State Clearinghouse No. 2006101004

DRAFT ADDENDUM TO FINAL ENVIRONMENTAL IMPACT REPORT MONTEREY PENINSULA WATER SUPPLY PROJECT

October 2026



CEQA Responsible Agency:
California Regional Water Quality Control Board, Central Coast Region
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

CEQA State Lead Agency:
California Public Utilities Commission
550 Kearny Street, Suite 800
San Francisco, CA 94102

Applicant:
California American Water
511 Forest Lodge Road, Suite 100
Pacific Grove, CA 93950

MISSION STATEMENT

To preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations.

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LIST OF ABBREVIATIONS AND ACRONYMS

Acronym/Abbreviation	Term
AB	Assembly Bill
AMS	Applied Marine Science
APN	Assessor's Parcel Number
AWPF	Advanced Water Purification Facility
BMP	Best Management Practice
BMS	Brine Mixing Structure
BMZ	Brine Mixing Zone
CalAm	California American Water
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalent
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission
CY	Cubic Yards
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESHA	Environmentally Sensitive Habitat Area
GHG	Greenhouse Gas
HC	Hydraulic Code
HDPE	High-Density Polyethylene
LS	Less than Significant
LSM	Less than Significant with Mitigation
LWA	Larry Walker Associates
M1W	Monterey One Water
MBARD	Monterey Bay Air Resource District
MG	Million Gallon
MGD	Million Gallon Per Day
MPWSP	Monterey Peninsula Water Supply Project
NI	No Impact
NO_x	Nitrous Oxides
NPDES	National Pollutant Discharge Elimination System
PM_{10}	Particulate Matter (10-micrometer diameter)
$PM_{2.5}$	Particulate Matter (2.5-micrometer diameter)
PRS	Pressure-Reducing Structure
PVC	Polyvinyl Chloride
PWM	Pure Water Monterey

Acronym/Abbreviation	Term
RO	Reverse Osmosis
ROG	Reactive Organic Gas
ROWD	Report of Waste Discharge
RTP	Regional Treatment Plant
RWQCB	Regional Water Quality Control Board
sf	Square Feet
SLC	State Lands Commission
SWPPP	Stormwater Pollution Prevention Program
USFWS	United State Fish and Wildlife Service
ZID	Zone of Initial Dilution

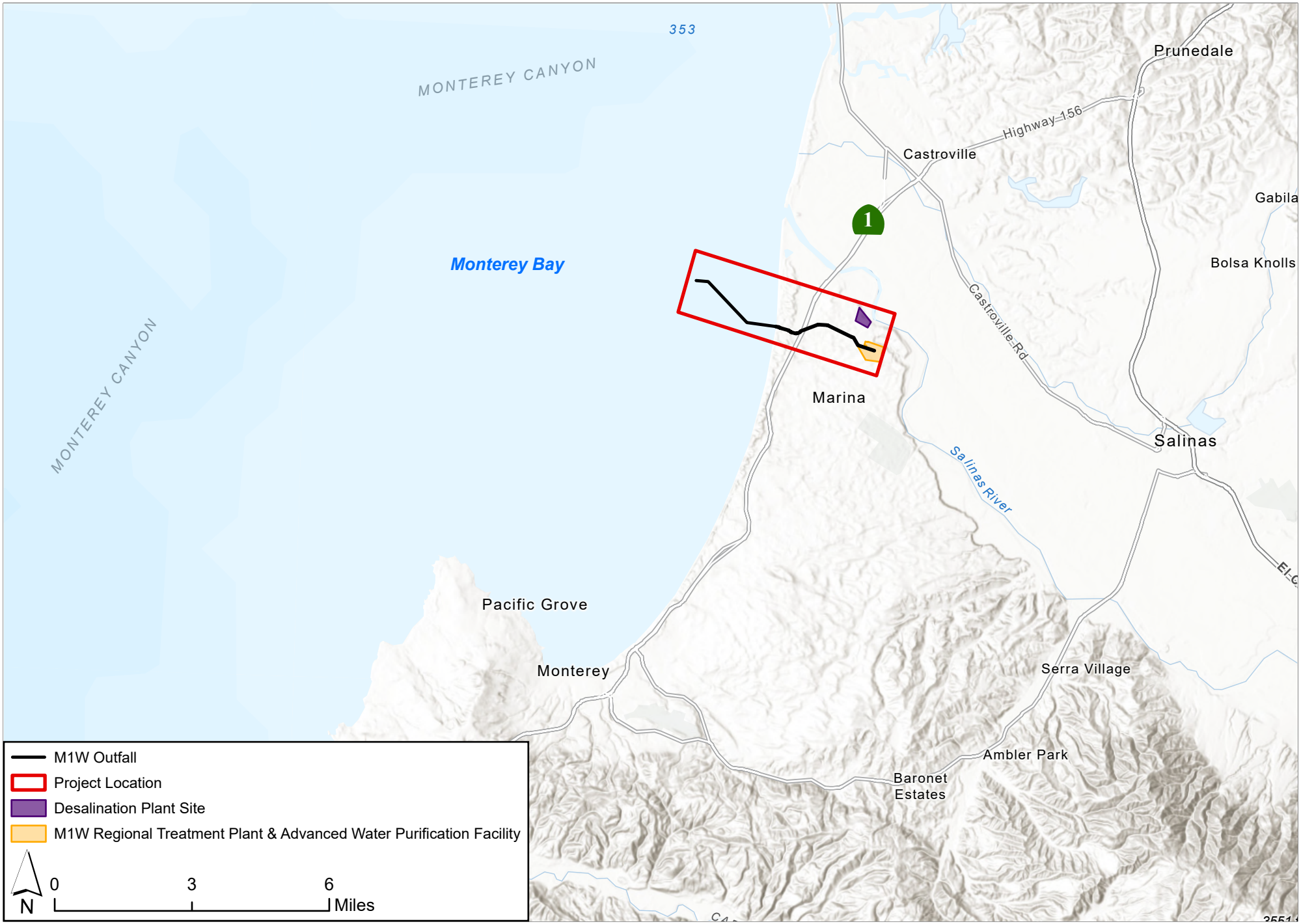
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1.1 ENVIRONMENTAL IMPACT REPORT ADDENDUM PURPOSE

The California Regional Water Quality Control Board, Central Coast Region ("Central Coast Water Board"), as a responsible agency under the California Environmental Quality Act ("CEQA"), prepared this Addendum to the Monterey Peninsula Water Supply Project ("MPWSP") Final Environmental Impact Report/Environmental Impact Statement ("Final EIR/EIS") to evaluate minor modifications to MPWSP components previously evaluated in the Final EIR/EIS. These modifications are necessary to accommodate future brine discharge via Monterey One Water's ("M1W's") existing outfall (which extends from M1W's existing regional wastewater treatment plant in unincorporated Monterey County to a diffuser located 11,260 feet offshore of the former CEMEX sand mining facility in the City of Marina) and ensure compliance with the California Ocean Plan, Water Quality Control Plan for the Central Coastal Basin, and California Water Code. The Central Coast Central Coast Water Board is specifically responsible for making a Water Code section 13142.5(b) consistency determination for the MPWSP's brine discharge from M1W's outfall. Because the Central Coast Water Board's consistency determination is a discretionary action subject to CEQA, the Central Coast Water Board must consider the potential environmental effects associated with the outfall and discharge-related modifications in accordance with CEQA's requirements.

The California Public Utilities Commission ("CPUC") originally approved the MPWSP in September 2018. The CPUC-approved MPWSP consists of the construction and operation of a 6.4 million-gallon per day ("MGD") desalination plant located in unincorporated Monterey County; six new subsurface slant wells, plus conversion of an existing test slant well to a permanent well, located at the former CEMEX sandmining site in Marina; pipelines to convey source water to the desalination plant, product water to the California American Water ("CalAm") service area, and brine to the existing outfall owned and operated by Monterey One Water ("M1W"); improvements to the existing aquifer storage and recovery system in Seaside; and improvements to M1W's outfall and the discharge of brine commingled with treated wastewater through the outfall into Monterey Bay[1] (see **Figure 1**).

[1] The Final EIR/EIS assessed potential modifications to M1W's existing outfall to accommodate the addition of MPWSP brine discharge into M1W waste streams. The potential modifications included modifying the outfall diffuser configuration to accommodate brine discharge without exceeding Ocean Plan water quality objectives, replacing existing internal joint seals along the nearshore portion of the outfall, and installing protective lining along the entire onshore portion of the outfall. For a complete description of the potential outfall modifications, please refer to the Final EIR/EIS and the Mitigation Monitoring and Reporting Plan, which can be accessed from: https://ia.cpuc.ca.gov/environment/info/esa/mpwsp/comms_n_docs.html.



Regional Map

Date
4/21/2026

Scale
1 in = 3 mi

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Planning and Environmental Consulting

Figure
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In November 2022, the California Coastal Commission ("CCC") approved a phased version of the MPWSP that would minimize potential inconsistencies with the Coastal Act associated with those project components located in the Coastal Zone. As part of the initial phase, CalAm would construct and operate a 4.8 MGD desalination plant, which requires only four new subsurface slant wells and conversion of the existing test slant well to a permanent well on the former CEMEX sandmining site ("Phase 1"). At full buildout,[2] the MPWSP would have a capacity of up to 6.4 MGD and would include up to seven slant wells, including the existing test slant well. Outfall modifications identified in the Final EIR/EIS are described in the MPWSP's Coastal Development Permits ("CDPs") approved by the CCC; however, the CDPs do not authorize the work since CalAm does not own the outfall or hold the existing outfall's CDP and the final scope of improvements related to the outfall and brine discharge had not been determined by M1W and CalAm at the time the CDPs were approved.

In June 2023, CalAm applied for a lease of State tidelands and submerged lands to the State Lands Commission ("SLC") for the portion of the slant well network for Phase 1 that extends seaward of the mean high tide line beneath Monterey Bay. The SLC approved CalAm's lease application on June 23, 2026. As a CEQA responsible agency, the SLC evaluated the Final EIR/EIS and CCC's Staff Report, in compliance with CEQA Guidelines section 15162, to inform the potential SLC action to consider a lease for the slant well network for Phase 1. As part of its review, the SLC prepared an Environmental Memorandum that analyzed whether any additional environmental review was necessary under CEQA for the proposed lease action. The SLC concluded that approval of a lease for Phase 1 "would not cause any new or different significant impacts and would not increase the severity of the previously identified significant impacts" (SLC, 2026 at pg. 2). The SLC further concluded that Phase 1 "would result in either an equal or reduced magnitude of potential impacts across resource areas" (ibid). The SLC concluded that its approval of a lease for Phase 1 did not require further CEQA review (SLC, 2026, at pg. 47).

In order to authorize the discharge of brine through M1W's existing outfall during MPWSP operations, the Central Coast Water Board must approve either a new or amended National Pollutant Discharge Elimination System ("NPDES") permit to allow the addition of brine discharge commingled with M1W's existing waste streams.[3] Additionally, the Central Coast Water Board must evaluate physical modifications to the outfall necessary to accommodate brine discharge and ensure compliance with the water quality objectives in the Ocean Plan. Finally, construction and operation of the MPWSP requires the Central Coast Water Board to consider a California Water Code Section 13142.5(b) determination for desalination facilities to ensure the MPWSP uses the best

[2] To proceed to Phase 2 for full buildout of the MPWSP, CalAm would be required to obtain further CCC approval of the additional improvements in the Coastal Zone.
[3] The action to adopt a NPDES permit is exempt from CEQA in accordance with Water Code section 13389. However, the Central Coast Water Board Water Code section 13142.5(b) determination is issued under State law authority only and is a discretionary approval subject to CEQA.

available site, design, technology, and mitigation measures feasible to minimize the intake and mortality of all forms of marine life.

On October 1, 2024, M1W submitted a Report of Waste Discharge ("ROWD") to the Central Coast Water Board to amend its existing NDPES permit (Permit No. CA0048551) to allow the discharge of commingled brine[4] through the existing outfall associated with Phase 1 operations only. In response to concerns from the Central Coast Water Board regarding potential marine impacts associated with changes to the M1W outfall, M1W modified its proposal and submitted an amended ROWD on July 1, 2025.

The July 2025 ROWD includes specific physical modifications to the outfall and improvements at CalAm's proposed desalination plant and M1W's Regional Treatment Plant ("RTP") to ensure compliance with the Ocean Plan and mitigation measures identified in the Final EIR/EIS. These modifications are substantially similar to those described in the Final EIR/EIS but involve certain minor changes, including changes to previously identified temporary construction work areas due to more refined site design. The proposed modifications to the previously evaluated outfall improvements described in the Final EIR/EIS and the outfall improvements and modifications to the desalination plant and RTP are collectively referred to as the "Proposed Modifications" and include the following components:

(1) Installing stiffer angled ports and opening existing closed ports on the outfall diffuser located offshore to maximize dilution at the point of discharge;

(2) Replacing internal joint seals inside the nearshore portion of the offshore segment of the outfall;[5]

(3) Excavating four additional access pits and 11 new grouting pits to install a protective slip liner inside the entire onshore portion of the outfall;

(4) Constructing additional brine storage at the desalination plant to maintain minimum brine flow requirements through the outfall during MPWSP operations; and

[4] "Commingled" brine discharge refers to MPWSP brine mixed with M1W Regional Treatment Plant secondary effluent, hauled saline waste, and M1W Advanced Water Purification Facility reverse osmosis concentrate.

[5] Replacement of internal joint seals would involve the same methods, materials, equipment, and timing as those identified in the Final EIR/EIS for the MPWSP. The only change to this component from what the Final EIR/EIS analyzed is the need for a smaller disturbance area at the beach junction structure for temporary stockpiling of excavated sand and staging of equipment. Whereas the Final EIR/EIS identified using an area of up to 0.5 acres at the beach junction structure, the Proposed Modifications would require an area of only 0.2 acres at this location. Therefore, this component of the Proposed Modifications would not result in any changes to the level of impacts that were previously identified in the Final EIR/EIS for the MPWSP. As a result, impacts associated with this component of the Proposed Modifications are not evaluated further in this Addendum.

(5) Installing a brine mixing structure (“BMS”) above a section of the outfall located onshore at the M1W RTP to thoroughly mix brine prior to discharging through the outfall.

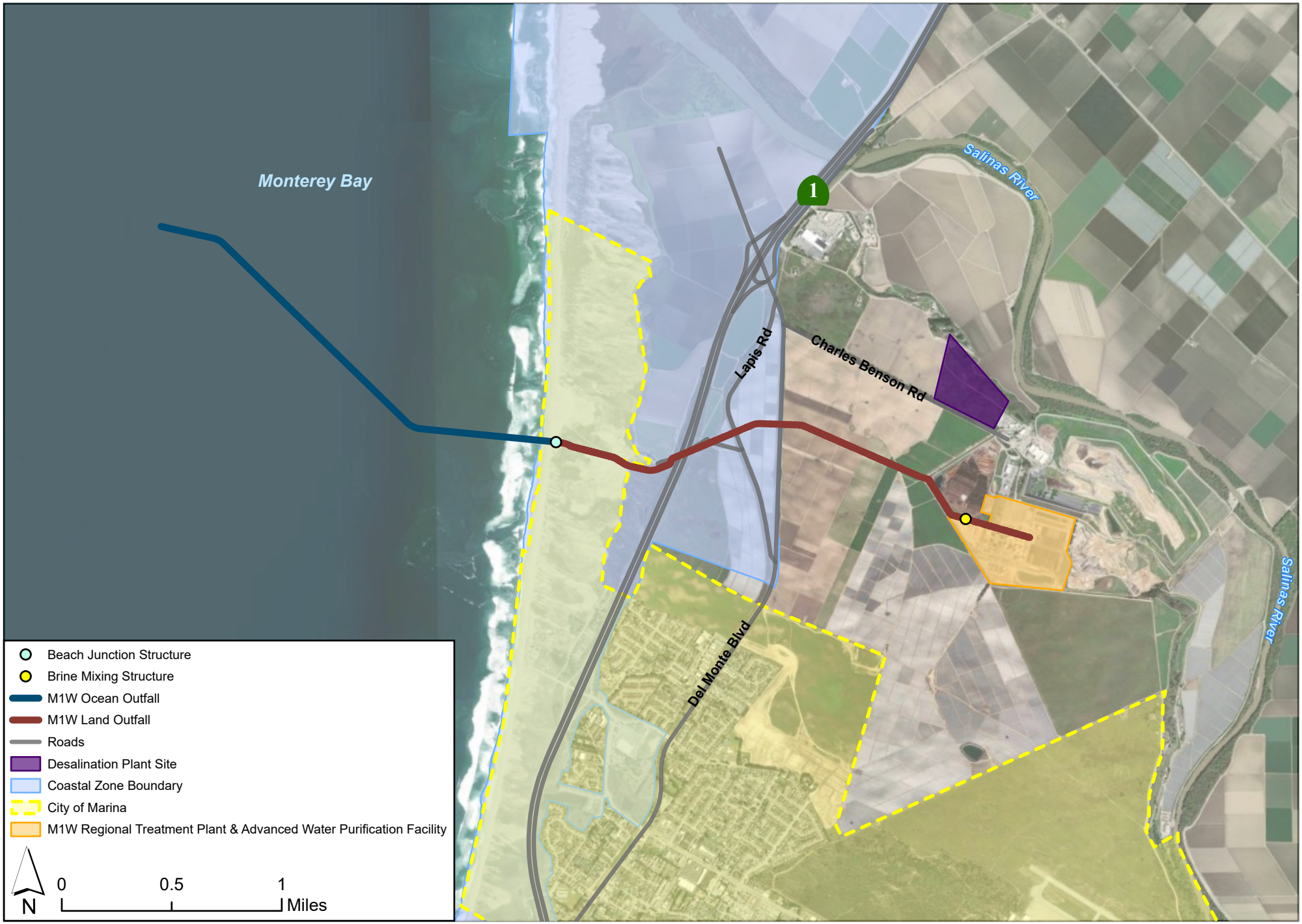
The Proposed Modifications are included in M1W’s ROWD as part of the NPDES permit amendment process and the Central Coast Water Board’s section 13142.5(b) determination for Phase 1 of the MPWSP. The purpose of this Addendum is to analyze whether the Proposed Modifications would cause “new or substantially more severe” significant impacts on the environment or otherwise warrant a subsequent or supplemental EIR pursuant to Public Resources Code section 21166 and State CEQA Guidelines sections 15162 and 15163.

1.2 PROJECT LOCATION AND EXISTING FACILITIES

1.2.1 MPWSP Desalination Plant Site

The MPWSP desalination plant site is located in unincorporated Monterey County, on approximately 25 acres of a 46-acre vacant parcel on Charles Benson Road, approximately 830 feet northwest of the M1W RTP and immediately adjacent to and west of the Monterey Regional Environmental Park (see **Figure 2**). The facilities to be built at the MPWSP desalination plant site include a pretreatment system, a reverse osmosis (“RO”) system, a post-treatment system, backwash supply and filtered water equalization tanks, desalinated product water storage and conveyance facilities, brine storage and disposal facilities, and an administration building and laboratory facility (collectively, “desalination plant”). The desalination plant would create approximately 15 acres of impervious surfaces. Grading and construction activities on the desalination plant site commenced on January 28, 2026, following the CPUC’s issuance of a Notice to Proceed for this scope of work.

The outfall consists of a 60-inch-diameter reinforced concrete pipe that extends approximately 24,000 feet west from M1W’s RTP located in unincorporated Monterey County (“County”), through the City of Marina, and into Monterey Bay (see **Figure 2**). The outfall includes an onshore segment (“onshore outfall”) and an offshore segment ("offshore outfall”). The onshore outfall extends approximately 13,000 feet west from M1W’s RTP (Assessor’s Parcel Number [“APN”] 175-011-041-000) through privately owned agricultural land to M1W’s existing beach junction structure, located approximately 220 feet above the mean high waterline on the former CEMEX sandmining site (APN 203-011-019-000). The entirety of the onshore outfall is located within an existing 20-foot utility easement that crosses Del Monte Boulevard and Lapis Road then follows a private entry road, which crosses State Route 1, to the CEMEX property.



Vicinity Map

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4/21/2026

Scale
1 in = 1 mi

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Figure
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The offshore outfall extends approximately 11,300 feet from the beach junction structure into Monterey Bay and ends with a 1,100-foot-long, underwater diffuser that rests on ballast rock. The diffuser has 168 diffuser ports (129 of which are currently open) that are generally located approximately six inches above the ballast rock and nominally 54 inches above the sea floor. The open diffuser ports are equipped with horizontally oriented Hydraulic Code (HC)[6] 61 diffuser check valves at an approximately 180-degree angle (see **Figure 3**).

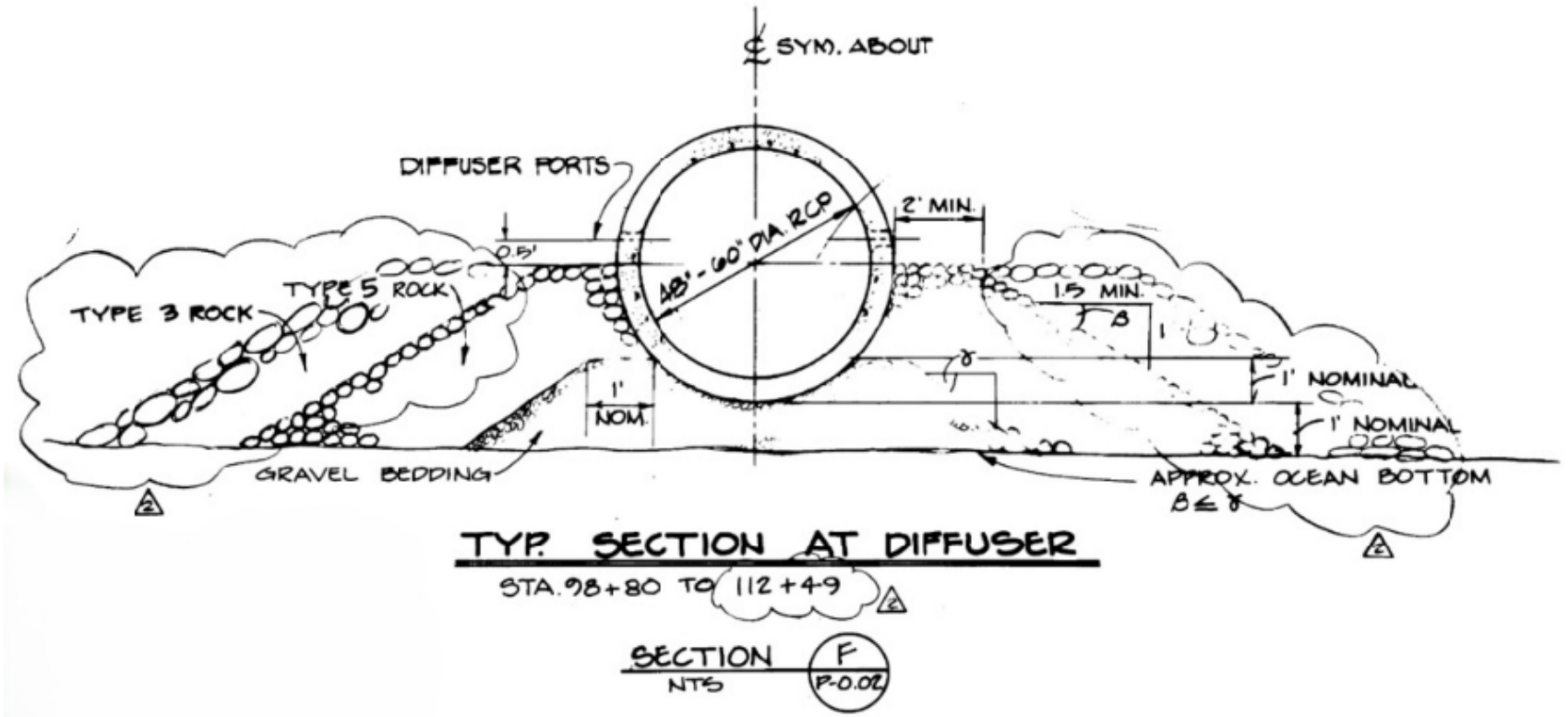
1.2.2 Location of Proposed Modifications

The Proposed Modifications would involve minor changes and refinements to improvements to M1W's existing onshore outfall and offshore outfall that the CPUC previously evaluated in the Final EIR/EIS. Modifications to the onshore outfall would primarily occur within M1W's existing permanent 20-ft wide utility easement that allows for ongoing outfall maintenance activities. Approximately 5,835 ft of the onshore outfall is located in agricultural land. Approximately 3,820 ft is located in developed areas associated with the RTP and under an existing private entry road to the CEMEX site. Approximately 2,920 ft is located in dune or coastal scrub habitat within and immediately adjacent to the CEMEX site, most of which is in areas that will already be disturbed in connection with the construction of MPWSP components at the CEMEX site.

The Proposed Modifications evaluated in this Addendum also include expanded brine storage at the desalination plant site, located along Charles Benson Road (APN 229-011-021-000), adjacent to and west of the ReGen Monterey landfill. All ground-disturbing activities would remain within the same temporary disturbance area described and analyzed for the MPWSP in the Final EIR/EIS. The desalination plant site is designated as Permanent Grazing land; however, this site is not currently used for agricultural activities.

In addition, the Proposed Modifications include installation of the BMS above a section of the outfall located at M1W's RTP (APNs 175-061-002-000 and 175-011-041-000), which is currently developed. These improvements are described more thoroughly in *Section 1.4*, below. **Table 1.2.2-1** and **Figure 4** identify the parcels that would be affected by the implementation of the Proposed Modifications.

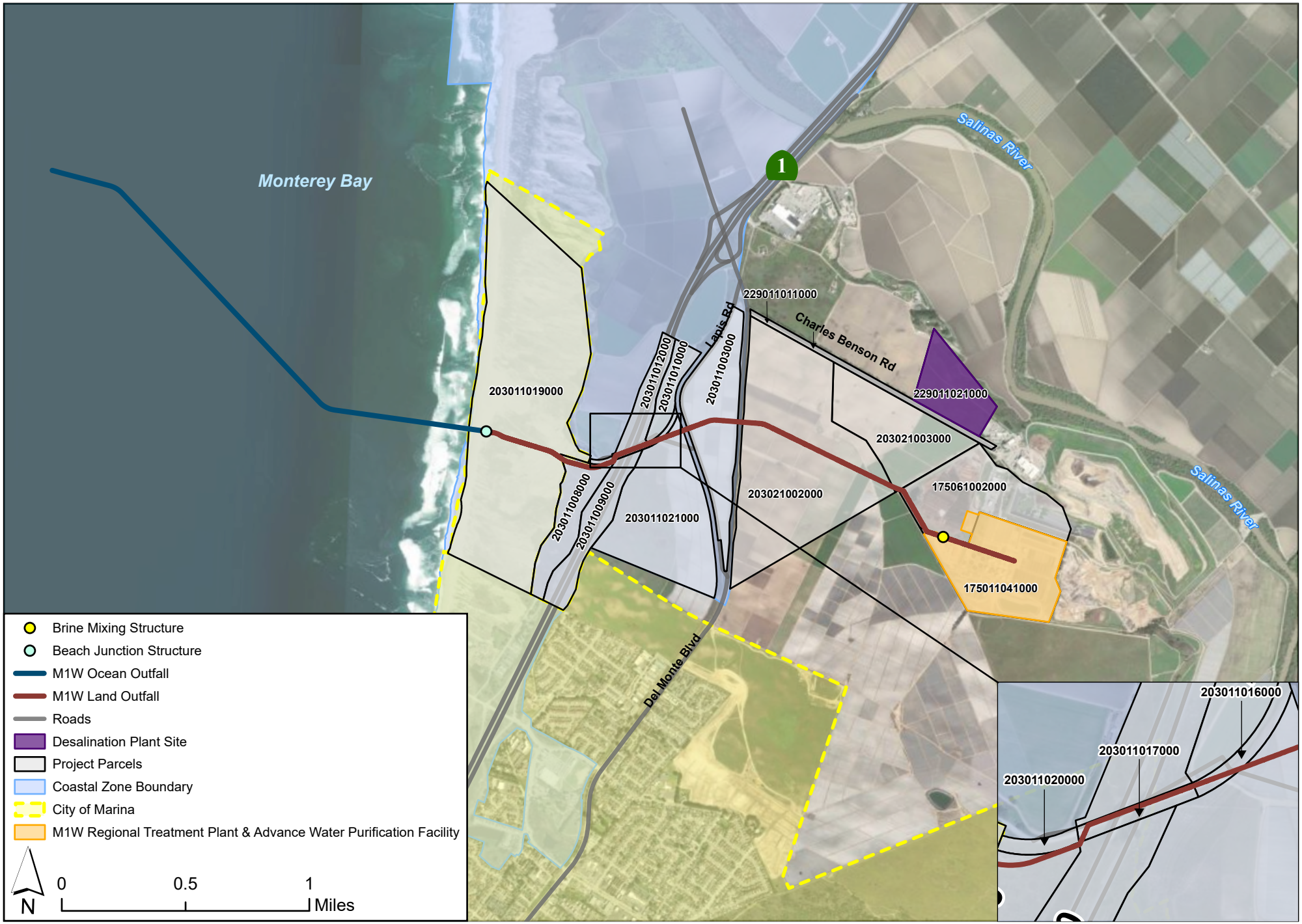
[6] The HC value refers to the material stiffness and resistance to opening under pressure. Larger HC values are more flexible and have a larger opening for a given flowrate than a lower HC value.



Source: Brown & Caldwell, 2025

Existing Diffuser Configuration Diagram	Date 4/21/2026	Denise Duffy & Associates, Inc. Planning and Environmental Consulting	Figure 3
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Assessor's Parcel Map

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4/21/2026

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Table 1.2-1
Assessor's Parcels Affected by the Proposed Modifications

APN	Land Use	Jurisdiction
203-011-019-000	Open Space	City of Marina – Coastal Zone
203-011-012-000	Caltrans Right-of-Way	City of Marina – Coastal Zone
203-011-010-000	Agricultural Preservation	City of Marina – Coastal Zone
203-011-008-000	Wetlands & Coastal Strand	City of Marina – Coastal Zone
203-011-009-000	Caltrans Right-of-Way	City of Marina – Coastal Zone
203-011-020-000	City Right-of-Way	City of Marina – Coastal Zone
203-011-021-000	Special Treatment Area	City of Marina – Coastal Zone
203-011-017-000	CEMEX Entry Road	City of Marina – Coastal Zone
203-011-016-000	Agricultural Preservation / Special Treatment Area	City of Marina – Coastal Zone
203-011-003-000	Special Treatment Area	City of Marina – Coastal Zone
203-021-002-000	Permanent Grazing	County of Monterey – Inland
203-021-003-000	Permanent Grazing	County of Monterey – Inland
229-011-011-000	Public/Quasi-Public	County of Monterey – Inland
229-011-021-000	Permanent Grazing/Farmlands	County of Monterey – Inland
175-061-002-000	Public/Quasi-Public	County of Monterey – Inland
175-011-041-000	Public/Quasi-Public	County of Monterey – Inland

1.3 PROJECT OVERVIEW & PROCEDURAL BACKGROUND

1.3.1 California Public Utilities Commission (CPUC) – Certificate of Public Convenience and Necessity

On March 20, 2018, the CPUC (acting as the CEQA Lead Agency) and the Monterey Bay National Marine Sanctuary (acting as the Lead Agency under the National Environmental Policy Act) published the Final EIR/EIS, which evaluated a 9.6 MGD desalination plant in unincorporated Monterey County (APN 229-011-021-000), as well as a reduced project alternative consisting of a 6.4 MGD desalination plant at the same location. The CPUC ultimately approved the 6.4 MGD desalination plant as part of the MPWSP, which the CPUC found was the environmentally superior alternative.

The Final EIR/EIS identified that implementation of the MPWSP would result in potentially significant impacts in the following resource areas: geology, soils, and seismicity; surface water hydrology and water quality; groundwater resources; terrestrial biological resources; hazards and hazardous materials; land use, land use planning, and recreation; traffic and transportation; air quality; greenhouse gas emissions; public services and utilities; aesthetic resources; cultural and paleontological resources; agricultural resources; energy conservation; and socioeconomics and environmental justice. The Final EIR/EIS concluded that all potentially significant impacts could be reduced to a less than significant level with mitigation except in the following areas: terrestrial biological resources, traffic and transportation, air quality, noise and vibration, and growth inducement.

In considering the MPWSP, the Final EIR/EIS assessed potential modifications to M1W's outfall to accommodate brine discharge and proposed various mitigation measures that would require outfall modifications prior to MPWSP operations (Mitigation Measures 4.3-5, 4.13-5a, and 4.13-5b). The potential modifications included modifying the offshore outfall diffuser configuration, replacing existing internal joint seals along the nearshore portion of the offshore outfall, and installing protective lining within the entire onshore portion of the outfall.

On September 13, 2018, the CPUC issued a decision (Decision 18-09-017) certifying the Final EIR/EIS and approving the 6.4 MGD MPWSP. As part of this process, the CPUC evaluated the need for additional water supplies, considered the reasonableness of projected water demand for CalAm's Monterey District, evaluated the adequacy of the Final EIR/EIS under CEQA, considered a range of potential alternatives, and determined that the MPWSP was needed to meet projected water demands through 2050. On September 20, 2018, the CPUC issued a Certificate of Public Convenience and Necessity ("CPCN"),[7] adopted certain settlement agreements, certified the Final EIR/EIS, and adopted CEQA Findings, a Mitigation Monitoring and Reporting Program, and a Statement of Overriding Considerations.

On August 28, 2019, the California Supreme Court denied two petitions for writ of mandate challenging the CPUC's decision and the adequacy of the Final EIR/EIS. The CPUC's decision and Final EIR/EIS are final, valid, and not subject to further challenge.

1.3.2 County of Monterey – Combined Development Permit

In September 2016, CalAm filed a Combined Development Permit application (PLN150889) with the County for certain portions of the MPWSP located in the unincorporated County, consisting of a Use Permit to allow for the construction and operation of the desalination plant and an Administrative Permit and Design Approval to allow the construction of the various buildings and facilities associated with the desalination plant, including an approximately three-million-gallon brine storage pond. On July 19, 2019, the County Board of Supervisors adopted Resolution 19-258 to adopt the Final EIR/EIS that was previously certified by the CPUC, the Mitigation Monitoring and Reporting Program from the Final EIR/EIS, CEQA Findings, and a Statement of Overriding Considerations, and to approve the desalination plant Combined Development Permit.[8]

[7] A CPCN is a discretionary decision-making document for granting or denying applications submitted by public utilities for projects that propose to construct or modify utilities infrastructure.
[8] In September 2023, the Sixth District Court of Appeal upheld the County's approval of the Combined Development Permit in Marina Coast Water District v. County of Monterey, Superior Court Case No. 19CV003305, Sixth Dist. Ct. of Appeal Case Nos. H09146 & H049710.

1.3.3 California Coastal Commission – Coastal Development Permits

During the CCC's consideration of the MPWSP following the CPUC's 2018 approval, CalAm proposed to develop the MPWSP in two phases to help minimize potential inconsistencies with the Coastal Act. Phase 1 would involve the construction of two well pads to accommodate four slant wells, plus conversion of the existing test slant well, for a total of five subsurface slant wells on three well pads. Phase 1 of the MPWSP would minimize potential impacts on Environmentally Sensitive Habitat Areas ("ESHA") and reduce potential impacts to groundwater (see Final Adopted Findings, Application No. 9-20-0603, Appeal No. A-3-MRA-19-0034, p. 3). Although CalAm proposed to phase the MPWSP, the CCC evaluated potential coastal resources impacts "associated with the full scale of the Project." (Id., p. 43.)

Modifications to the M1W outfall identified in the Final EIR/EIS were not included in CalAm's CDP application to the CCC because CalAm does not own the outfall or hold the existing outfall's coastal development permit, which are owned and controlled by M1W (Id., p. 45.). Nevertheless, the CCC evaluated the impacts of the modifications to the outfall described in the Final EIR/EIS as part of the CCC's Staff Report along with the MPWSP's consistency with the Coastal Act and applicable Local Coastal Programs. On November 17, 2022, the CCC approved CDPs for Phase 1 of the MPWSP, subject to 20 special conditions, including conditions related to future modifications to the outfall.

