the project can be deemed feasible. The fact that someone could challenge CalAm's water rights (and the possible effects of such a challenge) does not in and of itself make the project infeasible; however, it is a factor that can be considered by the decision-makers in determining whether the project is viable, cost effective, and can be timely implemented.

Commenters have asked what would happen if a court were later to determine that CalAm did not have legal rights to the Basin water withdrawn by the project slant wells, and whether CalAm or the Lead Agencies would bear liability if it turns out the SVGB is harmed. If it were later determined that CalAm did not possess legal rights to some portion of the water for the MPWSP, the MPWSP would have to be somehow redesigned or relocated to accommodate the specific ruling. As made clear above, the Lead Agencies are not formally deciding in the EIR/EIS or through their approval processes, nor do they have jurisdiction to do so, that CalAm possesses water rights for the project. Thus, if a court were to determine that CalAm did not enjoy such

rights, the Lead Agencies would not be involved in such proceeding and would not bear any liability for the outcome. It is not the place of the EIR/EIS to opine as to any liability that CalAm may or may not bear in such a circumstance. Note, however, that CalAm has proposed a mitigation measure (Mitigation Measure 4.4-3, set forth in Draft EIR/EIS Section 4.4.5.2 at page 4.4-74, and also discussed in EIR/EIS Section 2.6) whereby CalAm would take steps to avoid harm (possibly including improving well efficiency, providing a replacement water supply and/or compensating the well owner for increased costs) if the MPWSP is demonstrated to adversely affect existing neighboring active wells.

8.2.3.3 Authority and Expertise of SWRCB to Opine on Water Rights

As explained in EIR/EIS Section 2.6 and in Section 8.2.3.2 of this Master Response, in response to a written request from the CPUC for expert assistance in gauging CalAm's rights to water for the project supply, the SWRCB prepared a report concerning the legal framework applicable to and the factual basis needed for CalAm to possess water rights for the project. Some commenters have questioned the authority and expertise of the SWRCB to prepare the Report. The Report on page 58-59 (EIR/EIS Appendix B2) addresses this critique, in response to a similar comment on the draft Report, as follows:

> The State Water Board is the state agency with primary responsibility for the regulatory and adjudicatory functions of the state in the field of water resources. (Wat. Code, § 174.) The water right permitting and licensing system administered by the State Water Board is limited to diversions from surface water channels and subterranean streams flowing through known and definite channels. (See *id.*, § 1200.) But the State Water Board has other authority that applies to all waters of the state, surface or underground. This includes the State Water Board's water quality planning authority, which extends to any activity or factor affecting water quality, including water diversions. (*Id.* §§ 13050 subds. (e) & (i).), 13140 et seq., 13240 et seq.; see 44 Ops. Cal. Atty. Gen. 126, 128 (1964).)
>
> The State Water Board has broad powers to exchange information with other state agencies concerning water rights and water quality, and more specific authority to evaluate the need for water-quality-related investigations. (Wat. Code, §§ 187, 13163, subd. (b).) The State Water Board also has authority to conduct or participate in proceedings to promote the full beneficial use of waters of the state and prevent the waste or unreasonable use of water. (*Id.*, § 275.) This authority includes participation in proceedings before other executive, legislative, or judicial agencies, including the [California Public Utilities] Commission. (*Ibid.*) And the State Water Board's authority to promote the full beneficial use of water and prevent waste or unreasonable use applies [to] all waters the state, including percolating groundwater. (See, e.g., SWRCG Decision 1474 (1977.)
>
> The Water Code includes procedures for court references to the State Water Board, under which the State Water Board prepares a report on water right issues before the court. (Wat. Code, §§ 2000 et seq., 2075 et seq.; see *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 451 [these procedures are designed to enable courts . . . "to make use of the experience and expert knowledge of the board."]; *San Diego Gas & Electric Co. v. Superior Court* (1996) 13 Cal.4th 893, 914-15 [the Commission has broad authority including judicial powers].)

> Thus, it is well within the State Water Board's authority and consistent with the execution of its statutory responsibilities to report to the [California Public Utilities] Commission on matters related to rights to diversion and use of water, including diversions of percolating groundwater. The conclusions and recommendations in this Report are not binding on the [California Public Utilities] Commission, but provide a means for the [California Public Utilities] Commission to make use of the knowledge and expertise of the State Water Board.

8.2.3.4 Description of Supply Water

Numerous commenters questioned the following statement in the Draft EIR/EIS at 2-30:

> The proposed project (MPWSP) 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.

Commenters pointed out that some of the screens through which project supply water would be pulled into the slant wells lie under coastal land along the ocean, rather than being located under the ocean itself. In recognition of this fact, the pertinent language has been altered as follows:

> The proposed project (MPWSP) and Alternative 5a are designed to take supply water via underground slant wells that would draw water from aquifers that extend underneath Monterey Bay, and at this location, would eventually be recharged primarily by seawater.

8.2.3.5 Water Rights Analysis and Conclusions

Legal Framework

As a threshold matter, consistent with CEQA and NEPA directives and norms, the EIR/EIS (including Section 2.6) presumes that CalAm would implement the project in full conformance with laws, regulations, contracts and other legal constraints. As explained in EIR/EIS Section 2.6, and based on the SWRCB Report, CalAm would not need to secure any particular right to the seawater that would enter the slant wells for the project. As to the portion of the source water that would originate from the Basin, CalAm would need an appropriative groundwater right to retrieve and use that water. The Report outlines the factual circumstances that would need to exist in order for CalAm to possess such water right: so long as no legal user of water is harmed as a result, CalAm could withdraw for the project water that would otherwise be unused. CalAm would have rights to that water because it would be classified as "developed water" (sometimes also referred to as "salvaged water"), meaning that the new potable water would not have existed absent CalAm's efforts and actions. EIR/EIS Section 2.6 delves into the application of available facts to these criteria, concluding it is likely that CalAm would have water rights for any portion of the supply water that originated from the Basin because: (a) the water that originated from the Basin that would enter the desalination system is not currently being put to beneficial use, and; (b) the project would not injure existing legal water users per the factors outlined in the Report.

It is important to note that an appropriative groundwater right cannot and does not exist unless and until water is actually pumped and used. "To constitute a valid appropriation, three elements must always exist: (1) the intent to appropriate water and apply it to a beneficial use; (2) the

actual diversion . . . from a groundwater basin; and (3) the application of water to a beneficial use within a reasonable time." Turlock Irr. Dist. v. Zanker,140 Cal.App. 4th 1047, 1054 (2006). This means that CalAm will not actually possess water rights to the incidental water that originated in the Basin until the project is underway, and also means that those who may desire to use that water in the future through appropriation do not currently possess rights to use water in any greater amount or different manner other than their current actions.

The subsections of this Master Response below further address comments received on the water rights analysis and conclusions.

Quality of Basin Water

Some commenters question or seek proof that any water withdrawn from the Basin by the slant wells is in fact unusable to legal water users. As explained in Master Response 2, Source Water Components and Definitions, four basic types of water are pertinent to the project. The first, seawater originating from the ocean, is not at issue for water rights purposes. The second type, fresh water, is water that originated in the SVGB and has a total dissolved solids (TDS) concentration under 500 milligrams per Liter (mg/L). The third type of water is brackish water, a mix of seawater and fresh water resulting from decades of inland seawater intrusion. The fourth is source water, which is water that is drawn into the slant wells and is a combination of ambient highly brackish groundwater in the Dunes Sand and 180-Foot Equivalent Aquifers and the seawater that would recharge the slant well capture zone. The proposed slant wells at CEMEX would extract source water. As explained in EIR/EIS Section 4.4.1, the Dune Sand and 180-FTE Aquifers along the coast are hydraulically connected to the Pacific Ocean and seawater within the 180-Foot Aquifer has intruded to a maximum of approximately 8 miles inland as inferred from chloride concentrations greater than 500 mg/L as reported by the Monterey County Water Resources Agency (MCWRA). The source water that could be drawn into the supply wells is thus of very little use for irrigation or for drinking. It is thus reasonable to conclude that the water that would be drawn into the wells, including the brackish water originating in the Dune Sand and 180-Foot Equivalent Aquifers, is unusable water in its current form. Because the source water is unusable at present, it is not foreseeable that such water has potential reasonable beneficial uses. The only way for such water to become usable in any meaningful quality and quantity would be for such water to be desalinated in the same or a similar manner to the proposed project (see Section 8.2.3.7, below, for discussion of that possibility). Furthermore, as discussed in EIR/EIS Section 2.6, and further below, evidence indicates that any existing legal users of the brackish water would not be injured by the project.

The physical effects of the slant wells withdrawing the source water were projected using a calibrated groundwater model, as explained in EIR/EIS Section 4.4.4.2. See also Master Response 12, North Marina Groundwater Model (v.2016). Slant wells would initially extract the water that exists in the surrounding sediments (ambient brackish groundwater). As pumping continues, the wells would extract increasing proportions of infiltrating recharge from the ocean. The steady ocean recharge would gradually replace the ambient groundwater within the capture zone, and move within the capture zone toward the wells, but would not advance beyond the capture zone. For more information on these technical aspects of the project, see Master

Responses 8, Project Source Water and Seawater Intrusion. Given the inland groundwater gradient and the localized extent of the capture zone, the geographic extent within which water quality would be affected, would be a limited area confined to the coast and slightly inland (see Figures 8.2.8-5 and 8.2.6-4).

Commenters have questioned the conclusions of the water rights analysis in light of the sentence in Draft EIR/EIS Section 2.6 on page 2-34, that states that the groundwater modeling "cannot project the amount of Basin water that is expected to be drawn into the wells." It is true that the North Marina Groundwater Model cannot predict water quality, and is designed to show changes in water levels. The precise amount of fresh water (as a component of brackish water) that would be withdrawn by the slant wells is not a deciding factor as to whether CalAm would possess rights to the Basin water withdrawn. The SWRCB Report itself, at page 36, acknowledges that "the State Water Board is unable to estimate what percentage or proportion of water extracted from the Basin landward of the proposed well location could be attributed to fresh water sources." Yet the Report concludes at page 38, even with such uncertainty, that CalAm could possess rights to use Basin water for the project so long as "no other legal user of water is injured in the process." Thus, the question at hand is one of injury to existing legal water users. The modeled assessment of the drawdown effects of the project on aquifer levels appear sufficient for assessing injury without knowing how much of the withdrawn brackish water would consist of ocean water and how much would comprise fresh water. In any event, however, the Hydrogeologic Working Group has completed a work product that does help answer this query (EIR/EIS Appendix E3) and it is addressed in detail in Master Response 4, The Agency Act and Return Water.

Surplus Water

Commenters state that the brackish water drawn into the project slant wells would not automatically or necessarily be classified as surplus water in the water rights rubric. One argument is that such degraded water can still be used for "minor irrigation and dust control" and could be used by another possible desalination plant in the future. To the contrary, it does appear that such water can be properly characterized as surplus water. As the SWRCB Report states on page 35, "[B]ecause 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." The analysis and conclusion of EIR/EIS Section 2.6 are centered on exploring whether CalAm would have a right to Basin water on the basis of developing the water supply. As also stated in the Report (in footnote 65 on page 47), "Water that is currently unusable, both due to its location in the Basin and corresponding quality, could be rendered useable if desalinated and would thus be surplus to current water supplies in the Basin." Any water that is currently used for minor irrigation and dust control could continue to be so used and would not constitute surplus water. Section 4.4, Groundwater Resources, together with Section 2.6, Water Rights, indicate that the project would not harm such existing legal water users. Any possible future desalination plant does not currently possess appropriative groundwater rights because such plant has not already created a new water supply out of unusable surplus water, so it need not be considered in the pertinent water rights equation (but see the Effects on Marina Coast Water District subsection of this Master Response below).

Commenters criticize the water rights analysis for considering the usability of the brackish water that would make up a portion of the source water; they maintain that the Agency Act and County Ordinance 3709 do not differentiate between groundwater (no matter its quality) and "usable groundwater." However, the water rights evaluation is based upon the SWRCB Report, which does focus upon the quality (or usability, as discussed above) of the water withdrawn. The consistency of the project with the Agency Act and County Ordinance 3709 is a separate topic addressed in Master Response 4, The Agency Act and Return Water. Some commenters opine that the term "incidentally extracted useable groundwater" as used on page 40 of the Report in the Agency Act consistency discussion is different than the term "fresh water" (that may be contained within project source water) used in the EIR/EIS. However, the Report does repeatedly use the term "fresh water" in discussing the water that would be returned to the Basin as part of the project. It seems clear that the Report intended those terms to be interchangeable.

Commenters note that overlying Basin water users have been complying with Ordinance 3709 precluding pumping from the 180-Foot Aquifer and that the lack of use of such water should not classify it as "abandoned" water available for the project. However, EIR/EIS Section 2.6 does not depend on the unusable groundwater being "abandoned" to establish CalAm's rights to the source water. Some commenters further state that overlying users have voluntarily refrained from using groundwater when, in fact, they were precluded by Ordinance 3709 from doing so, and could not have used the water for domestic purposes due to its quality. In any event, the water rights analysis is based on the actual use and quality of any non-seawater withdrawn by the supply wells rather than the intent of overlying users.

Harm or Injury

A critical element of inquiry explored within EIR/EIS Section 2.6, and discussed throughout this Master Response, is harm or injury. As noted, CalAm may possess legal rights (on a developed water basis) to pump and use water that originated from the Basin so long as existing legal water users are protected from harm. Certain commenters claim that there is no substantiation for the conclusion in the water rights analysis that the project will not cause harm. However, as detailed in EIR/EIS Section 2.6, the findings related to harm or injury to groundwater users are based primarily upon the scientific analysis set forth in EIR/EIS Section 4.4, and the validated groundwater modeling that has been conducted for the project (as well as pertinent master responses). Section 2.6 does not merely apply the groundwater resources significance thresholds, but considers and applies each of the elements of possible injury to water rights as specified in the SWRCB Report. That Report was plainly based upon and grounded in legal precedent defining harm or injury.

Commenters stress the need for the water rights analysis to consider the effect of the diminution of water quality in the vicinity of the CEMEX property. EIR/EIS Section 4.4, together with Master Response 8, Project Source Water and Seawater Intrusion, explain that the diminution in water quality in the very local area of the CEMEX property would be of limited extent such as to not affect existing groundwater wells.

Some commenters state that the water rights analysis focuses on individual well owners, but fails to consider potential impacts on the region and its aquifers, alleging that "harm" and injury" are too narrowly defined and that any compensatory actions or mitigation measures should also include other stakeholders, such as MCWD, the City of Marina and the Fort Ord community. As stated in EIR/EIS Section 2.6:

> The [SWRCB] Report specifies three categories of foreseeable injuries that conceivably could be experienced by overlying water users within the area of influence of the MPWSP supply wells: "(1) a reduction in the overall availability of fresh water due to possible incidental extraction by the MWPSP; (2) a reduction in water quality in those wells in a localized area within the capture zone; and, (3) a reduction in groundwater elevations requiring users to expend additional pumping energy to extract water from the Basin." Report at 45.

It is not clear that MCWD or the City of Marina (as entities) have overlying water rights, so the harm inquiry directed by the Report above may not even apply. In any event, EIR/EIS Section 2.6 finds it reasonable to conclude that harm would not accrue to current groundwater users within the area where water levels could decline by 1 to 5 feet as a result of the project. Logically then, water users located more distant from the project slant wells, where water levels would decline by less than 1 foot (if at all), should be protected from harm or injury. Furthermore, EIR/EIS Section 4.4, fully examined more regional issues such as seawater intrusion, depletion of aquifer volume and reduction of groundwater quality, concluding in each respect that the project would not generate a significant environmental effect. While the CEQA/NEPA and water rights inquiries are not identical, the thresholds of significance employed in EIR/EIS Section 4.4 are such that application of them to the change effected by the project would encompass any resulting harm or injury.

In a similar vein, commenters state that taxpayers have invested in the improvement of the SVGB and efforts to ensure a long term, sustainable water supply, and that the proposed project would be adverse to such investments. With a similar response, the EIR/EIS demonstrates that no harm will accrue to the legal users of groundwater within the SVGB.

Waste of Water

At least one commenter linked the analysis of water demand in EIR/EIS Sections 2.1 – 2.5 with the topic of water rights, maintaining that any project supply of water in excess of the water supply needs of current water users would be a prohibited "waste" of groundwater. It is not expected that the project would produce more desalinated water than would be supplied to CalAm current and future customers. Thus, it is expected that no water would be wasted. To the extent that project water may be employed by new users or to support new land uses (such as legal lots of record or growth that has been envisioned by pertinent local general plans), it seems logical to assume that such water use would be a "reasonable and beneficial use" under the California Constitution aimed at preventing waste or unreasonable use of water.

8.2.3.6 Return Water

CalAm proposes as part of the project to return to the Basin the amount of fresh water that is contained within the brackish water withdrawn by the slant wells, by providing desalinated product water to CCSD and CSIP, in-lieu of CCSD and agricultural users pumping an equal amount of groundwater; see EIR/EIS Section 2.5.1. One purpose of the return water is to allay concerns over project compliance with a state law that precludes SVGB water from being removed from the SVGB. See Master Response 4, Agency Act and Return Water. Some commenters maintain that this return water component of the proposed MPWSP is a prerequisite to a conclusion that the project would enjoy water rights. Other commenters opine that water rights would exist without the return water component because the project generates no harm to existing legal water users that needs to be addressed through return water. The purpose of the return water element of the project is not to alleviate or address any environmental effects, and it is true that as to water rights, no harm has been shown to exist that the return must ameliorate. The return water is proposed to be returned to the same groundwater basin from which the fresh water component of the withdrawn brackish water would be derived; as such, the Basin would enjoy the benefits of such fresh water so as to stay in balance from a fresh water perspective. In any event, however, the question of whether the return water element is required to establish water rights is academic since the proposed project does include the return water elements and the project as a whole (rather than its individual parts) is the topic of the EIR/EIS and the water rights conclusions.

Certain commenters maintain that the return water component of the project is needed in order to establish water rights because of the water quality harm they state that the project would generate. The assertion is based on analysis in EIR/EIS Section 4.4 concerning changes in groundwater quality that could occur in the immediate vicinity of the slant wells and within the capture zone. There are no active wells constructed in the Dune Sands and 180-FTE Aquifers within the projected capture zone such that no existing legal water users would suffer harm. Furthermore, as noted above, the project considered as a whole does include the return water component such that the project would appear to be feasible from a water rights standpoint even if the return water element were critical to such conclusion.

8.2.3.7 Effect on Marina Coast Water District

Commenters express concern that the project will impair MCWD's ability to supply water on a long term, economic basis to the City of Marina and to Fort Ord, including through a possible future MCWD desalination plant. Some commenters state that the slant wells fall under the jurisdiction of MCWD, which is a public water agency. Many commenters appear to believe that MCWD owns, controls, or otherwise possesses legal rights to all groundwater within its service territory. This is not the case. To the extent that MCWD is currently appropriating water for its customers' beneficial use, MCWD certainly does possess the appropriative rights to such pumped water. As explained above in this Master Response, appropriative groundwater rights are based upon active use. They cannot be reserved in advance. The SWRCB Report at page 35 refers to "existing uses" and to "[p]otential overlying uses" as being implicated in a water rights analysis to demonstrate surplus water, but not to potential appropriative uses. Therefore, the fact that

MCWD may desire at some point in the future to use groundwater within the same aquifer or general location as does the proposed project, is not a factor that weighs into the current water rights inquiry for the project. Nonetheless, EIR/EIS Section 4.4.6 does contain a cumulative analysis of the combined effects of the MPWSP with a possible MCWD desalination plant. The analysis (which is necessarily of a fairly general, preliminary nature since no such MCWD plant is yet proposed) concludes that operation of both desalination projects would not adversely impact groundwater resources.

Commenters raise concerns that, in light of the dearth of water available to MCWD and its customers, and the needs of such current and future customers for a long term, sustainable water supply, it is illogical or unfair for the project to take any amount of water from the SVGB for the purpose of supplying water to CalAm's customers on the Monterey Peninsula. Such comments do not raise a water rights issue, but do engender a policy consideration that can be factored in and addressed by agencies considering approval of the project. Note that based on EIR/EIS Sections 4.4 and 2.6, and this Master Response, the proposed project would not cause significant impacts on groundwater quantity or quality in the Basin and it appears that the project would not harm current legal groundwater users. As to physical effects on MCWD's water source, please see Master Response 7, The Deeper Aquifers of the Salinas Valley Groundwater Basin, and Master Response 8, Project Source Water and Seawater Intrusion.

8.2.3.8 Implications of Annexation Agreement

In 1996, the MCWRA, the MCWD, the City of Marina, the owners of Armstrong Ranch, and then owners of the CEMEX property (RMC Lonestar) entered into an Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands ("Annexation Agreement"; MCWRA et al., 1996). The agreement established a framework for management of groundwater from the Basin and included terms and conditions for the annexation of lands (including the CEMEX properties) to MCWRA's benefit assessment zones as a financing mechanism to fund groundwater resource protection and reduction of seawater intrusion and to MCWD for water service.

Several commenters have raised the issue that Paragraph 7.2 of the Annexation Agreement limits CEMEX's (the successor owner of the Lonestar property and party to the Annexation Agreement) withdrawal and use of groundwater from the Basin to Lonestar's historical use of 500 acre-feet per year (afy). According to the comments, this same limitation should also apply to CalAm's right to pump groundwater from the CEMEX property. Many of the comments center on the argument that the Annexation Agreement was effective upon execution of the agreement by all parties in 1996, and therefore the limitations and restrictions apply to the proposed project. (Annexation Agreement, paragraph 7.2.)

The commenters are correct that the Annexation Agreement became effective on the date it was executed. It is not clear whether the parties to the Annexation Agreement are currently abiding by the agreement in that certain key objectives behind the agreement have not materialized (such as annexation of territory into MCWD). It does appear, though, that the more supportable position based upon the terms of the Annexation Agreement alone is that the 500 afy limitation on

CEMEX pumping groundwater from its property did also become effective on the effective date of the Annexation Agreement. EIR/EIS Section 2.6.4 has been revised to reflect this information.

Notwithstanding that conclusion, the commenters erroneously focus on the Annexation Agreement as a basis to argue that CalAm is restricted from withdrawing and using more than 500 afy of groundwater for the project. The parties to the Annexation Agreement whose water rights were implicated were all property owners, and the agreement relates to each of their overlying rights and uses of pumped groundwater on their properties. The MCWD 2010 Urban Water Management Plan (section 3.2.1, page 14) confirms that Lonestar's historical water use of 500 afy was an overlying water right and use.

In contrast, CalAm is not an overlying property owner subject to the Annexation Agreement and its right to withdraw and use brackish water from the Basin for the proposed project would be an appropriative right, as discussed extensively above and in EIR/EIS Section 2.6. The law distinguishes between the right to use water under an appropriative right and an overlying right. For instance, "[t]he overlying right . . . is associated with the ownership of land. Overlying rights are special rights to use groundwater under the owner's property. Appropriative rights, on the other hand, are not derived from land ownership but depend upon the actual taking of water." City of Santa Maria v. Adam, 211 Cal.App.4th 266, 278 (2006). A water rights legal treatise emphasizes this point as follows: "Unlike…overlying rights, [an] appropriative right is not dependent upon the ownership of real property. The right to use water under an appropriative right is distinct from the property through which the water flows or the land where the water is ultimately placed to beneficial use." 1 Slater, California Water Law and Policy (2017) § 2.16, at p. 2-102. Under these key distinctions, a non-property owner's right to water that is developed through pumping is an appropriative right. While it is true that the MPWSP would pump some water from the Basin through wells on CEMEX's property, CalAm is not the property owner and therefore does not have an overlying right to the groundwater. Accordingly, the limitations and restrictions in the Annexation Agreement apply only to CEMEX's use of the groundwater and would not apply to the proposed project.

Draft EIR/EIS Section 2.6.4 on page 2-41 stated that CalAm could conceivably employ an injection well on the CEMEX land to offset water pumped from the land so as to meet the requirements of the Annexation Agreement. Commenters have pointed out that such a strategy may not offset the amount of Basin groundwater withdrawn from the CEMEX land, and that such a concept was not studied in the Draft EIR/EIS. The critique is well taken and the language in Final EIR/EIS Section 2.6.4 has been amended to delete the suggestion.

8.2.3.9 Recirculation of Draft EIR/EIS

Certain commenters state that EIR/EIS Section 2.6 should be altered in various respects and then the Draft EIR/EIS should be recirculated for an additional round of public review and comment. In response to comments, some changes have been made to EIR/EIS Section 2.6. However, neither the methodologies employed nor the conclusions reached have changed in any way that implicates a significant environmental impact not identified in the Draft EIR/EIS, a substantially more severe significant environmental effect than indicated, or a new feasible alternative or

mitigation measure. Thus, there is no legal requirement based upon the water rights analysis to recirculate the Draft EIR/EIS.

8.2.3.10 References

MCWRA, MCWD, City of Marina, J.G. Armstrong Family Members, and RMC Lonestar, 1996. Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands. Available at http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Marina%20Coast%20Water%20District/MCWD-MCWRA%202-2A%20annexation%201996.pdf.

8.2.4 Master Response 4: The Agency Act and Return Water

COMMENTERS ADDRESSED IN MASTER RESPONSE 4

City of Marina	Water Ratepayers of the Monterey Peninsula
Marina Coast Water District	Kathy Biala
Monterey Peninsula Regional Water Authority	Margaret-Anne Coppernoll
Monterey Peninsula Water Management District	Juli Hofmann
Citizens for Just Water	Hebard Olsen
Coalition of Peninsula Businesses	Larry Parrish
Fort Ord Rec Users	Form Letter 2
Land Watch Monterey County	Public Meeting Verbal Comments
Public Water Now	

This Master Response addresses comments concerning the proposed project's compliance with the Monterey County Water Resources Agency Act (Agency Act) and aspects of the proposed return water component of the MPWSP, including the allocation of the proposed return water to the Castroville Community Services District (CCSD) and to the Castroville Seawater Intrusion Project (CSIP). This Master Response also addresses comments on the amount of water required to be so allocated (or returned) in order to satisfy the Agency Act and to address project impacts, and discusses the likely percentage of water drawn through the proposed supply wells that would comprise the fresh water component of the source water. See Master Response 2, Source Water Components and Definitions, for definitions of all components of source water.

8.2.4.1 Agency Act Compliance and Location of Return Water

As explained in Draft EIR/EIS Section 2.6.3 on page 2-39, a state law known as the Agency Act created the Monterey County Water Resources Agency (MCWRA or Agency). Section 21 of the Agency Act is titled "Legislative findings; Salinas River groundwater basin extraction and recharge." Section 21 provides in pertinent part:

> The Legislature finds and determines that the Agency is developing a project which will establish a substantial balance between extraction and recharge within the Salinas River Groundwater Basin. For the purpose of preserving that balance, no groundwater from that basin may be exported for any use outside the basin . . .

In order to satisfy the Agency Act, CalAm has proposed that it will calculate annually (based on the total dissolved solids (TDS) concentration of the water being drawn through the slant wells) the percentage of supply water that originated in the Salinas Valley Groundwater Basin (SVGB, which is the same as the Salinas River Groundwater Basin) as fresh water, i.e., the fresh water component of the brackish water drawn by the slant wells. CalAm would then "return" to the SVGB that same amount of water by providing desalinated product water to CCSD and CSIP. As a result, the amount of fresh water that was drawn into the slant wells would be devoted to domestic and agricultural uses in lieu of CCSD and agricultural users pumping and using an equal amount of groundwater within the SVGB. Draft EIR/EIS Section 2.6.3 evaluates the likelihood

that the project would comply with the Agency Act, concluding on page 2-40 that "it appears at least preliminary reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance [prohibiting groundwater extractions at a particular depth] such that those laws would not impair project feasibility."

Commenters expressed concern over the fact that the water returned to the Basin through provision of it to CCSD and to CSIP would be in a different location than the place from which the water was withdrawn. Specifically, commenters question how returning water to Castroville would benefit the water source for MCWD and state that the project would not return pumped groundwater directly to the Basin. Section 21 of the Agency Act pertains quite plainly to the "Salinas River Groundwater Basin" and states that "no water **from that basin** may be exported for any use outside the basin . . ." (emphasis added). The molecules of fresh water that would be drawn by the slant wells would have come from the SVGB. Likewise, CCSD currently pumps groundwater from the SVGB and that would be replaced by desalinated water supplied to CCSD, and agricultural users currently pump groundwater from the SVGB that would be replaced by desalinated water supplied to CSIP. The return water would be used in lieu of pumping groundwater directly from the SVGB. Thus, even though the withdrawal and the return may occur in different areas of the SVGB (roughly 4.5 miles apart), both would be within the same basin that is the subject of Agency Act Section 21. Concerning MCWD specifically, its water source is the SVGB. The relationship of the "Marina Subarea" defined by MCWD to the hydrogeographic unit of the SVGB is discussed in Master Response 6, The Sustainable Groundwater Management Act. The Agency Act concerns itself only 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.

Furthermore, as discussed in EIR/EIS Section 2.6.3 and included as EIR/EIS Appendix B2, the SWRCB opined on page 40 of its *Final Review of California American Water Company's Monterey Peninsula Water Supply Project* ("Report") that because "the Project as proposed would return any incidentally extracted usable groundwater to the Basin … , it does not appear that the Agency Act or the Ordinance [3709] operate to prohibit the Project." Pages 39 to 40 of the SWRCB Report noted that while the word "export" is not defined in the Agency Act, "limitations on export ordinarily are not interpreted to apply to situations where the conveyance of water to areas outside a watershed or stream system is accompanied by an augmentation of the waters in that area, so there is no net export." The Report specifically stated on page 39 that the return may be through the CSIP (the return to CCSD had not been identified when the Report was drafted), supporting the notion that the return locale need not be within a particular radius of the slant wells so long as it occurs within the SVGB.

Several commenters noted that the SWRCB Report assumed that the screens for the slant wells would be located solely under the ocean, with none being located inland of the mean high tide line. Regardless, the SWRCB's evaluation of Agency Act compliance assumes that the project would withdraw some usable groundwater (i.e., fresh water) from the SVGB. In addition, the EIR/EIS both acknowledges and assumes that some of the water withdrawn by the slant wells would indeed be brackish water containing fresh water molecules subject to the return component

of the project because they originated in the SVGB. The conclusions of the EIR/EIS Section 2.6.3 analysis concerning whether the Agency Act would impair project feasibility need not be altered.

Some commenters asked whether the MCWRA has agreed that the Agency Act does not preclude project viability. It is noteworthy that MCWRA (a party to the CPUC proceeding on the project) agreed to and executed the June 14, 2016, MPWSP Desalination Return Water Settlement Agreement. That Settlement Agreement, the terms of which are incorporated into CalAm's MPWSP proposal, sets forth the return water construct as to how the return water amount would be calculated and the provision of the return water to CCSD and CSIP. The Settlement Agreement does state that CalAm shall comply with the Agency Act and that the agreement does not alter or affect MCWRA's authority under the Agency Act. Nonetheless, the fact that MCWRA is a party to the Return Water Settlement Agreement indicates some level of endorsement by MCWRA of CalAm's plan for Agency Act compliance through the proposed return, as well MCWRA's acknowledgement that Ordinance 3709 would not impair the project.

8.2.4.2 Required Amount of Return Water

Certain commenters maintain that new test well and groundwater monitoring data indicate that the proposed one-to-one return water ratio is insufficient to offset impacts on the Marina Subarea of the SVGB. For a discussion of the Marina Subarea, see Master Response 6, The Sustainable Groundwater Management Act. See Master Response 11, CalAm Test Slant Well, for information on test slant well data, and Master Response 8, Project Source Water and Seawater Intrusion, together with Section 4.4, Groundwater Resources, concerning impacts to groundwater resources. The project envisions returning to the Basin precisely the same amount of desalinated water as the amount of fresh water that is withdrawn (as a component of brackish water) by the slant wells. None of the commenters articulate precisely why a ratio different than one-to-one should be employed, nor do they indicate what ratio would be more appropriate. It is noteworthy that while the fresh water component of the source water (the amount subject to the return proposal) would be mingled with ocean water within the withdrawn brackish water (and could be separated only through the use of a desalination technology), the water returned to the SVGB in lieu of an equal amount of groundwater pumping would be desalinated, and fully potable water.

8.2.4.3 Anticipated versus Actual Amount of Return Water

Certain commenters requested further discussion of the anticipated annual volume of water that would be returned to the SVGB. While a range of annual volume of water to be returned to the SVGB was assumed in order to analyze the anticipated impact of the proposed intake system, the actual volume of return water would be calculated annually using actual water quality data from the production wells, as specified in the 2016 Return Water Settlement Agreement. Both the Settlement Agreement calculation method and the modeling estimation procedures are discussed below.

2016 Settlement Agreement Return Water Calculation Method

The method of calculating the specific volume of annual return water is set forth in Section H of the Settlement Agreement, which states the following:

> The Project's slant intake wells are designed to produce source water for treatment by the selected desalination plant ("Project Source Water Production"). To meet applicable requirements of the Agency Act, CalAm has proposed as part of the Project to make available for delivery to groundwater users overlying the SVGB a volume of water ("Return Water") equal to the percentage of SVGB groundwater in the total Project Source Water Production, as calculated on a water year basis and determined by the Agency.

The formula for calculating the annual volume of return water is described in the Settlement Agreement, Appendix D Base Return Water Obligation Methodology. The equation is as follows:

> (seawater salinity) x (percentage of seawater) + (inland water salinity) x (percentage of Salinas Basin water) = (brackish water salinity)

The formula is aimed at establishing the percentage of the project source water that represents the fresh water component (i.e., inland water per the formula) of the brackish water withdrawn by the slant wells.

The Settlement Agreement establishes as constant values that the measured seawater salinity in Monterey Bay (analyzed as TDS) is 33,500 milligrams per liter (mg/L) and the fresh (i.e., inland) water salinity is 500 mg/L. The brackish water salinity would be measured annually in the source water from the slant wells. Inserting the agreed-upon salinity concentrations:

> 33,500 x percentage of seawater + 500 x percentage of inland water = source water salinity

Since the sum of both percentages must be 100 percent, or 1, the percentage of inland water would be 1 minus the percentage of seawater. Inserting this value:

> 33,500 x percentage of seawater + 500 x (1- percentage of seawater) = source water salinity

Rearranging the equation provides:

> [33,500 x percentage of seawater] + 500 - [500 x percentage of seawater] = source water salinity
>
> or
>
> 33,000 x percentage of seawater = source water salinity - 500

Simplifying the equation provides:

> Percentage of seawater = [source water salinity - 500] / 33,000

The percentage of return water would be 1 minus the percentage of seawater, yielding:

> Percentage of return water = 1 - [(source water salinity - 500) / 33,000]

For example, if the salinity of the source water were measured at 31,076 mg/L, then:

> Percentage of return water = 1 - (31,076 - 500 / 33,000) = 0.074 or 7.4 percent return water

Hydrogeologic Working Group Evaluation of Return Water Estimates

As discussed in Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, referred to as the Technical Group in the 2013 Large Settlement Agreement, was tasked with reaching "…agreement among the Technical Group about the studies, well tests, field work, modeling, monitoring, and other data analyses most appropriate to assess and characterize whether and to what extent the proposed operation of the MPWSP may adversely affect the SRGB [Salinas River Groundwater Basin] and the water supply available to legal water users thereof ("Hydrogeologic Study")."

Included in the tasks performed by the Hydrogeologic Working Group (HWG) was the evaluation of the methods and procedures used for developing the North Marina Groundwater Model (NMGWM). As described in Section 4.4.4.2, Groundwater Modeling, and Appendix E2, within the area to be modeled (model domain), the input parameters for the model included quantifying the volumes of water entering into the model domain from all sources (e.g., precipitation, seawater intrusion, agricultural return water, and infiltration from streams) and quantifying the volumes of water leaving the model domain (e.g., groundwater flow out of the model domain and agricultural pumping). The volume of return water is also an input parameter to the NMGWM because, although the return water would be extracted from and returned to the same basin, the location of the extraction (the slant wells) would not be the same as the location where the return water would be returned to the basin (CCSD distribution system or CSIP).

As previously discussed, the actual volume of return water would be calculated annually based on the salinity of the source water extracted by the slant wells, and would be expected to vary with time and season. Although the exact volume of return water would not be known prior to initiating the seawater extraction system, the return water volume was expected to be more than 0 percent but less than 12 percent, based on preliminary groundwater model runs and calculations. To account for the variable return water volumes, the 2016 version of the NMGWM (NMGWM^{2016}) was run with pumping scenarios that included representative return water volumes of 0, 3, 6, and 12 percent of the total source water volume. The HWG, as part of its Hydrogeologic Investigations, has since evaluated several approaches to return water estimates and has confirmed that the actual return water volume is expected to fall between 0 to 12 percent, as discussed below.

Return Water Estimates

As required by the 2013 Large Settlement Agreement and defined in the Hydrogeologic Workplan, the HWG was tasked with evaluating the test well study data, and ultimately preparing a report of its findings. The Technical Report prepared by the HWG (HWG, 2017; included in Final EIR/EIS as Appendix E3) includes two return water estimation methods. The first approach involves development of an analytical equation to describe mixing of water within the capture zone;[1] the second approach involves numerical modeling using the existing CEMEX Model. These methodologies are described further below. The Lead Agencies have independently reviewed the two methodologies and agree that the approaches and the input assumptions appear reasonable. The two methods – the Analytical Method and the CEMEX Model – confirm that the

[1] The capture zone is the localized region that would contribute source water to the slant wells. (See Master Response 8, Project Source Water and Seawater Intrusion).

range of 0 to 12 percent return water used in the EIR/EIS and the NMGWM^{2016} was reasonable. The HWG Technical Report (EIR/EIS Appendix E3) presents the calculated percentage of ocean water within the source water, referred to as the Ocean Water Percentage (OWP), in Section 2.2.3 and Appendix G of the report for each of the two methods. Since the OWP includes both the seawater in the source water as well as the seawater within the brackish water withdrawn by the supply wells, and in accordance with the formula in the Settlement Agreement, the return water percentage would be equal to 100 percent (or 1) minus the percentage of ocean water.

Calculation of OWP Using Analytical Method

This approach uses an analytical equation to calculate the percentage of ocean water based on the water and salinity budgets within the capture zone of the proposed slant wells. The water budget represents the steady-state inflows and outflows after equilibrium is reached from project pumping. The results show that equilibrium would be reached several months to a few years after the project pumping begins. The steady-state water inflows to the capture volume are seawater inflow from Monterey Bay and recharge from precipitation on the land surface overlying the capture zone. The steady-state water outflow from the capture zone is the pumping from the project wells.

The analytical method was generally calibrated by using the first 1.6 years (April 2015 through October 2016) of data collected from the test slant well and assumed groundwater gradients that were consistent with those used in the EIR/EIS and specifically within the NMGWM^{2016}. The major conclusions of the analytical method of calculating OWP, for the 6.4 mgd and the 9.6 mgd desalination facility options, are listed below:

- The long-term equilibrium OWP is estimated to range from 96 to 99 percent.
- Based on the range of assumptions considered, the continuous pumping time to reach 90 percent ocean water is estimated to range from about 4 months to 1.7 years.
- Based on the range of assumptions considered, the continuous pumping time to reach 95 percent ocean water is estimated to range from about 6 months to 3.1 years.

Thus, based upon the HWG calculations, 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 0 to 12 percent range studied in the EIR/EIS.

Calculation of OWP Using CEMEX and North Marina

As discussed in Section 2.2.3.2 of the HWG Technical Report, the analytical method discussed above cannot accurately predict salinity in the early months of project pumping (prior to equilibration) because the capture zone is transient (i.e., it starts with a smaller area and increases with time until equilibrium is reached). Therefore, the CEMEX Model (see description in EIR/EIS Section 4.4.4.2, Groundwater Modeling) and NMGWM^{2016} were used to provide data to compare with the results of the analytical method. Use of the models allows for additional detail in the early months of the pumping scenarios since the CEMEX Model can provide transient

water quality data. The results for these early months of project pumping indicate a higher percentage of ocean water in the project source water than that predicted by the analytical method. As pumping continues, however, the results from the CEMEX Model and NMGWM^{2016} are consistent with the long-term pumping results from the analytical method. The analysis predicts that the percentage of ocean water will rise to 90 percent within 90 days of the initiation of full-scale pumping and the percentage of ocean water will reach 95 percent within 5 years.

Based upon calculation of the OWP using the groundwater models, it appears that the return water percentage would be no more than 10 percent within the first year of project pumping and would drop to no more than 5 percent within 5 years of project pumping.

Conclusion

In conclusion, both the analytical method and CEMEX modeling approaches to estimating the percent of return water confirm that the anticipated actual annual volume of return water could be 10 percent in the first few months of project pumping and would be no more than 5 percent within 5 years of project pumping. The 0 to 12 percent range used in the EIR/EIS and the NMGWM^{2016} is consistent with these conclusions, appears conservative, and no edits to the analysis relevant to return water presented in the Draft EIR/EIS are necessary.

8.2.5 Master Response 5: The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS

COMMENTERS ADDRESSED IN MASTER RESPONSE 5

Marina Coast Water District	Charles Cech
Ag Land Trust	Bruce Delgado
Public Water Now	Margaret-Anne Coppernoll
Michael Baer	Jan Shriner
David Beech	Public Meeting Verbal Comments
Kathy Biala	

This Master Response discusses the background that led to the formation of the Hydrogeologic Working Group (HWG), identifies the members and the stakeholders each member represents, describes the roles and activities conducted by the HWG, describes the relationship of HWG work products to the CEQA/NEPA analysis, and discusses alleged conflicts of interest.

8.2.5.1 2013 Settlement Agreement

A Settlement Agreement was reached in 2013 wherein several parties to CPUC Proceeding A.12-04-019 affirmed their belief that, consistent with the Public Utilities Code Section 1002(a), the MPWSP would serve the public convenience and necessity. The 2013 Settlement Agreement was reached between California American Water Company (CalAm) and 10 parties, later expanded to 16 parties.[1] Parties to the 2013 Settlement Agreement represent diverse interests including: ratepayers, environmental groups, business groups, local government governments and government agencies, as well as other key stakeholders on the Monterey Peninsula. The Marina Coast Water District is a party to the proceeding, but is not a party to the 2013 Settlement Agreement. The City of Marina was not a party when the 2013 Settlement Agreement was executed and therefore, did not sign the 2013 Settlement Agreement; the City was granted party status in March 2017. Note that the 2013 Settlement Agreement is actually dated July 31, 2013, although it was submitted into the proceeding on August 6, 2013.

8.2.5.2 Establishment and Role of HWG

The HWG, referred to as the Technical Group in the 2013 Settlement Agreement, was established by the parties to the 2013 Settlement Agreement, and not by the CPUC. Within the Agreement, the parties with diverse interests agreed that CalAm's hydrogeologist and technical team would work with the Salinas Valley Water Coalition's (SVWC) and Monterey County Farm Bureau's

[1] CalAm, City of Pacific Grove, Coalition of Peninsula Businesses, County of Monterey, CPUC Division of Ratepayer Advocates (DRA), LandWatch Monterey County, Monterey County Farm Bureau (MCFB), Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Regional Water Authority (MPRWA), Monterey Peninsula Water Management District (MPWMD), Monterey Regional Water Pollution Control Agency (MRWPCA), Planning and Conservation League Foundation, Salinas Valley Water Coalition (SVWC), Sierra Club, and Surfrider Foundation (collectively, the Parties)

(MCFB) assigned hydrogeologists, and other technical experts designated by CalAm. As stated in Section 5 of the 2013 Settlement Agreement, the purpose of the HWG is:

> …to reach agreement among the Technical Group about the studies, well tests, field work, modeling, monitoring, and other data analyses most appropriate to assess and characterize whether and to what extent the proposed operation of the MPWSP may adversely affect the SRGB [Salinas River Groundwater Basin] and the water supply available to legal water users thereof ("Hydrogeologic Study"). The 10 Parties agree that the purpose of this Section 5 is intended to avoid litigation regarding the scope of and methodology used to develop the Hydrogeologic Study and the Technical Report.

The Hydrogeologic Study's Work Plan and Technical Report are described further below in Section 8.2.5.4, HWG Activities and are included in EIR/EIS Appendix E3.

8.2.5.3 HWG Members

The HWG is a collaborative body and does not have an executive director, a manager, a chief hydrogeologist, or any other leader; all work is shared and openly peer reviewed by all HWG members. As previously noted, CalAm and the SVWC designated experts to represent their interests. The HWG members and the entities they represent are:

- The SVWC and the MCFB are jointly represented by Tim Durbin and Martin Feeney, as independent consultants.
- CalAm is represented by Peter Leffler (Ludorff and Scalmanini) and Dr. Dennis Williams, assisted by his staff at Geoscience Support Services (Geoscience).

HWG members are paid by the entities they represent.

Additional Participants at HWG Meetings

Other participants attended some or all of the HWG meetings, but not as formal members of the HWG. Independent consultant Barry Keller participated in some meetings on behalf of CEMEX, the property owner of the proposed source water intake site. Rich Svindland and Ian Crooks participated in some HWG meetings as additional representatives for CalAm. These participants were also paid by the entities they represent. MCWD did not have a representative on the HWG because it was not a signatory to the 2013 Settlement Agreement that established it. The City of Marina did not become a party to the proceeding until March 2017. The Monterey County Water Resources Agency (MCWRA) and the Monterey Peninsula Water Management District (MPWMD) were both settling parties and agreed to accept the SVWC and MCFB representation. Representatives from the MCWRA participated in one or two of the HWG meetings that were attended by members of the CEQA/NEPA team. In addition, the CEQA/NEPA team participated in the HWG, as described below.

8.2.5.4 HWG Activities

As previously noted, the parties to the 2013 Settlement Agreement agreed that the CalAm and SVWC/MCFB hydrogeologists and technical teams would develop a joint Work Plan to conduct

the Hydrogeologic Study described in Section 5 of the 2013 Settlement Agreement, for the proposed source water intake site consistent with the study recommendations presented in the State Water Resources Control Board's (SWRCB) July 31, 2013, Final Review of California American Company's Monterey Peninsula Water Supply Project (included as Appendix B2 in the EIR/EIS). The HWG did not consider administrative or political boundaries (e.g., city, county, or agency areas of jurisdiction), water rights issues, legal issues, or financial considerations.

The Work Plan is titled *Monterey Peninsula Water Supply Project, Hydrogeologic Investigation Work Plan* and dated August 2, 2013. The Work Plan was referenced in the Draft EIR/EIS in Section 4.4 Groundwater Resources. Section 5.2 of the 2013 Settlement Agreement also states that, "The Technical Group will review and evaluate the data and results of the Hydrogeologic Study, and will prepare a Technical Report presenting the findings and conclusions of the Technical Group." The HWG prepared the *Draft Monterey Peninsula Water Supply Project Hydrogeologic Investigation, HWG Hydrogeologic Investigation Technical Report*, dated July 27, 2017, which is referenced in and employed in the analysis of EIR/EIS Section 4.4, Groundwater Resources. The 2013 Work Plan as well as the 2017 Technical Report are included in the Final EIR/EIS in Appendix E3.

Although the Work Plan and the Technical Report are published by Geoscience since the Settlement Agreement states (at Section 5.1, pages 9 and 10) that CalAm will implement and carry out the Hydrogeologic Study, the work products (Work Plan and Technical Report) represent the collaborative work of the entire HWG, not merely Geoscience or CalAm.

The HWG developed the Work Plan as a collaborative plan of investigation to assess the hydrogeologic conditions in the project area. The 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 Work Plan described the Hydrogeologic Study approach and methodologies, including the purpose, locations, and methodologies for installing exploratory borings and monitoring wells; the purpose and methods for collecting and analyzing soil and groundwater samples; the aquifer testing methodology using the test slant well; the development of the conceptual model of site conditions; and the development of the groundwater models. The Work Plan was updated several times as new information became available. The final Work Plan, cited above, incorporated comments and recommendations by members of the HWG, and covered the investigative steps the HWG agreed were needed to consider the anticipated effects of the project. The final Work Plan became the hydrogeology investigation roadmap and resulted in the implementation of the fieldwork and modeling efforts conducted for the MPWSP.

8.2.5.5 Relationship to CEQA/NEPA Analysis

As described above, the HWG resulted from the 2013 Settlement Agreement with a purpose independent of the EIR/EIS. However, the topics addressed by the HWG overlap with some of the environmental topics and inquiries considered by the EIR/EIS, and the Lead Agencies were able to gain valuable data from the work of the HWG. The CEQA/NEPA team engaged with the HWG to observe the implementation of the Work Plan, to understand the test slant well data, and to take

advantage of the individual and collective knowledge of the HWG members to inform the CEQA/NEPA analysis of groundwater resources. The CEQA/NEPA team members that participated in HWG meetings were Eric Zigas and Michael Burns (Environmental Science Associates), Peter Hudson (Sutro Science), and John Fio and Steve Deveral (HydroFocus). The CEQA/NEPA team members attended 10 monthly meetings with the HWG between December 10, 2015, and January 27, 2017 in order to understand the results of the Hydrogeologic Study.

As the Hydrogeologic Study progressed, at each meeting attended by the CEQA/NEPA team, the HWG discussed the status and preliminary results for various tasks of the Hydrogeologic Study, enabling the CEQA/NEPA team to understand the preliminary and final results, and provided the opportunity to ask questions to clarify understandings and assumptions. Concurrently, the CEQA/NEPA team provided feedback to assist the HWG and the groundwater modelers in understanding the significance criteria to be employed in the EIR/EIS. The CEQA/NEPA team obtained feedback from the HWG as to the groundwater aquifer characterization and the groundwater modeling assumptions (this is noted in Footnote 34 on Draft EIR/EIS page 2-35). The HWG also reviewed and commented on the portion of the August 19, 2016, Draft North Marina Groundwater Model Technical Memo that was prepared by HydroFocus for the Lead Agencies and presented at the September 1, 2016, public Groundwater Modeling Workshop that was hosted by the CPUC in Carmel.

The primary topics discussed during the meetings attended by the CEQA/NEPA team included the ongoing test slant well monitoring results, characterization of the hydrogeologic baseline, the Monthly Reports prepared pursuant to the Coastal Development Permit Special Condition 11, the CEMEX Modeling being performed by Geoscience for CalAm, and the 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) being utilized by HydroFocus for the Lead Agencies. Other topics discussed included: the December 2015 site visit to the Castroville Community Services District, and the Ag Land Trust wells; the approach to modeling sea level rise; scaling issues between the regional Salinas Valley Integrated Ground and Surface Water Model (SVIGSM), the $NMGWM^{2016}$ and the focused CEMEX model; model boundaries and boundary conditions; recharge and infiltration rates; the Seaside Basin divide; and Salinas Valley Return Water estimation methods.

The Lead Agencies prepared the EIR/EIS independent from the HWG, using independent judgment in evaluating the information provided by the HWG to help inform the EIR/EIS. The Lead Agencies considered and incorporated information and data generated by the HWG, as appropriate, into the EIR/EIS after subjecting it to peer review. The EIR/EIS impact analysis conclusions and mitigation measures were not shared or discussed with the HWG prior to January 2017 publication of the Draft EIR/EIS.

8.2.5.6 Potential Conflicts of Interest and Independent Judgment

Several commenters expressed concern that one or more conflicts of interest among the Lead Agencies and their consultants, the Applicant and its consultants, and the HWG may compromise the integrity of the CEQA/NEPA analysis and decision-making process. Three characterizations of potential conflicts of interest have been raised in comments:

1) that Dr. Dennis Williams, the President of Geoscience, holds one or more patents related to slant well technology that CalAm could or might use in the construction of the MPWSP;

2) that Geoscience, while under contract to the CPUC, also had a contractual relationship with CalAm, which raised concerns over the credibility and accuracy of the groundwater modeling, and concerns that the use of the NMGWM^{2016} does not reflect the independent judgment of the Lead Agencies; and

3) that the role of Geoscience, and of Dr. Williams in particular, on the HWG presented a potential or perceived conflict of interest with respect to the HWG work products and HWG input on information sources relied on in the EIR/EIS, and/or that HWG and Geoscience work products were relied on in a way that does not reflect the independent judgment of the Lead Agencies.

Although only the third item is directly related to the HWG itself, this section of Master Response 5 addresses these issues as well as the actions taken by the CPUC in response to these concerns. The second and third items are addressed together, as commenters have raised similar concerns about both Geoscience and the HWG, although they are not the same organization.

Financial Conflict of Interest Related to Patents

Dr. Williams, the President of Geoscience, is a member of the HWG and holds certain patents on slant well technology, specifically, the methodology for constructing the slant well subsurface feedwater supply system. Certain entities contacted the CPUC during the comment period for the 2015 MPWSP Draft EIR, and opined that having Geoscience conduct the project modeling and developing the design of the subsurface intake system using technology for which Dr. Williams holds the patents might constitute a conflict of interest. The opinions were that Dr. Williams would have a vested interest in the MPWSP using his technology and would gain financially by its use. Upon being apprised of the potential for a conflict of interest, a CPUC Administrative Law Judge (ALJ) issued a July 14, 2015, ruling in Proceeding A.12-04-019, requesting data from Geoscience and CalAm about patents held by Geoscience relating to the MPWSP.

Geoscience and CalAm both responded to the ruling in a document dated July 28, 2015 and titled *Response of Geoscience Support Services, Inc. to Administrative Law Judge's Ruling Requesting Data on Ratemaking and Geoscience Patents.* As explained in their responses, both parties maintained that Dr. Williams never intended to seek royalties or payments regarding his patent for slant wells in connection with the prior Coastal Water Project or the MPWSP, and no royalties were paid to Dr. Williams. Nevertheless, to provide the CPUC and CalAm customers with certainty on this issue, CalAm entered into a *Patent License and Non-Assertion Agreement* with Dr. Williams in his personal capacity and as president and owner of Geoscience. The agreement makes clear, as described in the Geoscience Response to Request No. 1f, "that Cal-Am, along with its contractors, the overseeing public entity, and end-users, are fully licensed to use, in connection with the MPWSP and for no additional charge, the technology that Geoscience has provided and is providing to CalAm . . . [P]er the terms and conditions of the Agreement, Geoscience and Dr. Williams have granted a royalty-free, fully paid-up license to make and use the slant well systems and methods . . . [A]lso per the terms and conditions of the Agreement,

Geoscience and Dr. Williams have covenanted not to assert . . . any claim of patent infringement respecting the slant well systems and methods being made and used as part of the MPWSP."

Geoscience Groundwater Model and Independent Review of Geoscience and HWG Work Products and Input

As noted in EIR/EIS Section 1.4.3, to address questions about the accuracy and credibility of the groundwater modeling performed by Geoscience (referred to as NMGWM^{2015}), the CPUC extended the public comment period on the April 2015 Draft EIR, made the groundwater data files available for public review, and employed the Lawrence Berkeley National Laboratory (LBNL) to conduct an independent evaluation of that data. In addition, the CPUC engaged with Monterey Bay National Marine Sanctuary (MBNMS, or Sanctuary) as co-lead agency and prepared an updated EIR/EIS that used an independent groundwater modeling consultant, HydroFocus, that had no prior connection to the MPWSP, as discussed below.

The results of LBNL's independent evaluation are provided in EIR/EIS Appendix E1, Section 2. As described therein, LBNL found that its simulation results matched Geoscience's results, which were presented in Appendix E2 of the April 2015 Draft EIR. LBNL's evaluation reproduced some of the groundwater modeling outputs exactly, while others showed small differences that can be attributed to computer round-off and cancellation errors. LBNL found that there were shortcomings in the Geosciences hydrostratigraphic model and simulation inputs that could potentially change the impact assessments. Chief among these was the absence of the Fort Ord-Salinas Valley Aquitard (FO-SVA), which hydraulically separates the Dune Sand and 180-Foot Equivalent (180-FTE) aquifers from greater than about 2 km east of the proposed extraction site.

Although the LBNL review indicated that the NMGWM^{2015} was correctly run and could be improved with the addition of input on the FO-SVA, in July 2015, the CPUC elected to terminate its relationship with Geoscience and proceed with the understanding that Geoscience's role was limited to being a consultant to CalAm, the Applicant. CalAm submitted the Geosciences model (NMWMG^{2015}) as applicant-provided information to the CPUC. The CPUC subsequently contracted with HydroFocus, a groundwater modeling consultant, to independently review, revise, and continue to develop and use the model for purposes of the revised Draft EIR/EIS. HydroFocus was selected because of its experience; because it had no existing or recent relationship with CalAm, Salinas Valley stakeholders, or any party to the CPUC proceeding; and because it would have no involvement with the design, construction, or operation of the MPWSP. As noted by HydroFocus in Section 1 of EIR/EIS Appendix E2, HydroFocus was charged with reviewing the NMGWM^{2015} to:

- Confirm reported hydraulic properties (horizontal and vertical hydraulic conductivity and specific storage), specified stresses (recharge and pumping), boundary conditions, and model-calculated groundwater levels and fluxes.
- Update the NMGWM^{2015} using new information from borehole, monitoring well, and slant well pumping test data (the update is referred to as the NMGWM^{2016}).
- Evaluate the NMGWM^{2016} by assessing history matching results (October 1979 through September 2011) and slant well pumping test results (April 2015 through January 2016).

- Employ the NMGWM^{2016} to calculate drawdown from proposed slant well pumping.
- Characterize sensitivity of the NMGWM^{2016} results to model assumptions and parameter values.

Revisions made to the NMGWM^{2015} by HydroFocus are described in EIR/EIS Appendix E2 at Section 3.0, specifically in Table 3.1, and were made independent from, but are consistent with, the LBNL recommendations. Thus, the credibility of the original model was confirmed by LBNL's independent review, and subsequently the accuracy of the groundwater modeling was improved as a result of the revisions made by HydroFocus.

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 EIR 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 judgment. (*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).

Here, the Lead Agencies and their CEQA/NEPA experts relied on HydroFocus' superposition modeling report (Appendix E2); the Lead Agencies independently reviewed the report, and made an independent conclusion in the EIR/EIS about the proposed project's potential impacts on groundwater resources. It is irrelevant that Geoscience prepared the NMGWM^{2015}, or that the HWG reviewed and commented on the August 19, 2016, Draft NMGWM Technical Memo, because the analyses and the conclusions in the EIR/EIS reflect the independent judgment of the Lead Agencies.

8.2.6 Master Response 6: The Sustainable Groundwater Management Act

COMMENTERS ADDRESSED IN MASTER RESPONSE 6

City of Marina	Public Water Now
Marina Coast Water District	Margaret-Anne Coppernoll
Monterey County Water Resources Agency	Just Water

This Master Response addresses comments regarding the Sustainable Groundwater Management Act (SGMA) and about whether the proposed MPWSP would be consistent with the requirements of SGMA. Specifically, commenters requested information on how the MPWSP would avoid causing the undesirable results cited in SGMA, and discussed below. Commenters asked whether SGMA may place restrictions on pumping that would prevent implementation of the MPWSP. Commenters also requested the recent updated groundwater basin designation information in response to SGMA and requested information on which entity would serve as the Groundwater Sustainability Agency (GSA) for which subbasin.

This Master Response, therefore, provides supplemental information that expands on the discussion of groundwater basins and SGMA as presented in the Draft EIR/EIS. However, the information presented in this Master Response does not change the representation of SGMA in EIR/EIS Section 4.4.2.2, nor does it change the impact significance determinations, as explained in Section 8.2.6.3 of this Master Response.

8.2.6.1 Sustainable Groundwater Management Act

As summarized in EIR/EIS Section 4.4.2.2, SGMA became effective January 1, 2015, gives local agencies the authority and obligation to manage groundwater in a sustainable manner, and allows for limited State intervention when necessary to protect groundwater resources. SGMA establishes a definition of sustainable groundwater management, establishes a framework for local agencies to develop plans and implement strategies to sustainably manage groundwater resources, prioritizes basins (ranked as high- and medium-priority) with the greatest problems (i.e., the undesirable results as discussed below), and sets a 20-year timeline for implementation.

SGMA requires the creation of a GSA for medium- and high-priority groundwater basins in accordance with Water Code §10723 et seq. Each GSA is responsible to develop and implement a Groundwater Sustainability Plan (GSP) in accordance with Water Code §10727 et seq. Each GSP is expected to describe how users of groundwater within the basin would manage and use groundwater in a manner that can be sustainably maintained during the planning and implementation horizon without causing undesirable results. SGMA defines undesirable results as follows:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply

- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies
- Significant and unreasonable land subsidence that substantially interferes with surface land uses
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

Section 8.2.6.3 of this Master Response refers to revisions that have been made in Final EIR/EIS Section 4.4.5.2 (Impacts 4.4-3 and 4.4-4), to document how and why the proposed MPWSP would not conflict with the SGMA-defined undesirable results.

8.2.6.2 Basins and Subbasins

Commenters requested the recent updated groundwater basin designation information in response to SGMA; this discussion is provided in response to those comments.

General Discussion

As discussed in EIR/EIS Section 4.4.1.2, the Salinas River Valley extends from the headwaters around the La Panza Range and Lake Nacimiento northwestward to the Pacific Ocean. The western coastline extent of the Valley extends from Moss Landing and Elkhorn Slough in the north to the City of Monterey in the south; the Valley is underlain by the Salinas Valley Groundwater Basin (SVGB). EIR/EIS Section 4.4.1.1 provides a discussion of groundwater terminology and concepts including basins, basin boundaries, and groundwater divides. The designation and delineation of groundwater basins is the responsibility of the California Department of Water Resources (DWR). The DWR has delineated several basins and subbasins within the Valley.

The designation of groundwater basins has evolved over time as new information has become available. As shown on EIR/EIS Figure 4.4-1, the basin boundaries designated by the DWR in 2012 (colored polygons) differ from the basin boundaries designated by DWR in 1946 (black outlines). Note that the names of the subbasins have also evolved over time. Local agencies such as the Monterey County Water Resources Agency (MCWRA) have used some different basin names and delineations based on their locally available information and understanding of basin boundaries. The proposed source water intake system, for example, would be located in the 180/400 Foot Aquifer Subbasin, the boundaries of which generally coincide with those of the SVGB Pressure Area (or Subbasin) traditionally recognized by MCWRA and DWR. The basin borders are described in EIR/EIS Section 4.4.1.2.

With the implementation of SGMA, DWR reviewed all of the basins statewide and assigned priorities for establishing GSAs and implementing GSPs. Entities desiring to become a GSA must submit an application to the DWR that justifies why they would qualify as a GSA, defines the basin or subbasin over which they propose to develop and implement a GSP, and proposes any

basin boundary changes based on technical data that justifies boundary changes. The DWR then reviews the submittal and either accepts the proposed GSA or rejects the submittal, informing the stakeholders as to the reasons and directing them to resolve the issues. In some cases, multiple entities have submitted proposals to the DWR to become GSAs for the same area or for areas that overlap. The DWR may accept one GSA submittal and reject the other(s), or reject all submittals and direct the stakeholders to resolve their differences. In cases where no entity proposes to become the GSA, the DWR would assign an entity, typically the county, as the GSA. Information on the current status of the formation of GSAs and the boundaries of basins and subbasins is provided by the DWR on its SGMA website at http://water.ca.gov/groundwater/sgm/index.cfm. The website is continually updated as new information becomes available.

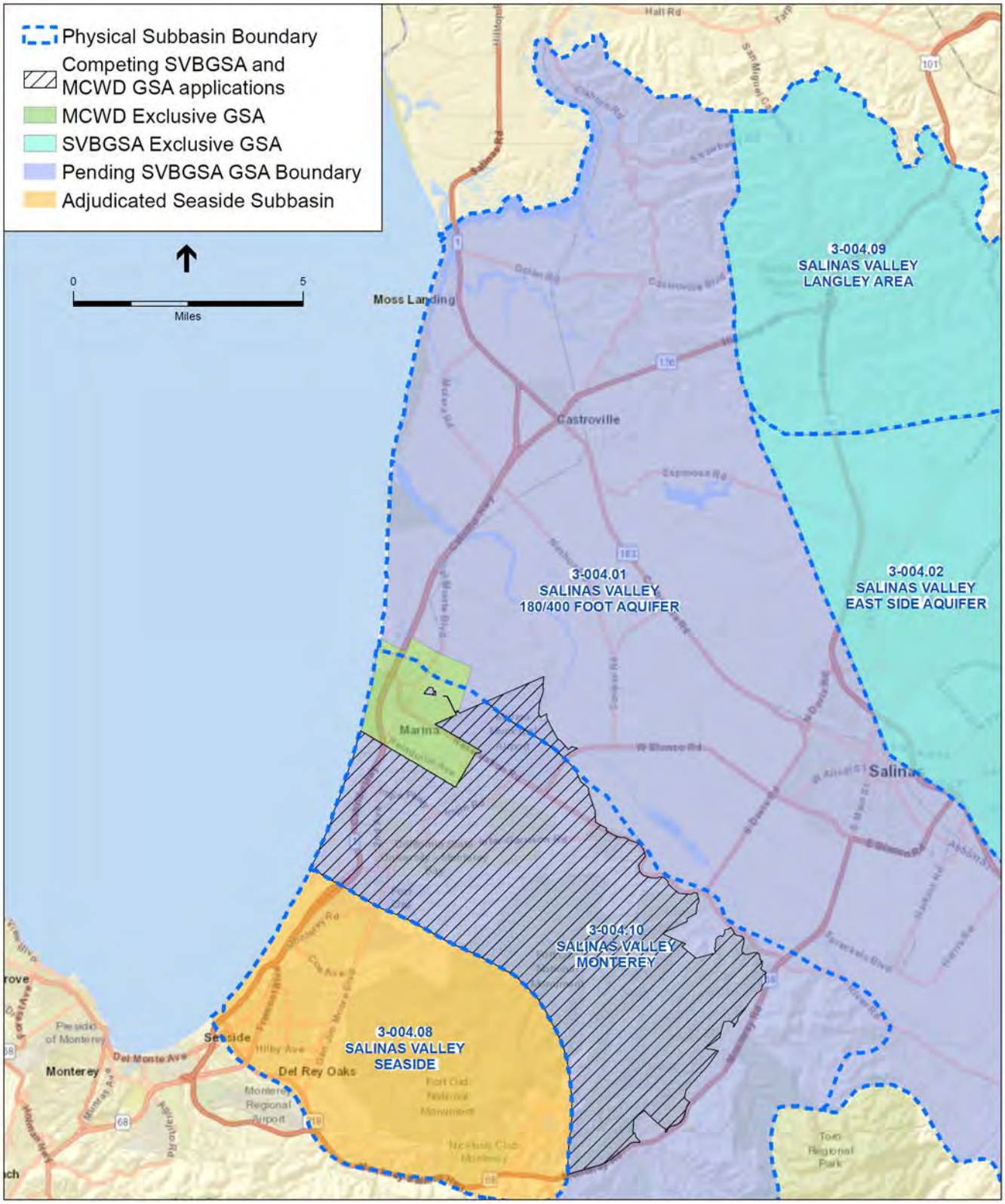
The subbasin assignments may be based on physical conditions (e.g., a groundwater divide within the overall basin), or administrative or jurisdictional boundaries (e.g., the service area of a water district whose boundaries may have no correlation to physical boundaries). It is important to note that the DWR, as authorized under SGMA, will require that each entire basin achieve sustainable groundwater conditions, regardless of how many GSAs or subbasins may exist within a given basin. Consequently, for basins that have multiple GSAs and/or subbasins, the GSAs will need to cooperate with each other to achieve sustainability on a basin-wide basis. As an ongoing process subsequent to the publication of the Draft EIR/EIS, the DWR has revised basin and subbasin boundaries and names, and will continue to do so as GSAs are formed, boundary disputes are resolved, and GSAs are accepted by the DWR.

Salinas Valley Groundwater Basin and Subbasins

Under SGMA, the DWR has identified the entire SVGB (Basin 3-004) as consisting of medium to high priority subbasins. In addition, the Salinas Valley 180/400 Foot Aquifer (Basin 3-004.01), a subbasin within the SVGB where the proposed seawater intake system would be located, is listed as a high priority, critically overdrafted subbasin. The subbasin boundaries and names, and the status of the formation of GSAs within the SVGB as of July 18, 2017, are shown on **Figure 8.2.6-1** and described below. Note that the DWR uses “basin” in its formal names of the subbasins even though these are specifically considered subbasins. Also note in the discussion below, the physical footprints of the basins, the jurisdictional footprint of water provider service areas, and the footprints in the applications for GSAs do not always precisely align; some GSA applications have overlap. Consequently, some of the GSA applications are still pending because the DWR will not approve overlapping GSAs.

Salinas Valley 180/400 Foot Aquifer Basin 3-004.01

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) is a joint powers authority consisting of a variety of local public agencies with water supply, water management, and land use responsibilities. The agencies include Monterey County; MCWRA; the cities of Salinas, Soledad, Gonzales, and King; the Castroville Community Services District (CCSD), and the Monterey Regional Water Pollution Control Agency (MRWPCA). The SVBGSA submitted GSA formation applications for all of the subbasins within the SVGB that are within Monterey County, including the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01, where the source water intake system for the MPWSP would be located. However, the GSA formation decision by



Notes: SVBGSA = Salinas Valley Basin Groundwater Sustainability Agency MCWD = Marina Coast Water District

SOURCE: DWR, 2017

http://sgma.water.ca.gov/webgis/index.jsp?appid=gasmaster&rz=true

205335.01 Monterey Peninsula Water Supply Project

Figure 8.2.6-1

DWR SGMA Basin Map

the DWR for the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01 is still pending because the Marina Coast Water District (MCWD) submitted an application for Salinas Valley Monterey Basin 3-004.10, discussed below, with a footprint that overlaps a southern portion of the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01 that the SVBGSA also applied to manage. MCWD may have done this because the MCWD is the water service provider in the overlapping area.

Salinas Valley Monterey Basin 3-004.10

The Salinas Valley Monterey Basin lies in between the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01 to the north (discussed above) and the Seaside Basin 3-004.08 to the south (discussed below). The formation of a GSA for this basin is pending because the SVBGSA and the MCWD each submitted overlapping and conflicting GSA formation requests for most of this basin.

The MCWD is a water agency that provides water supply for: the Central Marina service area, which consists of most of the City of Marina, and; the Ord Community service area, which includes some western portions of the former Ford Ord military base. The DWR has accepted the MCWD as the exclusive GSA within the Central Marina service area, most of which is in the northwestern portion of Salinas Valley Monterey Basin 3-004.10 but extends into a small portion of the Salinas Valley Monterey Basin 3-004.10 to the north, shown as the green area on Figure 8.2.6-1.

The SVBGSA has submitted a GSA formation request to the DWR for all of the Salinas Valley Monterey Basin 3-004.10, except for the above-described MCWD Central Marina service area. However, the MCWD has also submitted a proposal to the DWR to have the MCWD be the GSA for a larger portion of the Salinas Valley Monterey Basin 3-004.10 than merely the area within the MCWD Central Marina service area. The MCWD request includes its Ord Community service area, but also extends further east into areas not served by the MCWD. The DWR GSA formation decision on the diagonal shaded area on Figure 8.2.6-1 is pending.

Seaside Basin 3-004.08

The Seaside Basin 3-004.08, where the proposed ASR wells would be installed and operated, was adjudicated in 2006 in response to overdraft of the subbasin and conflict between groundwater users (*California American Water v. City of Seaside, et al.* (Case No. M66343, California Superior Court, Monterey County). The adjudication defined the safe yield of the subbasin and allocated specific volumes of groundwater pumpage to each of the parties to the adjudication that limits the total volume of groundwater extraction to the safe yield. The implementation of the adjudication results in managing the subbasin's groundwater resources in a sustainable manner similar to the requirements of SGMA. Consequently, the Seaside Basin 3-004.08 will not have a GSA formed and will not be required to prepare and implement a GSP under SGMA.

MCWD Proposed Designation of "Marina Subarea"

MCWD, in its comment letter on the Draft EIR/EIS (see Section 8.5.2), refers to a "Marina Subarea" that includes its service area and the combined area of the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01 south of the Salinas River and the northwest portion of the Salinas Valley

Monterey Basin 3-004.10. MCWD states this area would include the area affected by the proposed slant well pumping on the CEMEX property. MCWD acknowledges that this is not a DWR-recognized designation; MCWD has not formally requested such a designation from the DWR but claims, without providing documentation or published references to support the claim, that the hydrogeological conditions justify such a designation for "discussion purposes." However, the hydrogeological conditions as described in Section 4.4, Groundwater Resources, do not justify this designation because there are no known boundary conditions that would justify further subdividing the subbasin. Note that the analysis of impacts of the project are not dependent on which entity manages any particular area nor what the basins are named.

Anticipated Radius of Influence Relative to Subbasins

Based on the modeled maximum radius of influence of groundwater drawdown that could be caused by the operation of the source water intake system, as shown on EIR/EIS Figure 4.4-15 and discussed in Section 8.2.6.3 below, the majority of the affected area would be within the Salinas Valley 180/400 Foot Aquifer Basin 3-004.01. The southern boundary of this basin is a groundwater divide with the Salinas Valley Monterey Basin 3-004.10. As explained in EIR/EIS Section 4.4.1.2, the precise location of a groundwater divide changes over time in response to changes in climate, seasonal rainfall, and pumping of nearby extraction wells. Consequently, the location of the groundwater divide at any given time may not precisely align with the basin boundary as delineated by the DWR. Depending on the actual extent of the radius of influence of the proposed project pumping, the affected area may extend a short distance into the northern portion of the Salinas Valley Monterey Basin 3-004.10 and may extend into the MCWD GSA area. However, regardless of the precise extent of the radius of influence, the impact analyses concluded that there would be no adverse effects on users of groundwater in the subbasins, including in the area of MCWD's GSA, as discussed in Impacts 4.4-3 and 4.4-4 in the EIR/EIS.

8.2.6.3 Project Consistency with SGMA

As noted above, SGMA states that groundwater basins must be managed without resulting in the listed undesirable results. A summary of these 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) under the subheadings "Consistency with Regulatory Requirements." Based on those discussions, the project would not result in any of the six undesirable results cited in SGMA; therefore, MPWSP would be consistent with SGMA, and SGMA would not restrict the MPWSP's ability to pump groundwater as proposed.

Because adjudicated basins are exempt from SGMA requirements, as noted in Water Code §10720.8, impacts on groundwater resources in the Seaside Basin from operation of the proposed ASR wells are not discussed.

8.2.7 Master Response 7: The Deeper Aquifers of the Salinas Valley Groundwater Basin

COMMENTERS ADDRESSED IN MASTER RESPONSE 7

City of Marina	Just Water
Marina Coast Water District	Hebard Olsen
Monterey Regional Water Pollution Control Agency	Form Letter 2
Ag Land Trust	Public Meeting Verbal Comments
Fort Ord Rec Users	

Several comments on the Draft EIR/EIS suggested that Section 4.4, Groundwater Resources, did not adequately describe or address potential impacts on the "900-Foot (Deep)" Aquifer (see discussion of aquifer name below) and that the lack of analysis represented a flaw in the environmental evaluation of groundwater impacts. In addition, commenters asserted that the computer modeling used to evaluate the groundwater response to the proposed project did not analyze the effects on this aquifer.

Draft EIR/EIS Section 4.4.1.2 described the local and regional hydrogeology; the 400-Foot and 900-Foot Aquifers were presented on Draft EIR/EIS page 4.4-11. This Master Response addresses the inclusion of supplemental information in the Final EIR/EIS that clarifies the deeper aquifer system of the Salinas Valley Groundwater Basin (SVGB).

8.2.7.1 The Deeper Aquifers – Terms, Characteristics, and Production

In response to comments that suggested Draft EIR/EIS Section 4.4 did not adequately describe the "900-Foot (Deep)" Aquifer, this section summarizes the supplemental discussion that has been added to the Final EIR/EIS, which describes the hydrogeology of the deep aquifer zone in the SVGB, the terms used to describe it, and the current use of the aquifer for groundwater production.

Draft EIR/EIS Section 4.4.1.2 described the Pressure Area, a subbasin of the SVGB that has traditionally been recognized by the Monterey County Water Resources Agency (MCWRA) and the California Department of Water Resources (DWR). The Pressure Area is composed of aquifers and aquitards within distinct geologic formations and the characteristics of the aquifers and aquitards were described in the Draft EIR/EIS on pages 4.4-4 through 4.4-12. The Draft EIR/EIS included a discussion of the 900-Foot Aquifer in the subsection titled "400-Foot and 900-Foot Aquifers." EIR/EIS Figure 4.4-2 provides a conceptual model of the coastal aquifers, including the 900-Foot Aquifer. Because the groundwater modeling did not detect a drawdown in the 900-Foot Aquifer (as described in Section 8.2.7.2, below), the description of the 900-Foot Aquifer was minimized in the Draft EIR/EIS consistent with CEQA Guidelines Section 15125, which states, "The description of the environmental setting shall be no longer than is necessary to an understanding of the significant effects of the proposed project and its alternatives."

Increasing seawater intrusion over the past 30 years forced groundwater users in the Marina/Castroville area to drill and develop wells below the 400-Foot Aquifer. Starting in 1976,

groundwater users, including the Marina Coast Water District (MCWD), had to drill into the deeper aquifers to find a fresh groundwater supply. However, after implementation of the Castroville Seawater Intrusion Project (CSIP) in 1998, many of the groundwater users in the Castroville area who began receiving recycled water ceased using their deeper aquifer wells.

The terms "900-Foot Aquifer," "1,500-Foot Aquifer," and "Deep Zone" have been used to refer to the deeper aquifer units in the SVGB. However, these are vague definitions because the water-bearing sediments are not necessarily at these arbitrary depths. For the purposes of this EIR/EIS, and to be consistent with current findings regarding the distribution of water-bearing zones below the 400-Foot Aquifer, the term "deeper aquifers" is used to describe these units.

For informational purposes, supplemental text describing the deeper aquifers is presented in Final EIR/EIS Section 4.4.1.2 and, for the reasons just explained, the following EIR/EIS subsections have been renamed and reorganized as follows:

400-Foot ~~900-Foot~~ Aquifer; and,

Deeper Aquifers.

8.2.7.2 Computer Model Response in the Deeper Aquifer

In response to comments that suggested the Draft EIR/EIS did not adequately address potential impacts on the deeper aquifers and that the computer modeling used to evaluate the groundwater response to the proposed project did not analyze the effects on such aquifers, this section describes how the North Marina Groundwater Model, v. 2016 ($NMGWM^{2016}$) interpreted the effects of the proposed project on the deep aquifers and introduces supplemental text included in the Final EIR/EIS that presents its results.

The $NMGWM^{2016}$ is a detailed hydrologic computer model covering approximately 149 square miles and was a primary analytical tool used to evaluate impacts of the proposed project and alternatives on groundwater resources. See EIR/EIS Appendix E2. EIR/EIS Section 4.4.4.2 and Appendix E2 describe the components, model layers, and applications of the $NMGWM^{2016}$ and EIR/EIS Table 4.4-8 presents the correlation of the geologic units, aquifers, and model layers. As shown in Table 4.4-8, and discussed in detail in Appendix E2, the deeper aquifers were represented in the $NMGWM^{2016}$ as Model Layer 8.

As discussed in the EIR/EIS, the $NMGWM^{2016}$ did not indicate drawdown in Model Layer 8 from the proposed MPWSP pumping at CEMEX for either of the CEMEX site options (the proposed project and Alternative 5a with 24.1 mgd and 15.5 mgd pumping, respectively) or either of the Potrero Road options (Alternative 1 and 5b with 24.1 mgd and 15.5 mgd pumping, respectively); see Appendix E2, Figures 5.3a-b, 5.4a-b, 5.9a-b and 5.10a-b. The lack of detected response by the $NMGWM^{2016}$ in the deeper aquifers represented by Model Layer 8 prompted analysts to de-emphasize the deeper aquifers in the groundwater impacts analysis presented in the Draft EIR/EIS. Nonetheless, for informational purposes, supplemental text has been added to Final EIR/EIS Section 4.4.5.2, Impact 4.4-3, under the heading "Results of Impact Analysis – Proposed Project on Nearby Production Wells," to discuss aquifer response to the project in the deeper aquifers. Such additional clarifying text does not change the conclusions in the EIR/EIS.

8.2.8 Master Response 8: Project Source Water and Seawater Intrusion

COMMENTERS ADDRESSED IN MASTER RESPONSE 8

Fort Ord Base Realignment and Closure Field Office	Charles Cech
City of Marina	Bob Coble
Marina Coast Water District	David Gorman
Monterey County Water Resources Agency	Juli Hofmann
Monterey Peninsula Regional Water Authority	Thomas Moore
Citizens for Just Water	Hebard Olsen
Fort Ord Rec Users	Larry Parrish
Just Water	Nancy Selfridge
Salinas Valley Water Coalition and Monterey County Farm Bureau	Jan Shriner
Water Ratepayers Association of the Monterey Peninsula	Form Letter 1
David Beech	Form Letter 2
Kathy Biala	Public Meeting Verbal Comments
David Brown	

This Master Response addresses comments received on the Draft EIR/EIS regarding the origin of the slant well source water and the current seawater intrusion conditions in the Salinas Valley Groundwater Basin (SVGB), underlying the MPWSP area, including portions of the City of Marina. Several commenters maintain that the proposed project would draw fresh groundwater that could otherwise be used for potable groundwater supply from inland portions of the SVGB. Other commenters disagreed with the determination in the EIR/EIS that the groundwater underlying the project area in the Dune Sands and 180-Foot Equivalent (180-FTE) Aquifer is degraded by legacy and ongoing seawater intrusion and thus is not available for potable uses. This Master Response presents hydrogeologic and groundwater chemistry information to supplement and clarify the analyses of the groundwater resources impacts presented in EIR/EIS Section 4.4, Groundwater Resources, but does not change the impact conclusions. Where noted, EIR/EIS Section 4.4, Groundwater Resources, has been updated and refined based on information presented in this Master Response. Regarding the deeper aquifers of the SVGB (i.e., the 900-Foot Aquifer referred to in the Draft EIR/EIS and in comments), see Master Response 7.

8.2.8.1 Cone of Depression and Capture Zone

This subsection provides a brief summary of the difference between drawdown, the cone of depression, and the capture zone; this is a fundamental concept necessary to understand the response and movement of groundwater drawn to the proposed slant wells. These concepts are discussed in EIR/EIS Section 4.4.4, Approach to Analyses, and summarized and clarified in the sections below in response to comments about these concepts.

Drawdown and the Cone of Depression

Drawdown is the observed change in the aquifer water level caused by the extraction of groundwater and is calculated by subtracting the water level measured under pumping conditions from the water level measured without pumping, also referred to as the static water level. The static water level represents baseline conditions. The cone of depression, as described and shown graphically in EIR/EIS Section 4.4.4.2, Groundwater Modeling, is the zone where the drawdown caused by groundwater pumping is observed. Section 4.4.4.2 describes groundwater model terminology. The definition of the cone of depression (see Draft EIR/EIS page 4.4-44) has been revised as follows:

> As water is extracted from a well, it is pulled into the screened section of the slant wells and removed from the subsurface water-bearing unit. Groundwater elevations would decrease around the slant wells in a ~~radial~~distorted ovate fashion ~~resulting in a~~due to the ocean recharge boundary such that the cone of ~~drawdown~~ depression would not be centered at the slant wells. This cone would be the steepest and deepest closest to the well screen and rapidly become flatter and shallower away from the slant wells.

Draft EIR/EIS Figure 4.4-13 depicted this modelled cone of depression, represented by contour lines of equal drawdown, in the 180-Foot Aquifer. This figure has been renumbered 4.4-13a in the Final EIR/EIS, and Figure 4.4-13b has been added to Final EIR/EIS Section 4.4 to show the modelled cone of depression in the Dune Sand Aquifer.

The 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) projects that this drawdown would occur as a result of a slant well extraction rate of 24.1 million gallons per day (mgd). This is considered "worst-case" because it represents the cone of depression in the Dune Sand Aquifer under 2012 sea level conditions and 0 percent return water. Final EIR/EIS Figure 4.4-13a shows the cone of depression for the 180-FTE Aquifer as projected by the $NMGWM^{2016}$. This is also considered the worst-case drawdown condition under the proposed 24.1 mgd pumping scenario. The cones of depression for both the Dune Sand Aquifer and 180-FTE Aquifer are similar: steep contours just offshore along the western extent and flatter to the east, forming a cone of depression that extends inland with drawdown amounts ranging between 1 to 5 feet. As discussed in EIR/EIS Section 4.4.4.2, Groundwater Modeling, the area or radius of pumping influence demarks the extent that water levels would decrease (or be drawn down) by the extraction of groundwater at the slant wells. For purposes of the impact analysis in the EIR/EIS, the extent of the radius of influence was marked by the one-foot drawdown contour of the cone of depression.

Capture Zone

A capture zone refers to the three-dimensional volume of aquifer that contributes the water extracted by the wells. It is a function of drawdown caused by the pumping rate and the gradient (direction and slope) of the groundwater flow. When the pumps in the slant wells are turned on, the wells would initially extract the water that is held in the surrounding sediments (ambient groundwater). As pumping continues, the modeling indicates that the wells would extract increasing proportions of infiltrating recharge from the ocean. The ocean recharge would gradually replace the

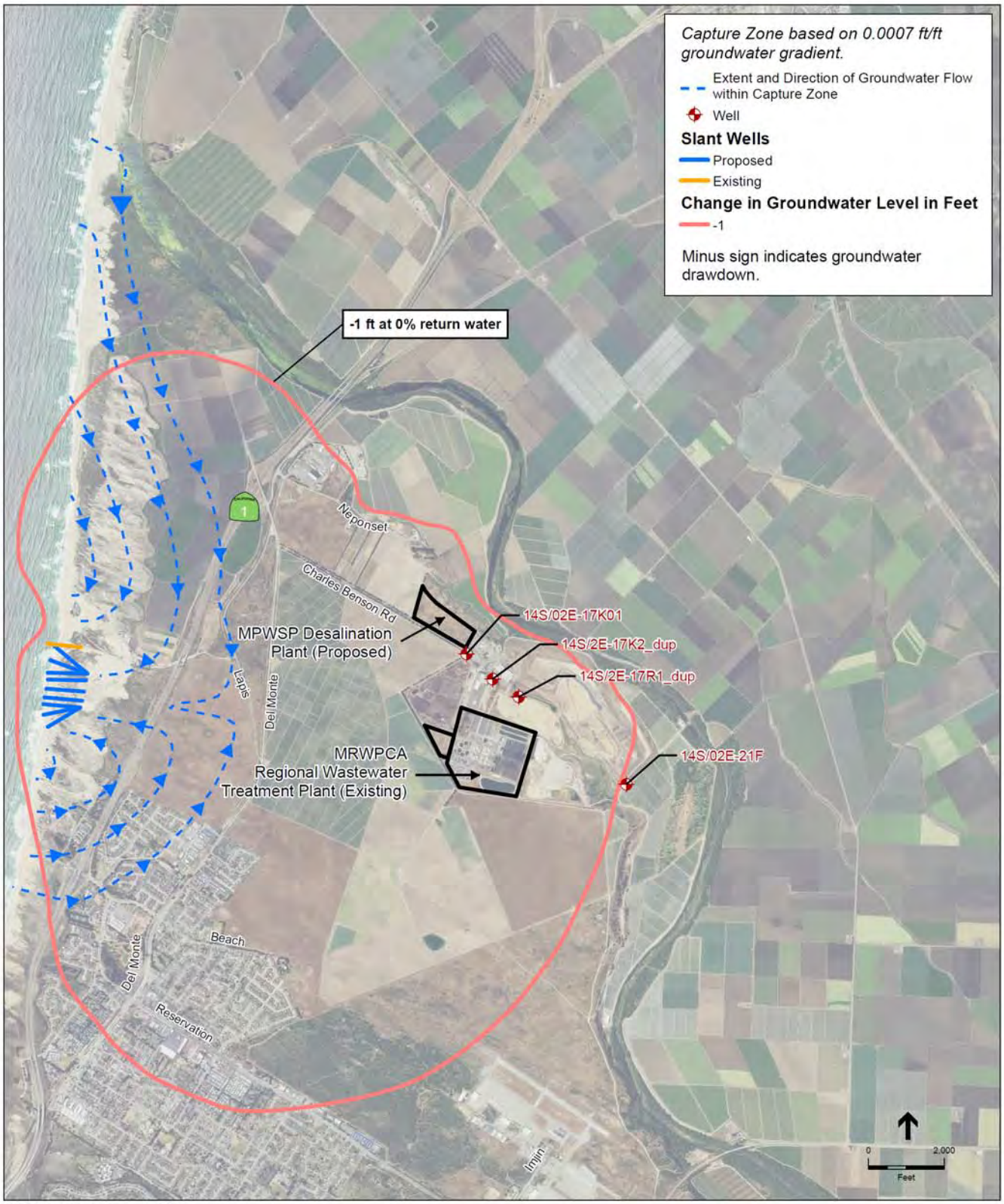
ambient groundwater within the capture zone, and move within the capture zone toward the well, but would not advance beyond the capture zone, as shown in **Figure 8.2.8-1** (Dune Sand) and **Figure 8.2.8-2** (180/180-FTE Aquifer). In the map view provided in these figures, the capture zone is a 2-dimensional surface that delineates the underlying aquifer volume where ocean water replaces ambient groundwater and ultimately becomes the primary source water to the slant wells. Figures 8.2.8-1 and Figure 8.2.8-2 show the map view of the capture zones for the proposed 24.1 mgd pumping scenario at CEMEX under a regional gradient estimated from groundwater measurements, which were developed as discussed below. The term "capture zone" has been clarified in Final EIR/EIS Section 4.4.4.2. To summarize the key differences in terms, the cone of depression is the area in which drawdown of groundwater would occur. However, the water drawn into the project supply wells would not originate from the entirety of the cone of depression, and would be drawn from the capture zone only.

Particle Tracking to Simulate Capture Zones

As described in EIR/EIS Section 4.4.4.2 and Appendix E2, groundwater capture zone boundaries were delineated using NMGWM^{2016} steady-state flow condition[1] results and particle tracking using the MODFLOW computer code post-processer MODPATH. The MODFLOW computer code post-processer MODPATH was employed to simulate groundwater flow paths. MODPATH uses the output from MODFLOW 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. Backward tracking shows the movement of groundwater to former points of recharge (for example, the movement of ocean water recharge to a pumping well), and forward tracking shows the movement of groundwater to future points of discharge (for example, the continued inland movement of the interface between intruded saltwater and native groundwater).

NMGWM^{2016} delineated slant well ocean water capture zones under steady-state flow conditions assuming full time operation 24 hours a day, 7 days a week. Forward tracking particles placed in every cell along the coast in model layers representing the Dune Sand Aquifer and the 180-Foot/180 FTE Aquifer displayed path lines that delineate groundwater flow paths to the extraction wells. Backward tracking particles placed evenly within pumping cells provided path lines that delineate recharge that either originates at the ocean bottom or as groundwater beneath the bay bottom. In both scenarios, MODPATH demonstrated that groundwater extracted by the wells would be recharged by ocean water. EIR/EIS Appendix E2 provides additional details on the particle tracking and simulation of capture zone.

[1] Steady state refers to the condition where the magnitude and direction of groundwater flow in a groundwater model domain remains constant; the same amount of water flows into the system as flows out.

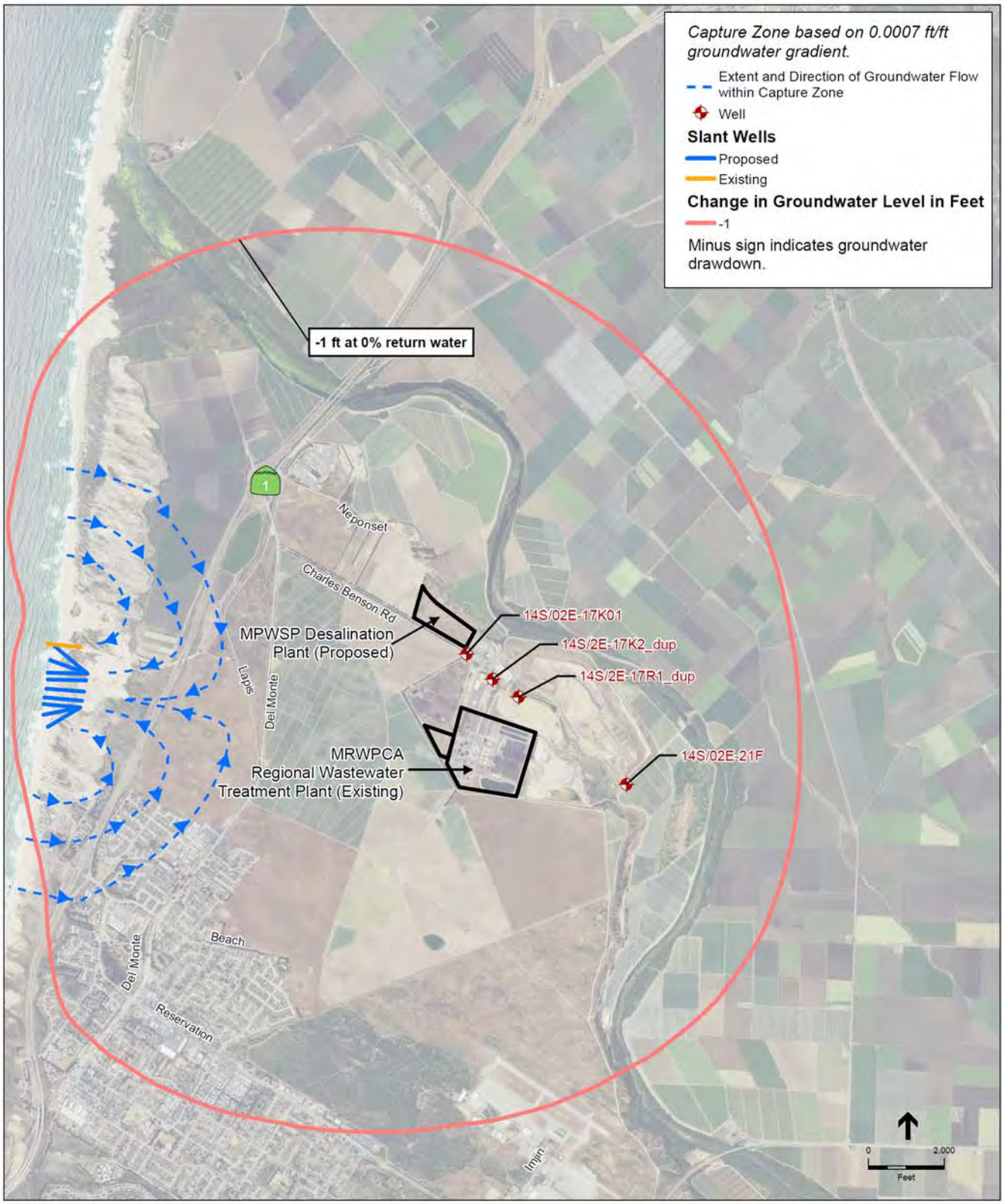


SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 8.2.8-1

Extent of Capture Zone and -1-Foot Contour of Cone of Depression
Dune Sand Aquifer After 63 years
0% Return Water



SOURCE:HydroFocus, 2016

205335.01 Monterey Peninsula Water Supply Project

Figure 8.2.8-2

Extent of Capture Zone and -1-Foot Contour of Cone of Depression
180-Foot Aquifer After 63 Years
0% Return Water

Consideration of Groundwater (Hydraulic) Gradients and Capture Zones

As explained in EIR/EIS Section 4.4.4.1, Subsurface Investigations, groundwater under unconfined conditions flows from areas of high groundwater elevation to areas of low groundwater elevation, and groundwater under confined conditions flows from areas of a higher head[2] to areas of lower head. The change in the head over distance is called the hydraulic gradient, and the groundwater flow direction is that which yields a maximum rate of decrease in head (Fetter, 1994). Hydraulic gradients, referred to hereafter as groundwater gradients, are typically shown using contour lines on 2-dimensional groundwater maps.[3] Figures 4.4-6, 4.4-7, and 4.4-8 in EIR/EIS Section 4.4.1.3 show regional groundwater gradients in the SVGB and the MPWSP area. As discussed in EIR/EIS Section 4.4.1.3, the groundwater in both the Dune Sand Aquifer and 180/180-FTE Aquifer flows inland beneath the project area (i.e., from the Monterey Bay east, toward the Salinas Valley) with measured gradients ranging from a minimum of 0.0007 to an average local gradient of 0.0011 (HWG, 2017). The inland gradient is a direct response to the extensive overpumping of the groundwater basin that has resulted in a groundwater depression located on the northeast side of the City of Salinas; see EIR/EIS Section 4.4.1.3.

As discussed in EIR/EIS Section 4.4.4.2 and in Appendix E2, the NMGWM^{2016} was converted to superposition and, as such, initial water levels are considered zero throughout the model area. Consequently, the model does not account for regional background groundwater gradients. However, these regional groundwater gradients significantly influence groundwater-flow paths from the ocean to the proposed project slant wells, and therefore are important to consider when calculating capture zone boundaries. Therefore, to incorporate the regional groundwater gradient across the CEMEX site, the gradient was calculated using the fall 2015 measured background gradient and then the approximate gradient was reproduced in the NMGWM^{2016}. The NMGWM^{2016} simulated the capture zones using the average groundwater gradients of 0.0004, 0.0007, and 0.0011, which are based on averages of measured gradients throughout the entire model domain.[4] However, the hydraulic gradients used in the modeling underestimate the local hydraulic gradients in the project area, since the steepest gradient used in the analysis (0.0011) is more representative of the average local gradient and the 0.0007 gradient better represents the minimum gradient (HWG, 2017). As shown in EIR/EIS Appendix E2, Figure 5.6, the extent of the capture zone is influenced by the groundwater gradient: the steeper the gradient, the smaller the capture zone. So, the smaller of the three capture zones (based on the gradient of 0.0011) projected by the NMGWM^{2016} would likely be more representative of actual project pumping conditions. Capture zones projected for the 15.5 mgd slant well pumping scenario would be smaller than those estimated for the 24.1 mgd scenario because less source water would be drawn to the slant wells. A graphic comparing the extent of capture zones under the 15.5 mgd and 24.1 mgd scenarios is shown in Appendix E2,

2 Head is the fluid potential for flow through an aquifer and is observed by the height of water in a groundwater well.
3 Groundwater gradients are expressed as the ratio of vertical change in head to lateral distance. For example, if groundwater levels decrease 5 feet over a horizontal distance of 10,000 feet, the gradient is expressed as 0.0005 feet per foot or ft/ft. Because it is a ratio, the units are often not included.
4 While the groundwater gradient of 0.0004 was considered for the NMGWM^{2016} in determining the extent of the capture zones, it was determined that 0.0007 was more representative of the minimum gradient based on local conditions.

Figure 5.6. EIR/EIS Appendix E2 and Appendix E3 provide additional details on particle tracking, the development of the capture zones, and the process of simulating groundwater gradients.

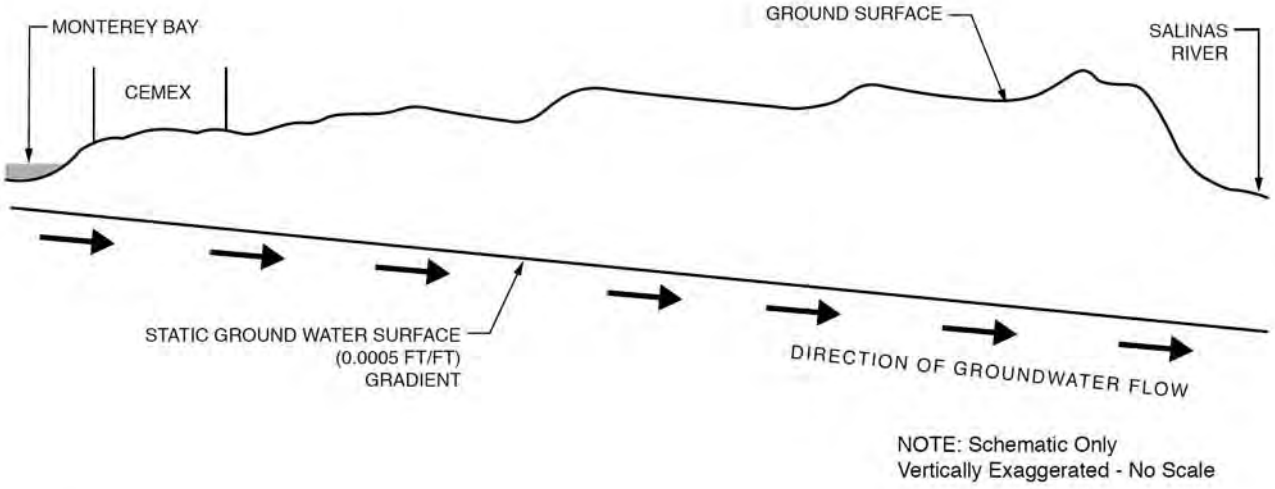
Relationship between Cone of Depression and Capture Zone

The cone of depression that forms from groundwater pumping and the capture zone that provides source water to the slant wells are not the same. **Figure 8.2.8-3** is a cross-sectional schematic that illustrates the relationship between the cone of depression (shown in map view on Figure 4.4-13a) and capture zone (shown in map view on Figure 8.2.8-2) under a "Pre-Project" and "Project" condition. Under the Pre-Project Condition (shown at the top of Figure 8.2.8-3), the groundwater is flowing inland from the coast at a gradient of 0.0005.[5] The Pre-Project Condition represents the groundwater condition without accounting for current well pumping or groundwater recharge. The "Project Condition" represents how the groundwater would respond to project slant well pumping in the 180/180-FTE Aquifer, assuming 2012 sea level and no return water (both conservative assumptions), and is correlative to the map view of the cone of depression shown on EIR/EIS Figure 4.4-13a. It should be noted that the vertical scale is considerably exaggerated in the "Project Condition" to clearly illustrate the relationship between the cone of depression and the capture zone; for reference, the NMGWM^{2016} projected that the maximum drawdown amount under this pumping scenario was about 29 feet at the slant wells. As illustrated in Figure 8.2.8-2, when the slant wells are pumping, water within the capture zone would be drawn into the wells from the surrounding sediments. The groundwater responds by creating a cone of depression, which would be most pronounced near the slant wells. Notice that the drawdown caused by slant well pumping decreases as the cone of depression extends eastward. The inland extent of the capture zone is shown by a vertical dashed line. This point could be described as a groundwater gradient divide: groundwater west of the divide is drawn into the capture zone by the slant wells and thus flows west, while the groundwater to the east of the boundary continues to flow inland unimpeded due to the regional gradient. 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 originates only from within the capture zone, while the regional gradient controls the groundwater flow beyond the capture zone.

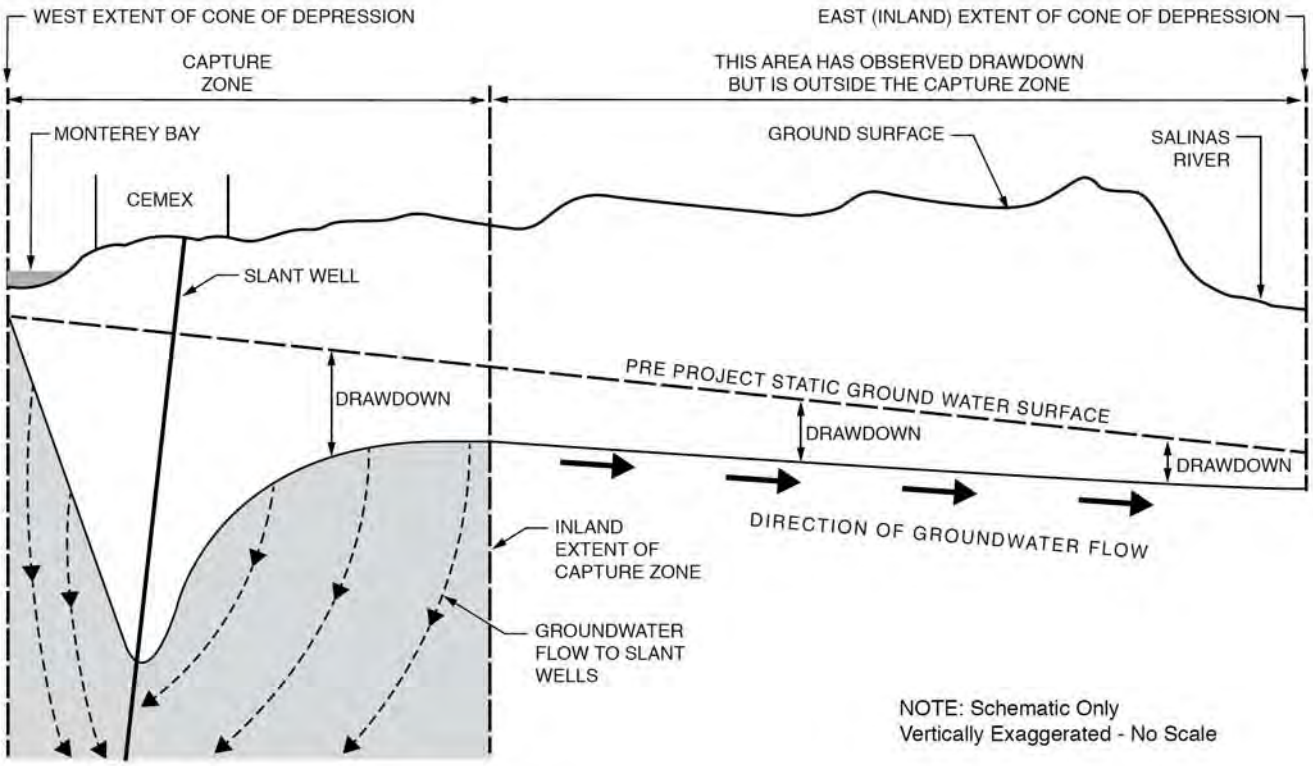
While the wells are expected to be operated 24 hours/per day every day as described in EIR/EIS Section 3.2.1.1, EIR/EIS Appendix E2 Section 5.4 examined the effects of ceasing pumping on groundwater basin recovery, in order to consider what would happen when the wells are turned off permanently. Temporary, short-term shut down for maintenance are not considered because at least some wells would be operating during servicing and repair. The effects on groundwater levels and water quality during a temporary shut-down would occur gradually and not be immediately obvious. Figure 5.5 in Appendix E2 shows the model-calculated post project recovery from drawdown due solely to 63 years of proposed project slant well pumping. Hydrographs at various locations show that drawdown would decrease and water levels would return to pre-pumped

[5] The gradient of 0.0005 was measured using groundwater contours generated from groundwater measurements in the 180/180-FTE aquifer collected in fall 2015 (Geoscience, 2017) and is used in Figure 8.2.8-3 as a representative gradient for the purposes of demonstration.

PRE PROJECT CONDITION



PROJECT CONDITION



SOURCE: ESA

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.2.8-3
Schematic Showing Relationship Between Cone of Depression and Capture Zone

conditions within several years for all but two wells. The modeled water level recovery for monitoring wells MW-5S and MW-7S would be completed within about 20 years due to the depth and location of the wells. Considering that the recovery for surrounding wells is on the order of a few years, the longer recovery for just these two wells is the effect of the relatively low hydraulic conductivity associated with the geologic conditions of Model Layer 2 (Dune Sand Aquifer) in those areas of the model.

8.2.8.2 Groundwater Quality within the Capture Zone

This subsection clarifies the quality of the existing groundwater within the capture zone, defined above, in response to comments expressing disagreement with the finding in the EIR/EIS that the groundwater underlying the project area in the Dune Sands and 180-FTE Aquifer is degraded by legacy and ongoing seawater intrusion, and claiming that water in this location is fresher than described in the EIR/EIS. As discussed in EIR/EIS Section 4.4.1.4 and Impact 4.4-3, the proposed MPWSP pumping would draw source water from a capture zone in the Dune Sand and 180-FTE Aquifers. The groundwater in this area is degraded by seawater and therefore, unusable for potable or irrigation water supply due to its elevated total dissolved solids (TDS) and chloride concentrations. The chemistry of groundwater in this area has been analyzed by the ongoing monitoring program implemented by CalAm and peer-reviewed by the Hydrogeologic Working Group (HWG), as discussed in EIR/EIS Section 4.4.4.1, and separately by the hydrologists and hydrogeologist on the EIR/EIS team. In conjunction with the installation and pumping of the test slant well (see EIR/EIS Section 4.4.4.1 and Master Response 11, CalAm Test Slant Well), CalAm installed nine clustered monitoring wells between December 2014 and August 2015 to monitor groundwater levels and collect representative groundwater quality data from the Dune Sand Aquifer, the 180-FTE Aquifer and the 400-Foot Aquifer. Each monitoring well cluster consists of three individual, separately constructed monitoring wells completed at different depth intervals identified as S (shallow), M (middle), D (deep), where shallow wells are primarily screened in the Dune Sand Aquifer, the middle wells are screened in the 180-FTE Aquifer or 180-Foot Aquifer, and the deep wells are primarily screened in the 400-Foot Aquifer (HWG, 2017). CalAm has conducted regular water level and water quality monitoring and has, since February 2015, produced and posted on its website weekly and monthly test slant well pumping reports. As shown on Figures 4.4-13a and 4.4-13b, MW-1 and MW-3 are located within or proximate to the capture zone and best represent the conditions and quality of slant well source water.

The analysis presented in EIR/EIS Impact 4.4-3 concluded that groundwater extracted by the slant wells would be brackish and originate in the capture zone, which occupies a localized area just inland from the coast underlying the CEMEX property (illustrated by Figures 8.2.8-1 and 8.2.8-2, included in this master response to clarify the extent and direction of groundwater flow within the capture zone). There is no active groundwater pumping by other users from the Dune Sand and/or 180-FTE Aquifers within the capture zone, primarily because of the degraded water quality. **Table 8.2.8-1** summarizes the TDS and chloride concentrations in the CalAm monitoring wells collected by pumping after development of the monitoring wells and prior to the first phase of test slant well pumping (thus representing baseline conditions) and references the California Secondary Maximum Contaminant Level (MCL) (Cal. Code Regs., tit. 22, § 64449) for TDS and chloride, which is 500 mg/L and the 250 mg/L, respectively. The groundwater quality data

provided in Table 8.2.8-1 below supports the conclusion that the water in the Dune Sand Aquifer and 180-FTE aquifer that is available to the slant wells is brackish to near seawater and does not meet California drinking water standards. In addition to the groundwater sample data provided in Table 8.2.8-1, Figures 3-1 and 3-2 in the Baseline Water and Total Dissolved Solids Levels Technical Memorandum illustrates that data logger-collected TDS concentrations in MW-1 and MW-3 consistently recorded between 22,000 mg/L and 33,000 mg/L for the entire groundwater quality baseline monitoring period of 34 days (Geoscience, 2015, see Appendix E3). Long term monitoring of the slant well water quality and the MPWSP monitoring wells near CEMEX site show that the TDS in the groundwater has remained elevated since monitoring began in 2015 (Geoscience, 2018). Brackish water is defined as having a TDS concentration greater than freshwater, but not as much as seawater, which is typically about 33,500 mg/L (see Master Response 2, Source Water Components and Definitions). Therefore, for the purposes of the groundwater resources analysis in the EIR/EIS, brackish water is considered to have a TDS concentration ranging between 500 mg/L to 33,500 mg/L. Concentrations of TDS in surface and groundwater that exceed 3,000 mg/L are considered by the SWRCB (Resolution No. 88-63, Adoption of Policy Entitled "Sources of Drinking Water") as an exception to its resolution that, "[a]ll surface and groundwaters 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." The groundwater in the capture zone of the MPWSP slant wells exceeds 3,000 mg/L TDS.

TABLE 8.2.8-1
TOTAL DISSOLVED SOLIDS CONCENTRATIONS IN MPWSP MONITORING WELLS LOCATED WITHIN THE SLANT WELL CAPTURE ZONE

Well Number	Sample Date	Aquifer	Total Dissolved Solids (TDS) (mg/L)	Chloride (mg/L)
			California Drinking Water Standard: 500 mg/L[a]	California Drinking Water Standard: 250 mg/L[a]
MW-1S	2/13/15	Dune Sand	26,600	14,504
MW-1M	2/14/15	180-FTE	30,900	16,037
MW-3S	2/25/15	Dune Sand	23,400	11,680
MW-3M	2/24/15	180-FTE	28,500	14,686
MW-4S	3/7/15	Dune Sand	11,900	5,497
MW-4M	3/6/15	180 FTE	17,900	9,751

NOTES:
[a] California Secondary Maximum Contaminant Level (Cal. Code Regs., tit. 22, § 64449)

SOURCE: Geoscience, 2015

Table 8.2.8-1 shows that chloride concentrations in the wells within the capture zone exceed the MCL for drinking water standard of 250 mg/L, indicating that this groundwater would be intolerable as a drinking water source unless it was desalinated. These chloride levels are also unsuitable for agricultural irrigation. With chloride concentrations over 355 mg/L, the groundwater does not meet the RWQCB Central Coast Basin Plan water quality guidelines for irrigation water. The irrigation water guidelines indicate that chloride concentrations exceeding 355 mg/L chloride could potentially result in severe effects for crops and soils (SWRCB, 2017).

8.2.8.3 Ocean Water Percentage

This subsection describes the estimated percentage of seawater in the slant well source water. The change in ocean water percentage (OWP) describes the projected water quality over time in the MPWSP slant well feedwater. An estimate of the OWP that would contribute to the slant well source water was calculated using an analytical methodology and numerical modeling (HWG, 2017) and the approach was peer reviewed by the EIR/EIS team. The OWP as it relates to return water is addressed in Master Response 4, The Agency Act and Return Water, and the methodology of the OWP calculation is provided in Appendix E3. The analytical methodology used an equation to calculate OWP based on water and salinity budgets for the capture zone volume of the proposed slant wells and the numerical modeling method utilized the CEMEX and NMGWM^{2016} groundwater models. The CEMEX and NMGWM^{2016} models provided better resolution than the analytical method in evaluating the early time interval after slant well pumping begins. Numerical modeling predicted a higher source water OWP during the early time period than the analytical method, but the long-term pumping results are consistent between the analytical and numerical predictions. 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.[6] These methodologies and results are discussed in Master Response 4 and are described in detail in Appendix E3.

8.2.8.4 Summary of Impact Conclusions

A clear understanding of the difference between the cone of depression and capture zone is paramount to understanding project impacts on groundwater resources presented in EIR/EIS Section 4.4.5. This section reviews the impact conclusions in the EIR/EIS, in response to comments disagreeing with the conclusions presented in Section 4.4.5, and provides further clarification based on the information discussed in the sections above.

Groundwater Supply

EIR/EIS Impact 4.4-3 concludes that the proposed project would not deplete groundwater supplies that would otherwise be available to users in the SVGB. This conclusion was reached because the proposed project would extract groundwater from a localized coastal-adjacent capture zone, which has been verified by water quality testing to contain groundwater with elevated concentration of TDS and chloride from decades of legacy seawater intrusion. The slant wells would initially extract the ambient brackish groundwater and, over time, the source water supplied by capture zone would be replaced by seawater. Given the proposed location of the slant wells, the projected configuration of the capture zone, and the inland regional gradient, groundwater originating from inland regions of the basin would not be drawn into the slant wells. This is because, to reiterate, groundwater would be drawn into the slant wells within the boundaries of a localized capture zone, which would be within the larger cone of depression.

6 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.

While the cone of depression is an expression of the drawdown effects of slant well pumping, it does not demark the area that would contribute to the slant well source water supply.

Groundwater Levels in Neighboring Wells

EIR/EIS Impact 4.4-3 concludes that the project would not negatively impact groundwater levels in nearby production wells. This conclusion is based on the fact that there are no active production wells extracting groundwater from the Dune Sand or 180-FTE Aquifer within the boundaries of the capture zone or cone of depression that would be created by the MPWSP slant well pumping. While the groundwater levels within the capture zone at the CEMEX site could be drawn down by as much as 29 feet at the peak 24.1 mgd scenario, the projected groundwater drawdown elsewhere in the cone of depression would range from 1 to 5 feet, as shown in EIR/EIS Figures 4.4-14, 4.4-15, and 4.4-16. This projected amount of drawdown is not sufficient to lower groundwater in neighboring production wells in the 180-Foot and 400-Foot aquifer below the top of the screen or to expose the well pump. Currently, there are no active production wells drawing supply from the Dune Sand Aquifer. **Table 8.2.8-2** expands on information provided in EIR/EIS Table 4.4-10 to compare the screen interval and the approximate depth to water in select neighboring production wells in the 180-FTE and 400-Foot Aquifers[7]. As is evident from these data, the well screens are considerably deeper than the static water level in the well and, consistent with the conclusion in the EIR/EIS, would accommodate the 1- to 5-foot drawdown that the MPWSP slant well pumping could create without damaging the well and/or exposing well screens or pumps. This is discussed in further detail below.

TABLE 8.2.8-2
REPRESENTATIVE SCREEN INTERVALS AND WATER DEPTHS FOR PRODUCTION WELLS WITHIN VICINITY OF THE PROPOSED MPWSP SLANT WELLS

Well Owner	Well Number/ID	Aquifer	Screen Interval(s) (depth in feet from top of well)	Approximate Depth to Water (feet below ground surface) Fall 2016[a]	Approximate Distance from Groundwater Surface to Top of Well Screen (feet)
Monterey Peninsula Landfill	14S/02E-17K01	180	210 - 250	95.0	115
	14S/02E-21F	180	200 - 261	43.0	157
Bill Baillee/Unknown	14S/02E-17L01	400	244 – 303 328 - 338	111.0	133

NOTES:
[a] Depth to water based on estimates from contours.
MRWPCA = Monterey Regional Water Pollution Control Agency
180 = 180-FTE Aquifer or 180-Foot Aquifer
400 = 400-Foot Aquifer
900 = 900-Foot Aquifer

SOURCE: Geoscience, 2015c; MRWMD, 2003.

[7] These representative wells were selected because adequate well construction details were available to assess screen depth.

The MCWRA compiles annual regional groundwater level data on a quarterly basis for the SVGB including the Pressure 180-Foot Aquifer and Pressure 400-Foot Aquifer[8] and compares the data to a representative dry water year and the 30-year average (MCWRA, 2018). According to MCWRA water level data, the 30-year average (1987 to 2017) groundwater levels in the Pressure 180-Foot Aquifer fluctuate seasonally about 17 feet: from about 22 feet above mean sea level (amsl) in the winter months to 5 feet amsl in the summer. The lowest seasonal average water levels are recorded during drought years where, seasonally, the maximum seasonal fluctuation can be similar to the 30-year average (about 17 feet) but the groundwater levels drop about 7 feet overall, as was the case during the peak of the last drought in 2015 when the groundwater levels reached an annual low of about 6 feet below mean sea level. The groundwater level trends are similar in the pressure 400-Foot Aquifer where the annual seasonal fluctuation is about 20 feet between: 7 feet amsl in the winter months to 17 feet below sea level in the summer. The drought year groundwater level fluctuation was similar to the 30-year average (about 22 feet) but the groundwater levels dropped about 7 feet in the dry water year of 2015.

The MCWRA groundwater level trend data characterizes the average and drought year seasonal fluctuation of groundwater in the Pressure 180- and 400-Foot Aquifer and thus provides a benchmark for analyzing the effect of the MPWSP on the local production wells (see EIR/EIS Table 4.4-10) within the MPWSP area of pumping influence. As shown on Table 8.2.8.2, above, there is over 100 vertical feet of groundwater column between the top of the well screens and the water level in the wells. This provides ample vertical distance to accommodate the seasonal and drought condition groundwater level fluctuation considering that the 30-year average fluctuation is 17 feet in the 180-Foot Aquifer and 20 feet in the 400-Foot Aquifer and dry year groundwater levels decline about 7 feet. Modeling projects that the proposed MPWSP pumping could add between 1 and 5 feet of additional drawdown to the seasonal fluctuation resulting in a maximum effect of about 12 feet of total drawdown during a dry year. While there could be an additional 1 to 5 feet of drawdown from MPWSP pumping, that increment of change would not negatively affect well yield or expose the screens leading to damage to the production well.

However, as discussed in the EIR/EIS Impact 4.4-3, CalAm recognizes the long-term nature of the proposed project and the need to provide continued verification that the project would not adversely affect groundwater levels in nearby wells within the SVGB. Under Applicant Proposed Measure 4.4-3, CalAm proposes to fund the expansion of 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, the 180-FTE Aquifer, and the 400-Foot Aquifer. The applicant-proposed measure 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 decline such that neighboring groundwater production wells are damaged or otherwise negatively affected by the proposed pumping, CalAm would arrange for an interim water supply and begin developing a

[8] As discussed in EIR/EIS Chapter 4.4, SVGB Pressure Area (or Subbasin) is traditionally recognized by the MCWRA. The Pressure Area consists of a series of aquifers include the 180-Foot Aquifer and the 400-Foot Aquifer, which underlie the CEMEX site and the area of influence of the proposed MPWSP pumping.

mutually agreed upon course of action to repair or deepen the well, restore groundwater yields by improving well efficiency, provide a long term supply or construct a new well.

Violation of Water Quality Standards

EIR/EIS Impact 4.4-4 concluded that the localized change in groundwater quality in the Dune Sand and 180-FTE Aquifers due to slant well pumping is not expected to violate water quality standards or interrupt or eliminate the potable or irrigation supply available to other basin users. This conclusion is reasonable because, as discussed above, the capture zone that supplies water to the slant wells contains groundwater that was previously degraded by decades of seawater intrusion, and the TDS concentrations of this water -- ranging between brackish and saline -- makes it non-potable or suitable for irrigation supply. The proposed project would not violate water quality standards because slant well pumping would, over time, only replace the existing, highly brackish and saline ambient groundwater within the capture zone with seawater from the Monterey Bay; the project would not degrade an otherwise potable groundwater supply. Furthermore, the proposed project would not interrupt or eliminate a potable groundwater supply because the exchange of ambient brackish water with saline water would only occur within the confines of the coastal-adjacent capture zone and would not extend inland or encroach on areas of the SVGB that rely on fresher groundwater for potable or irrigation supply.

8.2.8.5 References Cited

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8.2.9 Master Response 9: Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM)

COMMENTERS ADDRESSED IN MASTER RESPONSE 9

City of Marina	David Gorman
Marina Coast Water District	Jane Haines
Citizens for Just Water	Juli Hofmann
Fort Ord Rec Users	Carol Reeb
Public Water Now	Jan Shriner
Michael Baer	Form Letter 1
Kathy Biala	Form Letter 2
David Brown	Public Meeting Verbal Comments
Margaret-Anne Coppernoll	

Several comments received on the Draft EIR/EIS addressed Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM). Commenters stated that ERT and AEM data should be used to supplement the groundwater modeling and monitoring data that was used in the Draft EIR/EIS to analyze the impacts of the MPWSP on groundwater resources and some comments suggested that ERT should be used instead of the groundwater monitoring to analyze local water quality and seawater intrusion. In addition, certain commenters took issue with how Draft EIR/EIS Section 4.4.1.4 presented, on page 4.4-28, the ERT survey results and the work by Dr. Rosemary Knight.

This master response provides supplemental information and further clarification on ERT and its use as a method to help characterize water quality and seawater intrusion along the coast of Monterey Bay. This master response also provides information and preliminary results from the SkyTEM airborne geophysical survey, also referred to as AEM, which was conducted in May 2017 near the city of Marina for Marina Coast Water District (MCWD) by the Stanford University School of Earth Energy and Environmental Sciences. Section 8.2.9.1 of this master response describes ERT technology and other previous geophysical studies conducted along the Monterey Coast and the Salinas Valley, and the application of the technology as a geophysical exploratory tool. Section 8.2.9.2 describes the limitations of ERT surveys as a method to monitor and assess seawater intrusion along the Monterey Coast and inland. Section 8.2.9.3 discusses the use of ERT data in the Draft EIR/EIS analysis of groundwater impacts and in the North Marina Groundwater Model, as well as a discussion of the preliminary results from the May 2017 AEM survey and how such results compare to the data, analysis and conclusions of the EIR/EIS. Section 8.2.9.3 concludes by explaining that CEQA and NEPA do not require a lead agency to conduct every recommended test and perform all recommended research to evaluate the impacts of a proposed project.

8.2.9.1 ERT Technology, Application, and Recent Studies

ERT is a geophysical survey method that measures electrical resistance through a material to create images of subsurface geologic and geochemical features and conditions. As discussed in

EIR/EIS Section 4.4.1.4, electrical resistivity imaging uses a series of sensors (referred to as electrodes) placed along a transect line on the ground surface. A direct electrical current is applied to the sensors and the resulting electrical field is measured along the ground using a second pair of electrodes, referred to as dipoles. The decrease in electrical current detected by the receiving dipoles is recorded and the resistivity is calculated based on the measured voltage, the distance between the electrodes, and the current flowing between electrodes. By varying the unit length, or depth of the dipoles as well as the distance between them, the horizontal and vertical distribution of the subsurface material's electrical properties can be recorded. Using computer processing, the distribution differences can represent a two-dimensional cross-sectional image of the subsurface. The high and low resistivity zones in the subsurface are displayed as a series of colors in a cross section that represent variations in electrical resistivity. In this application, variations in electrical resistivity can be interpreted as variations in the content of seawater, fresh water, or varying intermediate concentrations of brackish water (i.e., water with salinity in between seawater and fresh water). Salty water has low resistance due to the higher concentration of total dissolved solids (TDS) or salinity; fresh water has a higher resistance because of the relatively low concentration of TDS.

ERT is not a new technology and its application as a preliminary geophysical exploration method has been in use for decades. Electrical resistivity survey methods have assisted in groundwater and engineering studies to identify ground failure surfaces, bedrock quality, groundwater quality, saltwater boundaries, and areas of seawater intrusion. In addition to Stanford Professor Dr. Rosemary Knight's recent ERT work along the Monterey Bay coast, at least two other hydrogeologic studies using electrical resistivity geophysics have been conducted in the Salinas Valley. The first resistivity geophysics survey was completed in this area in 1990, and the second study was conducted in 1993 for the Monterey County Water Resources Agency (MCWRA) as part of its Salinas Valley Groundwater Basin Seawater Intrusion Delineation/Monitoring Well Construction Program using Controlled Source Audio-frequency Magnetotellurics (CSAMT), a nonintrusive, ground geophysical survey method for obtaining information about subsurface resistivity.

As mentioned in EIR/EIS Section 4.4.1.4, Dr. Knight, along with Stanford University graduate and post-graduate students and staff, completed two ERT surveys along the beaches of Monterey Bay. The two ERT surveys were conducted along a single transect and generated two-dimensional cross sections of conditions directly beneath the beach; as these surveys were a single transect on the beach, they did not capture subsurface conditions under the ocean, under CEMEX or any further inland. The first study was conducted in 2011-12 and included one 4-mile-long line along the beach from Seaside to Marina (Pidlisecky et al., 2016), ending south of the location of the proposed slant wells. This was a pilot study to: 1) demonstrate the viability of using large-offset ERT to image the distribution of subsurface freshwater and saltwater over a large spatial extent; and 2) gain insight in the distribution and geologic controls of seawater intrusion in the Monterey Bay region.

A second, more extensive ERT survey was conducted along a 25-mile transect along the coast of Monterey Bay in 2014 and 2015 (Goebel et al., 2017), extending from the Santa Cruz Mid-County Basin in the north, through a portion of the Pajaro Valley Groundwater Basin as well as a portion of

the Salinas Valley Groundwater Basin, to the Seaside Basin in the south. However, several coast line stretches, including the beach area fronting the CEMEX sand mining facility, were not surveyed due to access restrictions. The purpose of the 2014-2015 resistivity survey was to map the salinity of groundwater and further delineate the location and extent of seawater intrusion along the coastline. The resistivity sections were further interpreted by comparing the results with well logs, seismic reflection data, geologic reports, hydrologic reports, and land use maps from the region. The study determined that the electrical resistivity readings positively correlated with measured TDS concentrations to a depth of about 500 feet in the Seaside Basin Water Master (SBWM) Monitoring Wells SBWM-1 thru SBWM-4, and supported the understanding that the deeper aquifers in the Seaside Basin have not yet been affected by seawater intrusion. Although access limitations prevented placing ERT electrodes on the beach directly in front of the proposed slant well location at CEMEX, the nearby ERT survey results identified the seawater intrusion that is occurring in the 180-Foot Aquifer and 400-Foot Aquifer in the Salinas Valley Groundwater Basin.