Specifically, Special Condition 1 of CalAm's CDPs requires that, prior to issuance of the CDPs, CalAm must submit proof of a Central Coast Water Board-approved amendment to M1W's NPDES permit that allows the discharge of commingled brine through M1W's outfall. Separately, Special Condition 1 also requires that CalAm submit proof of a CCC permit authorization for modifications to the outfall to accommodate MPWSP brine. To satisfy this special condition requirement, M1W and CalAm are pursuing an amendment to M1W's existing CDP (Permit No. 3-83-014) for the proposed outfall modifications located within the Coastal Zone.

1.3.4 State Lands Commission – Lease of State Lands

In June 2023, CalAm applied for a lease of State tidelands and submerged lands to the SLC for the portion of the slant well network for Phase 1 of the MPWSP that extends seaward of the mean high tide line beneath Monterey Bay, within SLC's jurisdiction.[9] The SLC, as a CEQA responsible agency, considered the Final EIR/EIS and the CCC's Staff Report, in reviewing CalAm's lease application. In compliance with CEQA Guidelines section 15162, the SLC evaluated whether the components of the

[9] The new subsurface slant wells would be extended further seaward compared to what was identified in the Final EIR/EIS to ensure the slant wells extend at least 1,000 ft seaward of the well head locations, in compliance with Special Condition 11 of the CDPs. Extension of the slant wells would not result in any new impacts compared to what was analyzed in the Final EIR/EIS (please refer to **Appendix H** for additional detail).

slant well network within the SLC's jurisdiction would result in additional or more severe significant impacts than identified in the Final EIR/EIS, thereby requiring further environmental review. As part of its review, SLC prepared an Environmental Memorandum that evaluated the previous CEQA analyses performed by the CPUC and the CCC for the MPWSP. The SLC concluded that phased construction of the MPWSP's slant well network within the SLC's jurisdiction would not result in new or more severe significant effects or that previously infeasible mitigation measures are now feasible and would substantially reduce significant impacts. Specifically, the SLC concluded that, "based on substantial evidence considering the whole record, none of the following circumstances exist regarding the Modified Project and the previously certified Final EIR/EIS:

- Substantial changes proposed in the project which would require major revisions of the Final EIR/EIS due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects (CEQA Guidelines, § 15162, subd. (a)(1)).

- Substantial changes that would occur with respect to the circumstances under which CalAm undertakes the Modified Project, which would require major revisions of the Final EIR/EIS due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects (CEQA Guidelines, § 15162, subd. (a)(2)).

- New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time of certification of the Final EIR/EIS by the CPUC (CEQA Guidelines, § 15162, subd. (a)(3)).”

Therefore, the SLC concluded that no subsequent or supplemental CEQA documentation was required. The SLC approved CalAm's lease application on June 23, 2026.

1.3.5 Regional Water Quality Control Board – National Pollutant Discharge Elimination System Permit

On October 1, 2024, M1W submitted a ROWD to the Central Coast Central Coast Water Board to amend M1W's existing NPDES permit to allow for the addition of brine discharge through M1W's outfall during MPWSP operations. The October 2024 ROWD proposed modifications to M1W's existing outfall based on technical analyses performed by M1W's consultants in collaboration with CalAm. The outfall modifications described in the October 2024 ROWD included improvements to the existing diffuser configuration, replacement of internal joint seals with corrosion-resistant WEKO seals in the nearshore portion of the offshore outfall, and installation of protective slip lining along the entire onshore outfall. In particular, the October 2024 ROWD proposed diffuser modifications that would involve: (1) removal of the existing end gate, (2) replacement of 129 currently open HC61 horizontal diffuser ports with HC6.8 ports

angled at 60 degrees, (3) installation of 60-degree HC6.8 ports on 39 currently closed diffuser ports, (4) installation of a pressure-relief structure ("PRS") at the end of the diffuser and anchored to the sea floor, and (5) installation of two additional ports on the PRS, for a total of 170 open ports along the ocean outfall. However, following submittal of the October 2024 ROWD, Central Coast Water Board staff expressed concerns with potential impacts on marine resources associated with PRS construction and operation. The Central Coast Water Board subsequently requested additional information regarding potentially feasible alternatives to the PRS.

In response, M1W and CalAm evaluated additional alternatives to the PRS. As part of this alternatives analysis, Dr. Philip Roberts, Trussell Technologies, Inc. ("Trussell"), and Larry Walker Associates ("LWA") conducted extensive dilution and water quality modeling to inform an outfall design that would comply with the Ocean Plan and NPDES permitting requirements, while minimizing potential environmental impacts and the extent of physical modifications to M1W's outfall.

On July 1, 2025, M1W submitted an amended ROWD[10] that proposed outfall improvements similar to the those described in the Final EIR/EIS. In particular, the July 2025 ROWD eliminated the PRS and proposed diffuser modifications that would involve: (i) fitting the end gate with a neoprene gasket seal, (ii) replacing 129 currently open HC61 horizontal diffuser ports with HC24 ports angled at 60 degrees, and (iii) installing 60-degree HC24 ports on 29 currently closed diffuser ports, resulting in a total of 158 open ports along the outfall. The amended ROWD also included modifications to address integrity of the outfall, including: (i) replacing internal joint seals with corrosion resistant WEKO seals in the nearshore portion of the offshore outfall and (ii) installing protective slip lining along the onshore outfall, generally consistent with outfall improvements described in the Final EIR/EIS.

1.4 DESCRIPTION OF PROJECT COMPONENTS AND OUTFALL MODIFICATIONS PREVIOUSLY EVALUATED IN THE FINAL EIR/EIS

In approving the MPWSP, the CPUC considered project components and potential modifications to M1W's existing outfall to ensure that MPWSP operations, including brine discharge, would comply with the Ocean Plan and Water Code section 13142.5(b). Additionally, the CPUC considered potential modifications to the outfall that would be needed to protect the outfall's integrity during MPWSP operation. The potential modifications to the outfall evaluated in the Final EIR/EIS included: (i) modifying the existing diffuser ports and end gate on the offshore portion of the outfall and (ii) constructing a BMS at the M1W RTP to mix brine with existing M1W waste streams prior to discharging brine through the outfall. Additionally, the Final EIR/EIS evaluated the construction of a brine storage pond at the desalination site in unincorporated Monterey County to temporarily store brine during low-flow operations.

[10] M1W's July 1, 2025 ROWD, including all technical memoranda prepared by Dr. Roberts, Trussell, and LWA, can be accessed from the M1W Board of Directors June 30, 2025 Meeting Agenda at the following link: https://montereyonewater.portal.civicclerk.com/event/465/files/attachment/7649

Finally, the Final EIR/EIS requires CalAm to implement measures designed to monitor potential marine impacts to receiving water quality from operational discharge and to minimize impacts on M1W infrastructure during MPWSP operation. These measures include: (i) installing monitoring equipment around the discharge site as part of implementing a comprehensive Monitoring and Mitigation Plan (Final EIR/EIS Mitigation Measure 4.3-4), (ii) replacing internal joint seals and clamps in the seaward portion of the offshore outfall (Final EIR/EIS Mitigation Measure 4.13-5a) and (iii) installing protective slip lining along the entire onshore outfall (Final EIR/EIS Mitigation Measure 4.13-5b).

This section provides detailed descriptions of each of the MPWSP components related to the discharge of brine that were analyzed in the Final EIR/EIS.

1.4.1 Components Required for Ocean Plan Compliance

Offshore Outfall Diffuser and End Gate Modifications

Because the salinity of brine from the desalination process would increase the density of the comingled discharge from the M1W outfall, and therefore decrease the commingled discharge's buoyancy, the Final EIR/EIS imposes Mitigation Measure 4.3-5 to ensure that brine discharges comply with the Ocean Plan. To comply with Mitigation Measure 4.3-5, the Final EIR/EIS identifies and evaluates potential design features and operational measures that the MPWSP could implement. These include: (i) temporarily removing the diffuser end gate to clear sediment from the offshore outfall, (ii) replacing existing horizontally oriented diffuser ports with inclined diffuser ports angled at 60 degrees for a total of 129 open ports, and (iii) replacing the existing end gate with a minimum of one six-inch Tideflex or similar check valve at an inclined angle of greater than 20 degrees and optimally 60 degrees (see Final EIR/EIS, pp. 4.3-106 to 4.3-110).

Divers would access the diffuser and end gate from offshore via boat to complete the proposed installation activities. Support craft at the water surface (i.e., barge) would provide temporary equipment staging and would facilitate removal of any accumulated sediment from the terminus of the diffuser (see Final EIR/EIS, pp. 4.3-109 to 4.3-110). The Final EIR/EIS did not include a specific construction timeline for this component, but the Proposed Modifications involve substantially the same amount of work on the diffuser and end gate as analyzed in the Final EIR/EIS.

Brine Mixing Structure[11]

To thoroughly mix brine with existing M1W waste streams, prior to discharge through the outfall, the MPWSP includes a BMS and appurtenances (i.e., connecting pipelines, flow bypass system, and laboratory and control building) located at the southern terminus of the desalination pipeline, on M1W property. The BMS and

[11] The Final EIR/EIS refers to this component as a "brine mixing box." For consistency throughout this Addendum, this component is referred to throughout as a "brine mixing structure" or "BMS."

associated infrastructure would occupy an approximately 0.5-acre undeveloped and previously disturbed area at M1W's RTP. Construction of the BMS and appurtenances would take approximately nine months.

Brine Storage

To manage brine flow to the outfall, the MPWSP includes construction of one double-lined, three-million-gallon ("MG") open brine storage pond, and appurtenances (i.e., pump station, aeration system, and connecting pipelines) located at the desalination plant site (see Final EIR/EIS, p. 3-29). The brine storage pond would be used to store brine during low-flow desalination plant operations. The brine storage pond and associated infrastructure would occupy approximately 1.5 acres of land at the desalination plant site (see *ibid*.). Construction activities at the desalination plant site, including construction of the brine storage pond, would occur over an approximately 24-month period.

Brine Discharge Monitoring Program (Mitigation Measure 4.3-4)

The Final EIR/EIS included Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance) to ensure that future commingled discharge would comply with the Ocean Plan. More specifically, Mitigation Measure 4.3-4 requires CalAm to implement a comprehensive brine discharge Monitoring and Reporting Plan (Brine Discharge Monitoring Program) that is consistent with the requirements of the Ocean Plan and that incorporates, at a minimum (but not limited to), monitoring guidelines detailed in the Ocean Plan. The Brine Discharge Monitoring Program would ensure that adequate water quality and marine resource data are gathered to determine baseline conditions and compliance with Ocean Plan water quality limitations, including salinity (see Final EIR/EIS, pp. 4.5-65). The Final EIR/EIS concluded that implementation of Mitigation Measure 4.3-4, including brine discharge monitoring, would ensure that impacts to surface water, as well as marine resources, would be less than significant.

1.4.2 Components Required to Ensure Outfall Integrity

WEKO Seal Replacement

Because the salinity of brine from the desalination process would accelerate deterioration of the existing internal joint seals in the nearshore portion of the offshore outfall, the Final EIR/EIS includes Mitigation Measure 4.13-5a, which requires replacing 22 existing internal joint seals and clamps located in the nearshore portion of the offshore outfall with WEKO seals and clamps that are highly resistant to corrosion from brine (see Final EIR/EIS, pp. 4.13-26 to 4.13-29.) Replacement of the existing joint seals would involve accessing the near-shore portion of the outfall via M1W's existing beach junction structure, removing the existing joint seals and clamps, and installing new corrosion-resistant seals and clamps (Final EIR/EIS, p. 4.13-28).

Construction would occur between late summer and early fall when flows in the outfall are low. The existing outfall access road located on CEMEX property would provide construction access. A fabricated accessway would be constructed within the existing beach junction structure to provide workers with access to the nearshore portion of the outfall. A bypass pumping system would be implemented during construction, which would include a surface pump and buried discharge piping. Bypass pumping effluent would be discharged into the sand in the tidal zone. A previously disturbed 0.5-acre area surrounding the beach junction structure would be used for excavating sand to uncover the beach junction structure and to provide temporary stockpiling and equipment and materials staging during construction (see Final EIR/EIS, pp. 4.13-28 to 4.13-29).

Onshore Outfall Protective Slip Liner

Because the salinity of brine from the desalination process would accelerate deterioration of the onshore outfall, the Final EIR/EIS imposes Mitigation Measure 4.13-5b to protect the onshore outfall from corrosion. Specifically, Mitigation Measure 4.13-5b requires the installation of either a Vylon or spiral-wound HDPE slip liner along the entire 13,000-foot-long onshore outfall (see Final EIR/EIS, pp. 4.13-27 to 4.13-30). Installation of the slip liner would involve inserting liner segments at specified locations and pushing the liner through the outfall. Installation would require excavating approximately 10 access pits along the outfall alignment to insert liner segments (Final EIR/EIS, p. 4.13-29).

Access pits would each be 300 square feet ("sf") (12 ft x 25 ft). Stockpiling of topsoil and the excavated soil would occur within M1W's existing permanent 20-foot-wide easement that extends along the entire length of the onshore outfall. Following liner installation, excavated soil at access pits would be returned as close to pre-construction compaction levels as possible and stockpiled topsoil would be replaced to match pre-construction elevations (see Final EIR/EIS, pp. 4.13-29-4.13-30). Any temporary impacts to sensitive habitat, including environmentally sensitive habitat areas ("ESHA") and temporarily impacted special-status plant species,[12] would be restored following construction. Installation activities would take no more than 7 to 10 days per segment and would occur during the irrigation season (April through September), when flows through the outfall are low.

1.5 DESCRIPTION OF PROPOSED MODIFICATIONS

The Proposed Modifications are generally consistent with the MPWSP evaluated in the Final EIR/EIS (described above, in Section 1.4). However, following the CPUC's approval of the MPWSP, M1W approved the Pure Water Monterey Expansion Project ("PWM Expansion Project"), which included expanding the capacity of M1W's AWPF.[13]

[12] Special-status species include obligate host plants for listed wildlife species.
[13] On April 16, 2021, the M1W Board of Directors unanimously approved the PWM Expansion Project, which would modify the approved and constructed PWM Project to provide additional purified recycled

As a result, M1W and CalAm conducted updated modeling to account for additional discharge through the outfall from the AWPF due to the PWM Expansion Project.

This modeling indicated that minor modifications to previously analyzed outfall improvements would be necessary to ensure compliance with Ocean Plan water quality objectives. This modeling also indicated that increased brine storage capacity at the desalination plant site would be required to assist in ensuring an adequate volume of minimum brine flow is being consistently discharged through the outfall during periods of brine discharge to meet applicable Ocean Plan water quality objectives. Finally, more refined site design for modifications to address the integrity of the outfall identified additional areas of temporary ground-disturbing activities beyond those evaluated in the Final EIR/EIS. Almost all additional temporary impacts are located within the MPWSP footprint or within M1W's existing M1W outfall easement[14] and previously disturbed or developed areas.

The following section provides detailed descriptions of the Proposed Modifications and includes a comparison against the previously analyzed outfall improvements from the Final EIR/EIS.

1.5.1 Proposed Modifications to Comply with the Ocean Plan

Offshore Outfall Diffuser and End Gate Modifications

The Proposed Modifications include improvements to the outfall diffuser, similar to those identified and evaluated in the Final EIR/EIS. However, the Proposed Modifications would require opening a greater number of diffuser ports compared to what was described for the MPWSP. Specifically, the Proposed Modifications would open an additional 29 diffuser ports for a total of 158 open ports (compared to 129 open ports described in the Final EIR/EIS). This number of ports remains within the total number of 168 ports that exist on the outfall. Similar to the MPWSP evaluated in the Final EIR/EIS, the Proposed Modifications would involve the following modifications to the outfall diffuser: (i) temporarily removing the diffuser end gate to clear sediment from the last 350 to 450 feet of the offshore outfall, (ii) replacing 129 existing horizontally-oriented HC61 diffuser ports with stiffer HC24 diffuser ports angled upward at 60 degrees, (iii) opening 29 currently closed diffuser ports, and (iv) installing the same,

water for injection into the Seaside Groundwater Basin. The PWM Project included the construction of a 5.0 mgd AWPF, source water diversion facilities, product water pipelines, and injection well facilities in the Seaside Groundwater Basin. The PWM Project is capable of injecting 3,500 acre-feet per year (afy) of purified recycled water. The PWM Expansion Project modified the PWM Project by 1) expanding the existing AWPF, 2) constructing additional injection well facilities, 3) constructing new product water pipelines, 4) developing new extraction well facilities, and 5) installing additional potable and raw water pipelines along GJM Boulevard. The approved PWM Expansion Project increases M1W's AWPF peak capacity to up to 7.6 mgd. As part of the PWM Expansion Project, an additional 2,250 afy of purified recycled water will be injected into the Seaside Groundwater Basin for later extraction and use.

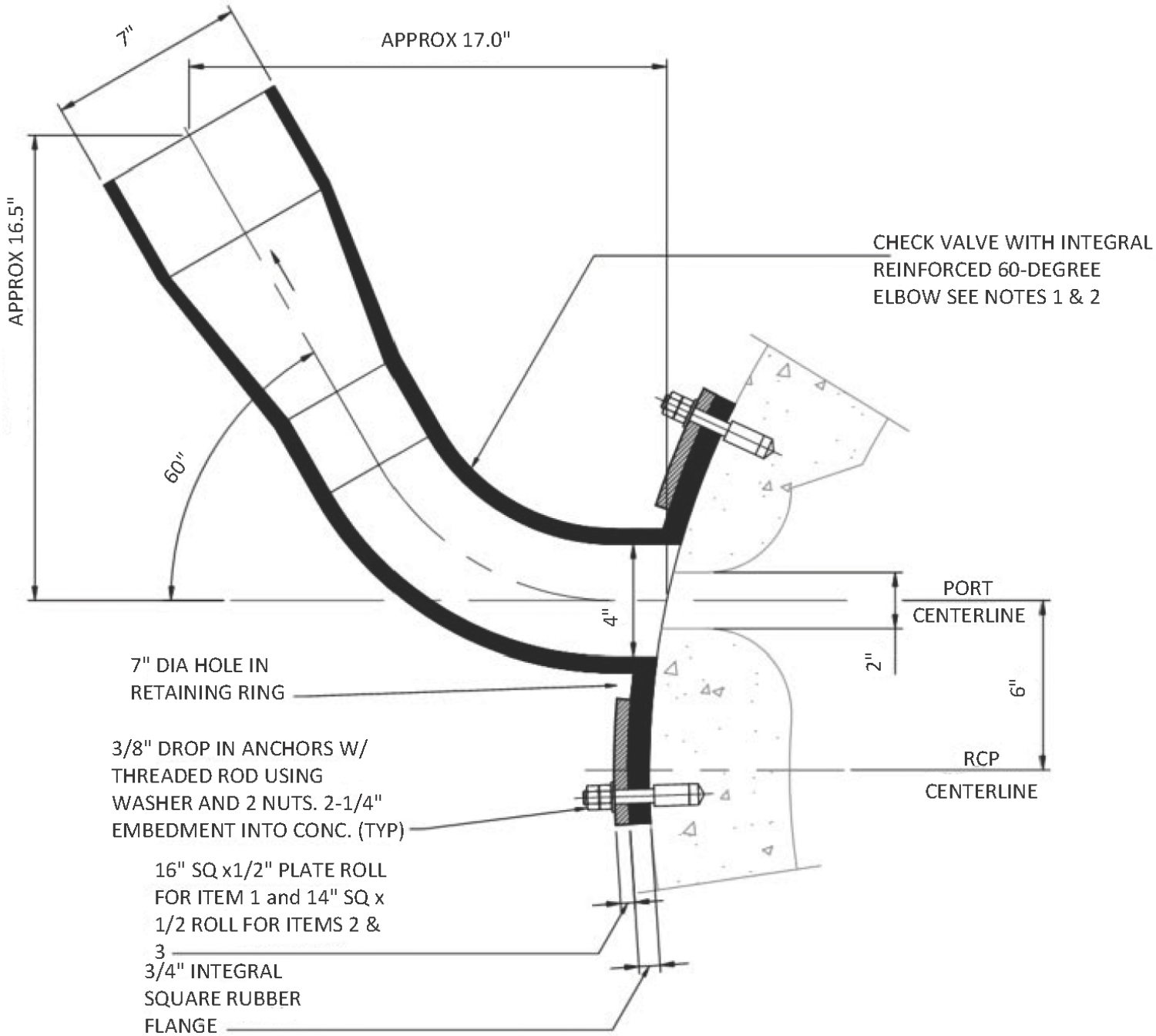
[14] M1W's existing outfall easement comprises a permanent 20-ft utility easement that allows for ongoing maintenance activities along the entire length of the onshore outfall.

stiffer (HC24) diffuser ports angled upward at 60 degrees at those 29 ports. Additionally, the end gate would be fitted with a neoprene seal to prevent future sediment accumulation in the diffuser and offshore outfall. Operation and maintenance activities would be consistent with ongoing outfall maintenance conducted by M1W. **Figure 5** shows a schematic of the proposed HC24 angled diffuser ports and **Figure 6** shows the proposed end gate modifications.

This component of the Proposed Modifications also includes as-needed replacement of existing anodes that were welded to the back of steel backing plates on the diffuser ports to serve as cathodic protection from corrosion. While the existing level of corrosion from the discharge flowing through the M1W outfall has had a negligible effect on the anodes, M1W inspections of the outfall have confirmed that some anodes have become detached from the backing plates since their initial installation in 1984 and need to be replaced. The Proposed Modifications would replace missing or corroded anodes with new anodes that would be bolted to the back of the backing plates. This minor repair and maintenance work was not specifically described in the Final EIR/EIS; however, M1W installed the existing anodes for cathodic protection purposes, and the anodes are meant to be periodically replaced as they corrode in order to maintain effective cathodic protection. M1W conducts as-needed anode replacement as part of existing routine outfall inspections and maintenance activities. Thus, as-needed anode replacement activities associated with the Proposed Modifications are considered routine maintenance necessary for continued operation of the outfall and are part of existing baseline operations.

Construction activities associated with the modifications to the outfall diffuser and end gate would occur within a 24-month period.[15] Divers would access the diffuser and end gate from offshore via boat to complete construction activities. Support craft at the water surface (i.e., barge) would provide temporary staging during construction and would facilitate removal of any accumulated sediment from the terminus of the diffuser. All construction debris, including removed sediment, would be brought onshore for disposal.

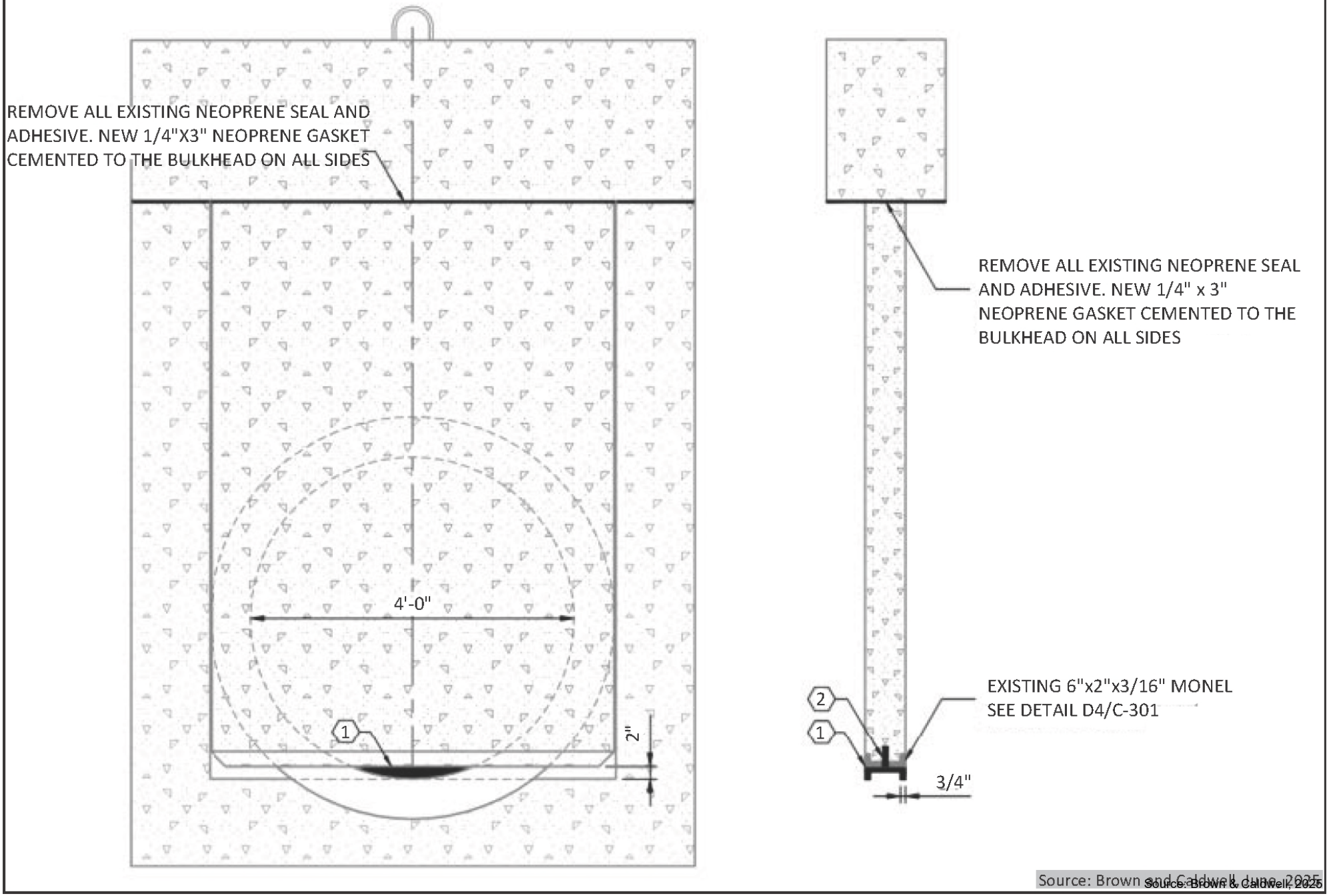
[15] Construction activities would not occur continuously over the full 24-month period, rather divers would conduct work over limited durations within the 24-month period depending on seasonal conditions.



Source: Brown & Caldwell, 2025

Proposed Diffuser Port Configuration Diagram	Date 4/21/2026	Denise Duffy & Associates, Inc. Planning and Environmental Consulting	Figure 5
	Scale N/A		

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Source: Brown and Caldwell, June, 2025

Source: Brown & Caldwell, 2025

Proposed End Gate Modifications	Date 4/21/2026	Denise Duffy & Associates, Inc. Planning and Environmental Consulting	Figure 6
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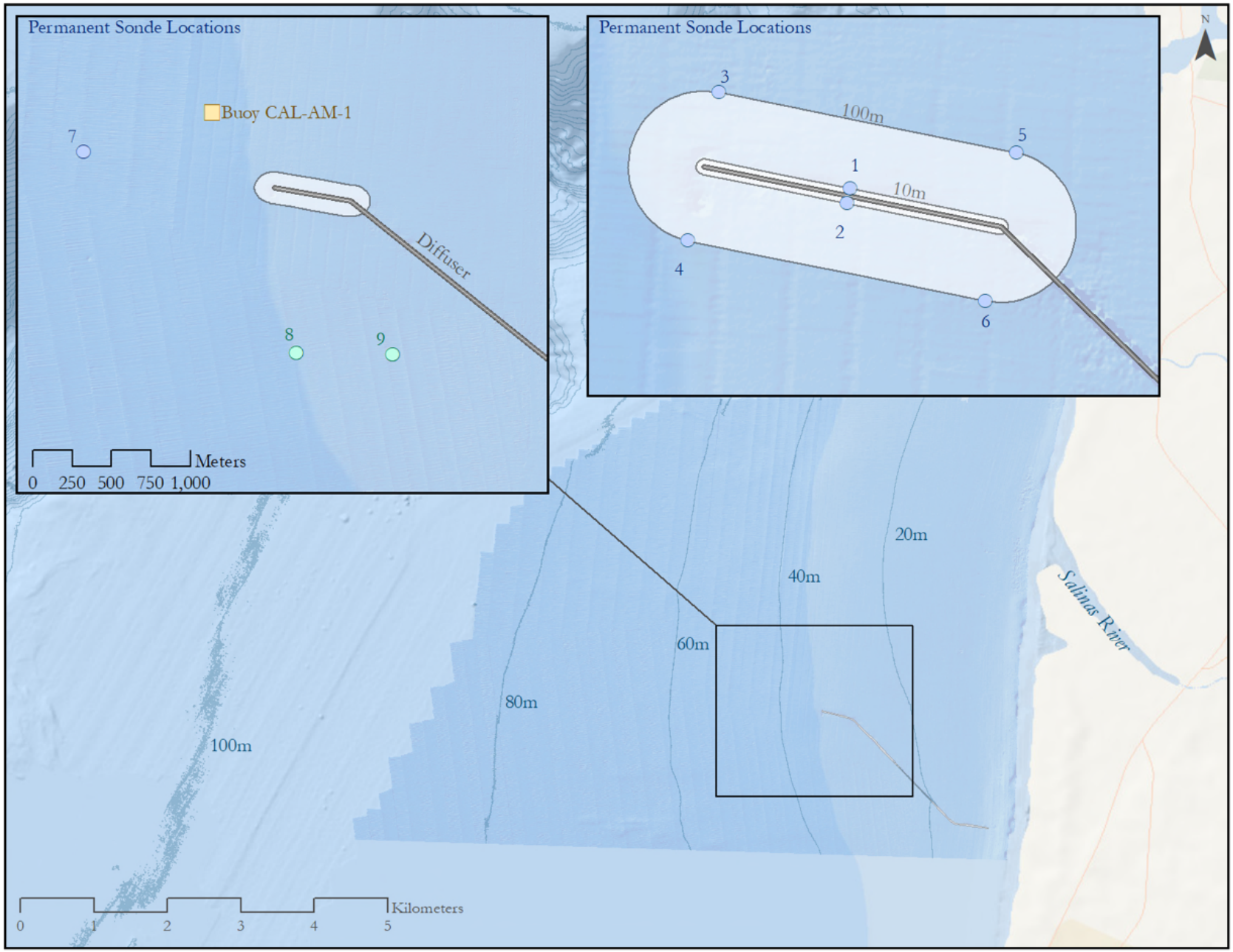
Brine Discharge Monitoring Program (Mitigation Measure 4.3-4)[16]

To satisfy the requirements of Mitigation Measure 4.3-4, CalAm retained Applied Marine Sciences ("AMS") to prepare a Monitoring and Reporting Plan[17] for CalAm's Brine Discharge Monitoring Program. As part of the Brine Discharge Monitoring Program, CalAm would install water quality monitoring instrumentation to record hourly salinity and dissolved oxygen ("DO") data at multiple distances from the outfall diffuser. This will entail the installation of nine (9) subsurface Conductivity-Temperature-Depth ("CTD") water quality monitoring sondes and a surface monitoring buoy (see **Figure 7**). CTD water quality monitoring sondes will be installed as close to the seafloor as possible at nine (9) different locations: two (2) within the zone of initial dilution (ZID), located within 32.8 ft (10 m) from the outfall diffuser; four within the brine mixing zone (BMZ), located within 328 ft (100 m) from the outfall diffuser; one beyond the BMZ, located at 3.280 ft (1,000 m) from the outfall diffuser; and at two control stations, located at a minimum of 3,280 ft (1,000 m) from the outfall diffuser. A single, surface-mounted environmental data buoy will be deployed approximately 600 meters from the outfall to receive acoustically transmitted data from the subsurface CTDs and relay the information for real-time monitoring.

The nine (9) CTDs will be anchored in sand and suspended approximately 0.9 ft (3 m) above the seafloor in an instrument bundle. The configuration will contain a pop-up acoustic release with a float and line for easy retrieval and maintenance. The pop-up release mechanism negates the need for buoy lines in the water column, which will reduce the risk of entangling marine mammals. When the pop-up release is acoustically triggered and the float reaches the surface, a beacon on the float with a flashing light will begin blinking and the GPS position will be broadcasted to aid in recovery. The anchoring system for each CTD will consist of a single 300-lb (136 kg) custom retrievable iron anchor with a benthic footprint of 1.25 ft^2 (0.12 m^2). The CTDs will be powered by batteries capable of running the units between quarterly site visits by AMS scientists, in which the batteries will be replaced, and data will be downloaded (AMS, 2026). **Figure 8a** provides and example of the proposed CTD sonde configuration.

[16] The MPWSP Final EIR/EIS included Mitigation Measure 4.3-4, which requires the deployment of long-term monitoring equipment in Monterey Bay to ensure compliance with the California Ocean Plan. At the time the CPUC and MBNMS prepared the Final EIR/EIS, the precise locations of the monitoring equipment had not yet been identified. Accordingly, this Addendum evaluates specific monitoring equipment locations and the potential impacts associated with deployment of the monitoring equipment. Mitigation Measure 4.3-4 was incorporated into the project to lessen the significance of potential water quality impacts and to ensure ongoing compliance with applicable California Ocean Plan requirements. As discussed in more detail in **Section 3.3, Marine Resources,** the deployment of the monitoring equipment at the specified locations would not result in any additional significant impacts or increase the severity of a previously identified significant impact.

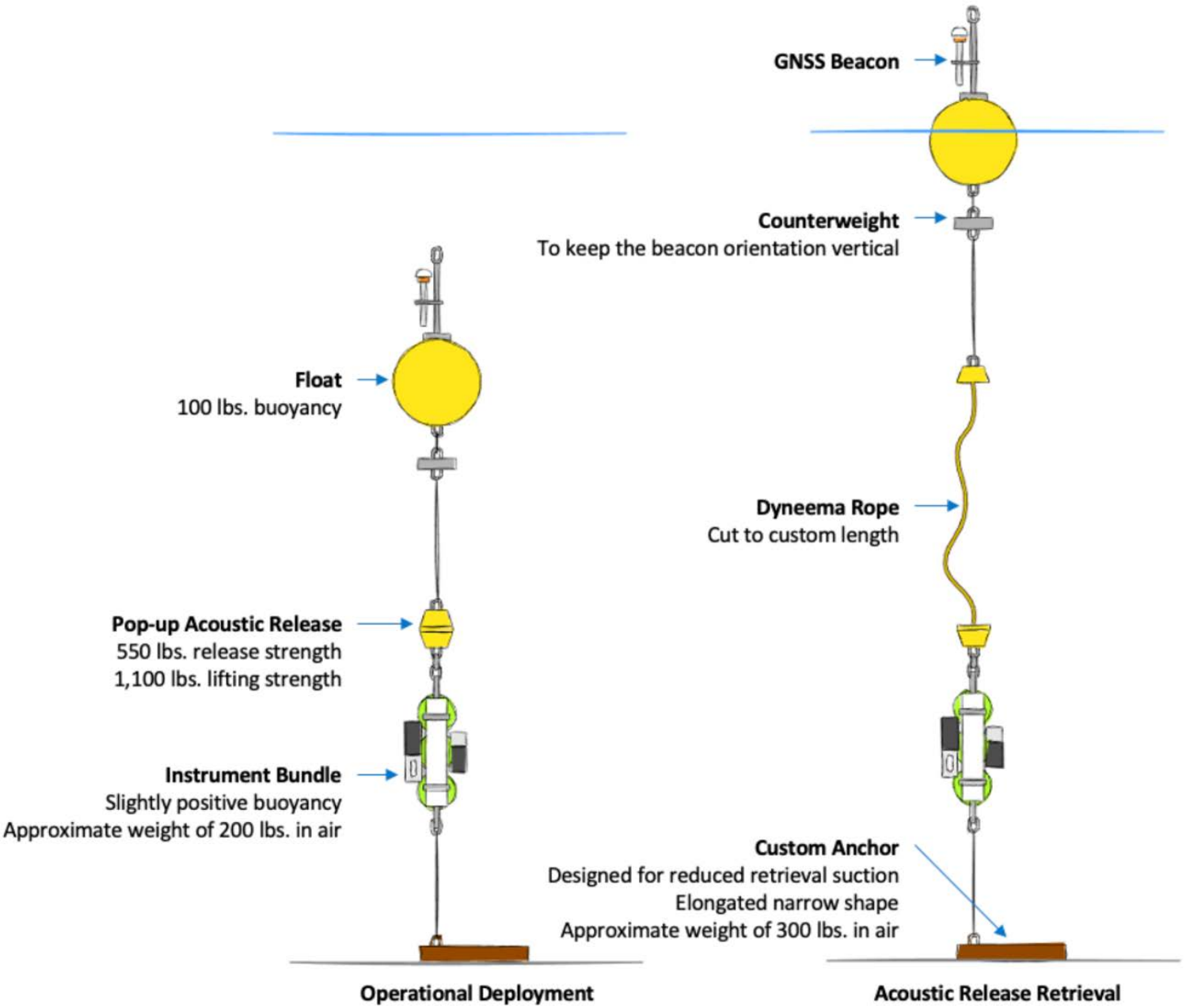
[17] CalAm submitted a revised draft Monitoring and Reporting Plan to the Central Coast Water Board on December 10, 2024. The draft Monitoring and Reporting Plan is subject to the review and approval of the Central Coast Water Board and revisions may be necessary based on requirements of the final NPDES permit. The final Brine Discharge Monitoring Program must be submitted to the Central Coast Water Board within 90 days of NDPES permit adoption.