In May 2017, Dr. Knight and graduate students conducted a third geophysical study consisting of an airborne geophysics survey of the coastal area of the Salinas Valley Groundwater Basin near Marina, extending inland from the Monterey Bay to Highway 183 and the Armstrong Ranch. A portion of the survey was also conducted off the Monterey Bay coast to capture and correlate resistivity data from the hydrogeology and water quality within the geologic units underlying the Bay. The survey employed a method known as Time Domain Electromagnetics (TEM); SkyTEM, a Denmark-based company, collected the survey data. SkyTEM introduced airborne geophysical surveys for groundwater studies around 2011 and has applied this technology in various applications throughout the world. The SkyTEM antenna, which is suspended from a helicopter at a height of about 150 feet above the ground, generates a primary magnetic field that is directed downward. This creates a secondary magnetic signal that is returned and detected by the receiver. The received signal is then converted to resistivity data and that data is inverted to produce output like that obtained from ERT. The SkyTEM survey, hereafter referred to as Airborne Electromagnetics (AEM), was conducted for MCWD and was designed to provide resistivity data that can be linked to the extent of seawater intrusion at the coast and further inland. Dr. Knight and graduate researcher Ian Gottschalk prepared a report in June 2017 (Gottschalk and Knight, 2017) with the preliminary interpretation of the AEM data acquisition and the initial results of the AEM survey were publicly presented to the Marina City Council on August 8, 2017 and provided to the Lead Agencies by MCWD in November 2017; see Section 8.5.2. The analysis of the AEM survey data relied on subsurface information provided by geophysical borehole logs from CalAm's nine monitoring well clusters installed in 2015 as part of the MPWSP Hydrogeologic Investigations Workplan. Preliminary results of the AEM study are discussed below in Section 8.2.9.2.

8.2.9.2 ERT/AEM Requires Ground-Truthing: Correlation with Actual Subsurface Data

ERT/AEM is a commonly used geophysical method; it can be used as a preliminary exploratory tool to provide data about the subsurface and is useful to identify data gaps and supplemental data needs. It is also useful for identifying preferred locations of monitoring and groundwater production wells. Dr. Knight's 2011 and 2014 ERT surveys demonstrated that there is generally a positive correlation between the ERT outputs and known subsurface geology and water

chemistry. However, as a general understanding, it should be noted that while the salinity of the groundwater in the aquifer materials can change subsurface resistivity measurements in seawater intruded areas, differences in the character of the subsurface geologic materials can also alter the measured resistivity (Goebel et al., 2017). Moreover, ERT/AEM requires correlation and ground-truthing with known data points that describe the geologic, groundwater, and water chemistry. In the case of the 2011 and 2014 ERT surveys, data from the four SBWM monitoring wells, seismic data, induction logging, and lithologic logs were critical to interpretation of ERT data. For the 2014 effort, use of downhole geophysical logs (E- logs) and drillers' reports led Goebel and others to "interpret the lowest resistivities in the inverted resistivity section as corresponding to the presence of saltwater, and the highest resistivities as corresponding to freshwater. Between these two end members, variation in lithology introduces uncertainty in the determination of fluid [groundwater] salinity" (Goebel et al., 2017)

ERT/AEM technology has the potential to augment subsurface data on seawater intrusion and subsurface groundwater conditions, but it cannot be considered a replacement for intrusive methods to evaluate the subsurface and groundwater aquifers (exploratory boreholes, groundwater monitoring wells, down-hole geophysics and modeling) because ERT/AEM has certain limitations. First, any obtained data would require verification and correlation through ground-truthing using groundwater monitoring wells and other subsurface data as control points. Without adequate ground-truthing or control points with actual subsurface lithology and water chemistry data, the ERT data could not be calibrated to actual site conditions.

Second, for each study area, there is a need for complementary data to transform the measured electrical resistivity measurements into relative salinity or TDS concentrations. As electrical resistivity depends on knowing both subsurface lithologic conditions and measured salinity or TDS concentrations of the groundwater, there is no universal salinity/TDS correlation with the specific color schemes displayed as ERT data (Knight, 2017). That correlation would have to be obtained from water testing from wells in the particular location to generate that correlation at that location. In Dr. Knight's 2011 and 2014 single-transect ERT surveys along the Monterey Coast, a review of down-hole E-log data allowed researchers to define a threshold above which resistivity corresponds to entirely freshwater-saturated materials (depicted as very blue in Dr. Knight's ERT studies), and another threshold below which resistivity corresponds to salt-water saturated materials (depicted as very red in Dr. Knight's ERT studies). As discussed in more detail below, the preliminary findings of the 2017 AEM survey show the bulk resistivity of the aquifer sediments combined with the resistivity of the water in those sediments but does not convert those resistivities to represent the actual groundwater quality. The final AEM report, which may provide that correlation, is expected in spring 2018.

Third, the ability of an ERT or AEM survey to identify the varying lithology and water chemistry in the distinct groundwater zones beneath the Salinas Valley area would depend on how the survey is designed and the desired image depth. ERT/AEM resolution decreases with depth and is less able to distinguish subtle changes in subsurface conditions as the depth increases. Therefore, if an ERT/AEM survey is not tailored for a specific shallower depth, it cannot necessarily be relied upon to accurately distinguish smaller zones of saline water from other zones producing water with lower salinity. This would be a concern for ERT/AEM surveys in the area near the city of Marina, for

example, where areal and vertical variations in lithology and, therefore, electrical properties, are numerous and widespread. However, Goebel et al. (2017) was able to show the value of using a combination of ERT data and traditional subsurface data (i.e. data from well bore logs, groundwater levels) to better understand the distribution of seawater intruded groundwater and fresher groundwater on a groundwater basin scale.

The AEM geophysical survey that was conducted in May 2017 will generate some usable data on the extent of groundwater aquifers and provide information as to the relative salinity/TDS concentrations of the water in those aquifers inland of the coast. This AEM technology makes it possible to complete numerous parallel transects efficiently and cost-effectively. It is likely, due to the recent advancements in the AEM technology, that the data will be more representative of the actual conditions than the geophysical studies conducted in the 1990s. However, as with the ERT results, the AEM data must be ground-truthed and correlated with the actual subsurface geology and water chemistry information using well logs, induction logs, and groundwater sampling results as control points. This is especially true for AEM assessments of seawater intrusion and identification of the seawater intrusion front. ERT/AEM data collected in the Monterey Bay area can be interpreted using well data. What can be extracted from the data (i.e., the extent to which lithology versus salinity/TDS can be resolved) depends on the quality of the complementary data. Locally, the verification of the recent AEM survey will include information from the monitoring wells installed by CalAm in the Marina area. The challenges with using AEM survey results to identify seawater intrusion and the seawater intrusion front could include difficulty resolving subtle changes in subsurface resistivity, identifying decreases in resistivity that do not necessarily indicate a decrease in salinity/TDS concentration, and capturing lateral resistivity changes that correlate with geologic conditions rather than water quality.

8.2.9.3 Use of ERT/AEM Results in the Analysis of Groundwater Impacts in the EIR/EIS

The Draft EIR/EIS mentioned Dr. Knight's ERT work along the Monterey Coast (EIR/EIS Section 4.4.1.4) as informational background for the Environmental Setting, and to recognize the current, notable efforts to apply geophysical methodology to the further assessment of seawater intrusion. Some comments assert that the analysis of groundwater in the EIR/EIS is incomplete or flawed because it did not incorporate findings from Dr. Knight's ERT surveys along the Monterey Coast. As explained below, the approach in the Draft EIR/EIS was appropriate, and minor clarifications and updates have been made in Final EIR/EIS Section 4.4.1.4, regarding the use of ERT/AEM data that do not change the conclusions reached in the EIR/EIS related to groundwater impacts.

Use of 2011 and 2014 ERT Survey Results in Draft EIR/EIS

The groundwater analysis did not incorporate findings from Dr. Knight's studies for three key reasons. First, the ERT survey results did not add new significant information that was not already known regarding the extent of seawater intrusion along the Monterey Coast or the hydrogeological conditions in the project area. Dr. Knight's 2011 and 2014 ERT surveys along the Monterey Coast captured only static images of subsurface conditions and water quality directly under the beach at

that time; they did not extend inland and they did not include the CEMEX property where project slant wells are proposed to be located. While they were interesting data from a scientific perspective, especially considering the resolution at depth, they did not provide additional useful information for the analysis of impacts for the MPWSP, primarily because the extent of seawater intrusion conditions at the coast have been confirmed for years through groundwater monitoring. Information regarding subsurface geology, groundwater flow and occurrence, and groundwater chemistry used in the EIR/EIS and for the 2016 version of the North Marina Groundwater Model ($NMGWM^{2016}$) development and validation were obtained from known scientific sources and included some of the same sources that Dr. Knight's team used to verify the ERT survey findings. Furthermore, the ERT results are reported as a cross-section of the groundwater system, and cannot be reliably extrapolated into the $NMGWM^{2016}$ areas that extend substantial distances west and east of the ERT section.

Use of 2011 and 2014 ERT Survey Data for $NMGWM^{2016}$

The data from the 2011 and 2014 ERT surveys did not provide useful supplemental data for input or calibration of the updated $NMGWM^{2016}$. As described in EIR/EIS Section 4.4.4.2, groundwater modeling using the $NMGWM^{2016}$ was the primary tool used to evaluate the response from pumping at the slant wells and to analyze the project impacts on groundwater resources in accordance with CEQA thresholds. The $NMGWM^{2016}$ was employed to calculate the water level decline in response to proposed MPWSP pumping, specifically, to estimate the cone of depression. MPWSP slant well pumping effects on the inland movement of the seawater intrusion front and the characteristics of the capture zone were evaluated using the $NMGWM^{2016}$ and particle tracking with the MODPATH code. The $NMGWM^{2016}$ is a detailed model, the construction of which is thoroughly documented in EIR/EIS Appendix E2. The input data for the models consists of lithologic conditions observed in drilling cores, and other field data. Given the development history, regional focus, calibration, and measured data, the $NMGWM^{2016}$ is the industry standard and best available technology to simulate the groundwater response from the proposed MPWSP pumping and to analyze the environmental impacts under CEQA and NEPA. Groundwater modeling, informed by a reasonable understanding of the local hydrogeologic conditions, which is agreed upon by experts in hydrogeology, provided sufficient information to assess impacts on groundwater in the project area. Master Response 12, The North Marina Groundwater Model (v. 2016), addresses comments about the model.

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 ERT studies produced a 2-dimensional cross-sectional resistivity map of single transects along the coast that showed estimates of bulk resistivity of geologic materials and pore water at an instant in time. The estimated bulk resistivities did not represent actual groundwater quality and even if they had, the $NMGWM^{2016}$ would not benefit nor would it be improved by ERT groundwater resistivity data because the model did not project changes in groundwater quality. The resistivity estimates provided by the 2011 and 2014 surveys, therefore, would not add relevant information to the calibration or operation of the $NMGWM^{2016}$.

Use of 2017 Preliminary AEM Results in the EIR/EIS

A preliminary interpretation of the May 2017 AEM survey that was conducted for MCWD was prepared in June 2017, publicly presented at a Marina City Council meeting in August 2017, and provided to the Lead Agencies in November 2017; see Section 8.5.2. According to the preliminary report, subsurface areas of low resistivity indicate the presence of saltwater and areas of high resistivity indicate areas that contain fresh groundwater. Based on this, the preliminary interpretation concluded that there is a "sizable isolated lens of freshwater" in the Dune Sand and 180-FTE Aquifer and the presumption of saltwater intrusion in this area appears incorrect. For the purposes of the AEM study, Dr. Knight's team defined an isolated freshwater lens as a water-bearing unit with anomalously low concentrations of TDS in an area otherwise known to be intruded by saltwater (Gottschalk and Knight, 2017).

As discussed above in Section 8.2.9.2, AEM data must be validated using physical data so it provides a consistent interpretation of subsurface conditions. Like ERT, AEM is unable to distinguish between fresh water filled fine-grained sediments and saline water filled sand sediments without the presence of a control point such as a boring or monitoring well (HWG, 2017; see EIR/EIS Appendix E3). Dr. Knight's team requested, received from CalAm, and used geophysical logs of MPWSP monitoring well clusters MW-1, MW-4, and MW-7 as control points in developing its resistivity profiling.[1] These geophysical logs were created when the wells were drilled in the latter part of 2014 and spring 2015. The resistivity shown on the geophysical logs, which Dr. Knight's team relied upon and the AEM survey output represent, is the bulk resistivity of the aquifer sediments (clay, silts clays) combined with the resistivity of the water within the aquifer; this combined resistivity is not the same as the resistivity (or conductivity by inverse) of the groundwater within the aquifer.

As discussed in detail in EIR/EIS Appendix E3, the Hydrogeologic Working Group (HWG) acquired the cross-sectional profile that was developed and presented as preliminary AEM study in August 2017 and overlaid the known hydrostratigraphy on it to show the perched and regional water tables. The overlay shows dark blue areas in the Marina uplands representing the unsaturated zone above the perched water table and a seawater wedge in the 180-Foot Aquifer with lower salinity in the shallow portion and higher salinity water in the lower portion. The 400-Foot Aquifer is shown to be seawater intruded throughout this profile. The observations and interpretations associated with the AEM data profile and HWG's hydrostratigraphic overlay are consistent with the hydrogeologic conceptual model developed by the HWG, confirmed by the Lead Agencies and used in the NMGWM[2016].

As noted above, the resistivity values shown on the geophysical logs of the monitoring wells, which were used to correlate the preliminary AEM survey data, represent bulk resistivity of the aquifer sediments and groundwater and do not represent the resistivity of just the groundwater. For example, when Dr. Knight's preliminary AEM study results show areas of dark blue (high resistivity, low conductivity, indicative of a fresher water source), it represents the combined resistivity of the sediments and the groundwater but does not necessarily mean that there is potable,

[1] Other than these three control points, most of the profiles developed by Dr. Knight's team to illustrate preliminary AEM findings do not show control points such as well logs or water quality sampling points.

freshwater in a particular zone. The only way to use the preliminary AEM survey data to represent the actual quality of the groundwater is to correlate it relative to actual groundwater quality data obtained from the monitoring wells. That is what the HWG did and the results are provided in EIR/EIS Appendix E3. The HWG used the actual groundwater conductivity measurements from a data set that has been compiled from the MPWSP monitoring well network for over 2 years to modify the presentation of Dr. Knight's the preliminary AEM survey findings. The HWG chose to use conductivity measurements taken in May 2017 so they would closely correlate to the time that the Stanford team conducted the AEM survey. In Appendix E3, the HWG presents an example to illustrate the difference between correlating groundwater quality with over two-year-old down-hole geophysical logs, as Dr. Knight's team did in its preliminary AEM findings, versus using actual, current groundwater data obtained from the well to correlate the AEM data, as was done by the HWG. The example considers geophysical log of MW-7. According to the MW-7 geophysical log (see Figure 3-9 in Appendix E-3), the resistivity in monitoring well cluster MW-7 at an elevation of -20 meters (correlative to MW-7S), is 100 ohm-meters (ohm-m), which is equivalent to a conductivity of 100 microsiemens per centimeter (µs/cm) or a TDS of about 68 mg/L. This could be considered fresher water considering the recommended California Secondary Maximum Contaminant Level (MCL) (Cal. Code Regs., tit. 22, § 64449) for TDS in drinking water is only 500 mg/L. However, compared to the actual measured TDS in the monitoring well in May 2017, this estimated TDS concentration is very low and inconsistent with actual groundwater data in and around monitoring well MW-7. Water chemistry monitoring over the past two years at MW-7S has shown that the conductivity of the groundwater near MW-7 is on average 2,160 µs/cm, representing a TDS of about 1,470 mg/L, which far exceeds California's MCL for drinking water. A TDS reading of that magnitude is greater than what was predicted using geophysical log data and shows that the groundwater is far from "fresh", as reported by Dr. Knight's team. This example illustrates how the preliminary AEM results, which have been presented to the public by the MCWD and Dr. Knight's team, do not accurately depict and may exceedingly underestimate the actual TDS concentrations in the groundwater. This finding underscores the need to use caution when relying on the preliminary AEM results to determine the presence or absence of isolated lenses of freshwater in the Dune Sand or 180-Foot aquifer.

As described above, the HWG modified the preliminary AEM resistivity profile to more correctly illustrate the distribution of water quality in the aquifers using the same control points but using known groundwater conductivity measured in the monitoring wells during May 2017 rather than geophysical logs from 2015. The results of the HWG modification of the AEM resistivity profile shows a distribution of groundwater chemistry that is consistent with the findings of the HWG hydrogeologic investigation and generally consistent with the annual salinity mapping for the 180-Foot and 400-Foot Aquifers published by the Monterey County Water Resources Agency. The red and dark red colors on the profile modified by the HWG (HWG, 2017) clearly indicate a two-dimensional view of a seawater intrusion front that is present in the Marina area. The 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 (HWG, 2017).

As described in Master Response 8, Project Source Water and Seawater Intrusion, the MPWSP would capture ambient groundwater from a coastal area that is heavily intruded with seawater

and, as pumping continues in that capture zone, seawater would eventually replace the ambient, intruded groundwater. Both the preliminary AEM survey results released by Dr. Knight's team and the modification of those results by the HWG to depict actual groundwater quality, clearly show the band of highly brackish to saline groundwater along the coast where the MPSWP slant wells would be extracting water. If there are pockets or lenses of fresher groundwater inland and outside of the MPWSP capture zone, it is of minor consequence because while the water located inland from the coast may be less intruded and have lower TDS, it would not be drawn into and would not become source water for the MPWSP slant wells.

CEQA and NEPA Perspective on Use of ERT/AEM in EIR/EIS

Several comments assert the EIR/EIS is deficient since it did not incorporate the ERT survey data or the May 2017 AEM survey data, that the ERT and AEM survey data should be incorporated and the Draft EIR/EIS should be recirculated. The Lead Agencies reviewed the ERT/AEM data and, as noted above, the HWG modification of the AEM resistivity profile shows a distribution of groundwater chemistry that is consistent with the findings of the HWG hydrogeologic investigation and generally consistent with the annual salinity mapping for the 180-Foot and 400-Foot Aquifers published by the Monterey County Water Resources Agency; no changes are required to the Draft EIR/EIS. The Lead Agencies considered this additional technology and while they are required to utilize best available science to make conclusions on the potential environmental harm of a project, the use of every possible technology available to evaluate the impacts of the project is not required. As explained previously, the Lead Agencies used the NMGWM^{2016} for the analysis. This master response demonstrates that the ERT/AEM data (once ground-truthed) and the underlying parameters of the NMGWM^{2016} are consistent; thus, the NMGWM^{2016} is sufficiently credible to be used in evaluating project impacts.[2]

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[2] "CEQA does not require a lead agency to conduct every recommended test and perform all recommended research to evaluate the impacts of a proposed project. The fact that additional studies might be helpful does not mean that they are required." (*Clover Valley Foundation v. City of Rocklin* (2011)197 Cal.App.4th 200, 245, quoting *Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1396.) "CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters." (CEQA Guidelines§ 15204, subd. (a).)

The studies on which an EIR/EIS is based need not be irrefutable, nor are analyses deemed inadequate because they could have been better or because there is another study or analysis that may provide more information. (See, *State Water Resources Control Bd. Cases* (2006) 136 Cal.App.4th 674, 795; *Barthelemy v. Chino Basin Mun. Water Dist.* (1995) 38 Cal.App.4th 1609, 1620; *Laurel Heights Improvement Assn v. Regents of University of California* (1988) 47 Cal. 3d 376; *Berkeley Keep Jets Over the Bay Committee v. Board of Port Com'rs* (2001) 91 Cal.App.4th 1344, 1355 - 1356.) The only relevant issue is whether the discussion of environmental impacts relied on in the EIR/EIS reasonably sets forth sufficient information to foster informed public participation and to enable the decision makers to consider the environmental factors necessary to make a reasoned decision, regardless of whether a new methodology is available.

In *Laurel Heights Improvement Assn v. Regents of University of California*, *supra*, 47 Cal. 3d at 409, the final EIR described two environmental sampling studies conducted at the UC San Francisco Parnassus campus in 1984 and 1986, which established that research activities had not resulted in statistically significant increases in the deposition of organic chemicals or radioactive materials in the vicinity of the campus. The Court of Appeal and the project opponent found the studies lacking and concluded the EIR should not have relied on them, but the Supreme Court disagreed. It was irrelevant that the studies might be lacking in certain particulars or that the studies may not have conclusively demonstrated a lack of environmental effect; rather, the relevant issue was whether the studies were sufficiently credible to be considered as part of the total evidence to support the conclusions in the EIR.

8.2.9.4 References

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

Gottschalk, Ian and Rosemary Knight, 2017. *Preliminary Interpretation of SkyTEM Data Acquired in the Marina Coast Water District*, June 16.

Hydrogeologic Working Group (HWG), 2017. *HWG Hydrogeologic Investigation Technical Report. Monterey Peninsula Water Supply Project*, October 2.

Knight, Rosemary, 2017. Personal Communication, May 15.

Pidlisecky, Adam, Tara Moran, Brad Hansen, and Rosemary Knight, 2016. Electrical Resistivity Imaging of Seawater Intrusion into the Monterey Bay Aquifer System. Groundwater, March-April, Vol. 54, No. 2, pages 255-261.

8.2.10 Master Response 10: Environmental Baseline under CEQA and NEPA

COMMENTERS ADDRESSED IN MASTER RESPONSE 10

City of Marina	Ecological Rights Foundation, the Center for Biological Diversity, and Our Children's Earth Foundation
Marina Coast Water District	Point Blue Conservation Science
California Unions for Reliable Energy	Public Water Now
Citizens for Just Water	

This Master Response has been prepared in response to comments asking why the EIR/EIS did not include a separate baseline report and why the baseline of 2012 was selected by the Lead Agencies, as well as claims that the selection and/or characterization of the baseline conditions against which environmental impacts were measured did not comply with CEQA. As is common with most EIRs and EISs, the CEQA and NEPA baseline has been integrated into the EIR/EIS and there was no specific baseline report prepared. As CEQA Guidelines Section 15125 explains, "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." NEPA (40 CFR 1502.15) requires that an "environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives."

Every resource section in EIR/EIS Chapter 4 (and in Section 5.5, Alternatives Impact Analysis) includes a setting/affected environment section and information on field studies conducted to develop the baseline. EIR/EIS Section 4.1.3, Baseline Conditions, explains the baseline:

> The baseline for this EIR/EIS is the existing condition on or about October 5, 2012, updated with new data as appropriate, which is when the CPUC issued a Notice of Preparation (NOP) for the proposed project to local, state, and federal agencies, Native American tribal organizations, and other interested parties. Although the Notice of Intent for the NEPA review contained within this document was issued in 2015, use of the 2012 baseline is appropriate and reasonable because (i) 2012 is a very recent point in time; (ii) the CPUC invested considerable resources amassing 2012 background/baseline data for the April 2015 Draft EIR; and (iii) environmental conditions in the study area have been relatively static such that 2012 conditions remain representative of meaningful baseline conditions. The environmental baseline reflects the pre-project environmental conditions to which the potential impacts of the proposed project and all alternatives are compared.
>
> Since the CPUC issued its NOP in 2012, the Lead Agencies have developed or received new data on some of the resource areas, so they have updated the baseline data as appropriate. This document notes those updates in its discussions of the Setting/Affected Environment for the various resource areas and applies them in the pertinent analyses. For instance, in

> Section 4.6, Terrestrial Biological Resources, updates to survey information for biological resources are described in Section 4.6.1.2, Information Sources and Survey Methodology.

As noted by the Department of Commerce, NOAA Office of National Marine Sanctuaries in its Notice of Intent to Prepare an EIS (80 FR 51787 dated Wednesday, August 26, 2015), "MBNMS has requested CPUC to re-issue the Project EIR as part of a joint draft CEQA/NEPA document." Therefore, the baseline used in this EIR/EIS represents existing conditions at the time the CEQA NOP was issued, updated as appropriate to reflect conditions since the analysis was re-initiated by the introduction of the NEPA Lead Agency.

8.2.11 Master Response 11: CalAm Test Slant Well

COMMENTERS ADDRESSED IN MASTER RESPONSE 11

City of Marina	Bob Coble
Marina Coast Water District	Margaret-Anne Coppernoll
Ag Land Trust	Myrleen Fisher
California Unions for Reliable Energy (CURE)	Jane Haines
Citizens for Just Water	Juli Hofmann
Fort Ord Rec Users	Thomas Moore
Public Water Now	Hebard Olsen
Water Ratepayers Association of the Monterey Peninsula	Nancy Selfridge
Michael Baer	Jan Shriner
David Beech	Form Letters 1 & 2
Kathy Biala	Public Meeting Verbal Comments
Charles Cech	

This Master Response addresses comments and questions about the existing CalAm test slant well, including: clarification of its background and purpose; its permitting and CEQA/NEPA review process; the monitoring wells and pump tests and how these data have been used in this EIR/EIS; and the conversion of the test slant well to a production well. This Master Response also summarizes data concerning other locations within California where slant well technology for desalination plants has been explored, but such technology has not been pursued, and explains why such evolving technology was deemed infeasible in those circumstances, in those locations, and how those conclusions don't necessarily apply to the MPWSP. Supplemental information provided in this Master Response is for clarification and does not change any of the conclusions made in the EIR/EIS.

8.2.11.1 Background

In 2013, CalAm proposed to install and operate a test slant well on the CEMEX site to gather technical data related to the feasibility of a subsurface intake system and to facilitate design and intake siting for the proposed Monterey Peninsula Water Supply Project (MPWSP), as well as to gather information about the potential effects of the proposed project on the groundwater aquifers. As described in Draft EIR/EIS Section 2.6 on page 2-30, the topic of water rights is relevant to the MPWSP in the context of project feasibility. EIR/EIS Section 2.6.1 notes that since the SWRCB is the state agency authorized to exercise adjudicatory and regulatory functions in the areas of water rights, the CPUC asked that the SWRCB issue an opinion as to whether CalAm has a credible legal claim to the supply water for the MPWSP. In response, the SWRCB prepared its *Final Review of California American Water Company's Monterey Peninsula Water Supply Project*. That July 2013 report is attached to the EIR/EIS as Appendix B2, and as described therein, the SWRCB recommended a series of test boring/wells to assess the hydrogeologic conditions at the CEMEX site, and aquifer testing to determine the pumping effects on both the Dune Sand Aquifer and the underlying 180-Foot Aquifer. As specified in EIR/EIS Appendix B2 Section 8, "Pre-project

conditions should be identified prior to aquifer testing. Aquifer tests should mimic proposed pumping rates." The installation and operation of the test slant well was in response to the SWRCB recommendation to collect the required information, and to inform CalAm's final design of the production wells.

8.2.11.2 Coastal Development Permit and CEQA Review for Test Slant Well

Several comments question the adequacy of the CEQA/NEPA review process conducted for the test slant well, challenge the EIR/EIS representation of the CEQA/NEPA review process for the test slant well, and question whether, or opine that, CEQA/NEPA was avoided completely. A test slant well, even as a temporary exploratory project, requires a Coastal Development Permit (CDP). As noted in the revised footnotes in EIR/EIS Sections 1.4.4 and 3.1, CalAm applied to the City of Marina for a CDP in July 2013, and the City oversaw the preparation of a CEQA Initial Study (IS) and Mitigated Negative Declaration (MND) for the project in 2014 (SWCA, 2014a). The IS/MND indicated that the proposed test slant well project had the potential to result in significant adverse effects on the environment, but that any such effects could be avoided or reduced to a less-than-significant level through project design modifications and development and implementation of feasible mitigation.

On July 10, 2014, the City of Marina Planning Commission declined to adopt the City-prepared IS/MND, and declined to approve or disapprove a CDP for the proposed CalAm test slant well project. CalAm appealed the Planning Commission's decisions to the Marina City Council; on September 4, 2014, the City Council also declined to adopt the IS/MND and denied CalAm's application for development of the test slant well in the coastal zone. CalAm filed a timely appeal with the California Coastal Commission (CCC), pursuant to Coastal Act Section 30603(a)(5), which allows appeals of any development that constitutes a major public works facility.

The CCC considered CalAm's application for a CDP on appeal at its November 2014 meeting, and issued Coastal Development Permit #A-3-MRA-14-0050, dated December 8, 2014, to CalAm for the test slant well.

As noted in the October 31, 2014 Staff Report (CCC, 2014), the CCC approvals of CDP applications are to be consistent with any applicable requirements of CEQA. CEQA Guidelines Section 21080.5(d)(2)(A) prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment. The CCC identified and adopted 17 special conditions necessary to avoid, minimize, or mitigate the potential for the proposed test slant well to result in significant adverse environmental impacts and found that, within the meaning of CEQA, the proposed project, as conditioned, was adequately mitigated and consistent with CEQA.

8.2.11.3 MBNMS Authorizations and NEPA Review for Test Slant Well

On June 25, 2013, CalAm submitted a Request for Authorization to MBNMS for the issuance of two separate authorizations for the test slant well project: (1) authorization of the CDP issued by

the CCC to allow CalAm's proposed drilling into the submerged lands of MBNMS; and (2) authorization of a National Pollutant Discharge Elimination System (NPDES) permit issued by the Central Coast Regional Water Quality Control Board to allow CalAm's proposed discharge of water into MBNMS. See EIR/EIS Sections 1.4.4 and 3.1. MBNMS oversaw the preparation of an Environmental Assessment (EA) for the test slant well project, in compliance with NEPA, and a Final EA was published in September 2014 (SWCA, 2014b). MBNMS authorized the CDP on December 9, 2014 and the NPDES permit on January 6, 2015.

8.2.11.4 Monitoring Wells

One of the special conditions of the CDP, Special Condition 11 ("Protection of Nearby Wells"), required CalAm to install monitoring devices in a minimum of four wells on the CEMEX site within 2,000 feet of the test well, and one or more offsite wells, to record water and salinity levels within the wells. Between December 2014 and April 2015, CalAm constructed the test slant well and five monitoring well clusters (MW-1, MW-3, MW-4, MW-5, and MW-6) with each cluster consisting of three, 4-inch diameter monitoring wells completed at different depth intervals corresponding to the Dune Sands, 180-Foot, and 400-Foot Aquifers (Shallow – MW-4S, Medium – MW-4M, and Deep – MW-4D, respectively), meeting this Special Condition 11 requirement for monitoring wells.

Special Condition 11 also required that prior to commencement of pumping of the test slant well, the Hydrogeologic Working Group (HWG; see also Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, Section 8.2.5) establish baseline water levels and Total Dissolved Solids (TDS) levels in those monitoring wells and provide these levels to the Executive Director of the CCC. Data monitoring began on February 19, 2015, and five monitoring reports were prepared prior to starting the pump test. An April 15, 2015 report titled *Baseline Water and Total Dissolved Solids Levels* was prepared in compliance with this provision of Special Condition 11, and included the results of Monitoring Report Nos. 1 through 5. That Baseline Report is referenced in EIR/EIS Section 4.4, Groundwater Resources, as Geoscience, 2015b. As confirmed in that report, groundwater level measurements and groundwater quality samples were collected from the test slant well and all monitoring wells, (Monitoring Reports Nos. 1 through 4) prior to the initiation of test well pumping.

8.2.11.5 The Long-Term Pump Test

Test slant well pumping was performed in two phases: a step-drawdown and 5-day constant rate pump test[1] immediately following construction and development of the test slant well, followed by the long-term pump test. The long-term[2] pump test commenced on April 22, 2015. Special Condition 11 required CalAm to stop pumping the test slant well if water levels were to drop more than 1.5 feet, or if TDS were to levels increase more than 2,000 parts per million from pre-pump test conditions. After 44 days of pumping (June 5, 2015), the test slant well was shut

1 In a step-drawdown test, the discharge rate in the pumping well is increased from an initially low constant rate to a progressively higher constant rate, whereas a 5-day constant rate test would use the same rate for 5 days.

2 The HWG Work Plan (Geoscience, 2013) makes reference to long-term as being 18 months (540 days) with the purpose of determining if there are seasonal or annual variations in source water quality due to potential changes in precipitation or upstream groundwater production.

off in compliance with Special Condition 11 because water levels were approaching the maximum allowable water level decrease. In a June 2015 memo to the CCC (HWG, 2015), the HWG provided the CCC with two analyses of groundwater elevations and TDS trends in the compliance monitoring wells, and demonstrated the influence of regional pumping.

In July 2015, the Executive Director of the CCC (Dr. Charles F. Lester) informed CalAm that the water level decrease appeared to be caused in part by the pump test and acknowledged that based on the data, several influences other than pumping of the test slant well were also responsible for the decrease in water levels (CCC, 2015). CalAm was required to submit an application for an amendment to the CDP, and the CCC recommended to CalAm that the HWG develop a proposed amendment to Special Condition 11 that better incorporated the local and regional trends in water levels and salinity.

Collection of data from the monitoring wells continued during the approximate 144-day test slant well shutdown period, and weekly reports of changes in groundwater levels and salinity during the test slant well outage continued to be prepared and posted online[3]; water levels continued to decrease in some of the monitoring wells while the test well was not pumping.

Revisions were made to Special Condition 11 of the CDP. Specifically, these revisions (CDP Amendment A-3-MRA-14-0050-A1 dated October 13, 2015) state:

- The HWG shall review weekly monitoring data and prepare a monthly report that shall be submitted to the Executive Director [of the CCC] documenting the regional/background groundwater elevation trends and TDS level trends.
- If data collected during the pump test from MW-4S or MW-4M exhibit a decrease in groundwater levels that exceed 1.5 feet ***from regional groundwater elevation trends***, or if TDS levels increase more than two thousand parts per million ***from regional TDS level trends***, the Permittee shall immediately stop the pump test and inform the Executive Director [of the CCC]. [emphasis added]

Test Well Outages

Following approval of these revisions to Special Condition 11, the long-term pumping of the test slant well resumed on October 27, 2015, and results, including a table of outages, have been made publicly available online[2]. The test slant well experienced numerous short term outages in addition to the 144-day shutdown. Comments on the Draft EIR/EIS questioned the reasons for the outages and requested the disclosure of their frequency. Over the course of the two-year test slant well operations (730 days from April 2015 to April 2017), the test slant well operated for approximately 500 days, and was idle for about 230 days. The largest blocks of idle time occurred during the voluntary shutdown between June 5 and October 27, 2015 (144 days), during the winter storm events in March/April 2016 (60 days) and in December 2016/January 2017 (18 days). All other outages (19 days total) were the result of power interruptions.

3 https://www.watersupplyproject.org/test-well

The following table summarizes the details of the pumping interruptions encountered during the test slant well long-term pump test, through April 2017[4]:

Pump Test Off		Pump Test On		Hours Off	Notes
Date	Time	Date	Time		
		4/22/2015	3:20 PM		Start of long-term pump test
6/5/2015	12:00 PM	10/27/2015	3:03 PM	3,459	Voluntary shutdown: revisions to CDP Special Condition 11
1/19/2016	11:10 AM	1/20/2016	8:51 AM	22	PG&E power interruptions
1/22/2016	11:53 PM	1/24/2016	11:01 AM	35	
1/30/2016	2:50 AM	1/30/2016	11:08 AM	8	
1/31/2016	3:29 PM	2/1/2016	11:20 AM	20	
2/12/2016	2:43 AM	2/12/2016	10:51 AM	8	
3/1/2016	8:30 AM	3/2/2016	1:40 PM	29	Discharge line repairs from winter storm event
3/4/2016	10:10 AM	5/2/2016	1:22 PM	1,419	
5/17/2016	11:59 PM	5/18/2016	2:35 PM	15	PG&E power interruptions
5/25/2016	1:28 PM	5/25/2016	5:21 PM	4	
6/3/2016	7:45 AM	6/3/2016	9:08 AM	1	
7/8/2016	6:12 AM	7/8/2016	7:17 AM	1	
7/14/2016	10:21 AM	7/14/2016	11:36 AM	1	
8/13/2016	11:32 AM	8/16/2016	7:29 PM	80	
10/3/2016	7:55 PM	10/5/2016	6:23 PM	46	
12/24/2016	9:18 AM	1/11/2017	9:23 AM	432	PG&E power interruption & discharge line repair
1/20/2017	7:42 PM	1/25/2017	2:43 PM	115	PG&E power interruptions
2/17/2017	5:43 AM	2/23/2017	9:47 AM	148	
2/23/2017	9:57 AM	2/23/2017	12:13 PM	2	
3/13/2017	2:48 PM	3/13/2017	4:14 PM	1	
3/22/2017	4:54 AM	3/22/2017	9:09 AM	4	
4/10/2017	4:04 PM	4/10/2017	10:32 AM	6	

SOURCE: HWG, Monthly Monitoring Report No. 25, December 2017.

Results of the Long-Term Pump Test

The *MPWSP Test Slant Well Long Term Pumping Monthly Monitoring Report No. 25* (November 1 through November 30, 2017) was published by the HWG on December 13, 2017. Rainfall events recorded from the local Marina, CA station are overlaid on the water level plots for MW-4 (see **Figure 8.2.11-1**), the compliance point for Special Condition 11. The larger precipitation events that took place between mid-October 2016 and late March 2017 likely contributed (through precipitation recharge and/or impacts of precipitation events on basin pumping) to the upward trend of groundwater levels from approximately mid-October 2016 in MW-4S through early March 2017. Overall, the seasonal trend of groundwater elevations at MW-4 from April 2015 through October 2017 are consistent regardless of the test slant well pump being on or off (see Figure 8.2.11-1).

[4] The test slant well continued to operate through November 2017 (an additional operating time of 6 months, or 180-days, or 4,320 hours) and experienced approximately 500 hours of additional outages.

Groundwater elevation and TDS changes in the compliance well (MW-4) showed no measurable impact that can be attributed to test slant well pumping throughout the monitoring record shown in Figure 8.2.11-1. The shallow aquifer (MW-4S) showed distinct seasonal trends from the start of test slant well pumping on April 22, 2015. A downward trend occurred through the summer of 2015 (even though the test slant well was not pumping), a flat trend occurred during the fall of 2015, followed by an upward trend through the winter of 2015/2016 (even though the test slant well was pumping). A downward trend began again in mid-April 2016 just prior to the May 2, 2016 re-start of the test slant well, and continued about halfway through October 2016, albeit with a slightly decreasing slope from late July through October 2016. A seasonal increase in water levels, likely due to onset of rainfall and/or a decline in regional groundwater pumping, began in mid-October 2016 and continued through the early part of March 2017.

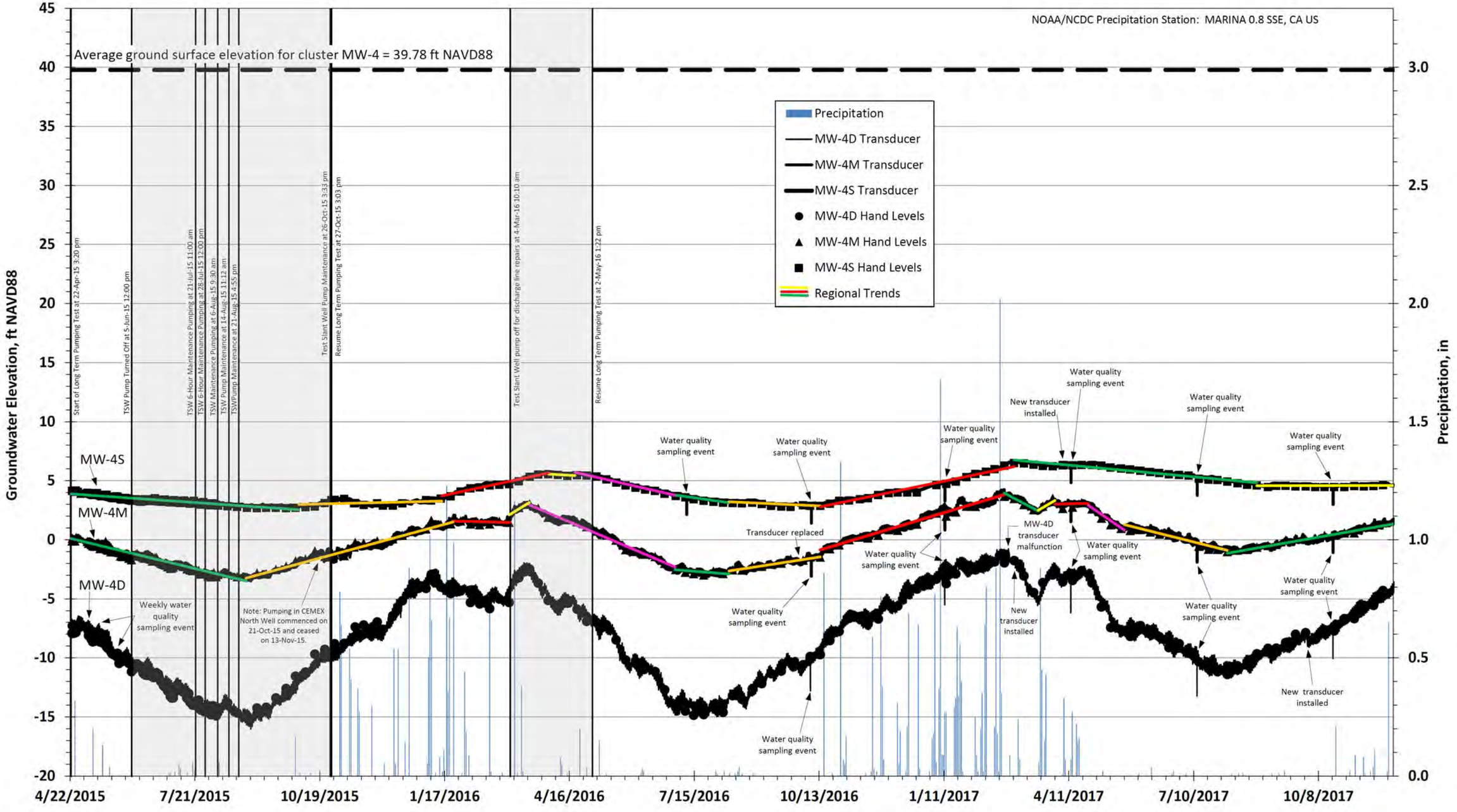
Similar to the shallow aquifer, MW-4M (at medium depth corresponding to the 180-Foot Aquifer) groundwater levels showed a distinct seasonal trend, with decreasing water levels in the spring and summer months and increasing water levels during fall and winter. There was a downward trend from mid-March through early July 2016, corresponding to a period of decreased precipitation and increased regional pumping (the start of irrigation season). The slope of the water level surface appears to have flattened in July 2016, with a slight upward slope beginning in August 2016, and a continued increasing slope through the early part of March 2017, likely as a result of decreased regional pumping (the end of the irrigation season) and the onset of the rainy season.

In summary, groundwater elevations in the Dune Sands Aquifer (MW-4S) and the 180-FTE Aquifer (MW-4M) reflected the effects of increased regional pumping in the summer months during irrigation season, and reduced irrigation pumping in the winter months, especially following rain events.

Based on data collected before and after the 144-day shutdown of test well pumping and subsequent power-related short-term test slant well outages, the HWG concluded and reported to the CCC in Monthly Monitoring Report No. 25 (HWG, 2017) that between April 2015 and November 2017:

- Groundwater levels in MW-4S and MW-4M continued to display regional trends. Therefore, groundwater levels in MW-4S and MW-4M continued to show no influences that can be attributed to test slant well pumping or non-pumping during the period (see Figure 8.2.11-1.) The groundwater elevations in MW-4S and MW-4M continued to decline when the test slant well pump was turned off between June and October 2015, and the groundwater elevations rose and then fell when the test slant well pump was turned off during March and April 2016. See Figure 8.2.11-1.
- TDS concentrations in MW-4S and MW-4M continued to display regional and/or seasonal trends, with water produced by the test slant well ranging from 25,400 mg/l[5] of TDS at start-up in April 2015 (76 percent ocean water salinity) to 31,800 mg/l in November 2016 (95 percent ocean water salinity). See HWG 2017, Table 3.

[5] Seawater generally has a TDS of 33,500 mg/l.



SOURCE: Geoscience, 2017

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Figure 8.2.11-1

Groundwater Elevation in MPWSP MW-4

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Groundwater level changes and TDS changes in the compliance well (MW-4S and MW-4M) continued to indicate no impact from test slant well pumping or non-pumping, and groundwater and TDS levels continued to remain within compliance with CCC permit requirements for the test slant well long-term pump test program.

8.2.11.6 Use of the Test Well Data in the EIR/EIS

The available test slant well pumping and monitoring data was used to assess the reliability of the North Marina Groundwater Model that was used in the EIR/EIS for simulating drawdown from slant well pumping (referred to as NMGWM^{2016}). The measured/observed drawdown was calculated from measured water levels in the monitoring wells during and after cessation of test slant well pumping, and was plotted against the corresponding model-calculated drawdown and recovery. There is generally good agreement between the model-calculated and measured timing of drawdown and recovery. See EIR/EIS Appendix E2, Section 4.2, and Figure 4.6.

The test slant well was also used to collect water quality data, which is shown in Table 3 in each of the Monthly Monitoring Reports, and was used in the EIR/EIS evaluation of the proposed project's conformance with Ocean Plan water quality objectives (see Draft EIR/EIS Section 4.3 on page 4.3-93, and Appendix D3). The salinity in the test slant well was also monitored and varied over time, ranging from 76 percent ocean water salinity at slant well start-up, to 95 percent ocean water salinity in November 2016, as discussed above in Section 8.2.11.5.

8.2.11.7 Conversion of Test Slant Well to Permanent Well

Some commenters on the Draft EIR/EIS question the appropriateness of converting the test slant well into a permanent well without complying with CEQA or NEPA, and because it was proposed and permitted as a "temporary" facility. The conversion of the test slant well to a permanent well is part of the proposed project and is evaluated in the EIR/EIS, as is made clear throughout the document. As stated in EIR/EIS Section 3.2.1.1, upon completion of the aquifer pump testing, CalAm proposes to convert the test slant well into a permanent well and operate it as part of the MPWSP source water intake system. Both the construction of the additional conveyance and treatment facilities needed to convert the test slant well into a permanent well and the long-term operation and maintenance of the converted test slant well are part of the proposed project, and thus evaluated in this EIR/EIS. Further, EIR/EIS Section 3.2 explains that if the MPWSP with subsurface slant wells at CEMEX is not approved and implemented, the test well would be decommissioned. 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 source water 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.

CalAm has always proposed to convert the test slant well into a permanent well if testing at CEMEX was successful and the MPWSP is approved, and has communicated this intention in publicly available documents such as its March 2013 application for test slant well permits to the City of Marina, MBNMS, and the CCC. In those applications, CalAm pointed out that the

temporary test slant well could not be used for the MPWSP without substantial additional infrastructure and associated CEQA, NEPA, and regulatory permitting compliance, which would be addressed as part of a separate CEQA, NEPA, and permitting process for the potential future MPWSP, if and when undertaken (CalAm, 2013). Accordingly, the conversion of the test slant well to a permanent well is part of the proposed project described and analyzed in the EIR/EIS, in compliance with CEQA and NEPA requirements. If the MPWSP is not approved in any form at the CEMEX site, then the test well would be decommissioned consistent with the prior CEQA/NEPA review for, and approval of, the test slant well. The test slant well is currently permitted to operate until February 2019, per a December 2017 Coastal Development Permit amendment.

8.2.11.8 New Technology

Although the test slant well at CEMEX is not the first of its kind, to the best of the Lead Agencies' knowledge, slant well technology has not yet been used for a full-scale desalination project. Several commenters question the feasibility of relying on this new, evolving technology for the MPWSP by citing issues with the Dana Point test slant well, and by citing out of context statements made as part of the Huntington Beach and Santa Barbara subsurface intake feasibility investigations. The discussions below provide background information concerning the other potential desalination projects addressed by commenters, and places the circumstances of those endeavors into their proper context.

Dana Point Test Slant Well

The Municipal Water District of Orange County (MWDOC), in partnership with five participating agencies, investigated the feasibility of slant wells to extract ocean water and a test slant well was constructed at Doheny State Park in Dana Point, CA in 2006. A step drawdown test was performed on March 29, 2006, and a five-day constant rate test was performed from March 31 to April 5, 2006. The well was redeveloped in 2010, and equipped with a submersible pump; a long-term pump test was performed between June 2010 and February 2012. The rate of drawdown measured in the well showed an increase over time, and well efficiency dropped from 95 percent to 52 percent.

Performance issues associated with the Dana Point Test Slant Well are summarized in a technical memo that is referenced in the EIR/EIS as Geoscience 2012, and titled *Aquifer Pumping Test Analysis and Evaluation of Specific Capacity and Well Efficiency Relationships SL-1 Test Slant Well Doheny Beach, Dana Point, CA.* The loss of well efficiency was expected due to the inability to fully develop[6] the well during construction. Specifically, the Doheny test slant well was completed with a uniform 12-inch diameter casing and well screen, without a larger diameter pump house chamber due to limited funding. As described in Geoscience, 2012, the general rule of thumb for final well development is that the well must be fully developed to pump at a rate of 1.5 times the design rate. In the case of the Doheny test slant well, the well should have been developed up to a rate of approximately 3,000 gallons per minute (gpm); however, during final

6 "Developing a well" describes the act of cleaning out the clay and silt introduced during the drilling process as well as the finer part of the aquifer directly around the well screen prior to putting the well into service.

well development by pumping and surging in 2006, the well was pumped only to a maximum discharge rate of approximately 1,800 gpm because at that time, limitations of the test well pump did not allow pumping at a higher rate. As determined by Geoscience (2012), the consequence of this was that fine-grained formation material that was not properly removed from the near well zone during well development likely migrated toward the well during the long-term pump test, clogging the well screen and near well zone

Since the Doheny test slant well was the first test slant well designed for seawater intake, valuable lessons were learned regarding submersible well pump design, installation, and operation for use as a seawater intake that were applied to CalAm test slant well. For example, because of the pump house casing limitation experienced at the Doheny test slant well and the inability to fully develop the well, the CalAm test slant well at CEMEX was designed to include an 18-inch pump house casing, which can accommodate the placement of large development pumps with capacities over 3,000 gpm, and a 5-inch artificial filter pack was installed around the screens to minimize clogging. To date, the test slant well at CEMEX has not experienced the same issues as the Dana Point slant well.

Huntington Beach Independent Scientific Technical Advisory Panel

After conducting public hearings in late 2013 to determine whether to issue a CDP for the offshore portions of the Poseidon Resources LLC-proposed Huntington Beach Desalination Project (including an open water intake), the CCC and Poseidon agreed in January 2014 to collectively develop independent verification of whether any of several subsurface intake designs would be feasible for the Huntington Beach project, and convened the Huntington Beach Independent Scientific Technical Advisory Panel (HB ISTAP, or Panel). Several commenters on the MPWSP EIR/EIS suggest that since subsurface intake wells were determined to be technically infeasible at the Huntington Beach site, the technology should also be considered infeasible at the Marina site.

However, the HB ISTAP interpreted its Phase 1 charge to be the evaluation of the technical feasibility of subsurface intake technology to deliver source water for a 100 to 127 mgd desalinated water project (compared to 9.6 mgd for the proposed MPWSP), given the hydrogeologic and oceanographic site conditions at the Huntington Beach site. The HB ISTAP's Phase 1 Final Report (2014) was included as a reference to the Draft EIR/EIS on page 5.3-57. The HB ISTAP Phase 1 Final Report discussed the nine subsurface intake options considered by the Panel and noted in its discussion of well intake systems (HB ISTAP Section 3.3.6) that based on the experience at Dana Point, "the long-term performance of the [slant well] technology has yet to be confirmed." In its evaluation of subsurface intakes for Huntington Beach, the Panel acknowledged (HB ISTAP Section 5.2.5) that "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." The Panel concluded in its Chapter 6 (Summary, Conclusions and Recommendations for Phase 2) that "slant wells tapping into 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."

The HB ISTAP concluded that slant wells would not be technically feasible to supply source water to support a project that would produce 100 to 127 mgd of product water at the Huntington Beach site, given the hydrogeologic and oceanographic conditions at that location. That conclusion is not directly transferable to the Marina location due to different hydrogeologic and oceanographic conditions and since the MPWSP is approximately 1/10th the size of the proposed Huntington Beach project. See also EIR/EIS Appendix E3.

Santa Barbara Subsurface Intake Feasibility Study

Some commenters on the MPWSP Draft EIR/EIS suggest that since the City of Santa Barbara found subsurface intakes to be infeasible for its project, subsurface intakes should be determined to be infeasible in Marina. On September 23, 2014, the City of Santa Barbara City Council directed staff to report back on a plan to evaluate the feasibility of using subsurface intakes as part of recommissioning that city's 10 mgd Charles E. Meyer Desalination Plant which was "mothballed" following the drought in the late 1990s. In January 2015, the Central Coast RWQCB adopted an amendment to the City's WWTP Waste Discharge Requirements that included a condition that the City should report back to the RWQCB with a work plan that would result in a completed subsurface intake feasibility study. Santa Barbara City staff accordingly explored the technical feasibility of six subsurface alternatives through an initial screening process to determine if the existing, permitted, screened open ocean intake at the existing Charles E. Meyer Desalination Plant could be replaced by a subsurface intake system.

The February 2017 Subsurface Desalination Intake Feasibility Study (Carollo, 2017) noted at page 3-19 that "slant wells have been tested for over six years at the Dana Point test site . . . [t]he overall experience with Dana Point was positive . . ." Carollo 2017 states on page 3-21 that "[o]peration of slant wells at the Dana Point and Monterey test sites in California demonstrated that this intake technology was capable of delivering 2,000 to 2,200 gpm of water." Carollo 2017 concludes on page 3-65 that "none of the subsurface intake alternatives considered in this study were determined to be potentially feasible based upon the study objectives" established by the City of Santa Barbara, and concludes specifically about slant wells on page 3-71 that "[t]o achieve the capacity required to meet this study's objectives [with slant wells], 3.5 to 6 miles of beachfront are required . . . only 1.7 miles of beach front is available . . ."

As a result, Santa Barbara chose to retain the existing open water intake, and not employ subsurface intakes because of the lack of any feasible subsurface intake alternative that could produce the full quantity of feed water required for the existing and already-permitted desalination plant within the limited City-owned beach front locations studied, and not because of the technology. Although the Santa Barbara project and the MPWSP are comparable in terms of production capacity, the conclusion that subsurface intakes are infeasible in Santa Barbara is not transferable to the MPWSP because the stratigraphy is different at CEMEX than in Santa Barbara, there is greater depth of sediment in Monterey and a larger beach within which to locate enough wells to meet the project objectives.

8.2.11.9 Slant Well Angle

Commenters have asked why the production wells are proposed to be drilled at a 14 degree angle from horizontal, when the test slant well was drilled at 19 degress from horizontal. The test slant well was planned to be drilled to 1,000 feet long at 19 degrees from horizontal, but due to snowy plover season and the USFWS requirement for construction equipment to be off the beach by the end of February 2015, the driller stopped before reaching the full length. In addition, the test slant well intentionally stopped short of penetrating the Salinas Valley Aquitard (SVA), which is the clay layer separating the 180-FTE Aquifer from the 400-Foot Aquifer. Since CalAm has committed to pumping from the shallower aquifers, the production wells are proposed to be drilled a little "flatter," at 14 degrees from horizonal, in order to gain some additional screen length in the targeted aquifers while staying above the SVA. The EIR/EIS evaluated the slant wells at 14 degrees, described in Draft EIR/EIS Section 3.2.1.1 at page 3-15, and the NMGWM^{2016} appropriately allocated slant well pumping between the Dune Sands Aquifer and the 180-FTE Aquifer, accounting for the proposed 14-degree angle of the production wells.

Regarding maintenance and cleaning of the slant wells (described in EIR/EIS Section 3.4.1), the test slant well has been cleaned using standard well cleaning procedures with no issues. The well cleaning procedures are also described in the Hydrogeologic Investigation Work Plan (Geoscience, 2013) and include 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, and have very low turbidity values. Given the similar shallow angles, no maintenance and cleaning issues are expected for the proposed slant wells at 14 degrees. Wells constructed with well screens at 0 degrees (entirely horizontal) have been commonly used for both water supply (e.g., horizontal wells drilled into spring locations to increase the water flow) and groundwater cleanup (e.g., horizontal wells installed under structures to access and remove contaminated groundwater).

8.2.11.10 References

California American Water (CalAm), 2013. Application Package for the Temporary Slant Test Well Project, Marina, CA.

California Coastal Commission (CCC), 2014. Staff Report: Recommendation on Appeal, Substantial Issue & De Novo Hearing and Coastal Development Permit. October 31.

California Coastal Commission (CCC), 2015. Condition Compliance – Special Condition #11 of Coastal Development Permits ("CDPs") A-3-MRA-14-0050 and 9-14-1735 for California American Water's ("Cal-Am's) slant test well project in Marina, Monterey County. July 3, 2015.

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8.2.12 Master Response 12: The North Marina Groundwater Model (v. 2016)

COMMENTERS ADDRESSED IN MASTER RESPONSE 12

City of Marina	David Brown
Marina Coast Water District	Charles Cech
Ag Land Trust	Juli Hofmann
Coalition of Peninsula Businesses	Hebard Olsen
Fort Ord Rec Users	Nancy Selfridge
Water Ratepayers Association of the Monterey Peninsula	Form Letter 2
Kathy Biala	Public Meeting Verbal Comments

Numerous comments expressed concerns about the purpose of the 2016 version of the North Marina Groundwater Model (referred to herein as NMGWM^{2016}) and its construction, calibration, and reliability. Further, comments questioned the model application using the method of superposition and the relationships between model sensitivity and model reliability. These topics are clarified below in response to these comments. For further reference, see EIR/EIS Section 4.4.4.2, Groundwater Modeling, and Appendix E2, which provide a robust discussion of the NMGWM. Note that Appendix E2 is a complex, scientific technical report appropriately appended to the EIR/EIS while EIR/EIS Section 4.4, Groundwater Resources, explains the processes and assumptions and summarizes the results of the groundwater modeling effort in relatively approachable and understandable terms. Some comments concerning the modeling for the Draft EIR/EIS were submitted by members of the general public, but numerous comments were also submitted by technical consultants and, as such, are detailed and delve into the technical aspects of the groundwater modeling. Because this Master Response addresses topics raised by all such comments, some aspects of this Master Response are necessarily technical and focused on the details of the model parameters, assumptions, processes and results.

8.2.12.1 NMGWM^{2016} Purpose and Approach

Some reviewers commented on the scope of the modeling analysis, the model's results and construction, and the modeling assumptions used. Several comments cited results for individual model layers interchangeably with hydrogeologic nomenclature of Salinas Valley aquifers and aquitards, which obscures interpretation of the relationships between model performance and comparisons to observed data. Other comments questioned the validity of the selected model boundary locations, referring to them as arbitrary and not representing physical conditions, or claiming that the model boundaries were located too close to the pumping wells analyzed with the NMGWM^{2016}. These comments did not acknowledge the telescopic modeling approach, the relationships between the NMGWM^{2016} and regional Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM), and the testing of boundary conditions reported as part of NMGWM^{2016} assessment. In contrast, other comments recognized the relationship between the SVIGSM and NMGWM^{2016} but concluded that discrepancies in model input and results between both models were indicative of NMGWM^{2016} limitations. Finally, there were comments about

$NMGWM^{2016}$ limitations for modeling the influence of spatial variations in groundwater salinity and density. These comments included requests to model groundwater density variations explicitly, and questioned the deployment of "equivalent freshwater head" to approximate the density contrast between "fresh water" and "sea water" in a constant density model. These topics are addressed in detail below.

HydroFocus's Assignment/Scope

HydroFocus, as a subconsultant to the consultant contracted by the Lead Agencies to prepare the EIR/EIS, was assigned to review, update, and if appropriate, re-calibrate the NMGWM for the purpose of estimating water level changes in response to proposed slant well pumping. The result of that effort is referred to as the $NMGWM^{2016}$. HydroFocus's scope of work was not related to the Lawrence Berkeley National Laboratory (LBNL) model evaluation, nor did HydroFocus receive direction from LBNL or have access to the LBNL model evaluation report prior to conducting its review and implementing its update. The LBNL recommendations (see EIR/EIS Appendix E1) and the $NMGWM^{2016}$ are the result of two independent evaluations, and their agreement provides credible evidence for the validity of the updates implemented in the $NMGWM^{2016}$.

The $NMGWM^{2016}$ was employed to calculate the water level decline in response to proposed project pumping (see "Introduction" of Appendix E2) -- specifically, to estimate the cone of depression, defined as the area where the difference between pumping and non-pumping water levels (the drawdown) are greater than or equal to 1 foot. The model also provided insight into the change in groundwater flow directions in response to pumping. The $NMGWM^{2016}$ was not constructed or employed to calculate changes in water quality and water density due to any mixing of ocean water and groundwater, and therefore model-calculated drawdown is an approximation. However, as discussed below, the influence of variable density on model-calculated drawdown is small, and aquifer property values and the modeled pumping stress have a much greater influence on the drawdown.

Model Grid and Layering

Table 2.1 of Appendix E2 describes what each model layer represents. For example, Model Layer 2 represents the shallow water-bearing sediments referred to as the 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 (180-FTE), 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. It would therefore be erroneous to use model results for an entire model layer to make global conclusions regarding one of the property zones. For example, model-calculated water levels at all monitoring wells located in Model Layer 2 cannot effectively evaluate model reliability for the single zone that represents the Dune Sand Aquifer (the Dune Sand Aquifer is represented by one of the 16 parameter zones in Model Layer 2).

Telescopic modeling approach and boundary effects

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 smaller model having a relatively fine grid is utilized to represent a subregion of the aquifer (Ward, et al., 1987). Continuity between the two models is maintained using either specified water levels or specified fluxes. For example, in the NMGWM^{2016}, the simulated water levels from the SVIGSM are extrapolated and specified at the NMGWM^{2016} head-dependent flux boundaries. Using this approach, the NMGWM^{2016} boundaries have hydraulic continuity with the physical boundaries of the basin through the SVIGSM, and while there was flexibility in the locations selected for the NMGWM^{2016}, the hydraulic conditions at those boundaries are quantitatively determined by the SVIGSM and therefore are not arbitrary.

The NMGWM^{2016} was employed to calculate the cone of depression for slant well pumping at the CEMEX and Potrero Road sites. Multiple model tests confirmed that the NMGWM^{2016} results are not substantially influenced by the head-dependent flux boundaries. In one test, the cone of depression calculated with the NMGWM^{2016} (24.1 mgd) was shown to be the same as the cone of depression calculated by an extended version of the NMGWM^{2016} (see **Figure 8.2.12-1**). The "Extended Model" is described in Attachment 2 of Appendix E2 "Simple Expanded Test Model," and its northern head-dependent flux boundary is located approximately 5.5 miles north of the NMGWM^{2016} boundary. Hence, two models having different boundary configurations produced the same cone of depression, confirming that the NMGWM^{2016} boundary locations do not reduce model-calculated drawdown. As another test, HydroFocus increased the pumping rate from 24.1 mgd to 27.7 mgd (an increase of 15 percent), and results showed the expected expansion of the cone of depression within the model domain (see **Figure 8.2.12-2**). These results confirm that the NMGWM^{2016} boundaries did not reduce the extent of the cone of depression from pumping at the CEMEX site. The same comparisons for the Potrero Road Site indicated that the cone of depression is modestly influenced by the northern boundary location, but the effect is fairly insignificant for making drawdown comparisons between the CEMEX and Potrero Road Sites (see Attachment 2 of Appendix E2).

Hydrostratigraphic comparison between SVIGSM and NMGWM

The NMGWM^{2016} includes the A-Aquifer and Fort Ord Salinas Valley Aquitard (FO-SVA) in model layers 2 and 3, respectively. These units are not considered in the 2015 version of the NMGWM (referred to herein as NMGWM^{2015}) and in SVIGSM, both of which supported the analysis in the April 2015 MPWSP Draft EIR. Their inclusion in the NMGWM^{2016} is consistent with recommendations made by the LBNL based on its review of the NMGWM^{2015}, but their inclusion was also identified and was implemented independently by HydroFocus. Drawdown due solely to pumping is dependent primarily on the pumping rate and the water transmitting and storage properties of the aquifer (Driscoll, 1986; Bear, 1979). Hence, because the NMGWM^{2016} is a more accurate representation of the hydrostratigraphic framework in the Fort Ord area (because it includes the A-Aquifer and FO-SVA), it provides more reliable drawdown results than the NMGWM^{2015} and SVIGSM.

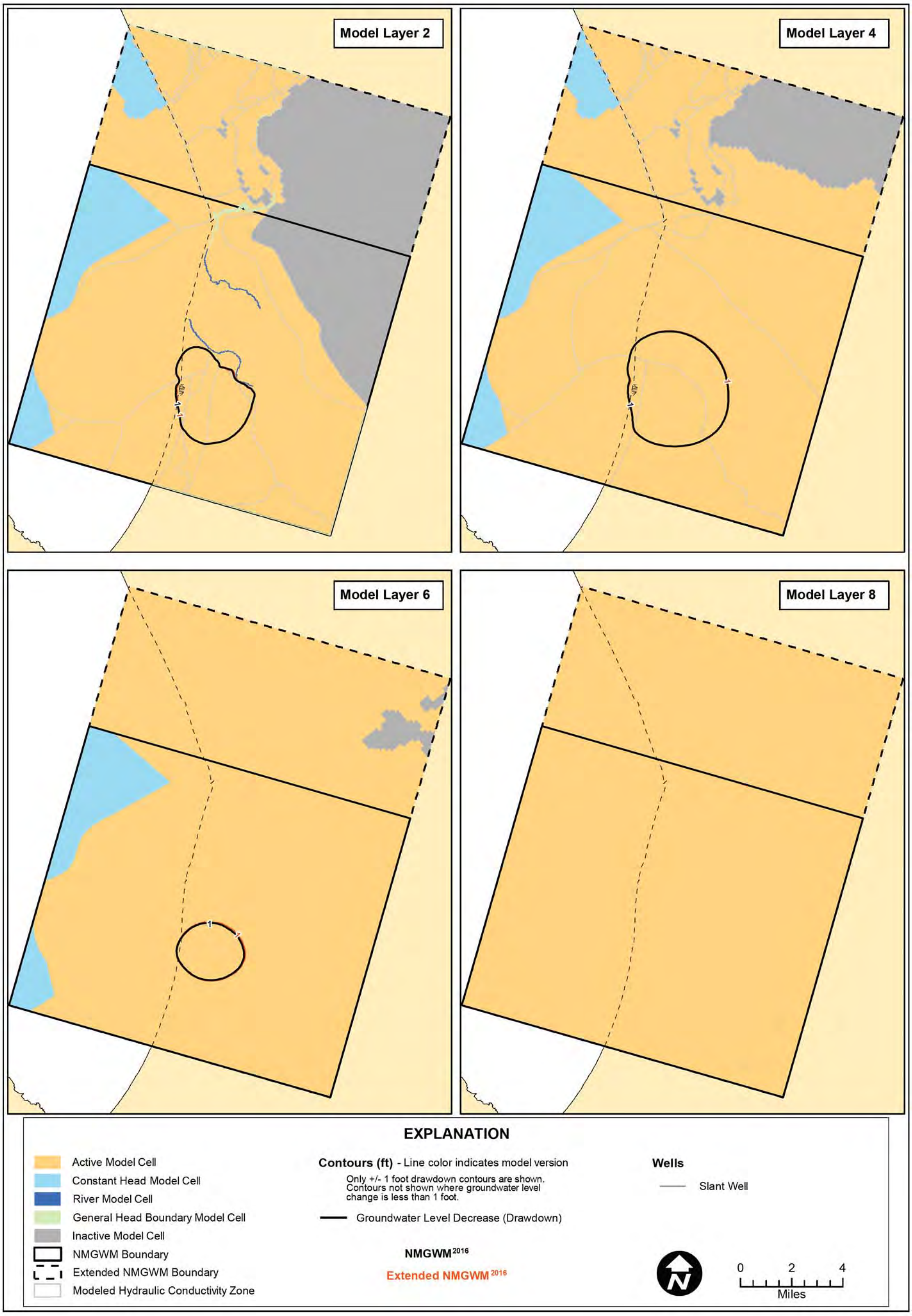
Groundwater Flow in Coastal Aquifers

In coastal aquifers, an interface can exist between groundwater with relatively low total dissolved solids ("fresh") and the saline groundwater influenced by seawater. The concentrations of dissolved constituents influence fluid density, and the resulting spatial variations in concentrations and fluid density within the transition zone can affect groundwater flow paths, the volumetric water balance, and location of the saltwater-freshwater interface. For example, the computer program SEAWAT is a modified version of MODFLOW (the computer program used for the NMGWM^{2016}), and simulates three-dimensional, variable-density, transient ground-water flow using the concept of equivalent freshwater head to solve the variable density flow equation. However, there are no guidelines to determine when it is necessary to employ a program like SEAWAT (Post et al., 2007). Therefore, HydroFocus's approach used the same concept of equivalent freshwater head to represent the density contrast between free-standing ocean water and groundwater, and then assumed that the density variations in the transition zone and resulting uncertainty in model-calculated drawdown was within the range of uncertainty quantified as part of the sensitivity assessment (see Section 8.2.12.4).

Equivalent Freshwater Head

"Equivalent freshwater head" is a common approach used to mimic the water density contrast near ocean boundaries (Senger and Fogg, 1990; Hanson et al., 2014; Payne et al., 2005). The approach increases the water level to account for the greater density of seawater within a constant density model domain. Motz (2004) examined the differences in calculated heads between SEAWAT (variable density flow model) and MODFLOW (constant density flow model) and found that the SEAWAT-calculated water levels were best matched to the MODFLOW-calculated water levels whose initial conditions had the ocean water level specified as equivalent freshwater heads over the full thickness of the aquifer. More recent work by Lu et al. (2015) suggests that submarine groundwater discharge in both confined and unconfined aquifers can be accurately simulated using constant-density flow and a coastal head correction factor. Modeling studies cited by Marina Coast Water District (MCWD) in its letter provided in Section 8.5.2 (Hydrometrics, 2008) similarly increased fresh water levels to account for the density contrast at the coast, and utilized the approach to calculate drawdown and groundwater flow paths from the ocean to coastal pumping wells.

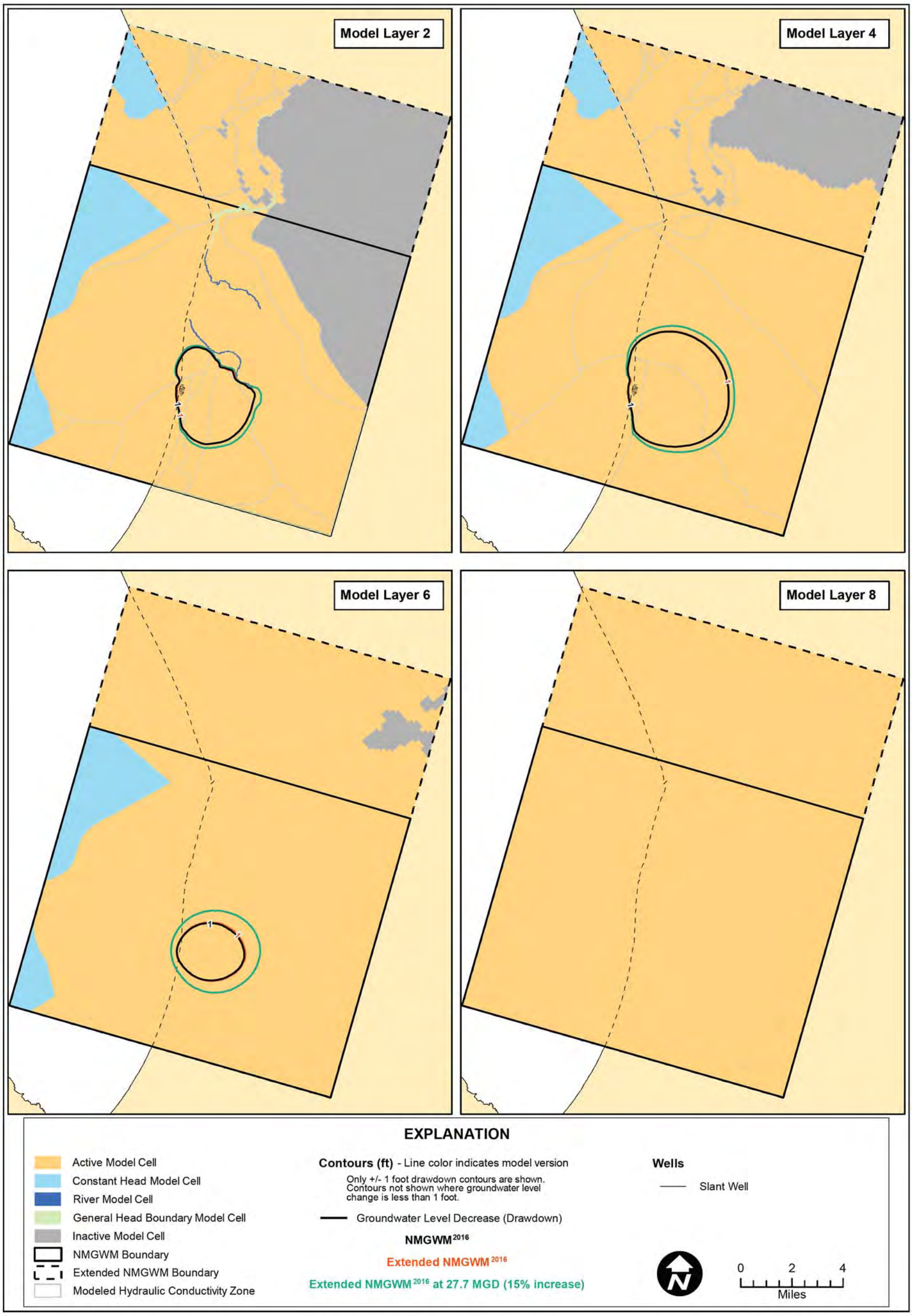
Both the NMGWM^{2015} and NMGWM^{2016} employed equivalent freshwater heads to represent the water density contrast between ocean water and groundwater (Geoscience, 2016). The equivalent heads were assigned to the portions of Model Layer 1 that represent ocean water; the portions of Model Layer 1 that represent the inland basin areas are inactive and have no influence on model calculations. Hence, no horizontal groundwater movement occurs between Model Layer 1 cells representing the ocean and the adjacent Model Layer 1 cells that overlie the inland basin. In the NMGWM^{2015}, Model Layer 1 is 1-foot thick everywhere, whereas in the NMGWM^{2016} the thickness of Model Layer 1 is variable and equal to the thickness of the water column between the ocean surface and the bottom of Monterey Bay. While the Layer 1 thicknesses representing ocean water are different in the two models, the equivalent head values were determined by the assumed TDS concentration of ocean water and the real-world height of the water column above the seafloor. Hence, although the thicknesses of Model Layer 1 are different in the two models, the specified values of the equivalent freshwater heads for corresponding model cells are essentially the same.



SOURCE: HydroFocus, 2017

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.2.12-1
Extended NMGWM2016



SOURCE: HydroFocus, 2017

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.2.12-2

Extended NMGWM^{2016} at 27.7 MGD (15% increase)

The use of equivalent freshwater heads had negligible effect on the history matching results and model calibration, and their use, therefore, does not artificially increase the modeled potential for seawater intrusion. HydroFocus confirmed this fact by running the history matching assessment with the NMGWM^{2016} after changing the equivalent freshwater head values everywhere to be equal to mean sea level ("0"), making them equal to the initial constant density water level values in the aquifer. The comparisons between model-calculated and measured water levels for the "with" and "without" equivalent freshwater head model simulations are essentially the same, confirming that there is negligible influence from equivalent freshwater heads on model-calculated inland aquifer water levels (see **Table 8.2.12-1**). Furthermore, the projected drawdown due to proposed slant well pumping was calculated using the method of superposition, and as stated in Section 5.3 of Appendix E2 under the subsection "Initial Heads, Boundary Conditions and Stresses," superposition is implemented by setting the hydraulic gradients along all boundaries to zero. This means "the boundaries representing the ocean and the head-dependent boundaries along the edges of the model domain were set to zero." While the concept of equivalent freshwater heads was utilized during the history matching run, they were not used in any of the runs used to project drawdown and therefore had no influence on model-calculated inland movement of saltwater.

TABLE 8.2.12-1
SUMMARY STATISTICS FOR THE COMPARISON BETWEEN MEASURED AND NMGWM^{2016} CALCULATED WATER LEVELS WHEN CONSTANT HEAD VALUES ARE SET EQUAL TO MEAN SEA LEVEL OR EQUIVALENT FRESHWATER HEADS

Calibration Statistics	Mean Sea Level ("0") (feet)	Equivalent Freshwater Head (feet)
RMSE[a]	10.2	10.3
Mean Model Error[b]	1.5	0.0
Min Model Error[b]	-39.9	-40.2
Max Model Error[b]	55.0	54.9

NOTES:
[a] Root Mean Square Error, which is the standard deviation of the residuals.
[b] Model Error is the model-calculated water level minus the measured water level.

Constant Density Assumption

The NMGWM^{2016} employed equivalent freshwater heads to simulate the density contrast between seawater at the Pacific Ocean boundary of the model and the underlying fresh groundwater in the aquifer. Dissolved constituent concentrations in groundwater can change from the movement of seawater in response to slant well pumping, but the effects of these changes on drawdown were assumed negligible and not simulated by the model. The extent of the cone of depression was, therefore, approximated by assuming that the constituent concentrations and groundwater density remain constant. Because measured dissolved constituent concentrations in groundwater decrease with increasing distance inland from the coast, with or without slant well pumping, the uncertainty introduced by the constant density approximation becomes less significant with increasing distance further inland and ultimately becomes negligible. The constant density assumption was assumed reasonable for reasons summarized below.

For the conditions analyzed in Appendix E2, the pumping stress and water transmitting and storage properties of the aquifer (the "aquifer parameter" values) have a much larger effect on the model-calculated drawdown than variations in constituent concentrations and water density. In other words, the uncertainty in model-calculated drawdown attributed to the constant density assumption is negligible relative to the uncertainty in aquifer parameter values. Appendix E2 at page 26 notes that comparisons between the MODFLOW-calculated water levels (constant density) and calculations using SEAWAT (variable density) differ at most by less than 2 feet. These differences exist nearest the coast where model-calculated drawdown and associated density effects are greatest. Further inland at the extent of the model-calculated drawdown, the constituent concentrations decrease and the differences between MODFLOW- and SEAWAT-calculated water levels diminish and become insignificant. 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 all have a greater influence on the extent of model-calculated drawdown than a contrast in dissolved constituent concentrations and groundwater density. 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} (see Section 6.0, "Uncertainty," in Appendix E2).

8.2.12.2 Calibration Assessment

Commenters cited the lack of historical monitoring well data in the CEMEX area as limiting NMGWM^{2016} reliability to calculate drawdown in the Dune Sand Aquifer; however, such comments do not acknowledge the other CEMEX area data and associated analyses with the NMGWM^{2016} used to evaluate model performance, including data from the slant well pumping test. Additionally, commenters cited model discrepancies in the Fort Ord Area of the NMGWM^{2016} as an indication of the unreliability of the NMGWM^{2016} to calculate drawdown in the CEMEX area; however, the comparison is inappropriate because of the very different hydrogeologic conditions that exist in the two areas. For example, monitoring well data indicate perched water table conditions in the Fort Ord Area, whereas perched water table conditions do not exist in the CEMEX area. Further, part of the reported model error[1] is contributed by discrepancies with the initial water levels, and these are removed from the drawdown analysis using the method of superposition. There were also comments concerning model calibration and reliability based on reported model error, comparisons between NMGWM^{2015} and NMGWM^{2016} model output, and reported model bias. For example, some comments made conclusions on model reliability based on comparisons between NMGWM^{2015} and NMGWM^{2016} calibration statistics, even though the statistics were determined from two different data sets. One commenter concluded that their analysis and review showed that data falsification occurred ("data tampering"). These comments are all based on methods and interpretations that generally deviate from accepted modeling practice, and the additional discussion below is provided to clarify these issues.

[1] "Model error" refers to the difference between model-calculated results and the corresponding measured values (for example, the difference between model-calculated and measured water levels in monitoring wells). All models approximate real-world conditions and therefore all models include model error. Model calibration and assessment evaluate the significance of the error relative to the intended use of the model.

Absence of Historical Dune Sand Data

The Dune Sand Aquifer is present in the CEMEX area. Water level data for the Dune Sand Aquifer are absent from the October 1979 through September 2011 historical calibration because no historical monitoring well data exists within the model domain for the Dune Sand Aquifer. However, Dune Sand Aquifer monitoring well data collected during test slant well pumping was available and used to adjust aquifer parameter zones and parameter values in Model Layer 2 and Model Layer 4 (see Appendix E2, Section 3.3 "Aquifer Parameter Zones"). Figure 4.6 in Appendix E2 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.

Monitoring well data from six cluster sites located in the "Fort Ord Area" were added to the historical model run to assess model-calculated water levels by the NMGWM^{2016} for areas south of the Salinas River. The shallowest of these monitoring wells are constructed in the A-Aquifer (not the Dune Sand Aquifer). As explained in Section 2.1 of Appendix E2, "The names and characteristics of this upper water-bearing zone are variable throughout the NMGWM. For example, *the Dune Sand Aquifer is present beneath the CEMEX* site and consists of younger and older dune sand geologic units. *The A-Aquifer located beneath the former Fort Ord Area* contains older dune sand deposits and overlies the Fort Ord-Salinas Valley Aquitard (FO-SVA) …These and other shallow aquifers are collectively represented by Model Layer 2" (emphasis added). The additional monitoring well data, therefore, represent conditions in the A-Aquifer beneath the Fort Ord Area – not the Dune Sand Aquifer at the CEMEX site. This distinction is important because the hydrogeologic conditions of the A-Aquifer and Dune Sand Aquifer are different.

The poor agreement between model-calculated and measured water levels reported in Appendix E2 for some Model Layer 2 wells located in the Fort Ord Area is due to deficiencies in prescribed initial water levels – the starting point for the historical model run – and the likelihood of "perched" groundwater conditions (in Appendix E2, see Figure 4.1 and the section "Seasonal Water-Levels and Long-Term Variations"). The discrepancy in the initial water levels is attributed solely to the input from the SVIGSM, and the method of superposition was employed to eliminate any effect these deficient initial water levels would contribute to model calculated drawdown.

Perched Conditions

As explained in Appendix E2, Section 4.1, vertical gradients between Fort Ord Area monitoring wells located in Model Layers 2 and 4 are greater than 1.0 at two sites (MW-BW-01-A and MW-OU2-29-A). Vertical gradients greater than 1.0 indicate the likely presence of an unsaturated interval between water-bearing deposits. Groundwater separated from a deeper water table by an unsaturated interval is considered "perched." The groundwater flow model assumes fully saturated conditions in all model layers, and therefore this unsaturated interval and its influence on vertical groundwater movement are not reproduced by the model. Data indicate that the perched groundwater conditions and corresponding area of poor model performance appears to be limited to the southernmost portions of the Fort Ord Area, beyond the influence of the proposed pumping capture zone, and model performance is notably more acceptable in other parts of the

Fort Ord Area where the observed vertical gradients are less steep. Relatively poor model performance in this localized area, however, does not affect model reliability in the area of interest and the calculated extent of drawdown from proposed project pumping.

Horizontal and vertical hydraulic conductivity specified for the A-Aquifer and FO-SVA in the Fort Ord Area were obtained from previous aquifer test and modeling studies (see Figure 3.3d of Appendix E2). The values selected minimized the difference between measured and model-calculated water levels, and are within the referenced range from previous studies (see Appendix E2, Figure 3.3a and 3.3b). This confirms that the water transmitting properties specified in the model are reasonable, and therefore the model errors in Model Layer 2 are attributed to other factors. Specifically, the model errors in Model Layer 2 are attributed to the large differences between measured and model-calculated water levels in the perched Model Layer 2 wells and the discrepancies in the initial water level conditions inherited from the SVIGSM. The "Model Error" discussion below explains how removing the perched well data substantially reduces the model error statistics, and Section 8.2.12.4 explains how errors due to specified initial water levels are removed from model-calculated drawdown.

Model Error Assessment

All groundwater models solve universally accepted mathematical equations to simulate subsurface water movement in porous media. The solutions are approximations because a model cannot quantify exactly the spatially variable properties that exist in the real world. A reliable groundwater-flow model is one that can produce field-measured water levels and groundwater flow within an acceptable range of error. Error exists because information on the real world system is always incomplete, and the field information that is available has associated errors (for example, measurement error or the assignment of monitoring wells to incorrect aquifers). The most likely sources of error in the $NMGWM^{2016}$ could arise from neglecting potential processes (for example, density effects on groundwater flow) and uncertainty associated with modeled boundary conditions, specified hydraulic conductivity values. Model error is therefore, evaluated to quantify model uncertainty, and the evaluation of $NMGWM^{2016}$ uncertainty is described in Section 4.1 of Appendix E2 "History Matching Assessment." That evaluation clearly states that model error was assessed using six tests widely used and accepted within the groundwater modeling community: "Ultimately the decision of model acceptability is based on the weight of one or more of the test results and their relevance to meeting modeling objectives (in this situation, concluding that the model acceptably projects the magnitude and distribution of the water level change due to coastal slant well pumping)." Several comments suggested that using only one of the six tests could delineate a "good/successful" model from a "bad/failed" model; this is not recommended groundwater modeling practice.

The use of multiple tests provides the means to identify key sources of model uncertainty that are not likely revealed relying solely on any one test. Furthermore, the acceptance or rejection of a model depends not only on the evaluation of model error but also on the intended application for which the model was created (Freyberg, 1988). For example, the model error may be high in the history matching run because recharge and pumping are poorly estimated. However, when the purpose of the model is to calculate water level changes due to a new stress, the reliability of the

model-calculated drawdown will depend primarily on the specified water transmitting and storage properties of the aquifer and not on the background recharge and pumping.

In EIR/EIS Appendix E2, multiple test results are reported that identified model deficiencies associated primarily with the prescribed initial conditions, boundary conditions, and historical recharge and pumping, all of which originated from the SVIGSM. The reliability of the specified aquifer parameters, however, was determined by comparisons between NMGWM^{2016} values and the measured or estimated values for similar materials. These comparisons indicated general agreement with values from previous hydrogeological and model studies (see Section 3.3, "Aquifer Parameter Zones," in Appendix E2). For the EIR/EIS, the "method of superposition" was employed to eliminate the deficiencies introduced by the prescribed initial conditions, boundary conditions, and recharge and pumping, whereas sensitivity tests were employed to quantify the potential uncertainty in the aquifer parameter values, boundary conditions, future project operations (see Appendix E2 Section 5.2 and EIR/EIS Section 4.4.4.2). By running the model and incorporating uncertainty related to 1) sea level rise, 2) return water volumes, 3) slant-well pumping rates, 4) model parameter values (hydraulic conductivity and storage properties), and 5) the relative volumes of groundwater flowing to the slant wells from different aquifers, HydroFocus estimated the potential range in the areal drawdown due to slant well pumping (see the discussion of uncertainty in Appendix E2, Section 6.0).

Comparison of NMGWM^{2016} and NMGWM^{2015}

NMGWM^{2016} has less model error than NMGWM^{2015}. A valid error comparison between two models must use the same wells and water level data, and when the same wells and water level data are used (see **Table 8.2.12-2**), the summary of error statistics confirm that the NMGWM^{2016} performance is superior to the NMGWM^{2015}. For example, Model Layer 2 monitoring wells located south of the Salinas River were added to the NMGWM^{2016}, and when these same wells and their corresponding water level data are added to the NMGWM^{2015} data set, the Model Layer 2 Root Mean Square Error (RMSE, which is the standard deviation of the residuals) is 40.2 feet, which is substantially higher than the RMSE calculated for the NMGWM^{2016} (10.1 feet). The comparisons between the deeper model layers have RMSE values that generally agree and are all within +/- 0.1 feet, indicating both models perform similarly in representing the deeper aquifers.

Model Bias

Bias in groundwater flow models results when model errors (the difference between model-calculated and measured water levels) do not conform to the assumptions of regression analysis (the assumptions that the model errors are independent, have zero mean, have a constant variance and follow a normal distribution) (Ward, et al., 1987). The evaluation of model error for Model Layer 4 (the 180-Foot Aquifer) provided in Appendix E2 showed that the model errors are not independent (the model errors vary with model-calculated values), the mean model error is not zero (the mean model error is equal to 1.4 feet), and visual inspection of the histogram suggests that model errors are not approximated by the normal distribution. These results indicate model bias in Model Layer 4. Further analysis of model errors was conducted by HydroFocus and revealed the cause of this bias, and the modeling approach employed to assess the proposed project was developed to eliminate the effect of this bias on the model results. The results of the model error analyses are discussed below.

TABLE 8.2.12-2
SUMMARY OF ERROR STATISTICS
BETWEEN NMGWM^{2015} AND NMGWM^{2016} USING IDENTICAL WATER LEVEL DATA

	NMGWM^{2015}* (feet) (using NMGWM^{2016} calibration data)					NMGWM^{2016}* (feet)				
	Layer 2	**Layer 4**	**Layer 6**	**Layer 8**	**Entire Model**	**Layer 2**	**Layer 4**	**Layer 6**	**Layer 8**	**Entire Model**
RMSE[a]	40.2	7.3	10.7	11.4	12.8	10.1	7.2	10.7	11.3	10.2
Minimum Error	-63.2	-16.4	-40.2	-38.6	-63.2	-35.2	-15.8	-39.9	-35.4	-39.9
Mean Error	-30.1	1.2	1.7	-1.9	-0.3	-4.9	1.4	2.1	0.4	1.5
Maximum Error	-1.2	32.7	54.9	39.2	54.9	9.2	32.2	55.0	41.2	55.0
Relative Error	62.8%	14.7%	10.2%	14.5%	7.9%	15.7%	14.4%	10.3%	14.4%	6.3%

NOTES:
* Statistics exclude two perched wells MW-BW-01-A and MW-OU2-29-A.
Root Mean Square Error (expressed in feet)

In Appendix E2, Figure 4.3d "Relationships between measured water levels, model-calculated water levels, and water level residuals, Well 02J01, Model Layer 4" shows two graphs. The upper graph shows model-calculated and measured water levels during the time period October 1979 through September 1991 for Well 02J01, which is screened in Model Layer 4 (180-Foot Aquifer). The upper graph also shows the residual (model error) for the same time period. The values and distances (scale) for both vertical axes (y-axes) are the same. Measured water levels are reported relative to mean sea level, which by convention is assigned a value of zero. The model error is also plotted relative to zero, and positive errors indicate model-calculated water levels are greater than measured, and negative errors indicate that model-calculated water levels are lower than measured. The lower graph shows the relationship between model error and model-calculated water level. Close inspection of these two graphs shows the following:

1. The upper graph shows that measured and model-calculated water levels decrease and become more negative over time. The shift from positive to negative water levels indicates that the water levels have decreased from above mean sea level to below mean sea level.

2. The lower graph shows that the model errors are generally large in magnitude and positive when model-calculated water levels are relatively high and above mean sea level. Conversely, the model errors are generally smaller in magnitude and more negative when model-calculated water levels are relatively low and below mean sea levels.

The water level and error plots indicate that model error is not random (the model results for Model Layer 4 are biased). The bias is consistent with the positive correlations shown for Model Layer 4 in Appendix E2 Figure 4.3b and Figure 4.3d (calculated correlation of 0.2). The positive correlation is consistent with the observation that the greatest water levels (the water levels that are the highest above mean sea level) have the greatest model errors and the errors tend to be positive, whereas the lowest water levels (the water levels that tend to be below mean sea level) have relatively smaller model errors that tend to be negative. In other words, the model error is positive (increases) when the water levels are positive, and the error is negative when the water

levels are negative. Hence, the slope of the line in the lower graph of Appendix E2 Figure 4.3d is positive, and shows an increasing relationship between model error and model-calculated water levels.

The model-calculated and measured water levels in Appendix E2 Figure 4.3d rise and fall each year as a result of seasonal changes in recharge and pumping. The seasonal trends in Figure 4.3d are superimposed on the longer, multi-year trends that show water levels generally decline from above sea level to below sea level. Comparisons between the model-calculated and measured water levels reveal that in the early years of the plotted data set, the seasonal model-calculated water level decline begins sooner than the measured seasonal water level decline, and this shift in timing causes relatively large differences between model-calculated and measured water levels (relatively large model error). In the later years of the plotted data set, there is better agreement between the timing of the seasonal water level decline, and as a result the model error is relatively smaller. The net effect of these time-shifts is the cause of the model bias described above.

Appendix E2 Figure 4.3c shows that the same relationship between seasonal model-calculated and measured water levels shown in Figure 4.3c exists in the SVIGSM – the greatest water levels have model errors that tend to be positive, and the lowest water levels have model errors that tend to be negative. The magnitude and timing of groundwater recharge and pumping utilized by the $NMGWM^{2016}$ was obtained from the SVIGSM, and therefore the model bias in the $NMGWM^{2016}$ produced by the seasonal changes in recharge and pumping is inherited from the SVIGSM.

Data Tampering

The documented correlation between model-calibrated water levels and model error described above under “Model Bias” has been erroneously cited in some comments as evidence of data tampering. However, the facts indicate that data tampering has not occurred, and this can be clarified with a discussion about what a groundwater-flow model is, how a groundwater model is constructed, and how a groundwater model is ultimately used.

As described in EIR/EIS Section 4.4.4.2, groundwater models are computer simulations that represent water flow in the environment using mathematical equations. The “model” is a mathematical model, meaning that groundwater flow is simulated by solving a governing mathematical equation that represents the physical processes that occur in a groundwater system. That governing equation is commonly referred to as the three-dimensional partial differential equation of groundwater flow.

MODFLOW is one of many computer codes that numerically solve the governing groundwater flow equation. As noted in EIR/EIS Section 4.4.4.2, since MODFLOW's release, the USGS has released numerous updated versions, and MODFLOW is now the de facto standard code for aquifer simulation. The MODFLOW computer source code is written in FORTRAN programming language, which is compiled to create an executable, which is the engine that actually performs the numerical calculations. The $NMGWM^{2016}$ is an application of MODFLOW, where the MODFLOW executable performs the calculations on the input data sets constructed specifically for the North Marina Area. The output from the MODFLOW executable is model-calculated water levels and groundwater fluxes for the North Marina Area.

Input data to MODFLOW includes the three-dimensional distribution of water storage and transmitting properties of the site-specific aquifers and aquitards in the North Marina Area. The input data also includes site-specific values for groundwater recharge and extractions by pumping wells. Lastly, input data includes specified conditions at the boundaries of the model domain (for example, boundary conditions specified to represent the Pacific Ocean). The water levels measured in wells (observations) are not input data, but rather are utilized to compare against their corresponding model output (model-calculated water levels) for the same time and spatial location. Similar to a "ruler" utilized to quantify the error in the estimated length of an object, measured water levels are compared to model-calculated water levels to quantify model error (the difference between model-calculated and measured water levels). Hence, model input (water storage properties, water transmitting properties, recharge, pumping, and boundary conditions) can be altered to change model output, but changes to measured water levels (observations) have no effect on model output. With this in mind, three facts indicate that data tampering – in this case, modification of the measured or model-calculated water levels employed to calculate model error – has not occurred. They are as follows:

1. The measured data were not altered before running the model. Measured water levels were provided by Monterey County Water Resources Agency (MCWRA), and Section 2.3 of Appendix E2, "Assessment of Model Inputs and Outputs," reports that measured water levels used by the model and reported by MCWRA are the same. Measurement dates used in the model for one well were off and another well was assigned to a different aquifer. Specifically, the water level measurement dates reported by MCWRA for well 14S/3E-6R1 were 11 days off in the $NMGWM^{2015}$ input data set, and well 14S/2E-14L01 was designated as representing Model Layer 6 but identified by MCWRA as representing the 180-Foot Aquifer (Model Layer 4). Neither of these exceptions had any effect on the measured water level values reported.

2. Three independent runs using different MODFLOW executables produced the same output (model-calculated water levels) and confirm that the model-calculated water levels were not modified during the model run. As noted in Table 3.1 of Appendix E2, Geoscience and HydroFocus utilized two different MODFLOW executables. Geoscience employed MODFLOW using the proprietary software "Groundwater Vistas," whereas HydroFocus employed the MODFLOW executable "freely available from the USGS." Section 2 of Appendix E2, "Assessment of Model Inputs and Outputs," states, "We ran the model ($NMGWM^{2015}$) and confirmed the model results [model-calculated water levels] were the same as reported." Furthermore, Appendix E-1, "Lawrence Berkeley National Laboratories Peer Review," describes similar testing and reported "computer simulations carried out by the modeling team can be replicated using the input and executable codes provided to us." This confirms that the FORTRAN computer code for the numerical groundwater-flow model (MODFLOW) was not altered prior to running the executable as a means to "tamper" with the data.

3. Model-calculated water levels were not altered after running MODFLOW. There is no processing of model output after running MODFLOW other than plotting the results using Excel software. The model-calculated water levels in the Excel files match the output from MODFLOW obtained from three independent runs using three different MODFLOW executables.

8.2.12.3 Superposition

The analysis using the NMGWM^{2016} employed the method of superposition. Some commenters interpreted this to mean a new model was developed rather than an application of the model. Other commenters utilized results from their own application of the NMGWM^{2016} and superposition method, and their results were different from those reported in Appendix E2. However, the analysis undertaken by the commenters was flawed, and conclusions based on those results were both unreliable and appeared to demonstrate misunderstanding about the method of superposition. The additional discussion below is provided to clarify the issues.

The NMGWM^{2016} was employed to calculate drawdown in response to pumping. Drawdown due solely to proposed project pumping is dependent primarily on the pumping rate, the water transmitting and storage properties of the aquifer (Driscoll, 1986; Bear, 1979), and any change in groundwater recharge or discharge that would occur solely as a result of that drawdown. For example, if pumping were to cause coastal water levels to decline below sea level, ocean water would percolate into the underlying aquifer and move inland to replace the extracted water. This increase in ocean-water recharge induced by the new pumping would reduce the drawdown relative to that which would have occurred in the absence of the ocean-water recharge.

For the EIR/EIS, the method of superposition was employed to remove the discrepancies introduced by the SVIGSM (initial water levels, boundary conditions, and bias attributed to specified recharge and pumping). Superposition is routinely employed for solving complex problems. It is a modeling approach that is useful in saving time and effort and eliminating uncertainty. The principal advantages and constraints of using superposition are described by Reilly et al. (1987) and summarized below:

1. The effects of a specified stress on the groundwater system can be evaluated even if other stresses in the basin are unknown.
2. The effects of a change in stress on the system can be evaluated even if the original conditions or subsequent period of equilibrium conditions are unknown.
3. The effect of one stress on the system can be isolated from the effects of all other stresses.

The superposition approach does not employ a “new” model; rather, the initial water levels and background recharge and pumping are all set to zero. These inputs are not “predictive variables” in the model, and they have no influence on the projected future drawdown calculated by the model. The approach therefore effectively removes the deficiencies introduced by the SVIGSM (see Section 5.2 of Appendix E2).

In the application of the NMGWM^{2016}, the complex problem is quantifying groundwater level changes and fluxes due to geographically and temporally varying recharge and discharge processes occurring within the Salinas Valley Groundwater Basin. The question asked is “what change in these groundwater levels and fluxes are expected as a result of a new stress – groundwater extraction by the proposed slant wells?” Rather than employ a model to simulate the complex problem (i.e., to quantify the effects of all recharge and discharge processes occurring within the basin), superposition is employed to determine the incremental drawdown due solely to

the proposed groundwater extraction by the slant wells. In other words, superposition is employed to isolate the expected change in groundwater levels and fluxes due solely to the project. These changes would be additive to future changes that occur as the net result of all other factors such as climate, background pumping, background recharge, and land use changes, which 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, none of which are known with certainty. See Appendix E2, Section 4.2, "Test Slant Well Pumping," for an example where real-world monitoring data is used to compare measured drawdown with the drawdown calculated with the superposition model.

Water Levels

The drawdown from proposed slant well pumping can be isolated using one of two approaches: (1) subtracting the results from two model runs, one run with the new stress and a second run without the stress, or (2) directly using superposition. For example, in its report attached to the MCWD comments, GeoHydros employed the superposition method to isolate the model-calculated drawdown due to slant well pumping from the proposed project (GeoHydros, 2017). To do this, GeoHydros added the proposed slant well pumping to the recharge, pumping, constant head, and head-dependent flow boundary input data from the "History Matching Assessment" described in Appendix E2. The approach is identical to the one described in Attachment 1 to Appendix E2 ("Example Superposition Model"). In Attachment 1, a model of a hypothetical groundwater basin is used to show that drawdown from a new pumping well calculated directly by superposition is identical to the drawdown calculated indirectly by subtracting the results from two model runs (one model run with the new well pumping stress and the second model run without the new well pumping stress). Both approaches employ the theory of superposition, but GeoHydros chose to use the latter approach of subtracting two model runs to isolate the drawdown rather than calculate it 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 GeoHydros analysis was not conducted correctly, and the flawed GeoHydros results are therefore different from the results reported in Appendix E2. As explained below, the GeoHydros analysis was flawed because it did not consider changes in the hydraulic interaction between groundwater, the Salinas River, and Tembladero Slough, and the GeoHydros report and results have therefore not been incorporated into the EIR/EIS analysis.

The recharge and pumping model input files from the History Matching Assessment include the historical river losses and gains due to the hydraulic interactions between groundwater, the Salinas River, and Tembladero Slough. GeoHydros used the same recharge and pumping input files for both of its simulations: one simulation that was identical to the History Matching Assessment and an identical simulation but with the addition of proposed slant well pumping. The GeoHydros approach failed to account for the changes in Salinas River and Tembladero Slough gains and losses that occur in response to the new pumping stress introduced by the slant wells, and the drawdown calculated by the GeoHydros approach is therefore greater than reported in Appendix E2. In order to account for the changes in river gains and losses, the NMGWM^{2016}

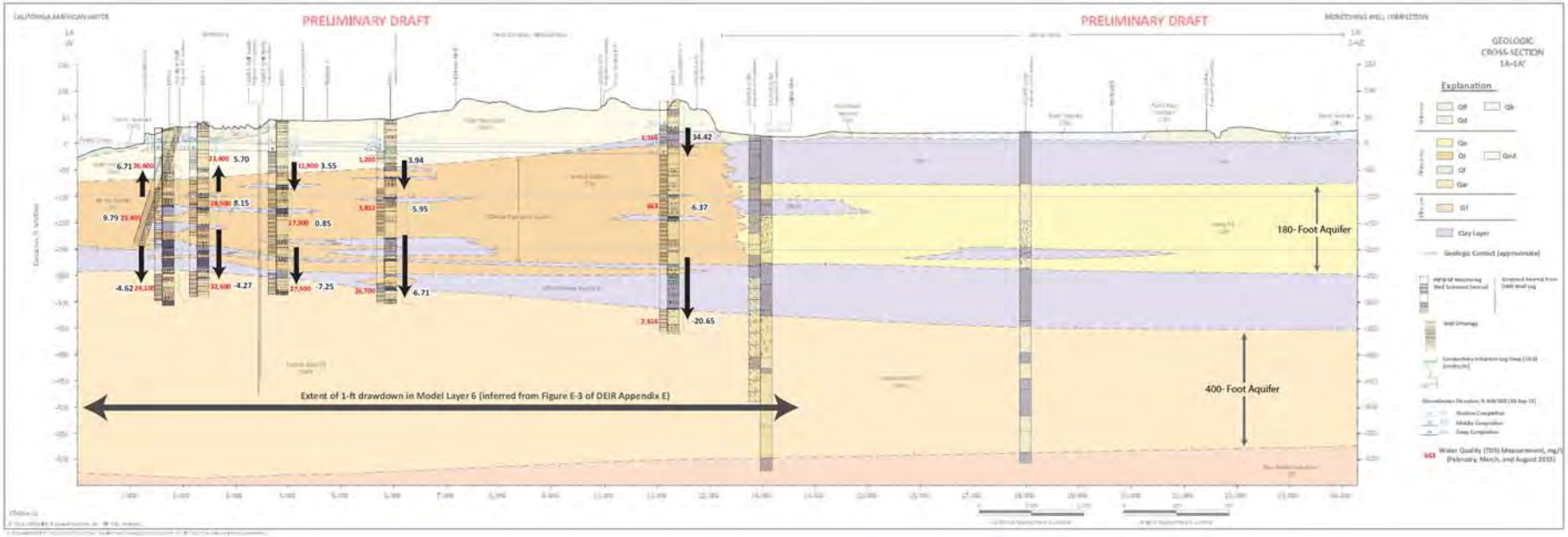
was modified as explained in Section 5.3 of Appendix E2 ("Modifications to the NMGWM^{2016}"). Hence, the GeoHydros results are not credible for assessing the adequacy of the NMGWM^{2016} and the superposition approach.

Water Budget

The method of superposition, whether employed directly using a superposition model as described in Appendix E2, or indirectly by subtracting two model runs as employed by GeoHydros, also provides the change in the volumetric groundwater budget. GeoHydros calculated the change in fluxes between model layers by subtracting the water budgets from the two model runs. Based on the GeoHydros calculations using flawed model results, GeoHydros reported that 756 afy of the water removed by the slant wells would come from "upward flow into the overlying 180-Foot and Dune Sand Aquifers" from the 400-Foot and deeper aquifers. They concluded that the model-calculated gain in the 180-Foot Aquifer represents harm to the deeper aquifers. However, this conclusion comes from an inappropriate interpretation of superposition results that ignore the real-world groundwater conditions beneath the CEMEX site. Further, the conclusion does not consider the poor water quality conditions measured in the 180-Foot Aquifer and existing groundwater overdraft of the deeper aquifers caused by inland pumping.

Superposition calculates the change in the volumetric water budget relative to the real-world groundwater system. A positive water budget change indicates "gain," whereas a negative water budget change indicates "loss." However, a gain is not necessarily indicative of greater "inflow" but can also indicate reduced outflow. Similarly, a loss is not necessarily indicative of greater "outflow" but can also indicate reduced inflow. The volumetric budget changes calculated by superposition and reported by GeoHydros must therefore be applied to real-world groundwater conditions to determine slant well pumping effects on groundwater-flow.

The real-world groundwater conditions beneath the CEMEX site as reported by Geoscience (2016) is illustrated in **Figure 8.2.12-3**, which is a modified cross-section that includes groundwater elevations determined from measured water levels in monitoring wells (corrected to equivalent freshwater heads based on measured TDS concentrations). Groundwater flow directions are inferred from the equivalent freshwater heads, whereby groundwater moves from areas of high equivalent freshwater head to areas of relatively low equivalent freshwater head. The inferred vertical flow directions in Figure 8.2.12-3 indicate that groundwater moves downward from the 180-Foot Aquifer to the 400-Foot Aquifer. Hence, the model-calculated gain in the "180-Foot Aquifer" is actually a reduction of the existing downward flow from the 180-Foot Aquifer to the 400-Foot Aquifer. The water quality data posted on the cross-sections indicate that near the coast and where project pumping induced drawdowns would be the greatest, the measured TDS concentrations in the 180-Foot Aquifer can exceed 28,000 mg/L. Hence, the 756 afy reported by GeoHydros as being removed from the deeper aquifers would actually be a reduction in downward flow of high-TDS groundwater. Reducing the inflow of high-TDS groundwater into the deeper aquifers would provide a water quality benefit. Because the GeoHydros analysis is conceptually consistent with that found in the EIR/EIS, but flawed and therefore quantitatively different from the EIR/EIS analysis as described above under "Water Levels," no revision to the EIR/EIS analysis is warranted in response to the GeoHydros analysis.



Modified from: GEOSCIENCE, 2016. Monterey Peninsula Water Supply Project - Hydrogeologic Investigation, Technical Memorandum (TM2) Monitoring Well Completion Report and CEMEX Model Update Draft. Prepared for California American Water dated July 15, 2016. Figure 3.

9.79 Equivalent freshwater head calculated from measured TDS concentrations

↓ Inferred vertical groundwater flow component

SOURCE: HydroFocus, 2017

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.2.12-3

Cross-section Showing Calculated Equivalent Freshwater Heads

8.2.12.4 Sensitivity Analysis

Some comments interpreted model sensitivity as a model limitation, and require clarification about the difference between model calibration and model prediction, as each relate to model sensitivity. In model calibration, the parameter sensitivity analysis identified the hydraulic conductivity and storativity[2] values that most influence the comparison between model-calculated and measured results in the history-matching assessment (parameter calibration sensitivity). The most sensitive calibrated values are usually the most reliable when it can be shown they are comparable to reported values from previous studies. 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 pumping is an entirely new stress, the most sensitive prediction parameters are not necessarily the same as the most sensitive calibration parameters (often they are not). The prediction parameter sensitivity results provide little to no information about the reliability of the calibrated parameter values.

Appendix E2 Section 6.0, "Uncertainty," explains that both the predictive sensitivity to assumed project operations and the predictive 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 bracket the range in possible drawdowns." Extreme values were employed to provide a conservative answer to the question "would the model predictions change so as to change the conclusions regarding proposed slant well operation." Extreme values were employed to rigorously test and conservatively quantify the drawdown calculated by the $NMGWM^{2016}$ as part of a planning assessment, and the results have limited application for assessing the adequacy of the model calibration conducted in the history-matching assessment.

8.2.12.5 References

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[2] Specific storativity is the amount of water taken out or put back into a unit volume of an aquifer when the water level changes.

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8.2.13 Master Response 13: Demand (Project Need) and Growth

COMMENTERS ADDRESSED IN MASTER RESPONSE 13

City of Marina	Public Trust Alliance
Monterey Peninsula Water Management District	Public Water Now
California Unions for Reliable Energy	Surfrider Foundation
Carmel River Steelhead Association	Margaret-Anne Coppernoll
Coalition of Peninsula Businesses	Juli Hofmann
Ecological Rights Foundation, the Center for Biological Diversity, and Our Children's Earth Foundation	Carol Reeb
Land Watch Monterey County	Roy Thomas
Pebble Beach Company	

This Master Response addresses comments concerning customer water demand, available water supplies, and growth that could be induced by the proposed MPWSP water supply. Given the wide variety of comments related to water supply and demand, and for clarity: Section 8.2.13.2 addresses comments on demand, Section 8.2.13.3 addresses comments on supplies, and Section 8.2.13.4 addresses comments on growth that would be induced by project water supply and the impacts of that growth. Appendix L: Alternative Supply - Demand Scenarios was prepared in conjunction with this master response to test the possibility of whether the project could be smaller if one considered different supply and demand numbers as suggested in some comments; Section 8.2.13.5 summarizes the results of that inquiry.

EIR/EIS Sections 2.3 through 2.5 provide information on estimated water customer demand, supplies, the basis for those estimates, and supplemental information about water supply and demand and factors affecting them in the area that would be served by the MPWSP. Use of these supply and demand assumptions in the EIR/EIS does not mean that these assumptions will for certain prove true. Forecasting future demand and supply is not an exact science. As stated in EIR/EIS Section 2.5.4, "estimating future water demand necessarily entails the use of assumptions about demand factors that cannot be predicted with absolute certainty." The demand and supply estimates presented in EIR/EIS Sections 2.3 through 2.5 are planning and environmental evaluation tools that are based upon the evidence available from multiple (sometimes conflicting) sources and reasonable assumptions stemming from that evidence. Future supply and/or demand could, in reality, turn out to be higher or lower than estimated. Commenters have expressed that more or less supply is needed and more or less demand should be assumed, and any one of those commenters could end up being correct. The lead agencies do not control demand of service area residents and businesses, which is affected by such things as the economy, trends in use habits, drought, water cost, and more; nor do they control supplies, which are dramatically affected by weather and climate. While the estimates assumed in the EIR/EIS are reasonable based on available data, they are inherently uncertain and cannot be guaranteed. Section 8.2.13.1, below, provides additional discussion of supply and demand in the context of the proposed project and the EIR/EIS analysis.

Note also that evidence concerning supply and demand is being gathered by the CPUC in a process that is separate from, but parallel to, the CEQA and NEPA process. Such evidence will be considered, along with all of the data within the EIR/EIS, to inform and shape the decision on the size of project and the possibility of phasing in the project or alternatives. The Lead Agencies have endeavored to consider and reflect in the EIR/EIS evidence that has been presented in the general CPUC proceeding. It will be up to the decisionmakers to weigh all of the evidence in the record, determine which, if any, option best suits the project purpose and need/satisfies the project objectives, and take appropriate actions based upon findings. This means that the CPUC could decide (for example only) that it is most likely that there will be no further hospitality industry economic recovery such that water need not be supplied for that purpose. So long as substantial evidence supports that ultimate decision, the state permitting agencies may judge the evidence as they see fit.

8.2.13.1 Purpose of the EIR/EIS Demand and Supply Information

NEPA and CEQA analyses typically address potable water demand and supply in the context of evaluating a project's impact on available supply (typically in the utilities section of the impact analysis). In this case, the MPWSP has been proposed to *provide* water supply to the CalAm service area. Given that the MPWSP project objectives and purpose and need are primarily related to supplying water to meet existing and some future water customer needs, supply and demand are fundamentally tied to the ability of the project to satisfy the project need and objectives. Supply and demand are therefore, important to fashioning the requisite range of feasible and reasonable project alternatives. In addition, to the degree that evidence indicates that the project may provide water in an amount that exceeds current demand, the project would be growth-inducing. EIR/EIS Sections 2.3 through 2.5, and Appendix L, provide the Lead Agencies and members of the public with data on water demand and supply in the CalAm service area with which to assess the likelihood that the MPWSP will provide adequate water supply to replace existing Carmel River and Seaside Groundwater Basin (SGB) supplies that were reduced by State Water Board orders and the SGB adjudication. This will allow the provision of an appropriate, acceptable level of supply for the identified additional future customer needs that CalAm proposes to serve.

8.2.13.2 Demand Assumptions

Existing Annual Service Area Demand

Many comments objected to CalAm's estimate of existing annual demand, which is based on service area demand in 2010, stating that the estimate overstates existing demand and ignores the trend of decreasing demand since 2010. The use of 2010 service area demand data to represent existing annual demand is consistent with the California Department of Public Health's California Waterworks Standards,[1] discussed in EIR/EIS Section 2.3.2, Peak Demands. As described in Section 2.3.2, this regulation – and CPUC General Order 103-4 – requires that the water sources of public water systems of the size of CalAm's Monterey District service area have the capacity

1 California Code of Regulations Title 22, Division 4, Chapter 16, Section 64554.

to meet peak demands. Specifically, the regulations require that systems have the capacity to meet maximum (max) day demand and peak hour demand, and specifies that max day demand and peak hour demand are to be determined *based on the most recent ten years of operation* (emphasis added). Peak month demand represents the Monterey District's most critical challenge in meeting peak demand, as elevated demand in the peak month is more sustained, over multiple days, and needs to be considered as a factor in plant sizing (Svindland, 2013b). The trend that shows declining water use is considered. The 2010 service area demand data was used because it provides a higher, more conservative estimate of the local water use to better plan for potential future peak demands and for consistency with California Waterworks Standards and CPUC General Order 103-A. CalAm selected year 2010 to represent peak month demand of existing customers with the explicit expectation that demand would continue to decline, as stated in Draft EIR/EIS Section 2.3.2, and that by 2020, when the desalination plant was expected to be on line, 2010 demand would represent the maximum demand year for this 10-year period, and July 2010 would represent max month demand (Svindland, 2016, as cited in Section 2.3.2).

Comments Urge Lower Demand Number

Some commenters stated that service area demand in 2015 or 2016 was lower than in 2010 and various commenters recommend that demand in one of these years be used to represent service area demand for MPWSP planning; some pointed to the downward trend in water demand shown in EIR/EIS Table 2-2 as evidence that a downward trend in demand would continue. While a generally downward trend in water demand is expected to continue as permanent conservation measures continue to be implemented, demand in recent years has been influenced by two uncommon events: the deepest recession since the Great Depression, recovery from which has been unusually protracted (Federal Reserve Bank of Dallas, 2013); and a severe five-year drought. These events complicate the task of estimating service area demands under more "typical" conditions when the influence of these events is expected to subside.

As described in EIR/EIS Section 2.3, the economic recession that began in late 2007-early 2008 affected the Monterey Peninsula hospitality industry, reducing occupancy levels and visitation rates, and, consequently, reducing water demand at local visitor-serving businesses. The recession was global in scope and commonly recognized as the deepest since the Great Depression, with an unusually weak and prolonged recovery period (Federal Reserve Bank of Dallas, 2013; Fischer, 2014; Russell Sage Foundation et al., 2017). High unemployment and low consumer confidence lingered for years after it was officially declared to be over in mid-2009, with different geographic areas experiencing different rates and degrees of recovery. If lingering effects of the recession continued to depress water demand to some extent in recent years, demand in a fully recovered, robust economy could rebound above 2015 or 2016 demand. The drought was in progress during the last four years shown in Table 2-2 and the governor's declared statewide drought emergency was in effect in the last two years shown. Permanent measures to reduce water use, such as plumbing retrofits and landscaping changes, were implemented during this period. However, it is also likely that many people on the Monterey Peninsula, as throughout the state, made voluntary behavioral changes to reduce their water use during the drought – changes that a water manager cannot count on to be sustained at the same level of commitment in normal rainfall years or when restrictions imposed by the CDO are lifted. Under normal rainfall

conditions and without the CDO restrictions, year-to-year declines cannot be expected to be as dramatic as were achieved during the drought, and service area demand could increase to some degree compared to the later years of the drought. For example, urban water production statewide in May 2017[2] (following a wet winter after five years of severe drought) was somewhat higher than in May 2016 and residential per capita water use in May 2017 was somewhat higher in all hydrologic regions than in May 2016 (SWRCB, 2017). For this reason, it may be unwise to assume that the final years of a severe drought, such as 2015 or 2016, provide a reliable estimate of customer demand in non-drought years. In addition, as discussed above, use of 2010 to estimate peak month demand of existing customers ensures capacity to meet the peak need consistent with state waterworks regulations. The general downward trend in demand is expected to continue for some time and this expectation underlies the assumption that using 2010 demand would be consistent with state waterworks regulations regarding capacity to meet peak demands discussed above. That said, the incremental water use reductions achieved each year by conservation measures and programs cannot be expected to continue at the same rate indefinitely as programs and measures reach market saturation in a given service area, barring currently unforeseen technological breakthroughs. The rate of continuing reductions in water use can, therefore, be expected to slow over time and eventually level off.

Comments Urge Higher Demand Number

Some comments state that the demand estimates in the Draft EIR/EIS were too low, that demand estimates reflect current constraints on water use, and that the project should be sized to allow more "relaxed" conservation. Related comments stated that demand estimates need to reflect non-revenue water use and the need for Salinas Valley Groundwater Basin (SVGB) return water; that it was short-sighted not to size the plant to meet general plan buildout; and that minor changes to the EIR/EIS could address a plant sized to meet general plan buildout demand. While some relaxation in the behavioral changes people made during the drought can be expected, as noted in the discussion of 2015 and 2016 demand above, such changes are not expected to warrant a larger-capacity project. The experience of drought, changing weather patterns, and concern about effects of climate change have increased the recognition of the need for ongoing conservation efforts. For example, Governor Brown's April 2017 Executive Order B-40-17 terminating the January 2014 Drought State of Emergency also calls for "Making Conservation a Way of Life" and retains prohibitions on wasteful water use. MPWMD and CalAm are not expected to abandon or weaken water conservation programs that have been put in place since 1995 or the MPWMD's prohibition on water waste if the MPWSP were implemented. Demand described in the EIR/EIS is system demand (not water customer consumption) and, therefore, accounts for non-revenue water loss. Regarding SVGB return water, see the discussion under "Supply available for other use" below in Section 8.2.13.3 and Master Response 4. Regarding one commenter's opinion that the project should be sized to address general plan buildout, EIR/EIS Chapter 2, Section 2.3, describes the demand the project is proposed to meet, which would include some development under adopted general plans: development of legal lots of record represents development that would be anticipated in general plans. EIR/EIS Table 2.5 (Section 2.5) shows the amount of water

[2] The most recent month reported as of July 2017.

needed to meet future water demand associated with general plan buildout and in Table 6.3-8 (Section 6.3), the EIR/EIS growth inducement analysis compares the amount of project water that could be available for growth with the amount needed for general plan buildout. The amount of water that would be available to serve growth depends on the project's SVGB return water obligation. Note also that CalAm, the Monterey Peninsula Regional Water Authority representing Monterey Peninsula jurisdictions, the Coalition of Peninsula Businesses, and others agreed to the size of the MPWSP desalination plant in a proposed settlement agreement on plant sizing in 2013 (CalAm, et al. 2013).

Other Demands

Pebble Beach Entitlements

Several comments stated that the Draft EIR/EIS failed to adequately scrutinize the amount of water CalAm assumed for the Pebble Beach water entitlements and that existing customer demand does not include water to serve the Pebble Beach water entitlements. Other comments stated that the recycled water project that was the basis for these entitlements enabled the conservation of far more potable water than the amount represented by the entitlements, that CalAm has an obligation to serve the entitlements from whatever sources are currently available, and that the full entitlement amount represents an existing "irrevocable, divisible, binding entitlement to potable water, as a vested property right and interest" for use on and by the benefitted properties and should, therefore, be classified as existing demand. Related comments stated that because the Pebble Beach entitlements must be honored from existing supplies whether or not a new water project is built, water for the entitlements would not be growth inducing. Comments noted that this obligation has been recognized by the State Water Board and in written agreement between CalAm, the Pebble Beach Company and MPWMD, and that the proposed MPWSP would not change the effect of the Pebble Beach entitlements.

Draft EIR/EIS Section 2.3.3.1 explained that the MPWMD granted the Pebble Beach water entitlements to the Pebble Beach Company and two other fiscal sponsors for underwriting the development of a wastewater reclamation project that MPWMD estimates saves approximately 1,000 acre-feet per year (afy) of potable water. The Pebble Beach Company was granted a 380 afy entitlement. Draft EIR/EIS Section 2.3.3.1 also discussed how much of the original 380 afy entitlement had been used and the basis for concluding that 325 afy was a reasonable estimate of the remaining entitlements not reflected in recent system demand. The State Water Board recognizes that the wastewater project reduced demand on the Carmel River by more than the amount of the water entitlements, as some comments noted, and has stated that the 380 afy represented by the water entitlements is available to serve the Del Monte Forest properties when they are developed. The State Water Board also recognizes that during the CDO extension period (extended by Order 2016-0016 to December 31, 2021), increased diversions from the Carmel River by CalAm to satisfy the Pebble Beach entitlements would not be counted as part of CalAm's diversion limit but instead added to the adjusted base against which CalAm's compliance was measured. The properties developed using these entitlements also are not subject to the prohibition on new service connections contained in the State Water Board CDOs (Anton, 1998; SWRCB, 2009; SWRCB 2016). The commenters who questioned the inclusion of the

Pebble Beach entitlements as part of CalAm's service area demand provided no evidence or reason for excluding this legal obligation to serve water. The water entitlements constitute an existing commitment by MPWMD and obligation to serve by CalAm when the properties are developed, and therefore, are considered part of CalAm's existing demand. Therefore, EIR/EIS Section 2.3.1, Existing Service Area Demand, includes a new section, 2.3.1.3, Pebble Beach Entitlements. Compared to the Draft EIR/EIS, the Pebble Beach entitlements have been moved in the Final EIR/EIS from being part of the project water to a baseline condition because these entitlements represent demand that CalAm is obligated to serve whether or not the project is implemented. As such, the project would not remove an obstacle to growth of the properties served by this water entitlement and the project would not be considered to induce the growth of those lands.

Economic Recovery

Some comments asserted that the Draft EIR/EIS failed to adequately scrutinize the amount of water assumed within the proposed project to serve tourism rebound, that this CalAm estimate was inflated and unsupported, and that tourism has rebounded although water demand remains low, while another comment cited previous MPWMD testimony that CalAm's 500 afy estimate was reasonable. CalAm estimated that water demand at local hospitality-related businesses, which had been depressed due to the lingering effects of the recession that began in late 2007-early 2008, could increase by about 500 afy under a more robust, recovered economy. This estimate was included as part of future service area demand that the MPWSP (with other service area supplies) would need to serve. The Draft EIR/EIS growth inducement analysis (Section 6.3) conducted additional review of available commercial sector water consumption data and concluded that some degree of economic recovery had likely occurred and that additional demand at existing businesses under a fully recovered economy may be less than CalAm had estimated – closer to 250 afy than 500 afy. The Draft EIR/EIS described the 2016 economic study of travel impacts mentioned in some comments, which showed that transient occupancy tax receipts in Monterey County declined for several years following 2008, but by 2012 were greater than before the recession. While this study provides evidence that the hospitality industry in the county has recovered to some extent, the study does not support a direct comparison of tax receipts in different years because the tax receipt data were not adjusted for inflation; therefore, increased tax receipts in recent years likely reflect, to some extent, increases in lodging prices that have occurred since 2008, in addition to increased occupancy rates due to a recovering economy. Thus, that single study does not establish that the county's economy has fully recovered.

In response to a comment stating that economic rebound would affect demand in all commercial, industrial, and institutional sectors – not just restaurants and lodging – CalAm water consumption data for the industrial and public authority sectors were reviewed in addition to the commercial sector consumption data discussed in Draft EIR/EIS Section 6.3.5.1 and shown in Table 6.3-2. The data show that demand for the three sectors combined in years after the recession commenced is lower than pre-recession demand by a greater margin than a comparison of the commercial sector alone for the same time periods. For example, a comparison of demand in the four years before the recession started (2004 through 2007) with the four years after (2008 through 2011) shows that average annual commercial sector demand was 230 acre-feet (af) lower

than average annual demand in the four years before the recession started, whereas average annual demand for the three sectors combined was 600 af lower. Non-residential demand since 2012 has continued to decrease, thereby increasing the difference in demand compared to 2007 or other years before 2008, even though the economic study discussed above suggests that the economy had begun to recover, to some extent, by 2012. The lower demand in recent years is assumed to reflect responses to the drought at least as much – likely more – than lingering effects of the recession. Some post-drought rebound in demand is expected to occur, as discussed above under "Comments Urge Lower Demand Numbers," and available evidence has not established that the economy in CalAm's service area has fully recovered. However, non-residential demand in a fully recovered economy is not expected to return to pre-recession demand levels given permanent reductions in water consumption achieved by ongoing conservation programs since 2007. If somewhat more supply were needed for economic recovery than was assumed in the Draft EIR/EIS growth inducement analysis, taking into account economic rebound in the industrial and public authority sectors in addition to the commercial sector, this would not change the Draft EIR/EIS conclusions regarding the project's growth-inducing impact but could reduce somewhat the amount of water assumed to be available for growth.

Legal Lots of Record

Comments stated that the Draft EIR/EIS failed to adequately scrutinize the amount of water that CalAm has assumed is needed as part of the project to serve legal lots that do not now use water; that development has occurred since MPMWD's preliminary reports were prepared in the early 2000s estimating the water needed for these lots; 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. Draft EIR/EIS Section 6.3.5.1 described the basis for CalAm's estimate of demand associated with vacant legal lots of record and summarized available information about this estimate. This included information on the preliminary studies that had been prepared for MPWMD and MPWMD's testimony during MPWSP proceedings that, based on MPWMD's assessment of available data, CalAm may have underestimated demand associated with lots of record. As the EIR/EIS states, one objection MPWMD had with one of the vacant lot studies (which it had commissioned but did not adopt) was that the demand estimate did not include demand associated with vacant lots on improved parcels in unincorporated areas. EIR/EIS Section 6.3.5.1 has been revised to include updated information from MPWMD (in Draft EIR/EIS comments, summarized above) that some lots have been developed and some vacant lots on improved parcels may never be developed. Due in part to the limited data on this component of project demand, Draft EIR/EIS Section 6.3.5.3 and Table 6.3-8 compared the water supply that would be provided by the project to serve legal lots of record and other new development with the estimate of water supply needed to serve development under adopted general plans in CalAm's service territory, and concluded that the amount of water supply provided by the project was consistent with (and less than) the estimate of water supply that would be needed to support general plan buildout.