Source: AMS, 2026

Environmental Data Buoy & CTD Sonde Locations	Date 7/23/2026	Denise Duffy & Associates, Inc. Planning and Environmental Consulting	Figure 7
	Scale N/A		

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Source: AMS, 2026

CTD Sonde Configuration	Date 4/21/2026	Denise Duffy & Associates, Inc. Planning and Environmental Consulting	Figure 8a
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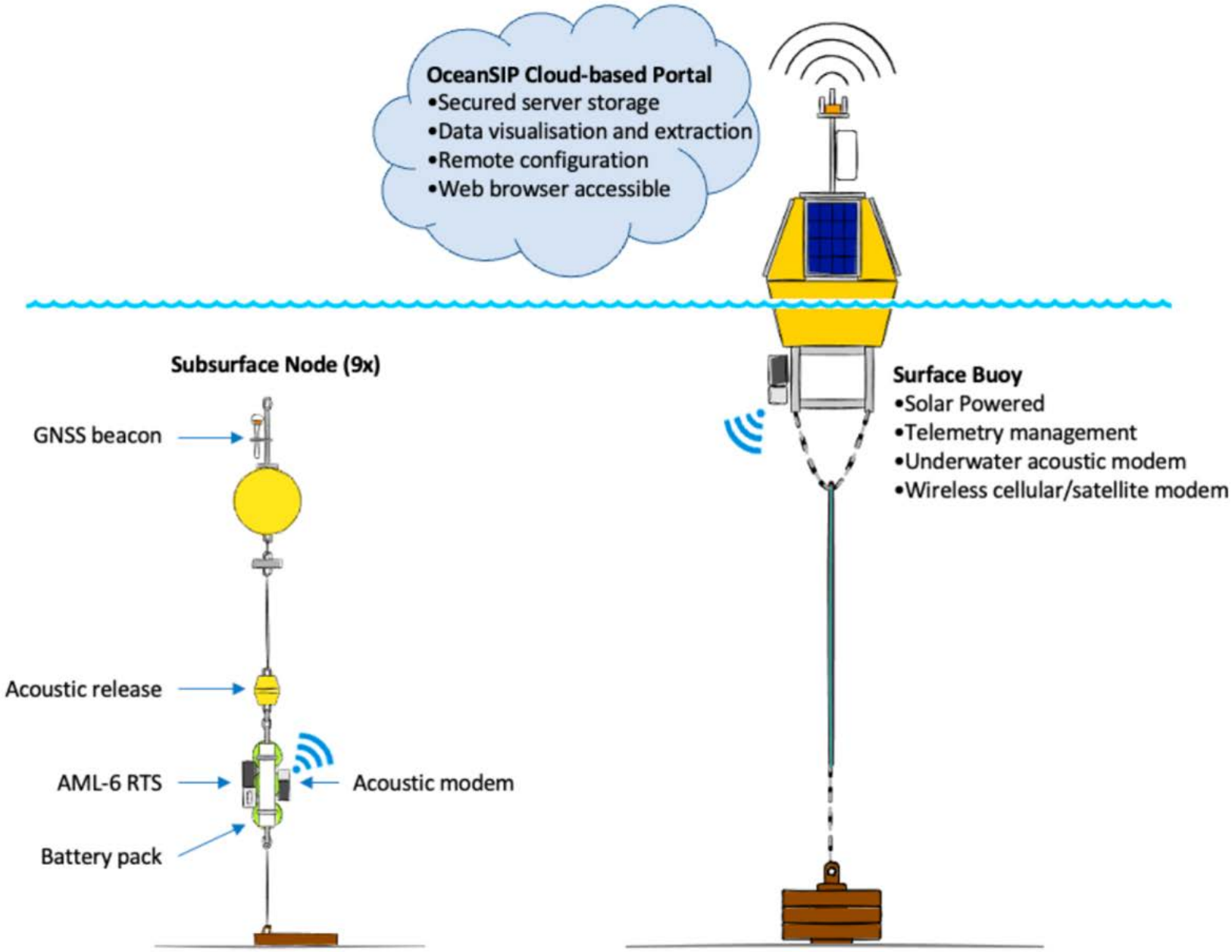
A single, surface-mounted environmental data buoy will be deployed to receive acoustically transmitted data from the subsurface CTDs and relay the information for real-time monitoring. It will be placed in a location of Monterey Bay that is outside the area of regular vessel traffic, but will be equipped with a radar reflector, flash lamp, and bright yellow coloring to reduce the potential of collisions. The buoy will be moored to an area of sandy seafloor via a ½ inch (0.64 cm) ballast chain, a riser consisting of 3/16 inch (0.48 cm) stainless steel cabling, ¾ inch (1.9 cm) bottom chain, and one 300-lb (136 kg) custom iron anchor, with a footprint of approximately 5 ft^2 (0.46 m^2). A 1.5:1 scope ratio will be used to limit slack and reduce the potential for marine mammal entanglement. As an added precaution, the buoy will be equipped with GPS and an alert system to notify field staff of unusual movement. When the buoy is recovered for annual maintenance, the anchor will remain, but a temporary float will be deployed to keep the mooring line at the surface until the buoy is reattached and redeployed (AMS, 2026). **Figure 8b** provides an example of the proposed environmental data buoy configuration.

Brine Mixing Structure

Consistent with the MPWSP evaluated in the Final EIR/EIS, the Proposed Modifications also includes the construction of a BMS at M1W's RTP. Specifically, the Proposed Modifications include the installation of one enclosed, cast-in-place concrete BMS and appurtenances (i.e., connecting pipelines and final effluent monitoring station) placed above a section of the outfall at the M1W RTP. This component also includes the installation of appurtenant infrastructure, consistent with the MPWSP (i.e., flow bypass system, diversion structure, effluent monitoring, station, and connecting pipelines). The BMS under the Proposed Modifications would be similar to the improvements described in the Final EIR/EIS, except that the BMS would be relocated from an undeveloped area adjacent to the outfall to an area above a section of the outfall pipe, on previously developed/disturbed land. All other aspects of the BMS would remain consistent with the facilities analyzed in the Final EIR/EIS.

The BMS would primarily be operated remotely from M1W's control room at the RTP site. Remote and on-site maintenance would occur on a regular basis. Remote maintenance is anticipated to consist of remotely exercising the gate valves to ensure that they do not get stuck. On-site maintenance would include using high-pressure water hoses to clean the gate valves.

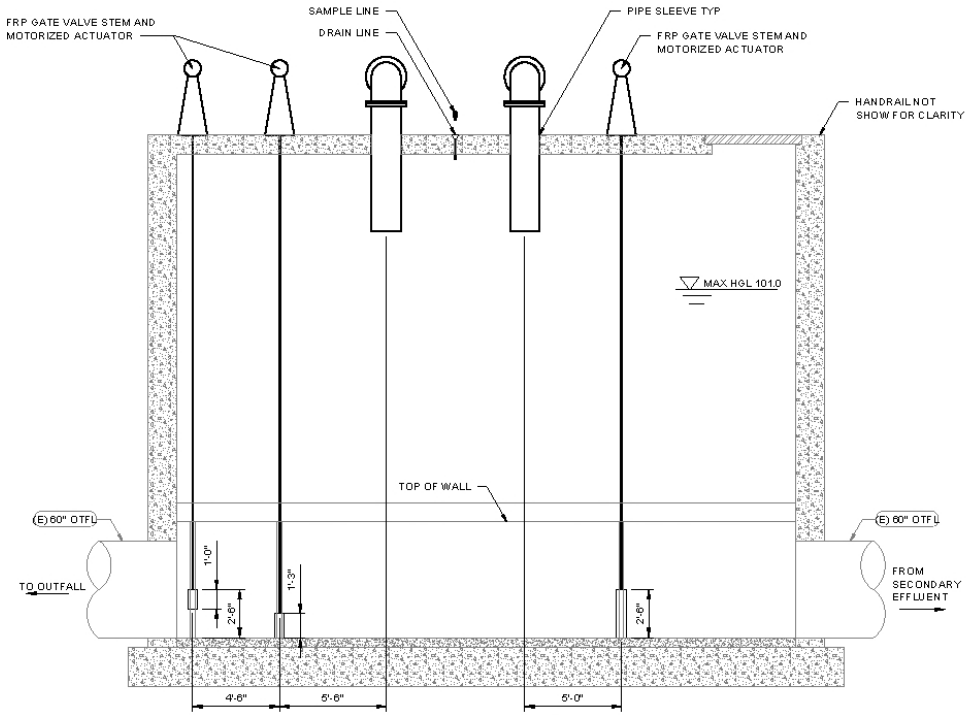
Construction would occur in the summer months when outfall flows are minimal. Nonetheless, a proposed bypass system would allow for continued effluent flows if construction activities continue beyond the summer months. **Figure 9a** shows a schematic of the proposed BMS. **Figure 9b** shows site plans for the BMS and associated bypass pumping at the M1W RTP

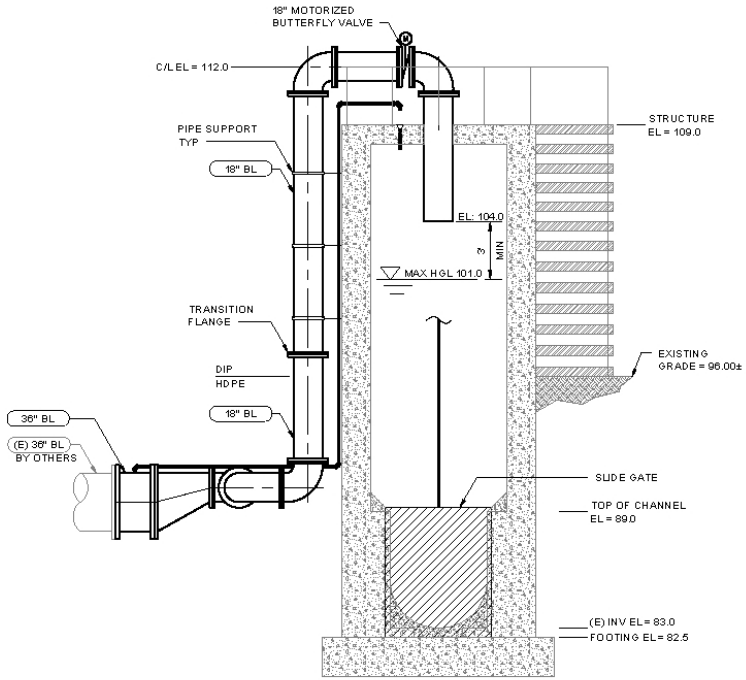


Source: AMS, 2026

Environmental Data Buoy Configuration	Date 4/21/2026	Denise Duffy & Associates, Inc. Planning and Environmental Consulting	Figure 8b
	Scale N/A		

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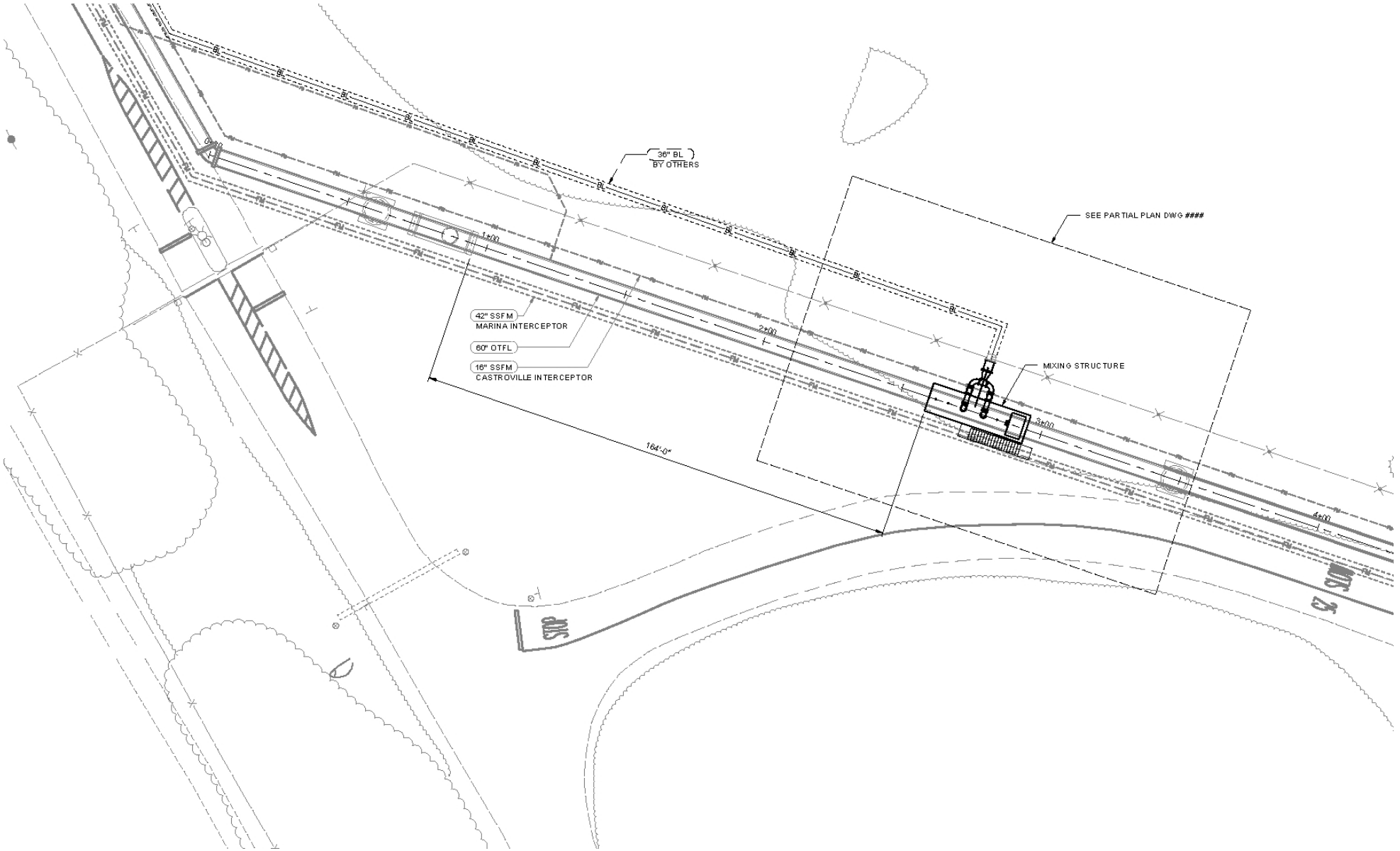




Source: Brown & Caldwell, 2025

Brine Mixing Structure Schematic	Date 4/21/2026	Denise Duffy & Associates, Inc. Planning and Environmental Consulting	Figure 9a
	Scale N/A		

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Source: Brown & Caldwell, 2025

Brine Mixing Structure & Flow Bypass System Site Plans	Date 4/21/2026 Scale N/A	**Denise Duffy & Associates, Inc.** Planning and Environmental Consulting	Figure 9b

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Brine Storage

The Proposed Modifications would include increased brine storage capacity at CalAm's desalination plant site to ensure a minimum brine flow of 5.80 MGD can be met when brine is being discharged through the outfall to assist in meeting applicable Ocean Plan water quality objectives. Expanded brine storage would include either (i) an additional, three-million-gallon brine storage pond adjacent to the approved brine storage pond (for a total of six MG of brine storage, including the originally proposed pond) that would increase permanent development by 0.24 acres at the desalination plant site compared to the acreage of permanent development in the Final EIR/EIS or (ii) replacement of the approved brine storage pond with two above-ground uncovered brine storage tanks (for a total of six MG of brine storage) and an overflow pond that would decrease permanent development on the desalination plant site by 0.5 acres compared to the acreage of permanent development in the Final EIR/EIS. The brine storage tanks would be of similar dimensions to other approved on-site water storage tanks (i.e., approximately 35 feet in height and 103 feet in diameter).

The increased brine storage would also include appurtenant infrastructure consistent with the improvements included as part of the MPWSP evaluated in the Final EIR/EIS (i.e., a pump station, aeration system, and connecting pipelines). Under either scenario, the Proposed Modifications would increase total brine storage capacity at the desalination plant by 3.0 MGD.

Both brine storage options would involve construction entirely within disturbed areas of the MPWSP desalination plant site footprint. Construction activities at the desalination plant site, including construction of additional brine storage, would occur over a 24-month period.

1.5.2 Proposed Modifications to Ensure Outfall Structural Integrity

WEKO Seal Replacement

This component of the Proposed Modifications involves the same design, construction methods, equipment, and schedule as analyzed in the Final EIR/EIS (described above in Section 1.3). However, based on refined development plans, it has been determined that work would require only a 0.2-acre disturbance area around the beach junction structure as opposed to a 0.5-acre area for temporary excavation, stockpiling, and equipment staging that was initially estimated in the Final EIR/EIS. (see **Figure 10a**).

Onshore Outfall Protective Slip Liner

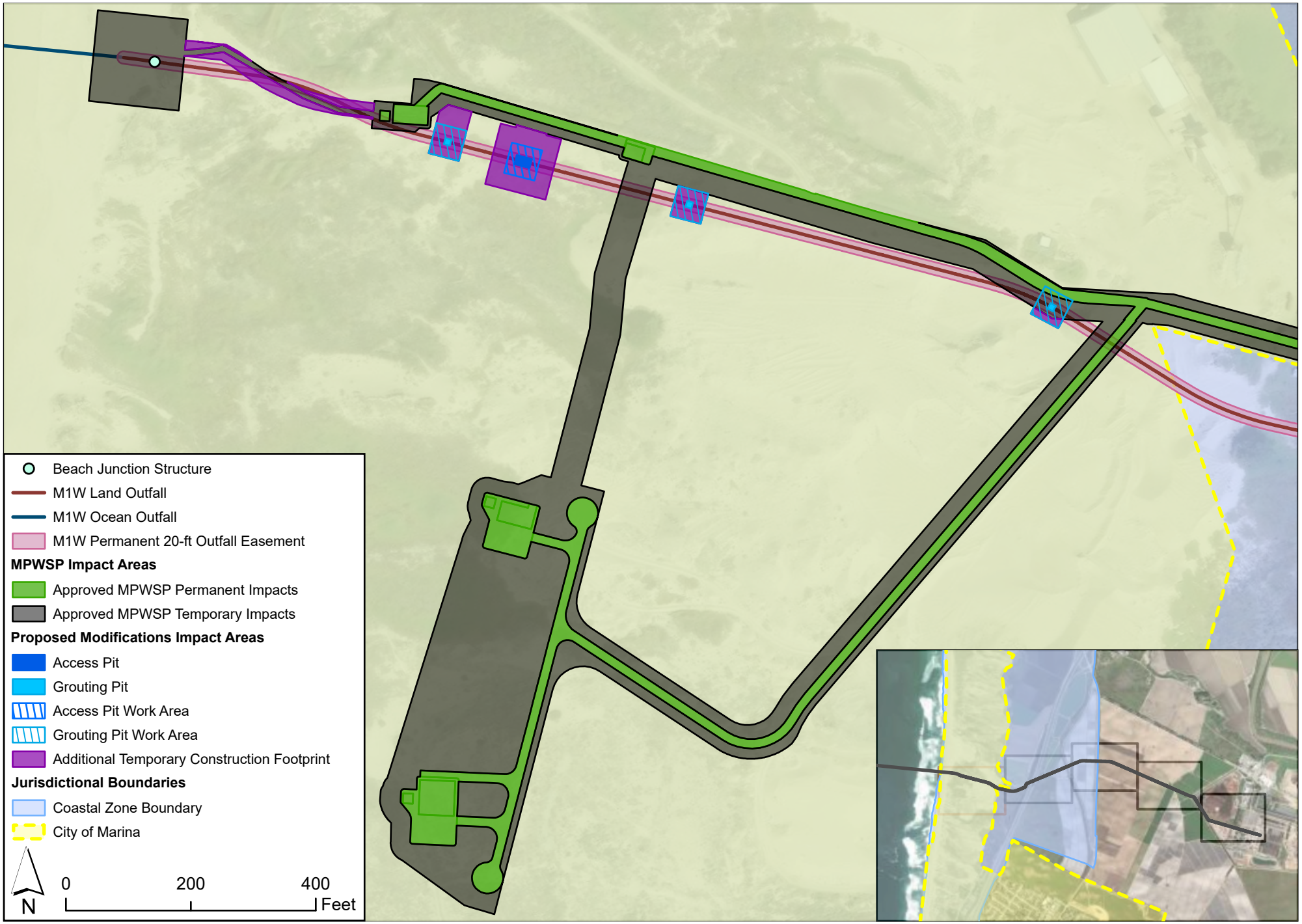
The Proposed Modifications include the installation of a PVC or similar material slip liner along the interior of the entire 13,000-foot-long onshore outfall consistent with the MPWSP analyzed in the Final EIR/EIS. Liner installation would involve inserting liner segments at specified locations, pushing the liner through the outfall, then grouting

the liner in place. However, since certification of the Final EIR/EIS, M1W has developed detailed design plans for the slip liner that would result in minor changes to temporary construction work areas compared to the areas considered in the Final EIR/EIS. Installation would require temporary excavation of 14 access pits along the outfall alignment to insert liner segments (i.e., four additional access pits beyond the 10 access pits that were described in the Final EIR/EIS). Slip liner installation would also include temporary excavation of 11 grouting pits to grout the liner in place, which were not part of the design evaluated in the Final EIR/EIS. Access pits would be approximately 15 ft x 25 ft with additional work area of 5,000 sf around each pit. Grouting pits would be 10 ft x 10 ft with additional work area of 2,500 sf around each pit.[18] Excavation areas for pits would be within M1W's existing outfall easement. These impacts would be located along the existing outfall alignment and in areas that would be disturbed in connection with construction of MPWSP components on the CEMEX property. Please also refer to **Table 1.6-1** for a detailed breakdown of impact areas associated with liner installation.

Slip liner installation would occur over nine months and would require an eight-person crew. Work limits associated with access pit excavation and liner installation would involve 5,000 sf of temporary ground disturbance. Work associated with excavation of grouting pits would involve 2,500 sf of temporary disturbance. Stockpiling would occur in work areas around access and grouting pits. A 34,000-sf area on adjacent agricultural land would provide staging and storage for the duration of construction. Existing agricultural access roads and the existing 20-foot outfall easement would provide access between pit locations where feasible. See **Figures 10a**–**10e** for proposed work areas associated with slip liner installation. Following slip liner installation, excavated soil at access and grouting pits would be returned as close to pre-construction compaction levels as possible and stockpiled topsoil would be replaced to match pre-construction elevations.

Routine inspections would be required for the duration of the slip liner's expected design life (i.e., 50 years) to ensure integrity of the liner during operations. Inspections would involve driving the alignment on a routine basis to inspect for surface disruptions (e.g., fractures) and to document pipeline conditions over time. These routine inspections would occur consistently with the existing inspection and maintenance procedures and schedule for the outfall. Minimal maintenance would be required and would consist of as-needed repairs and preventive maintenance (e.g., cleaning).

[18] Work space is needed around each access and grouting pit for temporary equipment staging, stockpiling, and parking. Additionally, space around each access pit is needed to angle the slip liner for insertion into the outfall.



Proposed Modifications Overlap with MPWSP Impact Areas - WEKO Seal Replacement & Protective Slip Liner Installation

Date
4/21/2026

Scale
1 in = 200 ft

Denise Duffy & Associates, Inc.
Planning and Environmental Consulting

Figure
10a

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Proposed Modifications Overlap with MPWSP Impact Areas - Protective Slip Liner Installation

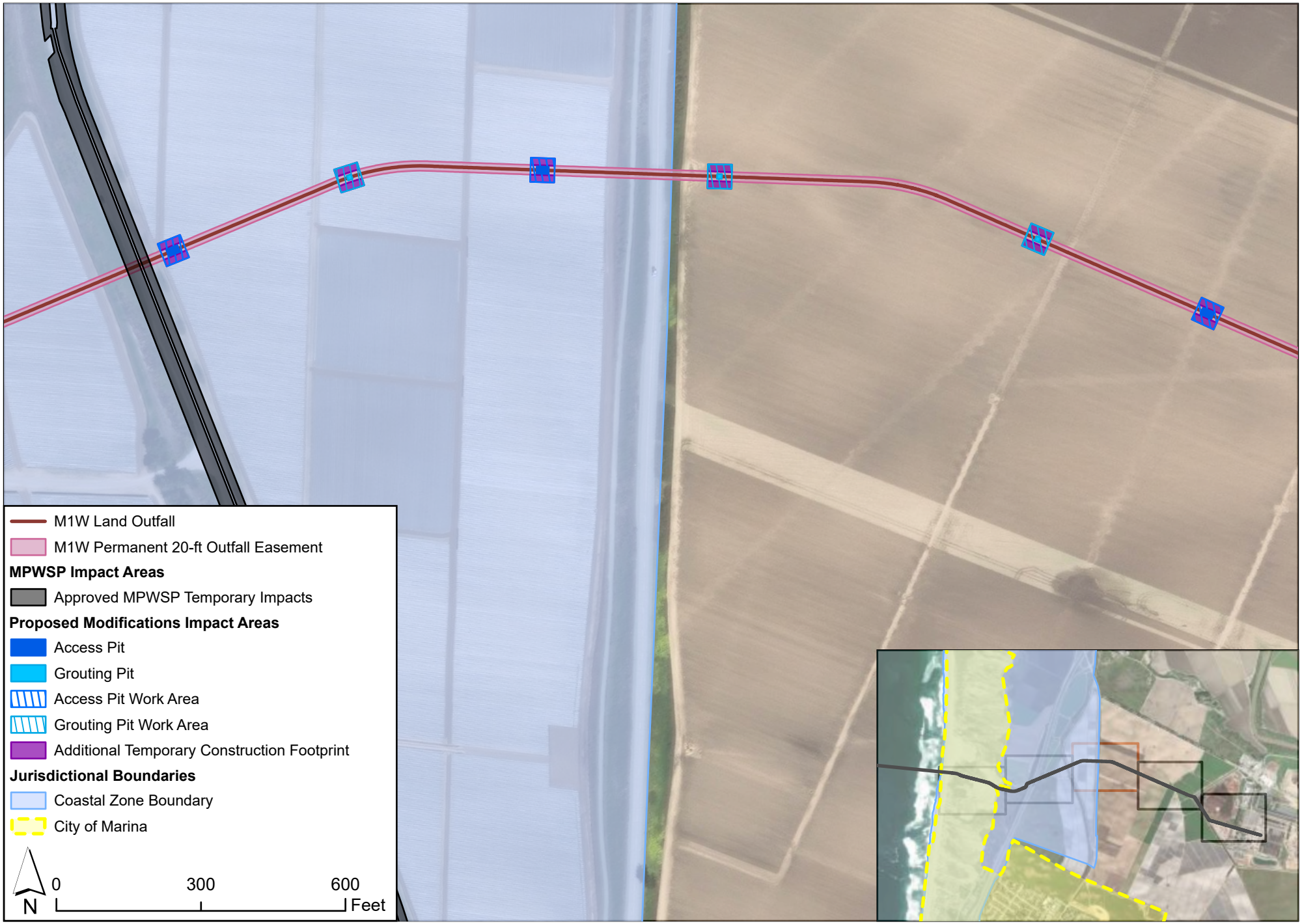
Date
4/21/2026

Scale
1 in = 241 ft

Denise Duffy & Associates, Inc.
Planning and Environmental Consulting

Figure
10b

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Proposed Modifications Overlap with MPWSP Impact Areas - Protective Slip Liner Installation

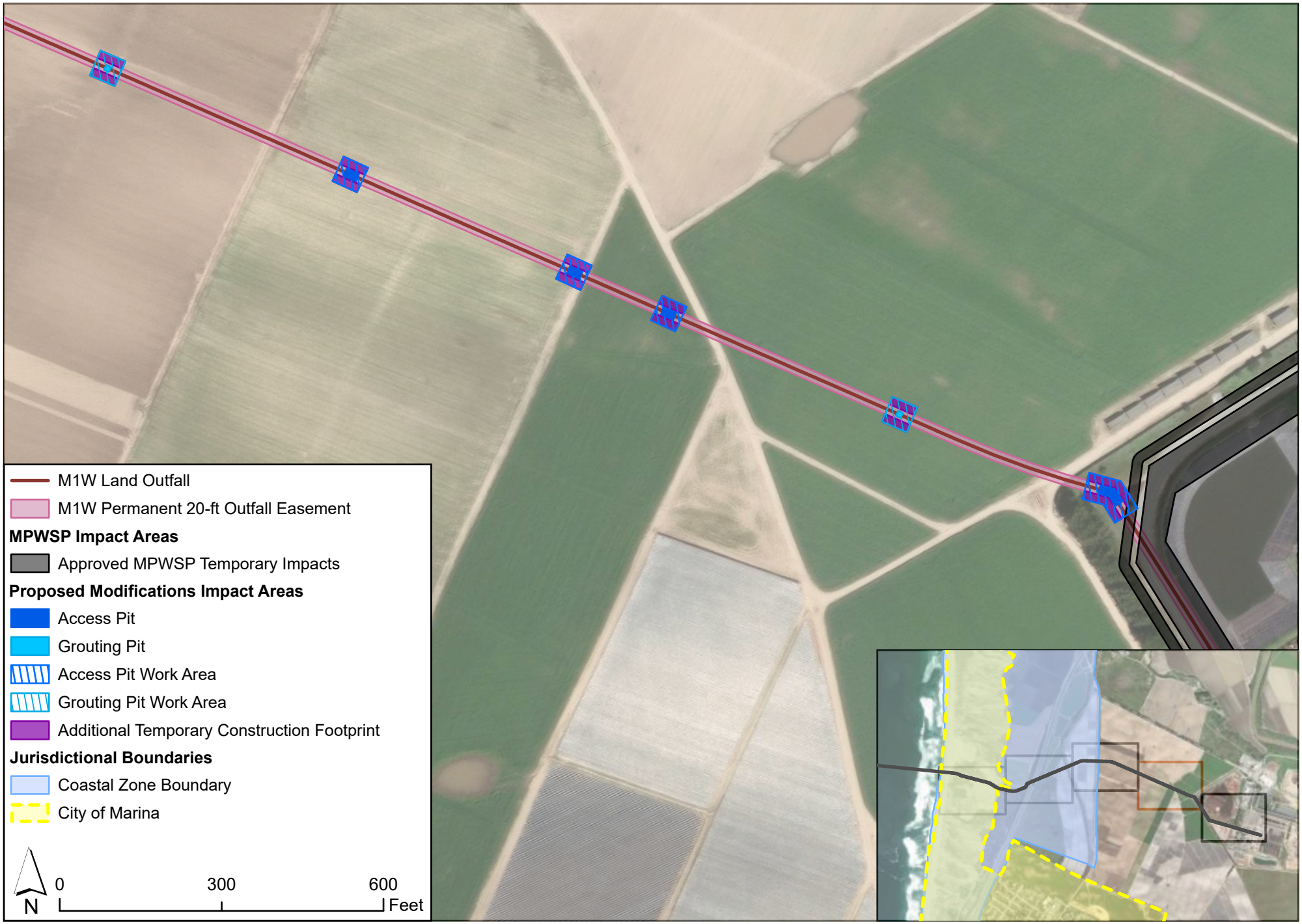
Date
4/21/2026

Scale
1 in = 259 ft

Denise Duffy & Associates, Inc.
Planning and Environmental Consulting

Figure
10c

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Proposed Modifications Overlap with MPWSP Impact Areas - Protective Slip Liner Installation

Date
4/21/2026

Scale
1 in = 232 ft

Denise Duffy & Associates, Inc.
Planning and Environmental Consulting

Figure
10d

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Proposed Modifications Overlap with MPWSP Impact Areas - Protective Slip Liner Installation & Brine Mixing Structure

Date
4/21/2026

Scale
1 in = 167 ft

Denise Duffy & Associates, Inc.
Planning and Environmental Consulting

Figure
10e

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1.6 COMPARISON OF THE MPWSP AND THE PROPOSED MODIFICATIONS

This Addendum evaluates the Proposed Modifications. The Central Coast Water Board, as a CEQA responsible agency, is relying upon this Addendum, in conjunction with the certified Final EIR/EIS and application materials on file, in its evaluation of approvals for the Proposed Modifications. **Table 1.6-1** compares the relevant components of the MPWSP evaluated in the Final EIR/EIS and the Proposed Modifications.

Table 1.6-1
Comparison of the MPWSP and the Proposed Modifications

Project Component	MPWSP	Proposed Modifications	Change
Modifications to Comply with Ocean Plan Water Quality Objectives			
Offshore (Ocean) Outfall Diffuser / End Gate Modifications	Modifications to the existing diffuser configuration: ▪ Replacement of 129 open HC61 horizontally oriented diffuser ports with ports[19] angled upward at 60 degrees. ▪ Replacement of existing end gate with minimum of six-inch Tideflex or similar check valves angled greater than 20 degrees (and optimally 60 degrees). Total of 129 open ports.	Modifications to the existing diffuser configuration: ▪ Replacement of 129 open HC61 horizontally oriented diffuser ports with HC24 ports angled upward at 60 degrees. ▪ Opening 29 currently closed diffuser ports and installing ports angled upward at 60-degrees. ▪ Fitting the diffuser end gate with a neoprene gasket seal. Total of 158 open ports.	▪ 29 additional open diffuser ports. ▪ Elimination of a check valve at the end gate.
Brine Discharge Monitoring Program	Mitigation Measure 4.3-4 (Brine Monitoring Program): Installation of water quality monitoring equipment, including: ▪ One (1) monitoring station at the edge of the ZID, but not more than 10 meters from the outfall diffuser. ▪ One (1) monitoring station at the edge of the BMZ, representing the point of	Installation of water quality monitoring equipment, including: ▪ Two (2) CTD sondes within the ZID, 10 meters from the outfall diffuser. ▪ Four (4) CTD sondes within the BMZ, 100 meters from the outfall diffuser. ▪ One (1) CTD sonde beyond the BMZ 1,000 meters from the outfall diffuser.	▪ Five (5) additional monitoring stations. ▪ One (1) additional reference station. ▪ One (1) environmental data buoy.

[19] The Final EIR/EIS does not specify the port size of the diffuser modifications.