Other Approaches to Estimating Future Water Demands

Some comments stated that the Draft EIR/EIS failed to conduct a per capita demand analysis or similar analysis based on water use per dwelling unit to determine the level of growth that would be supported by the proposed project. Estimating demand based on per capita water use is one of

several methods to estimate future water demand. The EIR/EIS compared the water that would be provided for additional development with the estimate of future water needs prepared by MPWMD, as described in Section 6.3.5.3 and shown in Table 6.3-8. The approach MPWMD took in 2006 to estimate future demand involved close consultation with service area jurisdictions and was based on anticipated land use development in the jurisdictions consistent with the respective adopted general plans. The analysis factored in water use based on different types of non-residential land uses, and recognized differences in water use in unincorporated county residences compared to city residences due to larger lot sizes, among other factors. One could reason this approach is no less valid than one based on estimated per capita or per dwelling unit water use, and arguably provides a more nuanced assessment of future water needs accounting for different land use types. The updates to the MPWMD estimates discussed in EIR/EIS Section 2.5.3.4 and shown in detail in EIR/EIS Table 2-5 were provided after the moratorium on new water connections was established in 2009. Therefore, little if any of this projected future demand will have been realized (became actual water use that would be reflected in existing demand) and the MPWMD estimates as revised are assumed to continue to reasonably reflect future water supply needs in CalAm's service area. The estimate of future water demand used in the EIR/EIS is appropriate and adequate because it is based on existing demand (for the substantial portion of the MPWSP that would replace water supplies no longer available to CalAm due to legal decisions discussed in EIR/EIS Section 2.2) and was evaluated with reference to the analysis of future water needs that was prepared by MPWMD.

Summary of Demand Assumption Revisions

For the reasons discussed above, the overall demand of 14,275 afy shown in Draft EIR/EIS Tables 2-3, 6.3-1, and 6.3-3 has not changed. However, the breakdown of identified existing and anticipated future demands shown in Table 6.3-3 has been revised: existing demand has been revised to include the 325 afy associated with existing Pebble Beach water entitlements, thereby increasing the estimate of existing demand from the 12,520 afy shown in the Draft EIR/EIS to 12,845 afy in the Final EIR/EIS. Correspondingly, because demand associated with anticipated future development shown in Table 6.3-3 no longer includes the Pebble Beach entitlements, it has been reduced by 325 afy, from 1,755 afy in the Draft EIR/EIS to 1,430 afy in the Final EIR/EIS.

8.2.13.3 Supply Assumptions

This section responds to comments concerning Draft EIR/EIS assumptions regarding available water supply. As discussed in the EIR/EIS and below, data concerning supply (as with data regarding demand) were derived primarily from estimates provided by CalAm and MPWMD.

ASR System

Several comments stated that the amount of water supply provided by the Aquifer Storage and Recovery (ASR) project assumed in the EIR/EIS was too low – that MPWMD assumed a higher yield from the ASR project and that a yield of 1,920 afy should be assumed rather than 1,300 afy assumed in the EIR/EIS. MPWMD commented that it has recently revised its estimate of the average annual yield from the ASR project. Draft EIR/EIS Section 2.4.3 explained that although the EIR prepared for the Phase I and Phase II ASR projects estimated the combined yield of the two phases would be 1,920 afy, diversions to the ASR system are contingent on maintaining

minimum daily instream flows in the Carmel River. Precipitation and streamflow can vary substantially from year to year; due to these uncertainties and constraints on potential diversions, the estimated long-term average annual ASR system yield of 1,300 afy assumed for the purpose of MPWSP water supply planning was considered reasonable to account for these fluctuations. MPWMD's updated estimate of the ASR project yield indicated that the weighted average yield (accounting for the statistical frequency of different water year types) of the Phase 1 and 2 ASR projects with the recently approved Monterey Pipeline is about 1,600 afy (see response to comment MPWMD-14). While CalAm's 1,300 afy estimate of long term average yield of the ASR project is more conservative than MPWMD's 1,600 afy estimate, CalAm's estimate is not unreasonable given the low yields during drier years – which many expect to be more frequent in the future due to climate change. Draft EIR/EIS Section 2.4.3 reported the substantial variation of Carmel River water available for ASR storage in recent years: "In water year 2011, which was wetter than average, 1,117 af of Carmel River water was injected into the groundwater basin. In water year 2012, 132 af was injected; in 2013, 295 af was injected, in 2014, no Carmel River water was injected, and in 2015, 215 af was injected."

Table 13 Water Rights

One commenter stated that the EIR/EIS should include water supply available under CalAm's Table 13 water rights, that Table 13 water supply should not be excluded on the basis that it is only available in wet years, and that it is not limited to wet years because it can be stored through the ASR system. As discussed in Draft EIR/EIS Section 2.4.6.1, CalAm's Table 13 water rights are subject to river flow criteria and other conditions, and Table 13 water must be used in the Carmel River watershed. That is, water available under this right cannot be diverted to storage in the ASR system, which is outside the Carmel River watershed. While Table 13 water is a useful supplement to CalAm supplies when it is available, it is less reliable than supply available via CalAm's other Carmel River rights because Table 13 water would not be available in dry years. Due to the variability of this supply, it is not appropriate to include it as a reliable element in CalAm's yearly supply portfolio. For example, as stated in Draft EIR/EIS Section 2.4.6.1, CalAm's combined diversions of Carmel River water under CalAm's Table 13 and ASR water rights were less than 300 afy in water year 2015. Regarding the effect of Table 13 water on desalination plant operations, in the proposed sizing settlement agreement signed by CalAm, the Monterey Peninsula Regional Water Authority, MPWMD, and others in 2013, CalAm agreed that if Table 13 water is available, "CalAm shall be able to lower the operating level of the desalination plant or use the Table 13 rights first in the year to allow other existing rights to be used later in the year for emergencies" (CalAm et al., 2013).

Sand City Desalination Plant

One commenter stated that more water is available to CalAm from the Sand City desalination plant than the 94 afy assumed for the project and noted that the description of the No Project Alternative in Draft EIR/EIS Section 5.4.2.3 assumed that 230 afy would be available from the Sand City plant. As discussed in EIR/EIS Section 2.4.4, CalAm's long term supply from the Sand City desalination plant water is 94 afy, and is the amount assumed in EIR/EIS Chapter 2 and Section 6.3. More is available in the near term – until Sand City needs the full 206 afy balance of

the plant's 300 afy production for development in Sand City. The timing and amount of availability of water for CalAm in excess of 94 afy is not under the control of CalAm, but is solely a function of growth in Sand City. To characterize CalAm's supply portfolio under the No Project Alternative when CalAm's unlawful Carmel River diversions end, pursuant to the 2016 CDO, 230 afy was assumed to be available from the Sand City plant. This is a near-term estimate of supply based on the amount assumed in the State Water Board's 2009 CDO for year 2016-2017, the last year for which the 2009 CDO provided a quantified estimate of supply available to CalAm from the Sand City plant.[3] The Final EIR/EIS Section 5.4.3.2 discussion under "Supply Shortages" has been revised to clarify that supply available to CalAm from the Sand City desalination plant under the No Project Alternative would eventually be reduced to 94 afy, as assumed for the MPWSP. Alternative supply and scenarios presented in Appendix L and summarized below in Section 8.2.13.5 include scenarios that assume 230 afy would be provided by the Sand City desalination plant.

GWR Supply

One commenter stated that the Draft EIR/EIS analysis underestimated the supply that would be available to CalAm from the GWR project and that 3,700 afy would be available to CalAm rather than the 3,500 afy assumed in the EIR/EIS. The amount of GWR supply that the EIR/EIS assumes would be available to CalAm is based on GWR project information. MRWPCA staff confirmed in September 2017 that an average of 3,500 afy of GWR water would be provided to CalAm. The GWR project also includes a drought component, which entails banking 200 afy in the groundwater basin for agricultural use during drought periods. That is, of a total of 3,700 acre-feet that would be injected into the groundwater basin each year, on average, 200 afy would be banked and withdrawn when needed during drought periods to provide additional supply to Salinas Valley growers (Imamura, 2017).

At the request of the CPUC, MRWPCA submitted three hypothetical scenarios to expand the GWR Project and produce more than 3,500 acre feet of purified recycled water annually for (CalAm's) Monterey District service area. In its testimony, MRWPCA emphasized that these scenarios are speculative; at this time, MRWPCA has no plans or proposals to expand the PWM Project beyond the current plans for expansion to 5 mgd (million gallons per day). As such, these scenarios are not assessed in this Final EIR/EIS. See Testimony at ohttp://docs.cpuc.ca.gov/PublishedDocs/SupDoc/A1204019/990/197582477.pdf.

Supply for Peak Demands

One commenter suggested that, similar to electric utilities, CalAm's Monterey District would require a "reserve margin," which the commenter defined as "a measure of the amount of electricity imports and in-state generation capacity available over average peak demand conditions" and asserted that the MPWSP project objective "to develop a reliable water supply for the CalAm Monterey District service area, accounting for peak month demand of existing

[3] The 2016 CDO does not quantify an estimate of near term supply available to CalAm from the Sand City plant. The 2016 CDO states that the Sand City desalination plant provides CalAm a minimum of 94 afy and the balance of the plant's capacity not needed for expanded use in Sand City.

customers" is a type of "planning or month-ahead reserve margin requirement" to meet demand of existing customers. Related comments suggested that a reserve margin of 10 percent applied to 2016 annual demand would be adequate to meet system capacity needs. Like any water supplier, CalAm needs adequate capacity to meet peak demands, as a practical matter and as required by state Waterworks Standards discussed above in Section 8.2.13.2 and EIR/EIS Section 2.3.2. Thus, the size of the MPWSP is logically tied to these peak demands. As noted above under "Existing Annual Service Area Demand," peak month demand is the peak demand that challenges system capacity in CalAm's Monterey District, and state Waterworks Standards require the system to have the capacity to meet peak demands considering the most recent ten years of operation. While a commenter suggested that a 10 percent margin should be adequate to meet CalAm's capacity requirements, monthly demand varies by much more than 10 percent. **Table 8.2.13-1** shows the variation in average monthly production demand anticipated for the project in a typical year. "System production demand" includes CalAm service area demand assumed for the proposed project and SVGB return water. The production demand shown is based on a 9.6 mgd desalination plant with an assumed 6 percent SVGB return water obligation. As shown, demand in the peak month, July, is roughly 35 percent greater than average monthly demand for the year overall, and demand in December is roughly 30 percent lower than the average monthly demand for the year. The comments raising the topic of a reserve margin defined it as being an amount "over average peak demand" but did not indicate what the "average peak demand" was assumed to be for the CalAm system. Comments subsequently implied that the reserve margin was an amount above average demand, and failed to demonstrate how the assumed 10 percent reserve margin could meet CalAm's peak demand capacity requirements. Regarding the assumption that 2016 demand accurately represents existing average annual demand, see the discussion of "Comments Urge Lower Demand Numbers" above in Section 8.2.13.2.

"Supply available for other use"

Several comments stated that water supply shown in Draft EIR/EIS Table 2-4 as "available for other uses" is surplus, should be subtracted from the asserted demand for this project, and shows that a smaller desalination plant would be feasible. The water shown in EIR/EIS Table 2-4 as "supply available for other use" is the volume of water available for other uses after service area demand is subtracted from anticipated supplies. Much of this water would be used to meet CalAm's SVGB return water obligation. SVGB return water is discussed in Section 2.5.1 and Section 2.6. See also Table 6.3-4 in Chapter 6, which shows supplies, demands, and two estimates of SVGB return water. Thus, supply shown as available for other use after service area demand is met is not necessarily surplus that would allow for a reduction in the size of the proposed project. Refer to Master Response 4, The Agency Act and Return Water. As discussed under "Conclusion: MPWSP Water Service Capacity" in EIR/EIS Section 6.3.5.1, there could be surplus supply after meeting the return water obligation – or a deficit – depending on the actual amount of the return water obligation. As that discussion states, supply not needed for other uses would be available to support new development. In addition, as indicated in the notes in Draft EIR/EIS Table 2-4, the estimates of annual water supply provided by desalination plant production show a direct unit conversion of the rated capacity of a 9.6 mgd and a 6.4 mgd plant, and thus reflect operation at 100 percent capacity. This is greater than industrial facilities are typically recommended to operate. If operating the plant at or near full production capacity

TABLE 8.2.13-1
TYPICAL MONTHLY SYSTEM PRODUCTION DEMAND - PROPOSED MPWSP

	January	February	March	April	May	June	July	August	September	October	November	December	Monthly Average
MPWSP System Production Demand (mgd)[a]	10.0	10.2	10.9	11.6	16.4	18.6	19.1	18.8	18.6	14.7	11.7	9.6	14.2
Percent of Average Monthly Demand[b]	70%	72%	77%	82%	116%	131%	134%	132%	131%	103%	83%	68%	100%

NOTES:
mgd = million gallons per day

[a] System production demand includes existing annual service area demand and additional demands the project is proposed to meet (Pebble Beach water entitlements, demand associated with hospitality industry economic recovery, and legal lots of record, shown in Draft EIR/EIS Chapter 2 Table 2-3), and Salinas Valley Groundwater Basin return water assuming a 6 percent return water obligation for a 9.6 mgd desalination plant.

[b] This row compares the typical demand for the month with annual average monthly demand to show the month-to-month variation in system production demand over the course of a year. For example, in July, demand is about 35 percent higher than the annual average (134%-100%), and in December, demand is about 30 percent lower than the annual average (100%-68%).

SOURCE: CalAm, 2016; ESA, 2017.

provided more water than needed to meet service area demand and the return water obligation, the plant could be operated at a lower capacity. As discussed above, the plant is sized to provide the flexibility needed to meet peak month demands.

Supply Provided by the Desalination Plant

One commenter asserted that the Draft EIR/EIS provided insufficient information on how CalAm's multiple water supply sources will be operated together to ensure supplies were optimized and another commenter expressed concern about high operating capacity assumed for the plant. As shown in EIR/EIS Table 3-7, the proposed desalination plant is expected to operate at a relatively constant rate throughout the year. As described in EIR/EIS Section 3.4.2, during wet periods, CalAm would store desalinated water supply in the SGB via the ASR system, and the stored desalinated product water as well as stored Carmel River supplies would typically be extracted during summer months and periods of peak demand. To illustrate how the plant would be operated in conjunction with CalAm's other supplies, **Table 8.2.13-2** shows an example of typical monthly operations for the proposed 9.6 mgd desalination plant assuming a 6 percent SVGB return water obligation.[4] The EIR/EIS assumption that the plant would operate primarily at or near full production capacity (e.g., at 95 to 100 percent most months in the monthly operations table below and at 100 percent capacity in EIR/EIS Tables 2-4 and 6.3-4) is conservative from the perspective of evaluating the environmental impacts of plant operations and indirect effects of water supply the project would provide, but operating at 95 to 100 percent capacity is a higher operating capacity than would likely be considered practical. Most industrial facilities do not operate this close to 100 percent capacity.[5] Should supplies be somewhat greater than demand, or longer-term demand decline due to conservation programs, the plant could be operated at a somewhat lower capacity. Indeed, although MPWMD has not determined the allocation of water that would be provided by the project, MPWMD stated in a comment on the Draft EIR/EIS that it may not allocate all of the water produced by the project. One reason MPWMD may choose not to allocate the full amount that could be produced would be to allow the plant to operate at a lower capacity (see comment MPWMD-21). Absent assurance that the plant would be operated at a lower level, the EIR/EIS analysis assumed that the plant would operate at or near full capacity. The monthly operations shown in Table 8.2.13-2 assume normal rainfall conditions. In dry years, less water may be available from the Carmel River, e.g., for diversion to the ASR system. In extended dry periods, such as the recent drought, even water that may have previously been injected into the ASR system over a period years[6] could be depleted. In such periods, supplies provided by the desalination plant would be even more critical.

4 This table is based on a monthly operations table showing a 7 percent SVGB return water obligation that was prepared by CalAm. The table was revised for this example to show a 6% return obligation, for consistency with the mid-range return obligation percentage considered in EIR/EIS groundwater modeling, by reducing the amount of return water delivered from May to October to CSIP.

5 For example, according to the U.S. Census Bureau's quarterly surveys of plant capacity utilization rate, U.S. domestic manufacturing plants on average used 71 to 73 percent of their full production capacity in 2016, although a few industries operated above 90 to 95 percent in some or all quarters. Reverse osmosis desalination was not listed as a category of industrial facilities in the survey (U.S. Census Bureau, 2017).

6 As noted in the ASR discussion above, it is assumed when CalAm has a replacement supply that enables it to cease unlawful diversions that it will not be required to use stored ASR water in the same year it is injected.

TABLE 8.2.13-2
AVERAGE DAILY SUPPLY AND DEMAND ASSUMING 9.6 MGD DESALINATION PLANT, BY MONTH[a]

	MGD												Acre-Feet
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual[b]
Average Demand	9.5	9.7	10.3	10.9	14.1	16.1	16.7	16.4	16.1	13.0	11.1	9.1	14,300
Salinas Valley Return – Castroville[c]	0.5	0.5	0.6	0.7	0.8	0.9	0.9	0.8	0.8	0.8	0.7	0.5	800
Salinas Valley Return – CSIP[c]	0.0	0.0	0.0	0.0	1.5	1.6	1.6	1.6	1.6	0.9	0.0	0.0	820
Total System Production Demand	**10.0**	**10.2**	**10.9**	**11.6**	**16.4**	**18.6**	**19.1**	**18.8**	**18.6**	**14.7**	**11.7**	**9.6**	**15,920**
Supplies													
Carmel River to Distribution System	5.7	5.7	5.7	5.2	2.2	1.0	1.0	1.0	1.0	1.0	1.0	5.7	3,366
Seaside GW Supply to Distribution System	0.0	0.0	0.0	0.0	1.1	1.2	1.3	1.3	1.1	1.1	1.1	0.0	771
Sand City Desalinated Supplies to Distribution System	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	94
ASR – GWR Supplies Extracted from Seaside GW Basin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
ASR – Carmel River Supplies Extracted from Seaside GW Basin	0.0	0.0	0.0	0.6	1.6	2.3	2.5	2.5	2.3	1.4	1.0	0.0	1,332
ASR – Desalinated Supplies Extracted from Seaside GW Basin	0.0	0.0	0.0	0.0	2.8	5.0	5.3	4.9	5.1	1.9	0.0	0.0	2,343
MPWSP Desalinated Supplies to Distribution System	3.8	4.0	4.6	5.1	6.3	6.5	6.5	6.6	6.5	7.5	7.9	3.3	6,394
Total Supplies to Distribution System	**9.5**	**9.8**	**10.3**	**10.9**	**14.1**	**16.1**	**16.7**	**16.4**	**16.1**	**13.0**	**11.1**	**9.1**	**14,300**
Total Supplies to Distribution System and SVGB	**10.0**	**10.2**	**10.9**	**11.6**	**16.4**	**18.6**	**19.1**	**18.8**	**18.6**	**14.6**	**11.7**	**9.6**	**15,914**
Difference: Total Supplies minus Total Production Demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.1	0.0	0.0	0.0

TABLE 8.2.13-2 (Continued)
AVERAGE DAILY SUPPLY AND DEMAND ASSUMING 9.6 MGD DESALINATION PLANT, BY MONTH[a]

	mgd												Acre-Feet
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual[a]
Supply Provided by MPWSP Desalination Plant													
Desalinated Supplies to Distribution System	3.8	4.0	4.6	5.1	6.3	6.5	6.5	6.6	6.5	7.5	7.9	3.3	6,394
Desalinated Supplies to ASR Injection	5.4	5.0	4.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	1.1	5.8	2,347
Desalinated Supplies to Salinas Valley Return – Castroville	0.5	0.5	0.6	0.7	0.8	0.9	0.9	0.8	0.8	0.8	0.7	0.5	800
Desalinated Supplies to Salinas Valley Return – CSIP	0.0	0.0	0.0	0.0	1.5	1.6	1.6	1.6	1.6	0.9	0.0	0.0	820
Total Desalinated Supplies	**9.6**	**9.5**	**9.6**	**9.3**	**8.6**	**9.0**	**8.9**	**9.0**	**9.0**	**9.2**	**9.6**	**9.6**	**10,361**
Supply Extracted from Seaside Groundwater Basin via ASR System													
GWR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Carmel River	0.0	0.0	0.0	0.6	1.6	2.3	2.5	2.5	2.3	1.4	1.0	0.0	1,332
MPWSP Desalinated Supplies	0.0	0.0	0.0	0.0	2.8	5.0	5.3	4.9	5.1	1.9	0.0	0.0	2,343
Total Extraction	**0.0**	**0.0**	**0.0**	**0.6**	**4.4**	**7.3**	**7.8**	**7.4**	**7.4**	**3.3**	**1.0**	**0.0**	**3,675**

NOTES: MGD = million gallons per day
Components may not sum to the totals shown due to rounding.

[a] Based on MPWSP supply and demand assumptions: average demand of 14,275 afy, 94 afy supply from the Sand City desalination plant, and 1,300 afy from the ASR system.
[b] Annual totals in acre-feet/year are calculated by converting the estimated monthly averages in mgd shown here, provided for information purposes. 1 mgd = 1,120 afy
[c] Assumes a 6 percent Salinas Valley Groundwater Basin return water obligation.

SOURCE: CalAm, 2016; ESA, 2017.

Water Available after Seaside Groundwater Basin Replenishment

For the first 25 years of operations, CalAm would pump 700 afy less than its adjudicated right from the SGB to provide "in-lieu" replenishment of water it has pumped in excess of its adjudicated rights since that basin was adjudicated. At the end of the 25-year period, CalAm would have access to its full 1,474 afy adjudicated right. The additional 700 afy that would then be available to CalAm could be used to offset loss of capacity at Los Padres Reservoir, as stated in comment MPWMD-17; to reduce the operating level of the desalination plant; or to serve additional growth within the CalAm service area, as stated in "Conclusion: MPWSP Water Service Capacity" in EIR/EIS Section 6.3.5.1. Added to the supply available for future development assuming either 6 or 12 percent SVGB return obligation, shown in Draft EIR/EIS Table 6.3-8, this would still be less than the revised MPWMD estimate of future supply needs. If no water is needed to be returned to the SVGB, supplies with the additional 700 afy from the SGB that would be available for future development would total 4,149 afy. This **would exceed the amount of water needed for growth** under adopted general plans based on the revised MPWMD estimate of future supply needs (3,526 afy) shown in Draft EIR/EIS Table 6.3-8. Supply available for future development would exceed this estimate of future supply needs by 623 afy, which represents 2.3 percent of the source water needed for a 9.6 mgd plant (assumed to be 24.1 mgd, or 26,990 afy). Therefore, if the SVGB return water obligation turned out to be an amount less than 2.3 percent, the amount of water available after the Seaside Basin replenishment period would change the Draft EIR/EIS conclusion regarding the consistency of the project with planned growth and thus the project's growth inducing impact. However, as explained in Master Response 4, Section 8.2.4.3 (see also EIR/EIS Appendix E3), the actual annual volume of return water could be 10 percent in the first few months of project pumping and would be no more than 5 percent within 5 years of project pumping. Therefore, based on current available information, the Draft EIR/EIS conclusion – that the supply provided by the project would be consistent with growth anticipated in jurisdictions' adopted general plans – remains valid.

Summary of Supply Assumptions

For the reasons discussed above, the amount of water supply provided by the project and CalAm's other supply sources shown in Draft EIR/EIS Table 2-4 has not changed. Based on current groundwater investigations, the SVGB return water obligation would be about 5 percent within 5 years and therefore, Draft EIR/EIS conclusion about the consistency of water supply provided by the project with water needed for growth under adopted general plans would not change.

8.2.13.4 Growth Inducement

Water Available for Growth

Comments claimed that demand is overestimated and available supply underestimated, and therefore, the project would provide more water than needed, inducing more growth than identified in the Draft EIR/EIS. Some comments asserted that because demand has been decreasing, the project would result in more water than the analysis assumed for new development, and that the amount of water available for growth would exceed water needed for general plan buildout in the

service area. Related comments asserted that the EIR/EIS approach of looking at growth projections and buildout in general plan EIRs is not appropriate because the general plans and their environmental documents are outdated and baseline conditions have changed. Sections 8.2.13.2 and 8.2.13.3, above, address comments concerning the EIR/EIS demand and supply assumptions and document why they remain reasonable – and, consequently, why the quantity of water assumed to be available to serve additional growth is also reasonable. As discussed in EIR/EIS Section 6.3.2.1, a jurisdiction's general plan is its comprehensive, long-term plan for physical development, including the general distribution, location, and extent of land uses, and recommended standards of population density and building intensity. Consequently, service area jurisdictions' adopted general plans provide an appropriate indication of the development anticipated in CalAm's service area. The comparison in EIR/EIS Table 6.3-8 of water supply available for future development provided by the project and CalAm's other supply sources with future water supply needs is based on the estimate of future water needs prepared by MPWMD in 2006, in consultation with representatives of service area jurisdictions. As described in Section 6.3.5.3, the jurisdictions provided estimates of anticipated development at the time, consistent with their adopted plans. All of the subsequent updates of the 2006 estimates, which are shown in Draft EIR/EIS Table 2-5, were provided since 2009, when the moratorium on new water connections was in effect. Therefore, the MPWMD estimate of future water supply needs, as revised, remains a reasonable point of comparison for growth that would be supported by project water supply. The Draft EIR/EIS analysis confirmed that the project water supply available to support new development would be consistent with that estimate of future water needs and no change has been made to the EIR/EIS.

One commenter asserted that the EIR/EIS assumption that project water not needed to meet existing demand potentially could be used for any purpose was inconsistent with stated project objectives and could lead to the need for another water supply project in the future with the same objectives – serving lots of record, Pebble Beach entitlements, and tourism demand – if the MPWSP water supply was not reserved for the stated project objectives. The commenter stated that the EIR/EIS should include mitigation to limit use of project water to the stated purposes, and if the CPUC does not have authority to impose such mitigation, the EIR/EIS should be revised to identify this as a potentially significant impact. CalAm is responsible for providing water within its service territory. The MPWMD – not CalAm, the CPUC or MBNMS – is responsible for allocating water supply within CalAm's service territory (see EIR/EIS Section 2.5.4), but has not yet prepared an allocation for the proposed MPWSP supply. Note that comment MPWMD-21 presents some options that the MPWMD would consider in the allocation process, including reserving some water for lots of record, economic recovery, and Pebble Beach entitlements. The "impact" suggested by this commenter would flow from the inability of all parties to make water available per the project objectives. This is speculative and also not reasonably foreseeable given that water for Pebble Beach is based on established entitlements, and especially given the MPWMD's comments about allocation. In the absence of definitive information about how MPWMD would allocate the proposed water supply, and given that CalAm and the Lead Agencies cannot dictate how project water is used, the EIR/EIS properly discloses the potential that jurisdictions that are allocated project water would be able to use it for purposes other than those underlying CalAm's project objectives. EIR/EIS Section 6.3.6 identifies the project's growth inducing impact as significant and unavoidable.

Impacts of Growth

Comments regarding growth impacts stated that the Draft EIR/EIS analysis cannot avoid or ignore the impacts of growth induced by the project on the theory that the growth may have been included in the analysis of various general plans; that induced growth would contribute to cumulative GHG emissions and global climate change; and that the impacts of growth induced by cumulative water supply projects were not adequately described or analyzed. Draft EIR/EIS Section 6.3 acknowledges that the project would remove an obstacle to growth by removing, to a degree, water supply limitations in CalAm's service area. The analysis identifies the impacts of growth that the project would support. The impacts of planned growth that would be supported, in part, by the project have been identified in the general plan CEQA documents of service area jurisdictions; as discussed in EIR/EIS Section 6.3.6, some of the identified indirect impacts of growth are significant and unavoidable; others are significant but can be mitigated. These are the impacts to which the project would indirectly contribute by providing water supply, and are the basis for the determination that the project's growth inducing impact would be significant and unavoidable. Section 6.3.6 and Table 6.3-9 summarized the impacts of this growth. Draft EIR/EIS Appendix J2 provided a more detailed summary of the impacts and the mitigation measures identified in the general plan CEQA documents to mitigate the effects of that growth. Table 6.3-9 identified 'contribution to cumulative greenhouse gas emissions and global climate change' as one of the significant unavoidable impacts associated with growth supported by the project. In addition, the EIR/EIS growth inducement analysis states that although some of the general plan CEQA documents of service area jurisdictions were prepared before passage of the California Global Warming Solutions Act of 2006, the project was indeed expected to indirectly contribute to a significant and unavoidable increase in greenhouse gas emissions as a result of growth supported by project water supply; see EIR/EIS Section 6.3.6. The general plans and their respective CEQA documents are not unrelated to the project water supply, as one comment suggested. Project water not needed as Carmel River and SGB replacement supply to meet existing demand would be allocated to jurisdictions or reserved by MPWMD. Decisions relating to project water that is allocated to jurisdictions would be the responsibility of the respective jurisdictions and subject to their land use plans, policies and regulations, chief among which typically is the general plan. Comments to the effect that the analysis "wrote-off" growth-related impacts as an obligation of the municipal planning process may misunderstand Section 6.3.6.2, Authority to Mitigate Effects of Growth. As discussed above, the Draft EIR/EIS identified growth inducement as a significant and unavoidable impact of the proposed project. However, as stated in section 6.3.6.2, the CPUC, MBNMS, and CalAm do not have the authority to approve, deny, or impose mitigation measures upon land uses that may rely on project water for their development. Urban growth typically results in many common impacts – those impacts are described and disclosed for the MPWSP in Section 6.3.6. Multiple water projects in the region would increase growth in the region, as discussed in Draft EIR/EIS Section 6.3.7. The cumulative analysis accurately concludes that the effect of growth induced by cumulative water projects would be to increase the severity of the impacts and expand the area that would be affected by these impacts.

8.2.13.5 Alternative Supply and Demand Assumptions

Questions have been raised as to whether the project may or may not be 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. In order to test out that possibility, Appendix L was prepared for informational purposes only (i.e., without change to the assumptions in the EIR/EIS, as addressed above throughout this Master Response) to consider the results of using different supply and demand numbers. The primary consideration is whether facts exist to support a smaller desalination plant (e.g., having one less reverse osmosis [RO] unit) such that either a smaller plant or a phased plant could be approved for the 9.6 mgd project or the 6.4 mgd Alternative 5a. The results of that sensitivity analysis could inform and affect the ultimate project decision.

The first scenario considered in Appendix L is based on the following demand assumptions:

- Demand in 2013 (rather than 2010), the year before the drought emergency was declared, represented existing annual demand of 11,360 afy rather than 12,270 afy
- The same amount of water would be needed to serve Pebble Beach entitlements as assumed in the EIR/EIS (325 afy)
- Economic recovery of the tourism industry would require half the supply shown in EIR/EIS Table 2-3 for this demand component (250 afy rather than 500 afy)
- Development of lots of record would require half the supply shown in EIR/EIS Table 2-3 for this demand component (590 afy rather than 1,180 afy)

Together these assumptions would thus reduce overall service area demand to 12,521 afy, compared to the 14,275 afy assumed for the project.

These demand assumptions were paired with three different ASR supply assumptions and two different Sand City desalination supply assumptions, shown below, to create six variations of Scenario 1, Scenarios 1a through 1f.

- ASR supply of 0 (during a drought), 1300 afy (as assumed in the EIR/EIS), or 1,600 afy (as currently estimated by MPWMD)
- Sand City desalination plant supply of 94 afy (CalAm's long term supply assumed for the MPWSP) or 230 afy (CalAm's near-term supply assumed for the No Project Alternative)

Under Scenario 1, assuming that the ASR system provided at least as much supply as assumed in the Draft EIR/EIS (i.e., 1,300 or 1,600 afy), the plant size could be reduced by one 1.6 mgd RO unit. This would reduce the plant size from 9.6 to 8.0 mgd for the proposed project or from 6.4 to 4.8 mgd for Alternative 5a. However, in a drought when little or no supply was available from the ASR system, there would be insufficient supply to meet assumed demands if the plants were one RO unit smaller. Based on the above demand and supply assumptions that would allow for elimination of an RO unit, if a unit were *not* eliminated, the amount of supply that could be provided in excess of demand would still be within the amount of water needed for growth under adopted general plans discussed in the Draft EIR/EIS. Therefore, these assumptions would not change the Draft EIR/EIS conclusions about the project's growth inducing impact. Moreover, the

recent severe, five-year drought demonstrated that it is not reasonable to assume that there would never be drought conditions that could deplete ASR reserves and prevent new ASR supplies being diverted from the Carmel River for storage and use. Consequently, changes in plant sizing based on scenarios that assume the availability of adequate ASR supplies would need to be considered carefully.

Scenario 2 considered in Appendix L is based on the following assumptions:

- Demand in 2015 (rather than 2010), well into the recent drought, represented existing annual demand of 9,545 afy rather than 12,270 afy
- The same assumptions regarding the other demand components described above for Scenario 1 (Pebble Beach entitlements = 325 afy, economic recovery demand = 250 afy, and lots of record demand = 250 afy)
- The same assumptions regarding ASR and Sand City supply described above for Scenario 1 (ASR supply = 0, 1,300 afy, or 1,600 afy; Sand City supply = 94 or 230 afy)

These demand and supply assumptions were combined to create six variations, Scenarios 2a through 2f.

Under Scenario 2, the plant size could be reduced by one RO unit even in drought conditions when no water was available from the ASR system. Assuming the availability of ASR system supplies, i.e., non-drought conditions, plant size could be reduced by two RO units – from 9.6 to 6.4 mgd for the proposed project or from 6.4 to 3.2 mgd for Alternative 5a. However, in a drought when little or no supply was available from the ASR system, there would be insufficient supply to meet assumed demands if the plant was two RO units smaller. If the 2015 demand and supply assumptions that include 1,300 or 1,600 afy from the ASR system (i.e., those that allow for elimination of two units) were assumed to be correct, but the proposed plant size was *not* reduced by at least one unit, the amount of supply that could be provided above demand **would exceed the amount of water needed for growth under adopted general plans described in the Draft EIR/EIS. This would change the Draft EIR/EIS conclusion regarding the consistency of the project with planned growth and thus the project's growth inducing impact.** However, as noted above regarding Scenario 1, the recent drought has shown that it is not reasonable to assume there will never be drought conditions that could deplete ASR reserves and eliminate this as a supply source in some years. Given that development under general plan buildout would require adequate supply in all water year types, including droughts, the amount of supply available for additional development when no water was available from the ASR system is therefore, a more reasonable volume with which to compare with the amount of water needed for general plan buildout. When ASR supply is not available, the amount of water that would be provided in excess of demand under Scenario 2 is within the amount of water needed for growth under adopted general plans discussed in the Draft EIR/EIS.

Refer to Appendix L for more information on the alternative supply and demand scenarios that were explored.

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8.2.14 Master Response 14: CEMEX Settlement Agreement

COMMENTERS ADDRESSED IN MASTER RESPONSE 14

City of Marina	CEMEX
Marina Coast Water District	

This Master Response provides an update to the status of the CEMEX sand mining facility, also known as the Lapis #110 Pit, the Lapis Sand Pit, and the Lapis Sand Plant. As explained in EIR/EIS Section 4.17.1.2, the California Coastal Commission (CCC) on March 17, 2016, issued a Notice of Intent (NOI) to Commence a Cease and Desist Order to CEMEX property owners (CCC, 2016). The NOI described past discussions between the CCC and CEMEX regarding CCC staff's allegations of the lack of proper coastal development permits and several other violations of the Coastal Act related to sensitive dune habitat in the vicinity of the active mining operations and coastal access. CEMEX has disputed and continues to dispute the CCC's allegations set forth in the NOI and asserts that it conducts the Lapis sand plant operations lawfully, and between March 2016 and July 2017, engaged in discussions with CCC regarding the cease and desist order proceedings.

Further, following publication of the Draft EIR/EIS, on May 16, 2017, the California State Lands Commission (CLSC) issued a letter to CEMEX concluding that the Lapis Sand Mine engaged in unlawful conversion of state public trust resources and indicated that CEMEX must either immediately submit a lease application or cease dredge pond (mining) operations. On June 6, 2017, the City of Marina passed Resolution No. 2017-57 that authorized the City Attorney to pursue the possibility of a civil action against CEMEX to declare and abate the Lapis Sand Mine as a public nuisance under sections 3479 and 3480 of the California Civil Code pursuant to California Code of Civil Procedure section 731, and to pursue the possibility of commencing action or proceedings for abatement under section 17.60.040 and section 17.25.030 of the Marina Municipal Code.

The following subsections describe the settlement agreement ultimately reached among CEMEX, the CCC, the CSLC, and the City of Marina, the Removal Plan required by that agreement, and the effects of the agreement on the proposed project and the EIR/EIS analysis. Because the settlement agreement was reached after the close of the Draft EIR/EIS comment period, no comments have been received that pertain specifically to this agreement. However, some comments (e.g., MCWD, City of Marina) pertain to ongoing CEMEX mining operations described in the Draft EIR/EIS that now are expected to cease, such as references to the active or retired portions of the mining operation, the availability of on-site habitat mitigation opportunities, or CalAm's access to its permanent easement, or how the mining operation affects coastal erosion. This Master Response therefore provides a consolidated explanation of reasonably foreseeable changes relevant to the proposed project and EIR/EIS associated with the expected change in mining activities.

8.2.14.1 CEMEX and CCC Settlement Agreement

Subsequent to the publication of the Draft EIR/EIS, in July 2017, the CCC, the CSLC, and the City of Marina reached an agreement with CEMEX to end the sand mining operations at the CEMEX site. Among other things, the Consent Settlement Agreement and Cease and Desist Order CCC-17-CD-02 (Settlement Agreement; CCC, 2017) requires that CEMEX stop sand mining on the CEMEX property by December 31, 2020, pursuant to a cessation plan; put a cap on the amount of sand that can be mined until that time; remove dredges, equipment associated with dredges, a pump station, and other facilities from the CEMEX property pursuant to a removal plan; abstain from causing any further changes in intensity of use of the property; undertake reclamation of the property and protect sensitive species on site; and transfer the property to an approved non-profit or governmental entity for conservation at a reduced price, with a deed restriction to protect the access and the habitat at the site in perpetuity. The deed restriction must preserve the open space and habitat values of the property, and must reflect that improvements to provide low-impact passive recreation, public access, and public education; removal activities; and activities to restore native habitat will be consistent with existing easements or other rights of record.

Removal Plan

Section 5.0 of the Settlement Agreement requires CEMEX to prepare and submit to the CCC Executive Director, no later than 90 days following the December 31, 2020 end of the sand mining phase-out period, a Removal Plan that summarizes all measures to be taken in connection with the removal of the physical structures and materials from the site, including erosion control measures to be used during removal activities. The Removal Plan shall describe the equipment to be used, and the schedule to complete removal, consistent with a schedule provided in the Settlement Agreement, with all CEMEX buildings and facilities to be removed by December 31, 2024 and final grading and seeding to occur by December 31, 2025.

CalAm Easement at CEMEX

Section 23.2 of the Settlement Agreement states that, “Notwithstanding anything in this Agreement to the contrary, this Agreement . . . shall not . . . interfere with any existing rights or obligations of California-American Water Company . . . related to the Property, including, but not limited, to the recorded easement and related option in favor of CalAm and does not require the removal of such easement and related option.”

In November 2014, CalAm and CEMEX entered into an “Agreement for Temporary Investigatory Easement, Option for Permanent Easements and Joint Escrow Instructions” (CalAm-CEMEX Agreement). In that easement agreement, CEMEX granted to CalAm an option to purchase permanent easements on, across, and under the property, solely for the purpose of accessing, constructing, installing, operating, and maintaining slant wells and related pipelines and utilities for the desalination facility proposed to be constructed as part of the MPWSP. The permanent easement granted to CalAm would occupy approximately 30 acres of the CEMEX property, situated south of the existing access road. Starting at the point where the existing access road intersects the beach, the trapezoidal-shaped easement area would run south along the front

(ocean-side) of the dunes for about 1,800 feet before turning inland (east) for about 700 feet, then turning north for about 1,500 feet where it would intersect with the existing access road about 800 feet inland from the beach. CalAm would also maintain an additional 30-foot-wide easement along approximately 4,000 feet of the Source Water Pipeline alignment for another approximately 3 acres. See **Figure 8.2.14-1**.

8.2.14.2 Final EIR/EIS Considerations

Impacts of Settlement Agreement on MPWSP Access

As described in EIR/EIS Section 3.4.1, the analysis assumes that CalAm maintenance workers would access the slant wells via the existing CEMEX access road. Access to the CalAm easement across the CEMEX property is provided for in the CalAm-CEMEX Agreement. Section 3(h) of that agreement specifies that CalAm and CEMEX will determine a route for a vehicular access easement across the greater CEMEX property to the CalAm easement (see Figure 8.2.14-1), although CEMEX retained the right to relocate the vehicular access easement at any time so long as CalAm is provided with equivalent access to its easement. If the vehicular access easement is relocated such that the existing access road is no longer used, the new route would still be within the area analyzed as the extent of project disturbance and shown on EIR/EIS Figure 3-3a. Since the Settlement Agreement allows for public access and low-impact passive recreation on the property (Settlement Agreement Sections 6.1, 6.2(D)(3)), the new owners of the property will likely prepare a public access plan. Pursuant to Section 23.2 of the Settlement Agreement and the terms of the CalAm-CEMEX Agreement, the new owners and any public access plan would necessarily respect the access provision of the CalAm-CEMEX Agreement. Therefore, the assumptions regarding ongoing access to the slant well sites for project maintenance have not been changed in the Final EIR/EIS.

Impacts of Settlement Agreement on Coastal Erosion

As explained in the EIR/EIS Coastal Erosion Study (see Appendix C2, and EIR/EIS Section 4.2.4.5), one of the most important variables in the coastal erosion model is the historic erosion trend. Shoreline change data were compiled from a variety of sources and were combined with the Thornton et al., 2006 dune erosion rates, where available (see Appendix C2, Section 2.2) since estimated erosion based on dune crest recession is a more robust estimate of erosion than shoreline change. In this region where beaches have been controlled in part by sand mining, the coastal retreat study assumed there would be no changes to existing sand mining practices. 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. 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. From a practical standpoint, a slower rate of erosion would mean that the slant wells would be unimpaired and not exposed by coastal erosion for a longer period of time (such that they would not need to be relocated until a later time).

Consideration of Removal Plan and Reclamation Plan Implementation in Cumulative Scenario

EIR/EIS Section 4.17, Mineral Resources, describes the existing mining operations at CEMEX, as well as the Lapis Plant Reclamation Plan that was approved by the State Mining and Geology Board on June 15, 1992. As noted in Section 4.17.1.2, Mining Operations, Phase I revegetation and recontouring measures have been carried out along the slopes of the southern portion of the CEMEX property, while Phase II reclamation plans call for revegetation of the northeastern slope once mining operations have ceased. At the time of publication of the Draft EIR/EIS, the Reclamation Plan anticipated that sand mining could continue until or beyond 2039; therefore, a timeframe for the required reclamation under Phase II was not known. However, as noted in Section 3.4 of the Settlement Agreement, the initiation of reclamation activities consistent with the Reclamation Plan, including restorative grading, revegetation and monitoring, shall begin no later than December 2023.

Additionally, the Removal Plan described in Section 8.2.14.1, above, will require the removal of CEMEX structures and facilities by no later than December 2024.

Given this increased certainty regarding the implementation schedule for the Reclamation Plan and the nature and timing of the Removal Plan, both have been added to the list of projects to be analyzed in the EIR/EIS for potential cumulative effects along with the proposed project impacts (see Project No. 63 in Final EIR/EIS Table 4.1-2), and have been incorporated into the analysis of cumulative impacts as appropriate throughout Chapter 4 and Section 5.5 of the Final EIR/EIS. No new significant impacts or substantial changes to previously-identified significant impacts were identified as a result of this addition of the Removal Plan and Reclamation Plan to the cumulative scenario.

8.2.14.3 References

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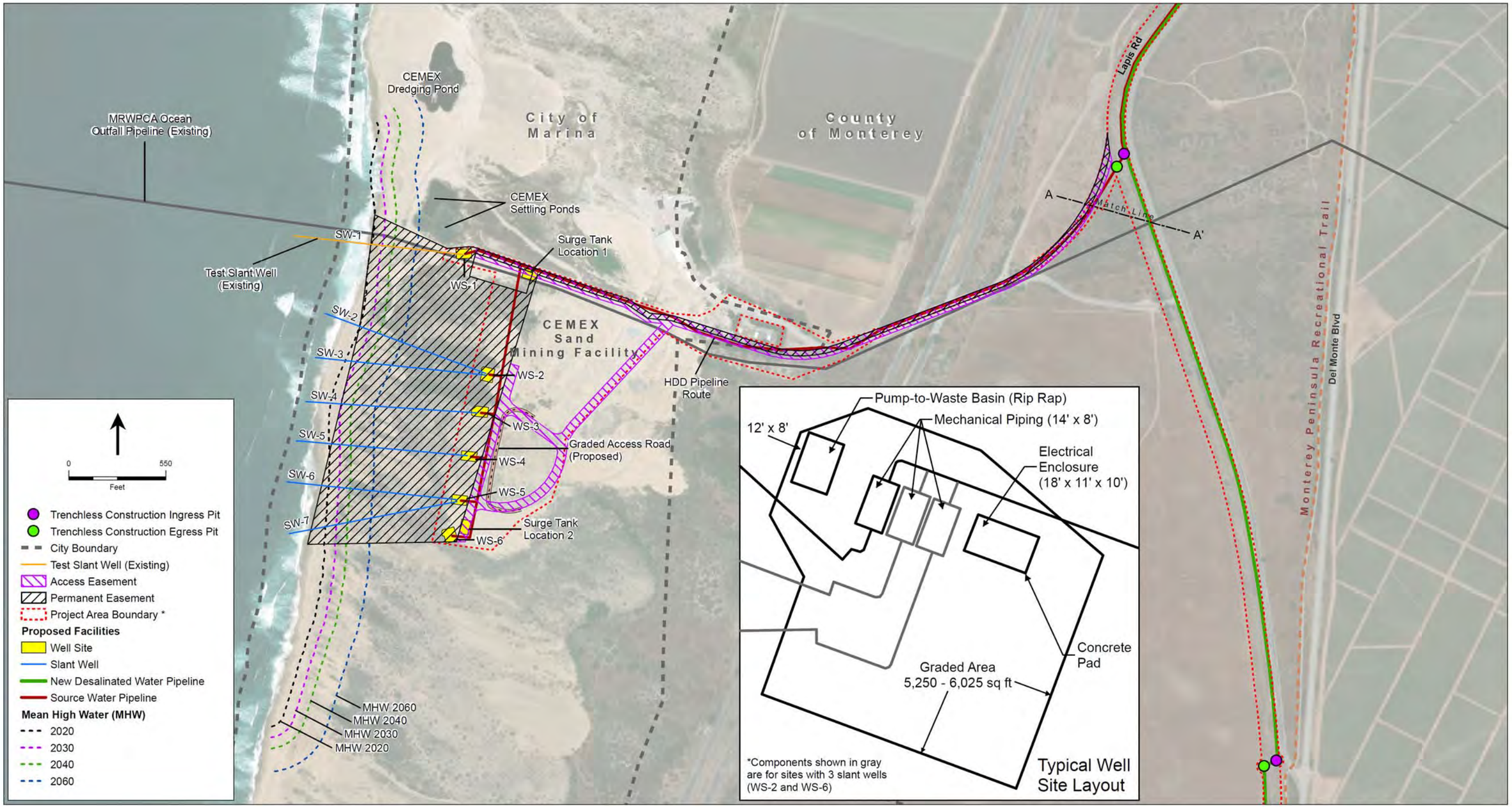

NOTE:
*Project area boundary refers to the area within which all construction related disturbance would occur.

SOURCE: ESA, 2016; Michael Baker International, 2018

205335.01 Monterey Peninsula Water Supply Project

Figure 8.2.14-1

CalAm Easement and Access at CEMEX

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8.2.15 Master Response 15: Alternative Desalination Projects – Status, Information Sources, and Cumulative Scenario

COMMENTERS ADDRESSED BY MASTER RESPONSE 15

Marina Coast Water District	David Beech
California Unions for Reliable Energy (CURE)	Margaret-Anne Coppernoll
Deep Water Desal, LLC	Myrleen Fisher
Ecological Rights Foundation, the Center for Biological Diversity, and Our Children's Earth Foundation	Juli Hofmann
Public Water Now	Nancy Selfridge
Surfrider Foundation	

The currently proposed Monterey Bay Regional Water Project (MBRWP or DeepWater Desal Project) and People's Moss Landing Water Desalination Project (People's Project) are considered in the EIR/EIS as alternatives to the proposed MPWSP. This Master Response provides clarification on these two projects and their status, and also addresses questions (further explained below) on the assumptions used for considering cumulative impacts of these projects. The DeepWater Desal Project (Alternative 3) is described in EIR/EIS Section 5.4.5 and the People's Project (Alternative 4) is described in Section 5.4.6.

8.2.15.1 Monterey Bay Regional Water Project (MBRWP or DeepWater Desal) Status

The status of this project is as follows:

- An NOP/NOI was issued on June 1, 2015, by the California State Lands Commission and the Monterey Bay National Marine Sanctuary (MBNMS), explaining that a joint EIR/EIS would be prepared.
- The joint CEQA/NEPA document has been initiated, and some studies completed, yet it is currently unknown when the Draft EIR/EIS will be published due to outstanding information needs.
- The Applicant is in the process of completing additional studies necessary for the Draft EIR/EIS impact analysis.

8.2.15.2 People's Project Status and Basis for Analysis

Project Status

Several comments indicated that the People's Project appeared to be more feasible than other desalination projects due to the timeline for its approval since it would be utilizing existing infrastructure. The Moss Landing Harbor District is the CEQA lead agency for the People's Project; however, the project has been on hold since 2016 due to outstanding information needed to complete the CEQA analysis. MBNMS is the federal NEPA lead agency for the proposed

People's Project, and since 2015 the project's application to MBNMS has been deemed incomplete. The initial application was filed on October 7, 2015, and was determined by MBNMS to be incomplete on October 27, 2015. At that time, MBNMS notified the applicant of additional information required to complete the application and start the environmental review process. MBNMS also advised the applicant it would be most efficient to move forward with a joint CEQA/NEPA document.

On March 25, 2016, the applicant submitted additional information, including an administrative draft project description for the People's Project. MBNMS notified the applicant in writing on April 25, 2016 that the application was still incomplete. MBNMS provided specific details on what additional information was needed for a complete application and to start the environmental analysis. As of March, 2018, MBNMS has received a revised project description from the applicant and will review the submittal for completeness. Since the application to MBNMS is still incomplete, a Notice of Intent (NOI) to prepare an EIS has not been published, and cannot be published until MBNMS determines the application is complete. If MBNMS determines that sufficient information has been submitted to initiate the NEPA process, it will issue a Notice of Intent to start the EIS scoping process. Additional studies will be required to complete the NEPA document or joint CEQA/NEPA document. Given the current status of the application to MBNMS, no date has been established for completion of a NEPA document.

The People's Project applicant submitted an Administrative Draft EIR to the Moss Landing Harbor District, the CEQA lead agency. After thorough review, the Harbor District determined that the Administrative Draft EIR was not adequate under CEQA; the Harbor District informed the applicant of the document deficiencies and provided details on additional studies and data needed to complete the CEQA process. At this time, (March 2018), the applicant has developed additional project description information for consideration by the Harbor District. However, no date has been established for the completion and publication of the CEQA environmental document.

Basis for Impact Analysis of People's Project and Applicant Contact

Comments suggested that neither the CEQA lead agency for the People's Project (Moss Landing Harbor District) nor the People's Project applicant and counsel were contacted to obtain information for the MPWSP alternatives analysis and that available information was not utilized in the EIR/EIS alternatives analysis. On the contrary, MBNMS contacted the People's Project applicant, the consultant, and legal counsel verbally and in writing in February and March 2016, to request project description information. The MPWSP EIR/EIS preparers worked with MBNMS to obtain this project information from the People's Project applicant since MBNMS is the federal lead agency for the People's Project, DeepWater Desal project, and MPWSP. The EIR/EIS includes the same project description information that was submitted to the Moss Landing Harbor District in 2016. MBNMS requested permission to share project information submitted by the People's Project applicant on March 25, 2016 with the MPWSP EIR/EIS preparers. The People's Project's counsel granted MBNMS permission to share the project description information with the MPWSP EIR/EIS preparers on June 6, 2016. However, the applicant did not grant permission to share the remainder of the Administrative Draft EIR or any supporting studies. The analysis in

the MPWSP Draft EIR/EIS was based on project description information that was shared by the People's Project applicant in June 2016.

One comment noted that solar panels are part of the People's Project. The 2016 Project description information received from the applicant stated that the primary source of electricity for the project would be either direct service from the Moss Landing Power Plant through an agreement with Dynegy, or from Pacific Gas and Electric Company (PG&E) from the existing local electrical grid. Circuits feeding the desalination plant would be provided from an existing 12 kV electrical system through a 460-volt circuit. In the future, the Moss Landing Commercial Park also intends to install a solar photovoltaic (PV) facility of 3.5 MW at the existing site to serve a portion of the project's energy requirements in order to provide a "green and clean" energy source to the project. The project site has sufficient available space outside wetland areas to install such a facility. The solar PV facility would be constructed as a separate project in the future once sufficient details are known, and therefore it is not an integral part of the proposed project at this point in time.

The EIR/EIS analysis did not assume installation/operation of the solar panels as part of the People's Project since: 1) sufficient details were not available for the solar project; 2) the timing of this future project was uncertain; and 3) the applicant stated that the main source of power would not be from the solar field. The applicant was fully informed of the data that was being shared with the EIR/EIS preparers and did not amend or update the project description regarding the solar panel project.

Regarding comments related to the Draft EIR/EIS's lack of cultural resources information at the People's Project plant site, the applicant did not provide information on available cultural resources surveys or studies at the time that MBNMS requested project information from the applicant, and MBNMS has no knowledge of site-specific cultural resource surveys conducted by a qualified cultural resource professional. Given the limited information that was provided to the EIR/EIS preparers, the impact conclusions assumed no cultural resources studies had been conducted, impacts on currently unknown cultural resources would be a potentially significant impact, and mitigation measures were necessary.

8.2.15.3 Cumulative Impact Scenario Related to DeepWater Desal Project and People's Project

Several comments suggested that all three proposed desalination projects in the Monterey area – CalAm's MPWSP, the DeepWater Desal Project, and the People's Project – should be considered in the cumulative impact analysis since commenters suggested that all three might ultimately be built. The Lead Agencies have not implemented this suggestion for the reasons described below.

EIR/EIS Section 4.1.7.2 explains in detail the assumptions used to determine which projects would be considered in conjunction with the proposed project and with each of the alternatives in the cumulative impacts scenario. Projects included in the cumulative impact scenario are listed in EIR/EIS Table 4.1-2.

As stated in EIR/EIS Section 4.1.7, the cumulative impact analysis focuses on the impacts on the environment that result from the incremental impact of the proposed project (or alternative under consideration) when added to other past, present, and reasonably foreseeable future actions. As explained in EIR/EIS Section 5.1.1, under CEQA and NEPA, the EIR/EIS must identify and analyze the impacts of reasonable alternatives that would also meet the purpose and need, and would avoid or minimize adverse environmental impacts of the proposed project. The DeepWater Desal Project and the People's Project are considered in the EIR/EIS as alternatives to the MPWSP because they each are desalination plants being separately proposed to meet, in part, the objectives of the MPWSP (and sometimes other objectives as well). However, as explained below, the DeepWater Desal Project is also considered in the cumulative impacts analysis for the MPWSP because the DeepWater Desal project proponent has indicated that it intends to proceed even if another desalination plant (e.g., the proposed project) is selected to serve CalAm's Monterey Service District. Conversely, the People's Project is not considered in the cumulative analysis with the MPWSP because the MPWSP and People's Project share the same objectives to provide water to CalAm's Monterey District, thus, it is not reasonably foreseeable that the People's Project would proceed if the MPWSP is approved.

Reasonably Foreseeable Projects

The Surfrider Foundation, in its comment letter on the Draft EIR/EIS, claims that unless there is a "binding restriction" prohibiting the development of all three desalination projects, then the EIR/EIS must include all three in the cumulative analysis. There is no "binding restriction," as all three projects must be reviewed on their own merits by the numerous agencies with permit jurisdiction. However, as described in EIR/EIS Section 4.1.7, CEQA and NEPA cumulative impact analysis requirements are based on projects that are reasonably foreseeable or probable to occur. Further, CEQA Guidelines Section 15130(b) specifies that one of two methods must be used to analyze cumulative impacts. For the first method (used for the majority of the analyses in the EIR/EIS), Section 15130(b)(1) defines the list of projects that must be considered as "A list of past, present, and probable future projects producing related or cumulative impacts…" Similarly, NEPA refers to cumulative effects 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…" (40 CFR 1508.7, NAO 216-6A). The key words here are "probable," or "reasonably foreseeable," which limits the analysis to those projects that are likely to occur. The EIR/EIS analysis is consistent with these provisions, as described in more detail below. See also Master Response 13, Demand (Project Need) and Growth, for a discussion of current and projected water demand in the region.

DeepWater Desal Project

As noted in EIR/EIS Table 4.1-2, the DeepWater Desal Project would provide up to 25,000 afy of potable water supply to participating communities in the Monterey Bay region, potentially including the Monterey Peninsula, Castroville, Salinas, and parts of Santa Cruz County. DeepWater Desal's project business model includes a co-located data center. As proposed by DeepWater Desal, the project would develop supplemental water supplies to serve the customers in CalAm's Monterey District service area. However, if the proposed MPWSP is built,

DeepWater Desal indicates that it can provide water to other areas, as described above. Therefore, the EIR/EIS considers two reasonably foreseeable scenarios that include development of the DeepWater Desal Project:

1. Development of the DeepWater Desal Project as an alternative to the MPWSP, as described in Chapter 5 (serving CalAm's Monterey District service area, as well as other areas). This is Alternative 3 described and analyzed in Chapter 5.

2. Development as a separate project *in addition* to the MPWSP or another alternative that would serve CalAm's Monterey District service area. In this case, the impacts of the DeepWater Desal Project are considered in the cumulative scenario as they relate to the provision of water to Santa Cruz County and the City of Salinas. The DeepWater Desal Project with provision of water to Santa Cruz County and the City of Salinas is a reasonably foreseeable project in the cumulative scenario relevant to the proposed project and Alternatives 1 (slant wells at Potrero Road), 2 (open water intake), 4 (People's Project), and 5a and 5b (reduced-scale projects).

People's Project

As proposed by its applicant, the primary purpose of the People's Project is to develop 12 mgd (13,400 afy) of desalinated water to serve customers in CalAm's Monterey District service area. The NOP for the project states that a small portion (3.3 mgd) of the water may serve north Monterey County: "These demands have not yet been fully verified, but there has been strong interest for the Proposed Project to serve demands in the North Monterey County Area. Through the EIR process these demands will be evaluated in order that the Proposed Project can serve these potential North County demands" (Moss Landing Harbor District, 2015). However, subsequent information received from the applicant indicates that the northern Monterey County service is uncertain.

Since the People's Project and the MPWSP would both serve the same customers in the CalAm Monterey District Service Area, this EIR/EIS assumes the People's Moss Landing Project is an *alternative* to the MPWSP (see Chapter 5). Unlike the DeepWater Desal Project proponent, who has publicly stated its intent to proceed even if the MPWSP is built and whose business model would allow the project to serve its entire output to customers in Santa Cruz County and the City of Salinas, there is no other available information that indicates that the People's Project would be built *in addition* to the proposed MPWSP, based on the People's Project's stated purpose and objectives to meet the exact same demand that is proposed to be met by the MPWSP. Therefore, it is not a reasonably foreseeable project in the cumulative scenario relevant to the MPWSP. Similarly, if the DeepWater Desal Project were developed as an alternative to the MPWSP (i.e., Alternative 3), the People's Project would not be a reasonably foreseeable project in the cumulative scenario, because Alternative 3 assumes that all of the Monterey Peninsula's needs would be met by the DeepWater Desal Project and no demand (and therefore, no market) would remain in the Monterey Peninsula for the People's Project to serve. As noted above, however, if the People's Project were approved to serve the water needs of the Monterey Peninsula, the EIR/EIS cumulative analysis does assume that the DeepWater Desal project would be a cumulative project in that scenario. Furthermore, the California Ocean Plan requires that desalination project applicants document the need for water. The Ocean Plan states that the

regional water board shall require the owner to: "Consider whether the identified need for desalinated water is consistent with an applicable adopted urban water management plan prepared in accordance with California Water Code Section 10631, or if no urban water management plan is available, other water planning documents such as a county general plan or integrated regional water management plan." If any project is approved to serve demand in the Monterey Peninsula, it is unlikely that another project with the intent to serve this same population would be able to provide the necessary documentation of the need for water. Despite this, and in light of DeepWater Desal's stated intention to serve other areas, this EIR/EIS takes a conservative approach and considers DeepWater Desal in the cumulative scenarios as described above.

Therefore, although acknowledged as an alternative to the proposed project (as described in Chapter 5), the People's Project contributions to cumulative impacts are not considered as part of the cumulative scenario relevant to the proposed project or another alternative. If, in the future, the People's Project objectives change, the cumulative impact analysis in the CEQA and/or NEPA documents prepared for the People's Project would be required to assess cumulative effects based on the changed intent of that project.

8.2.15.4 References

Moss Landing Harbor District, 2015. Notice of Preparation, Environmental Impact Report for People's Moss Landing Water Desalination Project. June.

8.3 Federal Agency Comments and Responses

8.3.1 Department of the Army, Fort Ord Base Realignment and Closure Field Office (FOBRAC)

8.3.2 Department of the Army, US Army Installation Management Command (USARMY)

8.3.3 Monterey Bay National Marine Sanctuary Advisory Council, Research Activity Panel (MBNMS RAP)

8.3.4 United States Army Corps of Engineers (USACE)

8.3.5 United States Environmental Protection Agency (USEPA)

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8.3.1 Department of the Army, Fort Ord Base Realignment and Closure Field Office (FOBRAC)

DEPARTMENT OF THE ARMY
ARMY BASE REALIGNMENT AND CLOSURE, FORMER FORT ORD
P.O. BOX 5008, BUILDING #4463 GIGLING ROAD
MONTEREY, CA 93944-5008

REPLY TO
ATTENTION OF:

MAR 2 4 2017

Fort Ord BRAC Field Office

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

To Whom It May Concern,

The Draft Environmental Impact Report/Environmental Impact Statement for the Monterey Peninsula Water Supply Project State Clearinghouse No. 2006101004 identifies the potential for the proposed project to impact the Army's existing groundwater remediation system at Fort Ord Operable Unit Carbon Tetrachloride Plume (OUCTP) (Section 4.4.5.2, page 4.4-77). It identifies mitigation measure 4.4-4 (page 4.4-86) which proposes to conduct groundwater monitoring incorporating the Army's groundwater monitoring data, and if an analysis by CalAm concludes that slant well pumping could affect the OUCTP plumes, then "the project applicant will reimburse the U.S. Army for the necessary additional costs to address changes in the plume flow direction, arrest mitigation of the plumes, and/or to remediate areas of new contamination created by slant well pumping." This mitigation measure is later described as requiring CalAm to prevent expansion of the OUCTP plumes.

The Army's groundwater remediation projects at the former Fort Ord is being conducted under CERCLA. If the proposed project will in any way adversely affect the Army's implementation of CERCLA remedial actions, the project proponent will be considered a potentially responsible party under CERCLA, and its responsibilities would need to be properly identified in consultation with U.S. Environmental Protection Agency. The proposed mitigation measure does not sufficiently address the identified impact.

Portions of the proposed project occurs within the former Fort Ord, over or near the Army's environmental remediation sites under CERCLA. The Army encourages the project proponent to avoid any adverse impacts to the CERCLA actions. We suggest this be noted in Section 4.7.2.1 where CERCLA is described under Regulatory Framework (page 4.7-13).