Project Component	MPWSP	Proposed Modifications	Change
	compliance with the Ocean Plan salinity standard (not more than 100 meters from the outfall diffuser). A representative reference location at least 1,000 meters from the outfall diffuser, situated on the same elevation contour as that of the outfall diffuser, in an area outside the influence of operational discharges or other inputs to Monterey Bay, such as operational discharges from other.	▪ Two (2) CTD sondes as reference locations, located at a minimum of 1,000 meters from the outfall diffuser. One (1) environmental data buoy to receive and relay information from CTD sondes.	
Minimum Brine Discharge	N/A[20]	5.80 MGD minimum discharge	▪ 5.80 MGD minimum discharge
Brine Mixing Structure ("BMS")	Construction of a BMS and appurtenances located on an approximately 0.5-acre undeveloped area at the M1W RTP: ▪ One enclosed BMS located at the M1W RTP. Appurtenances and ancillary facilities (i.e., flow bypass system, diversion structure, laboratory and control building, and connecting pipelines).	Construction of a BMS and appurtenances placed above a section of the outfall on a developed area at the M1W RTP: ▪ One enclosed, cast-in-place concrete BMS placed above a section of the outfall located at the M1W RTP. Appurtenances and ancillary facilities (i.e., flow bypass system, diversion structure, final effluent monitoring station, and connecting pipelines).	▪ Relocation of BMS from undeveloped area adjacent to the outfall to placement above the outfall pipe. ▪ Elimination of laboratory and control building.

[20] The discharge flow scenarios considered for the MPWSP included "normal" desalination brine flow (13.98 MGD) and "high" desalination brine flow (16.31 MGD) scenarios. No minimum brine flow requirements were specified for the MPWSP.

Project Component	MPWSP	Proposed Modifications	Change
Brine Storage[21]	Construction of one double-lined, uncovered, three-MG brine storage pond and appurtenances (i.e., pump station, aeration system, and connecting pipelines) on approximately 1.5 acres at the desalination plant site.	Construction of six MGs of brine storage in one of two options: • Two three-MG double-lined, uncovered brine storage ponds (i.e., addition of one three-MG pond compared to the MPWSP). • Two three-MG enclosed, above-ground storage tanks.[22]	▪ Increase in brine storage capacity of three MG, including either an additional brine storage pond or replacement of brine storage ponds with two brine storage tanks. ▪ Option 1 – Additional Brine Storage Pond: Increase in permanent impact footprint by a maximum of 0.24 acres, albeit entirely within the existing construction footprint for the desalination plant. ▪ Option 2 – Two Brine Storage Tanks: Decrease in permanent impact footprint by approximately 0.5 acres. All work would occur entirely within the existing construction footprint for the desalination plant.

[21] Brine storage was included as part of the MPWSP to accommodate low-flow desalination operations. Under the Proposed Modifications, additional brine storage would be required to maintain the minimum brine flow needed to remain in compliance with Ocean Plan water quality objectives; however, this component of the Proposed Modifications was not specifically required by Mitigation Measure 4.3-5.
[22] Expanded brine storage would involve either an additional three-MG brine storage pond and appurtenances located on approximately 1.5 acres at the desalination site, adjacent to the originally proposed brine storage pond, or two above-ground brine storage tanks in lieu of brine storage ponds. Both options would involve construction entirely within a disturbed area of the previously approved desalination plant footprint that was analyzed in the Final EIR/EIS.

Project Component	MPWSP	Proposed Modifications	Change
Modifications to Ensure Outfall Integrity			
WEKO Seal Replacement	Removal of 21 existing WEKO seal clamps and installation of 21 new corrosion-resistant clamps in the nearshore portion of the offshore outfall: ▪ Construction would occur in late summer/early fall when flows in the outfall are minimal. ▪ Nearshore outfall access provided via fabricated accessway constructed in the existing Beach Junction Structure. ▪ Access to Beach Junction Structure provided via existing outfall access road. ▪ Temporary bypass pumping, including installation of surface pump and temporary buried discharge piping. Effluent would be discharged into the tidal zone. Construction staging in 0.5-acre area at Beach Junction Structure.	Removal of 22[23] existing WEKO seal clamps and installation of 22 new corrosion-resistant clamps in the nearshore portion of the offshore outfall: ▪ Construction would occur in late summer/early fall when flows in the outfall are minimal. ▪ Nearshore outfall access provided via fabricated accessway constructed in the existing Beach Junction Structure. ▪ Access to Beach Junction Structure provided via existing outfall access road. ▪ Temporary bypass pumping, including installation of surface pump and temporary buried discharge piping. Effluent would be discharged into the tidal zone. Construction staging in 0.2-acre area at Beach Junction Structure.	▪ Reduction of temporary construction staging/stockpiling at the beach junction structure by 0.3 acres.

[23] The Final EIR/EIS incorrectly identified 21 existing seals on the outfall. Since approval of the Final EIR/EIS, M1W records have shown there are 22 existing WEKO seals located on the outfall. The additional seal is therefore a result of the Final EIR/EIS incorrectly identifying the total number of existing seals rather than a change to the modifications proposed in the Final EIR/EIS. The Final EIR/EIS accounted for replacement of "the existing" WEKO seals in the nearshore portion of the outfall (see Mitigation Measure 4.13-5a, Final EIR/EIS, p. 4.13-28), with the intention that all existing WEKO seals would be replaced.

Project Component	MPWSP	Proposed Modifications	Change
Onshore (Land) Outfall Protective Slip Liner	Installation of a Vylon or spiral-wound HDPE slip liner along the entire onshore outfall: ▪ Excavation of 10 access pits. ▪ Access pits would be 12 ft x 25 ft. ▪ Excavation and temporary stockpiling within the existing permanent 20-ft M1W outfall easement. ▪ Replacement of excavated soils to pre-construction or near pre-construction conditions.	Installation of a PVC or similar material slip liner along the entire onshore outfall: ▪ Excavation of 14 access pits and 11 grouting pits. ▪ Access pits would be approximately 15 ft x 25 ft with additional work area of 5,000 sf around each pit. ▪ Grouting pits would be 10 ft x 10 ft with additional work area of 2,500 sf around each pit. ▪ Temporary stockpiling within the existing permanent 20-ft M1W outfall easement. ▪ Staging and storage on a 0.78-acre (34,000-sf) area on adjacent agricultural land. ▪ Replacement of excavated soils to pre-construction or near pre-construction conditions.	▪ Excavation of four additional access pits ▪ Excavation of 11 new grouting pits. ▪ Total increase of approximately 0.08 acres of earthmoving for pit excavations. ▪ Total increase of approximately 2.8 acres of temporary construction impacts to accommodate temporary construction access and staging along the existing M1W outfall easement.[24]

[24] The additional 2.8 acres of temporary impacts include: (1) additional work spaces surrounding each pit that are required for temporary equipment staging, parking, and angling the slip liner for insertion into the outfall and (2) additional access and staging located within agricultural land, including the 0.78-acre staging and storage area on adjacent agricultural land.

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2.0 CEQA ADDENDUM

The Final EIR/EIS identified the MPWSP's potential impacts on the following resource areas: geology, soils, and seismicity; surface water hydrology and water quality; groundwater resources; marine biological resources; terrestrial biological resources; hazards and hazardous materials; land use, land use planning, and recreation; traffic and transportation; air quality; greenhouse gas emissions; noise and vibration; public services and utilities; aesthetic resources; cultural and paleontological resources; agricultural resources; mineral resources; energy conservation; population and housing; socioeconomics and environmental justice; and growth inducement.

The Central Coast Water Board, as a CEQA responsible agency,[25] prepared this Addendum to the Final EIR/EIS because minor changes or additions to the Final EIR/EIS are needed to reflect the Proposed Modifications, but the modifications do not meet the requirements to prepare a subsequent or supplemental EIR[26] (see State CEQA Guidelines, § 15162).[27, 28] The purpose of this Addendum is to analyze whether

[25] The CEQA Guidelines state that "[w]hen considering alternatives and mitigation measures, a responsible agency is more limited than a lead agency. A responsible agency has responsibility for mitigating or avoiding only the direct or indirect environmental effects of those parts of the project" that are subject to its legal authority (State CEQA Guidelines, § 15096, subd. (g)(1)).

[26] For the purposes of this Addendum, "subsequent" EIR refers to both a subsequent or supplemental EIR.

[27] CEQA Guidelines section 15162, subdivision (a) provides:

"(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

1) Substantial changes are proposed in the project which would require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
2) Substantial changes occur with respect to the circumstances under which the project is undertaken which would require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
   A. The project would have one or more significant effects not discussed in the previous EIR or negative declaration.
   B. Significant effects previously examined would be substantially more severe than shown in the previous EIR.
   C. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
   D. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative."

[28] CEQA Guidelines section 15163, subdivision (a) provides:

the Proposed Modifications would cause “new or substantially more severe” significant impacts on the environment or otherwise warrant a subsequent or supplemental EIR pursuant to State CEQA Guidelines section 15162. In preparation of this Addendum, the Central Coast Water Board considered the CEQA analyses provided in the CCC’s Staff Report and the SLC’s Environmental Memorandum, which are incorporated by reference.

As confirmed in the analysis provided in Section 3.0, *Environmental Assessment*, none of the conditions described in CEQA Guidelines Section 15162 have occurred that would require preparation of a subsequent EIR. When considered with the effects of the MPWSP, the Proposed Modifications would not cause a new significant impact and would not substantially increase the severity of a previously identified significant impact. Specifically, the Proposed Modifications would result in the same level of impacts for all resource areas evaluated in the Final EIR/EIS, including: geology, soils, and seismicity; surface water hydrology and water quality; groundwater resources; marine biological resources; terrestrial biological resources; hazards and hazardous materials; land use, planning, and recreation; traffic and transportation; air quality; greenhouse gas emissions; noise and vibration; public services and utilities; aesthetic resources; cultural and paleontological resources; agricultural resources; mineral resources; energy conservation; population and housing; socioeconomics and environmental justice; and, growth inducement. Additionally, all mitigation measures proposed in the Final EIR/EIS are still applicable to the Proposed Modifications; no new mitigation measures are necessary. A comparison of impacts between the MPWSP and the Proposed Modifications is attached in **Appendix A**.

Circulation of an Addendum for public review is not necessary (State CEQA Guidelines § 15164, subd. (c)); however, the Addendum must be considered by the Central Coast Central Coast Water Board in conjunction with the certified Final EIR/EIS and the Mitigation Monitoring and Reporting Program for the MPWSP prior to implementation of the Proposed Modifications. As a result, the Central Coast Water Board has determined to release the Addendum to the public for a limited, written public comment period. Public comments will also be considered at the adoption hearing on this matter. The Central Coast Water Board will respond to all comments either in writing or at the adoption hearing.

“(a) The Lead or Responsible Agency may choose to prepare a supplement to an EIR rather than a subsequent EIR if:

1) Any of the conditions described in Section 15162 would require the preparation of a subsequent EIR, and
2) Only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.”

3.1 METHODOLOGY

3.1.1 Introduction

The Central Coast Water Board, in its capacity as a CEQA responsible agency, prepared this Addendum to evaluate the potential environmental impacts associated with implementation of the Proposed Modifications. Specifically, this Addendum assesses whether the Proposed Modifications would either directly or indirectly result in environmental impacts and whether such impacts would result in a substantial increase in the severity of a previously identified significant impact or result in a new significant environmental impact as compared to the analysis provided in the Final EIR/EIS certified by the CPUC.

This section describes the approach for evaluating impacts, summarizes the impacts identified in the Final EIR/EIS, and identifies the topical resource sections excluded from further analysis.

3.1.2 Approach to Analysis

This Addendum evaluates whether the Proposed Modifications, changed circumstances, or new information of substantial importance would result in a substantial increase in the severity of a previously identified significant impact or result in a new significant environmental effect beyond what was identified in the Final EIR/EIS (see State CEQA Guidelines, § 15162). This Addendum also includes a comprehensive analysis of potential impacts, with separate discussions of potential construction impacts and operational impacts associated with the Proposed Modifications when considered with the effects of the MPWSP, including impacts identified in the Final EIR/EIS as less than significant.[29] Because the nature of impacts associated with modifications in the marine environment differ from those associated with onshore modifications, this analysis separately evaluates offshore outfall modifications and onshore outfall modifications.[30]

This chapter presents the impact conclusions from the Final EIR/EIS by topical section, summarizes any new information of substantial importance or changed circumstances surrounding the Proposed Modifications and evaluates whether implementation of the Proposed Modifications would increase the severity of a

[29] This Addendum is limited to evaluating potential impacts that are applicable to the Proposed Modifications. For impacts the Final EIR/EIS identified that are not applicable to the Proposed Modifications (i.e., where impacts were identified for specific components of the MPWSP that are unrelated to the Proposed Modifications), a detailed discussion is not included.

[30] While the internal joint seals that would be replaced as part of the Proposed Modifications are located in the nearshore portion of the offshore outfall, all disturbance from proposed replacement activities would occur on land. Therefore, for the purposes of this Addendum, this component is evaluated as part of the onshore outfall modifications.

previously identified potentially significant impact or result in any new significant environmental impacts beyond those previously identified in the Final EIR/EIS. This Addendum is limited to evaluating topical sections where the Proposed Modifications could result in an impact; for resource areas where impacts would remain unchanged from those identified in the Final EIR/EIS, a detailed discussion is not included. However, for informational purposes, a brief discussion of potential impacts associated with the Proposed Modification for all topical resource areas is included in **Appendix A**.

This Addendum also evaluates the environmental effects associated with the construction and operation of improvements outside of the Central Coast Water Board's permitting jurisdiction because these improvements are necessary to ensure compliance with the Ocean Plan water quality requirements that the Central Coast Water Board is charged with enforcing, as well as to comply with existing mitigation measures identified in the Final EIR/EIS, given the Central Coast Water Board's role as CEQA responsible agency for the MPWSP. This Addendum evaluates the entirety of the Proposed Modifications to ensure that the full extent of reasonably foreseeable potential impacts associated with modifications necessary to ensure Ocean Plan compliance are fully evaluated consistent with the requirements of CEQA.

3.1.3 Final Environmental Impact Report/Environmental Impact Statement – Impact Summary

The Final EIR/EIS evaluated the MPWSP and identified potentially significant impacts in the following areas: geology, soils, and seismicity; surface water hydrology and water quality; groundwater resources; terrestrial biological resources; hazards and hazardous materials; land use, land use planning, and recreation; traffic and transportation; air quality; greenhouse gas emissions; noise and vibration; public services and utilities; aesthetic resources; cultural and paleontological resources; agricultural resources; energy conservation; socioeconomics and environmental justice; and growth inducement.[31] The Final EIR/EIS concluded that implementation of mitigation would reduce all potentially significant impacts to a less than significant level except for the following significant and unavoidable impacts:

- Inconsistencies with local policies or ordinances protecting terrestrial biological resources;
- Temporary construction-related air quality emissions;

[31] The Final EIR/EIS did not analyze potential impacts to forestry resources or military and homeland security uses (see Final EIR/EIS, page 4.1-7). The Final EIR/EIS concluded that none of the land in the MPWSP area is zoned as forest land, timberland, or included in a Timberland Protection Zone, and no rezoning of any kind would be required to build the MPWSP (ibid.). The Final EIR/EIS also determined that MPWSP construction and operation would not interfere with any military or homeland security uses and, thus, further study was not required (Final EIR/EIS, page 4.1-8).

- Conflict with implementation of the applicable air quality plan during construction; and

- Temporary increases in ambient noise levels during construction.[32]

The Final EIR/EIS also identified cumulatively significant and unavoidable impacts in the following areas: terrestrial biological resources; traffic and transportation; air quality; noise and vibration; and growth inducement. All other impacts would be less than significant. Please refer to **Appendix A** for a complete summary of impacts identified in the Final EIR/EIS.

3.1.4 Resource Areas Excluded from Further Evaluation

The Proposed Modifications would result in substantially the same overall impact footprint and magnitude of construction-related activities compared to the activities analyzed in the Final EIR/EIS. As a result, the level of significance of potential impacts and the magnitude of the impacts for the Proposed Modifications would remain unchanged in comparison with the impacts identified in the Final EIR/EIS for most topical resource areas.

In particular, the Proposed Modifications would not involve any changes that would affect the following topical resource areas in comparison with what the Final EIR/EIS evaluated:

- Geology, Soils, and Seismicity
- Groundwater Resources
- Hazards and Hazardous Materials
- Land Use, Land Use Planning, and Recreation
- Traffic and Transportation
- Noise and Vibration
- Mineral Resources
- Energy Conservation
- Population and Housing
- Public Services and Utilities
- Socioeconomic and Environmental Justice[33]
- Growth Inducement

The Proposed Modifications would not result in any impacts in these resource areas beyond those described in the Final EIR/EIS. Further, there are no changed circumstances surrounding the Proposed Modifications nor is there new information of substantial importance that affects the conclusions of the Final EIR/EIS in these topical

[32] The Final EIR/EIS identified significant and unavoidable impacts associated with nighttime construction of aquifer storage and recovery (ASR) wells located at the intersection of General Jim Moore Boulevard and Ardennes Circle, as well as for the construction of the Castroville Pipeline Optional Alignment 1 located within the vicinity of residences on Cypress Circle and Merritt Way, in Castroville. The Final EIR/EIS determined construction noise impacts for all other MPWSP components would be less than significant or could be reduced to less than significant through implementation of mitigation.
[33] CEQA does not require an evaluation of potential socioeconomic or environmental justice issues. Nevertheless, a brief discussion of socioeconomic and environmental justice impacts associated with the Proposed Modifications is included in **Appendix A** for informational purposes and for consistency with the prior environmental analysis.

resource areas. As a result, this Addendum does not include a detailed discussion of these topical resource areas.

3.1.5 Environmental Analysis

The following sections evaluate each topical resource section included in the Final EIR/EIS where implementation of the Proposed Modifications could result in environmental impacts, either directly or indirectly. The following environmental analysis evaluates whether the Proposed Modifications, when considered with the effects of the MPWSP, would result in impacts which would cause a substantial increase in the severity of a previously identified significant impact or result in a new significant environmental impact beyond what was previously considered in the Final EIR/EIS. The following sections also identify any new information of substantial importance or changed circumstances with respect to each topical resource section to determine whether the new information or changed circumstances would result in a substantial increase in the severity of a previously identified significant impact or result in a new significant environmental effect beyond what was identified in the Final EIR/EIS. The impact analysis in this Addendum includes the following:

- Summary of the environmental effects identified in the Final EIR/EIS;
- Evaluation of the potential impacts associated with the Proposed Modifications to determine whether the Proposed Modifications would result in any new significant effects or increase the severity of a previously identified significant impact;
- Identification of any relevant new information of substantial importance or changed circumstances not already incorporated into the MPWSP and evaluation of whether the new information or changed circumstances would result in a substantial increase in the severity of a previously identified significant impact or result in a new significant environmental effect; and,
- Identification of applicable mitigation measures included in the Final EIR/EIS that would apply to the Proposed Modifications.

The Final EIR/EIS identified that a number of design-level plans would be prepared prior to construction of various elements of the MPWSP, in compliance with existing regulatory requirements. These include, but are not limited to, a Hazardous Materials Business Plan, Multihazard Emergency Plan, Health and Safety Plan, Soil and Groundwater Management Plan, and Stormwater Pollution Prevention Plan (“SWPPP”), as well as the implementation of mitigation measures identified in the Final EIR/EIS. The Final EIR/EIS identified that compliance with existing regulatory requirements (e.g., NPDES construction and industrial general permits, general waste discharge requirements, general waivers, Ocean Plan requirements, etc.), preparation of design-level documents, and the implementation of mitigation measures would generally avoid or minimize potential impacts. The following analysis evaluates the direct and indirect

construction and operational impacts associated with implementing the Proposed Modifications.

3.2 SURFACE WATER HYDROLOGY AND WATER QUALITY

3.2.1 Summary of Prior Environmental Analysis

3.2.1.1 Final Environmental Impact Report/Environmental Impact Statement

The Final EIR/EIS evaluated potential surface water hydrology and water quality related impacts associated with the MPWSP. **Table 3.2-1** summarizes the impacts associated with the MPWSP and identifies the Final EIR/EIS's significance determination for each impact category. The following analysis specifically evaluates whether the Proposed Modifications would result in any new significant impacts or would substantially increase the severity of a previously identified significant impact related to surface water hydrology and water quality.

Table 3.2-1
Surface Water Hydrology and Water Quality Impacts Analyzed in the MPWSP Final Environmental Impact Report/Environmental Impact Statement

Impacts	Significance Determinations
Impact 4.3-1: Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities.	LS
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.	LSM
Impact 4.3-3: Degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction.	LS
Impact 4.3-4: Violate water quality standards or waste discharge requirements or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant.	LSM
Impact 4.3-5: Violate water quality standards or waste discharge requirements or degrade water quality as a result of brine discharge from the operation of the MPWSP Desalination Plant.	LSM
Impact 4.3-6: Degradation of water quality due to discharges associated with maintenance of the subsurface slant wells and the ASR-5 and ASR-6 Wells.	LS
Impact 4.3-7: Alteration of drainage patterns such that there is a resultant increase in erosion, siltation, or the rate or amount of surface runoff.	LS
Impact 4.3-8: Alteration of drainage patterns such that there is an increase in flooding on- or offsite or the capacity of the stormwater drainage system is exceeded.	LS
Impact 4.3-9: Impedance or redirection of flood flows following construction due to the siting of project facilities in a 100-year flood hazard area.	LS
Impact 4.3-10: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami.	LS

Impacts	Significance Determinations
Impact 4.3-11: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise.	LS
Impact 4.3-C: Cumulative impacts related to surface water hydrology and water quality.	LSM

NOTES:
LS = Less than Significant Impact, no mitigation required
LSM = Less than Significant Impact with Mitigation
Source: Final EIR/EIS, Table 4.3-8 Summary of Impacts – Surface Water Hydrology and Water Quality

The Final EIR/EIS determined most of the MPWSP's impacts to surface water hydrology and water quality would be less than significant. However, the Final EIR/EIS concluded that potentially significant impacts could occur as a result of degraded water quality from construction-related discharges of dewatering effluent from open excavations and water produced during well drilling and development (Impact 4.3-2). The Final EIR/EIS also determined the MPWSP could result in potentially significant impacts from violation of water quality standards or waste discharge requirements, or degradation of water quality as a result of brine discharge during MPWSP operation (Impacts 4.3-4 and 4.3-5). However, the Final EIR/EIS determined these impacts could be reduced to a less than significant level with the implementation of **Mitigation Measure 4.7-2b** (development and implementation of a groundwater dewatering control and disposal plan); **Mitigation Measure 4.3-4** (development and implementation of a monitoring and reporting plan for effluent and receiving water); and **Mitigation Measure 4.3-5** (water quality assessment and design and implementation of protocols to avoid water quality exceedances). The Final EIR/EIS also identified potentially significant cumulative impacts related to long-term operational brine discharge but concluded these impacts would be reduced to a less than significant level with implementation of **Mitigation Measures 4.3-4** and **4.3-5**. Please refer to **Appendix B** for more information concerning applicable mitigation measures.

The Final EIR/EIS analyzed potential secondary impacts of implementing **Mitigation Measure 4.3-5**, which involved installing modifications to M1W's outfall to meet Ocean Plan water quality objectives in compliance with M1W's amended NPDES permit. The Final EIR/EIS determined the outfall modifications would reduce potential operational impacts of the MPWSP and ensure brine discharge does not exceed Ocean Plan water quality objectives. Additionally, the Final EIR/EIS concluded all impacts to water quality resulting from construction and installation of the outfall modifications would be less than significant and would not require mitigation to reduce impacts.

3.2.2 Impact Analysis

Offshore Outfall Diffuser and End Gate Modifications

The Final EIR/EIS identified potentially significant impacts related to operational discharge through M1W's outfall and included **Mitigation Measures 4.3-4** and **4.3-5** to reduce these impacts to a less than significant level. **Mitigation Measure 4.3-5** included the following modifications to the outfall diffuser to ensure brine discharge would comply

with the Ocean Plan: (i) temporarily removing the diffuser end gate to clear sediment from the offshore outfall, (ii) replacing existing horizontally oriented diffuser ports with inclined diffuser ports angled at 60 degrees (for a total of 129 open ports), and (iii) replacing the existing end gate with a minimum of one six-inch Tideflex or similar check valve at an inclined angle of greater than 20 degrees and optimally 60 degrees. The Proposed Modifications would involve the same improvements to the diffuser and end gate that were identified in the Final EIR/EIS, with the exception of opening an additional 29 ports (of 43 remaining available ports in the diffuser) and fitting the end gate with a neoprene seal, as opposed to replacing the entire end gate. Fitting the end gate with a neoprene seal would result in the same impacts as identified in the Final EIR/EIS for replacing the end gate, as both options would entail temporarily removing the existing end gate. The extent of physical disturbance would be substantially the same as replacing the end gate.[34] Therefore, the following discussion is limited to the impacts associated with opening additional diffuser ports in the offshore outfall.

Construction

The Proposed Modifications involve increasing the number of operational diffuser ports by 29 compared to the configuration evaluated in the Final EIR/EIS. This change represents a refinement to the diffuser design that is necessary for meeting Ocean Plan and NPDES requirements and does not change the MPWSP construction footprint, methods, equipment, or duration evaluated in the Final EIR/EIS. Increasing the number of open ports by 29 would not substantially alter the level of impacts identified in the Final EIR/EIS because construction activities would be consistent with those described for the MPWSP. Construction would not disturb additional areas beyond what the Final EIR/EIS evaluated and would involve additional minor installation activities including drilling holes into the anchor bolts on the diffuser and bolting the new ports in place, consistent with the modifications evaluated in the Final EIR/EIS. No construction of additional infrastructure would occur as a result of these activities, and all impacts would be temporary, consistent with the MPWSP. Installation activities would occur immediately adjacent to where the existing open ports are to be replaced; therefore, as described in the Final EIR/EIS, only areas immediately surrounding the diffuser would be temporarily disturbed. Consistent with the MPWSP, disturbance would involve short-term increases in turbidity that would occur over several hours to up to one or two days at times when work is conducted (see Final EIR/EIS p. 4.3-109).

Additionally, Applied Marine Science (AMS) prepared a technical memorandum evaluating the potential marine impacts associated with implementing the Proposed

[34] The Final EIR/EIS explained that the impacts associated with replacing the end gate "would likely be minor and temporary, consisting primarily of minor construction-related sea-bed disturbance and water quality degradation in the form of increased turbidity and disturbance of benthic organisms on and adjacent to the outfall diffuser." (Final EIR/EIS, p. 4.3-109.) "Water quality would rapidly return to ambient conditions following completion of the retrofit" (ibid.). As for benthic community impacts, "[t]he disturbance would be short in duration and of low intensity and benthic communities would likely recover to baseline conditions" (ibid.). Therefore, the Final EIR/EIS concluded that construction impacts from the end gate replacement would be less than significant.

Modifications (see **Appendix C**). AMS determined the Proposed Modifications are consistent with existing outfall maintenance activities performed by M1W (i.e., replacing degraded or corroded hardware, flushing the outfall to unclog sediment from the diffuser ports, and conducting video surveillance and leak detection testing). These existing maintenance activities require temporary, localized disturbance by divers around the diffuser, similar to what would occur during the opening and installation of additional ports under the Proposed Modifications. Because the Proposed Modifications would generally involve the same improvements to the diffuser that were identified in the Final EIR/EIS; would require the same construction methods, equipment, and duration of work; and would be consistent with existing outfall maintenance activities, construction-related water quality impacts associated with this component of the Proposed Modifications would remain unchanged from what was identified in the Final EIR/EIS (less than significant). Therefore, the Proposed Modifications would not result in additional impacts beyond those identified in the Final EIR/EIS when considered with the effects of the MPWSP. Please refer to *Section 3.3, Marine Biological Resources* for additional detail on biological resource-related marine impacts resulting from construction of the Proposed Modifications.

Operation

The Final EIR/EIS evaluated brine discharge through the outfall under its existing configuration (with 129 open ports discharging horizontally) as well as the secondary impacts associated with implementing **Mitigation Measure 4.3-5**, which identified diffuser and end gate modifications as a potential method to ensure MPWSP operational discharges' consistency with applicable Ocean Plan water quality objectives. More specifically, the Final EIR/EIS evaluated whether MPWSP discharges using the current diffuser configuration would meet the Ocean Plan water quality objectives and determined that while discharges would meet the Ocean Plan salinity limitation for desalination facilities,[35] brine-only discharges could violate other Ocean Plan water quality objectives (i.e., ammonia and cyanide) (see Final EIR/EIS pp. 4.3-100 – 104). Therefore, the Final EIR/EIS identified **Mitigation Measure 4.3-5** to reduce potential impacts to less than significant levels. The Final EIR/EIS evaluated whether modifying the diffuser ports and end gate consistent with Mitigation Measure 4.3-5 would reduce overall dilution of operational discharges[36] from the outfall diffuser ports. Based on dilution modeling, the Final EIR/EIS determined that retrofitting the diffuser as proposed in **Mitigation Measure 4.3-5** would not reduce minimum dilution to the extent that buoyant plumes would fail to conform to NPDES or Ocean Plan requirements. As a result, the Final EIR/EIS concluded that potential operational impacts associated with

[35] The Ocean Plan requires that discharges from desalination facilities do not exceed a daily maximum increase in salinity of 2.0 ppt above natural background salinity, measured no farther than 100 meters (328 ft) horizontally from each discharge point.
[36] The Final EIR/EIS analyzed operational discharge scenarios for brine-only discharges from the MPWSP Desalination Plant as well as combined discharges (when the brine would be blended with the treated wastewater from the M1W RTP).

diffuser port and end gate modifications to the outfall would be less than significant (see Final EIR/EIS pp. 4.3-109 – 110).

The Proposed Modifications are generally consistent with the diffuser and end gate modifications identified as mitigation in the Final EIR/EIS to ensure Ocean Plan compliance. Although the Proposed Modifications would entail opening 29 additional ports and retrofitting the end gate with a seal (as opposed to removing the entire end gate), these minor changes would not result in any additional operational impacts. In fact, these modifications would ensure that operational discharge of comingled brine would meet the Ocean Plan and applicable NPDES permitting requirements.

Dr. Roberts, Trussell Technologies ("Trussell"), and Larry Walker Associates ("LWA") evaluated hundreds of modeled simulations involving 122 flow scenarios, three different density profiles, multiple valve types, various scenarios with different numbers of open ports, and various port orientations to identify the optimal diffuser design to ensure compliance with the Ocean Plan (see **Appendix D** through **Appendix F**). The results of that technical analysis concluded that the Proposed Modifications were the optimal diffuser design configuration for complying with Ocean Plan and NPDES permitting requirements for both dense and buoyant discharges. In fact, these findings are consistent with the recommendations contained in the Final EIR/EIS that identified that angling the diffuser ports to 60 degrees represents the optimal diffuser configuration to ensure compliance with the Ocean Plan's water quality objectives (see Final EIR/EIS pg. 4.3-107). Based on the findings of the updated technical analyses prepared in support of the NPDES amendment, implementation of the Proposed Modifications would ensure that the discharge of commingled brine would remain well within Ocean Plan water quality limitations (see **Appendix D** through **Appendix F**).[37] More specifically, the technical analysis concluded that diffuser ports with HC24 valves and a minimum of 158 open ports angled at 60 degrees would meet both water quality and hydraulic constraints for every modeled scenario.[38] Additionally, the analysis concluded that 158 ports were the minimum number of open ports required to meet hydraulic constraints, while the optimal orientation of the ports for minimizing entrainment of marine organisms was 60 degrees.[39] For comparative purposes, the following

[37] The updated dilution modeling specifically analyzes dilution for compliance of up to 80 percent of the Ocean Plan objectives for water quality and salinity levels. In other words, the dilution modeling provides a conservative 20 percent safety margin between the projected pollutant concentrations and the regulatory thresholds. For example, where the Ocean Plan requires a six-month median ammonia concentration of 600 micrograms per liter ("µg/L"), dilution models assume a conservative limit of 80 percent of this value, or 480 µg/L, as required for meeting the Ocean Plan's water quality objectives.
[38] Effluent composition of modeled scenarios ranged from brine commingled with secondary treated effluent and/or ROC to brine-only discharges (see Appendix D, p. 1). Flows of various waste streams included (i) Secondary Effluent: 0 to 29.6 MGD, (ii) ROC: 0 to 1.78 MGD, (iii) hauled saline waste: 0 to 0.05 MGD, and (iv) MPWSP Brine: 0 to 8.66 MGD (see Appendix E, p. 3).
[39] The Proposed Modifications were designed to ensure that the outfall could accommodate a 75.6 MGD peak wet weather flow. Under a scenario with such peak wet weather flows, the hydraulic characteristics were found to exhibit a head at the beginning of the diffuser of 25 feet and overall head loss of 51 feet and salinity increases ranged from 0.0 to 0.3 ppt, well within the Ocean Plan's 2.0-ppt limitation (see **Appendix D**).

discussions further evaluate the effects of elevated salinity consistent with the analysis provided in the Final EIR/EIS.

Effects of Elevated Salinity

The Final EIR/EIS determined that under the worst-case, brine-only discharge scenario, the maximum incremental increase in salinity above ambient conditions at the edge of the ZID[40] (calculated to be approximately 10 feet [3.0 m] from the diffuser port) would be 1.61 ppt. Therefore, the Final EIR/EIS concluded that the Ocean Plan salinity limitation (2.0 ppt above ambient conditions within 100 meters of the BMZ) would be met well within the edge of the ZID under all discharge scenarios. The Proposed Modifications involve increasing the number of open ports on the diffuser by 29. The 29 ports that would be opened (ports 130 through 158) lie inshore of the currently open ports. This would slightly extend the length of the ZID to 12 ft (3.7 m) from the diffuser (see **Table 3.2-2**).

Table 3.2-2
Peak Salinity and Salinity Increment at the Edge of the ZID Under the Worst-Case Brine-Only Scenario – Final EIR/EIS Compared with the Proposed Modifications

Metric (Brine-Only Discharge Scenario)	Final EIR/EIS	Proposed Modifications	Change
Peak salinity at edge of ZID	35.49 ppt	34.67 ppt	−0.82 ppt
Peak increment above ambient	+1.6 ppt	+0.40 ppt (or less)	Decrease 75%
Peak ambient at that condition	33.89 ppt (Upwelling)	34.27 ppt (Upwelling)	—
Peak salinity at edge of BMZ	35.23 ppt	34.67 ppt	−0.56 ppt

Source: See **Appendix H**

While the Proposed Modifications would slightly increase the extent of the ZID, the maximum salinity increment – associated with the worst-case, brine-only discharge scenario – would be 0.4 ppt above ambient conditions at the edge of the ZID (i.e., 12 ft from the diffuser). As a result, the Proposed Modifications would reduce the peak salinity increment above background conditions at the edge of the ZID by 75% compared to the MPWSP discharge evaluated in the Final EIR/EIS (see **Table 3.2-2**). Therefore, the minor expansion of the ZID resulting from the Proposed Modifications would not result in greater water quality impacts than those identified in the Final EIR/EIS.

Similarly, the Final EIR/EIS identified that peak salinity – associated with the worst-case, brine-only discharge scenario – at the edge of the BMZ (located 328 ft (100 m) from the diffuser) would be 35.23 ppt. Under the Proposed Modifications, peak

[40] For dense discharges, the edge of the ZID is the point where the discharge plume contacts the seafloor. This analysis focuses on the brine-only discharge scenario, which would result in a dense (i.e., negatively buoyant) plume, as this represents the worst-case discharge scenario for MPWSP operations.

salinity at the edge of the BMZ under the worst-case, brine-only scenario, would be reduced to 34.67 ppt (a reduction of 0.56 ppt) (see **Table 3.2-2**). Moreover, peak salinity under the Proposed Modifications would be approximately 0.40 ppt above ambient conditions under the worst-case discharge scenario and, therefore, would meet the Ocean Plan salinity limitation of 2.0 ppt above ambient conditions. Therefore, the Proposed Modifications would not change the level of impacts that were identified in the Final EIR/EIS. Please refer to **Appendix H** for additional detail.

Further, the Final EIR/EIS identified that peak ambient salinity occurs during the upwelling season, which coincides during the period of the year when the maximum concentrated brine discharge scenario from the MPWSP (i.e., brine-only) is anticipated to occur. This combination of ambient seasonal conditions and brine-only discharge produces the peak salinity occurring at the edge of the ZID. The Final EIR/EIS identified a peak salinity of 35.49 ppt at the edge of the ZID under this scenario. With the Proposed Modifications, peak ambient salinity would still occur during the upwelling season. Salinity by season in natural background conditions and at the seafloor under the Proposed Modifications are shown in **Table 3.2-3**. However, as identified above, the peak salinity at the edge of the ZID would be reduced with implementation of the Proposed Modifications as compared to the MPWSP discharge evaluated in the Final EIR/EIS. Peak salinity with implementation of the Proposed Modifications would be 34.67 ppt[41] at the edge of the ZID (see **Table 3.2-3** and **Appendix H**).