FOBRAC-1

The draft EIR/EIS also describes that the project would comply with the excavation permit program of the City of Seaside that would address the potential for encountering unexploded ordnance (UXO) while engaging in ground-disturbing activities within the Seaside Munitions Response Area (MRA). The proposed project also involves ground-disturbing activities in other areas of the former Fort Ord, outside of the Seaside MRA. Because of the former Fort Ord's history as a military installation, there is a potential for munitions and

FOBRAC-2

explosives of concern (MEC) (including UXO) to be present. Should any munitions or suspected MEC item be encountered during ground-disturbing or intrusive activity, people engaging in the activity should immediately stop the activity; should not attempt to disturb remove or destroy it; but should immediately notify the local law enforcement agency having jurisdiction on the property so that appropriate explosive ordnance disposal personnel can be dispatched to address the item. This notice of the potential presence of MEC is provided in federal deeds for transferred former Fort Ord properties. In addition, the Army offers munitions recognition and safety training to anyone who requests it. The training is intended to increase the ability to recognize suspicious items and participants will learn the proper procedures when a suspicious item is encountered. The training is available by contacting the U.S. Army Base Realignment and Closure office at 831-393-1284.

FOBRAC-2 cont.

If you have any questions please call me at (831) 242-7920 or email at William.K.Collins.Civ@Mail.Mil.

Sincerely,

William K. Collins

William K. Collins
Base Realignment and Closure
Environmental Coordinator

8.3.2 Department of the Army, US Army Installation Management Command (USARMY)

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, PRESIDIO OF MONTEREY
1759 LEWIS ROAD, SUITE 210
MONTEREY, CA 93944-3223

Office of the Garrison Commander

MAR 24 2017

MBNMS Desalination Project Lead
99 Pacific Ave., Bldg. 455a
Monterey, CA 93940

Dear Ms. Grimmer,

Thank you for the opportunity to comment on the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for California American Water's (CalAm's) Monterey Peninsula Water Supply Project (MPWSP).

While the Monterey Bay National Marine Sanctuary (MBNMS) is the lead Federal agency ensuring National Environmental Policy Act (NEPA) compliance for the proposed action, the U.S. Army's (Army's) NEPA implementing regulations under 32 Code of Federal Regulations (CFR) 651.14.h, require the Army to coordinate with the lead agency to ensure all proposed actions which would affect the Army are thoroughly analyzed. Thus, the Army became a cooperating agency on this Draft document as portions of the MPWSP are proposed to be installed and operated on Army property, including portions of the 36-inch new Transfer Main pipeline, the Aquifer Storage and Recovery (ASR) Wells #5 and #6, and associated ASR pipelines, in the Ord Military Community in Seaside, CA. The Army has discretionary approval authority over proposed projects on Army lands and will use the NEPA analysis during decision-making with regard to the proposed action.

This letter provides the Army's enclosed comments on the Draft EIR/EIS under Federal NEPA implementing regulations 40 CFR 1500 et seq. and 32 CFR 651. These comments provide clarifications to the Draft EIR/EIS that the Army believes are necessary to ensure compliance under NEPA.

The POC for this letter is Joelle Lobo at 831-242-7829 or joelle.l.lobo.civ@mail.mil.

Sincerely,

Lawrence T. Brown
Colonel, US Army
Commanding

Chapter 1. Introduction and Background

Section 1.3.1 CalAm's Project Objectives, page 1-5.
Appears that a main objective of the MPWSP is to minimize the take of marine biological matter based on the proposed use of subterranean slant wells as included in the proposed project. Consider including this objective along with the list of primary objects of the project as given in Section 1.3.1. USARMY-1

Section 1.5.4.3 Other Agencies' Consideration of the EIR/EIS and Proposed Project, page 1-17:
The Draft EIR/EIS does not present an option (other than the No Action Alternative) where the proposed project or alternatives would not involve use Army land. Therefore, the Army should be listed as an organization which, due to their discretionary approval authority over land use for some components of CalAm's proposed project, will use the EIR/EIS to make decisions, not merely as an agency with "potential" permitting authority. USARMY-2

Chapter 3. Description of the Proposed Project

Section 3.2.3.5 Terminal Reservoir, page 3-30
The Draft EIR/EIS states the proposed Terminal Reservoir would be located in an undeveloped portion of the former Fort Ord. Please provide clarification as to who has jurisdiction over this portion of land. USARMY-3

Section 3.2.4.1 ASR Injection/Extraction Wells (ASR-5 and ASR-6 Wells), page 3-43.
Please include in the Draft EIR/EIS information regarding siting studies and how the proposed ASR #5 and #6 sites were selected.

The following information was provided by CalAm:
"The open areas south of the SM ASR wells is unfavorable for ASR wells compared to the Fitch Park site, due primarily to the geologic structure of the basin. The bedrock and the Santa Margarita Sandstone ([Tsm] the target aquifer for ASR) are rising in elevation in this area due to the Laguna Seca Anticline, which results in a lack of sufficient saturated Tsm thickness to support the planned well injection rates. Also, the area to the east of the SM ASR wells is now within the area of influence of the Pure Water Monterey recycled water injection wells, which precludes this area for potable supply wells due to aquifer residence times required for the recycled water." Additional conversations indicated that the area on the north side of General Jim Moore, across from the proposed ASR wells, encountered land use conflicts when investigated for potential ASR siting.

In addition to including the above please include in the Draft EIR/EIS any other information pertaining to siting and examining alternatives for the proposed ASR wells, i.e. what were the criteria used to determine a successful ASR Well site, what tests were done to determine suitability of the proposed site and what were the results (from USARMY-4

the Fitch Park Monitoring Well No. 1 Summary of Operations Report), and what other sites were considered/examined and what were the results? USARMY-4 cont.

Figure 3-14 Site Plans: ASR-6 and ASR-6 Well, page 3-45.
Please include figures with clearer resolution. Text in the existing figures is difficult to read. USARMY-5

Section 3.3.2.2 ASR Injection/Extraction Wells, page 3-48.
Please include a discussion on the requirement for 24 hour per day construction for the proposed ASR wells, including the reason continuous drilling is required (i.e. based on technology for this type of drilling, based on schedule, etc.). If technology for other-than-24 hour drilling is available, please describe. Please also indicate if permanent access road(s) would be installed to the ASR Wells from General Jim Moore Blvd. USARMY-6

Section 3.3.4.3 Disinfection of Existing and Newly Installed Pipelines, page 3-53.
Use of Army owned stormwater outfall for discharges associated with pipeline construction generated effluent requires explicit permission by the Army. Effluent generated on Army land will generally be discharged to a percolation pond. USARMY-7

Section 3.3.9 Construction Schedule, page 3-55.
Paragraph 3 of this section states, "Installation of pipelines within the city of Seaside, including all or portions of the three ASR pipelines (ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline) and the sections of the new Transmission Main would occur only during the day." The terms of the Army issued permit will require daytime only pipeline construction on Army owned property. USARMY-8

Section 3.4.1 Operation of the Seawater Intake System, MPWSP Desalination Plant, and Brine Discharges, page 3-56.
Section 3.4.1 states that the MPWSP Desalination Plant would operate 24 hours a day, 365 days per week. Please include a discussion on operational adjustments should demand, available water supply, or overall precipitation change, such that water needs are lowered, recognizing that desalinated water is environmentally and economically costly. Please also include any adjustments to operations in response to future regional power shortages. USARMY-9

Table 3-8 Anticipated Permits and Approvals, page 3-63.
In the second row (labeled, 'U.S. Army'), please change the second column to the following: "Real property outgrants for construction and operation to CalAm or other entities involved in water augmentation projects (Army Regulation (AR) 405-80, 200-1)". USARMY-10

Chapter 4.3 Surface Water Hydrology and Water Quality

Section 4.3.2.2 State Regulations, NPDES Municipal Stormwater Permit, page 4.3-40
The Presidio of Monterey is a Phase II MS4 – Non-traditional permitee with requirements applicable within the Ord Military Community in Seaside, CA. Stormwater outfall for discharges associated with the pipeline or ASR well construction generated effluent requires explicit permission by the Army. Effluent generated on Army land will generally be discharged to a percolation pond. USARMY-11

Section 4.3.5.1 Construction Impacts
Impact 4.3-2: Degradation of water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development, Dewatering Discharges (All Other Project Facilities), page 4.3-63.
Request MS4 Permittees receive analytics for any discharges. USARMY-12

Chapter 4.4 Groundwater

Figure 4.4-7 Groundwater Flow – Seaside Basin Shallow Zone, July/August 2015 and Figure 4.4-8 Groundwater Flow – Seaside Basin Deep Zone, July/August 2015, pages 4.4-17-4.4-18
Please provide a legend to describe the features on these figures. USARMY-13

Section 4.4.1.4 Groundwater Quality, Disinfection Byproducts, page 4.4-27 and Section 4.4.5.2 Operations Impacts and Mitigation Measures, Impact 4.4-4 Violate any groundwater quality standards or otherwise degrade groundwater quality during operations, Addition of Treated Water to the Santa Margarita Aquifer, page 4.4-82

Section 4.4.1.4 states, "The Disinfection Byproducts (DBP) data collected during the 2015 water year indicated that trihalomethanes (THMs) peaked approximately 30 to 90 days after injection and storage, followed by a gradual decline. After approximately 150 to 210 days of storage, THMs had degraded to below the initial injection levels." However, per the "*Draft Summary of Operations Report for the Monterey Peninsula ASR Project, Water Year 2015*", dated June 2016, prepared by Pueblo Water Resources for the Monterey Peninsula Water Management District, Figure 22, it appears that THMs exceed the initial injection level after 210 days for the ASR-3 site. Please include a discussion that considers this data. USARMY-14

Section 4.4.1.4 states, "More importantly, throughout the 2015 water year, THMs were below the MCL of 80 micrograms per liter and haloacetic acids (HAAs) were below the MCL of 60 micrograms per liter." However, per the "*Draft Summary of Operations Report for the Monterey Peninsula ASR Project, Water Year 2015*", dated June 2016, prepared by Pueblo Water Resources for the Monterey Peninsula Water Management District, Figures 21, 22, and 24, it appears that the THMs reached or exceeded the MCL of 80 micrograms per liter. Please include a discussion that considers this data. USARMY-15

In order to better understand fate of DPBs and the resulting chemistry of the groundwater, recommend including a table or graph in the Draft EIR/EIS that shows the relative levels of DPBs in the cited 2015 study (and other studies with available data) as compared to the regulatory limits, including pH levels, and including the rate of decline in concentration of DPBs over the given timeframes and the resulting concentrations, to show if the decline in concentration returns to below injection levels or if elevated concentration conditions exist. The proposed amount of yearly injected desalinated water may be higher than the injected 2015 Carmel River water. Please also include details of the study such as the reason for decline in DPB concentration over time and if this pattern of initial increase and decline in DBP concentration is expected to be consistent for larger amounts of injected DBPs. USARMY-16

Three separate sources of water: desalinated, purified, and river water, are proposed to be injected into the Seaside aquifer, likely at higher than historic volumes. To more clearly understand the cumulative impacts of DBPs and/or other constituents associated with proposed project or alternatives, due to volume and/or source of injected water, please include an estimated (maximum) injection volume from the combined Carmel River, desalinated, and purified waters into the aquifer and associated DBP concentrations. Please include a discussion or information on the expected fate of DBPs for the combined Carmel River, desalinated, and purified water volumes. USARMY-17

Please include a discussion on whether the Seaside aquifer is confined or if aquifer waters have potential to intermix with other waters or emerge into the environment. Please cite any relevant chemical or toxicological studies regarding effect of DBPs on other organisms in the environment. USARMY-18

Additionally, please include a discussion on adaptive management strategies should DBPs in the aquifer or in extracted waters exceed regulated drinking water concentrations. USARMY-19

Chapter 4.6 Terrestrial Biological Resources

Table 4.6-4 Applicable Regional and Local Land use Plans and Policies relevant to Terrestrial Biological Resources, page 4.6-107.
Please include the "Integrated Natural Resource Management Plan (INRMP) Presidio of Monterey and Ord Military Community, November 2008" to table 4.6-4. The 2008 INRMP, or most current version, would apply to the project components proposed on Army property including portions of the new Transmission Main, ASR wells, and ASR wells pipeline. USARMY-20

Section 4.6.5 Direct and Indirect Effects of the Proposed Project, Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or local tree ordinances, page 4.6-222.
Landscape in the work areas should be restored after work is completed, including the planting of shrubs and trees as additional screening, using the Presidio of Monterey INRMP approved plants. All trees schedule for removal or preservation on Army property, including mitigation for tree removal and protection for tree preservation, shall be done in accordance with the Presidio of Monterey INRMP. USARMY-21

Chapter 4.9 Traffic and Transportation

Section 4.9.5.1 Construction Impacts, Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan, page 4.9-24.
Any proposed work on Army owned property will required a real property outgrant as prescribed by Army Regulation (AR) 405-80. Prior to issuance of an outgrant, the Army will required a detailed briefing by CalAm to ensure all of the Army's interests are addressed in the Traffic Control and Safety Assurance Plan, including POM Fire Station, POM Police Station, housing office, community and youth centers, as well as public works, commercial, safety and other related interests. USARMY-22

Section 4.9.5.1 Construction Impacts, Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan, page 4.9-24.
Terms of the Army issued permit would likely require that access to Army services along General Jim Moore Blvd. are maintained during construction including the POM Fire Station, the Army Air Force Exchange Service (AAFES) Service Station and Mini-Mart, Army Community Services offices and facilities, the Ord Military Community Chapel, and Porter Youth Center. USARMY-23

Section 4.9.5.1 Construction Impacts, Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan, page 4.9-26.
Unreasonable delays in the establish bus schedule as agreed upon with Monterey-Salinas Transit will have a direct impact on the military mission. Prior to commencement of construction, coordination with the Army will be required to ensure bus routes maintain timeliness such that Department of Defense (DoD) personnel traveling from the Ord Military Community family housing arrive on time to their duty stations. USARMY-24

Section 4.9.5.1 Construction Impacts, Impact 4.9-3 Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways, and area trails, sidewalks and other pathways, during construction, page 4.9-28.
Significant traffic congestion persists at the intersection of General Jim Moore Boulevard and Normandy Road during the peak traffic hours associated with Marshall Elementary School, the Dual Language Academy of the Monterey Peninsula, and the Army's Porter Youth Center. The cumulative pedestrian and vehicular traffic associated with these schools and youth center, converge on the Army owned intersection of USARMY-25

General Jim Moore Boulevard and Normandy Road. To ameliorate potential safety related issues regarding young children and families crossing the intersection during construction, recommend mitigation to construct the New Transmission Main in this area during summer months while schools are in recess, or after school and common business hours. USARMY-25 cont.

Section 4.9.5.1 Construction Impacts, Impact 4.9-4 Impaired emergency access during construction, page 4.9-29.
Presidio of Monterey Emergency Services will require the specific traffic control measures for proposed construction along General Jim Moore Blvd. and the resulting impact to emergency services response times. Terms of the Army issued permit will require a briefing by CalAm to the Army Directorate of Emergency Services on these measures to determine impact on response times and the level of risk to the Ord Military Community and federal employees. USARMY-26

Section 4.9.5.1 Construction Impacts, Impact 4.9-6 Increased wear-and-tear on the designated haul routes, page 4.9-31.
The terms of the Army issued permit will require CalAm coordination with the Army during the development of the Roadway Rehabilitation Program in order to ensure roadway wear and tear, damages, and restoration of Army owned roads are properly addressed. The terms of the Army issued permit will require that roadway wear and tear, damages, and required restoration of Army owned roads associated with the proposed action will be the responsibility of CalAm. USARMY-27

Section 4.9.5.1 Construction Impacts, Impact 4.9-7 Parking interference during construction, staging areas, page 4.9-33.
The Draft EIR/EIS proposes a staging area on Army property at the AAFES Service Station at the north-west corner of General Jim Moore Blvd. and Gigling Rd. Use of a staging area in this location would require a permit from the Army which is unlikely due tenant request and potential for additional traffic hazards. USARMY-28

Chapter 4.12 Noise and Vibration

Section 4.12.5.1 Temporary or Periodic Increases in Ambient Noise Levels, Speech Interference, page 4.12-18.
Please clarify how the threshold "substantial construction noise where the duration of construction noise exceeds two weeks" was derived. It is unclear how the two week timeframe was obtained. USARMY-29

Section 4.12.6.1 Construction Impacts, Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction, page 4.12-21.
The second paragraph of this Section states, "The proposed pipelines and pump station would be constructed during daytime hours to the extent feasible. This analysis assumes that the ASR Recirculation Pipeline, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, Terminal Reservoir, and some portions of the new Desalinated Water Pipeline and the new Transmission Main within the City of Marina would be constructed only during daytime hours (see Mitigation Measure 12.4-4 (Nighttime Construction Restrictions in Marina); however, nighttime construction could be required for all other pipelines to meet the project schedule." This is in contradiction to Section 3.3.9 where it is stated that, "Installation of pipelines within the city of Seaside, including all or portions of the three ASR pipelines (ASR Conveyance Pipeline, ASR Recirculation Pipeline, and ASR Pump-to-Waste Pipeline) and the sections of the new Transmission Main would occur only during the day."

The terms of the Army issued permit will require daytime only pipeline construction on Army owned property.

USARMY-30

Section 4.12.6.1 Construction Impacts, Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction, page 4-12.29.
Please include a figure showing decibel level impacts associated with ASR wells construction. Please show expected noise levels at increasing distances from the construction sites for both proposed 24 hour drilling and for daytime only construction.

USARMY-31

Section 4.12.6.1 Construction Impacts, Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction, page 4-12.29.
Construction noise is assumed to be attenuated by closed windows. However, the proposed construction for the ASR Wells is estimated to last for approximately 1 year, during which time ambient temperature may significantly vary. The housing in this area does not have central air conditioning. The terms of the Army issued permit will require that CalAm ensure all possible noise controls are implemented and monitored for effectiveness and provide adaptive management strategies should noise exceed threshold values, with residence opening windows as climate dictates.

USARMY-32

Section 4.12.6.1 Construction Impacts, Mitigation Measures 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors, page 4.12-34.
The terms of the Army issued permit will require that noise mitigation is based on actual noise levels at the residence (receptor), not based on geographical distance from the construction.

USARMY-33

Section 4.12.6.1 Construction Impacts, Mitigation Measures 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors, page 4.12-34.
Terms of the Army issued permit would require the impacted residents have a choice of off-site accommodations to fit their needs. USARMY-34

Section 4.12.6.1 Construction Impacts, Mitigation Measures 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors, page 4.12-34.
The Army's military family housing partner under the Residential Communities Initiative (RCI) recommends that in additional to Mitigation 4.12-1e, individuals displaced from their homes during the 24 hour ASR well construction should be afforded a meal per diem to offset the disruption in daily activities such as access to kitchen for cooking meals. Terms of the Army issued permit would require this stipend with a recommended per diem amount at least equivalent to the General Services Administration (GSA) per diem for the current fiscal year for Monterey County (https://gsa.gov/portal/content/104877) USARMY-35

Section 4.12.6.2 Operational Impacts and Mitigation Measures, Impact 4.12-5 Substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project during operations, page 4.12-51.
The terms of the Army issued permit will require operational noise adjacent to ASR Wells #5 and #6 to remain consistent with the City of Seaside noise standards under Seaside Municipal Code Chapter 17.30. USARMY-36

Chapter 4.13 Public Services and Utilities

Table 4.13-1 Local utility and public service providers, by jurisdiction, page 4.13-2.
Please add Presidio of Monterey Fire Department and Presidio of Monterey Police Department to the list of service providers in this table. Presidio of Monterey Fire and Police Departments are located on the Ord Military Community in Seaside, CA.

Please change row #4 of the table from "Federal Lands" to "U.S. Army". Pls. change "Note a" to the following: "Project components are proposed for the U.S. Army owned property at the Ord Military Community (OMC) in Seaside, CA."

Please add project components "New Transmission Main" and "ASR Pipelines" to row #4 of the table.

In the table, please indicate the Presidio of Monterey Fire Department responds to U.S. Army lands, City of Monterey, City of Seaside, the California State University of Monterey Bay, and City of Marina. Please indicate that Presidio of Monterey Police Department responds to U.S. Army lands only. USARMY-37

Section 4.13.1.1 Fire Protection, Law Enforcement, and Emergency Services, page 4.13-3

Under "Fire Protection", please add the following paragraph:
"U.S. Army
The Presidio of Monterey Fire Department serves all Army property on the Ord Military Community and Presidio of Monterey, as well as holding mutual aid agreements with Seaside, Marina, the California State University of Monterey Bay, and the Monterey County Regional Fire District."

Under "Police", please add the following paragraph:
"U.S. Army
The Presidio of Monterey Police Department serves all Army property on the Ord Military Community and Presidio of Monterey"

USARMY-38

Section 4.13.5.1 Construction Impacts, Impact 4.13-1 Disrupt or relocate regional or local utilities during construction, page 4.13-16.

Water Well Construction Permit #09-11644 obtained for the monitoring well drilling near the proposed ASR #5 site included a condition that the well shall be at least 50 feet from any sewer main, line, or lateral. Please be informed that sewer laterals may exist in the direct vicinity of the proposed ASR wells #5 and #6.

USARMY-39

Chapter 4.15 Cultural and Paleontological Resources

Section 4.15.6.1 Construction Impacts, Mitigation Measure 4.15-2b: Inadvertent Discovery of Cultural Resources, page 4.15-49.

Since this mitigation measure applies to all project components, including those proposed on Army land, it must reference compliance actions in accordance with federal law under the National Historic Preservation Act and implementing regulations under 36 Code of Federal Regulations § 800. Please include the following as part of Mitigation Measure 4.15-2b:

"If cultural resources are inadvertently discovered during construction on Army owned property, work shall immediately cease within a 100- foot radius of the find and the Army, Presidio of Monterey, Cultural Resources Manager (CRM) will be contacted to assess the discovery. The CRM will implement procedures set forth in the Presidio's Integrated Cultural Resources Management Plan (ICRMP) and Army Regulation (AR 200-1), which may include completion of consultation under Section 106 of the National Historic Preservation Act (NHPA)(16 USC. 470f; 36 CFR Part 800) prior to resuming construction in the vicinity of the find. CalAm will be responsible for completing any additional archaeological work required to comply with federal regulations."

USARMY-40

Section 4.15.6.1 Construction Impacts, Mitigation Measure 4.15-4: Inadvertent Discovery of Human Remains, page 4.15-51.
Since this mitigation measure applies to all project components, including those proposed on Army land, it must reference compliance actions in accordance with federal law under the Native American Graves Protection and Repatriation Act, Section 3. Please include the following as part of Mitigation Measure 4.15-2b:

"If human remains are encountered during construction on Army owned property, work shall cease within a 100-foot radius of the discovery and immediate notification will be made to the CRM. The CRM will initially evaluate the site to determine if the remains are either Native American in origin or associated with a recent crime scene (i.e., 50 years old or less). If the remains appear recent, the CRM will notify the Army's Criminal Investigation Command who will assume control of the crime scene and custody of the remains. If the remains appear to be Native American in origin, the CRM will notify the Presidio Garrison Commander and the Monterey County Coroner. Upon verification of the CRM's initial assessment, the Coroner will notify the Native American Heritage Commission within 24 hours. If the find includes human remains, the County Coroner and Army point of contact (POC) must be notified. If the remains are determined to be Native American remains, the Native American Heritage Commission shall be notified. The Native American Heritage Commission will appoint a Most Likely Descendant, who will provide recommendations for the disposition of the remains. All activities with regard to the discovery and handling of human remains and cultural resources will comply with applicable requirements of the Integrated Cultural Resource Management Plan (ICRMP)." USARMY-41

Chapter 5 Alternatives Screening and Analysis

Section 5.1.2 Project Objectives and Significant Impacts, page 5.1-3 and Section 5.3.6 Evaluation of Intake, Outfall, and Desalination Plant Options, page 5.3-29
Please include a discussion on why no alternatives to the new Transmission Main, particularly the portions on Army land, were deemed reasonable for further analysis. Please also include a discussion on why the proposed ASR Wells 5 and 6 are only proposed for location in Fitch Park neighborhood. USARMY-42

8.3.3 Monterey Bay National Marine Sanctuary Advisory Council, Research Activity Panel (MBNMS RAP)

John Hunt, Chair
Monterey Bay National Marine Sanctuary
Research Activity Panel

March 28, 2017

MBNMS Desal Project Lead
99 Pacific Ave, Building 455a, Monterey, CA 93940
(Electronic public comment submission via the Federal e-Rulemaking Portal)

Re: Docket #NOAA-NOS-2016-0156
California-American Water Company Monterey Peninsula Water Supply Project (MPWSP)
Public Comment

Dear MBNMS Desal Project Lead,

The Research Activity Panel (RAP) is a working group of the Monterey Bay National Marine Sanctuary Advisory Council. Among the RAP's key objectives is to advise Sanctuary staff on conservation science issues that will influence policy. The RAP has received presentations on the CalAm MPWSP Draft Environmental Impact Statement (DEIS), and members of the RAP have submitted comments to the chair for submission on behalf of the RAP. Please consider our comments on the following topics:

1. The effects of ocean currents in the brine mixing zone (BMZ) model analyses.

2. Impacts to freshwater and brackish water habitats from decreased freshwater flows related to Alternative 5a reliance on the Pure Water Monterey GWR Project.

3. RAP offer to review and participate in the design of monitoring programs developed as part of mitigation measures cited in the DEIS.

4. Documents that should be considered when characterizing habitat in the area affected by brine discharge.

1. Ocean Currents

We wish to express concern over the decision not to include the effects of ocean currents in the brine mixing zone (BMZ) model analyses. As stated in the Appendix D1 Executive Summary, "Zero current speed was assumed for all dilution calculations." Water column currents are mentioned as a mechanism by which the physical mixing of the outfall water will be enhanced (see 4.3-10), but currents can also act as an advective process. In fact, it is likely that the predominant effect of a strong alongshore current would be to coherently transport the brine plume away from the vent sites faster than it would through dispersion and mixing alone. There are several sources that provide information on the water column current velocity patterns in this region of the Monterey Bay shelf. Measurements of water column currents were collected in the southern shelf region of Monterey Bay in 2011 and 2012 by researchers involved in the NSF Benthic Exchange project (grant OCE0961810; cf. Cheriton et al., 2014; Sevadjian et al., 2015). At shelf depths of 55-60 m, near-bed currents of 10 cm/s were common and could reach up to 20 cm/s. Near-bed currents of similar magnitude (~ 5-10 cm/s) have been measured closer to shore, at 20-m sites off of the Pajaro River (Nickols et al., 2012) and the north side of the Monterey Peninsula

MBNMS-RAP-1

(Walters et al., 2012). Currents on the order of 10-20 cm/s could transport water 3 m (~ 10 ft) in approximately 15 to 30 seconds. We also note that the outer shelf current measurements mentioned above were collected during the fall season ('Oceanic' climate, see 4.3-10), and thus likely represent the least energetic seasonal currents. The degree to which these advection dynamics would change the BMZ around the vent sites is unclear, but without currents taken into account, the calculations run by these models do not represent the most conservative or "worst-case" estimates, as argued in the draft (see 5.5-48). Therefore, we recommend that these water column current patterns be taken into consideration in the BMZ calculations and analyses.

MBNMS-RAP-1 cont.

2. Freshwater and Brackish Water Habitats

Coastal estuarine habitat of the lower Salinas Valley (including Elkhorn Slough) is reliant on freshwater inputs from local watersheds to maintain fresh and brackish water conditions. The extraction of additional summer surface water by the Pure Water Monterey GWR Project, used to offset reductions in desalination production of Preferred Alternative 5a, will lead to changes in salinity dynamics (including saltwater intrusion within surface waters) of the Salinas River, Old Salinas River, Moro Cojo, Tembladero and Elkhorn Slough estuaries. A full analysis should be done to compare the incremental benefits achieved from reducing the scale of the desalination project with the potential environmental impacts of extracting approximately 3,500 AFY of Salinas Valley surface water before Alternative 5a is recommended as the "preferable alternative."

MBNMS-RAP-2

See below for Tables 2-12 and 2-13 from DEIS Appendix H: Pure Water Monterey GWR Project, Consolidated Final EIR.

3. Monitoring Design

The DEIS contains a number of statements such as: "The Lead Agencies will prepare a Mitigation, Monitoring, Reporting, and Compliance Program (MMRCP)/ Environmental and Construction Compliance Monitoring Plan (ECCMP) if they approve the proposed project or an alternative analyzed in Chapter 5." The RAP offers to review and/or participate in the design of programs developed to monitor and assess social, physical, chemical or biological effects of the CalAm MPWSP.

MBNMS-RAP-3

4. Additional References for Consideration

Members of the RAP are aware of and have participated in additional studies characterizing the physical, chemical and biological conditions of the marine areas near the brine discharge site. The following documents should be considered when characterizing habitat of the impacted area.

MBNMS-RAP-4

Eittreim, S.L., A.J. Stevenson, L.A. Mayer, J. Oakden, C. Malzone, and R. Kvitek (1997). Multibeam Bathymetry and Acoustic Backscatter Imagery of the Southern Monterey Bay Shelf. http://montereybay.noaa.gov/research/techreports/treittreim1997b.html

Edwards, B.D., J.V. Gardner, and M.D. Medrano (1997). Grain Size, Organic Carbon, and CaCO3 of Surface Sediments from the Southern Monterey Bay Continental Shelf Seafloor. http://montereybay.noaa.gov/research/techreports/tredwards1997.html

Eittreim, S.L., editor (1997). Southern Monterey Bay Continental Shelf Investigations: Former Fort Ord Restricted Zone http://montereybay.noaa.gov/research/techreports/treittreim1997a.html

Eittreim, Stephen L., Kaye Kinoshita, George B. Tate and David A. Cacchione (1997). Rippled Scour Depressions of the Southern Monterey Bay Shelf [abstract]. In: MBNMS (editor). 1997. Facets of Biodiversity. Monterey Bay National Marine Sanctuary Currents Symposium; 1997 March 15; Santa Cruz, CA. p. 24. Abstract text:

> Similar to many other continental shelves of the world, the southeast Monterey Bay inner shelf contains distinct depressions floored with rippled sand in which the dominantly coarse material of the depressed floor moves as bedload. These 1-m-deep features occur in the offshore former Fort Ord region, the site of impingement of very large storm waves from the northwest, and have been ascribed to rip-current and alongshore flow associated with these large waves. Recently-acquired EM-1000 multibeam bathymetric data now show that two types of these features exist on the southeast Monterey Bay shelf: the dominantly shore-parallel type in 10-30m water-depth and the shore-normal type at greater water depths, to 60m. Both types tend to have thin pinch-outs that point offshore. The shore-normal, deep-water type is concentrated in one area that has been called a nodal zone for alongshore sediment transport separating the consistently southerly flow off northern Fort Ord from the variable and northerly flow off southern Fort Ord. The inter-trough areas of the shore-normal troughs are flat featureless plains with small ripples populated with abundant short seapens. No large crecentic dunes exist in the inter-trough areas as is the case on the shelf off north-central California. Repeated measurements show that, whereas the shallow shore parallel troughs are extremely dynamic, with major changes in shape over periods of months, the deep shore-normal trough system shows no change whatsoever, within the accuracies of differential GPS navigation.

MBNMS-RAP-4 cont.

References related to Ocean Currents

Cheriton, O. M., E. E. McPhee-Shaw, W. J. Shaw, T. P. Stanton, J. G. Bellingham, and C. D. Storlazzi (2014), Suspended particulate layers and internal waves over the southern Monterey Bay continental shelf: An important control on shelf mud belts?, J. Geophys. Res. Oceans, 119, 428–444, doi:10.1002/2013JC009360.

Cheriton, O. M., E. E. McPhee-Shaw, C. D. Storlazzi, K. J. Rosenberger, W. J. Shaw, and B. Y. Raanan (2014), Upwelling rebound, ephemeral secondary pycnoclines, and the creation of a near-bottom wave guide over the Monterey Bay continental shelf, Geophys. Res. Lett., 41, 8503–8511, doi:10.1002/2014GL061897.

Nickols KJ, Gaylord B, Largier JL (2012) The coastal boundary layer: predictable current structure decreases alongshore transport and alters scales of dispersal, Mar. Ecol. Prog. Ser. 464:17-35, doi:10.3354/meps09875.

Sevadjian, J. C., E. E. McPhee-Shaw, B. Y. Raanan, O. M. Cheriton, and C. D. Storlazzi (2015), Vertical convergence of resuspended sediment and subducted phytoplankton to a persistent detached layer over the southern shelf of Monterey Bay, California, J. Geophys. Res. Oceans, 120, doi:10.1002/2015JC010785.

Tables from APPENDIX H: Pure Water Monterey GWR Project, Consolidated Final EIR.

Table 2-12
Source Waters Flows: Existing and Assumed Available for Proposed Project (in AFY)

Type of Source Water:	Definitions of "Existing" Flows (in AFY)							Projected future flows in 2017 (AFY)	Proposed Project Maximum Use of Source Water Flows, (AFY) (Note 2)
	2012 (actual)	2013 (actual)	Historical Average Flows (averaging period)						
			2012-13 *(2-yr average)*	2009-13 *(5-yr average)*	2007-13 *(7-yr average)*	2004-13 *(10-yr average)*	All data (see below)		
Excess/Unused Regional Treatment Plant Municipal Effluent (MRWPCA, Regional Treatment Plant flow monitoring data, January 2014)	9,714	4,621	7,183	8,225	8,704	9,457	10,300 (1999-2013)	6,242 (Note 1)	3,000 to more than 5,000
Agricultural Wash Water Flows (Source: City of Salinas and MRWPCA, 2014)	3,058	3,228	3,143	2,876	2,579	NA (Note 3)	2,579 (2007-13)	3,732 (Note 1)	2,579
City of Salinas Urban Runoff to Salinas River (Source: Schaaf & Wheeler, 2015a)	229	19	124	196	165	176	225 (1932-2013)	225	
Reclamation Ditch at Davis Road (Source: Schaaf & Wheeler, 2015b)	6,759	1,965	4,362	7,034	6,374	7,482	7,159 (2003-13)	7,159	1,522
Tembladero Slough at Castroville (Source: Schaaf & Wheeler, 2015b)	9,190	2,610	5,900	9,536	8,531	10,030	9,593 (2003-13)	9,593	1,135
Blanco Drain Diversions (Source: Schaaf & Wheeler, 2014b)	NA (Note 5)	NA (Note 5)	NA (Note 5)	NA	NA	NA	2,620 (2010-12)	2,620 (Note 5)	2,620
Lake El Estero Storage Management Water (Source: Schaaf & Wheeler, 2014a)	65	0	33	66	55	60	87 (1952-2013)	87	87
TOTALS (Note 6)	**22,256**	**10,478**	**16,383**	**21,557**	**20,034**	**NA (Note 4)**	**25,404**	**NA**	**9,311 (Note 6)**

Notes:
1. Projection of flows available in first year of Proposed Project operation 2017 (See **Appendix B rev**).
2. Source: Schaaf & Wheeler/Monterey Peninsula Water Management District, 2015 (see **Appendix B rev**).
3. Flows not available for years prior to 2007.
4. Due to lack of data regarding agricultural wash water prior to 2007 and recent trends, these numbers could not be summed to provide a total of source water flows for this averaging period.
5. Blanco Drain flows calculated based on seasonal pumping records (April to November)
6. The total use of source water would be less than the sum of all source waters due to seasonal nature of the demands and losses due to Salinas Treatment Facility Storage and Recovery. The analysis assumes that new source water that exceeds the amount used by the Proposed Project for recycling would be disposed via the MRWPCA existing ocean outfall. The amount of effluent to be disposed to the MRWPCA ocean outfall would be less with Proposed Project than current conditions as shown in **Appendix B rev**.
NA = Not available.

Table 2-13

Source Water Use Scenarios, including Priority, Seasonality, and Use by Project Phase and Drought Reserve Status

Priority	Source	Seasonal Availability	Usage Period	Projected Use Scenarios by Type of Operational Year (AFY)		
				While Building Drought Reserve	Drought Reserve is Full at 1,000 AFY	During Years when CSIP Uses Drought Reserve
1	Unused Treated Municipal Wastewater	October through March	When available	1,992	1,787	1,503
2	Agricultural Wash Water (See Note 1)	Year-round	Store at Salinas Treatment Facility for summer	2,579	2,579	2,362
3	Salinas Urban Stormwater Runoff (See Note 1)	October through April				
4	Reclamation Ditch at Davis Road	Year-round, higher in October through April	When available	721	721	1,071
5	Blanco Drain Pump Station	Year-round, higher in April through September	When available	1,268	1,020	2,003
6	Tembladero Slough At Castroville	Year-round, higher in October through April	When available	0	0	478
7	Monterey Stormwater at Lake El Estero (See Note 2)	October through April	When available	0	0	0

Notes:
1. The amount of Agricultural Wash Water and Salinas Urban Stormwater Runoff source water use shown in this table are combined because they will be mixed, stored, and diverted to the Regional Treatment Plant together. The ability of the Proposed Project to recycle the full amount available (shown in Table 2-12) would be reduced due to the storage and recovery of these waters at the Salinas Treatment Facility and the associated percolation and evaporation during storage. The storage and recovery component does, however, shift the availability of the supplies to the dry season when there is a greater demand for irrigation water within the CSIP area.
2. Wet season supply from Lake El Estero is not required in these typical scenarios shown; however, there may be conditions during which diversions may occur.
See **Appendix B rev** for detailed monthly source water use projections based on water year type, drought reserve status, and project phase.

We thank the project proponents, lead agencies and consultants for their thorough evaluation of the many facets of this project, and for considering these comments.

Sincerely,

John Hunt
Chair
MBNMS Research Activity Panel

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

APR 10 2017

Regulatory Division

SUBJECT: File Number 2013-00111S

Ms. Bridget Hoover
Water Quality Protection Program Director
Monterey Bay National Marine Sanctuary
99 Pacific Street Bldg 455
Monterey, California, 93940

Dear Ms. Hoover:

This letter is written in response to a request for comments on the Draft Environmental Impact Report/Environmental Impact Statement concerning the Monterey Peninsula Water Supply Project. The project would include construction of a desalinization plant with related facilities for seawater intake, water treatment, and desalinated water conveyance and storage. The proposed project area extends approximately 18 miles along the Monterey Bay coast, from the town of Castroville in the north, to the City of Carmel in the south, Monterey County, California. Since the activities included in the project may impact waters of the U.S. (Monterey Bay and its tributaries and adjacent wetlands), the Corps of Engineers will need to review those portions of the project.

All proposed work and/or structures extending bayward or seaward of the line on shore reached by: mean high water (MHW) in tidal waters, or ordinary high water in non-tidal waters designated as navigable waters of the United States, must be authorized by the Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403). Additionally, all work and structures proposed in unfilled portions of the interior of diked areas below former MHW must be authorized under Section 10 of the same statute. USACE-1

All proposed discharges of dredged or fill material into waters of the United States must be authorized by the Corps of Engineers pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. Section 1344). Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands.

Depending on the nature and extent of project impacts within the Corps of Engineer's jurisdiction, the proposed project may require a standard individual 404 permit from the Corps and would need to comply with the 404(b)(1) Guidelines, which include the following prerequisites:

1) there are no practicable alternatives to the proposed discharge that would have a less adverse effect on the aquatic environment;
2) the proposed discharge would not cause or contribute to a violation of state water quality standards;

3) the proposed discharge would not contribute to significant degradation of waters of the U.S., and
4) the project would implement all appropriate and practicable measures to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

During the process of the 404(b)(1) analysis, the Corps would want the basic project purpose stated clearly to help determine whether the project, to achieve its basic purpose, is water dependent. In this context, a project would be water dependent if it requires access or proximity to or siting within a special aquatic site to fulfill its basic purpose. For reference, see 40 CFR Sec 230.10 -Restrictions on discharge, and in particular, Sec 230.10(a)(3). The alternative analysis presented in Chapter 5 of the EIS does not present enough information about impacts to waters of the U.S. to determine whether the proposed preferred project alternative is the LEDPA. Table 5.3-4 presents several alternatives and it appears that for the intake options, several may have decreased impacts compared with the preferred alternative. The 404(b)(1) alternatives analysis will determine the LEDPA, and when that is provided to the Corps, the applicant will need to demonstrate why some of the other options that may have less fill discharge to waters of the U.S. are either not practicable, would not achieve the basic project purpose, or would have other environmental impacts.

USACE-1 cont.

The Corps of Engineers regulatory program supports the national goal of "no overall net loss" of wetlands. For permitted activities that result in unavoidable losses, the Corps requires replacement wetlands to offset those losses. The U.S. Army Corps of Engineers and U.S. Environmental Protection Agency released a new Compensatory Mitigation Rule on April 10, 2008, to clarify how to provide compensatory mitigation for unavoidable impacts to the nation's wetlands and streams. A copy of this rule can be found on our Headquarters website: http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/mitig_info.aspx The new rule changes where and how mitigation is to be completed, but maintains existing requirements on when mitigation is required. The rule also preserves the requirement for applicants to avoid or minimize impacts to aquatic resources before proposing compensatory mitigation projects to offset permitted impacts.

USACE-2

A jurisdictional survey (delineation) should be provided by the applicant on a scaled topographic map or site plan. When this document is forwarded with the application, the Corps staff will validate and authenticate the limits of Corps jurisdiction. While it is not necessary to confirm all boundary points, the Corps will verify the jurisdictional boundary along one or more transects and may visit random intermediate points. All delineations of wetlands must be conducted in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual*, or appropriate Regional Supplement, and submitted to the District for review and verification. Two Regional Supplements have been approved for use within the boundaries of the San Francisco District: the *Arid West Supplement*, and the *Western Mountains, Valleys and Coast Supplement*. Copies of these documents are available to download on our website: http://www.spn.usace.army.mil/Missions/Regulatory/JurisdictionDeterminations.aspx.

The Corps of Engineers receives thousands of requests each year to perform wetland delineations for potential applicants for permits under Section 404 of the Clean Water Act. Due to limited staff and resources, response time can be several months or longer. To expedite this process, the San Francisco District encourages applicants to use consultants to conduct wetland delineations, especially for large and/or complex areas. The San Francisco District is not authorized to recommend any private consulting services and advises applicants to check references and referrals of prospective consultants before contracting services.

USACE-2 cont.

You may refer any questions on this matter to Frances Malamud-Roam of my Regulatory staff by telephone at 415-503-6792 or by e-mail at Frances.P.Malamud-Roam@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

Sincerely,

for Rick M. Bottoms, Ph.D.
Chief, Regulatory Division

Copy Furnished:

CA DFW, Monterey, CA
CA RWQCB, San Luis Obispo, CA

8.3.5 United States Environmental Protection Agency (USEPA)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 2 9 2017

Mr. Paul Michel, Superintendent
National Oceanic and Atmospheric Administration
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455A
Monterey, California 93940

Subject: Draft Environmental Impact Statement/Report for the Monterey Peninsula Water Supply Project, Monterey, California (EIS No. 20170000)

Dear Mr. Michel:

The U.S. Environmental Protection Agency has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

EPA recognizes the water supply challenges that result from the Monterey Bay area's geography and climate. In order to provide a reliable, long-term, and drought-resistant water supply to its customers, California American Water Company has applied to the Monterey National Marine Sanctuary for authorization to operate a seawater intake system, a reverse osmosis desalination plant, and ancillary facilities to serve Monterey county residents and businesses. We commend the Sanctuary for evaluating, in the Draft EIS, several project site locations, sizes, and technologies as alternatives to the Applicant's Proposed Action. The document's evaluation of a reasonable range of alternatives will aid the public and decision-makers in understanding and comparing the environmental impacts of various approaches to meeting the area's water supply needs. We also note that the North Marina Groundwater Model, presented in the Draft EIS, appears conceptually sound and well parametrized. USEPA-1

The Draft EIS identifies Alternative 5a as the Sanctuary's Preferred Alternative. Alternative 5a would authorize the drilling of seven subsurface slant wells, a brine discharge into Sanctuary waters, and a desalination facility and pipelines that would process a maximum of 6.4 million gallons per day. EPA has reviewed the Draft EIS and rated the Preferred Alternative *Lack of Objections (LO)* (see attached "Summary of EPA Rating Definitions"). The remainder of this letter provides EPA's suggestions to assist the Sanctuary in the development of the Final EIS. USEPA-2

Fort Ord Superfund Site

The Department of the Army's groundwater remediation projects at the former Fort Ord are being conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Contamination at the site includes the Operable Unit Carbon Tetrachloride Plume (OUCTP), located two miles from the proposed subsurface seawater intake wells. According to the Draft EIS, if the radius of influence of the proposed slant wells does reach the western portion of the OUCTP A-Aquifer Plume, then the decrease in groundwater elevations could alter the existing groundwater flow direction. This change in flow direction could pull the OUCTP Plume further northwest, spreading the contamination to areas that are not now contaminated above action levels. USEPA-3

Mitigation Measure 4.4-4 states that "the project applicant will reimburse the U.S. Army for the necessary additional costs to address changes in the plume flow direction, arrest mitigation of the plumes, and/or to remediate areas of new contamination created by slant well pumping." It is unclear exactly what would trigger implementation of Mitigation Measure 4.4-4. EPA suggests that the Sanctuary continue to work with the Army's Fort Ord Base Realignment and Closure office to refine Mitigation Measure 4.4-4 to include appropriate thresholds for action. In addition, it would be helpful to include, with input from the Army, a description of the possible mechanisms through which reimbursement of the Army could be provided, if necessary. EPA also suggests that the Final EIS and Record of Decision include a requirement that the Army be notified, in advance, of any operational changes to the project. USEPA-3 cont.

The Draft EIS also includes Mitigation Measure 4.4-3, under which groundwater monitoring that incorporates the Army's groundwater monitoring data would be conducted. Specifically, CalAm proposes to expand the existing regional groundwater monitoring program to include the area where groundwater elevations are anticipated to decrease by one foot, plus one mile (p.4.4-68). We encourage CalAm to continue to coordinate with the Army to ensure that placement of future groundwater monitoring wells would be complementary to any groundwater cleanup activities in the Fort Ord Superfund Site.

Energy Conservation

Proposed Mitigation Measure 4.11-1 states that:

> "CalAm shall 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, including but not necessarily limited to: the use of methane gas from the existing Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site; and installation of solar photovoltaic (PV) panels at or adjacent to the desalination plant."

EPA supports the use of renewable energy; however, we note that neither expansion of the LFGTE facility nor the installation of solar PV panels is included as part of the proposed project. The Draft EIS explains how the CalAm project could connect to the LFGTE facility, but provides no further discussion of PV. USEPA-4

We suggest that the Sanctuary evaluate the feasibility of incorporating solar PV panels into the project design. If PV panels are found to be feasible, include them in the Description of the Proposed Project in the Final EIS, and include an analysis of the operational energy savings that would result from incorporating solar energy into the project. Alternatively, consider evaluating solar panels separately as a mitigated alternative, consistent with 40 CFR 1502.14(f). One design option would be to install solar panels on buildings and on carports over parking lots, the latter which would also reduce evaporative emissions from vehicles and provide shade in addition to generating electricity.

Wetlands Impacts

The Draft EIS does not distinguish between permanent and temporary impacts. The U.S. Army Corps of Engineers generally states that temporary is no longer than one year and one growing season. In the Draft EIS, all construction impacts are categorized as temporary, even if they may be longer than a year. EPA suggests that the Final EIS clarify the definition of "temporary" relied upon for characterizing USEPA-5

impacts of the proposed project, and discuss temporary and any permanent impacts to waters of the US accordingly. USEPA-5 cont.

In closing, EPA appreciates the opportunity to review this Draft EIS. When the Final EIS is released for public review, please send one copy to the address above (mail code: ENF-4-2). If you have any questions, please contact me at (415) 972-3521, or contact Stephanie Gordon, the lead reviewer for this project, at 415-972-3098 or gordon.stephanies@epa.gov.

Sincerely,

Kathleen Martyn Goforth, Manager
Environmental Review Section

Enclosure: Summary of EPA Rating Definitions

cc: Bridget Hoover, Water Quality Protection Program Director, Monterey Bay National Marine Sanctuary
William Collins, Fort Ord Base Realignment and Closure Office, Department of the Army
Frances Malamud-Roam, U.S. Army Corps of Engineers
Grant Himebaugh, Central Coast Regional Water Quality Control Board

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment

8.3.1 Responses to Comments from Department of the Army, Fort Ord Base Realignment and Closure Field Office

FOBRAC-1 Mitigation Measure 4.4-4 applies to the proposed MPWSP at 9.6 million gallons per day (mgd) as described in Chapter 3, Project Description. As discussed in Impact 4.4-4 in Section 4.4, Groundwater Resources, the operation of the proposed MPWSP is not anticipated to adversely affect the Fort Ord Operable Unit Carbon Tetrachloride Plumes (OUCTP) plumes. Nonetheless, in an abundance of caution, Mitigation Measure 4.4-4 is proposed to address the possibility that the capture zone of the seawater intake system could extend to and affect the OUCTP plumes. Changes to Mitigation Measure 4.4-4 in response to this comment are discussed further below.

However, it is important to note that Alternative 5a, described in Section 5.4.7, may be selected by the Lead Agencies as the environmentally superior/agency preferred alternative. Under Alternative 5a, the seawater intake system would be operated at a reduced volume of 6.4 mgd, which in turn would result in a reduced capture zone that would not approach the OUCTP plumes, avoiding the potential (though not anticipated) impact of the proposed project.

Mitigation Measure 4.4-4 specifically includes the requirement that CalAm monitor the development of the radius of influence, defined as 1 foot of drawdown. In the event that the radius of influence approaches the OUCTP plumes, the monitoring would enable (and Mitigation Measure 4.4-4 would require) CalAm to respond prior to adverse effects on the OUCTP plumes. As discussed in Impact 4.4-4 in Section 4.4, the operation of the seawater intake system may result in a drawdown of 1 foot close to the northwestern edge of the OUCTP plumes. As explained in Master Response 8, Project Source Water and Seawater Intrusion, this would not necessarily change the flow direction at those locations. More importantly, the capture zone[1] would have a much smaller extent than the radius of influence, defined above. This means that the proposed project would be unlikely to capture any groundwater being treated at the OUCTP plumes. As previously noted, Mitigation Measure 4.4-4 is proposed as a conservative measure in the event that the capture zone extends further than anticipated.

In response to this comment, the following text has been added to the end of the CERCLA subsection in Section 4.7.2.1, Regulatory Framework:

> <u>The cleanup projects being conducted at the former Fort Ord, described above in Section 4.7.1 Setting/Affected Environment, are being conducted under CERCLA. If the MPWSP were to adversely affect the ongoing cleanup</u>

[1] A capture zone is the three-dimensional volume of aquifer that contributes the water extracted by the wells. See Master Response 8, Project Source Water and Seawater Intrusion.

activities, CalAm may be considered a potentially responsible party as defined in CERCLA.

In addition, Mitigation Measure 4.4-4 has been revised as follows:

Mitigation Measure 4.4-4: (Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes).

Prior to the start of MPWSP construction, CalAm ~~the project applicant~~ shall incorporate the future quarterly groundwater elevation monitoring results for the two OUCTP plumes into the well monitoring program described above in **Applicant Proposed Measure 4.4-3** until the two OUCTP plumes have been appropriately remediated and the RWQCB no longer requires remediation activities. Groundwater elevation data shall be obtained from the periodic monitoring reports developed by the U.S. Army and its contractors. The elements of the additions to the groundwater monitoring program proposed under this mitigation measure are described below.

- Using the most recent monitoring reports available through the U.S. Army and its contractors, the groundwater elevations in the A-Aquifer and the Upper 180-Foot Aquifer for wells at and downgradient of the westernmost edge of the two OUCTP plumes shall be incorporated into the well monitoring program described above for **Applicant Proposed Measure 4.4-3**.

- The groundwater elevation results shall be evaluated by CalAm and its consultants on a quarterly basis to assess whether the ~~cone of depression~~ -1 foot drawdown contour from the proposed seawater intake system is approaching ~~or has reached~~ the edge of the two OUCTP plumes. If the analysis concludes that the slant well pumping could intersect or could influence the flow direction of two OUCTP plumes, then CalAm ~~the project applicant~~ shall contact the U.S. Army, the Regional Water Quality Control Board – Central Coast Region, the California Department of Toxic Substance Control, and the USEPA to initiate communications and develop and implement a plan to either stop or decrease the pumping to prevent any impact on the OUCTP plumes. In the unlikely event that an impact does occur, CalAm shall bear ~~reimburse the U.S. Army for~~ the necessary additional costs to address changes in the plume flow direction, arrest migration of the plumes, and/or to remediate areas of new contamination created by slant well pumping. CalAm shall consider using existing groundwater remediation and monitoring wells that remain on the site to expand the existing treatment systems.

- When the ongoing remediation of the two OUCTP plumes has been completed and the RWQCB authorizes closure of the two OUCTP plumes remediation activities, this mitigation measure shall no longer apply.

FOBRAC-2 The commenter stated that unexploded ordinance (UXO) from the previous military use of the former Fort Ord may be present outside of the City of Seaside,

which administers an excavation permit program that includes the potential to encounter UXO. In Section 4.7.5.1, Impact 4.7-3 includes analysis for encountering UXO and requires compliance with the City of Seaside's Ordnance Remediation District regulations and the environmental protection provisions of the Findings of Suitability for Early Transfer (FOSET) agreement described in Section 4.7.1.1. The components of the proposed MPWSP that are located within the former Fort Ord are all located within the City of Seaside. As discussed in Impact 4.7-3, the only project component within the Seaside Munitions Response Area (MRA) is about 700 feet of the southernmost portion of the new Transmission Main, and construction within this area would therefore be required to comply with the permit. In addition, as explained on Draft EIR/EIS pages 4.7-7 to 4.7-8, investigations for and cleanup of UXO have been completed along General Jim Moore Boulevard where the project components would be located and the construction of the road would also have exposed UXO, if any. The commenter notes that the U.S. Army offers munitions recognition and safety training to anyone who requests it. As discussed in Impact 4.7-3, UXO recognition training is part of the permit requirements. No revisions were made in response to this comment.

8.3.2 Responses to Comments from Department of the Army, U.S. Army Installation Management Command

USARMY-1 The design and operation of the proposed MPWSP subsurface intakes is constrained by policies intended to avoid or minimize adverse environmental impacts outlined in the State Water Resources Control Board's (SWRCB) California Ocean Plan, California Coastal Commission (CCC) policies, and National Oceanic and Atmospheric Administration (NOAA) policy guidelines for desalination facilities. See EIR/EIS Section 5.3.1. The primary objectives of the MPWSP include developing supplies to replace Carmel River and Seaside Basin supplies that are constrained by regulatory and legal decisions. A secondary objective includes locating key project facilities in areas that minimize environmental impacts. See EIR/EIS Section 1.3.1. No change to the EIR/EIS has been made in response to this comment.

USARMY-2 In response to this comment, Section 1.5.4.3, Other Agencies' Consideration of the EIR/EIS and Proposed Project, has been revised as follows:

> On the federal level, agencies with ~~potential~~ reviewing or permitting authority include NOAA Fisheries, the U.S. Army, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service (USFWS).

USARMY-3 The Terminal Reservoir is no longer a proposed project component. Therefore, the description of Terminal Reservoir in Draft EIR/EIS Section 3.2.3.5, and all references and analysis related to the component, have been removed from the EIR/EIS.

USARMY-4 The comment cites information provided by CalAm that describes the constraints on locating the proposed ASR wells in a location other than as proposed because of land use (i.e., Fort Ord ordinance cleanup areas and residential), biological resources in the area, and limitations on the geologic formation. The Lead Agencies reviewed and concur with these limitations. Therefore, the Lead Agencies did not consider other sites for the proposed ASR-5 and ASR-6 wells in the preparation of the Draft EIR/EIS.

Note that the proposed ASR-5 and ASR-6 wells previously were analyzed by the U.S. Army Garrison, Presidio of Monterey, in a Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) (U.S. Army, 2010), after CalAm requested a right-of-entry and 50-year land lease with an option for renewals on the two parcels located within the Fitch Park Housing Area that are the current proposed locations of the ASR-5 and ASR-6 wells.[1] As explained in

[1] In the 2010 EA/FONSI, these wells are referred to as "ASR-3 and ASR-4;" however, as shown on Exhibit 2B in U.S. Army, 2010, these are the same sites currently proposed for the ASR-5 and ASR-6 wells as a component of the MPWSP.

the FONSI, that action was then determined to have no adverse impacts (after implementation of avoidance, minimization, and mitigation measures). The EA describes the process of evaluating alternatives to that project, and that CalAm considered several other locations for the ASR wells along the General Jim Moore Boulevard corridor (where existing ASR facilities are located), but did not pursue other locations. No additional discussion of evaluation of alternative sites was provided in the EA.

Final EIR/EIS Section 5.2, Alternatives Not Evaluated in Detail, has been revised to include the information provided in this response. See Section 5.2.7, Siting Alternatives for ASR-5 and ASR-6 Wells.

USARMY-5 Figure 3-14 has been replaced with higher-resolution graphics in the Final EIR/EIS.

USARMY-6 Draft EIR/EIS Section 3.3.2.2 describes the continuous 24-hour drilling of the ASR wells to be necessary until final depth is reached and the borehole is stabilized. The EIR/EIS text has been revised to include the explanation that this would 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, as could occur if drilling were paused. The access driveways from General Jim Moore Boulevard are shown in Final EIR/EIS Figure 3-14 and described in Section 3.2.4.1.

USARMY-7 In response to this comment, text in Section 3.3.4.3 has been revised as follows:

> Before connecting existing and new pipelines, CalAm would drain and disinfect the existing pipe segments before putting them into service. Similarly, upon completing construction activities, facility operators would disinfect the newly installed pipelines and pipeline connections before bringing the pipes into service. Effluent produced during the pipeline disinfection process would be discharged to the local stormwater drainage system in accordance with the Central Coast RWQCB *General Waste Discharge Requirements for Discharges with Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES Permit No. CAG993001) (RWQCB, 2011), or discharged in compliance with stormwater control requirements in the respective local jurisdictions (e.g., as directed by U.S. Army approvals on Army-owned property). See Impact 4.3-3 in Section 4.3, Surface Water Hydrology and Water Quality, for additional information.

The management of discharges of treated water and disinfectant from existing and newly installed pipelines during construction is discussed in Section 4.3.5.1 under Impact 4.3-3. In response to this comment, text in the first paragraph of this impact has been revised as follows:

> … The treated water generated from the draining of existing pipelines and the effluent generated from disinfection of newly installed pipelines would be discharged to the local storm drainage system or discharged in compliance with stormwater control requirements in the respective local jurisdictions (e.g., to percolation ponds as may be directed by U.S. Army approvals on Army-owned property). …

USARMY-8 Section 3.3.9, Construction Schedule, has been revised to clearly state that any pipelines constructed within U.S. Army-owned property would require daytime construction only.

USARMY-9 See Master Response 13, Demand (Project Need) and Growth, for a detailed discussion of reasonably foreseeable demand scenarios. Should demand, available water supply, or overall precipitation change, such that water needs are lowered, the desalination plant could be operated at a lower level. Indeed, although the Monterey Peninsula Water Management District (MPWMD) has not determined the allocation of water that could be provided by the proposed project, MPWMD stated in a comment on the Draft EIR/EIS (see comment MPWMD-21) that it may not allocate all the water produced by the project; one reason it may choose not to allocate the full amount would be to allow the plant to operate at less than full capacity, depending on the level of customer demand.

While the seawater intake system and desalination plant typically would operate year round, as discussed in EIR/EIS Section 3.4.1, there would be periods over the life of the project when CalAm would need to shut down the MPWSP Desalination Plant for a host of reasons (e.g., mechanical or electrical problems, water quality issues, loss of power, etc.). CalAm would be able to serve customer demand using other sources, including water stored in the ASR system, during such outages. Typical annual variation in rainfall is unlikely to affect the proposed operation of the desalination plant because, as shown in EIR/EIS Table 3-6, during the wet season when surface water is available to serve the Monterey District, desalinated product water would be injected into ASR and stored for later use. The quantity of desalinated product water that could be injected would be determined by the amount of desalinated water not being delivered to customers, and is estimated to be about 2,100 afy, but could vary in any given year. Further, as explained in Section 3.4.4, CalAm is obligated to replenish the Seaside Groundwater Basin on an approximately 25-year schedule, with the actual volume of water replenished during any given year varying but being equal to or greater than 700 afy based on a running 5-year average. Therefore, in the event that increased rainfall and/or decreased demand occur prior to completion of the Seaside Groundwater Basin payback period, CalAm could continue to operate the desalination plant as proposed in order to fulfill this obligation. In the event of a short-term power outage, CalAm would rely on other supply sources and then resume desalination plant operations; see EIR/EIS Section 3.4.1 and Table 3-7.

USARMY-10 The second column (U.S. Army) of the second row (Permit or Approval) of Table 3-8, Anticipated Permits and Approvals, has been revised to read:

> Real property outgrants for construction and operation for non-Army users (Army Regulation (AR) 405-80, 200-1) ~~Land Use (Army Regulation (AR) 405-80, 200-1)~~

USARMY-11 See response to comment USARMY-7.

USARMY-12 As discussed in Draft EIR/EIS Section 4.3.5.1 under Impact 4.3-2, all dewatering discharges related to excavations, well drilling, and well development would occur in compliance with regulatory requirements that are protective of the receiving waters; impacts associated with such discharges were found to be less than significant. To obtain NPDES coverage for construction related discharges, CalAm would be required to test dewatering effluent for possible pollutants and provide results of the water quality analysis to the Central Coast Regional Water Quality Control Board. The Construction General Permit requires all dischargers to electronically file all Permit Registration Documents (PRDs), Notices of Termination (NOT), changes of information, annual reporting, and other compliance documents required by permit through the State Water Board's Stormwater Multi-Application and Report Tracking System (SMARTS) website where this information is publicly accessible (https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml); no change has been made to the Draft EIR/EIS in response to this comment.

USARMY-13 The legend has been expanded to describe the features on Figures 4.7-7 and 4.4-8.

USARMY-14 The discussion of Disinfection Byproducts in Section 4.4.1.4 has been revised to reflect the cited information about past operation of existing ASR-3:

> After approximately 150 to 210 days of storage, THMs in four out of the five wells monitored had degraded to below the initial injection levels. Although the concentration of THMs in the ASR-3 well had not yet reached the initial injection level as of 210 days, the concentration was exhibiting a continuing downward trend suggesting the initial injection concentration would be reached within about 240 days. HAAs degraded to below reporting limits by 90 to 100 days. More importantly, throughout the 2015 water year, after the initial increase following injection, THMs were below the MCL of 80 micrograms per liter and HAAs were below the MCL of 60 micrograms per liter in all five wells monitored.