Table 3.2-3
Modeled Salinity at the Seafloor Under the Proposed Modifications Compared to Seasonally Averaged Ocean Density Profiles

Ocean season	Natural background	Maximum at seafloor	Peak increment
Upwelling	34.27 ppt	34.67 ppt	<0.40 ppt
Oceanic	33.97 ppt	34.37 ppt	<0.40 ppt
Davidson	33.90 ppt	34.30 ppt	<0.40 ppt

Source: see **Appendix H**

In addition to evaluating salinity levels at the edge of the ZID and BMZ, the Final EIR/EIS evaluated salinity levels within the BMZ and identified the area within the BMZ where the salinity increment from MPWSP discharge could exceed 2.0 ppt above ambient conditions. As identified in **Table 3.2-4** and **Appendix H**, the Final EIR/EIS determined the salinity increment would exceed 2.0 ppt under the worst-case, brine-only scenario within an approximately 8.5-cubic foot volume of water (approximately eight [8] ft long by two [2] ft in diameter) around each diffuser port and located approximately two (2) ft above the seafloor. This would result in a total volume of approximately 1,100-

[41] With implementation of the Proposed Modifications, the peak salinity associated with the worst-case, brine-only scenario is 60 ppt within the diffuser jet, located at the point of discharge. The discharge is rapidly reduced by entrainment of ambient ocean water in the jet stream within a few feet from the diffuser port; therefore, outside the immediate vicinity of the diffuser, and at the edge of the ZID as well as the edge of the BMZ, salinity is essentially indistinguishable from background conditions. See **Appendix H** for additional detail.

cubic foot volume of water above the 2.0 ppt salinity increment. However, the Final EIR/EIS explained that the brine plumes at each diffuser port would not merge prior to contacting the sea floor, thus the Final EIR/EIS concluded there would not be a contiguous area around the diffuser where salinity exceeds 2.0 ppt salinity increment (see Final EIR/EIS, p. 4.3-85).

The Proposed Modifications would reduce the volume of water where the salinity increment exceeds the 2.0 ppt salinity increment to four (4) cubic feet around each diffuser port, for a total of 630 cubic feet of water. Under the worst-case, brine-only scenario, the region enclosed by the 2.0-ppt contour around each jet (**Figure 11**) is estimated to be approximately eight (8) ft long with a maximum diameter of 1.3 ft, located approximately two (2) to seven (7) ft above the sea floor and within a horizontal distance of less than 5.6 ft (1.7 m) from the diffuser under typical operations. This represents a 53% reduction in per-port volume and a 42% reduction in total volume compared to what the Final EIR/EIS identified for the MPWSP (see **Table 3.2-4**). Additionally, consistent with the Final EIR/EIS's conclusions, the brine plumes at each modified diffuser port would not merge into a contiguous area but are discrete areas distributed among 158 ports. None of these plumes would exceed the 2.0 ppt salinity increment at the time they contact the seafloor and, therefore, the seafloor would not be exposed to salinity levels of 2.0 ppt or greater due to MPWSP brine discharge with the implementation of the Proposed Modifications.

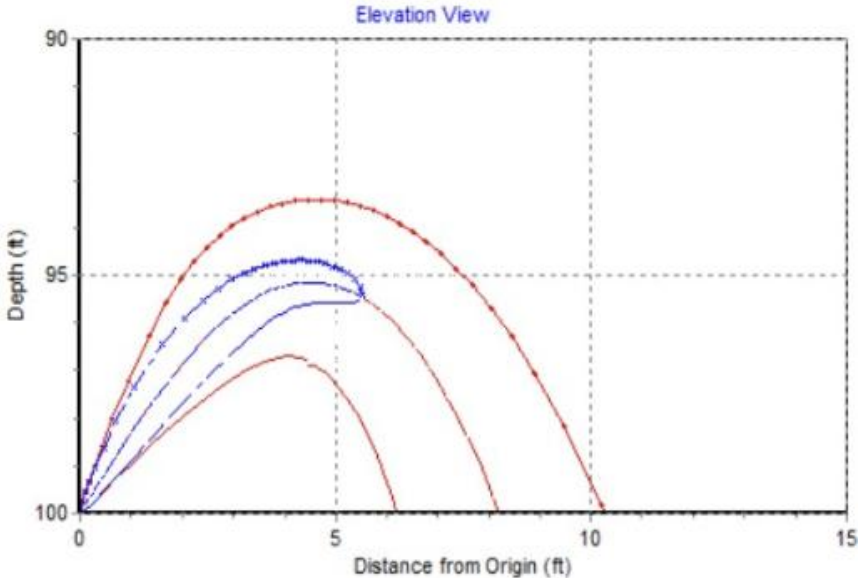


Figure 11. Modeled graphical output for the maximum brine discharge scenario (8.66 mgd of brine only) in the Davidson Current season. The red line is the outer boundary of the jet; the blue line is the 2.0 ppt salinity increment contour. Source: see Appendix H

Table 3.2-4
Volume of Discharge Exceeding the 2.0 ppt Salinity Increment Above Ambient Conditions Under the Worst-Case, Brine-Only Scenario – Final EIR/EIS Compared with the Proposed Modifications

Parameter	Final EIR/EIS	Proposed Modifications	Change
Number of Open Diffuser Ports	129	158	+22%
Volume >2.0 ppt Per Port	8.5 ft^3	4 ft^3	−53%
Total Volume >2.0 ppt	~1,100 ft^3 (31 m^3)	~630 ft^3 (18 m^3)	−42%

Source: see **Appendix H**

More specifically, since the salinity increment associated with the Proposed Modifications would be below 0.40 ppt by the time the discharge plume reaches the seafloor (see **Table 3.2-2** above), salinity would never approach the 2.0-ppt Ocean Plan salinity threshold at the edge of the BMZ. These results are consistent with the Final EIR/EIS's conclusion that the discharge plume would be below the Ocean Plan's 2.0-ppt salinity threshold when contacting the seafloor at the edge of the BMZ, under all discharge scenarios (see Final EIR/EIS, p. 4.5-61).

For the reasons described above, the Proposed Modifications would not result in salinity-related impacts beyond those identified in the Final EIR/EIS; in fact, the Proposed Modifications would reduce the salinity increment compared to the MPWSP analyzed in the Final EIR/EIS. Similarly, the Proposed Modifications would reduce the volume of water exposed to salinity levels exceeding the Ocean Plan's 2.0-ppt salinity increment threshold as compared to the MPWSP analyzed in the Final EIR/EIS. Please also refer to *Section 3.3, Marine Biological Resources* for discussion of salinity impacts as they relate to biological resources.

Effects of Elevated Constituent Concentrations

The Final EIR/EIS identified six (6) constituents with a potential to exceed Ocean Plan objectives. These included copper, ammonium (ammonia), chlordanes, DDT, PCBs, and toxaphene. None were expected to approach their respective Ocean Plan objectives at the edge of the ZID with modeled dilution factors at the edge of the ZID ranging from approximately 15:1 to 59:1 (Final EIR/EIS, p. 4.5-64). With implementation of the Proposed Modifications, ammonia is the limiting constituent for assessing compliance of the commingled discharge. As identified above, the Proposed Modifications were selected to provide the required dilution for ensuring discharge constituents remained within a conservative 80% of the Ocean Plan's water quality objectives. For ammonia, the Ocean Plan objective is 600 µg/L; therefore, the target objective for the Proposed Modifications is 480 µg/L. Meeting the target objective of 480 µg/L requires a dilution on the order of 100:1. The updated modeling demonstrates that the Proposed Modifications would provide this dilution at the edge of the ZID, thus ensuring compliance with the Ocean Plan (see **Appendix H**). As a result, the Proposed Modifications would meet the requirements of **Mitigation Measure 4.3-5** by ensuring the Ocean Plan water quality objectives are met. Therefore, implementation of the

Proposed Modifications would not change the level of impacts identified in the Final EIR/EIS, which were determined to be less than significant with the implementation of identified mitigation.

The Final EIR/EIS calculated the area of the seafloor that would be contacted by the discharge plumes at each of the diffuser ports. Using a plume diameter of 1.5 ft at the point of contact with the seafloor and a total ZID area of 23,100 sf, the Final EIR/EIS determined each plume would affect 1.77 sf of seafloor (for a total of 228 sf across all 129 ports). This would represent approximately 0.99% of the total ZID area (see **Table 3.2-5**). Under the Proposed Modifications, the plume diameter would be reduced to approximately 1.3 ft and the total ZID area would increase to 30,144 sf. These changes would reduce the area of the seafloor impacted by the Proposed Modifications to 1.33 sf per plume (for a total of 210 sf across all 158 ports). This would equate to 0.70% of the total ZID area – a reduction of 0.29% (see **Table 3.2-5**). Therefore, the affected seafloor area associated with the Proposed Modifications would remain below 1% of the total ZID, consistent with the Final EIR/EIS' conclusions. As a result, the Proposed Modifications would not change the level of significance of impacts to the seafloor from elevated constituents beyond those identified in the Final EIR/EIS. Please also refer to *Section 3.3, Marine Biological Resources* for an evaluation of impacts to benthic species associated with elevated discharge constituent concentrations.

Table 3.2-5
Seafloor Area Contacted by Discharge Plumes and Expressed as a Percentage of the ZID

Parameter	Final EIR/EIS	Proposed Modifications	Change
Plume Diameter at Contact Point	1.5 ft	~1.3 ft	Decrease
Seafloor Area Affected Per Plume	1.77 ft²	1.33 ft²	Decrease
Number of Open Ports	129	158	Increase
Total Seafloor Area Affected	228 ft²	210 ft²	Decrease
Percentage of Total ZID Area Affected	0.99%	0.70%	Decrease

Source: see **Appendix H**

The Proposed Modifications are consistent with the mitigation identified in the Final EIR/EIS and have been shown to increase the dilution of discharges from the diffuser compared to what was analyzed in the Final EIR/EIS. The Proposed Modifications would reduce the incremental salinity resulting from brine discharges and would reduce the volume of water exposed to salinity levels exceeding the Ocean Plan's 2.0-ppt salinity increment threshold as compared to the scenarios analyzed in the Final EIR/EIS. Moreover, the Proposed Modifications would reduce the area of seafloor contacted by discharge plumes. Therefore, the Proposed Modifications would result in the same level of operational impacts identified in the Final EIR/EIS. For detailed discussion regarding potential impacts to marine biological resources, as they relate to elevated salinity and constituent concentrations, please refer to *Section 3.3, Marine Biological Resources*.

Brine Discharge Monitoring Program

Pursuant to **Mitigation Measure 4.3-4**, CalAm would implement the Brine Discharge Monitoring Program to minimize potential water quality impacts through long-term monitoring to ensure Ocean Plan compliance. Installation of monitoring equipment could result in minor impacts to benthic communities and negligible water quality changes related to temporary sea floor disturbance. Additionally, installation and operation of monitoring equipment could result in impacts to marine species; however, as discussed below, these activities would not result in new significant impacts or substantially increase the severity of a previously identified significant impact compared to those identified in in the Final EIR/EIS. The installation and operation of the monitoring equipment is necessary to comply with mitigation identified in the Final EIR/EIS to ensure marine water quality impacts are less than significant. Water quality impacts associated with installation and operation of monitoring equipment are discussed below. Impacts to benthic communities and marine mammals are discussed separately in *Section 3.3, Marine Biological Resources*.

Construction

Similar to the diffuser modifications, installing monitoring equipment would cause localized temporary increases in turbidity from sea floor disturbance associated with installing each CTD sonde anchor and the environmental data buoy anchor. The total footprint on the sea floor associated with the nine (9) CTD anchors would be 11.125 sf (0.00026 acres), and the footprint of the single environmental data buoy anchor would be 5.0 sf. These areas represent a small fraction of the total sea floor area of the MBNMS; therefore, the localized water quality impacts associated with higher turbidity while installing anchors to the sea floor would be negligible compared to existing background conditions. These impacts would also be consistent with the impacts associated with installing the outfall diffuser modifications and those identified in the Final EIR/EIS for potential outfall modifications (i.e., localized temporary, short-term increases in turbidity that would last for several hours to up to one or two days at the time when the work is conducted). As a result, potential temporary impacts associated with the installation of monitoring equipment would not exceed the level of impacts previously identified in the Final EIR/EIS related to offshore construction activities. This component of the Proposed Modifications would not result in a new significant impact or substantially increase the severity of a previously identified significant impact identified in the Final EIR/EIS. Please refer to *Section 3.3, Marine Biological Resources* for additional detail on biological resource-related marine impacts resulting from installation of the monitoring equipment.

Operation

Operation of the monitoring equipment could result in very minor, temporary turbidity increases related to (i) quarterly maintenance of the CTD sondes and (ii) movement of the environmental data buoy anchor chain along the sea floor. The area of benthic disturbance from retrieval and redeployment of the CTD sondes is expected to

remain below a total of 45 sf.[42] The area of periodic, temporary disturbance caused by the sweeping of the environmental data buoy anchor chain along the sea floor would result in an additional 3,380 sf of temporary disturbance in connection with on-going monitoring activities (see **Appendix G**). As identified in **Appendix G**, the MBNMS covers 6,094 square miles, or 1.6989e^{11} sf. Retrieval and redeployment of the CTD sondes would only affect 0.00000003 percent of the MBNMS annually. Another 0.000002 percent would be periodically and temporarily disturbed by the anchor chain from the environmental data buoy over the duration of the monitoring activities. The potential impacts associated with temporary disturbance during operation would be negligible.[43] Further, the CTD sondes and environmental data buoy are designed to minimize physical disturbance during operation. Specifically, the CTD sondes use custom retrievable anchors with a relatively small static benthic footprint (approximately 1.5 sf) so periodic retrieval of the sondes would result in minimal sea floor disturbance. Similarly, maintenance of the environmental data buoy would involve the use of a temporary float during servicing to keep the mooring line at the surface, thus minimizing sediment disturbance from contact of the mooring line with the sea floor.

For the reasons described above, potential water quality impacts are expected to be undetectable compared to existing background conditions. Please refer to **Appendix G** for additional information. Please also refer to *Section 3.3, Marine Biological Resources* for additional detail on biological resource-related marine impacts resulting from operation of the monitoring equipment.[44]

Brine Mixing Structure

The Proposed Modifications also include installing a BMS at the RTP site. The BMS would be relocated from an undeveloped area of the RTP site to above a section of the existing outfall on an already developed/disturbed area of the RTP site. Because the BMS would be relocated from an undeveloped area to developed/disturbed land, this component would reduce potential impacts compared to those identified in the Final EIR/EIS.

Construction

BMS construction would be relocated from an undeveloped area of the RTP site comprising non-native grassland to a previously developed/disturbed area located above the existing outfall at the RTP site. The Final EIR/EIS did not identify potential

[42] The disturbance footprint associated with operational retrieval and redeployment is calculated as the total CTD anchor footprint (i.e., 11.125 sf) multiplied by the anticipated number of times per year the CTD sondes will be retrieved and redeployed. It is assumed the CTD sondes will need to be retrieved and redeployed a maximum of four (4) times per year. Therefore, the area of disturbance is calculated as: 11.125 sf x 4 = 45 sf.

[43] Additionally, consistent with the Final EIR/EIS, if dissolved oxygen is found not to be a concern, and/or use of the second control CTD is determined to be redundant, one or more CTD sondes may be removed, which would lessen the area of periodic disturbance.

[44] U.S. Army Corps of Engineers Water Code section 404 and 401 permits may be required prior to construction or disturbance of the ocean floor.

impacts to surface water quality and hydrology specifically associated with BMS construction; however, the Final EIR/EIS identified potential degradation of water quality associated with erosion and potential release of hazardous chemicals during general construction activities for all MPWSP components. Consistent with the general construction activities evaluated for the MPWSP, the Proposed Modifications would involve grading and use of chemicals such as lubricants and fuels for BMS construction. However, BMS relocation would not involve additional disturbance beyond what was identified for the MPWSP and would involve the same construction methods and equipment that were analyzed in the Final EIR/EIS. Therefore, relocation of the BMS would not result in new or increased surface water hydrology or water quality impacts beyond those identified in the Final EIR/EIS.

Operation

The Final EIR/EIS did not identify operational impacts associated with BMS operations. The relocated BMS under the Proposed Modifications would not result in a larger footprint or impermeable surface compared to the BMS analyzed in the Final EIR/EIS and would not result in increased runoff. Consistent with the MPWSP, the relocated BMS would not result in operational impacts to water quality and hydrology. The BMS primarily would be operated remotely from M1W's control room at the RTP, with some on-site maintenance to clean gate valves. These operations would be consistent with existing M1W RTP operations and would not result in any new or increased surface water hydrology or water quality impacts not identified in the Final EIR/EIS.

Brine Storage

The Proposed Modifications also involve expanding brine storage capacity at the desalination plant site. As described above, the Proposed Modifications would either entail the construction of an additional three-MG brine storage pond (for a total of six MG of storage, including the originally proposed pond) or replacement of the approved brine storage pond with two above-ground brine storage tanks (for a total of six MG of storage). Both options would be located entirely within the construction footprint of the MPWSP.

Option 1: Additional Brine Storage Pond[45]

Construction

The construction of an additional brine storage pond would slightly increase the overall volume of grading required at the desalination plant site. This option would require a total of 71,000 cubic yards ("CY") of cut and 57,000 CY of fill, resulting in an increase of 34,000 CY of grading. This increase in grading could result in localized

[45] A Waste Discharge Requirement Permit issued by the Central Coast Water Board may be required prior to operation of the Brine Storage Ponds.

erosion and/or additional discharges of dewatering effluent from excavated areas during construction. However, potential impacts from the construction of a second brine storage pond would be minimal for several reasons. First, the additional grading required for the second brine storage pond would occur in an area that would already be disturbed/graded as part of MPWSP construction activities on the desalination plant site. In other words, the additional brine storage pond would be constructed entirely within the existing temporary construction footprint previously evaluated in the Final EIR/EIS; therefore, additional earthmoving for this option would not change the overall construction footprint of the MPWSP. Second, the Proposed Modifications must comply with the Stormwater Pollution Prevention Plan (SWPPP) for the MPWSP to minimize construction-related impacts. Finally, the Proposed Modifications must comply with previously identified mitigation, including **Mitigation Measure 4.7-2b**, which requires CalAm or its contractor to prepare a Soil and Groundwater Management Plan that specifies how the construction contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. Implementation of the SWPPP and **Mitigation Measure 4.7-2b** would ensure the Proposed Modifications implement project-specific BMPs and other measures to reduce and monitor erosion-related sedimentation as well as prevent spills. These requirements would avoid or minimize construction-related impacts such that the level of impacts would remain unchanged from those analyzed in the Final EIR/EIS (less than significant with mitigation). As identified in the Final EIR/EIS, the SWPPP must be prepared prior to the start of construction (see Final EIR/EIS pp. 4.2-35). Similarly, the Soil and Groundwater Management Plan must be prepared and submitted to the CPUC and the MBNMS for review and approval prior to commencement of construction (see Final EIR/EIS p. 4.7-31). Therefore, with implementation of the required SWPPP and mitigation, construction of the Proposed Modifications would result in the same level of impacts as those evaluated in the Final EIR/EIS.

Operation

The Final EIR/EIS conservatively estimated that total permanent disturbance at the desalination plant site would be approximately 15 acres to allow for flexibility in final design of the desalination plant. The current design, however, would result in less permanent disturbance than identified in the Final EIR/EIS. In fact, final design of the desalination plant (not including the Proposed Modifications) would permanently impact 13.26 acres—approximately 1.74 acres less than the 15 acres identified in the Final EIR/EIS. The additional brine storage pond would be the same size as the approved brine storage pond for the MPWSP (1.5 acres). Therefore, with the addition of the brine storage pond to the final design of the desalination plant, the total permanent impact footprint at the desalination plant site would be 15.24 acres. Accordingly, this option would slightly increase permanent impacts associated with the desalination plant by 0.24 acres beyond the permanent footprint of 15 acres identified in the Final EIR/EIS. While the addition of 0.24 acres of permanent impacts due to the Proposed Modifications could contribute to altered drainage patterns at the site, these impacts would remain entirely within the existing 25-acre construction footprint that the Final

EIR/EIS evaluated for the MPWSP. Therefore, impacts would not extend into previously undisturbed areas. Additionally, the expanded brine storage would be consistent with other improvements at the desalination plant site included as part of the MPWSP (i.e., brine storage pond, water storage tanks). Further, the additional 0.24 acres of impact area represents a negligible increase in total impervious surface area at the desalination plant site. As described above, the Final EIR/EIS conservatively evaluated a larger permanent facility footprint—final design of the desalination plant would result in a reduced project footprint.

Therefore, this option would not substantially increase impervious surface beyond what was considered in the Final EIR/EIS or modify drainage patterns in such a way that would noticeably increase runoff when compared to the MPWSP evaluated in the Final EIR/EIS. Additionally, because the ponds would be uncovered, the extent of impervious coverage would actually be less. Any potential increases in on-site drainage due to impervious surfaces would also be addressed through compliance with the recommendations of a design-level drainage analysis which would ensure that site-specific drainage improvements would be included as part of final desalination plant design.

Moreover, consistent with the MPWSP, this component of the Proposed Modifications would be required to comply with the Central Coast Water Board's most recent post-construction stormwater control requirements, which are enforced by local jurisdictions in accordance with the Monterey Regional Stormwater Management Program and the NDPES Municipal Stormwater Permit. These requirements include, but are not limited to, implementing site design measures to reduce runoff generation by reducing impervious surfaces and preserving natural drainage patterns; implementing BMPs for managing stormwater; and preparing and implementing a stormwater control or a post-construction stormwater management plan. Compliance with these requirements would ensure impacts would remain within the level of significance that was identified in the Final EIR/EIS. Therefore, operational impacts to surface water quality and hydrology from the addition of a brine storage pond would remain unchanged from those disclosed in the Final EIR/EIS (less than significant).

Option 2: Brine Storage Tanks[46]

Construction

Construction of this option would require a total of 63,000 CY of cut and 49,000 CY of fill, resulting in an additional 18,000 CY of grading. Similar to the additional brine storage pond option, additional earthmoving to construct this option would not change the overall construction footprint evaluated in the Final EIR/EIS. This option would be constructed entirely within the existing temporary construction footprint evaluated in the

[46] The "Brine Storage Tanks" option refers collectively to the construction and operation of the two brine storage tanks and the overflow pond. All analyses throughout this Addendum related to this option account for impacts associated with construction and operation of the storage tanks and the overflow pond.

Final EIR/EIS—i.e., construction would occur entirely within an area planned for temporary disturbance during construction at the desalination plant site. Therefore, the additional grading activities associated with this option would not increase the project's temporary construction footprint beyond what was already evaluated for the MPWSP. Please see discussion of operational impacts below for impacts associated with new permanent development at this site. Additionally, as discussed above, consistent with the MPWSP, the construction of this option would comply with the SWPPP for the MPWSP to minimize construction-related impacts. Further, similar to Option 1, **Mitigation Measure 4.7-2b** would still apply to this option to ensure excavated materials are removed, handled, transported, and disposed of in a safe, appropriate, and lawful manner, and that the level of impacts from additional ground disturbance remains unchanged from what was identified in the Final EIR/EIS. Moreover, as discussed above, implementation of the SWPPP, combined with implementation of **Mitigation Measure 4.7-2b**, would ensure impacts remain unchanged from those analyzed in the Final EIR/EIS. Therefore, construction of the Proposed Modifications would result in the same level of impacts as those evaluated in the Final EIR/EIS (less than significant with mitigation).

Operation

The brine storage tanks and overflow pond would occupy a smaller surface area compared MPWSP evaluated in the Final EIR/EIS. As described above, the Final EIR/EIS conservatively evaluated a larger permanent facility footprint consisting of 15 acres to allow for flexibility in the MPWSP's final design. The final desalination plant design would reduce the facility's permanent footprint by approximately 1.7 acres. The addition of two brine storage tanks and an overflow pond to the final design would result in a permanent facility footprint of approximately 14.5 acres, which would result in a net reduction of permanent impacts (compared to the findings contained in the Final EIR/EIS) by approximately 0.5 acres. The two proposed tanks would hold a similar volume as the treated water storage tanks that were approved as part of the MPWSP (i.e., each brine storage tank would hold three MG) and would therefore be of similar dimensions (i.e., approximately 35 ft tall and 103 ft in diameter). Accordingly, this option would be consistent with approved site improvements at the desalination plant site. Since this option would reduce permanent impacts compared to the MPWSP, this option would not result in an increase in impermeable surfaces. Similar to the brine storage pond option, the tanks would be uncovered. As a result, the tanks would not result in the introduction of additional impervious surfaces. The final design of this option would also be required to comply with the requirements of a design-level drainage analysis, which would ensure that site-specific drainage improvements would be implemented as part of final desalination plant design.

Further, consistent with the MPWSP, this option would be required to comply with the Central Coast Water Board's most recent post-construction stormwater control requirements which are enforced by local jurisdictions in accordance with the Monterey Regional Stormwater Management Program and the NPDES Municipal Stormwater Permit. Compliance with these requirements would ensure impacts remain within the

level of significance that was identified in the Final EIR/EIS. Therefore, operational impacts to surface water quality and hydrology from the use of brine storage tanks would remain unchanged from those disclosed in the Final EIR/EIS (less than significant).

Onshore Outfall Protective Slip Liner

This component of the Proposed Modifications would slightly increase ground disturbing activities in order to install the protective slip lining as compared to the analysis in the Final EIR/EIS. However, all impacts would be temporary and would occur primarily in areas that are already disturbed or developed or would be disturbed in connection with construction of other MPWSP components.

Construction

Consistent with the MPWSP, construction of the Proposed Modifications would involve excavations that could result in construction-related impacts to water quality. The Proposed Modifications would require excavating four additional access pits for slip liner installation beyond what was analyzed in the Final EIR/EIS, as well as the excavation of 11 new grouting pits. These modifications would result in approximately 0.08 acres of additional earthmoving to excavate the four additional access pits and the 11 grouting pits. Additionally, this component would include an additional 2.8 acres area for temporary construction access, staging, and stockpiling.

The increase of 0.08 acres of earthmoving and 2.8 acres of access, staging, and stockpiling would represent a minor increase in temporary impacts identified in the Final EIR/EIS in connection with MWPSP construction. Temporary construction-related activities would not substantially increase ground disturbance such that additional erosion-related impacts would occur. Erosional impacts from construction activities are typically caused by earthmoving activities (e.g., grading, stockpiling); however, only 0.08 acres of additional earthmoving would occur because of the Proposed Modifications. This is a negligible increase compared to the earthmoving required for the entire MPWSP. Additionally, all ground disturbance for liner installation would be temporary – excavated soils would be returned to pre-construction or near pre-construction conditions following liner installation. Further, as discussed above, ground-disturbing construction activities must comply with the requirements of a SWPPP prepared for the MPWSP, which requires implementation of standard erosion-control BMPs during construction to avoid or minimize impacts to the extent feasible.

Moreover, the additional ground disturbance would be located along the existing outfall alignment and in areas that are routinely disturbed in connection with existing agricultural operations or would substantially overlap with areas already planned for disturbance as part of the MPWSP. Additionally, all impacts would be temporary; excavated soils would be returned to pre-construction or near pre-construction conditions following liner installation. Further, as discussed above, ground-disturbing construction activities must comply with the requirements of a SWPPP prepared for the

MPWSP, which requires implementing project-specific BMPs to reduce and monitor erosion sedimentation. Since all impacts would be temporary, would result in only a negligible increase in earthmoving activities compared to the MPWSP, would comply with the SWPPP, and would implement **Mitigation Measure 4.7-2b**, erosion-related impacts would remain unchanged from those identified in the Final EIR/EIS (less than significant with mitigation).

Operation

The Final EIR/EIS did not identify potential operational surface water quality and hydrology impacts related to the protective slip liner. Consistent with the MPWSP, this component of the Proposed Modifications would not result in impacts from operation. As such, operational impacts would remain unchanged from what was evaluated for the MPWSP (less than significant with mitigation). Overall, the Proposed Modifications would result in substantially the same construction and operational impacts as those identified in the Final EIR/EIS. Please also refer to **Appendix A** for more information.

3.2.3 Conclusion

The Proposed Modifications would result in relatively minor changes to the MPWSP that could result in temporary construction impacts from increased erosion due to ground disturbing activities; however, the Proposed Modifications must comply with existing mitigation identified in the Final EIR/EIS, including **Mitigation Measure 4.7-2b**, which would ensure construction impacts remain less than significant. Additionally, the Proposed Modifications would result in the same level of operational impacts as those associated with the MPWSP. Further, there are no changed circumstances surrounding the Proposed Modifications or new information of substantial importance that affect the Final EIR/EIS's conclusions. Accordingly, the Proposed Modifications would not result in any new significant environmental effects or increase the severity of previously identified significant impact related to surface water hydrology and water quality. No additional mitigation measures are necessary.

3.3 MARINE BIOLOGICAL RESOURCES

3.3.1 Summary of Prior Environmental Analysis

3.3.1.1 Final Environmental Impact Report/Environmental Impact Statement

The Final EIR/EIS evaluated potential impacts on marine biological resources associated with the MPWSP. **Table 3.3-1** summarizes the impacts associated with the MPWSP and identifies the Final EIR/EIS's significance determination for each impact category. The following analysis specifically evaluates whether the Proposed Modifications would result in any new significant impacts or would substantially increase the severity of a previously identified significant impact related to marine biological resources.

Table 3.3-1
Marine Biological Resources Impacts Analyzed in the MPWSP Final Environmental Impact Report/Environmental Impact Statement

Impacts	Significance Determinations
Impact 4.5-1: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during construction.	LS
Impact 4.5-2: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during construction; or cause modification of breeding, feeding or sheltering behavior.	LS
Impact 4.5-3: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during construction.	LS
Impact 4.5-4: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and/or NMFS during operations.	LS
Impact 4.5-5: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during operations.	LS
Impact 4.5-6: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors, or impede the use of native marine wildlife nursery sites during operations.	LS
Impact 4.5-C: Cumulative impacts related to marine biological resources.	LS

NOTES:
LS = Less than Significant Impact, no mitigation required
Source: Final EIR/EIS, Table 4.5-5 Summary of Impacts – Marine Biological Resources

The Final EIR/EIS determined that all impacts of the MPWSP on marine biological resources would be less than significant and would not require separate mitigation. The Final EIR/EIS also concluded that implementation of mitigation already required to address water quality impacts (see *Section 4.3, Surface Water Hydrology and Water Quality*) would further ensure that MPWSP brine discharge complies with applicable regulatory standards that are protective of marine biological resources. The Final EIR/EIS evaluated marine biological impacts specifically related to operational discharge through the outfall. The Final EIR/EIS assessed potential impacts from higher salinity levels and increased concentrations of brine constituents (e.g., ammonia), as well as marine life impacts from greater shear stress at the discharge site (Impacts 4.5-4 and 4.5-5). The Final EIR/EIS determined these impacts would be less than significant for several reasons. First, increased salinity and other constituents in brine discharge would meet Ocean Plan water quality objectives, which is ensured through

implementation of **Mitigation Measures 4.3-4** (Operational Discharge Monitoring, Analysis, Reporting, and Compliance) and **4.3-5** (Implement Protocols to Avoid Exceeding Water Quality Objectives), and would therefore not cause impairments to marine organisms. Second, impacts related to shear stress would be limited to a small percentage of plankton abundances (i.e., estimated maximum annual plankton loss of less than one percent). Finally, salinity levels, other discharge constituents, and shear stress would not indirectly impact fish, marine mammals, or birds from transfer of bioaccumulated contaminants across trophic levels or from substantial decline of benthic infauna and macrofauna.[47]

The Final EIR/EIS also evaluated secondary impacts to marine resources from implementing **Mitigation Measure 4.3-5** and concluded impacts would be less than significant. Please see *Section 3.2, Surface Water Hydrology and Water Quality* for a detailed discussion of the Final EIR/EIS's analysis of marine water quality impacts. Please also refer to **Appendix B** for more information concerning applicable mitigation measures.

3.3.2 Impact Analysis

The Proposed Modifications involve offshore modifications to the outfall diffuser and end gate, the construction of which could temporarily impact marine biological resources. Additionally, the Proposed Modifications would involve installing monitoring equipment offshore to comply with **Mitigation Measure 4.3-4** in the Final EIR/REIS. All other components of the Proposed Modifications would be constructed outside of the marine environment and would not impact marine biological resources. As a result, the following analysis only evaluates Proposed Modifications related to changes to M1W's offshore outfall and implementation of monitoring equipment that have the potential to affect marine resources.

The Proposed Modifications' changes to the outfall diffuser and end gate are generally consistent with the outfall improvements that were described as part of **Mitigation Measure 4.3-5** in the Final EIR/EIS. Compared with the modifications described in the Final EIR/EIS, the Proposed Modifications would involve increasing the number of open diffuser ports by 29 (for a total of 158 open ports along the outfall). Additionally, the Proposed Modifications would fit the end gate with a neoprene seal as opposed to replacing the entire end gate.

The Final EIR/EIS also included **Mitigation Measure 4.3-4** to minimize potential impacts related to brine discharge to ensure compliance with the Ocean Plan. The

[47] In addition, the new subsurface slant wells would be extended seaward compared to what was identified in the Final EIR/EIS to ensure the slant wells extend at least 1,000 ft seaward of the well head locations, in compliance with Special Condition 11 of the CDPs. Extension of the new slant wells seaward would not change the types of organisms that would potentially be exposed to impingement. Further, source-water vertical infiltration rates have decreased compared to what was analyzed in the Final EIR/EIS. Therefore, impacts would remain unchanged from what the Final EIR/EIS evaluated for the MPWSP (less than significant). Please refer to Appendix **H** for additional detail.

Proposed Modifications include implementation of the Brine Discharge Monitoring Program—long-term water quality and benthic monitoring consistent with the requirements of the Final EIR/EIS, as well as the Ocean Plan. At the time the CPUC and MBNMS prepared the Final EIR/EIS, the precise locations of the monitoring equipment had not yet been identified. Accordingly, this Addendum evaluates the specific locations for the monitoring equipment and the potential impacts associated with deployment of the monitoring equipment. While installation and operation of monitoring equipment could result in localized impacts to marine biological resources, activities associated with long-term monitoring would not result in a new significant impact or substantially increase the severity of a previously identified significant impact. These impacts would be consistent with the nature of impacts described in the Final EIR/EIS. The installation and operation of the monitoring equipment is necessary for complying with mitigation identified in the Final EIR/EIS to ensure marine impacts are less than significant and to ensure compliance with the Ocean Plan.

Offshore Outfall Diffuser and End Gate Modifications

Construction

The level of significance for construction impacts would remain unchanged from what was identified in the Final EIR/EIS (less than significant). Increasing the number of open ports on the outfall diffuser by 29 ports represents a refinement to the diffuser design that is necessary to meet Ocean Plan and NPDES requirements. This change does not alter the MPWSP construction footprint, methods, equipment, or duration that were evaluated in the Final EIR/EIS. Divers would still need to access the diffuser by boat, drill holes into existing anchor bolts on the diffuser, and then bolt the new ports in place, which would cause temporary minor seafloor disturbance, as described in the Final EIR/EIS (p. 4.3-109). Consistent with the impacts described in the Final EIR/EIS for diffuser modifications and end gate replacement, this component of the Proposed Modifications would temporarily increase turbidity and disturb benthic communities immediately surrounding the diffuser and benthic communities would be expected to recover to baseline conditions. Because implementation of the Proposed Modifications would involve essentially the same diffuser modifications that the Final EIR/EIS evaluated for the MPWSP, with only a minor increase in the number of open ports, the level of construction-related impacts would not change compared to what was disclosed in the Final EIR/EIS. Fitting the end gate with a neoprene seal would result in the same impacts as identified in the Final EIR/EIS for replacing the end gate, as both options would entail temporarily removing the existing end gate.

Further, as described in *Section 3.2.2* above, AMS prepared a technical memorandum evaluating the potential marine impacts associated with the Proposed Modifications (see **Appendix C**). AMS determined that construction of the Proposed Modifications within the marine environment would be consistent with the overall impacts from construction of MPWSP improvements in the marine environment identified and analyzed in the Final EIR/EIS. AMS further determined that installation of these components of the Proposed Modifications would be consistent with existing

outfall maintenance activities regularly performed by M1W (i.e., replacing degraded or corroded hardware, flushing the outfall to unclog sediment from the diffuser ports, and conducting video surveillance and leak detection testing), which involve temporary, localized disturbance by divers around the diffuser. AMS did not identify the presence of any listed sensitive species on or around the outfall and concluded that installation of the Proposed Modifications would not result in new impacts to marine organisms beyond those identified in the Final EIR/EIS. AMS further identified that the implementation of standard BMPs during construction would further ensure impacts would be minimized (see **Appendix C**). As a result, construction impacts associated with these components of the Proposed Modifications would remain unchanged from those identified in the Final EIR/EIS (less than significant).

Operation

The Final EIR/EIS evaluated potential impacts to marine biological resources from higher salinity levels and increased concentrations of brine constituents (e.g., ammonia), as well as marine life impacts from greater shear stress at the discharge site during discharges from MPWSP operations. To ensure adequate dilution of brine to meet Ocean Plan and NPDES requirements related to increased salinity and brine constituent concentrations, the Final EIR/EIS imposes **Mitigation Measure 4.3-5**, requiring modifications to the diffuser and end gate.

The Proposed Modifications involve generally the same physical modifications to the diffuser that were identified in the Final EIR/EIS (see *Section 3.2, Surface Water Quality and Hydrology*). However, the Proposed Modifications would increase the number of open ports by 29 and would fit the end gate with a neoprene gasket seal rather than replacing the entire end gate. These minor changes to the modifications described in the Final EIR/EIS represent refinements to the diffuser design that are necessary for meeting Ocean Plan and NPDES permitting requirements.

As discussed in *Section 3.2, Surface Water Hydrology and Water Quality*, the Proposed Modifications were identified as the optimal design configuration for maximizing dilution while minimizing marine life impacts from entrainment, based on extensive updated dilution and compliance modeling. The updated modeling demonstrates that, consistent with the Final EIR/EIS's mitigation requirements, these changes to the diffuser and end gate design would ensure water quality constituent concentrations and salinity levels remain below the levels allowed by the Ocean Plan during operation (see **Appendix D** through **Appendix F**). As a result, these modifications would minimize potential impacts to marine organisms associated with changes to water quality during MPWSP operations. The following discussion provides a detailed analysis of impacts related to elevated salinity, elevated constituent concentrations, and shear stress, consistent with the Final EIR/EIS' analysis of marine biological impacts.

Effects of Elevated Salinity

The Final EIR/EIS specifically evaluated the potential impacts associated with elevated salinity levels on market squid (*Doryteuthis opalescens*) and red abalone (*Haliotis rufescens*). The Final EIR/EIS determined that other species in the vicinity of the discharge site are motile and would be able to avoid areas of elevated salinity in the area immediately surrounding the brine discharge (see Final EIR/EIS, p. 4.5-59). The Final EIR/EIS also evaluated potential impacts associated with hypoxic conditions at the seafloor. AMS prepared a technical memorandum (see **Appendix H)** that evaluated potential impacts to benthic species and the potential for hypoxic conditions at the sea floor resulting from elevated salinity associated with the Proposed Modifications. AMS' analyses are consistent with the Final EIR/EIS' methods for assessing marine resource impacts. The Central Coast Water Board reviewed and agreed with the AMS analyses. The results of AMS' evaluation are described in further detail below.

Potential Impacts to Market Squid

The Final EIR/EIS estimated the potential impact of MPWSP discharge on market squid spawning habitat by calculating the proportion of the total area of suitable spawning habitat south of the Monterey Submarine Canyon where salinity would be elevated by MPWSP operational discharges (see Final EIR/EIS p. 4.5-59 and p. 4.5-62).[48] In other words, the Final EIR/EIS compared the area between the diffuser port and the edge of the ZID on both sides of the outfall with the total area of suitable spawning habitat. The affected area of market squid habitat identified in the Final EIR/EIS under a brine-only discharge scenario that is based on the extent of the ZID would be approximately 2,010 cubic meters. Thus, the Final EIR/EIS concluded the MPWSP would potentially impact 0.0042 percent of the total available squid spawning habitat.

As in the Final EIR/EIS, the total area of suitable spawning habitat that could be affected by the Proposed Modifications would remain 48 square kilometers (18 square miles), representing the extent of the shelf south of the Monterey Submarine Canyon. However, the Proposed Modifications involve increasing the number of open ports in the M1W outfall by 29 ports. As a result, the extent of the ZID would increase from 23,100 sf (1,100 ft long by 21 ft wide) to 30,144 sf (1,256 ft long by 24 ft wide). With implementation of the Proposed Modifications, the potentially affected area would be slightly larger – up to 0.0059 percent of the total available spawning habitat area – due to the expanded ZID area. This would represent an increase of 0.0017 percent compared to the affected habitat area identified in the Final EIR/EIS.

[48] The Final EIR/EIS calculated this as the area between the diffuser and the edge of the ZID, on both sides of the outfall, divided by the total area of suitable spawning habitat south of the Monterey Submarine Canyon.

However, the Final EIR/EIS's estimate is based on the extent of the ZID, rather than the area potentially exceeding 2.0 ppt salinity.[49] As discussed in *Section 3.2, Surface Water Hydrology and Water Quality*, the area exceeding 2.0 ppt salinity associated with the Proposed Modifications would occur two (2) to seven (7) ft above the seafloor, within a horizontal distance of less than 5.6 ft from the diffuser; this area exceeding 2.0 ppt salinity would not contact the seafloor (see **Appendix H**). With implementation of the Proposed Modifications, the discharge plume reaches the seafloor with a salinity increment of less than 0.40 ppt above ambient conditions. Because the modeled seafloor salinity increment does not approach 2.0 ppt at the seafloor anywhere within the discharge footprint, the area on the seafloor in which salinity exceeds 2.0 ppt above ambient conditions is considered zero under all modeled flow scenarios and all seasonal density profiles. As a result, the area of seafloor rendered unsuitable for squid spawning by elevated salinity is zero. The Proposed Modification's salinity increment of less than 0.40 ppt above ambient conditions is well under the Ocean Plan's 2.0-ppt salinity threshold for protecting marine resources. In addition, this salinity increment is below the 1.6-ppt increment at the edge of the ZID identified in the Final EIR/EIS[50] (see **Appendix H**; see also Final EIR/EIS, p. 4.5-59).

Market squid spawn in Monterey Bay principally during the upwelling season (March through August). As identified in *Section 3.2, Surface Water Hydrology and Water Quality*, the upwelling season is when natural background salinity is highest (34.27 ppt). Consequently, seafloor salinity under a brine-only discharge scenario would be highest during upwelling season (34.67 ppt at the edge of the ZID), resulting in dense discharges on approximately 92% of days between March and August (see **Appendix H** for additional detail). However, the Proposed Modifications would result in an incremental salinity increase of only 0.4 ppt above ambient background conditions – well below the Ocean Plan's 2.0 ppt incremental salinity limitation for protecting marine resources. Peak salinity at the edge of the ZID under the Proposed Modifications (34.67 ppt.) also would remain within the range supporting normal embryonic development of market squid (34 – 42 ppt). Therefore, impacts would remain less than significant under the Proposed Modifications.

[49] The Final EIR/EIS recognized that the Ocean Plan establishes an allowable salinity increase of less than 2.0 ppt at the BMZ boundary. The Final EIR/EIS nonetheless determined that limit to be a conservative threshold for marine organisms because none of the studies reviewed as part of the Final EIR/EIS found adverse effects on survival, growth, or behavior at salinities as low as the Ocean Plan objective (see Final EIR/EIS, p. 4.5-59). Regardless, the Final EIR/EIS conservatively considered salinity levels both within the ZID and BMZ, as well as at the edges of these zones for potential impacts on marine biological resources (Final EIR/EIS, p. 4.5-59). The Final EIR/EIS concluded that potential impacts to marine resources from MPWSP operations would be less than significant (Final EIR/EIS, p. 4.5-63).

[50] The Final EIR/EIS explained that although the maximum increase in salinity at the edge of the ZID would be 1.6 ppt above ambient conditions under the brine-only discharge scenario, elevated salinities in the discharge plumes would never exceed 2.0 ppt above ambient at the point of contact with the seafloor and maximum salinities would continue to dilute through mixing and diffusion as they flow across the seafloor (Final EIR/EIS, p. 4.5-59).

Impacts to Red Abalone

The Final EIR/EIS compiled salinity tolerance data for red abalone (*Haliotis rufescens*) that showed red abalone held at salinity levels of 37 to 40 ppt survived for 5.5 months with no effects on growth or fertility. The lowest mean effective salinity reported for red abalone embryonic development is 36.8 ppt. The modeled peak salinity of 34.67 ppt under the Proposed Modifications within the ZID is below both thresholds and is below the peak salinity of 35.49 ppt that the Final EIR/EIS found acceptable on the same basis. Further, as identified in the Final EIR/EIS, no suitable habitat for red abalone exists near the outfall. Therefore, exposure of red abalone to any elevated salinity from discharge is not expected based on the lack of suitable habitat availability, independent of the tolerance comparison. Impacts would remain less than significant under the Proposed Modifications.

Benthic Impacts and Hypoxia

Under the worst-case, brine-only discharge scenario, the MPWSP discharge plume contacts the sea floor with a salinity increment within 0.40 ppt above ambient conditions when evaluated under the Proposed Modifications (see **Appendix H**). As explained in **Appendix H**, a density increase of this magnitude is insufficient to establish or maintain a stagnant layer of high salinity water near the seafloor. Therefore, the discharge poses no risk of inducing hypoxic conditions at or beyond the point of contact with the seafloor. This is consistent with the Final EIR/EIS's findings that discharges would meet Ocean Plan requirements and are not likely to result in hypoxia on the ocean floor (see Final EIR/EIS, p. 4.5-63). Consistent with the conclusions of the Final EIR/EIS, discharge associated with the Proposed Modifications would remain well below the Ocean Plan's 2.0-ppt salinity threshold and would not result in dense, negatively buoyant plumes causing adverse effects from elevated salinity or hypoxic conditions within or outside of the BMZ. Impacts would therefore remain less than significant under the Proposed Modifications. For additional information, please refer to **Appendix H**.

Effects of Elevated Constituent Concentrations

As identified in *Section 3.2, Surface Water Hydrology and Water Quality*, the Proposed Modifications were designed to provide the required dilution for ensuring constituent concentrations remained within a conservative 80% of the Ocean Plan's water quality objectives. As discussed in **Appendix H**, the total seafloor area affected by elevated constituent concentrations associated with the Proposed Modifications would be reduced from 228 sf (representing 0.99% of the total ZID area) to 210 sf (representing 0.70% of the total ZID area). As a result, the affected seafloor area would remain below 1% of the ZID, consistent with the Final EIR/EIS' conclusions.

AMS identified that the bioaccumulation of discharged constituents from benthic infauna to higher trophic levels would remain limited by the very small area of seafloor affected by the discharges, consistent with the Final EIR/EIS' conclusions. Because the

benthic area affected by the discharged constituents would be smaller than the area identified in the Final EIR/EIS, the Proposed Modifications would not change the level of impacts beyond those identified in the Final EIR/EIS. Therefore, impacts would remain less than significant under the Proposed Modifications.

Effects of Shear Stress

The Proposed Modifications involve replacing HC61 ports with stiffer HC24 ports to increase jet velocity and thus dilution at the discharge site. The increased velocity may result in higher marine life mortality caused by greater shear stress.[51] Nevertheless, the modifications to the diffuser design were identified as the optimal design configuration for increasing dilution while minimizing marine life impacts from shear stress (see **Appendix D** and **Appendix E**). As identified in the Final EIR/EIS, impacts on marine organisms caused by shear stress would be concentrated on plankton smaller than 1.0 mm and would be less than significant (see Final EIR/EIS at p. 4.5-72). The Final EIR/EIS concluded that "impacts due to shear stress caused by the brine discharge would be limited to plankton, because motile organisms would be able to avoid turbulence in the immediate vicinity of the brine discharge and the impact would be less than significant because of the small percentage of plankton abundances potentially affected" (see Final EIR/EIS, p. 4.5-67). The Final EIR/EIS further identified that potential mortality due to shear stress would be addressed through compliance with the Ocean Plan.

AMS prepared a Marine Life Mortality Report (MLMR),[52] in compliance with Ocean Plan section III.M.2.e.(1), to evaluate potential marine life mortality associated with the construction and operation of the MPWSP, including any incremental impacts resulting from the Proposed Modifications, and to identify measures required under the Ocean Plan to avoid or minimize impacts on marine life resulting from the MPWSP. The MLMR concludes that operation of the MPWSP, including the Proposed Modifications, would remain consistent with the impact analysis and conclusions contained in the Final EIR/EIS and would not result in any new potentially significant impacts or a substantial increase in the severity of previously identified impacts.

As identified in the MLMR, the MPWSP incorporates several design features intended to avoid or minimize marine life impacts associated with seawater intake and brine discharge, consistent with the preferred intake and discharge technologies identified in Ocean Plan section III.M.2(d)(1). More specifically, the MPWSP would use subsurface intakes, which the Ocean Plan identifies as the "best intake technology for minimizing the intake and mortality of marine life" (see Ocean Plan section

[51] Shear stress is defined as the "strain in a structure of a substance produced by pressure, when its layers are laterally shifted in relation to each other." (Final EIR/EIS, p. 4.5-52.) In other words, the jet velocity of discharge at each diffuser port can cause strain to marine life existing within the area around the ports (id., p. 4.5-65).
[52] CalAm submitted the draft MLMR to the Central Coast Water Board for review on July 31, 2026.

III.M.2(b)(7)).[53] In addition, the MPWSP would commingle desalination brine discharge with treated wastewater and discharge the combined effluent through the existing M1W outfall, an approach identified in the Ocean Plan as the preferred technology to minimize marine life mortality (see Ocean Plan section III.M.2(d)(2)(a)). As identified in the MLMR, commingling brine discharge with treated wastewater dilutes the combined effluent, thus minimizing the salinity difference between the discharge and receiving water so that its density is closer to that of the receiving seawater. Since it is the density difference between the discharge and the receiving water that drives the density-driven mixing, reducing that difference produces more buoyancy-neutral flow and a smaller velocity contrast with the surrounding water. This reduces the steepness of the velocity gradients in the discharge plume, and thus the turbulence and shear stress generated. Lower shear stress reduces the potential for shear-related mortality among organisms entrained in the discharge plume. Keeping the salinity of the commingled discharge closer to ambient conditions likewise limits the magnitude of the salinity change organisms are exposed to, reducing the potential for water quality related effects (Roberts, 2025; AMS, 2026).

The MLMR concluded that potential impacts to marine biological resources resulting from operation of the MPWSP, including the Proposed Modifications, would be consistent with the impacts identified in the Final EIR/EIS. Specifically, the MLMR determined that commingled discharge would result in localized plankton mortality associated with shear stress within the discharge plume; however, the MLMR concluded that commingled discharge would not cause measurable population-level reductions in any zooplankton taxon group. More specifically, the MLMR determined that proportional mortality associated with commingled discharge would represent less than 0.003 percent of the nearshore plankton in Monterey Bay. As identified in **Appendix H**, updated calculations of shear stress-related mortality show that the maximum annual loss would be 0.0221 percent, which would be far less than 1 percent of the annual source water population for potentially affected zooplankton groups. These findings are consistent with the Final EIR/EIS's conclusion that operation of the MPWSP would result in a "maximum annual loss of less than 1 percent" (ibid.). The MLMR also concluded that the commingled brine discharge would not result in marine life mortality from elevated salinity. Modeling determined that minimum dilutions to meet other water quality standards well exceed the dilution required to meet the Ocean Plan salinity requirements (Roberts, 2025). The Final EIR/EIS also noted that compliance with mitigation related to Surface Water Hydrology and Water Quality (**Mitigation Measure 4.3-4**) would further ensure that MPWSP brine is discharged at concentrations in accordance with Ocean Plan water quality objectives and ensure protection of the uses and resources in Monterey Bay. The Final EIR/EIS determined that the impacts of the MPWSP on marine biological resources from increases in ocean salinity from the brine discharge would be less than significant. Accordingly, the MLMR confirms that

[53] The Central Coast Water Board previously concluded that the MPWSP's "proposed site and intake technology are the best site and intake technology feasible to minimize the intake and mortality of all forms of marine life, as required by Water Code section 13142.5(b) and Ocean Plan chapters III.M.2.b and III.M.2.d.(1)" (RWQCB, 2019).

operational impacts associated with the Proposed Modifications would remain within the scope of impacts previously evaluated in the Final EIR/EIS.

The Final EIR/EIS concluded that potential impacts associated with marine life mortality and brine discharge would remain less than significant through compliance with the Ocean Plan and associated NPDES permit requirements. Consistent with that analysis, the MLMR was prepared to satisfy the requirements of Ocean Plan Section III.M.2 and to evaluate marine life mortality associated with operation of the MPWSP, including the Proposed Modifications. As discussed above, the MLMR concludes that operation of the MPWSP, including the Proposed Modifications, would remain consistent with the impacts previously evaluated in the Final EIR/EIS and would not result in measurable population-level impacts to marine biological resources. The MLMR also identifies mitigation required under the Ocean Plan to address marine life mortality associated with commingled brine discharge. Accordingly, the MLMR further substantiates the Final EIR/EIS's conclusion that compliance with the Ocean Plan would ensure impacts associated with marine life mortality and brine discharge remain less than significant under CEQA.

The MLMR determined that implementation of the MPWSP would require mitigation to satisfy Ocean Plan Section III.M.2(d)(2)(e). The MLMR identifies tidal wetland and saltmarsh restoration at Elkhorn Slough as the most suitable mitigation habitat for fulfilling the required Ocean Plan mitigation requirements. Prior to operation of the MPWSP, CalAm is required to submit a final MLMR and Marine Life Mitigation Plan and implementation schedule to the Central Coast Water Board identifying the proposed mitigation approach, restoration methods, success criteria, and monitoring requirements consistent with Ocean Plan Section III.M.2(d)(2). Implementation of these Ocean Plan requirements would ensure continued consistency with the impact analysis and conclusions contained in the Final EIR/EIS.

In summary, for the reasons described above, the Proposed Modifications would result in the same level of impacts as those identified in the Final EIR/EIS (less than significant). Peak salinity would remain within 0.04 ppt – well below the Ocean Plan's 2.0-ppt threshold and within the tolerance ranges for benthic species. Additionally, the peak salinity increase associated with the Proposed Modifications is below what the Final EIR/EIS identified for the MPWSP. Further, the Proposed Modifications would reduce the area within the ZID that could be affected by elevated constituent concentrations. Lastly, marine life mortality related to shear stress would be reduced compared to the analysis of the MPWSP discharge analyzed in the Final EIR/EIS. Therefore, no new or increased impacts would occur as a result of the Proposed Modifications.

Brine Discharge Monitoring Program

Construction

Installing monitoring equipment would not change the level of significance for impacts to marine biological resources from what the Final EIR/EIS identified for the MPWSP (less than significant). Installation activities would involve placing nine (9) anchors on the sea floor for each of the CTD sondes and one (1) anchor for the environmental data buoy—all within soft sandy substrate. This would cause localized temporary disturbance to benthic communities, consistent with the impacts from offshore work around the diffuser that were identified in the Final EIR/EIS. The Final EIR/EIS determined that offshore construction activities would result in "minor disturbance over a small area" (see Final EIR/EIS, p. 4.3-109). The Final EIR/EIS also concluded that disturbance to benthic communities would be "short in duration and of low intensity and benthic communities would likely recover to baseline conditions" (ibid.). Consistent with the Final EIR/EIS' analysis, impacts from installing monitoring equipment would be minor, temporary, and would not impact marine species or habitat such that new or more severe impact would occur.

As identified in **Appendix G**, disturbance on the sea floor would be minor; the total footprint on the sea floor associated with the nine (9) CTD anchors would be 11.125 sf (0.00026 acres), and the footprint of the single data buoy anchor would be 5.0 sf. These areas represent a very small fraction (approximately 0.00000003 percent) of the total sea floor area of the MBNMS; therefore, any disturbance of benthic organisms associated with installing anchors to the sea floor would be negligible. Another 0.000000003 percent of the total sea floor area would be affected by the environmental data buoy anchor, and 0.000002 percent would be periodically and temporarily disturbed by the anchor chain from the environmental data buoy over the duration of the Brine Discharge Monitoring Program. Additionally, anchors for all monitoring equipment (i.e., the nine (9) CTD sondes and the single environmental data buoy) would be placed on soft sandy substrate to avoid biogenic habitat and the existing hard-substrate community located on and around the M1W outfall structure. Further, no sensitive species are known to be present in the sandy substrate where anchors are proposed. Equipment installation is not expected to result in adverse impacts to sensitive species due to the absence of suitable habitat, the very low probability of contacting sensitive species given the low abundance of these species in the MBNMS, and the small individual disturbance footprint of each anchor (see **Appendix G** for additional detail).

For the reasons provided above, impacts related to installing monitoring equipment would be consistent with the offshore impacts to marine resources described in the Final EIR/EIS, which were less than significant. Therefore, the installation of monitoring equipment would not result in a new significant impacts or a substantial increase in the severity of a previously identified significant impact beyond those identified in the Final EIR/EIS when considered with the effects of the MPWSP. Please refer to *Section 3.2, Surface Water Hydrology and Water Quality* for additional detail on water quality-related impacts resulting from installation of the monitoring equipment.

Operation

Operation of the monitoring equipment could result in minor, temporary disturbance of benthic communities from (i) quarterly maintenance of the CTD sondes, (ii) periodic collection of sediment samples, and (iii) movement of the environmental data buoy anchor chain along the sea floor. Potential impacts from marine mammal entanglement would be avoided through buoy design.

Benthic communities located at each anchor location could be periodically disturbed during retrieval and redeployment of the nine (9) CTD sondes and from movement of the data buoy anchor chain on the sea floor. The area of benthic disturbance from retrieval and redeployment of the nine (9) CTD sondes is expected to remain below a total of 45 sf. The area of periodic, temporary disturbance caused by the sweeping of the environmental data buoy anchor chain along the sea floor would add a maximum of 3,380 sf over the duration of monitoring activities (see **Appendix G**). Retrieval and redeployment of the CTD sondes would only affect 0.00000003 percent of the MBNMS annually, and only 0.000002 percent would be periodically and temporarily disturbed by the environmental data buoy anchor chain. Based on the small area of disturbed benthic habitat within the MBNMS and the temporary time period over which the habitat would be unavailable for use, the loss is expected to be undetectable (see **Appendix G**). These impacts are consistent with the short-term, small-scale benthic disturbance described above in association with installation activities and in the Final EIR/EIS as they relate to offshore work.

In addition, the nine (9) CTD sondes and the environmental data buoy are designed to minimize disturbance of benthic communities by using retrievable anchors with relatively small, stationary footprints to minimize periodic disturbance during retrieval and redeployment. Similarly, the environmental data buoy includes the use of a float to keep the buoy mooring line at the water surface, minimizing benthic disturbance during maintenance activities. Further, consistent with the Final EIR/EIS, if monitoring demonstrates that DO is not a concern, and/or use of the second control CTD is determined to be redundant, one or more CTD sondes may be removed, which would lessen the area of periodic disturbance. As a result, the installation of monitoring equipment would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact.

Finally, the Brine Discharge Monitoring Program has been designed to avoid and minimize potential impacts related to marine mammal entanglement. For instance, the nine (9) CTD sondes will be deployed and anchored to the seafloor with a pop-up acoustic release mechanism that eliminates the need for vertical buoy lines in the water column. This design feature eliminates one of the primary sources of entanglement and is consistent with ropeless fishing technology approved for use in California. Similarly, the environmental data buoy has also been designed to avoid potential marine mammal risk. The surface environmental data buoy will be moored using a 1.5:1 scope ratio to limit slack and reduce the probability of mooring line entanglement. In addition, as discussed in **Appendix G**, the buoy will be equipped with GPS and a movement alert

system to provide notification of an unusual displacement consistent with an entanglement event to ensure a rapid response to further minimize the risk of potential entanglement. As a result, the operation of the monitoring equipment would not introduce new significant impacts or increase the severity of a previously identified significant impact. Therefore, impacts would remain unchanged from those identified in the Final EIR/EIS for operation of the MPWSP (less than significant).

Overall, the Proposed Modifications would result in the same level of marine biological resource-related impacts from operation when compared to the MPWSP. Like the MPWSP, the Proposed Modifications would also be required to implement **Mitigation Measures 4.3-4** and **4.3-5** to ensure discharges remain in compliance with NPDES permit and Ocean Plan requirements. **Mitigation Measure 4.3-4** requires CalAm to implement a Monitoring and Reporting Plan to monitor effluent and receiving water salinity and benthic community composition in the ZID and BMZ to monitor MPWSP compliance with the Ocean Plan during operations. **Mitigation Measure 4.3-5** requires that CalAm complete a water quality assessment to demonstrate compliance for the full range of Ocean Plan water quality constituents and NPDES water quality requirements and implement any necessary design features, engineering solutions, and/or operational measures to ensure Ocean Plan compliance. As explained above, the Proposed Modifications are generally consistent with the diffuser modifications identified in the Final EIR/EIS as part of **Mitigation Measure 4.3-5**, and updated modeling demonstrates that MPWSP discharges will comply with the Ocean Plan and NPDES permit requirements. Additionally, ongoing effluent monitoring during MPWSP operations, in compliance with **Mitigation Measure 4.3-4**, will further ensure discharges comply with Ocean Plan water quality objectives. Therefore, as discussed in the Final EIR/EIS, the implementation of these mitigation measures would further ensure that brine constituents are discharged at concentrations below Ocean Plan requirements and further ensure compliance with the monitoring requirements and regulatory standards that are protective of the beneficial uses (including aquatic wildlife and habitat) of Monterey Bay (Final EIR/EIS, p. 4.5-65).

As identified above, implementation of the Brine Discharge Monitoring Program could result in impacts to benthic communities and increase the risk of marine mammal entanglement; however, impacts to benthic communities would be negligible and temporary, while potential impacts to marine mammals would be avoided or reduced to the maximum extent practicable through design features. With implementation of these design features , the impacts associated with long-term monitoring would not result in a new significant impact or increase the severity of a previously identified significant impact to marine biological resources. Implementation of the Brine Discharge Monitoring Program would ensure that MPWSP discharges comply with Ocean Plan requirements and regulatory standards that protect aquatic wildlife and habitat in the Monterey Bay. Please refer to **Appendix A** for additional information. Please also refer to S*ection 3.2, Surface Water Hydrology and Water Quality* for additional detail related to operational marine water quality impacts.

3.3.3 Conclusion

The Proposed Modifications would not result in new or more severe construction or operational effects on marine biological resources beyond what the Final EIR/EIS identified for the MPWSP. Construction of the Proposed Modifications would result in impacts generally consistent with existing M1W outfall maintenance activities and with the potential impacts identified in the Final EIR/EIS. The Proposed Modifications would ensure that operational impacts caused by changes in marine water quality from brine discharge would be less than significant by implementing a Monitoring and Reporting Plan in compliance with **Mitigation Measure 4.3-4** and diffuser modifications consistent with the requirements of **Mitigation Measure 4.3-5**. These modifications are needed to ensure compliance with the Ocean Plan and to minimize potential impacts to marine organisms (also see **Appendix C**). Additionally, operational impacts associated with marine life mortality due to entrainment would be consistent with the level of impacts identified in the Final EIR/EIS (less than significant with mitigation). Further, there are no changed circumstances surrounding the Proposed Modifications or new information of substantial importance that affect the Final EIR/EIS's conclusions. Accordingly, the Proposed Modifications would not result in any additional significant environmental effects or increase the severity of a previously identified significant impact related to marine biological resources. No additional mitigation measures are necessary.

3.4 TERRESTRIAL BIOLOGICAL RESOURCES

3.4.1 Summary of Prior Environmental Analysis

3.4.1.1 Final Environmental Impact Report/Environmental Impact Statement

The Final EIR/EIS evaluated potential impacts on terrestrial biological resources associated with the MPWSP. **Table 3.4-1** summarizes the impacts associated with the MPWSP and identifies the Final EIR/EIS's significance determination for each impact category. The following analysis specifically evaluates whether the Proposed Modifications would result in any new significant impacts or would substantially increase the severity of a previously identified significant impact related to terrestrial biological resources.

Table 3.4-1
Terrestrial Biological Resources Impacts Analyzed in the MPWSP Final Environmental Impact Report/Environmental Impact Statement

Impacts	Significance Determinations
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction.	**LSM**
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction.	LSM
Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction.	LSM

Impacts	Significance Determinations
Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	SU
Impact 4.6-5: Introduce or spread an invasive non-native species during construction.	**LSM**
Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations.	LSM
Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations.	LSM
Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations.	LSM
Impact 4.6-9: Introduce or spread an invasive non-native species during project operations.	LSM
Impact 4.6-10: Be inconsistent with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan or other approved local, regional, or state habitat conservation plan.	LSM
Impact 4.6-C: Cumulative impacts related to terrestrial biological resources.	**SU**

NOTES:
NI = No Impact
LS = Less than Significant Impact, no mitigation required
LSM = Less than Significant Impact with Mitigation
SU = Significant and Unavoidable Impact with mitigation incorporated
Bold = potentially significant impacts identified in connection with activities associated with outfall modifications
Source: Final EIR/EIS, Table 4.6-5 Summary of Impacts – Terrestrial Biological Resources

The Final EIR/EIS determined that most impacts of the MPWSP on terrestrial biological resources would be potentially significant. The Final EIR/EIS identified the following mitigation measures to reduce all potentially significant impacts to terrestrial biological resources to the maximum extent feasible: **Mitigation Measure 4.6-1a** through **Mitigation Measure 4.6-1j, Mitigation Measure 4.6-1l, Mitigation Measure 4.6-1n, Mitigation Measure 4.6-1o, Mitigation Measure 4.6-1p**, **Mitigation Measure 4.6-2a** through **Mitigation Measure 4.6-2b**, **Mitigation Measure 4.6-3**, **Mitigation Measure 4.6-4**, **Mitigation Measure 4.6-6**, **Mitigation Measure 4.12-1b**, and **Mitigation Measure 4.14-2.** These measures include, but are not limited to, pre-construction surveys, protective measures and monitoring, avoidance and minimization measures for special-status species, and construction worker environmental awareness training. The Final EIR/EIS concluded that implementation of mitigation would reduce all impacts to less than significant, except: (i) Impact 4.6-4 (inconsistency with local policies or ordinances protecting biological resources) and (ii) Impact 4.6-C (cumulative terrestrial biological resources impacts). The Final EIR/EIS concluded that these impacts would remain significant and unavoidable following the implementation of all feasible mitigation.

The Final EIR/EIS analyzed potential impacts to terrestrial biological resources specifically associated with improvements to the M1W outfall, including installing slip lining along the onshore outfall and replacing internal joint seals in the nearshore portion of the offshore outfall, as well as impacts related to development at the desalination plant site, including impacts associated with brine storage at this location. The Final EIR/EIS determined construction activities associated with work in these areas could disturb special-status species and critical habitat (Impacts 4.6-1 through 4.6-3).

However, the Final EIR/EIS concluded these potentially significant impacts could be reduced to a less than significant level with implementation of **Mitigation Measure 4.6-1a** through **Mitigation Measure 4.6-1j**, **Mitigation Measure 4.6-1l**, **Mitigation Measure 4.6-1n, Mitigation Measure 4.6-1o, Mitigation Measure 4.6-1p**, **Mitigation Measure 4.6-2a** through **Mitigation Measure 4.6-2b**, **Mitigation Measure 4.12-1b**, and **Mitigation Measure 4.14-2**.[54] The Final EIR/EIS did not identify potential terrestrial biological resource-related impacts associated with the BMS. Please refer to **Appendix B** for additional information concerning applicable mitigation measures.

3.4.2 Impact Analysis

Consistent with the MPWSP, the Proposed Modifications could impact special status-species and habitats during construction. The Proposed Modifications would include ground disturbance in and adjacent to potential habitat for protected species, including coastal dune habitat and potential ESHA.

Brine Mixing Structure

The Proposed Modifications would involve relocating the BMS from an undeveloped area of the RTP site to an area above the outfall on already developed/disturbed land within M1W's existing outfall utility easement. Because the new location is a developed/disturbed area at the RTP, construction impacts would be reduced compared to the construction of this component of the MPWSP. Operational impacts associated with the BMS would remain unchanged from those identified in the Final EIR/EIS (less than significant).

Construction

The Final EIR/EIS determined that due to its location on the RTP site, construction of the BMS would not result in impacts to sensitive natural communities, ESHA, or critical habitat but concluded that all MPWSP components had potential to result in significant impacts to sensitive species and included the mitigation measures listed above to reduce impacts. The Proposed Modifications includes relocating the BMS from grassland habitat to an already developed/disturbed area above the outfall that does not contain wildlife habitat. No changes to the construction methods or equipment that the Final EIR/EIS described for the MPWSP are being proposed for installation of the BMS. Therefore, this component of the Proposed Modifications would result in fewer potential construction-related impacts to terrestrial biological resources compared to those identified for the MPWSP given the already developed area on the RTP site that would be affected. The Proposed Modifications also would continue to be required to implement mitigation measures to reduce construction impacts where applicable (e.g., to reduce impacts to nearby nesting birds), which would ensure

[54] Although physical impacts from MPWSP construction and operation would be less than significant with mitigation, the Final EIR/EIS concluded that the MPWSP would result in significant and unavoidable impacts related to local policies or ordinances protecting biological resources (Final EIR/EIS, p. 4.6-242).

impacts do not exceed those disclosed in the Final EIR/EIS. For these reasons, the relocation and construction of the BMS would result in the same level of impacts identified in the Final EIR/EIS.

Operation

The Final EIR/EIS did not identify operational impacts associated with the BMS. Consistent with the MPWSP, operation of the relocated BMS would not result in impacts to terrestrial biological resources during operations. The BMS would primarily be operated remotely from M1W's control room at the RTP, with some on-site maintenance to clean gate valves. These operations would be consistent with existing M1W RTP operations and would not result in any new impacts when compared to the effects of the MPWSP.

Brine Storage

This component of the Proposed Modifications would involve expanded brine storage capacity in the form of either an additional three-MG brine storage pond or replacement of the approved brine storage pond with two above-ground brine storage tanks. Both options would be located entirely within the disturbed MPWSP construction footprint.

Option 1: Additional Brine Storage Pond

Construction

The additional brine storage pond would result in a minor increase in permanent impacts compared to the MPWSP. Specifically, this option would increase permanent impacts at the desalination plant site by approximately 0.24 acres; this option would not result in any additional temporary construction-related impacts beyond what was analyzed in the Final EIR/EIS because all construction activities would occur within the previously evaluated 25-acre construction footprint for the MPWSP. As such, construction of this component of the Proposed Modifications would not increase areas temporarily impacted during construction beyond those evaluated in the Final EIR/EIS for the MPWSP. Therefore, temporary construction impacts related to habitat disturbance at this site would be consistent with those previously disclosed in the Final EIR/EIS and no new construction-related impacts would occur. See discussion under operational impacts for potential impacts related to additional permanent development at the desalination plant site.