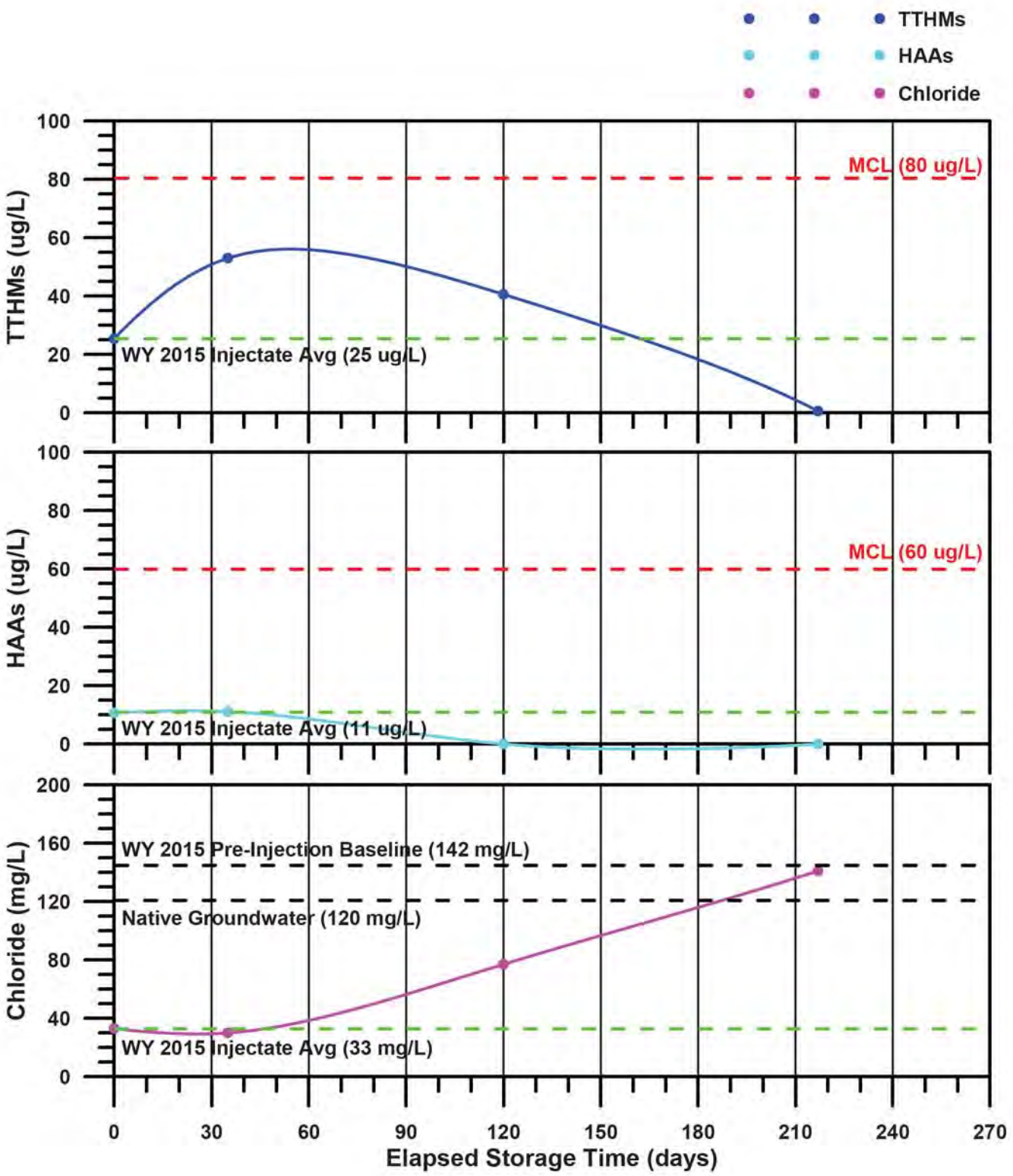
Pueblo Water Resources describes the rates and trends as "approximate" and "typical" because the actual rates and trends for an individual well during any one of the monitoring events vary and may be slightly outside of the typical trends observed since the evaluations began in 2001. Considering that the

concentrations are below MCLs and the trends are always downward back to the initial injection levels, this one outlier is not considered to be significant.

USARMY-15 As explained in the subsection titled Disinfection Byproducts in Section 4.4.1.4 Groundwater Quality, the concentrations of THMs in ASR-3 did initially increase and then decrease over time to below the Maximum Contaminant Level (MCL) or 80 micrograms per liter (mg/L). See the revision in response to comment USARMY-14 for clarification that THMs were below the MCL after the initial increase following injection.

USARMY-16 As discussed in the subsection titled Disinfection Byproducts in Section 4.4.1.4 Groundwater Quality, the concentrations of disinfection byproducts (DBPs) declined over time to below the regulatory action level of their respective MCLs in all wells monitored. Graphs of the concentrations of disinfection byproducts showing the rate of decline compared to the regulatory action level of their respective MCLs are shown on Figures 20 through 24 in Pueblo Water Resources, 2016, cited in Section 4.4. As requested, Figures 20 through 24 from Pueblo Water Resources, 2016, are provided in this Section 8.2.3. The graphs also show that with time, the concentrations of disinfection byproducts continued to decrease to below the initial injectate levels, indicating that elevated concentration conditions do not persist. The Pueblo 2016 report did not present pH values on the listed figures. However, Table 11 of the Pueblo 2016 report states that the 2014 and 2015 injectates had pH measurements of 7.2 and 7.6, both within the MCL for pH of 6.5 to 8.5. As listed in Table 4.4-2 in the Draft EIR/EIS, the injected volumes have varied from 2 to 1,117 acre-feet per year, but the concentrations of disinfection byproducts have always returned to below injectate levels. This pattern of initial increase followed by a decline in DBP concentration is expected independent of the injected volume.

As stated in Pueblo Water Resources, 2016 and Padre Associates, Inc., 2004, cited in Section 4.4, the formation and degradation of DBPs are consistent with other ASR sites with reduced (anaerobic) subsurface conditions. The DBPs are formed when naturally occurring organic and inorganic materials in the water and subsurface materials react with the disinfectants. The DBPs are then degraded through biometabolism by microorganisms indigenous to the groundwater aquifers or adsorbed to the materials of the aquifer matrix. Under the proposed project, the maximum volume of water that could be supplied to the ASR system from the MPWSP desalination plant would be 2,100 acre-feet per year. Given the limitations of Water Rights Permits 20808A and C, the maximum volume of water that could be diverted from the Carmel River system could be 5,326 acre-feet per year (Water Rights Permits 20808A and 20808C) that are subject to instream flow requirements; as noted above, the actual volume has been between 2 and 1,117 acre-feet per year due to the seasonal rainfall limitations and instream flow requirements. Thus, the volume of water that CalAm could inject into the ASR system in a given year could be a maximum of

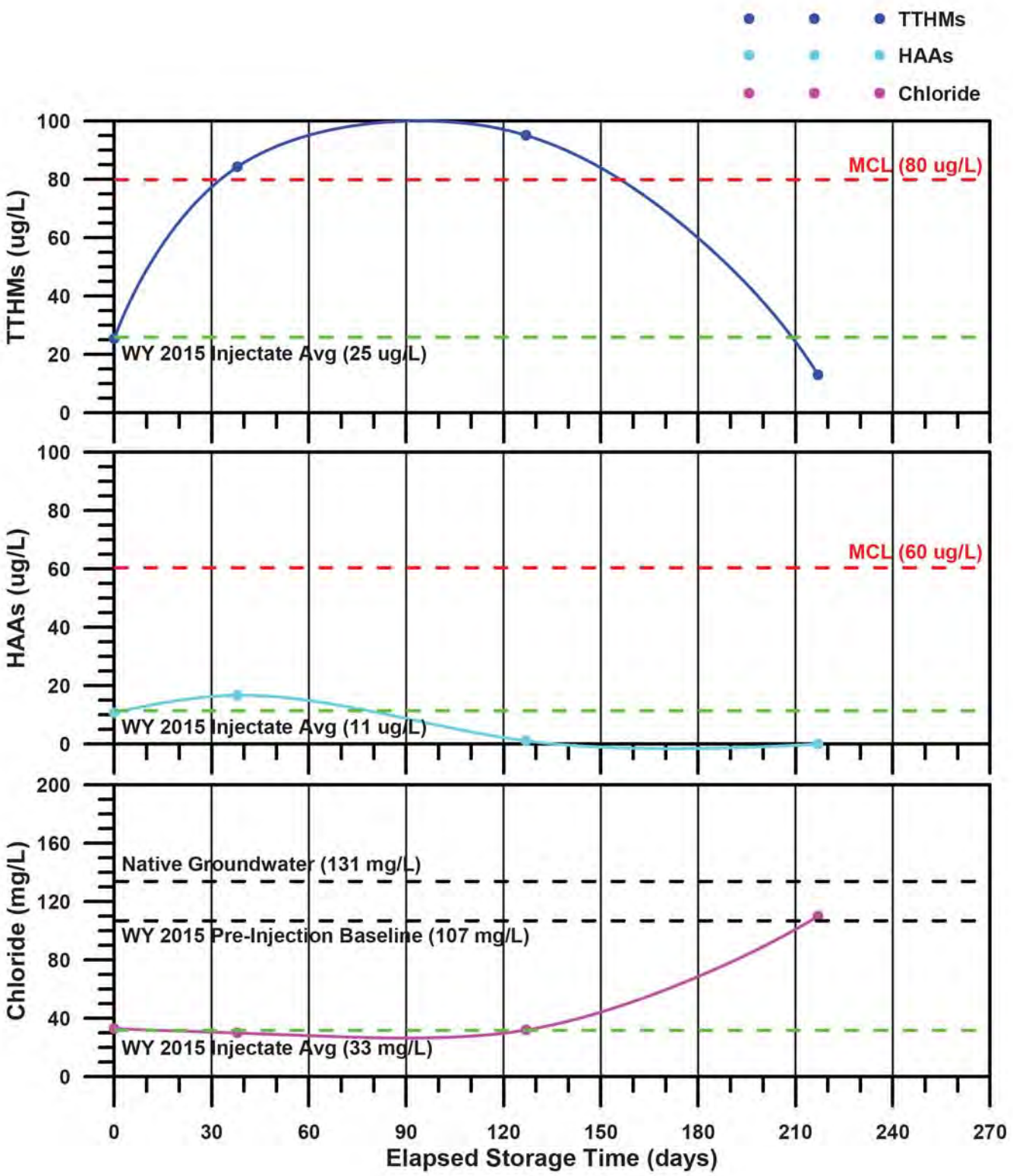


SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-1

ASR-1 Disinfection Byproducts Parameters

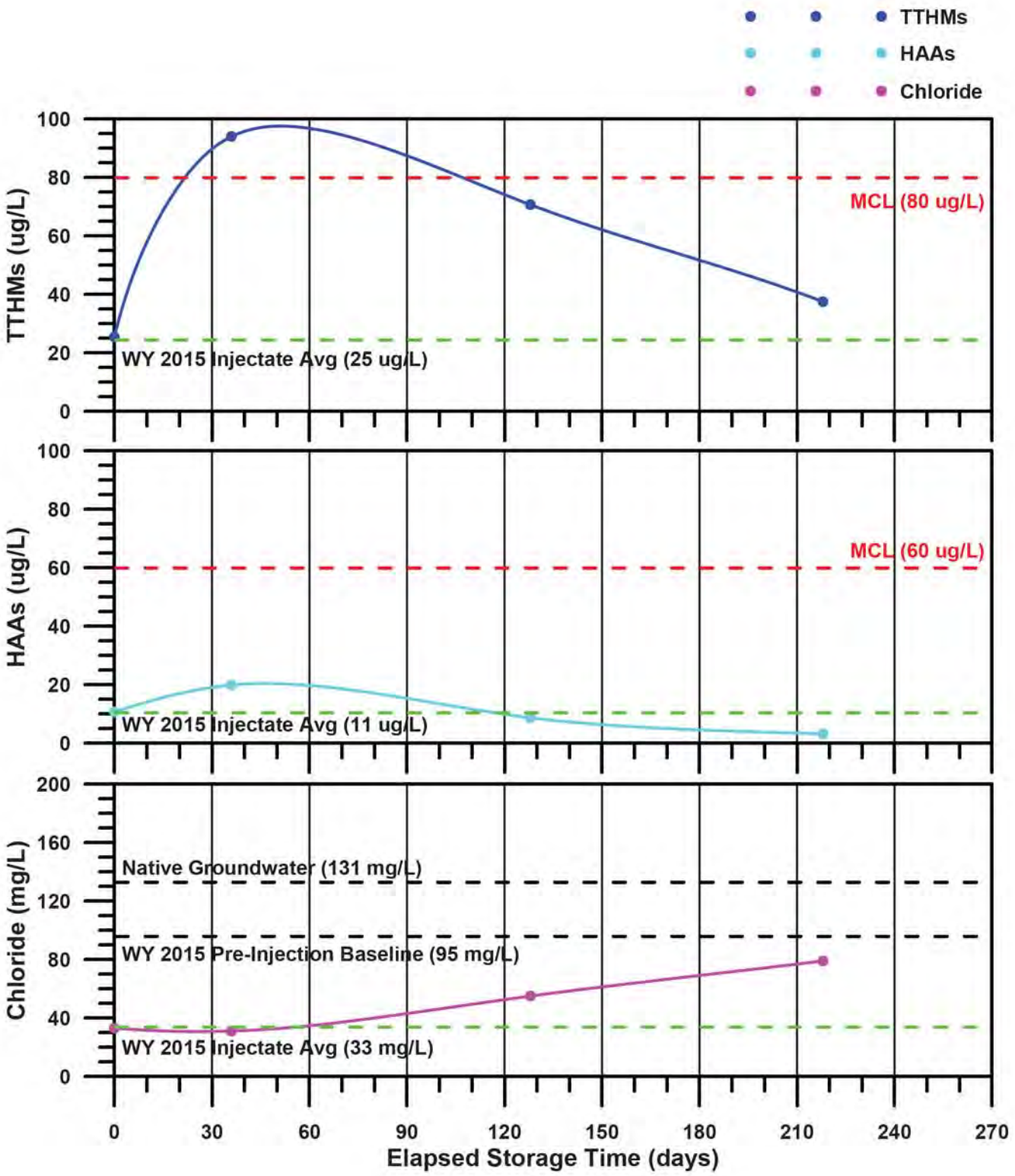


SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-2

ASR-2 Disinfection Byproducts Parameters

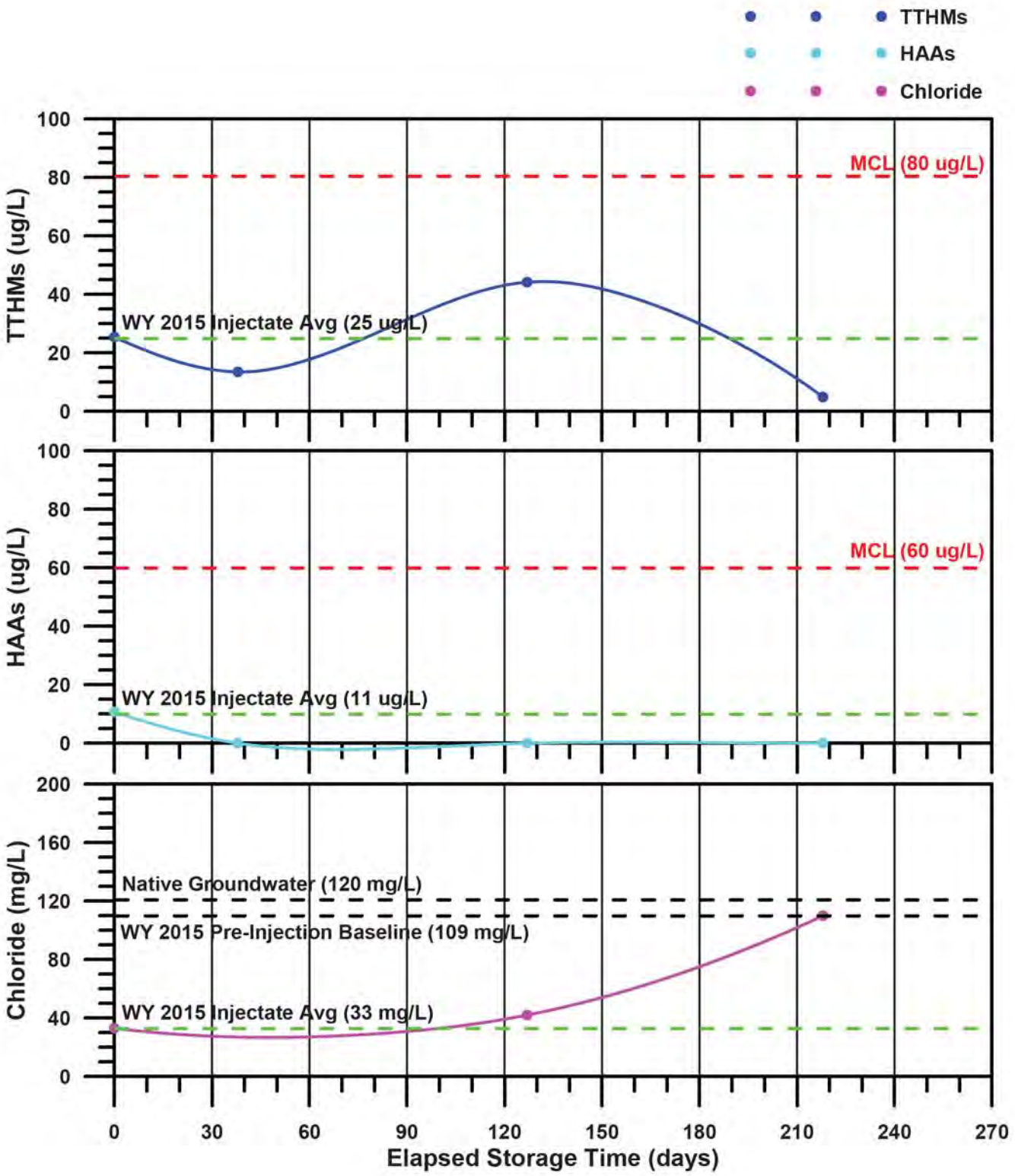


SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-3

ASR-3 Disinfection Byproducts Parameters

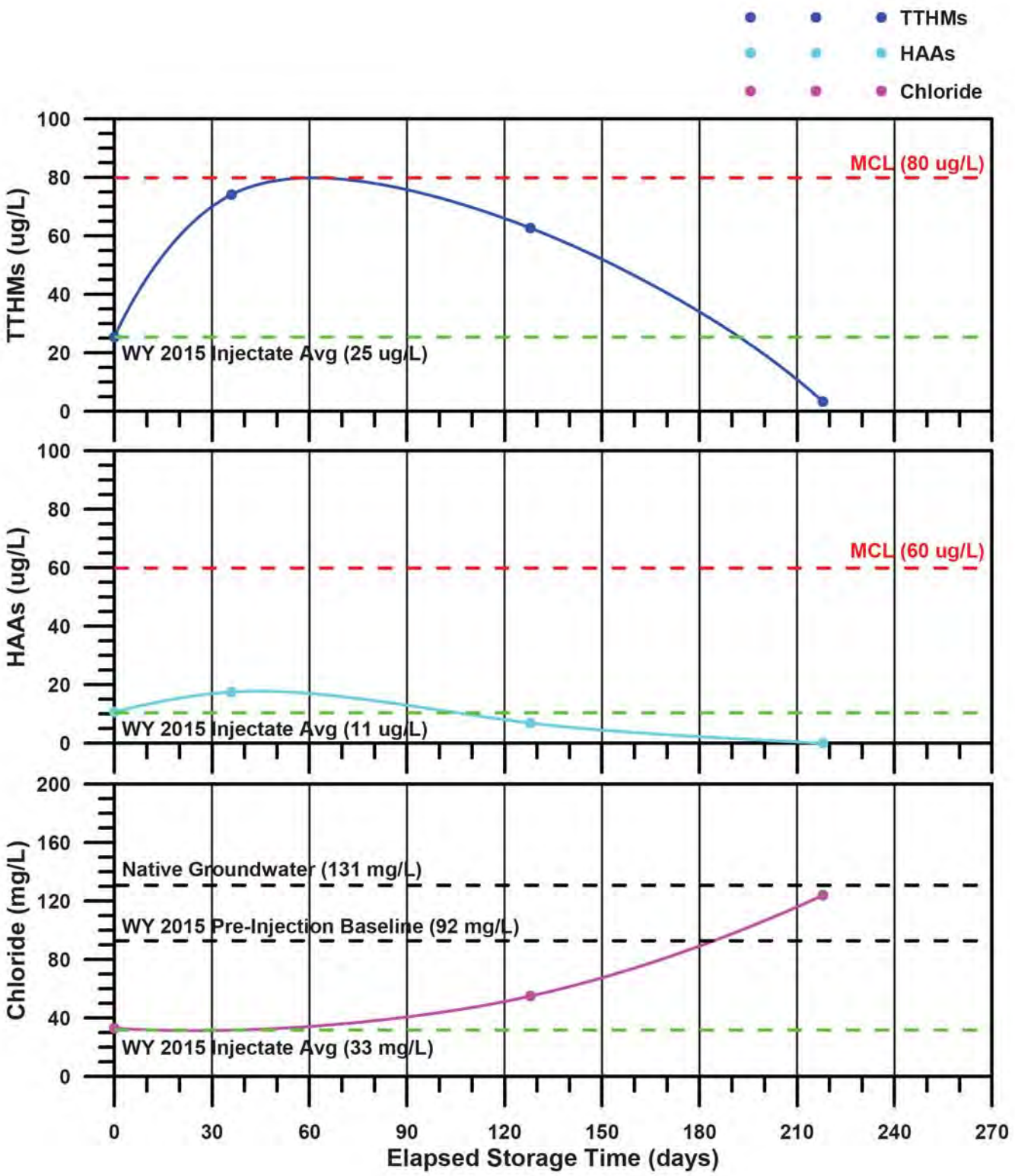


SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-4

SM MW-1 Disinfection Byproducts Parameters



SOURCE: Pueblo Water Resources, 2016

Monterey Peninsula Water Supply Project . 205335.01

Figure 8.3.2-5

SMS Deep Disinfection Byproducts Parameters

about 7,426 acre-feet. However, the water from the desalination plant would be advanced treated and would contain less organic material than the water injected from the Carmel River, which in turn would generate a lower concentration of DBPs. As stated above, an initial increase followed by a decline in DBP concentration is expected, independent of the injected volume.

USARMY-17 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. As explained in Impact 4.4-3 on Draft EIR/EIS page 4.4-68, the volume of treated desalinated water that would be routed to the ASR system for storage would depend on precipitation and the water demands in any given year, but is expected to be about 2,100 acre-feet per year. The MPWMD's 2006 ASR EIR analyzed the impacts on groundwater storage and water levels in the Seaside Groundwater Basin (MPWMD, 2006). The analysis presented a pilot study and a groundwater model to evaluate the impacts on groundwater storage in the SGB through operation of the ASR program. The analysis assumed up to 2,426 acre-feet per year could be injected through the implementation of the ASR program, of which up to 2,003 acre-feet per year would be extracted, consistent with the terms of the water rights permits. The findings of the analysis concluded that injecting excess treated water into the ASR injection/extraction wells was beneficial to groundwater storage within the Seaside Groundwater Basin, so long as extraction did not exceed injection on an annual basis. In addition, as discussed above in response to comment USARMY-16, the fate of the disinfection byproducts would be the same as described in the subsection titled Disinfection Byproducts in Section 4.4.1.4, Groundwater Quality, and the decline in DBP concentrations would be independent of the injected volumes of supply.

USARMY-18 As discussed in Section 4.4.1.2, Local and Regional Hydrogeology, the Santa Margarita Sandstone, the aquifer into which treated water would be injected, is a confined aquifer. At this depth and under these conditions, water would not be able to intermix with groundwater in other aquifers. There would be no organisms within the Santa Margarita Sandstone that could be affected by the disinfection byproducts.

USARMY-19 As discussed in the subsection titled Disinfection Byproducts in Section 4.4.1.4, Groundwater Quality, water injected into the ASR system is monitored to track the degradation rate of the disinfection byproducts. This monitoring program is required by the State Water Resources Control Board under the Division of Water Rights Permit 20808C – Amended Permit for Diversion and Use of Water, which includes rules for the recovery of the stored water (see Section 4.4.2, Regulatory Framework). The Permit requires quantifying the amount of time needed to ensure that, prior to extraction, the concentration of the disinfection byproducts has decreased to below MCLs. As an adaptive management strategy,

the residency time of the treated water in the aquifer is dictated by the degradation rate of the disinfection byproducts and can vary accordingly.

USARMY-20 The Integrated Natural Resource Management Plan (INRMP), Presidio of Monterey and Ord Military Community, has been reviewed and a brief summary added in Final EIR/EIS Section 4.6.2.1, Federal Regulations, in Section 4.6, Terrestrial Biological Resources. Additionally, provisions have been added to mitigation measures where appropriate to acknowledge the applicability of the INRMP to project components within U.S. Army-owned land within the Ord Military Community area. In Mitigation Measure 4.6-1p (Control Measures for Spread of Invasive Plants), item number 7 has been added as follows:

> Within U.S. Army-owned land, control measures for invasive species also shall conform to guidelines in the Integrated Natural Resource Management Plan (INRMP) Presidio of Monterey and Ord Military Community (e.g., Section 9.2.4, Undesirable Plant Pests).

See also response to comment USARMY-21, below. The Lead Agencies also anticipate that the U.S. Army will require compliance with applicable INRMP policies and guidelines in permits and/or other agreements obtained by CalAm for facilities within U.S. Army-owned land.

Table 4.6-4 in Section 4.6.2.3, Regional and Local Regulations, summarizes the regional and local (i.e., not federal or state) land use plans, policies, and regulations pertaining to inland biological resources that are relevant to the MPWSP and that were adopted for the purpose of avoiding or minimizing an adverse environmental effect, and has not been revised to include the INRMP (a federal land management plan).

USARMY-21 The Draft EIR/EIS includes measures for site restoration and tree replacement in accordance with local policies and ordinances. Mitigation Measure 4.6-1c, which applies to all project components, specifies that all temporarily disturbed areas shall be returned to pre-project conditions or better. Through implementation of Mitigation Measure 4.6-1c, any landscaped areas would be restored after work is complete. Through implementation of Mitigation Measure 4.6-4, CalAm would be required to comply with any local tree policies or ordinances, which may require the replacement of a protected tree depending on the applicable policy or ordinance.

In response to this comment, item 4 has been added to Mitigation Measure 4.6-4 (Compliance with Local Tree Ordinances) as follows:

> Tree removal, preservation, or mitigation on Army property shall be in accordance with the Integrated Natural Resource Management Plan Presidio of Monterey and Ord Military Community (November, 2008).

USARMY-22 See response to comment USARMY-10 regarding how Army Regulation 405-80 is now presented in Table 3-8, Anticipated Permits and Approvals. The comment is acknowledged, and it will be the responsibility of CalAm and/or its contractors to secure the necessary permits and comply with the conditions imposed at that time by permitting agencies.

USARMY-23 As described on Draft EIR/EIS page 4.9-27, where feasible and appropriate, project pipelines would be installed so as to avoid construction within vehicle travel lanes and to minimize impacts on roadway capacity and function. For the proposed pipeline along General Jim Moore Boulevard, the impact analysis conservatively assumed that construction could require temporary lane closures, and that the impact related to pipeline installation is considered to be potentially significant. However, the Traffic Control and Safety Assurance Plan (Mitigation Measure 4.9-1) would include measures to minimize the adverse effects of temporary lanes closures. Regarding access for emergency service providers (such as the POM Fire Station on General Jim Moore Boulevard), as stated on page 4.9-25, the Traffic Control and Safety Assurance Plan would stipulate that access for emergency vehicles would be maintained at all times. Access for the other uses cited in the comment would be maintained, but could be temporarily impeded by project construction. See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-24 Temporary disruption to public transit during construction is discussed under Impact 4.9-5. As stated there, pipeline installation activities could temporarily affect public transportation along affected roadways in the project area. However, implementation of Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan), which includes measures that would minimize impacts on public transportation during construction, would reduce the impact to a less-than-significant level. Relevant to the comment's concern about DoD personnel commuting by Monterey-Salinas Transit buses, the Traffic Control and Safety Assurance Plan would stipulate that construction truck trips and lane closures would be scheduled to occur outside of peak morning and evening commute hours to minimize adverse impacts on traffic flow (which includes traffic flow by buses).

USARMY-25 See response to comment USARMY-24 regarding the Traffic Control and Safety Assurance Plan (Mitigation Measure 4.9-1) and its stipulation that construction truck trips and lane closures would be scheduled to occur outside of peak traffic hours to minimize adverse impacts on traffic flow (if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications). As stated on Draft EIR/EIS page 4.9-24, the traffic control and safety assurance plan shall be developed on the basis of detailed design plans for the approved project, and shall include, but not necessarily be limited to the elements listed on Draft EIR/EIS pages 4.9-24 to 4.9-26. The following additional element has been added to the list of measures

that could be included in the traffic control and safety assurance plan required by Mitigation Measure 4.9-1:

- Develop a school traffic and pedestrian safety plan to minimize adverse impacts associated with truck trips and lane closures (e.g., in the vicinity of the Marshall Elementary School east of the General Jim Moore Boulevard / Normandy Road intersection).

USARMY-26 See response to comment USARMY-23 regarding emergency access during project construction. Mitigation Measure 4.9-1, Traffic Control and Safety Assurance Plan, requires CalAm and/or its contractors to obtain any necessary road encroachment permits prior to constructing each project component and to comply with the conditions of approval attached to all project permits. This measure has been revised to clarify that a permit from the U.S. Army is among those potentially necessary permits with which CalAm and its contractors must comply. The statement about the process the U.S. Army would undertake during its review of a request by CalAm to work on Army-owned property is acknowledged. See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-27 Potential increased wear-and-tear on the designated haul routes used by project construction vehicles is discussed under Impact 4.9-6. As stated there, the degree to which this impact would occur depends on the roadway design (pavement type and thickness) and the existing condition of the roadway. It is acknowledged that some roadways may not have been constructed to support use by heavy construction trucks and vehicles, and project-related increases in construction truck trips could cause excessive wear-and-tear on these roadways, a potentially significant impact. However, implementation of Mitigation Measure 4.9-6 (Roadway Rehabilitation Program), which requires rehabilitation of any roadways damaged following construction, would reduce this impact to a less-than-significant level. See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-28 The concern about the proposed use of a portion of the AAFES Service Station parking lot as a construction staging area is noted. The Draft EIR/EIS concluded that project-generated traffic would result in less-than-significant impacts, and it is unclear from the comment what the potential for additional traffic hazards would be. Regardless, the Lead Agencies acknowledge that CalAm's proposed use of staging areas is subject to agreements with property owners and that the U.S. Army may decline to permit the use of this location as a temporary construction staging area. As shown on EIR/EIS Figure 3-8, there are several other proposed staging areas in the vicinity that may be used if the location at the northwest corner of General Jim Moore Boulevard and Gigling Road cannot be permitted.

USARMY-29 The two-week (10 working days) duration is used as a threshold by some local noise ordinances, based upon the premise that construction noise exposure for less than two weeks is more tolerable (e.g., City of Oakland, Noise Ordinance No. 11895; Ventura County, Construction Noise Threshold Criteria and Control Plan). Text has been added to Section 4.12.2.1 to clarify the basis of this threshold. The purpose of this threshold in the EIR/EIS is to assess the significance of temporary or periodic increases over ambient noise levels that may not be found significant if judged solely in comparison to applicable local noise regulations (i.e., those described in Table 4.12-3 in Section 4.12.3.3). CEQA requires that impacts be assessed using both of these criteria (i.e., temporary and permanent noise increases).

USARMY-30 Both discussions cited by the commenter in Chapter 3 and Section 4.12 confirm that construction of the ASR Recirculation Pipeline, ASR Conveyance Pipeline, and ASR Pump-to-Waste Pipeline would occur during daytime hours. However, the discussion on Draft EIR/EIS pages 4.12-21 and 4.12-28 with regard to construction of the New Transmission Main incorrectly identified only those portions of the New Transmission Main within the City of Marina as assumed to occur during daytime hours. The second paragraph on Draft EIR/EIS page 4.12-21 and the last paragraph on page 4.12-28 of the Draft EIR/EIS have been revised to indicate that construction of the New Transmission Main within areas under U.S. Army jurisdiction (i.e., locations within the City of Seaside) also would occur during daytime hours only.

USARMY-31 New figures 4.12-2 through 4.12-5 have been added to Section 4.12 of the Final EIR/EIS. These figures depict the estimated noise contours associated with proposed 24-hour drilling associated with ASR well construction, consistent with those presented for the nearest receptor on page 4.12-29 of the Draft EIR/EIS.

EIR/EIS Table 4.12-8 presents the construction-related noise associated with construction of the New Transmission Main at the closest sensitive receptors. The data provided in that table are sufficient to draw significance conclusions for New Transmission Main construction for the purposes of CEQA and NEPA, and to require mitigation as described in Impact 4.12-1. In addition, as requested in the comment, the table below presents the construction-related noise associated with daytime-only open trench construction of the New Transmission Main at multiple distances, consistent with those presented for the nearest receptor in Table 4.12-8. As shown below, noise levels at residences greater than 180 feet would not exceed the 70 dBA Leq daytime threshold.

Pipeline (Construction Method)	Closest Sensitive Receptor(s)	Distance to Receptor (feet)[a]	Attenuated Construction Equipment Noise Level at Receptor(s) (dBA L_{eq})[a]
New Transmission Main (Open Trench Construction)	Residences (various)	100	74.0
		150	70.5
		180	68.9
		250	66.0
		400	62.0
		500	60.0
		750	56.5

USARMY-32 The predominant noisy activity associated with the construction of the ASR-5 and ASR-6 wells would be the 24-hour drilling for approximately four weeks. Sound-attenuating curtains can be installed surrounding this activity. Given the nighttime drilling activity and the understandable need to occasionally have windows open, Mitigation Measure 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors is identified on page 4.12-34 of the Draft EIR/EIS to address this impact to the extent feasible. However, acknowledging the inconvenience associated with temporary re-location, this impact is identified as significant and unavoidable.

Once drilling is complete, other construction activities would occur only during the daytime and would include concrete work, piping, mechanical and electrical work and installation of a control building. These later activities would involve occasional operation of off-road equipment (e.g., forklift or crane) and intensity would be similar to that of construction of a single family home. See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-33 Mitigation Measure 4.12-1e, Offsite Accommodations for Substantially Affected Nighttime Receptors, is revised as indicated below to establish an application mechanism based on sound level as opposed to distance:

Mitigation Measure 4.12-1e: Offsite Accommodations for Substantially Affected Nighttime Receptors.

CalAm shall provide temporary hotel accommodations for all residences and any other nighttime sensitive receptors ~~located within 100 feet of a designated construction work area that would~~:

1. <u>That would be</u> exposed to 24-hour <u>project</u> construction activities and
2. Where nighttime construction noise would exceed 60 dBA with windows closed or 35 dBA with windows open, even with implementation of acoustic barriers and/or shielding measures.

The accommodations shall be provided for the duration of 24-hour construction activities. CalAm shall provide accommodations reasonably similar to those of the impacted residents in terms of number of beds and amenities. If identified accommodations do not include typical residential kitchen facilities (e.g., cooktop, oven, full size refrigerator), then CalAm shall provide displaced individuals with a per diem allowance to offset costs of meals for the period of relocation.

See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-34 See text revision identified in response to comment USARMY-33 for additional discussion of appropriate accommodations.

USARMY-35 See text revision identified in response to comment USARMY-33 for additional discussion of proportionate accommodations.

USARMY-36 Mitigation Measure 4.12-5, Stationary-Source Noise Controls, provides a performance standard of 60 CNEL at the property lines of nearby residences and other noise-sensitive receptors. This standard is 5 dBA lower than that codified in Section 17.30.060 of the City of Seaside municipal code so as to address impacts related to permanent increases above those existing without the project (Impact 4.12-5). See response to comment USARMY-22 regarding CalAm's responsibility for obtaining permits.

USARMY-37 Table 4.13-1 in Section 4.13, Public Services and Utilities, has been revised to incorporate the requests of this comment. Specifically, columns have been added to address the Presidio of Monterey Fire Department and Presidio of Monterey Police Department. Check marks indicate that the Presidio of Monterey Fire Department serves U.S. Army Lands (including the locations of the proposed New Transmission Main and ASR Pipelines), City of Monterey, City of Seaside, and City of Marina. A check mark also has been added to indicate that the Presidio of Monterey Police Department serves U.S. Army Lands. The requested change to table note "a" has been made.

USARMY-38 The following text has been added to Section 4.13.1.1, Fire Protection, Law Enforcement, and Emergency:

Fire Protection

U.S. Army

The Presidio of Monterey Fire Department serves all Army property on the Ord Military Community and Presidio of Monterey, as well as holding mutual aid agreements with Seaside, Marina, the California State University of Monterey Bay, and the Monterey County Regional Fire District.

Police

U.S. Army

The Presidio of Monterey Police Department serves all Army property on the Ord Military Community and Presidio of Monterey.

USARMY-39 The comment's indication that sewer laterals may exist in the vicinity of the proposed ASR-5 Well is noted. Mitigation Measure 4.13-1a in Section 4.13, Public Services and Utilities, requires CalAm or its contractors to locate all underground utility lines, including sewage, prior to excavation and to highlight these lines on construction drawings. Mitigation Measure 4.13-1b requires that CalAm or its contractors coordinate final construction plans, schedule, and specifications with affected utilities. Exhibit 3 in the U.S. Army's Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) (2010) for these ASR well sites depicts an existing sewer line that is located more than 50 feet from the proposed locations of the ASR wells. Nonetheless, if additional utilities are present in this vicinity, the proposed mitigation measures will require that CalAm coordinate with the Army and/or any utility provider in this area prior to construction.

USARMY-40 In response to this comment the following text has been added to the end of Mitigation Measure 4.15-2b, Inadvertent Discovery of Cultural Resources:

> If cultural resources are inadvertently discovered during construction on Army-owned property, work shall immediately cease within a 100-foot radius of the find and the Army, Presidio of Monterey, Cultural Resources Manager (CRM) shall be contacted to assess the discovery. For discoveries on Army lands, the CRM will implement procedures set forth in the Presidio's Integrated Cultural Resources Management Plant (ICRMP) and Army Regulation (AR 200-1), which may include completion of consultation under Section 106 of the National Historic Preservation Act (NHPA) prior to resuming construction in the vicinity of the find. CalAm shall be responsible for completing any additional archaeological work required to comply with federal regulations.

USARMY-41 In response to this comment the following text has been added to the end of Mitigation Measure 4.15-4, Inadvertent Discovery of Human Remains:

> If human remains are encountered during construction on Army-owned property, work shall cease within a 100-foot radius of the discovery and the CRM shall be notified immediately. The CRM shall initially evaluate the site to determine if the remains are either Native American in origin or associated with a recent crime scene (i.e., 50 years old or less). If the remains appear recent, the CRM shall notify the Army's Criminal Investigation Command who shall assume control of the crime scene and custody of the remains. If the remains appear to be Native American in origin, the CRM shall notify the Presidio Garrison Commander and

implement procedures set forth in Section 3 of the Native American Graves Protection and Repatriation Act.

USARMY-42 The alignment for the "new" Transmission Main (see EIR/EIS Section 3.2.3.4) was chosen based on the connection point with existing and proposed ASR wells located in the Santa Margarita sandstone aquifer of the Seaside Groundwater Basin and other factors. The location of the Transmission Main was designed based on the most direct route, avoiding sensitive land uses while also meeting engineering standards for flow requirements based on pressure differences due to elevation changes between the ASR wells and the City of Monterey. This alignment was an alternative to the proposed Transmission Main alignment that was evaluated in the April 2015 Draft MPWSP EIR; the current alignment was determined in the April 2015 Draft EIR to be the environmentally preferred alternative; see also EIR/EIS Section 1.4.4, specifically, Item 2(a) and 2(b). Regarding ASR well location alternatives, see response to comment USARMY-4.

References

U.S. Army, 2010. Final Environmental Assessment and Finding of No Significant Impact, Monterey Bay Regional Water Project – Aquifer Storage and Recovery. September.

8.3.3 Responses to Comments from Monterey Bay National Marine Sanctuary Advisory Council, Research Activity Panel

MBNMS-RAP-1 Consistent with the requirements of the California Ocean Plan, the dilution analyses completed in support of the EIR/EIS impact assessment assumed zero current speed, representing the worst-case condition in terms of dilution. As described in EIR/EIS Section 4.3, the main environmental parameter relevant for dilution and mixing is the receiving water density structure. The comment presents data demonstrating currents in the vicinity of the diffuser to commonly be 5 to 10 centimeters per second (cm/s) and up to 20 cm/s (by citing: grant OCE0961810; cf. Cheriton et al., 2014; Sevadjian et.al., 2015; Nickols et al., 2012; Walters et al, 2012), and claims such currents could act to transport the brine plume away from the discharge structure more rapidly than occurs through dispersion and mixing alone. The comment urges further analysis in order to determine the effects of fast currents, i.e., whether such transport could result in salinities exceeding the Ocean Plan salinity requirement by causing incremental salinities to exceed 2 parts per thousand (ppt) above ambient conditions within or beyond the Brine Mixing Zone (BMZ) boundary.

Additional dilution analyses have been completed since the publication of the Draft EIR/EIS at the request of the Monterey Regional Water Pollution Control Agency (MRWPCA), in part to support NPDES permitting efforts of the Pure Water Monterey Groundwater Replenishment (GWR) Project. The additional dilution modeling was not required for the EIR/EIS analysis, is consistent with the analysis conducted for the Draft EIR/EIS, and does not change the conclusions of the EIR/EIS with respect to dilution-related impacts. A supplemental dilution analysis report was completed by Dr. Phil Roberts and is presented in Appendix D1 of the Final EIR/EIS. As part of the supplemental analyses and as a result of this comment, Roberts assessed the effect of currents on the dilution dynamics of dense, negatively buoyant discharges.

In the supplemental dilution analysis, Roberts simulated the pure brine discharge scenario (worst case condition due to highest density) at current speeds of 0, 5, 10, and 20 cm/s. Because of the orientation of the MRWPCA diffuser, the predominant current direction is expected to be perpendicular to the diffuser axis. The nozzles are perpendicular to the diffuser, so the current direction relative to the individual jets is either counter-flow (jets directly opposing the current), or co-flow (jets in the same direction as the currents). Simulations were run for both conditions and results were presented for the distance from the diffuser that plumes contact the ocean floor (representing the edge of the Zone of Initial Dilution (ZID)), as well as minimum dilution achieved at the edge of the BMZ. All results were compared to the analyses where current speed was assumed to be zero.

Overall, the effect of the currents is to increase dilution compared to the zero current results. The maximum impact distance (edge of the ZID) from the diffuser would occur with co-flowing currents and increase as the current speed increases. In this case, the maximum impact distance, or edge of the ZID, for currents of 20 cm/s is 27 feet (8.2 meters) with a minimum dilution of 78:1 as compared to 10 feet if zero current is assumed with a minimum dilution of 16:1. Clearly, even with the maximum current assumed, the edge of the ZID (27 feet or 8.2 meters) is much less than the distance to the edge of the BMZ (328 feet or 100 meters). Additionally, although the edge of the ZID is farther from the diffuser compared to the zero current case, the resulting salinities are substantially lower as greater dilution is achieved. It is therefore concluded that assuming zero current is indeed conservative and represents a "worst-case" scenario, and the Ocean Plan regulations would, therefore, be met for all anticipated currents. For a more detailed description of assessment methodology, model assumptions, and detailed results, see the Roberts report presented in Final EIR/EIS Appendix D1.

MBNMS-RAP-2 An EIR for the Pure Water Monterey GWR Project has been prepared and certified, and the project has been approved (see EIR/EIS Section 1.1, and Project No. 59 in Table 4.1-2) by the Monterey Regional Water Pollution Control Agency. That project is independent from the MPWSP, not the subject of this EIR/EIS, and not subject to modification or other decisions based on this EIR/EIS.

The cumulative impact analysis of Alternative 5a presented in each resource section of EIR/EIS Chapter 5.5 includes consideration of the GWR Project (see summary below and Section 5.5 for discussion of cumulative impacts associated with Alternative 5a). Also, the analysis has been structured to facilitate a comparison of impacts – direct, indirect, and cumulative – across the proposed alternatives. As noted in Section 5.6, Environmentally Superior Alternative/ NOAA-Preferred Alternative, because the GWR Project already has been approved and is not subject to any decisions based on this EIR/EIS, "the methodology of choosing the environmentally superior, or agency-preferred alternative, includes … Identifying two environmentally superior/agency-preferred alternatives; one without, and one with the GWR Project" (Draft EIR/EIS pages 5.6-2 and 5.6-3).

The GWR Final EIR concludes that the GWR Project would not result in a significant impact relating to altered salinity dynamics in local lagoon/estuary systems. The GWR Project diversions, including all proposed surface water, urban runoff, and wastewater diversions, were found to not have a significant adverse impact on brackish tidal and wetland habitat in the downstream portions of the watershed. This includes the Salinas River estuary, Old Salinas River channel, Tembladero Slough, Elkhorn Slough, and Moro Cojo Slough

during project operations (as documented on pages 4.5-97 through 4.5-105 and 4.11-71 through 4.11-73 of the Draft GWR EIR, as modified in the Final GWR EIR). Further, the combined GWR diversions from both Salinas River and Tembladero Slough/Reclamation Ditch were determined to result in a less-than significant impact on fisheries and aquatic habitat from the reduction in flows to the downstream coastal sloughs in the area (e.g., Elkhorn Slough), and Moro Cojo Slough.

Changes in salinity dynamics of the Salinas River, Tembladero Slough, Old Salinas River, and Elkhorn Slough estuaries were quantified as part of the environmental assessment presented in the GWR Final EIR. The GWR Project would not divert any flows from the Moro Cojo Slough and would not change the amount of flow into or out of the Moro Cojo Slough (MRWPCA and MPWMD, 2016, page 4.5-107); therefore, Moro Cojo Slough was not assessed and no cumulative impacts on Moro Cojo slough related to salinity dynamics could result from implementation of Alternative 5a.

As stated in the GWR Final EIR with respect to impacts on the Salinas River estuary, "Due to the very small percentage change in total [Salinas River] Lagoon inflows due to the Proposed Project (less than 1%), no measurable salinity changes to the [Salinas River] Lagoon would occur." (MRWPCA and MPWMD, 2016, page 4.5-104)

With respect to GWR project-specific impacts on Tembladero Slough and the Old Salinas River, the GWR Final EIR states:

> There is a potential for increases in salinity near the water surface, and/or longer periods of salinity accumulation in the Tembladero Slough and the OSR [Old Salinas River] Channel before seasonal flushing by winter runoff. …the Proposed [GWR] Project would have a less-than-significant impact on the water quality because the salinity changes would be within the range of salinities that are currently found in these water bodies every year. Species and habitats relying upon the OSR and Tembladero Slough waters have demonstrated their tolerance for high salinity waters. In particular much higher salinity levels (above 15 ppt) are seen during prolonged dry periods, such as late summer and fall of 2013 through 2015. (MRWPCA and MPWMD, 2016, page 4.5-105)

Finally, with respect to GWR project-specific impacts on Elkhorn Slough, the GWR Final EIR states:

> The analysis . . . shows that the Proposed Project would cause less than 0.8% salinity increase at Elkhorn Slough and 0.8% would occur only in a peak event using conservative assumptions such as drought conditions with low tidal influence. On a daily, weekly and monthly average, the Proposed [GWR] Project would cause changes of even less than that amount (i.e., an undetectable change given the wide variations of salinity

> in the slough caused by the tidal cycle each day). Salinity levels (including measurements of electroconductivity and total dissolved solids concentrations), are used as the primary indicator of the relative amounts of freshwater versus saline ocean water in a water body. Thus, the Proposed Project would not result in an adverse impact on the biological resources or other beneficial uses within the Elkhorn Slough. (MRWPCA and MPWMD, 2016, page 4.5-107)

With respect to potential cumulative impacts on salinity dynamics from reduced surface water flow volumes resulting from operation of Alternative 5a in combination with the GWR Project, the MPWSP EIR/EIS acknowledges that Alternative 5a slant well pumping could remove brackish groundwater from the Salinas River recharge system. As discussed in detail in Section 4.4.5 (see Draft EIR/EIS page 4.4-70), when a river gains groundwater from an aquifer, it is called a gaining stream; when it loses groundwater to the aquifer, it is called a losing stream. In the case of the MPWSP, the portion of the Salinas River within the area of influence from the slant well pumping is a gaining stream. Consequently, the slant well pumping could draw in groundwater that would otherwise discharge to the river. In this manner, Alternative 5a would remove groundwater from the Salinas River recharge system and reduce annual river flow volume by 0.11 percent (as compared to 0.16 percent for the MPWSP). However, Alternative 5a (or the proposed project) would not directly pull surface water from the Salinas River; it would intercept groundwater from the seawater-intruded Dune Sands Aquifer that would otherwise have flowed to the River. This magnitude of groundwater diversion from the Salinas River would be a minor, if not unmeasurable, reduction in surface water flows. As described in EIR/EIS Section 5.5.6.8, under the heading "Combined Impacts with GWR Project," the combined reduction in Salinas River flows resulting from Alternative 5a (0.11 percent) and the GWR Project (1 percent) would be a combined cumulative reduction of 1.11 percent of average annual flow.[1] Consistent with the findings of the GWR Final EIR, presented above, this reduction in annual flow would not result in any measurable salinity changes. The same conclusion is applied to Tembladero Slough, where the removal of 47 afy (as compared to 65 afy for the proposed project) of brackish groundwater discharge would not constitute a recognizable loss in surface flow, nor any measurable salinity change, for that system (see Draft EIR/EIS pages 4.6-236 and 5.5-161). Overall, the reduction of surface water attributable to slant well pumping under Alternative 5a would not result in a substantial reduction of surface flows in the Salinas River or Tembladero Slough and, due to the brackish quality, would not measurably

[1] The Draft EIR/EIS stated that the GWR Project would result in a 2 percent reduction in Salinas River Flows (page 5.5-162). The GWR Final EIR states that a 1 percent reduction would occur (MRWPCA and MPWMD, 2016, page 4.5-98). Section 5.5.6.8 in the Final EIR/EIS has been revised to reflect a combined cumulative reduction of 1.11 percent, rather than 2.11 percent.

alter the salinity dynamics of these estuary systems, even when considered in combination with diversions under the GWR Project. Alternative 5a would not affect surface flows in Elkhorn Slough and thus would not contribute to, or combine with, potential effects of GWR on the hydrology or water quality (relevant to salinity dynamics) of Elkhorn Slough.

A full analysis comparing the environmental advantages and benefits of implementing Alternative 5a is presented in detail in EIR/EIS Section 5.6.2 (summarized here). Alternative 5a (in combination with the already approved GWR project) would result in numerous environmental advantages as compared to other alternatives. The EIR/EIS acknowledges in Section 5.6.2 that, as a standalone project, Alternative 5a would not meet the project objectives or purpose and need in terms of providing adequate water supply to the CalAm Service District, but that the combination of Alternative 5a and with the approved GWR would meet project objectives. The cumulative effects of Alternative 5a and GWR may be greater for some of the construction-related impacts (such as air quality, traffic, and noise), and some of the footprint-related impacts (all of the GWR facility footprints plus the footprint of Alternative 5a). However, some of the operational impacts would be reduced compared to the proposed project because the 3,500 afy provided by the GWR Project would require less energy than producing it by desalination, resulting in reduced impacts on GHG and air quality. The reduced capacity desalination plant would require less source water from the slant wells, resulting in a reduction in the severity of the less than significant impacts on groundwater levels, and the GWR project would provide additional irrigation supplies to CSIP that would benefit the groundwater basin. Further, the GWR project would result in benefits relating to water quality, including reducing overall pollutants discharged to Monterey Bay (such as nitrogen), reducing pollutant loads in Clean Water Act 303(d)-listed impaired waters (Salinas River and Monterey Bay), and improving dry season flows and lagoon/estuary system water quality (Monterey One Water, 2017). For these reasons, Alternative 5a was determined to be the environmentally superior/NOAA-preferred alternative.

MBNMS-RAP-3 The Lead Agencies acknowledge and appreciate the Research Activity Panel's offer to review the Mitigation Monitoring, Reporting, and Compliance Plan (MMRCP) and/or Environmental and Construction Compliance Monitoring Plan (ECCMP) (see EIR/EIS Section 4.1.6). These plans will be prepared prior to Lead Agency decisions on the project or an alternative.

MBNMS-RAP-4 The recommendation to consider the scientific information contained in a series of additional scientific studies in the project area that were conducted in 1997 as part of the Fort Ord decommissioning effort is acknowledged. The Lead Agencies have considered these documents, and although the information on marine habitats, their composition, chemistry, and associated marine biota

contained in these studies does not alter the Lead Agencies' understanding or characterization of the Marine Biological Resources baseline in the EIR/EIS, the text describing Benthic (seafloor) Habitats on Draft EIR/EIS page 4.5-8 has been clarified as follows:

> The soft substrate habitat in the study area has been characterized as a flat featureless plain with a gently sloping sandy seafloor (Eittreim et al., 1997). This soft substrate habitat consists primarily of deltaic deposits from the Salinas River and other unclassified soft substrate. Physical processes, such as waves and currents, sort the sediment particles roughly by grain size so that there are onshore-offshore gradients in the fineness of sediments, with coarser sand deposits closer to shore grading to muddy areas farther offshore (Edwards et al., 1997). The sea floor habitat located within the high-energy surf zone is characterized by coarse, mobile sands and contains a limited range and abundance of species commonly including flatfish, rays, shrimp, crabs, sand dollars, amphipods, clams, and large polychaete worms (Edwards et al., 1997). […]

References

Monterey Regional Water Pollution Control Agency and Monterey Peninsula Water Management District (MRWPCA and MPWMD), 2016. Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project, Volume IV, Exhibit B. http://purewatermonterey.org/wp/wp-content/uploads/Volume-IV-EIR-Certification-and-Project-Approval-Jan-2016.pdf.

Monterey One Water, 2017. Overview of Pure Water Monterey, Ocean Plan Compliance, and Proposed NPDES Permitting Approach, Presentation to MBNMS and RWQCB, August 23.

8.3.4 Responses to Comments from United States Army Corps of Engineers

USACE-1 In Section 4.6.2, Regulatory Framework, the Draft EIR/EIS described that wetlands and other waters receive protection under Section 404 of the Clean Water Act and that Section 10 of the Rivers and Harbors Act governs certain activities in navigable waters. The Draft EIR/EIS also specified that the U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the U.S. Certain activities that could interfere with navigation may require a Section 10 permit and the discharge of dredge or fill into waters of the U.S. may require a Section 404 permit. Potential project construction and operational impacts on wetlands or waters regulated by the USACE are described in Impact 4.6-3 and Impact 4.6-8, respectively. Several project components have potential to impact waters of the U.S., including potential direct impacts from the new Desalinated Water Pipeline, Castroville Pipeline, and Ryan Ranch-Bishop Interconnection Improvements. Some other project components, including the subsurface slant wells and Source Water Pipeline, would have potential for indirect impacts resulting from construction, such as soil erosion or the inadvertent discharge of toxic construction chemicals resulting in polluted runoff to waters of the U.S. Mitigation measures are proposed under Impacts 4.6-3 and 4.6-8 to address these potential impacts. The type of USACE permit (Nationwide, Individual, or other) would be determined during the permitting process, which is separate from the CEQA/NEPA analysis, and is dependent upon the extent of impacts within USACE jurisdiction. A wetland delineation report has been prepared since publication of the Draft EIR/EIS. It is referenced in Section 4.6 of the Final EIR/EIS as AECOM, 2017, and it was transmitted by CalAm to the USACE on November 7, 2017, with a request for a Preliminary Jurisdictional Determination, but it has not yet been verified by the USACE or other permitting agencies. Since the wetland delineation report concludes that the proposed project could impact less than 0.5 acre of jurisdictional waters of the U.S., it is anticipated the proposed project would qualify for a Nationwide Permit 12 (Utility Line Activity), and an individual permit would not be necessary. If that is the case, a 404(b)(1) alternatives analysis to identify the Least Environmentally Damaging Practicable Alternative (LEDPA) would not be required.

The EIR/EIS analyzes impacts on waters of the U.S. consistent with the requirements of CEQA and NEPA, as described in Section 5.1.1, Alternatives Analysis – CEQA/NEPA Requirements. The alternatives analysis in the Draft EIR/EIS provides adequate information for compliance with CEQA and NEPA guidelines. Table 5.3-4, which is referenced in the comment, presents a preliminary evaluation of intake options for purposes of screening alternatives; this table is not intended to provide detailed impact analysis but provides documentation of the full range of alternatives initially considered. Alternatives carried forward for full analysis are described in Section 5.4 and evaluated, in detail, in Section 5.5. Sections 5.5.6.3 through 5.5.6.8 provide detailed discussions of the impacts of alternatives carried forward for

analysis on biological resources, including waters of the U.S. Please note that the level of detail required for permitting under Clean Water Act Section 404(b)(1) will be developed as part of the permitting process. If an Individual Permit is required, then CalAm would submit an application that complies with the 404(b)(1) Guidelines.

USACE-2 Mitigation Measure 4.6-3 requires that the project be designed to avoid and/or minimize impacts on jurisdictional waters. Where disturbance to jurisdictional waters cannot be avoided, then compensation shall be provided. See response to comment Marina-79, in Section 8.5.1, which describes revisions to this mitigation measure. The revised measure requires that any temporarily impacted jurisdictional waters be returned to pre-construction conditions or better and that compensation for permanent impacts shall be provided at a 2:1 or greater ratio. Providing compensatory mitigation for loss of jurisdictional waters at a ratio of at least 2:1 would ensure consistency with the USACE's program, which supports the national goal of "no overall net loss" of wetlands, and with the USACE's requirement to replace wetlands to offset unavoidable losses.

As described on page 4.6-35 of the Draft EIR/EIS, wetlands or waters potentially regulated by the USACE, RWQCB, and/or CCC were mapped in the project's study area during field surveys conducted in support of the project. As described in response to comment USACE-1, a wetland delineation report, based on some of these field surveys and conducted in accordance with USACE guidance, has been prepared since publication of the Draft EIR/EIS. It was transmitted by CalAm to the USACE on November 7, 2017, with a request for a Preliminary Jurisdictional Determination, but it has not yet been verified by the USACE or other permitting agencies.

8.3.5 Responses to Comments from United States Environmental Protection Agency

USEPA-1 The Lead Agencies acknowledge the USEPA's opinion regarding the adequacy of the evaluation of alternatives and of the North Marina Groundwater Model presented in the Draft EIR/EIS.

USEPA-2 The Lead Agencies acknowledge the USEPA's rating of the preferred alternative as "Lack of Objections."

USEPA-3 Mitigation Measure 4.4-4 has been revised to clarify that CalAm would contact the U.S. Army, USEPA, and other agencies in the event that the extent of 1 foot of drawdown approaches the Fort Ord plumes. The corrective actions would be discussed with these agencies and may include changing the operations of the MPWSP and/or reactivating and/or expanding the existing wells and treatment systems in the former Fort Ord area. A drawdown of 1 foot or less would be unlikely to significantly affect groundwater flow directions again because of the much larger seasonal fluctuations in the Salinas Valley.

Please see clarifications made to Mitigation Measure 4.4-4 regarding CalAm's actions if slant well pumping could intersect or could influence the flow direction of two OUCTP plumes, in response to comment FOBRAC-1 in Section 8.3.1.

USEPA-4 In response to this and other comments on the Draft EIR/EIS, the quoted text in the comment has been deleted from Mitigation Measure 4.11-1 and the measure has been revised as shown below. The proposed Monterey Regional Waste Management District landfill-gas-to-energy (LFGTE) facility Phased Capacity Improvements Project is not part of the proposed project, but is analyzed as a project in the cumulative scenario (see project No. 58 in EIR/EIS Table 4.1-2, Cumulative Projects).

The revised Mitigation Measure 4.11-1 continues to provide that on-site solar photovoltaic (PV) panels may be used to satisfy the net zero operational GHG emissions requirement. In response to this comment, a subsection entitled "Secondary Impacts of Mitigation Measure 4.11-1" has been added to Final EIR/EIS Section 4.11 to address the potential impacts of on-site PV panels. Because it is not yet known which option or options would be implemented (e.g., because the feasibility of the LFGTE project, being evaluated independent of the proposed project, has not yet been determined but may make the use of on-site PV unnecessary or not cost-effective), this option is evaluated at a programmatic level based on a conceptual description of a potential on-site PV installation.

Mitigation Measure 4.11-1: GHG Emissions Reductions Plan.

(a) ***Energy Conservation Technologies.*** CalAm shall have a qualified professional <u>(a licensed mechanical engineer or other appropriately</u>

certified professional approved by the CPUC) prepare and submit a GHG Emissions Reduction Plan (Plan) to the CPUC ~~and the Sanctuary~~ for approval prior to the start of project construction activities. Once approved by the CPUC ~~and the Sanctuary~~, the Plan shall be implemented. The Plan shall 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 based on the energy portfolio of PG&E, the applicable Electric Service Provider under Direct Access service, or Monterey Bay Community Power and its successors and assigns, as applicable.

The Plan 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. The carbon footprint estimate for the project shall include consideration of all proposed energy recovery and conservation technologies that will be employed by the project, and shall describe the approximate GHG emissions reductions that will be associated with each technology.

(b) ***Renewable Energy.*** CalAm shall ~~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, including but not necessarily limited to: the use of methane gas from the existing Monterey Regional Waste Management District (MRWMD) landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site; and installation of solar photovoltaic (PV) panels at or adjacent to the desalination plant. The carbon footprint estimate for the project shall include consideration of all renewable energy that would directly be available and used by the project in the form of kilowatt hours per year, and shall describe the approximate GHG emissions reductions that will be associated with the use of the renewable energy.~~ ensure that the approved project's operational electricity use results in net zero GHG emissions. In meeting this net zero GHG emissions requirement, subject to the procedures below, CalAm shall adhere to the following loading order:

(1) Obtain 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. If renewable energy from the LFGTE facility is secured, CalAm must demonstrate that the associated criteria pollutant emissions, when combined with the other operational criteria pollutant emissions disclosed in EIR/EIS Table 4.10-7, would not exceed the Monterey Bay Air Resources District significance thresholds.

(2) Procure renewable energy from off-site sources within California via purchases from one or more of the following: (a) PG&E, (b) an Electric Service Provider under Direct Access service, or (c) Monterey Bay Community Power and its successors and assigns.

(3) Procure and retire Renewable Energy Certificates (also known as RECs, green tags, Renewable Energy Credits, Renewable Electricity Certificates, or Tradable Renewable Certificates) for projects or activities in California.

(4) Procure and retire Carbon Offsets, in a quantity equal to the GHG emissions attributable to the project's operational electricity use. "Carbon Offset" means an instrument issued by an Approved Registry and shall represent the past reduction or sequestration of one metric ton of CO_2e achieved by any GHG emission reduction project or activity within California. "Approved Registry" means: (i) the Climate Action Reserve, the American Carbon Registry, the Verified Carbon Standard, or the Clean Development Mechanism; or (ii) any other entity approved by the California Air Resources Board to act as an "offset project registry" under the state's Cap-and-Trade Program.

CalAm may meet this net zero GHG emissions requirement via any of the options, or their future equivalents, or any combination of options, or their future equivalents, included in the aforementioned loading order.

Further, CalAm shall progress through the loading order on the basis of the options' physical and economic feasibility, as reasonably determined by CalAm, with low-cost options preferred over high-cost options. In the event that options have equivalent costs, options enumerated earlier in the loading order shall be selected by CalAm over options enumerated later in the loading order. On or before June 1 of each year the approved project is in operation, CalAm shall submit documentation to the CPUC demonstrating that the project's operational electricity use in the immediately preceding calendar year resulted in net zero GHG emissions. Calculation of the GHG emissions attributable to the project's operational electricity use (if any) shall be calculated by CalAm on an annual basis using the most up-to-date emissions coefficient for purchased electricity (if any), as compiled or published by PG&E, the applicable Electric Service Provider under Direct Access service, or Monterey Bay Community Power and its successors and assigns, as applicable. If the CPUC determines that CalAm failed to achieve net zero GHG emissions for the approved project's operational electricity use for a particular year, then the CPUC shall notify CalAm in writing of the exceedance within 45 days of receipt of the documentation submitted by CalAm under this mitigation measure. The notice shall specify the metric tons of GHG emissions that exceeded the net zero obligation. Within 45 days of receipt of this notice, CalAm shall procure and retire Carbon Offsets in an amount at least equivalent to the exceedance, and will submit documentation to the CPUC demonstrating this procurement and retirement.

USEPA-5 For the purposes of the Draft EIR/EIS analysis, temporarily impacted areas include those areas that would be returned to pre-project conditions following construction and permanently impacted areas include those areas that would be permanently lost following construction. The discussion in Impact 4.6-3 describes any temporary or permanent impacts on wetlands or waters. For example, in the discussion for the New Desalinated Water Pipeline on Draft EIR/EIS page 4.6-212 states, "Riparian woodland and scrub at Locke-Paddon Park and near the intersection of Marina Green Drive and Del Monte Boulevard are potential waters of the U.S./waters of the state. Pipeline installation activities could temporarily impact 0.42 acre of riparian woodland and scrub." As part of the permitting process, CalAm would apply for a Clean Water Act Section 404 permit and/or a Rivers and Harbors Act Section 10 permit from the U.S. Army Corps of Engineers (USACE). The evaluation of impacts as defined by the USACE would be determined during that permitting process, which is separate from this CEQA/NEPA analysis.

In response to this comment, the following change has been made to Impact 4.6-3 on Draft EIR/EIS page 4.6-209:

> Direct impacts on those wetlands could include removal of vegetation, soil, or structures and/or the placement of fill in the wetland/other water, or hydrological modifications (i.e., altering the flow of water in or out of the wetland or water). Temporarily impacted areas include those areas that would be returned to pre-project conditions following construction. Permanently impacted areas include those areas that would be permanently lost following construction.

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8.4 State Agency Comments and Responses

8.4.1 California Coastal Commission (CCC)
8.4.2 California Department of Fish and Wildlife (CDFW)
8.4.3 California Department of Parks and Recreation (CA Parks)
8.4.4 California State Lands Commission (CSLC)
8.4.5 State Water Resources Control Board (SWRCB)

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8.4.1 California Coastal Commission (CCC)

STATE OF CALIFORNIA—NATURAL RESOURCES AGENCY EDMUND G BROWN, JR., GOVERNOR

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
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March 29, 2017

Mary Jo Borak, CEQA Lead
California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94018

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

FILED ELECTRONICALLY

RE: Comments on Draft Environmental Impact Report ("DEIR") / Draft Environmental Impact Statement ("DEIS") for proposed Monterey Peninsula Water Supply Project

Dear Ms. Borak and Ms. Grimmer:

Thank you for the opportunity to provide comments on the above-referenced document regarding the proposed Monterey Peninsula Water Supply Project. The proposed project would provide a water supply for the California-American Water Company's ("Cal-Am's") service area in the Monterey Bay area. It would produce drinking water using a seawater desalination facility obtaining source water from slant wells to be constructed along the Monterey Bay shoreline in the City of Marina and would discharge a high-salinity effluent through an existing wastewater outfall being used by the Monterey Regional Water Pollution Control Authority. The produced water would be transported through a distribution system of pipelines and associated infrastructure to be built within several jurisdictions in the Monterey Bay area.

The proposed project will require several permits and approvals, including coastal development permits ("CDPs") from several nearby local jurisdictions and from the Coastal Commission for proposed development within the Commission's retained jurisdiction. Coastal Commission staff is currently coordinating its project review with other state agencies, and we expect to conduct a full review of the project's conformity to relevant Coastal Act policies and requirements upon Cal-Am's submission of its CDP application to the Commission.

We reviewed key sections of this DEIR/DEIS related to issues of conformity to Coastal Act policies and we have just a few brief comments:

- Use of subsurface intakes: We concur with the use of subsurface intakes where feasible as a means to avoid and minimize adverse effects on marine life. We commend the project applicant for selecting a subsurface method for its proposed project. CCC-1

- Environmentally sensitive habitat areas: The document's *Section 4.6 – Terrestrial Biological Resources* identifies the upland area proposed for the project's slant wells as "primary habitat" under the City of Marina's Local Coastal Program designation. This designation applies to areas that provide habitat for rare, endangered, or threatened plant and animal species or habitat that is necessary for the survival of an endangered species. Allowable CCC-2

types of development allowed within these areas are extremely limited and must be designed and sited to minimize habitat impacts. We recommend the Final EIR thoroughly evaluate and consider alternatives that would fully avoid or minimize habitat impacts within areas designated as primary habitat.

CCC-2 cont.

Again, thank you for the opportunity to comment, and please let me know if you have any questions.

Sincerely,

Tom Luster

Tom uster
Energy, Ocean Resources, and Federal Consistency Division

8.4.2 California Department of Fish and Wildlife (CDFW)

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
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(559) 243-4005
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

February 27, 2017

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Subject: Draft Environmental Impact Report /Environmental Impact Statement (DEIR/EIS) for the CalAm Monterey Peninsula Water Supply Project (MPWSP), State Clearinghouse No. 2006101004

Dear Ms. Borak and Ms. Grimmer:

The Department of Fish and Wildlife (CDFW) is in receipt of the Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) for the California-American Water Company (CalAm) Monterey Peninsula Water Supply Project (Project). A past Draft EIR for the Project was issued on April 30, 2015 by the California Public Utilities Commission (CPUC), for which CDFW submitted a comment letter dated June 30, 2015.

The purpose of the proposed Project is to develop up to 9,752 acre-feet per year (afy) of water supplies to meet, in conjunction with other existing sources of supply, a future average annual demand of 15,296 afy in CalAm's Monterey District service area (Monterey District). The Project would be constructed to replace those portions of CalAm's existing supplies that have been constrained by legal decisions regarding CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. The proposed Project would produce desalinated water, convey it to the existing CalAm distribution system, and increase the system's use of storage capacity in the Seaside Groundwater Basin. The Project would consist of several components: a seawater intake system; a desalination plant; a brine discharge system; product water conveyance pipelines and storage facilities; and an aquifer storage and recovery (ASR) system. CalAm also proposed a variant to the proposed Project that would combine a

reduced-capacity desalination plant and all other facilities included in the proposed Project, with a water purchase agreement from the Monterey Regional Water Pollution Control Agency's (MRWPCA) proposed Pure Water Monterey Groundwater Replenishment (GWR) project. The Project area extends approximately 14 miles, from the MPWSP Desalination Plant site located in unincorporated Monterey County in the north to the western terminus of the proposed Monterey Pipeline in the City of Pacific Grove, and east approximately eight miles to the unincorporated community of Hidden Hills along Highway 68.

The Project area includes habitat for State and federally listed species, State fully protected species, and State species of special concern including, but not limited to, the following: Federally threatened and State species of special concern Western snowy plover (*Charadrius alexandrines nivosus*), State and federally threatened California tiger salamander (*Ambystoma californiense*), federally threatened and State species of species of special concern California red-legged frog (*Rana draytonii*); the State endangered seaside bird's-beak (*Cordylanthus rigidus var. littoralis*), beach layia (*Layia carnosa*), Tidestrom's lupine (*Lupinus tidestomii*), and Menzies' wallflower (*Erysimum menziesii*); the State threatened Monterey gilia (*Gilia tenuiflora ssp. arenaria*); and the State rare Pacific Grove clover (*Trifolium polyodon*) and Dudley's lousewort (*Pedicularis dudleyi*). Several other State and federally listed species, State fully protected species, and State species of special concern have the potential to occur within the Project as well including sensitive plants, amphibians, marine mammals, and nesting bird species. Additionally, the Project area supports sensitive habitat types such as coastal wetlands, dune scrub, maritime chaparral, Monterey pine forest, and potentially other habitat types which are considered sensitive by CDFW. CDFW-1

As stated in its prior comments regarding the Draft EIR, CDFW has concerns about the Project-related impacts to the sensitive habitats that are adjacent to or within the Project alignment, as well as the associated impacts to species that utilize habitats found in the Project area. Project-related impacts to these special status biological resources should be evaluated and addressed prior to Project implementation, in order to comply with State laws described below.

Department Jurisdiction

Trustee Agency Role: CDFW is a Trustee Agency with the responsibility under the California Environmental Quality Act (CEQA) for commenting on projects that could impact plant and wildlife resources. Pursuant to Fish and Game Code Section 1802, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. As a Trustee Agency for fish and wildlife resources, CDFW is responsible for providing, as available, biological expertise to review and comment on environmental documents and impacts arising from project activities, as those terms are used under CEQA.

Responsible Agency Role: CDFW is a Responsible Agency when a subsequent permit or other type of discretionary approval is required from CDFW, such as an Incidental Take Permit (ITP), pursuant to the California Endangered Species Act (CESA), or a Lake and Streambed Alteration Agreement (LSAA) issued pursuant to Fish and Game Code Sections 1600 *et seq*.

CDFW has regulatory authority over projects that could result in the "take" of any species listed by the State as threatened or endangered, or designated as a candidate for listing, pursuant to Fish and Game Code Section 2081. If the Project could result in the take of any species pursuant to CESA, CDFW may need to issue an ITP for the Project. CEQA requires a Mandatory Finding of Significance if a project is likely to substantially impact threatened or endangered species (Sections 21001(c), 21083, Guidelines Sections 15380, 15064, 15065). Impacts must be avoided or mitigated to less than significant levels unless the CEQA Lead Agency makes and supports Statement of Overriding Consideration (SOC).

The CEQA Lead Agency's SOC does not eliminate the Project proponent's obligation to comply with CESA. In other words, compliance with CESA does not automatically occur based on local agency project approvals or CEQA compliance; consultation with CDFW is warranted to ensure that Project implementation does not result in unauthorized take of a State-listed species.

Incidental take authority is required prior to engaging in lawful take of any plant or animal species listed under CESA. Plants listed as threatened or endangered under CESA cannot be addressed by methods described in the Native Plant Protection Act. No direct or indirect disturbance, including translocation, may legally occur to State-listed species prior to the applicant obtaining incidental take authority in the form of an ITP.

Permit Streamlining: Issuance of an LSAA or an ITP by CDFW is considered a "project" (CEQA Guidelines Section15378) and is subject to CEQA. CDFW typically relies on the Lead Agency's CEQA compliance to make its own findings. For the Lead Agency's CEQA document to suffice for permit/agreement issuance, it must commit to fully describing the potential Project-related impacts to stream/riparian resources and listed species, as well as measures to avoid, minimize, and mitigate impacts to these resources. Take of State-listed species must be "fully mitigated" in order to comply with CESA (California Fish and Game Code Section 2081(b)(2)). If the CEQA document issued by the California Public Utilities Commission (CPUC) for this Project does not adequately analyze impacts to resources that require permits issued by CDFW, CDFW may need to act as a Lead CEQA Agency and complete a subsequent CEQA document. This could significantly delay permit issuance and, subsequently, Project implementation. For that reason, it is very important that the EIR reflect suitable and feasible avoidance, minimization, and compensatory mitigation, such that CDFW is able to make findings per CEQA necessary for ITP issuance. In addition, CEQA grants Responsible Agencies authority to require changes in a Project to lessen or avoid

effects of that part of the Project which the Responsible Agency will be called on to approve (CEQA Guidelines Section 15041).

Bird Protection: CDFW has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Sections of the Fish and Game Code that protect birds, their eggs and nests include sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

Biological Information: As required by CEQA, the DEIR/EIS should clearly identify resources on the Project site and their potential to be impacted by the proposed Project; analyze potential impacts as to their significance; and identify measures to reduce all potentially significant impacts to a level of less-than-significant. Impact analysis should be predicated on complete biological surveys. Measures and alternatives that would avoid and minimize potential impacts to resources of concern, as well as on-site conservation measures, should be considered prior to measures and alternatives that would provide for compensatory resources on or off-site.

Specific Biological Resources Comments and Recommendations

Botanical Inventory: There is the potential for sensitive plant species to occur within the Project area. Botanical surveys are recommended to be conducted prior to Project activities and be performed in accordance with guidelines developed by CDFW (DFG, 2009; https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline) and the United States Fish and Wildlife Service (USFWS) (USFWS, 2000; https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/Listed_plant_survey_guidelines.PDF)
. Botanical surveys are floristic in nature and must be timed appropriately and cover the entire Project area and may require multiple surveys in order to detect all species which could potentially be present on the property before impact analysis occurs. The above referenced guidelines instruct the use of reference sites to confirm appropriate survey timing, particularly for seasonably variable, often difficult to detect species. CDFW is aware that extensive botanical surveys have been conducted including analysis of reference populations, but would like to reiterate that environmental conditions have not been favorable towards plant species in the last few years during the unprecedented drought, and as a result sensitive plant populations may have not expressed themselves adequately for detection and identification during surveys. CDFW-2

Special Status Plants: As previously mentioned, State-listed plant species that are known to occur within the Project area and may occur within the Project alignment include seaside bird's-beak, Menzies' wallflower, Monterey gilia, beach layia, Pacific Grove clover. and Tidestrom's lupine. Based on botanical surveys, the DEIR/EIS discloses the potential impacts that the Project may have on listed plants and provides measures to mitigate for potential impacts to those plants. Due to the potential for CDFW-3

State-listed plants to occur within the Project alignment, consultation with CDFW is strongly recommended to determine if the Project can avoid take. If take cannot be avoided, acquisition of a State ITP from CDFW prior to Project implementation is warranted to comply with CESA.

For information regarding ITPs please see the following link: http://www.dfg.ca.gov/habcon/cesa/. Included in the ITP would be measures required to avoid and/or minimize direct take of State listed plants on the Project site, as well as measures to fully mitigate the impact of the take. CDFW would like to work with the CPUC, CalAm, and USFWS to identify measures which could be included as conditions of approval prior to CEQA certification.

CDFW-3 cont.

As noted in CDFW's June 30, 2015 letter for the Draft EIR, Mitigation Measure 4.6-1(e) in the DEIR/EIS discusses the restoration and reintroduction of sensitive plants as a result of Project impacts including the development of a Habitat Mitigation and Monitoring Plan (Mitigation Measure 4.6-1n). The reintroduction of sensitive plant species that may be impacted by the Project is typically not recommended for species associated with the sensitive habitats found in the Project area. Rare plants are restricted to a specific micro habitat that is suitable for their establishment and persistence. Reintroducing sensitive plant species outside of their existing habitat may not be successful, and relocation into habitat that is already occupied by these species could ultimately be detrimental to the existing population. No evidence is provided that such measures would be successful. Studies that followed the success or failure of permits issued by CDFW for various plant species have shown that success (including partial success) is less than 15% overall, for all species. Success for annual plant species is even less over the long term. With no information regarding the potential for success of reintroduction and relocation of these sensitive plants, reliance on reintroduction and relocation as the primary measure to mitigate for the impact of the take of the populations on the Project site would not meet ITP issuance criteria to fully mitigate the take of these species and may not be sufficient to reduce the impact to less than significant if the restoration and reintroduction fails. CDFW recommends that the Project be designed to substantially avoid impacts to sensitive plant species, and any residual impacts mitigated by conservation of occupied habitat at a rate of at least 2 to 1 in addition to habitat restoration. CDFW recommends Restoration success criteria include the restored population having greater than the number of individuals of the impacted population(s), in an area greater than or equal to the size of the impacted population(s), for at least 3 consecutive years without irrigation, weeding, or other manipulation of the restoration site.

CDFW-4

State Listed Rare Plants: Section 4.6.2.2 State Regulations of the DEIR/EIS discusses information regarding State rare plants. Previously, State rare plants were similar to fully protected species because CDFW had no method to authorize take. Recent legislation has included take of State rare plant species under the incidental take authority of CDFW, and CDFW now has the mechanism to permit take of State rare plants under CCR Title 14, Section 786.9(b) using the same procedures and under

CDFW-5

the same conditions as take authorizations issued pursuant to Section 2081 of Fish & Game Code (please see CCR Title 14, Section 786.9), effective January 1, 2015 (http://www.fgc.ca.gov/regulations/2014/index.aspx#786_9). If take of the State rare species Pacific Grove clover is proposed as a result of the Project, an ITP from CDFW to authorize take is warranted. In the DEIR/EIS, CDFW also recommends that Pacific Clover be moved from the sub-heading of Other Special-Status Species to the sub-heading Federal or State Listed Species due to its State rare listing.

CDFW-5 cont.

Nesting Birds: The trees, shrubs, and grasses within and in the vicinity of the Project site likely provide nesting habitat for songbirds and raptors. CDFW encourages Project implementation to occur during the non-nesting bird season; however, if ground-disturbing activities must occur during the breeding season (February through mid-September), the Project applicant is responsible for ensuring that implementation of the Project does not result in any violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above. Prior to work commencing, including staging, clearing, and grubbing, CDFW recommends that surveys for active nests be conducted by a qualified wildlife biologist no more than 10 days prior to the start of the Project commencing and that the surveys be conducted in a sufficient area around the work site to identify any nests that are present and to determine their status. A sufficient area means any nest within an area that could potentially be affected by the Project. In addition to direct impacts, such as nest destruction, nests might be affected by noise, vibration, odors, and movement of workers or equipment. CDFW recommends that identified nests be continuously surveyed for the first 24 hours prior to any construction related activities to establish a behavioral baseline, and once work commences, for all nests to be continuously monitored to detect any behavioral changes as a result of the Project. If behavioral changes are observed, CDFW recommends that the work causing that change cease and CDFW consulted for additional avoidance and minimization measures.

CDFW-6

If continuous monitoring of identified nests by a qualified wildlife biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500 foot no-disturbance buffer around the nests of unlisted raptors until the breeding season has ended, or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no disturbance buffers may be implemented when there is compelling biological or ecological reason to do so, such as when the Project area would be concealed from a nest site by topography. Any variance from these buffers is advised to be supported by a qualified wildlife biologist and it is recommended CDFW be notified in advance of implementation of a no-disturbance buffer variance.

Burrowing Owl: The Project site may be occupied by burrowing owls. CDFW recommends following the preconstruction survey methodology developed by the California Burrowing Owl Consortium (CBOC, 1993;

CDFW-7

https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842) if the site contains burrows that could be used by burrowing owls. CDFW recommends that impacts to occupied burrows be avoided in accordance with the following table unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. The below table can be found from the Burrowing Owl Staff Report (CDFG 2012; https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

The Staff Report recommends that foraging habitat be acquired and permanently protected to offset the loss of foraging and burrow habitat. CDFW also recommends replacement of occupied burrows with artificial burrows at a ratio of one burrow collapsed to one artificial burrow constructed (1:1) as mitigation for the potentially significant impact of evicting a burrowing owl if a biologist knowledgeable with the biology and natural history of the species determines that suitable burrows are a potential limiting factor for burrowing owl. If the Project proposes to evict burrowing owls that may be present, CDFW recommends passive relocation during the non-breeding season. CDFW recommends that the CEQA document prepared for this Project describe methods that would be used to evict owls from burrows, including a monitoring program to ensure that evicted individuals are using a relocation site.

CDFW-7 cont.

California Tiger Salamander (CTS): CTS are known to occur within the Planning Area and may occur within the Project alignment. The DEIR/EIS is advised to clearly disclose the potential impacts that the Project may have on CTS and provide measures to mitigate for all potential impacts to CTS. CDFW recommends that a site assessment and protocol level surveys be conducted for CTS because of known occurrences of CTS in the Project vicinity and aquatic features that may be CTS breeding habitat, identified adjacent to the Project site. CDFW recommends that surveys for this species follow current United States Fish and Wildlife Service (USFWS) protocol methods. Survey guidance can be found at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83915.

CDFW-8

The results of the site assessment and protocol level surveys for CTS can then be utilized to evaluate the potential for impacts to the species which would be analyzed by the CPUC in the CEQA document, as well as to determine the potential for take to occur. If the Project has the potential to result in take of this species, take authorization from CDFW in the form of an ITP, pursuant to Fish and Game Code Section 2081(b),

would be required prior to Project implementation, to comply with Fish and Game Code. In the absence of protocol surveys, the applicant can assume presence of CTS within the Project area and obtain an ITP. Impacts related to the permitted taking of CTS must be minimized and fully mitigated in order for CDFW to issue an ITP.

DEIR/EIS Mitigation Measure 4.6-1o provides avoidance and minimization measures for CTS and California red-legged frog (CRLF). The mitigation measure discusses options to relocate CTS and CRLF if identified during preconstruction surveys or ground disturbing activities. It also discusses installation of exclusion fencing where there is a moderate to high potential for CTS and CRLF to occur as specified in Mitigation Measure 4.6-1c. Please be advised that preconstruction surveys are not an appropriate time to detect presence/absence of CTS for which an ITP may be warranted. Also, handling and relocating CTS and installation of exclusion fencing in occupied CTS habitat without an ITP would be a violation of Fish and Game Code and CESA. If the Project does not complete the above recommended CTS surveys and chooses not to acquire an ITP, CDFW recommends that all small mammal burrows within dispersal distance of a known or potential breeding pond be avoided by a minimum buffer of 50 feet to avoid take of CTS. CDFW-8 cont.

Avoidable Wildlife Impacts from Erosion Control Mesh Products: Due to this Project site's extensive wildlife habitat interface, CDFW requests that erosion control and landscaping specifications allow only natural-fiber, biodegradable meshes and coir rolls. "Photodegradable" and other plastic mesh products have been found to persist in the environment, ensnaring and killing terrestrial wildlife. Reptile and amphibian deaths resulting from the use of plastic mesh products are well-documented. Plastic mesh erosion control products would likely cause unanticipated, avoidable impacts, including the potential take of special status species. CDFW believes requiring the use of biodegradable products would be a feasible mitigation measure to reduce impacts to wildlife species. CDFW-9

USFWS & NOAA Consultation: As stated previously, CDFW recommends consultation with the USFWS prior to any ground disturbance related to this Project due to potential impacts to federally listed species. Take under the Federal Endangered Species Act (FESA) is more stringently defined than under CESA; take under FESA may also include significant habitat modification or degradation that could result in death or injury to a listed species, by interfering with essential behavioral patterns such as breeding, foraging, or nesting. Consultation with the USFWS and NOAA in order to comply with FESA is advised well in advance of Project implementation. CDFW-10

Thank you for the opportunity to comment on the DEIR/EIS. CDFW is available to consult with the CPUC regarding potential effects to fish and wildlife resources, as well as specific measures that would mitigate potential effects of the Project. Depending upon the results of the actual Project site configuration, and other details which should be disclosed in the DEIR/EIS, CDFW may have additional comments and recommendations regarding avoidance, minimization, and mitigation of Project impacts

to habitat and special status species. If you have any questions regarding these comments, please contact Annette Tenneboe, Senior Environmental Scientist (Specialist), at (559) 243-4014, extension 227 or by e-mail at annette.tenneboe@wildlife.ca.gov. If you have specific questions in regards to marine biological resources, please contact Marine Region staff Steve Rienecke, Environmental Scientist, by telephone at (805) 594-6174 or by email at Steven.Rienecke@wildlife.ca.gov.

Sincerely,

Julie A. Vance
Regional Manager

cc: Steve Henry, Field Supervisor
Ventura Fish and Wildlife Office
United States Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, California 93003

Amanda Morrison, Central Coast Branch Supervisor
NOAA Fisheries
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404
amanda.morrison@noaa.gov

ec: State Clearinghouse
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Craig Bailey
Linda Connolly
Annee Ferranti
Steven Rienecke
Brandon Sanderson
Annette Tenneboe
Department of Fish and Wildlife

8.4.3 California Department of Parks and Recreation (CA Parks)

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
DEPARTMENT OF PARKS AND RECREATION
Lisa Ann L. angat, *Director*
MONTEREY ISTRICT
2211 GARDEN ROAD
MONTEREY CA 93940

March 28, 2017

CPUC/MBNMS
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Subject: Monterey Peninsula Water Supply Project EIR Comments

In response to the request for comments on the Draft Environmental Impact Report/Environmental Impact Statement for the Monterey Peninsula Water Supply Project, California State Parks has prepared the following comments.

1. PRC 5001.65 states commercial exploitation of resources in units of the State Park system is prohibited. Taking of the State Park land for a municipal water system is not appropriate and is not conducive to our mission statement, which is to provide for the health, inspiration and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation. CA Parks-1

2. Regarding the construction of Transmission Main Pipeline, the EIR states on page 4.8-16 that it will "traverse an approximately .25 band of Fort Ord Dunes State Park lands between Divarty Street/1st Street and the alignments' Highway 1 undercrossing near Lightfighter Drive". Please clarify what a .25 band is and provide more information and detailed maps of these areas that depict the limits of State Park land needed. CA Parks-2

3. Any easements needed will require approval and close coordination with California State Parks. Impacts to park resources shall be repaired and replaced in-kind and any vegetation removed shall be replaced with native plants sourced from the area. CA Parks-3

4. Regarding construction and placement of Transmission Main Pipeline near First Street in Fort Ord, work shall be coordinated with California State Parks as the utilities for the planned Fort Ord Dunes State Park campground will be installed in this area. Construction may also conflict with campground construction and public access at 1st Street construction site. The acquisition of utility easements from our office regarding these activities will be required. Please coordinate well in advance as the easement process can take up to two years to process. Parking lot maintenance and or road agreements may also need to be negotiated. CA Parks-4

5. In the event any Desal appurtenances were to be built within State Park ownership, easement, rights-of-entry (ROE) and lease negotiations shall be prepared and approved well in advance of any work commencing on State Park property. Easements and leases may take up to two years to negotiate and execute. Leases, ROEs and/ or easements may include reimbursements to State Parks for processing these requests, including staff time processing any CEQA compliance or coastal development permits. Lease negotiations, if approved, may include, but not be limited to, assessing revenue fee structures for Desal facilities placed on public lands. Easements, if granted, will need to be appraised using the Department of General Services Appraisal Guidelines and be accompanied by legal descriptions approved by our survey staff. CA Parks-5

6. The following comments pertain to Options in the EIR that occur on State Park property (Intake Option 3 – Subsurface Slant Wells at Potrero Road, Intake Option 4 – Open-Water Intake at Potrero Road, Outfall Option 3 – New Outfall at Potrero Road, Alternative 1 – Slant Wells at Potrero Road, Alternative 5b – Reduced Project 6.4-mgd, Desalination Plant (Intake Slant Wells at Potrero Road).

a. The construction and placement of these facilities in a state beach is not in compliance with the State's Public Resources Code or compatible with our mission statement. If natural resource and recreational public land is condemned for private purposes, approvals, easements and fees shall be negotiated with California State Parks for the use of state lands for the installation of permanent desalinization facilities and associated appurtenances located within State Park lands. CA Parks-6

b. Operation and maintenance of facilities shall not degrade or otherwise compromise coastal sand dune habitat, snowy plover habitat or inhibit public beach access or recreation. Subterranean intake pump vaults and resulting vibrations through the sand column within snowy plover habitat should be studied prior to FEIR certification and project approval to understand what impacts may occur. This activity may trigger a need for an incidental take permit from the US Fish and Wildlife Service. Impacts to Western Snowy Plovers during the construction, operation and maintenance, including impacts from noise and vibration, need to be thoroughly observed and analyzed and the results of any studies made available to State Parks. California State Parks may require compensation for plover monitoring each year during the breeding season for at least 5 years and mitigation of any lost native vegetation at a replacement ratio of 3:1. Improvements such as paving and maintenance to the impacted parking lots may also be required by State Parks. Any utility lines proposed for installation would need to be installed underground so as not to become perches for avian predators. CA Parks-7

c. The proposed alternatives will include municipal scale infrastructure improvements which are not specifically identified. Construction of municipal water processing facilities in the proposed State Park land is not compatible with the local coastal plan CA Parks-8

that protects coastal values or the mission of State Parks. Items such as pumps, electrical service, maintenance facilities, discharge drains for maintenance, equipment housing, underground vaults, vehicle parking, control panels, access manholes, and any above ground features are in conflict with the natural and rural setting in the park. Currently there are no permanent facilities of the type proposed in the park. The parking lot is unpaved and there are no utilities (water, sewer, electrical, or communication) to the site. There are no flush toilets at the site.

CA Parks-8 cont.

d. Another issue is the use of the parking lot for anything other than coastal access. This site is only one of the few coastal access points for the public in this segment of the Monterey coast and State Parks is unlikely to be able to build additional parking due to the sensitive nature of the surrounding lands. Any Desal related appurtenances shall not interfere with public access parking and shall not impinge upon or take coastal dune habitat.

CA Parks-9

e Visual impacts are also another concern, where the proposed use may involve the need for security fences and lights around fixtures. All areas that are fenced will require landscaping and all lighting will require light shields that do not illuminate adjacent coastal sand dune habitat.

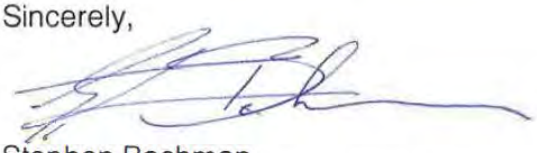
CA Parks-10

f. Water production, noise and vibration impacts, and discharges of any kind are prohibited.

CA Parks-11

If you have any questions regarding these comments, please do not hesitate to contact me at (831) 649-2862 or Stephen.bachman@parks.ca.gov

Sincerely,



Stephen Bachman
Senior Planner Monterey District

8.4.4 California State Lands Commission (CSLC)

STATE OF CALIFORNIA — EDMUND G. BROWN JR., *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 *Fax* (916) 574-1810
California Relay Service TDD Phone 1-800-735-2929
from Voice Phone 1-800-735-2922

Contact Phone: **(916) 574-1890**
Contact FAX: **(916) 574-1885**

Established in 1938

February 27, 2017

File Ref: SCH # 2006101004

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

Subject: Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Monterey Peninsula Water Supply Project, Monterey County

Dear Ms. Borak:

The California State Lands Commission (CSLC) staff has reviewed the subject Draft EIR/EIS for the Monterey Peninsula Water Supply Project (Project), which is being prepared by the California Public Utilities Commission (CPUC) and the Monterey Bay National Marine Sanctuary (MBNMS). The CPUC is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), because it is considering issuance of a Certificate of Public Convenience and Necessity to the California American Water Company (CalAm) pursuant to Public Utilities Code section 100. MBNMS is the lead agency under the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.) as portions of the Project fall within its jurisdiction. The CSLC is a trustee agency for projects that could directly or indirectly affect sovereign lands and their accompanying Public Trust resources or uses. Additionally, because the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC staff previously commented on the Notice of Preparation for the Project in a letter dated November 8, 2012, and the previous Draft EIR, in a letter dated September 30, 2015 (enclosed). In September 2015, the CPUC announced that the Draft EIR would be modified and recirculated as a joint EIR/EIS in coordination with MBNMS.

CSLC Jurisdiction and Public Trust Lands

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has

certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6009, subd. (c); 6009.1; 6301; 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

On December 17, 2014, the CSLC authorized a General Lease – Right-of-Way Use to CalAm for the construction and operation of a temporary exploratory test slant well in Monterey Bay. In order to operate the existing test well as a permanent well, CalAm must obtain a new lease. In addition, the Project includes nine new proposed slant wells which appear to be located on sovereign land within Monterey Bay; construction and operation of these wells would also require a lease. The existing Monterey Regional Water Pollution Control Agency's ocean outfall and diffusers proposed for use as part of this Project are currently authorized under CSLC Lease No. PRC 6091.9. A lease amendment or new lease may be required for CalAm to use the existing outfall. Questions regarding CSLC jurisdiction or leasing requirements should be directed to Cheryl Hudson with the Land Management Division (see contact information below). CSLC-1

Project Description

The Project as proposed by CalAm would be located near the Salinas River along the coast in the southern portion of Monterey Bay, Monterey County. The Draft EIR/EIS identifies Alternative 5a – "Reduced Project 6.4 Million Gallons Per Day Desalination Plant (Intake Slant Wells at CEMEX)" as the Environmentally Superior Alternative. This Alternative would include an agreement to purchase 3,500 acre feet/year of recycled water from the proposed Pure Water Monterey Groundwater Replenishment project, to replace those portions of CalAm's supplies that have been constrained by legal decisions regarding CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. The Alternative would achieve the Project's goals and objectives through reduced operational energy use, reduced GHG emissions, and reduced effects on groundwater levels influenced by fewer slant wells and less volume of pumping, compared to the proposed Project.

CSLC staff understands the Project would include the following components:

- A subsurface seawater intake system;
- 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 system.

Environmental Review

As a responsible agency, the CSLC's exercise of discretion is limited to the portions of the Project that are under the CSLC's jurisdiction (State CEQA Guidelines, § 15096, subd. (d)). As a result, the comments below focus on the construction and operation of the discharge pipeline and slant wells, which are the components of the Project that would be subject to the CSLC's leasing authority. CSLC staff requests that the CPUC consider the following comments on the Project's Draft EIR/EIS.

Greenhouse Gas (GHG)

The portions of the Project under the jurisdiction of the CSLC have not substantially changed since the release of the 2015 EIR. CSLC staff acknowledge that the current EIR/EIS has sufficiently responded to all of staff's previous comments with one exception. Although it is understood that the impacts associated with GHG emissions would remain significant and unavoidable, that impact conclusion is "based on the information currently available." Mitigation Measure (MM) 4.11-1 indicates that the proposed GHG Emissions Reduction Plan would provide feasible measures when completed. For that reason, CSLC staff believes that the lead agencies have not gone far enough to explore feasible mitigation, or to demonstrate that feasible measures are not available. In addition, MM 4.11-1 itself does not contain specific, feasible, enforceable obligations, or formulas containing performance standards that would further mitigate the significant effect of the Project (State CEQA Guidelines, § 15126.4, subd. (a)(2)). Although the assumption is that the preparation of the plan would reduce the carbon footprint of the Project, the measure, as written, does not guarantee this result and may constitute deferred mitigation impermissible under CEQA (State CEQA Guidelines, § 15126.4, subd. (a)(1)(B)). CSLC-2

For example, MM 4.11-1 states in part:

> The Plan 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. (Emphasis added.)

Therefore, if no technologies are found to be feasible, they are not required to be implemented. In addition, the measure states "CalAm shall 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...." (Emphasis added.)

However, there is no definition of what a "good faith effort" would entail. Additionally, the mitigation measure fails to identify potential impacts of the measure itself, such as the possible "installation of solar photovoltaic panels at or adjacent to the desalination plant," which would also need to be discussed, albeit in less detail than the effects of the Project (State CEQA Guidelines, § 15126.4, subd. (a)(1)(D)). CSLC-2 cont.

CSLC staff requests that MM 4.11-1 be reworded to improve enforceability. The MM should identify specific, feasible energy recovery and conservation technologies that could be used individually, or in combination to reduce net GHG emissions and require the lead agencies to meet targeted reductions.

As noted above, a lease (or leases) would be required from the CSLC for the construction and operation of the proposed slant wells and use of the existing outfall. A more concise and enforceable measure would assist staff in determining whether additional analysis would be required prior to lease approval.

Thank you for the opportunity to comment on the Draft EIR/EIS for the Project. As a responsible and trustee agency, the CSLC will need to rely on the Final EIR/EIS for the issuance of any amended or new lease as specified above, and therefore, we request that you consider our comments prior to certifying the EIR/EIS.

Please send copies of future Project-related documents, including electronic copies of the Approving Resolution, Final EIR/EIS, Mitigation Monitoring and Reporting Program, Notice of Determination, CEQA Findings and, if applicable, Statement of Overriding Considerations when they become available. Please refer questions concerning environmental review to Cynthia Herzog, Senior Environmental Scientist, at (916) 574-1310 or via e-mail at Cynthia.Herzog@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Cheryl Hudson, Public Land Management Specialist, at (916) 574-0732 or via e-mail at Cheryl.Hudson@slc.ca.gov.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

Attachments

cc: Office of Planning and Research
C. Herzog, CSLC
C. Hudson, CSLC
L. Calvo, CSLC

8.4.5 State Water Resources Control Board (SWRCB)

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

March 28, 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

Submitted electronically

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT FOR THE CALIFORNIA AMERICAN WATER COMPANY PROPOSED MONTEREY PENINSULA WATER SUPPLY PROJECT (Docket ID: NOAA-NOS-2016-0156)

Dear Ms. Borak and Ms. Grimmer:

The Central Coast Regional Water Quality Control Board (Central Coast Water Board) and State Water Resources Control Board (State Water Board) (collectively Water Boards) have reviewed the Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) for the Monterey Peninsula Water Supply Project (MPWSP) proposed by California American Water Company (CalAm). CalAm proposes to construct a facility capable of producing 10,750 acre-feet (9.6 MGD) of potable water per year. The seawater intake system for the MPWSP would consist of 10 subsurface slant wells at the CEMEX sand mining site in the City of Marina and would extract 24.1 million gallons per day of source water through the seafloor. The MPWSP would transport brine from the desalination facility to commingle with wastewater from the Monterey Regional Water Pollution Control Agency, when available, prior to being discharged through the existing Monterey Regional Water Pollution Control Authority's ocean outfall pipeline. The pipeline discharges into the Monterey Bay National Marine Sanctuary and is equipped with multiport diffusers that are oriented horizontally to the seafloor. The diffuser has 171 two-inch-diameter ports: 65 in the 60-inch section and 106 in the 48-inch section. The ports discharge horizontally alternately from both sides of the diffuser at a spacing of 16 feet on each side. The 42 ports closest to shore are presently closed, so there are 129 open ports distributed over a length of approximately 1024 ft. The ports are approximately six inches above the rock ballast and nominally 54 inches above the sea bed.

The Central Coast Water Board is the agency responsible for issuing the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of brine and other wastes from the MPWSP to the Pacific Ocean and for making a determination regarding the MPWSP's consistency with California Water Code section 13142.5, subdivision (b) (Water Code section 13142.5(b)). CalAm submitted a request for a Water Code section 13142.5(b) determination to the Central Coast Water Board on February 10, 2017. The Central Coast Water Board, in consultation with the State Water Board, is currently reviewing this information to determine if it

is sufficient for performing the analyses required by Chapter III.M of the Water Quality Control Plan for the Ocean Waters of California (Ocean Plan), which provides direction for the regional water boards on how to conduct a Water Code section 13142.5(b) analysis for a seawater desalination facility. Water Boards staff will prepare a recommendation regarding the best available site, design, technology, and mitigation measures feasible for the MPWSP, considering the requirements in Chapter III.M of the Ocean Plan for the Central Coast Water Board to consider in conjunction with the NPDES permit.

Water Boards staff acknowledges that the analysis required in Chapter III.M of the Ocean Plan, including determining consistency with Water Code section 13142.5(b), is separate and distinct from the DEIR/EIS and California Environmental Quality Act (CEQA) process. However, Water Boards staff will rely on analyses and information conducted as part the CEQA process for the Water ode section 13142.5(b) determination to the extent possible. Therefore, Water Boards staff offers the following comments on the DEIR/EIS.

General Comments

CalAm is proposing to use slant wells to withdraw seawater for the MPWSP. Slant wells are a type of subsurface intakes which are the preferred intake technology in the Ocean Plan[1] because they minimize or eliminate intake and mortality of marine life over the operational lifetime of the facility. CalAm's construction and maintenance plan for the slant wells appears to avoid impacts to marine life. Slant wells, constructed from an onshore well head, will have no mortality to marine life caused by construction of the intake. Additionally, it appears that there would be no construction-related mortality associated with the discharge as the brine will be disposed through the existing Monterey Regional Water Pollution Control Agency ocean outfall pipeline. If it is determined that adjustments to the duckbill nozzles on the existing diffuser are necessary, an estimate of any marine life mortality caused by this construction should be included. SWRCB-1

Brine from the MPWSP would be commingled with wastewater from the MRWPCA when available. During the dry season, when wastewater is unavailable, brine only will be discharged through the MRWPCA multiport diffusers, which is the preferred brine disposal technology if wastewater for commingling is unavailable. The proposed MPWSP appears to comport with the preferred intake and discharge technologies in the Ocean Plan.[2]

Overall, it appears that the MPWSP has been sited and designed in a manner that would result in minimal impacts to marine life and is consistent with the intent of the Ocean Plan to protect marine life and water quality. This is especially important because the facility's intake and discharge would be within the Monterey Bay National Marine Sanctuary, which contains extensive kelp forests, is a diverse ecosystem, is home to sensitive species, and provides habitats to over 500 species of fish. SWRCB-2

Additional Comment on Surface Water Hydrology and Water Quality (Section 4.3 of the DEIR/EIS)

1. Although the MPWSP would use the preferred brine discharge technology of commingling brine with wastewater, the DEIR/EIS should assess any potential discharge-related mortality of all forms of marine life,[2] including any incremental SWRCB-3

[1] Ocean Plan Chapter III.M.2.d.(1)

[2] Ocean Plan Chapter .M.2.d.(2)

shearing- or salinity-related mortality for both the commingled and brine-only discharge scenarios. The DEIR/EIS should also describe proposed mitigation for any discharge-related mortality for each discharge scenario.

SWRCB-3 cont.

2. The DEIR/EIS describes using potential operational measures, including flow augmentation, to ensure that the MPWSP operational discharges meet water quality requirements in the NPDES permit. The Ocean Plan defines flow augmentation as when a facility withdraws additional source water for the specific purpose of diluting brine prior to discharge. Water Boards staff is unclear how Cal Am defines flow augmentation and the potential operational scenarios that are being defined as flow augmentation in the DEIR/EIS. Since CalAm proposes to use subsurface intakes for the MPWSP, it would be exempt from the Ocean Plan's prohibition on flow augmentation as an alternative brine discharge technology.[3] However, the DEIR/EIS should clarify the possible sources of water that may be used for the potential operational measure of flow augmentation as defined in the Ocean Plan.

SWRCB-4

Thank you for the opportunity to comment on this draft environmental document. If you have any questions or would like to discuss our comments further, please contact me at Claire.Waggoner@waterboards.ca.gov (916) 341-5582 or Peter von Langen at (805) 549-3688.

Sincerely,

Claire Waggoner and John Robertson

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[3] Ocean Plan chapter III.M.2.d(2)(d)i.

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8.4.1 Responses to Comments from California Coastal Commission

CCC-1 The Lead Agencies acknowledge the California Coastal Commission's commendation of the project applicant's selection of subsurface intakes in order to avoid and minimize adverse effects on marine life.

CCC-2 Alternatives that would avoid impacts on primary and/or secondary habitats were evaluated in the EIR/EIS. Although Alternative 1 is considered to result in a significant and unavoidable impact with respect to conflict with the North County LCP/LUP, as described on Draft EIR/EIS page 5.5-140, "It is noted that the Alternative 1 subsurface slant well construction would occur within the disturbed parking lot area and would not significantly disrupt habitat in this location; nonetheless, because the subsurface slant wells are not a resource-dependent use, they would conflict with this policy." Thus, Alternative 1 (and for similar reasons, Alternative 5b) would avoid the impacts on primary and/or secondary habitat described for the slant wells under the proposed project since the intake system and source water pipeline would not be located in primary and/or secondary habitat. Additionally, each of the alternatives that include an open-water intake (Alternatives 2, 3, and 4) would avoid the impact on primary and/or secondary habitat associated with the slant wells at CEMEX. However, these alternatives have different and more severe impacts on marine habitats; therefore, there are impact tradeoffs associated with the alternatives.

Impacts on primary habitat would be common to some or all alternatives. Under Alternatives 1, 2, 3, 4, and 5b, the Source Water Pipeline would not impact primary habitat. Under Alternative 5a, the Source Water Pipeline would impact primary habitat similar to the proposed project. The new Desalinated Water Pipeline and new Transmission Main, which are components of all alternatives, would have similar impacts on primary habitat as the proposed project. Therefore, while none of the action alternatives would fully avoid impacts on primary habitat, the Final EIR/EIS does thoroughly evaluate several alternatives that would minimize impacts within primary habitat.

8.4.2 Responses to Comments from California Department of Fish and Wildlife

CDFW-1 The Draft EIR/EIS does not evaluate Dudley's lousewort (*Pedicularis dudleyi*). According to the best available information from the California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS) as of publication of the Final EIR/EIS, there are no extant or historical populations within approximately 20 miles of the project area (the nearest population is in Big Sur), and therefore no compelling reason to include it as potentially occurring within the project area. Further, the species was not detected during multiple survey dates (see EIR/EIS Section 4.6.1.2, Information Sources and Survey Methodology, for a list of survey dates).

CDFW-2 The Lead Agencies acknowledge CDFW's comment regarding the environmental conditions in the project area in recent years. The Draft EIR/EIS acknowledges that sensitive plant species have potential to occur at the project site, but does not base its impact analysis solely on the results of surveys, but also relies on an evaluation of habitat conditions to determine whether there is potential for a special-status plant to occur within the project boundary. For example, for Hickman's onion, described in Section 4.6.1.8 on page 4.6-51, the Draft EIR/EIS states, "This species has not been observed during project-related botanical surveys, but has potential to occur in grassland or grassland understory of coast live oak woodlands alongside the Ryan Ranch-Bishop and Main System-Hidden Hills Interconnection Improvements sites." Additionally, as described in Mitigation Measures 4.6-1e, focused surveys for special-status plants would be conducted in accordance with guidelines established by CDFW prior to commencement of ground disturbing activities to determine the location of any special-status plant species within the project area.

CDFW-3 As described in Table F-1 in Appendix F, beach layia and Tidestrom's lupine have a low potential to occur in the project area. The Draft EIR/EIS analyzes potential impacts on Seaside bird's-beak, Menzies' wallflower, Monterey gilia (described as sand gilia in the Draft EIR/EIS), and Pacific Grove clover as these species have a moderate or higher potential to occur in the project area. The Lead Agencies acknowledge that if take of any of these state-listed species cannot be avoided, CalAm would apply for an Incidental Take Permit (ITP) from CDFW prior to project implementation during the permitting process (see Table 3-8, Anticipated Permits and Approvals). CDFW's specific comments on mitigation measures (which would be adopted at the time of approval of the project or an alternative) are addressed in responses to the following comments.

CDFW-4 Mitigation Measure 4.6-1e does not require reintroduction of sensitive plant species, nor recommend it as the primary measure to mitigate for take of such plants, but states that it may be one option to compensate for temporary or permanent loss of special-status plant occurrences and specifies that "Compensatory measures shall be

determined on a case-by-case basis in consultation with the resource agencies with jurisdiction over those species." The Lead Agencies acknowledge that CDFW, as a resource agency that may have jurisdiction (depending on the species and location of compensatory habitat), would not recommend reintroduction. Subparts 1 and 2 of Mitigation Measure 4.6-1e require the siting of project facilities to avoid permanent and temporary impacts on special-status plants and their required constituent habitat elements to the extent feasible, and to implement measures during construction to avoid take of special-status plants, as requested in the comment.

As recommended in the comment, Mitigation Measure 4.6-1e has been revised to require a minimum 2:1 compensation ratio for permanent impacts and to clarify the options for compensation. The measure has also been revised to clarify the applicable performance standards as recommended in this comment (i.e., that the restored population must have greater than the number of individuals of the impacted population(s), in an area greater than or equal to the size of the impacted population(s), for at least three consecutive years without irrigation, weeding, or other manipulation of the restored site).

See response to comment CDFW-3 regarding the potential need for an ITP.

CDFW-5 In response to this comment, the following text has been added to the discussion of the California Fish and Game Code in Final EIR/EIS Section 4.6.2.2, State Regulations:

> Additionally, as described in CCR Title 14, Section 786.9, CDFW may also permit take of state rare plants under the same conditions as take authorizations issued pursuant to Section 2081 of the Fish and Game Code.

Also in response to this comment, text regarding listed and non-listed species on Draft EIR/EIS page 4.6-4 in Section 4.6.1.1, Definitions, has been revised to acknowledged that listed special-status species refers to those species that are listed as threatened or endangered under FESA and/or CESA or as rare by the California Fish and Game Commission.

Finally, the discussion of Pacific Clover has been moved from the heading "Other Special-Status Species" to "Federal or State Listed Species" in Table 4.6-2 and in Table F-1 in Appendix F in the Final EIR/EIS as recommended in this comment. See response to comment CDFW-3 regarding the potential need for an ITP.

CDFW-6 As encouraged in this comment, Mitigation Measure 4.6-1i describes that if ground-disturbing activities must occur during the breeding season, then CalAm would implement measures to avoid impacts on nesting birds protected under the Migratory Bird Treaty Act or Section 3503 of the Fish and Game Code. Additionally, Mitigation Measure 4.6-1i has been revised to incorporate CDFW's recommendations in this comment, which include behavior monitoring for the first 24 hours prior to any construction related activities and during the project,

consultation with CDFW, and using 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 non-listed raptors.

CDFW-7 Consistent with this comment, Mitigation Measure 4.6-1h requires that impacts on occupied burrowing owl burrows be avoided by establishing a no ground-disturbing work buffer using buffer distances described in CDFW Staff Report on Burrowing Owl Mitigation. The measure also requires that CalAm implement preconstruction surveys described in the Staff Report on Burrowing Owl, which is more detailed and specific than that required in the California Burrowing Owl Consortium's Burrowing Owl Survey Protocol and Mitigation Guidelines. Also consistent with this comment, regarding compensation, the measure requires that "if burrowing owls are found on-site, compensatory mitigation for loss of breeding and/or wintering habitat shall be implemented onsite or offsite in accordance with Staff Report on Burrowing Owl Mitigation guidance and in consultation with CDFW." The measure addresses the requirements for relocation of owls in subparts 6 through 8, including through the development and implementation of a Burrowing Owl Exclusion Plan that must be approved by CDFW. Mitigation Measure 4.6-1h specifies that the plan must include relocation measures consistent with this comment (i.e., replacement of occupied burrows with artificial burrows at a ratio of 1:1, with passive relocation occurring only during non-breeding season).

CDFW-8 As described in EIR/EIS Section 4.6.1.2, reconnaissance-level field surveys were conducted to determine the potential for special-status species, including the California tiger salamander, to occur within the project area. The EIR/EIS acknowledges that California tiger salamander have potential to occur in the project area in Section 4.6.1.8 and provides a detailed assessment of where this species has potential to occur. The EIR/EIS identifies potential habitat for California tiger salamander as non-native grassland within 1.2 miles of potential breeding ponds and assumes that this species may occur in these areas in the absence of protocol-level surveys. The EIR/EIS provides a comprehensive analysis of the potential direct and indirect (i.e., take) project impacts on California tiger salamander in Section 4.6.5 based on where they have potential to occur. Construction-related impacts and mitigation measures to reduce those impacts to less than significant are described in Impact 4.6-1. There are no potential operational impacts on California tiger salamander. See response to comment CDFW-3 regarding the need for an ITP for construction activities. Because the project, as well as avoidance measures such as installation of exclusion fencing, has potential for take of California tiger salamander, the Lead Agencies anticipate that CalAm would need to obtain an ITP from CDFW prior to project implementation. Take authorization will also be sought from the USFWS.

As described in Mitigation Measure 4.6-1o, California tiger salamander would only be relocated with authorization from USFWS and CDFW (i.e., through Federal and California Endangered Species Act consultation or permits, respectively).

Additionally, Mitigation Measure 4.6-1o has been revised to clarify that installation of exclusion fencing for California tiger salamander also would be subject to such authorization. The measure has also been revised to specify that if take authorization for California tiger salamander is not obtained from CDFW and USFWS, then all small mammal burrows within dispersal distance of a known or potential breeding pond shall be avoided by a minimum buffer of 50 feet.

CDFW-9 In response to this comment, Mitigation Measure 4.6-1c has been revised to incorporate CDFW's recommendations regarding the use of natural-fiber, biodegradable meshes and coir rolls, and to prohibit the use of photodegradable and other plastic mesh erosion control products (see subpart 22).

CDFW-10 As described in 4.6.2.1, Federal Regulations, a federal agency is required to consult with USFWS and NMFS if the proposed project may affect a federal listed species. ONMS has consulted with USFWS and NMFS through Section 7 of the Federal Endangered Species Act, as required.

In response to this comment, the following text from Draft EIR/EIS page 4.6-122 has been revised in Section 4.6.5:

> The following impact analysis evaluates impacts of the proposed project as required by CEQA and NEPA. A Biological Assessment, which would evaluate the project's impacts on federally listed species, would be prepared in support of FESA Section 7 consultation between the ONMS and USFWS <u>and between the ONMS and NMFS</u>.

8.4.3 Responses to Comments from California Department of Parks and Recreation

CA Parks-1 The proposed project does not include the taking of any state park land. However, CalAm would need to seek an easement, right-of-entry, and/or a lease agreement with State Parks for any facility that would encroach upon State Parks property. A sentence has been added in Final EIR/EIS Section 5.4.3.1 to acknowledge this. Accordingly, CalAm would be required to comply with any conditions required as part of the easement, right-of-entry, and/or lease agreement with State Parks for such facility, including conditions described in this letter, such as repaving and maintaining parking lots following disturbance.

CA Parks-2 The text in Draft EIR/EIS Section 4.8.2.2 that describes state regulations, including the Fort Ord Dunes State Parks General Plan on page 4.8-16, has been revised to read:

> "The new Transmission Main . . . would traverse an approximately 0.25-mile-long band . . ."

Draft EIR/EIS Section 3.3.4 explains the width of the disturbance corridor for pipeline construction would vary typically from 50 to 100 feet and trenchless technologies could require wider corridors at entry and exit pits. See Figures 3-6, 3-7, and particularly Figure 3-8.

CA Parks-3 CalAm will need to apply to State Parks for an easement, right-of-entry, and/or a lease agreement. As noted in Draft EIR/EIS Table 4.6-4, the installation of the new Transmission Main in the Fort Ord Dunes State Park would occur within central dune scrub. The potential impacts are addressed in Impact 4.6-2. In response to this and other comments, Mitigation Measure 4.6-2b has been revised to ensure that impacts on central dune scrub (among other plant communities and habitat types) will be restored to previous conditions or better at the end of construction, so that by the fifth year following restoration, native vegetation covers at least 70 percent of the baseline/impact area native vegetation cover, and so that there is no more cover by invasives than the baseline/impact area. Additionally, the Lead Agencies anticipate that conditions of approval of the State Parks easement, right-of-entry, and/or lease agreement may further define specific planting requirements within State Parks lands.

CA Parks-4 The Fort Ord Dunes State Park Campground is recognized as a potential project in Draft EIR/EIS Table 4.1-2 as Project No. 46 that may contribute to cumulative impacts. The cumulative impacts on land use and recreation if the campground and MPWSP are constructed at the same time or sequentially are addressed in Impact 4.8-C in EIR/EIS Section 4.8, Land Use, Land Use Planning, and Recreation.

CalAm will need to apply for an easement from State Parks and is willing to negotiate maintenance and/or road agreements.

CA Parks-5 See response to comment CA Parks-1. Table 3-8 has been revised to include State Parks, as follows.

Agency or Department	Permit or Approval	Discussion
California Department of Parks and Recreation	Easement, right-of-entry (ROE), and/or lease negotiations for 0.25-mile portion of the new Transmission Main that would encroach on Fort Ord Dunes State Park	• State Parks has jurisdiction and management authority over Fort Ord Dunes State Park and any easement, ROE, and/or lease if granted, will need to be appraised using DGS guidelines and be accompanied by State Parks-approved legal descriptions.

CA Parks-6 As discussed on page 5.3-30 of the Draft EIR/EIS, only Intake Option 9 was carried forward into the development of whole alternatives. Likewise, as noted on page 5.3-51 of the Draft EIR/EIS, only the proposed use of the existing (MRWPCA] outfall was carried forward in the development of Alternatives 1 and 5b; therefore, Intake Option 4 and Outfall Option 3 were screened out from further consideration in the EIR/EIS.

Intake Option 3, described in Draft EIR/EIS Section 5.3.3 and evaluated in Section 5.3.6 that may occur on State Parks property, would be located in the parking lot at the end of Potrero Road. Table 5.3-4 considers the impact of this intake option on the Potrero Road parking lot. The alternatives evaluated in the Draft EIR/EIS that include Intake Option 3 are described in Section 5.4.3 (Alternative 1, Slant Wells at Potrero Road) and Section 5.4.8 (Alternative 5b, Reduced Project Slant Wells at Potrero Road). All onshore construction activities and disturbance would occur in the parking lot at the western terminus of Potrero Road, and would not disturb the dunes or active beach area; the electrical control building would be located at the edge of the parking lot. The setting/affected environment at the Potrero Road parking lot is described in Section 5.5.8.1 and impacts of the alternatives on the parking lot and recreational resources are discussed in Sections 5.5.8.4 (Alternative 1), and 5.5.8.8 (Alternative 5b). See response to comment CA Parks-1 regarding the need for an easement, right-of-entry, and/or lease agreement.

CA Parks-7 With respect to coastal dune habitat and snowy plover habitat, the impacts of Alternatives 1 and 5b facilities on these and other sensitive terrestrial biological resources are described in EIR/EIS Section 5.5.6.4 (Direct and Indirect Effects of Project Alternative 1 – Slant Wells at Potrero Road), and Section 5.5.6.8 (Direct and Indirect Effects of Alternative 5 – Reduced Desal Project 5a [CEMEX] and 5b [Potrero Road]). The Alternatives 1 and 5b facilities that would be located within State Parks land would be constructed in a parking lot behind the sand dunes and would not directly impact sensitive natural communities or wetlands. Indirect

impacts on coastal sand dune habitat and snowy plover habitat would be reduced to a less-than-significant level with implementation of mitigation measures listed in EIR/EIS Sections 5.5.6.4 and 5.5.6.8 (see Section 4.6, Terrestrial Biological Resources, for the full text of these measures). With regard to impacts from pump vibration, impacts from Alternatives 1 and 5b would be the same as described for the proposed project. Sections 4.6, 5.5.6.4, and 5.5.6.8 of the Final EIR/EIS have been revised to cross-reference the analysis in Section 4.12, Noise and Vibration, which concludes that operation of the slant wells under the proposed project would not produce groundborne vibration. Since there would be no groundborne vibration, there would be no impact from groundborne vibration on western snowy plover. This determination would be the same for Alternative 1 and Alternative 5b.

Although groundborne vibration would not result in incidental take of the western snowy plover, the USFWS will be consulted with reagrding potential impacts from construction and maintenance activities. As part of that permitting process, ONMS is consulting with USFWS through the Section 7 consultation process as necessary for potential impacts on snowy plover. In response to comments on the Draft EIR/EIS and to this ongoing consultation process, Mitigation Measure 4.6-1d (Protective Measures for Western Snowy Plover) has been revised to specify performance standards for the fifth year following restoration of temporarily impacted snowy plover habitat and to require a minimum 3:1 ratio of permanent compensation for permanent loss of western snowy plover habitat (see Final EIR/EIS Section 4.6). These revisions are consistent with the comment's requests.

With respect to paving and maintenance of parking lots and installation of utility lines, see response to comment CA Parks-1.

CA Parks-8 See response to comment CA Parks-6.

CA Parks-9 Impacts of Alternatives 1 and 5b on public coastal access and parking at Potrero Road are discussed in Draft EIR/EIS Sections 5.5.8.4 and 5.5.8.8. Existing access and parking at the Potrero Road parking lot would temporarily be precluded during construction, and parking options for Salinas River State Beach visitors would be limited to two of three existing options (Sandholdt Road lot or Monterey Dunes Way lot). The EIR/EIS includes Mitigation Measures REC-1a and REC-1b, which would require public notice regarding closure and implementation of a plan for maintaining safe beach access during construction. Mitigation Measure REC-1b has been revised to require that CalAm submit the Beach Access Management Plan to State Parks for review and approval prior to construction. Potrero Road parking access would be fully restored following construction.

Impacts of Alternatives 1 and 5b on coastal dune habitat are discussed in Sections 5.5.6.4 and 5.5.6.8. Mitigation Measure 4.6-2b described in response to comment CA Parks-3 would apply to these alternatives.

CA Parks-10 Draft EIR/EIS Section 5.5.14.1 describes the aesthetic setting/affected environment at the Potrero Road parking lot. Impacts of Alternatives 1 and 5b on the visual resources at Potrero Road are discussed in Sections 5.5.14.4 and 5.5.14.8. Permanent structures would not require security fencing and would not be visible from the beach or block coastal views. See Draft EIR/EIS pages 5.5-279 and 5.5-292 for a discussion of nighttime light and glare. Mitigation Measure 4.14-2 (Site-Specific Nighttime Lighting Measures), which would require lighting fixtures to be cast downward and shielded to prevent light from spilling onto adjacent offsite uses (including into adjacent offsite habitat) would apply to these alternatives.

CA Parks-11 See responses to comments CA Parks-5 through CA Parks-10. EIR/EIS Section 5.5.12 addresses impacts from noise and vibration and Section 5.5.3 addresses surface water runoff and discharges.

8.4.4 Responses to Comments from California State Lands Commission

CSLC-1 As described in Draft EIR/EIS Section 3.4, the proposed project, including the conversion of the test slant well to a permanent well and use of the existing outfall, could require discretionary permits from federal, state, and local jurisdictions. Table 3-8, Anticipated Permits and Approvals, lists the State Lands Commission requirement for a New Land Use Lease and Amended Land Use Lease for the uses described in the comment, among the many approvals CalAm is expected to pursue prior to project implementation (see Draft EIR/EIS page 3-65).

CSLC-2 In response to this and other comments on the Draft EIR/EIS, the quoted text in the comment has been deleted from Mitigation Measure 4.11-1 and the measure has been revised as shown in response to comment USEPA-4 in Section 8.3.5. Based on these revisions to the mitigation measure, the analysis also has been revised to conclude that, with mitigation, the proposed project's impacts with respect to GHG emissions would be less than significant.

8.4.5 Responses to Comments from State Water Resources Control Board

SWRCB-1 As summarized in the comment and discussed in detail in EIR/EIS Sections 4.3.5 and 4.5.5, the use of slant wells is consistent with the Ocean Plan's preferred technology for desalination plant intakes since they minimize or eliminate marine life mortality during operations over the project life-time. Additionally, construction of the proposed project would avoid and/or minimize impacts associated with marine life mortality and such impacts would be less than significant. Implementation of a retrofit of the existing MRWPCA outfall diffuser to increase the dilution of operational discharges is described under Impact 4.3-5 and Mitigation Measure 4.3-5 in Section 4.3.5. The potential secondary construction-related impacts on marine biological resources from implementing Mitigation Measure 4.3-5 are assessed and described in Section 4.3.5.4. Secondary impacts on benthic organisms and other marine biological resources associated with retrofitting the outfall diffuser with inclined jets would be less than significant.

SWRCB-2 As summarized in the comment and discussed in detail in Sections 4.3.5 and 4.5.5, the proposed project has been sited and designed in a manner that adheres to the requirements of the Ocean Plan regarding the use of multiport diffusers and the comingling brine from the MPWSP with wastewater to protect marine life and water quality within the Monterey Bay National Marine Sanctuary.

SWRCB-3 Two potential sources of mortality of marine organisms associated with discharges of brine were considered in EIR/EIS Section 4.5.5.2: increased salinity and turbulence shear stress. Salinity-related and shear stress-related marine life mortality for brine-only and comingled operational discharges is assessed in detail under Impact 4.5-4. The review of available literature presented in Table 4.5-9 found no reported cases of mortality in experiments that tested organisms at salinities as low as the maxima predicted in the brine discharges at the points of contact with the seafloor. Consequently, the EIR/EIS concluded that no mortality would occur due to the elevated salinities in the brine discharge and no mitigation is necessary.

As described in detail under Impact 4.5-4, the EIR/EIS concluded that for the worst-case brine-only discharge scenario, roughly 0.23 to 0.86 percent of total numbers of plankton flowing over the diffuser could be killed by shear stress, estimated to be roughly 892 million organisms per day or 0.00261 percent of the total area around the edge of Monterey Bay at the depth of 35 meters. As noted in EIR/EIS Appendix D1, the volumes entrained into the proposed brine discharges are much less than are entrained into the existing discharges that only include secondary treated wastewater. This is mainly because the dilution of the treated wastewater is much higher. For the brine-only discharges, the entrainment rates range from 7 to 22 percent of those for the baseline case. Therefore, organism

mortality for the proposed project brine discharges would also be expected to be about 7 to 22 percent of the baseline case. Because the CEQA/NEPA analysis determined that the impacts would be less than significant for discharge related mortality, no mitigation is proposed.

However, while the EIR/EIS does not require mitigation for salinity-related or shear stress-related mortality, the SWRCB might want to impose conditions (mitigation) as part of the permitting process. In order to do so, the area of production foregone (APF) would need to be calculated and it is typically calculated as a percentage of the entrainment losses resulting from the intake analysis. But since the project proposes to utilize subsurface intakes, Empirical Transport Modeling (ETM) was not performed, and Area of Production Foregone (APF) was therefore, not included in that calculation. The APF from the discharge could be estimated by assuming the area between the diffuser port and the edge of the zone of initial dilution (ZID) on both sides of the outfall that exceed 2 ppt above ambient salinity could settle on the seafloor (which model results indicate it would not). That area is calculated to be approximately 2,010 to 7,800 square meters of seafloor (21,635 to 85,800 square feet) or 0.5 to 2 acres. See EIR/EIS Section 4.5.5.2, Impact 4.5-4.

SWRCB-4 The use of additional source water from the intake slant wells is not proposed for flow augmentation to increase the dilution of operational discharges. As described in Mitigation Measure 4.3-5 in Section 4.3.5.2, flow augmentation would be achieved by adding water with densities (i.e., salinity) closer to fresh water. This would decrease the density difference between the operational discharge and the receiving ocean waters and result in increased dilution and mixing. As modeled by Roberts (see EIR/EIS Appendix D1), adding 2.3 to 4.8 million gallons per day (mgd) of freshwater flows, depending on the discharge scenario, could substantially increase minimum dilution at the edge of the ZID, and thus ensure compliance with the water quality objectives defined in the California Ocean Plan. See response to comment MRWPCA-7 in Section 8.5.9 for further discussion regarding the use of Mitigation Measure 4.3-5 flow augmentation to increase the dilution of operational discharges at the outfall diffuser and for further discussion regarding the use of Mitigation Measure 4.3-5 flow augmentation to increase the dilution of operational discharges at the outfall diffuser.