Further, consistent with the MPWSP, the additional brine storage pond would be required to comply with the following mitigation measures identified in the Final EIR/EIS to ensure potential construction-related physical impacts to terrestrial biological resources would be less than significant: **Mitigation Measure 4.6-1a** through **Mitigation Measure 4.6-1c**, **Mitigation Measure 4.6-1e**, **Mitigation Measure 4.6-1i**, **Mitigation Measure 4.6-1j**, **Mitigation Measure 4.6-1l**, **Mitigation Measure 4.6-1n**,

Mitigation Measure 4.6-1o, **Mitigation Measure 4.6-1p**, **Mitigation Measure 4.6-2b**, and **Mitigation Measure 4.6-4**. These measures include, but are not limited to, conducting pre-construction surveys; implementing general protective measures, such as installing exclusion fencing; biological monitoring; implementing avoidance and minimization measures for special-status species; and conducting construction worker environmental awareness training. Implementation of these mitigation measures would further ensure the level of impacts related to construction activities associated with the additional brine storage do not exceed those identified in the Final EIR/EIS.

Operation

The Final EIR/EIS conservatively estimated that total permanent disturbance at the desalination plant site would be approximately 15 acres to allow for flexibility in final design of the desalination plant. Final design of the desalination plant (not including the Proposed Modifications) has reduced the permanent impact footprint of the MPWSP by approximately 1.74 acres compared to what the Final EIR/EIS evaluated for the MPWSP. The additional brine storage pond would be the same size as the approved brine storage pond for the MPWSP (1.5 acres). Therefore, with the addition of the brine storage pond to the final design, the total permanent impact footprint at the desalination plant site would be 15.24 acres. Accordingly, this option would result in an increase in permanent impacts of only 0.24 acres compared to what was analyzed in the Final EIR/EIS.

The addition of a second brine storage pond could result in a minor increase in permanent impacts to special-status species depending on final brine storage configuration; however, this additional permanent impact would remain entirely within areas that would be disturbed in connection with construction of the MPWSP desalination plant. In other words, the additional permanent impact footprint would neither affect nor increase impacts to undisturbed wildlife habitat at the desalination plant site. Although the additional brine storage pond would result in a minor increase in permanent disturbance at the desalination plant site compared to what was analyzed in the Final EIR/EIS, this component of the Proposed Modifications would be subject to the above mitigation measures identified in the Final EIR/EIS. The Final EIR/EIS concluded that implementation of these mitigation measures would reduce operational impacts to special-status species to less-than-significant levels.

Operation of an additional brine storage pond could result in impacts to migratory bird species, consistent with operational impacts identified in the Final EIR/EIS for the MPWSP (see Impact 4.6-6). The Final EIR/EIS concluded that, over the life of the MPWSP, impacts to migratory bird species from the brine storage basin would be significant. The Final EIR/EIS identified **Mitigation Measure 4.6-6** (installation and monitoring of bird deterrents) to reduce potential impacts to a less than significant level. If an additional brine storage pond is constructed at the desalination plant site, this would increase the amount of associated surface water at the desalination plant site, which could result in greater exposure of migratory birds to saline water. Research on impacts of hypersaline waterbodies on birds indicates that waterfowl using large highly

saline lakes or ponds can become sick or die, particularly if there is not a source of fresh water in the vicinity. These waterbodies varied in size between 140 to approximately 3,200 acres in size (see Final EIR/EIS, p. 4.6-250). The additional pond would be approximately 1.5 acres in size. Including the approved pond, the total water surface area would therefore be approximately three (3) acres, far smaller than the large highly saline ponds described in existing studies. Therefore, it is unlikely the additional storage basin would impact a substantial number of birds. Additionally, Locke-Paddon Park, located approximately two (2) miles south of the desalination plant site, contains a freshwater pond that is similar in size to the proposed brine storage basin and would provide a freshwater alternative for waterfowl to utilize (Final EIR/EIS, Ibid.). Consistent with the Final EIR/EIS's analysis, while it is unlikely that a substantial number of birds would be affected by the addition of a second brine storage pond, some migratory waterfowl could be affected by use of the ponds over the lifespan of the MPWSP.

However, consistent with the MPWSP, the mitigation identified in the Final EIR/EIS would remain applicable to the additional brine pond option to ensure impacts are reduced to a less than significant level and that there are no additional or more severe significant impacts beyond those identified for the MPWSP. Specifically, **Mitigation Measure 4.6-6** mandates periodic monitoring of the approved brine storage pond and adaptive management in the event that bird deterrents are found insufficient for deterring birds from the pond. With implementation of this mitigation, the addition of a second brine storage pond would not increase impacts because an increase in pond area does not proportionally increase the potential for bird exposure. In other words, doubling the amount of surface water does not correspondingly double the potential for bird exposure to saline water. The potential for impacts to birds is related to whether birds are able to access the ponds, not pond size. Deterrents would be installed over the full extent of both ponds, thereby limiting bird access regardless of the total pond surface area present at the site. Moreover, **Mitigation Measure 4.6-6** includes adaptive management for ensuring effectiveness of the mitigation strategy. If monitoring identifies increased bird use associated with the expanded brine storage pond, deterrents would be modified to maintain their effectiveness thus ensuring impacts remain less than significant. For these reasons, operational impacts associated with a second brine storage pond would remain unchanged compared to what was identified in the Final EIR/EIS (less than significant with mitigation).

Option 2: Brine Storage Tanks

Construction

The construction of this option would not change the temporary impact footprint - all temporary construction related impacts would occur within the same footprint analyzed in the Final EIR/EIS. Similar to the additional brine storage pond option, all temporary disturbance would be within the MPWSP construction footprint that was analyzed in the Final EIR/EIS; therefore, temporary impacts related to habitat disturbance at this site would be consistent with those previously identified in the Final

EIR/EIS and no new construction-related impacts would occur. Further, consistent with the MPWSP, construction of this option would be required to comply with the same mitigation measures identified above to ensure potential construction-related physical impacts to terrestrial biological resources would be less than significant: **Mitigation Measure 4.6-1a** through **Mitigation Measure 4.6-1c**, **Mitigation Measure 4.6-1e**, **Mitigation Measure 4.6-1i**, **Mitigation Measure 4.6-1j**, **Mitigation Measure 4.6-1l**, **Mitigation Measure 4.6-1n**, **Mitigation Measure 4.6-1o**, **Mitigation Measure 4.6-1p**, **Mitigation Measure 4.6-2b**, and **Mitigation Measure 4.6-4**. As described for the additional brine storage pond option, implementation of these mitigation measures would ensure the level of impacts related to construction of the additional brine storage does not exceed those identified in the Final EIR/EIS.

Operation

This option would decrease overall permanent footprint at the desalination site by approximately 0.5 acres compared to the MPWSP evaluated in the Final EIR/EIS. As a result, this option would reduce potential permanent impacts associated with the MPWSP desalination plant. Nonetheless, this option would result in substantially similar impacts to migratory bird species because the tanks and related infrastructure (i.e., overflow pond) would be uncovered. These impacts would remain less than significant with mitigation for the reasons described in the preceding analysis regarding impacts associated with a second brine storage pond. For these reasons, operational impacts associated with brine storage tanks would remain unchanged compared to what was identified in the Final EIR/EIS (less than significant with mitigation).

WEKO Seal Replacement

Consistent with the MPWSP, replacing WEKO seals would require temporary excavation and backfill of sand at the beach junction structure. Temporary impacts would occur during construction activities, consistent with impacts considered in the Final EIR/EIS. All impacts associated with this component would be temporary during construction activities; no operational impacts would occur from this component. As a result, the following discussion is limited to an analysis of potential construction impacts associated with the WEKO seal replacement.

Construction

Consistent with the impacts identified for the MPWSP, this component of the Proposed Modifications would involve temporary excavation and backfill of sand at the beach junction structure to replace WEKO seals. The Final EIR/EIS identified potentially significant impacts associated with temporary excavation at this location, due to potential presence of sensitive dune habitat and protected species (e.g., western snowy plover). Compared with the MPWSP evaluated in the Final EIR/EIS, construction of this component of the Proposed Modifications would result in less ground disturbance (0.2 acres of disturbance as opposed to 0.5 acres). Therefore, potential impacts would be reduced compared to what was identified in the Final EIR/EIS. Nonetheless, the

Proposed Modifications would implement previously identified **Mitigation Measures 4.6-1a – 1g**, **4.6-1i**, **4.6-1n**, **4.6-1p**, **4.6-2a – 2b**, **4.12-1b**, and **4.14-2** to ensure impacts remain less than significant. These mitigation measures include conducting pre-construction surveys; biological monitoring; conducting construction worker environmental awareness training; implementing protective measures for special-status species, including western snowy plover; implementing avoidance and minimization measures for special-status species and nesting birds; developing and implementing a Habitat Mitigation and Monitoring Plan (HMMP); implanting measures to control the spread of invasive plants; conducting consultation with local agencies and the CCC; avoiding, minimizing, and compensating for impacts to sensitive communities and ESHA; and implementing nighttime lighting measures. Since the Proposed Modifications would implement these previously identified mitigation measures—which the Final EIR/EIS found would reduce physical impacts to terrestrial biological resources to a less than significant level—and construction activities would decrease the construction footprint from what was previously considered in the Final EIR/EIS, impacts would be reduced from what was previously considered for the MPWSP. Therefore, there are no additional or more severe significant impacts beyond those identified for the MPWSP in the Final EIR/EIS.

Onshore Outfall Protective Slip Liner

Liner installation would require slightly expanded ground disturbing activities compared to what was evaluated in the Final EIR/EIS. However, impacts would occur primarily in areas that are already disturbed or developed (i.e., along the existing outfall alignment, in existing roads, in areas of the CEMEX site previously disturbed by former sand mining operations, and in active agricultural land) and areas that would be disturbed in connection with construction of other MPWSP components (i.e., areas at the CEMEX site that overlap with the MPWSP impact footprint for construction of slant wells and associated pipeline infrastructure). Additionally, all impacts would be temporary and would cease upon completion of construction. No operational impacts would occur as a result in protective slip liner installation. Therefore, the following analysis is limited to discussion of temporary construction-related impacts.

Construction

The Final EIR/EIS identified potential impacts to sensitive species and habitats from liner installation activities. The Proposed Modifications would require excavating four (4) additional access pits for slip liner installation beyond what was analyzed in the Final EIR/EIS (for a total of 14 access pits), as well as excavating 11 new grouting pits. These changes would result in approximately 0.08 acres of additional earthmoving for excavation of access and grouting pits and approximately 2.85 acres of additional temporary construction access, staging, and stockpiling compared to what was considered in the Final EIR/EIS. Approximately 1.38 acres of the additional temporary impacts would occur in active agricultural or developed land, while approximately 1.47 acres would occur in dune habitat and potential ESHA.

Installation of the slip liner would result in an increase in temporary disturbance within areas mapped as ESHA given the additional access and grouting pits required. However, as discussed in detail below, temporary impacts to ESHA associated with slip liner installation would be fully offset by changes to MPWSP design that were approved by the CCC. Due to the net reduction in temporary impacts from the CCC-approved changes, the additional disturbance from the Proposed Modifications would not result in additional ESHA impacts beyond what the Final EIR/EIS considered for the MPWSP and thus would not contribute to a previously identified significant and unavoidable conflict related to the City of Marina's Local Coastal Land Use Plan ("LCLUP") policies protecting primary and secondary habitat. For the reasons provided below, the increase in temporary disturbance would not increase the severity of overall temporary impacts to EHSA identified in the Final EIR/EIS.

Although the Final EIR/EIS concluded that physical impacts to terrestrial biological resources would be mitigated to less-than-significant levels, the Final EIR/EIS determined that potential impacts to ESHA would represent a significant and unavoidable impact due to potential conflicts with applicable regulatory requirements (i.e., the City of Marina's LCLUP) (see Final EIR/EIS, p. 4.6-235). The Final EIR/EIS explained that "construction and maintenance of the subsurface slant wells, new Desalinated Water Pipeline, new Transmission Main and the staging area located at Beach Road are not uses or developments dependent on the sensitive resources that comprise the primary habitat present" (Final EIR/EIS, ibid.). Therefore, the Final EIR/EIS concluded that "these facilities would be inconsistent with the City of Marina LCLUP policies governing protection of primary habitat, a significant and unavoidable impact" (ibid.). Nonetheless, the Final EIR/EIS acknowledged that Coastal Act Section 30260 encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned. (See Final EIR/EIS, p. 5.6-7.)

While the Final EIR/EIS identified a significant and unavoidable policy conflict, the CCC subsequently considered potential impacts to ESHA and approved a phased approach for the MPWSP proposed by CalAm to avoid or reduce some of the previously anticipated ESHA impacts identified in the Final EIR/EIS. CalAm also proposed to install several sections of MPWSP pipelines using tunneling techniques rather than trenching. The phased approach to constructing the MPWSP and the changes in pipeline installation methods would result in 22.22 acres of temporary impacts and 1.94 acres of permanent impacts to ESHA, resulting in a total impact reduction of 13.31acres (see **Table 3.4-21**). As a result, actual impacts to ESHA associated with the MPWSP were substantially reduced compared to what was analyzed in the Final EIR/EIS through the CDP process for the MPWSP.

In addition, in approving the MPWSP CDPs, the CCC considered whether the MPWSP satisfied the requirements of Coastal Act Section 30260. In particular, the CCC evaluated whether adverse environmental impacts are mitigated to the maximum extent feasible (CCC, pp. 163 – 164). With an "array of Special Conditions requiring that Cal-Am implement substantial mitigation measures to address a range of expected or

potential impacts to coastal resources to the extent feasible" in addition to the CPUC's MMRP, the CCC concluded that "any adverse environmental effects to coastal resources are mitigated to the maximum extent feasible." (CCC, pp. 163 – 164.)

For the Proposed Modifications, the increase in temporary ground-disturbing activities associated with installation of the slip liner would not increase temporary physical impacts to terrestrial biological resources beyond the levels considered in the Final EIR/EIS because any temporary ESHA impacts would be more than offset by modifications approved by the CCC to reduce temporary impacts associated with pipeline construction (see **Table 3.4-2**). In other words, any temporary ESHA impacts have been offset by modifications approved by the CCC to reduce temporary ESHA impacts associated with the MPWSP. Further, the Proposed Modifications would reduce disturbance to dune habitat for work related to WEKO seal replacement by approximately 0.3 acres, which would further offset temporary ESHA impacts from liner installation.

Table 3.4-2
Impacts to Potential ESHA from the MPWSP, the CCC-Approved Phased MPWSP, and the Proposed Modifications

Impacts to Potential ESHA	Area (acres)
Total Maximum Impact Footprint (Final EIR/EIS)	**36**
Total Impact Footprint (Proposed Modifications)*	1.59
Proposed Modifications Impact Area Overlap with MPWSP	0.12
Total Additional Impact Area of Proposed Modifications (minus MPWSP Overlap)	**1.47**
Total Impact Area of MPWSP with Proposed Modifications	**37.47**
Impact Reduction from CCC-Approved MPWSP**	13.31
Revised Total Impact Footprint (CCC-Approved Phased MPWSP with Proposed Modifications)	**24.16**

Note: See Final EIR/EIS, p. 4.6-216 for impact acreages to potential ESHA identified in the Final EIR/EIS. See CCC Staff Report, p. 7 and p. 73 for reduced impact acreages from MPWSP phasing and alternative pipeline construction methods, respectively.
*All impacts to potential ESHA associated with the Proposed Modifications are temporary; no permanent impacts to potential ESHA would occur as a result of the Proposed Modifications.

In addition, the proposed slip lining work in potential ESHA would result only in short-term disturbance associated with construction activities and would not introduce new permanent development within ESHA compared to what was considered in the Final EIR/EIS. The temporary disturbance would occur largely within areas already identified for disturbance as part of the MPWSP and within the existing outfall alignment. These activities would be temporary and the affected areas would be restored following construction. Moreover, because the Proposed Modifications would involve a further reduction of 0.3 acres of disturbance to dune habitat for work related to WEKO seal replacement compared to what was considered in the Final EIR/EIS, this change would fully offset temporary ESHA impacts. Finally, the Proposed Modifications would implement mitigation measures identified in the Final EIR/EIS, including **Mitigation Measures 4.6-1a** through **4.6-1l**, including but not limited to, conducting pre-construction surveys, implementing general protective measures, biological monitoring, implementing avoidance and minimization measures for special-status species, and

conducting construction worker environmental awareness training; **Mitigation Measure 4.6-1o** (Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander); **Mitigation Measure 4.6-1p** (Control Measures for Spread of Invasive Plants); **Mitigation Measure 4.6-2a** (Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas); **Mitigation Measure 4.6-2b** (Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas); **Mitigation Measure 4.12-1b** (General Noise Controls for Construction Equipment and Activities); **Mitigation Measure 4.12-5** (Stationary-Source Noise Controls); and **Mitigation Measure 4.14-2** (Site-Specific Nighttime Lighting Measures). Implementation of these mitigation measures would ensure physical construction-related impacts to terrestrial biological resources remain unchanged from the level of impacts identified in the Final EIR/EIS for the MPWSP (less than significant with mitigation).

From a land use consistency perspective, the installation of the slip liner remains inconsistent with the City of Marina's LCLUP. The presence of development within ESHA either conflicts with LCLUP policies or it does not; the degree of temporary disturbance does not create a gradation of that policy conflict once the conflict has been identified as significant. While the Proposed Modifications would result in additional areas within ESHA being temporarily impacted in connection with the slip liner installation, the Proposed Modifications would not increase the overall amount of temporary ESHA impacts identified in the Final EIR/EIS (see **Table 3.4-2**). As a result, the previously identified inconsistency with applicable City of Marina LCLUP policies remains unchanged (significant and unavoidable). These actions would not materially change the nature of the underlying policy conflict. Accordingly, while the previously identified significant and unavoidable impact related to ESHA and LCP consistency would remain, the Proposed Modifications would not substantially increase the severity of that impact. As described in the Final EIR/EIS, Coastal Act Section 30260 encourages coastal-dependent industrial uses and provides for resolution of conflicting Coastal Act policies where such development is concerned. (See Final EIR/EIS, p. 5.6-7.) For the reasons discussed throughout this section, the level of impact from implementation of the Proposed Modifications for slip liner installation would be the same as what was identified in the Final EIR/EIS. Overall, the Proposed Modifications would result in substantially the same level of terrestrial biological resources impacts when compared to the MPWSP. Please refer to **Appendix A** for additional information.

3.4.3 Conclusion

The Proposed Modifications would not result in new or more severe construction or operational effects on terrestrial biological resources. Most impacts associated with the Proposed Modifications would be temporary and would occur within areas that would be disturbed in connection with MPWSP construction activities. Moreover, modifications to the MPWSP approved by CCC substantially reduced potential temporary impacts associated with MPWSP construction. These modifications would offset any temporary increase in ESHA impacts associated with the Proposed

Modifications. Moreover, the Proposed Modifications would also be required to comply with mitigation identified in the Final EIR/EIS to ensure the level of impacts does not exceed what was identified in the Final EIR/EIS. Further, there are no changed circumstances surrounding the Proposed Modifications or new information of substantial importance that affect the Final EIR/EIS's conclusions. Accordingly, the Proposed Modifications would not result in any new significant environmental effects or increase the severity of a previously identified significant impact related to terrestrial biological resources. No additional mitigation measures are necessary.

3.5 AIR QUALITY

3.5.1 Summary of Prior Environmental Analysis

3.5.1.1 Final Environmental Impact Report/Environmental Impact Statement

The Final EIR/EIS evaluated potential air quality related impacts associated with the MPWSP. **Table 3.5-1** summarizes impacts associated with the MPWSP and identifies the Final EIR/EIS's significance determination for each impact. The following analysis specifically evaluates whether the Proposed Modifications would result in any new significant impacts or would substantially increase the severity of a previously identified significant impact related to air quality.

Table 3.5-1
Air Quality Impacts Analyzed in the MPWSP Final Environmental Impact Report/Environmental Impact Statement

Impacts	Significance Determinations
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction.	SU
Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan.	SU
Impact 4.10-3: Expose sensitive receptors to substantial pollutant concentrations and/or *Coccidioides immitis* spores or create objectionable odors affecting a substantial number of people during construction.	LS
Impact 4.10-4: Long-term increase of criteria pollutant emissions that could contribute to a violation of an ambient air quality standard during operations.	LS
Impact 4.10-5: Expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations.	LS
Impact 4.10-C: Cumulative impacts related to air quality.	**SU**

NOTES:
LS = Less than Significant impact, no mitigation required
SU = Significant and Unavoidable Impact with mitigation incorporated
Bold = potentially significant impacts identified in connection with activities associated with outfall modifications
Source: Final EIR/EIS, Table 4.10-4 Summary of Impacts – Air Quality

The Final EIR/EIS determined the MPWSP would have the following significant air quality impacts: (i) emissions of criteria air pollutants during construction could contribute to a violation of an ambient air quality standard (Impact 4.10-1); (ii) construction activities could conflict with implementation of the applicable air quality plan

(Impact 4-10-2); and (iii) cumulative construction-related air quality impacts could occur associated with the potential to contribute to a violation of ambient air quality standards or conflict with an applicable air quality plan (Impact 4.10-C). The Final EIR/EIS identified **Mitigation Measure 4.10-1a** through **Mitigation Measure 4.10-1e** to address potential construction-related air quality impacts. These measures include certain construction equipment standards and idling restrictions; development of a Construction Fugitive Dust Control Plan; and off-site mitigation funding. Nevertheless, the Final EIR/EIS concluded that even following the implementation of all feasible mitigation, Impacts 4.10-1 and 4.10-2 as well as cumulative air quality impacts would remain significant and unavoidable.

The Final EIR/EIS analyzed potential air quality-related impacts specifically associated with installation of protective slip lining along the onshore outfall and replacement of internal joint seals in the nearshore portion of the offshore segment of the outfall. The Final EIR/EIS determined that combined with the short-term construction emissions for the MPWSP, construction of these outfall modifications could contribute to an exceedance of state and/or federal emissions standards (Impact 4.10-1). However, the Final EIR/EIS concluded that potentially significant impacts associated with slip liner installation and internal joint seal replacement could be reduced to a less than significant level with implementation of **Mitigation Measure 4.10-1a** through **Mitigation Measure 4.10-1c** (see Final EIR/EIS pp. 4.13-32 and 4.13-35 – 4.13-36). Please refer to **Appendix B** for more information concerning applicable mitigation measures.

3.5.2 Impact Analysis

Consistent with the Final EIR/EIS, the Proposed Modifications would involve the use of a variety of diesel-fueled equipment, including graders, backhoes, excavators, loaders, and a barge, as well as personal worker vehicles that would emit exhaust containing air pollutants during construction. The diffuser modifications, discharge monitoring, BMS installation, and WEKO seal components of the Proposed Modifications do not involve any additional earthmoving or equipment that could result in impacts beyond those evaluated and disclosed in the Final EIR/EIS. As such, the following discussion focuses on components of the Proposed Modifications that would require additional earthmoving that could result in additional air quality impacts: (i) expanded brine storage; and (ii) installation of the slip liner.

Brine Storage

This component of the Proposed Modifications would increase temporary grading volumes and would increase permanent disturbance at the desalination plant site to expand brine storage capacity at this location. However, air quality impacts associated with these activities would be relatively minor and would be temporary during construction. Expanded brine storage would not result in additional long-term operational emissions. As a result, the following discussion is limited to construction-related impacts associated with expanding brine storage capacity at the desalination plant site.

Option 1: Additional Brine Storage Pond

Construction

Construction of the additional brine storage pond would involve the use of a variety of diesel-fueled equipment, including graders, backhoes, excavators, and loaders, that would emit exhaust containing air pollutants. Additionally, construction vehicles and workers' vehicles would generate exhaust emissions offsite and generate fugitive dust onsite through ground disturbing activities. Construction of an additional brine storage pond would result in an increase of grading-related activities onsite in connection with the excavation of a second pond. The minor increase of 0.24 acres of disturbance was used to quantify the incremental increase in emissions associated with the Proposed Modifications, consistent with the methods used in the Final EIR/EIS' analysis. All other modeling assumptions (e.g., number of trips, land use type, type of equipment, construction duration, etc.) remained unchanged from the assumptions used in the Final EIR/EIS' analysis.

Construction would increase temporary air quality emissions associated with additional ground-disturbing activities. These potential construction-related air quality impacts would, however, be consistent with those previously identified in the Final EIR/EIS – i.e., temporary air quality emissions associated with the operation of construction equipment. Additionally, all excavated material would be balanced onsite. Therefore, no additional truck trips to haul materials offsite, nor additional equipment – which could contribute higher emissions – would be needed to construction this option. As identified in **Table 3.5-2,** the increased air quality emissions would represent a minor increase in maximum daily emissions associated with the MPWSP. This represents a less than 1% increase in maximum daily emissions. The additional emissions from the construction of an additional brine storage pond would not cause an exceedance of an existing MBARD threshold such that a new significant air quality impact would occur. ROG, CO, and $PM_{2.5}$ emissions would continue to remain below MBARD's thresholds of significance.

Table 3.5-2
Construction Emissions for Criteria Air Pollutants (lbs./day) – Brine Storage Pond

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Off-road Construction Equipment and On-road Vehicle Exhaust					
Desalination Plant	6.39	90.11	48.47	3.36	2.71
Subsurface Slant Wells	3.57	48.28	23.09	1.84	1.56
Source Water Pipeline	2.51	31.10	19.34	1.31	1.12
Brine Discharge Pipeline	2.34	26.99	17.21	1.18	1.04
Brine Mixing Box	2.34	26.99	17.21	1.18	1.04
Castroville Pipeline	2.39	27.59	17.61	1.19	1.06
Pipeline to CSIP	2.34	26.99	17.21	1.18	1.04
New Transmission Main	*2.54*	*31.52*	*19.62*	*1.32*	*1.13*
ASR Pipelines	2.47	30.74	19.10	1.30	1.10
ASR Injection and Extraction Wells	1.45	20.36	10.73	0.70	0.55

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Carmel Valley Pump Station	*1.09*	*13.62*	*7.56*	*0.51*	*0.44*
Subtotal	**29.41**	**374.27**	**217.14**	**15.05**	**12.79**
Fugitive Dust	N/A	N/A	N/A	189.88	36.04 27.56
Off-gassing from Paving	4.53	N/A	N/A	N/A	N/A
Total Maximum Daily Emissions (MPWSP):	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**
Maximum Daily Emissions (Additional Brine Storage Pond):	0.36	2.72	8.34	7.49[1]	1.35
Revised Total:	**34.30**	**376.99**	**225.48**	**212.42**	**41.70**

Source: Final EIR/EIS, Table 4.10-5 Estimated Maximum Daily Construction Emissions; see also **Appendix I**
Note: Components identified in *italics* have been constructed or partially constructed.
[1]The Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

As identified in the Final EIR/EIS, the MPWSP's maximum daily emissions, which conservatively included emissions for the concurrent construction of all MPWSP components, would exceed MBARD's thresholds of significance for NO_x and PM_{10}. The Final EIR/EIS concluded that temporary PM_{10} emissions would be reduced to a less-than-significant level through the implementation of **Mitigation Measure 4.10-1a** through **Mitigation Measure 4.10-1e**, but NO_x related impacts would remain significant and unavoidable after mitigation.

The construction of the additional brine storage pond would increase maximum daily emissions for NO_x and PM_{10} by less than 1%, as compared to the MPWSP analyzed in the Final EIR/EIS. This negligible increase in temporary air quality emissions would not substantially increase the severity of a previously identified significant air quality impact for several reasons.

First, the Final EIR/EIS assumed that CalAm would construct all components of the MPWSP concurrently. As a result, the Final EIR/EIS conservatively identified maximum daily emissions for construction of the entire MPWSP. Actual construction, however, would not occur simultaneously. Specifically, CalAm already has constructed several MPWSP components, including the Carmel Valley Pump Station, Ryan-Ranch Interconnection Project[55], and a one-mile segment of the Transfer Pipeline (referred to as New Transmission Main in the Final EIR/EIS), thereby reducing the potential maximum daily emissions associated with MPWSP construction that could occur. As demonstrated in **Table 3.5-2,** the potential air quality emissions associated with construction of the Carmel Valley Pump Station independently from other MPWSP components comprises a total of 4% of the maximum daily emissions for NO_x and PM_{10}, combined. Because this MPWSP component has already been constructed, this offsets

[55] The Final EIR/EIS did not specifically evaluate construction emissions for criteria air pollutants associated with the Ryan-Ranch Interconnection Project. As a result, emissions for this component of the MPWSP are not included in Table 3.5-2 or Table 3.5-4.

any incremental increase in the maximum daily emissions from the additional brine storage pond that could occur from simultaneous construction of the pond with the remaining MPWSP components to be constructed.

Second, this modification would not result in an increase in localized emissions associated with construction on the desalination plant site, thereby causing a significant air quality impact specific to construction on that site, because total emissions for the desalination plant site with the additional brine storage pond would be substantially less than applicable MBARD thresholds (see **Table 3.5-3**).

Table 3.5-3
Estimated Maximum Daily Construction Emissions (lbs./day) – Desalination Plant

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Desalination Plant:	6.39	90.11	48.47	3.36	2.71
Additional Brine Pond:	0.36	2.72	8.34	7.49[1]	1.35
Total:	6.75	92.83	56.81	10.85	4.06
MBARD Significance Threshold:	137	137	550	82	55

[1] The Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

Further, the additional earthmoving for this option would occur over the course of several weeks and would therefore not result in earthmoving greater than MBARD's thresholds of 2.2 acres of major earthmoving (i.e., excavation) per day or 8.1 acres of earthmoving per day for projects that require minimal earthmoving activities. Construction of the additional brine storage pond would occur within the same overall construction timeline evaluated for the MPWSP (i.e., 24 months) but would not occur simultaneously with construction of all other MPWSP components. Additionally, initial grading and other earthmoving activities have already begun at the desalination plant site. As a result, the worst-case scenario evaluated in the Final EIR/EIS – which assumed all MPWSP components would be constructed simultaneously – has already been reduced.

Third, as discussed in the Final EIR/EIS, **Mitigation Measure 4.10-1a** through **Mitigation Measure 4.10-1e** would be implemented to ensure the temporary construction-related air quality emissions are minimized to the extent feasible. Because construction activities would result in relatively minor additional temporary emissions (less than 1%) that would not substantially increase construction impacts when considered with other MPWSP components and would implement mitigation that would further reduce impacts, construction of the additional brine storage pond would result in substantially the same impacts as those identified in the Final EIR/EIS for the MPWSP.

Therefore, construction of the additional brine storage pond would not result in the exceedance of an appliable air quality threshold. Construction of the additional brine storage pond would not result in a new significant impact or substantially increase the severity of a previously identified significant air quality impact. No additional mitigation measures are necessary.

Option 2: Brine Storage Tanks

Construction

Construction of this option would involve the same equipment discussed above for the additional brine storage pond. These activities would generate temporary air quality emissions that would result in potential construction-related air quality impacts, consistent with those previously identified in the Final EIR/EIS. Preliminary estimates indicate that this option would reduce overall site disturbance by approximately 0.5 acres as compared to the MPWSP.

As identified in **Table 3.5-4,** construction of this option would reduce overall temporary emissions due to the reduction in ground-disturbance. Therefore, construction of the brine storage tanks would result in fewer air quality-related impacts compared to the MPWSP analyzed in the Final EIR/EIS. Similar to the additional brine storage pond option, air quality impacts related to construction of this option would be temporary and would cease upon completion of construction activities. Additionally, no additional truck trips or equipment would be needed, as materials would be balanced onsite. Earthmoving activities would occur over several weeks and thus would not exceed MBARD daily earthmoving thresholds. Further, similar to the additional brine storage pond option, the minor decrease of 0.5 acres of disturbance was used to quantify the incremental decrease in emissions associated with the Proposed Modifications, consistent with the methods used in the Final EIR/EIS's analysis.

All other modeling assumptions (e.g., number of trips, land use type, type of equipment, construction duration, etc.) remained unchanged from the assumptions used in the Final EIR/EIS's analysis.

Table 3.5-4
Construction Emissions for Criteria Air Pollutants (lbs./day) – Brine Storage Tanks

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Off-road Construction Equipment and On-road Vehicle Exhaust					
Desalination Plant	6.39	90.11	48.47	3.36	2.71
Subsurface Slant Wells	3.57	48.28	23.09	1.84	1.56
Source Water Pipeline	2.51	31.10	19.34	1.31	1.12
Brine Discharge Pipeline	2.34	26.99	17.21	1.18	1.04
Brine Mixing Box	2.34	26.99	17.21	1.18	1.04
Castroville Pipeline	2.39	27.59	17.61	1.19	1.06
Pipeline to CSIP	2.34	26.99	17.21	1.18	1.04
New Transmission Main	*2.54*	*31.52*	*19.62*	*1.32*	*1.13*
ASR Pipelines	2.47	30.74	19.10	1.30	1.10
ASR Injection and Extraction Wells	1.45	20.36	10.73	0.70	0.55
Carmel Valley Pump Station	*1.09*	*13.62*	*7.56*	*0.51*	*0.44*
Subtotal	**29.41**	**374.27**	**217.14**	**15.05**	**12.79**

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Fugitive Dust	N/A	N/A	N/A	189.88	36.04 27.56
Off-gassing from Paving	4.53	N/A	N/A	N/A	N/A
Total Maximum Daily Emissions (MPWSP):	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**
Maximum Daily Emissions (Brine Tanks):	(0.36)	(2.72)	(8.34)	(7.49)[1]	(1.35)
Revised Total:	**33.58**	**371.55**	**208.80**	**197.44**	**39.00**

Source: Final EIR/EIS Table 4.10-5 Estimated Maximum Daily Construction Emissions; see also **Appendix I**
Note: Components identified in *italics* have been constructed or partially constructed.
[1] The Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

Further, as discussed above, the Final EIR/EIS evaluated a "worst-case" scenario for daily emissions that assumed CalAm would construct all components of the MPWSP simultaneously (see Final EIR/EIS, p. 4.10-21). CalAm has already constructed several components, and earthmoving activities have already been initiated at the desalination plant site. As a result, the worst-case scenario evaluated in the Final EIR/EIS has already been reduced and this option would further reduce overall emissions, even when assuming all components would be constructed concurrently. For these reasons, as well as for the reasons previously discussed above, this option would not result in a new significant impact or increase the severity of a previously identified significant impact.

Moreover, similar to the additional brine storage pond option and as discussed in the Final EIR/EIS, this option would also implement **Mitigation Measure 4.10-1a** through **Mitigation Measure 4.10-1e** to ensure the temporary air quality emissions are minimized to the extent feasible. Consistent with the Final EIR/EIS's analysis, overall air quality impacts from construction would remain unchanged with the implementation of **Mitigation Measure 4.10-1a** through **Mitigation Measure 4.10-1e** (less than significant with mitigation). Construction activities would result in relatively minor decrease in emissions that would reduce air quality impacts when compared to the MPWSP. For the reasons described above, construction of the brine storage tanks would result in substantially the same impacts as those identified in the Final EIR/EIS.

Onshore Outfall Protective Slip Liner

Liner installation would require slightly expanded ground disturbing activities compared to what was evaluated in the Final EIR/EIS. However, all impacts would be temporary and would not require substantially more earthmoving that could result in substantially greater air quality emissions when compared to the Final EIR/EIS's analysis of the MPWSP. No operational impacts would result from this component of the Proposed Modifications. As a result, the following discussion is limited to evaluating temporary construction-related impacts.

Construction

Consistent with the Final EIR/EIS's analysis, installation of the slip liner would involve construction equipment and worker vehicles that would produce temporary air quality emissions. This component would involve approximately 0.08 acres of additional earthmoving to excavate access and grouting pits. The additional short-term emissions associated with liner installation would be negligible in comparison to overall MPWSP construction emissions. As identified in **Table 3.5-5**, the increase in temporary emissions would slightly increase emissions as compared to the total maximum daily emissions identified in the Final EIR/EIS.

As discussed above, the Final EIR/EIS estimated total maximum daily emissions for the entire MPWSP assuming CalAm would construct all components simultaneously. CalAm, however, has already constructed several project components, including the Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Project, and a one (1) mile segment of the New Transmission Main. As a result, the total maximum daily emissions associated with the MPWSP has already been reduced. Any temporary incremental increases in ROG and NO_x emissions associated with slip liner installation would be fully offset by prior construction of the Carmel Valley Pump Station; therefore, the slip liner would not increase the previously identified significant and unavoidable impact associated with NO_x emissions. Prior construction of the Carmel Valley Pump Station would also substantially offset any minor increases in emissions of CO, PM_{10}, and $PM_{2.5}$, thus these emissions would remain below MBARD's thresholds even with implementation of the protective slip liner. Any temporary increases in emissions associated with slip liner installation would be more than offset by the fact that CalAm has already constructed the Carmel Valley Pump Station.

Table 3.5-5
Maximum Average Daily Construction Emissions (lbs./day) – Slip Liner Installation

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Total Maximum Daily Emissions (MPWSP):	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**
Slip Liner Installation	0.19	0.87	10.09	3.56[1]	1.48
Revised Total:	**34.13**	**375.14**	**227.23**	**208.49**	**41.83**

Note: See **Appendix I**.

[1] Note, the Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

The incremental increase in disturbance represents a small fraction of the overall construction footprint evaluated in the Final EIR/EIS and would not materially change the scale of construction activities or associated equipment use. In addition, this component of the Proposed Modifications would not change the construction methods, equipment, or schedule from what was evaluated in the Final EIR/EIS, and all excavated material would be balanced onsite. Therefore, no additional truck trips to haul materials offsite, nor additional equipment or a longer construction duration – all of which could contribute higher emissions – would be needed for the minor increase in earthmoving. Further, as discussed above, the Final EIR/EIS evaluated a "worst-case"

scenario for daily emissions that assumed CalAm would construct all components of the MPWSP simultaneously; however, CalAm has already constructed several components of the MPWSP. As a result, the worst-case scenario evaluated in the Final EIR/EIS has already been reduced. Moreover, the Final EIR/EIS determined implementation of **Mitigation Measures 4.10-1a** through **4.10-1e** would reduce impacts related to installing the protective slip liner to a less-than-significant level. Consistent with the Final EIR/EIS, the Proposed Modifications would be required to implement **Mitigation Measures 4.10-1a** through **4.10-1e** to ensure air quality impacts are reduced to the extent feasible. Because the additional earthmoving needed for this component represents a minor increase in ground-disturbing activities, and the Proposed Modifications would implement existing mitigation to further reduce impacts, there would be no change in the level of construction-related air quality impacts beyond those identified for the MPWSP.

Combined Effects of the Proposed Modifications

As described in the discussions above, the Proposed Modifications would generate minor additional temporary emissions during construction activities, which would not introduce new or more substantial significant air quality impacts beyond those identified in the Final EIR/EIS. Because the additional emissions related to the Proposed Modifications would not individually contribute enough emissions to cause the MPWSP to exceed established air quality thresholds, the additional emissions would not contribute a cumulatively considerable air quality impact beyond what the Final EIR/EIS identified for the MPWSP.

As discussed throughout this section, the Final EIR/EIS evaluated a “worst-case” scenario for daily emissions that assumed CalAm would construct all components of the MPWSP simultaneously and assumed construction of other regional projects would occur simultaneously with construction of the MPWSP. CalAm has already constructed several components of the MPWSP, including the Carmel Valley Pump Station, Ryan-Ryan-Ranch Interconnection Project, and a segment of the Transmission Main Pipeline in the City of Seaside. In addition, several regional projects, including the Pure Water Monterey Project have also already been constructed. As a result, the worst-case scenario evaluated in the Final EIR/EIS has already been reduced and cumulative impacts would be less than what was conservatively estimated in the Final EIR/EIS for the MPWSP.

Consistent with the analysis in the Final EIR/EIS, even with implementation of the mitigation measures identified above, construction impacts and cumulative impacts associated with the MPWSP would remain unchanged (significant and unavoidable) with the implementation of **Mitigation Measure 4.10-1a** (Equipment with High-Tiered Engine Standards), **4.10-1b** (Idling Restrictions), and **4.10-1e** (Off-site Mitigation Program). All air quality impacts associated with the Proposed Modifications would be temporary during construction, and the Proposed Modifications would not involve additional operational emissions that could contribute to long-term or permanent air quality impacts beyond those identified in the Final EIR/EIS.

Additionally, as demonstrated in **Table 3.5-6,** the total combined increase in temporary construction emissions associated with the Proposed Modifications would not exceed the maximum daily emissions identified in the Final EIR/EIS that would result in a significant air quality impact, particularly given that CalAm constructed the Carmel Valley Pump Station in 2020, which reduced maximum daily construction emissions associated with the MPWSP.

Table 3.5-6
Maximum Average Daily Construction Emissions (lbs./day) – Proposed Modifications

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Total Maximum Daily Emissions (MPWSP):	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**
Slip Liner Installation	0.19	0.87	10.09	3.56	1.48
Additional Brine Pond	0.36	2.72	8.34	7.49	1.35
Subtotal:	**34.40**	**377.86**	**235.57**	**215.98**	**43.18**
Carmel Valley Pump Station	*1.09*	*13.62*	*7.56*	*0.51*	*0.44*
Revised Maximum Daily Emissions (MPWSP):	**33.34**	**364.24**	**228.01**	**214.15**	**41.61**

Note: See **Appendix I**

Note: CalAm constructed the Carmel Valley Pump Station in 2020. As a result, construction emissions associated with this component of MPWSP have been deducted from total maximum daily emissions to account for changes in construction timeline.

More specifically, the air quality emissions reduction from construction of the Carmel Valley Pump Station alone would fully offset the additional emissions associated with ROG and NO_x emissions associated with the Proposed Modifications. As a result, the Proposed Modifications would not increase the previously identified significant and unavoidable impact associated with NO_x emissions. Prior construction of the Carmel Valley Pump Station would also partially offset minor increases in emissions of CO, PM_{10}, and $PM_{2.5}$ such that these emissions would remain below MBARD's thresholds even with implementation of the Proposed Modifications. Therefore, after accounting for prior construction of the Carmel Valley Pump Station, the Proposed Modifications would not result in a new significant impact or increase the severity of a previously identified significant impact. Consistent with the findings of the Final EIR/EIS, the implementation of mitigation would ensure that PM_{10} emissions would be below applicable MBARD thresholds of significance (see **Table 3.5-7**).

Table 3.5-7
Estimated Mitigated Maximum Daily Construction Emissions (lbs./day) – Proposed Modifications

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Total Mitigated Maximum Daily Emissions (MPWSP):	**33.94**	**316.00**	**217.14**	**68.00**	**40.35**
Slip Liner Installation (Mitigated)	0.19	0.87	10.09	3.56[1]	1.48
Additional Brine Pond (Mitigated)	0.36	2.72	8.34	7.49[1]	1.35
Total Mitigated:	**34.49**	**319.59**	**235.57**	**79.05**	**43.18**
Carmel Valley Pump Station	*1.09*	*13.62*	*7.56*	*0.51*	*0.44*
Revised Total Mitigated:	**33.40**	**305.97**	**228.01**	**78.54**	**42.74**
MBARD Significance Threshold:	137	137	550	82	55

Note: See Final EIR/EIS, pp. 4.10-22 – 4.10-24; see also **Appendix I**

[1] The Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

For the reasons described above, the Proposed Modifications would result in substantially the same impacts as those identified in the Final EIR/EIS for the MPWSP. Therefore, the Proposed Modifications would not result in a new significant impact or substantially increase the severity of a previously identified significant impact. Please refer to **Appendix A** for additional detail.

3.5.3 Conclusion

The Proposed Modifications would require additional earthmoving activities that would result in a minor increase in temporary air quality emissions during construction. However, the expanded earthmoving would be minor and would primarily occur within the construction footprint for the MPWSP identified in the Final EIR/EIS. Further, the Proposed Modifications must comply with the mitigation measures identified in the Final EIR/EIS, including **Mitigation Measures 4.10-1a** through **4.10-1e**, to reduce construction-related air quality impacts to the extent feasible. For those same reasons, cumulative construction-related air quality impacts would remain unchanged from those identified in the Final EIR/EIS (significant and unavoidable). There are no changed circumstances surrounding the Proposed Modifications or new information of substantial importance that call into question the Final EIR/EIS's conclusions. CalAm has already constructed several MPWSP components, thereby reducing the Final EIR/EIS's worst-case estimated maximum daily emissions associated with simultaneous construction of MPWSP components.

Accordingly, the Proposed Modifications would not result in any additional significant environmental effects or increase the severity of a previously identified significant impact related to air quality. No additional mitigation measures are necessary.

3.6 GREENHOUSE GAS EMISSIONS

3.6.1 Summary of Prior Environmental Analysis

3.6.1.1 Final Environmental Impact Report/Environmental Impact Statement

The Final EIR/EIS evaluated the MPWSP's potential greenhouse gas ("GHG") emissions, including from the construction and operation of all MPWSP components. **Table 3.6-1** summarizes impacts associated with the MPWSP and identifies the Final EIR/EIS's significance determination for each impact category. The following analysis specifically evaluates whether the Proposed Modifications would result in any new significant impacts or would substantially increase the severity of a previously identified significant impact related to GHG emissions.

Table 3.6-1
Greenhouse Gas Impacts Analyzed in the MPWSP Final Environmental Impact Report/Environmental Impact Statement

Impacts	Significance Determinations
Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project.	LSM
Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal.	LSM
Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan.	LSM
Impact 4.11-C: Cumulative impacts related to greenhouse gas emissions	**LSM**

NOTES:
LSM = Less than Significant impact with Mitigation
Bold = potentially significant impacts identified in connection with activities associated with outfall modifications
Source: Final EIR/EIS, Table 4.11-2 Summary of Impacts – GHG Emissions

The Final EIR/EIS concluded that the MPWSP's GHG-related impacts would be potentially significant. Specifically, the Final EIR/EIS identified the following potentially significant GHG impacts: (i) incremental contribution to climate change from GHG emissions (Impact 4.11-1); (ii) conflict with Executive Order B-30-15 Emissions Reduction Goal (Impact 4.11-2); (iii) conflict with Assembly Bill (AB) 32 Climate Change Scoping Plan (Impact 4.11-2); (iv) cumulative impacts related to greenhouse gas emissions (4.11-C).

The Final EIR/EIS concluded that implementation of **Mitigation Measure 4.11-1** and **Mitigation Measure 4.18-1** could reduce all impacts related to GHG emissions to a less than significant level. Please refer to **Appendix B** for more information concerning applicable mitigation measures.

The Final EIR/EIS analyzed potential GHG-related impacts specifically associated with installation of slip lining along the onshore outfall. The Final EIR/EIS determined construction activities could contribute to total GHG emissions for the entire MPWSP, which would exceed the established significance threshold (Impact 4.11-1). However, the Final EIR/EIS concluded potentially significant impacts related to construction of these outfall modifications could be reduced to a less than significant level with implementation of **Mitigation Measure 4.11-1** (GHG Emissions Reduction Plan) (see Final EIR/EIS pp. 4.13-32 and 4.13-35 – 4.13-36).

3.6.2 Impact Analysis

The Proposed Modifications would involve slightly increased earthmoving work necessary for expanding brine storage and installing protective slip lining, which could contribute additional temporary GHG emissions. The diffuser modifications, discharge monitoring, BMS relocation, and WEKO seal components do not involve any additional earthmoving or changes to construction methods or equipment that could result in impacts beyond those evaluated in the Final EIR/EIS. As such, the following analysis focuses only on the components of the Proposed Modifications that would require expanded earthmoving that could result in additional GHG-related impacts: (i) expanded brine storage, and (ii) installation of the slip liner. Additionally, because all GHG impacts

associated with the Proposed Modifications would be temporary during construction and no new impacts would occur from operation of the expanded brine storage or slip liner, the following analysis is limited to construction-related impacts.

Brine Storage

Expanding brine storage capacity at the desalination plant site would involve additional earthmoving beyond what was included for the MPWSP; however, GHG-related impacts would be minor and temporary during construction. Expanded brine storage would not result in additional long-term operational impacts. As such, the following discussions for each brine storage expansion option are limited to construction-related impacts.

Option 1: Additional Brine Storage Pond

Construction

Construction of an additional brine storage pond at the desalination plant site would increase temporary GHG emissions in connection with construction-related equipment for ground-disturbing activities. This option would increase overall site disturbance by 0.24 acre as compared to the MPWSP. The Final EIR/EIS identified that GHG emissions generated by construction of the MPWSP would total approximately 14,291 metric tons of carbon dioxide equivalent ("CO_2e")[56] over the 24-month construction period, which equates to a 40-year amortized annual average value of approximately 357 metric tons CO_2e.

Table 3.6-2 identifies GHG emissions associated with existing construction sources identified in the Final EIR/EIS and anticipated GHG emissions associated with construction of an additional brine storage pond at the desalination plant site. Construction-related activities associated with the additional brine storage pond would result in an increase in GHG emissions of less than 1% beyond what was considered for the MPWSP (see **Appendix I**). This increase in GHG emissions during construction of the additional brine storage pond would be negligible in comparison to overall MPWSP GHG emissions.

Table 3.6-2
Total GHG Emissions from MPWSP Construction – Brine Storage Pond

Construction Emissions Source	CO_2e
Desalination Plant	7,087.22
Subsurface Slant Wells	1,880.56
Source Water Pipeline	575.17
Brine Discharge Pipeline	198.02
Brine Mixing Box	594.06
Castroville Pipeline	271.09

[56] CO_2e is a standard unit for measuring the climate impact of various GHGs by converting their global warming potential into the equivalent amount of CO_2.

Construction Emissions Source	CO_2e
Pipeline to CSIP	189.61
New Desalinated Water Pipeline	571.10
New Transmission Main	*873.98*
ASR Pipelines	472.24
ASR-5 and ASR-6 Wells	866.65
Carmel Valley Pump Station	*249.65*
Ryan Ranch-Bishop Interconnection Project	*264.03*
Main System-Hidden Hills Interconnection Project	198.02
MPWSP Total Emissions	**14,291.41**
40-Year Amortized Annual Average	**357.29**
Additional Brine Storage Pond	67.54
Revised Total Emissions	**14,358.95**
Revised 40-Year Amortized Annual Average	**358.98**

Note: See Final EIR/EIS, p. 4.11-16; see also **Appendix I**

Overall, the increase in GHG emissions associated with construction of an additional brine pond would represent a negligible increase in emissions. In addition, construction of the additional brine storage pond would be required to comply with previously identified mitigation measures, including **Mitigation Measure 4.11-1** and **Mitigation Measure 4.18-1**, which require the preparation of a GHG reduction plan and construction equipment and vehicle efficiency plan, respectively. The Final EIR/EIS concluded that implementation of **Mitigation Measure 4.11-1** and **Mitigation Measure 4.18-1** would ensure that the MPWSP is constructed in an energy-efficient manner and that the MPWSP's GHG impacts would be less than significant.

As shown in **Table 3.6-3** below, the sum of the 40-year amortized construction GHG emissions and the total net operation emissions of the MPWSP with the additional brine storage pond would be approximately 8,382 metric tons CO_2e per year. Implementation of **Mitigation Measure 4.11-1**, however, would reduce total amortized emissions from 8,368.099 metric tons CO_2e per year to approximately 1,483 metric tons CO_2e per year (as compared to 1,480 metric tons metric tons CO_2e per year for the MPWSP as evaluated in the Final EIR/EIS). This would be below MBARD's recommended threshold of 2,000 metric tons CO_2e per year. Therefore, the nominal increase in GHG emissions associated with the construction of an additional brine storage pond would not significantly increase total amortized emissions for the MPWSP, such that they would exceed MBARD's recommended threshold of significance.

Table 3.6-3
Total Amortized Emissions – Brine Pond Storage

Emissions Source	CO_2e
Revised 40-Year Amortized Construction Emissions	358.98
Total Net Operational Emissions	8,008
Total Project Emissions (Pre-Mitigation):	**8366.98**
Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)	(6,885)
Total Project Emissions (Post-Mitigation):	**1,481.98**
MBARD Significance Threshold:	2,000

Note: See Final EIR/EIS at p. 4.11-18; see also **Appendix I**

For these reasons, construction of the additional brine storage pond would not change the level of impacts beyond what was evaluated in the Final EIR/EIS (i.e., less than significant with the implementation of mitigation).

Option 2: Brine Storage Tanks

Construction

Construction of brine storage tanks at the desalination plant site would not substantially increase temporary GHG emissions. The Final EIR/EIS identified that GHG emissions generated by construction of the MPWSP would total approximately 14,291 metric tons CO_2e over the 24-month construction period, which equates to a 40-year amortized annual average value of approximately 357 metric tons CO_2e.

Table 3.6-4 identifies GHG emissions associated with existing construction sources identified in the Final EIR/EIS and anticipated GHG emissions associated with construction of brine storage tanks at the desalination plant site. As identified previously, construction of this option would reduce overall site disturbance by approximately 0.5 acres. As a result, anticipated ground-disturbing activities would be less than analyzed in the Final EIR/EIS, and construction-related activities would result in a minor decrease in GHG emissions during construction compared to the MPWSP as evaluated in the Final EIR/EIS (see **Appendix I**).

Table 3.6-4
Total GHG Emissions from MPWSP Construction – Brine Storage Tanks

Construction Emissions Source	CO_2e
Desalination Plant	7,087.22
Subsurface Slant Wells	1,880.56
Source Water Pipeline	575.17
Brine Discharge Pipeline	198.02
Brine Mixing Box	594.06
Castroville Pipeline	271.09
Pipeline to CSIP	189.61
New Desalinated Water Pipeline	571.10
New Transmission Main	*873.98*

Construction Emissions Source	CO_2e
ASR Pipelines	472.24
ASR-5 and ASR-6 Wells	866.65
Carmel Valley Pump Station	*249.65*
Ryan Ranch-Bishop Interconnection Project	*264.03*
Main System-Hidden Hills Interconnection Project	198.02
MPWSP Total Emissions	**14,291.41**
40-Year Amortized Annual Average	**357.29**
Brine Storage Tanks	(67.54)
Revised Total Emissions	**14,223.87**
Revised 40-Year Amortized Annual Average	**355.60**

Note: See Final EIR/EIS at p. 4.11-16; see also **Appendix I**

Overall, the decrease in GHG emissions associated with construction of an additional brine tank would represent a minor decrease in GHG emissions compared to what was evaluated in the Final EIR/EIS. While this option would reduce overall construction-related GHG emissions, construction would still be required to comply with previously identified mitigation measures, including **Mitigation Measure 4.11-1** and **Mitigation Measure 4.18-1**. The Final EIR/EIS concluded that implementation of **Mitigation Measure 4.11-1** and **Mitigation Measure 4.18-1** would ensure that the MPWSP is constructed in an energy-efficient manner and that the MPWSP's GHG impacts would be less than significant.

In addition, as shown in **Table 3.6-5** below, the sum of the 40-year amortized construction GHG emissions and the total net operational emissions of the MPWSP with the brine storage tanks would be approximately 8,364 metric tons CO_2e per year. Implementation of **Mitigation Measure 4.11-1**, however, would reduce total amortized emissions to approximately 1,478 metric tons CO_2e per year (as compared to 1,480 metric tons metric tons CO_2e per year for the MPWSP as evaluated in the Final EIR/EIS). This would be below MBARD's recommended threshold of 2,000 metric tons CO_2e per year. Therefore, the decrease in GHG emissions associated with the construction of this option would slightly decrease amortized emissions compared to the MPWSP as evaluated in the Final EIR/EIS.

Table 3.6-5
Total Amortized Emissions – Brine Storage Tanks

Emissions Source	CO_2e
Revised 40-Year Amortized Construction Emissions	355.60
Total Net Operational Emissions	8,008
Total Project Emissions (Pre-Mitigation):	**8,363.60**
Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)	(6,885)
Total Project Emissions (Post-Mitigation):	**1,478.60**
MBARD Significance Threshold:	2,000

Note: See Final EIR/EIS at pg. 4.11-18; see also **Appendix I**

For these reasons, construction of this option would not change the level of impacts beyond what was evaluated in the Final EIR/EIS (i.e., less than significant with the implementation of mitigation).

Onshore Outfall Protective Slip Liner

Slip liner installation would require slightly expanded ground disturbing activities, including additional excavation, compared to what was evaluated in the Final EIR/EIS. However, all construction-related impacts would be temporary and would not require substantially more earthmoving that could result in substantially greater GHG emissions compared to the MPWSP evaluated in the Final EIR/EIS.

Construction

Construction activities associated with installing the slip liner would generate a negligible increase in GHG emissions when compared to the Final EIR/EIS's analysis of the MPWSP. Installation of the slip liner would require approximately 2.8 acres of additional temporary construction access, staging, and stockpiling; and 0.08 acres of additional earthmoving associated with excavation of four (4) additional access pits and 11 grouting pits. Consistent with the Final EIR/EIS's analysis, these activities would involve construction equipment and worker vehicles that would produce GHG emissions.

Construction-related GHG emissions are primarily associated with diesel combustion from grading and use of construction equipment. Detailed grading quantities for this component of the Proposed Modifications are not currently available. However, the proposed work would involve only approximately 0.08 acres of additional excavation, representing a very small increment of additional construction-related earthmoving relative to the overall MPWSP footprint evaluated in the Final EIR/EIS. While 2.8 acres would be disturbed in connection with construction access, staging, and stockpiling, slip liner installation would not require additional earthmoving or truck trips that could increase GHG emissions compared to what was analyzed in the EIR/EIS. Additionally, the additional 2.8 acres would comprise temporary access, staging and stockpiling during construction – no additional earthmoving would be associated with this additional disturbance area. As a result, GHG emissions modeling is based on the additional 0.08 acres of earthmoving activity, which accounts for emissions associated with diesel combustion during use of construction equipment for soil excavation and backfill. Given the limited extent of the additional 0.08 acres of excavation and the short duration of excavation activities, any incremental GHG emissions would be minimal (see **Table 3.6-6**).

Table 3.6-6
Total GHG Emissions from MPWSP Construction – Slip Liner Installation

Construction Emissions Source	CO_2e
Desalination Plant	7,087.22
Subsurface Slant Wells	1,880.56
Source Water Pipeline	575.17
Brine Discharge Pipeline	198.02
Brine Mixing Box	594.06
Castroville Pipeline	271.09
Pipeline to CSIP	189.61
New Desalinated Water Pipeline	571.10
New Transmission Main	*873.98*
ASR Pipelines	472.24
ASR-5 and ASR-6 Wells	866.65
Carmel Valley Pump Station	*249.65*
Ryan Ranch-Bishop Interconnection Project	*264.03*
Main System-Hidden Hills Interconnection Project	198.02
MPWSP Total Emissions	**14,291.41**
40-Year Amortized Annual Average	**357.29**
Slip Liner Installation	69.88
Slip Liner 40-Year Amortized Annual Average	1.75
Revised Total Emissions	**14,361.29**
Revised 40-Year Amortized Annual Average	**359.03**

Note: Final EIR/EIS at p. 4.11-16; see also **Appendix I**

The Proposed Modifications would be required to comply with **Mitigation Measure 4.11-1** and **Mitigation Measure 4.18-1,** thereby ensuring that GHG impacts would remain less than significant with mitigation. In addition, as shown in **Table 3.6-7** below, the sum of the 40-year amortized construction GHG emissions and the total net operation emissions of the MPWSP with slip liner installation would be approximately 8,367 metric tons of CO_2e per year. Implementation of **Mitigation Measure 4.11-1**, however, would reduce total amortized emissions from 8,367 metric tons of CO_2e per year to approximately 1,482 metric tons of CO_2e per year (as compared to 1,480 metric tons of CO_2e per year for the MPWSP evaluated in the Final EIR/EIS). This would be below MBARD's significance threshold of 2,000 metric tons per year. Given the very limited additional excavation required for slip liner installation compared to the MPWSP evaluated in the Final EIR/EIS, the associated GHG emissions would be several orders of magnitude smaller than the amount necessary to exceed MBARD's recommended threshold and therefore would not alter the Final EIR/EIS's prior significance determination (i.e., less than significant with mitigation).

Table 3.6-7
Total Amortized Emissions – Slip Liner Installation

Emissions Source	CO_2e
Revised 40-Year Amortized Construction Emissions	359.03
Total Net Operational Emissions	8,008
Total Project Emissions (Pre-Mitigation):	**8,367.03**
Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)	(6,885)
Total Project Emissions (Post-Mitigation):	**1,482.03**
MBARD Significance Threshold:	2,000

Note: See Final EIR/EIS at p. 4.11-18; see also **Appendix I**

Accordingly, the Proposed Modifications would not result in a substantial increase in GHG emissions and would not increase the severity of the previously identified impact.

Combined Effects of the Proposed Modifications

The combined increase in total amortized GHG emissions associated with the Proposed Modifications would be nominal compared to the entirety of the MPWSP. The combined increase in total amortized GHG emissions associated with the Proposed Modifications would be nominal compared to the entirety of the MPWSP, as analyzed in the Final EIR/EIS. The total combined amortized GHG emissions evaluated for the Proposed Modifications include the slip liner and the Additional Brine Storage Pond option, as this brine storage option would generate additional GHG emissions. However, if Option 2 for expanded brine storage is pursued, overall GHG emissions would be reduced, since Option 2 would decrease the disturbance footprint at the desalination plant site and thus reduce GHG emissions associated with improvements at that location. Therefore, this analysis conservatively estimates a worst-case scenario for total amortized emissions resulting from the Proposed Modifications. If Option 2 is pursued, total GHG emissions would be below 8,368.73 metric tons CO_2e without mitigations and below 1,483.73 metric tons CO_2e with mitigation (see **Table 3.6-8**). Further, with implementation of **Mitigation Measure 4.11-1** and **Mitigation Measure 4.18-1**, GHG emissions would be well below the MBARD threshold of 2,000-metric tons of CO_2e (see **Table 3.6-8**). As a result, the Proposed Modifications would not result in any additional significant impacts or increase the severity of a previously identified significant impact.

Table 3.6-8
Total Amortized Emissions – Proposed Modifications[57]

Emissions Source	CO_2e
Revised 40-Year Amortized Construction Emissions	360.73
Total Net Operational Emissions	8,008
Total Project Emissions (Pre-Mitigation):	**8,368.73**
Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)	(6,885)
Total Project Emissions (Post-Mitigation):	**1,483.73**
MBARD Significance Threshold:	2,000

Note: See Final EIR/EIS at p. 4.11-18; see also **Appendix I**

3.6.3 Conclusion

Overall, the Proposed Modifications are anticipated to result in a negligible change in GHG emissions compared to what was analyzed in the Final EIR/EIS. Any change in temporary GHG emissions would be magnitudes lower than the amount necessary to exceed MBARD's threshold of 2,000 metric tons CO_2e after implementation of mitigation. The Proposed Modifications would be required to comply with mitigation identified in the Final EIR/EIS, including **Mitigation Measure 4.11-1** and **Mitigation Measure 4.18-1**, to ensure potential impacts would be less than significant.

Further, there are no changed circumstances surrounding the Proposed Modifications or new information of substantial importance that affect the Final EIR/EIS's conclusions. Accordingly, the Proposed Modifications would not result in any additional significant environmental effects or increase the severity of a previously identified significant impact related to GHG emissions. No additional mitigation measures are necessary.

3.7 AESTHETIC RESOURCES

3.7.1 Summary of Prior Environmental Analysis

3.7.1.1 Final Environmental Impact Report/Environmental Impact Statement

The Final EIR/EIS evaluated potential aesthetic resource related impacts associated with the MPWSP. **Table 3.7-1** summarizes the impacts associated with the MPWSP and identifies the Final EIR/EIS's significance determination for each impact category. The following analysis specifically evaluates whether the Proposed Modifications would result in any new significant impacts or would substantially increase the severity of a previously identified significant impact related to aesthetic resources.

[57] Total amortized emissions for the Proposed Modifications accounts for the amortized emissions associated with the brine storage pond option and installation of the slip liner. This represents a worst-case scenario because the brine storage tanks option would reduce total amortized emissions. As a result, if the brine storage tanks option is pursued, total amortized emissions for the MPWSP, with implementation of the Proposed Modifications, would be less than 8,383.75 metric tons CO_2e without mitigation and 1,498.75 metric tons CO_2e with mitigation, which would remain below MBARD's threshold.

Table 3.7-1
Aesthetic Resources Impacts Analyzed in the MPWSP Final Environmental Impact Report/Environmental Impact Statement

Impacts	Significance Determinations
Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	LS
Impact 4.14-2: Temporary sources of substantial light or glare during construction.	LSM
Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	LSM
Impact 4.14-4: Permanent new sources of light or glare.	LSM
Impact 4.14-C: Cumulative impacts related to aesthetic resources.	LSM

NOTES:
LS = Less than Significant impact, no mitigation required
LSM = Less than Significant impact with Mitigation
Source: Final EIR/EIS, Table 4.14-3 Summary of Impacts – Aesthetic Resources

The Final EIR/EIS determined that most of the MPWSP's impacts on aesthetics would be potentially significant. However, most impacts identified in the Final EIR/EIS are related to pipeline installations in areas located outside of the desalination plant site, the RTP site, the CEMEX site, and along the M1W outfall easement, which would not be affected by the Proposed Modifications. The Final EIR/EIS determined that aesthetic impacts related to diffuser modifications, replacement of WEKO seals, and improvements at the desalination plant site, RTP site, and CEMEX site would be less than significant. In addition, the Final EIR/EIS did not identify any aesthetic-related impacts associated with installation of protective slip lining along the onshore outfall between the RTP site and the CEMEX site. Additionally, the Final EIR/EIS concluded that implementation of **Mitigation Measure 4.14-1, Mitigation Measure 4.14-2, Mitigation Measure 4.14-3a,** and **Mitigation Measure 4.14-3b** would reduce all potentially significant construction and operational aesthetic impacts to a less than significant level.

These mitigation measures include the following: maintain clean and orderly construction sites; install site specific nighttime lighting measures; and provide appropriate facility design and screening. Please refer to **Appendix B** for more information concerning applicable mitigation measures.

3.7.2 Impact Analysis

Modifications to the outfall diffuser, installation of underwater brine discharge monitoring equipment, internal WEKO seal replacement, and liner installation would not result in additional aesthetic impacts because these components all involve below-grade infrastructure. These components would involve the same construction equipment, general construction schedule, and methods described in the Final EIR/EIS, all along the same construction corridor for the outfall where the Final EIR/EIS determined that aesthetic impacts during construction would be less than significant. Additionally, all areas disturbed for the Proposed Modifications would be returned to

pre-construction conditions following construction activities. Further, as described in the Final EIR/EIS, temporary views of construction activities for these components would generally be limited by topography and existing vegetation. All aesthetic-related impacts during construction would be temporary and less than significant, and there would be no permanent visual impacts due to the below-grade nature of these improvements. For these reasons, modifications associated with the diffuser, WEKO seals, and protective slip liner would not result in additional or more severe significant impacts beyond those identified in the Final EIR/EIS.

As a result, the following impact analysis focuses on the Proposed Modifications that would involve the construction of new permanent above-ground features that could result in an aesthetic-related impacts: (i) the relocated BMS and (ii) brine storage expansion.

Brine Mixing Structure

The Final EIR/EIS did not identify aesthetic impacts associated with BMS construction or operation because the BMS would not be located in a scenic area visible from public viewpoints. The Proposed Modifications would relocate the BMS from an undeveloped area of the RTP site to developed/disturbed land at the RTP site, located above a portion of the existing outfall. Consistent with the MPWSP, the BMS would remain out of publicly accessible scenic viewpoints. As such, the Proposed Modifications would not result in additional aesthetic impacts at this location beyond those disclosed in the Final EIR/EIS (i.e., less than significant).

Brine Storage

The Proposed Modifications would involve expanding brine storage capacity at the desalination plant site. As described above, the Proposed Modifications would either entail the construction of an additional three-MG brine storage pond (for a total of six MG of storage, including the originally proposed pond) or replacement of the approved brine storage pond with two above-ground brine storage tanks (for a total of six MG of storage), which would be located entirely within the area that already will be disturbed on the desalination plant site due to the construction of the MPWSP.

Option 1: Additional Brine Storage Pond

Construction

Construction of an additional brine storage pond at the desalination plant site would not result in greater aesthetic impacts beyond those identified in the Final EIR/EIS for the MPWSP. The additional brine storage pond would be constructed entirely within the disturbed construction footprint of the MPWSP on the desalination plant site, which was previously evaluated by the Final EIR/EIS. The Final EIR/EIS determined the desalination plant site is not located in a visually sensitive area and that the site has a low aesthetic resource value (see Final EIR/EIS pp. 4.14-30 and 4.14-39

– 40). The site is surrounded by existing infrastructure associated with M1W's RTP and AWPF and ReGen's Monterey Peninsula Landfill to the east, and vegetation along Charles Benson Road to the south. Therefore, views of the site are generally obstructed. Since the additional brine storage pond would be constructed entirely within the MPWSP construction footprint, consistent with the Final EIR/EIS's analysis, this component would not be located in a visually sensitive area and views would generally be obstructed by existing buildings and vegetation during construction. Additionally, the Proposed Modifications would not change the construction methods, equipment, or construction duration from what was evaluated in the Final EIR/EIS. Therefore, the level of temporary aesthetic impacts from use of construction equipment at the site would remain unchanged from what was identified in the Final EIR/EIS (less than significant).

Operation

The addition of a brine storage pond at the desalination plant site would introduce additional permanent above-ground features. However, the introduction of additional infrastructure on the MPWSP desalination site would result in a negligible increase in visual effects when compared to the effects of the MPWSP analyzed in the Final EIR/EIS. Specifically, the additional brine storage pond would be consistent with the type of improvements analyzed as part of the MPWSP, which specifically included construction of an approximately 1.25-acre, three-MG brine storage pond with appurtenances (i.e., pump station, aeration system, and connecting pipelines) that would occupy a total area of approximately 1.5 acres. The additional brine storage pond would be the same size as the approved pond (i.e., three MG and 1.25 acres). The second pond and appurtenances would occupy an additional 1.5 acres located adjacent to the approved pond.

Moreover, as discussed above, the Final EIR/EIS determined the desalination plant site is not located in a visually sensitive area and the site has a low aesthetic resource value (see Final EIR/EIS pp. 4.14-30 and 4.14-39 – 40) and views of the site are generally obstructed. Since the additional brine storage pond would be constructed entirely within the MPWSP's disturbance footprint, consistent with the Final EIR/EIS's analysis, this component would not be located in a visually sensitive area and views would generally be obstructed by existing buildings and vegetation. Because new above-ground components would be within the same location evaluated in the MPWSP and would involve changes that are consistent with the desalination site improvements for the MPWSP, the operation of an additional brine storage pond would not change the level of significance of aesthetic-related impacts beyond what was disclosed in the Final EIR/EIS (i.e., less than significant).

Option 2: Brine Storage Tanks

Construction

Construction of this option would not result in greater aesthetic impacts beyond those identified in the Final EIR/EIS for the MPWSP. This option would be installed

entirely within the construction footprint of the MPWSP on the desalination plant site, which was previously evaluated in the Final EIR/EIS and would reduce the amount of permanent site disturbance by approximately 0.5 acres. The Final EIR/EIS determined the desalination plant site is not located in a visually sensitive area and the site has a low aesthetic resource value (see Final EIR/EIS pp. 4.14-30 and 4.14-39 – 40). The site is surrounded by existing infrastructure associated with M1W's RTP and AWPF and ReGen's Monterey Peninsula Landfill to the east, and vegetation along Charles Benson Road to the south. Therefore, views of the site are generally obstructed. Because the brine storage tanks would be built entirely within the MPWSP construction footprint, this component would not increase potential temporary construction-related impacts. Additionally, the Proposed Modifications would not change the construction methods, equipment, or construction duration from what was evaluated in the Final EIR/EIS. Therefore, the level of temporary aesthetic impacts from use of construction equipment at the site would remain unchanged from what was identified in the Final EIR/EIS (less than significant).

Operation

This option would be consistent with the type of improvements associated with the desalination plant site analyzed as part of the MPWSP (e.g., structures generally ranging from 6,000 to 30,000 sf; 1.25-acre brine storage pond; two 300,000-gallon backwash and filtered water equalization tanks; and 35-ft-tall, 103-ft-diameter treated water storage tanks, etc.). The MPWSP includes two above-ground treated water storage tanks that would be approximately 35 ft tall and 103 ft in diameter, would be constructed of steel or concrete, to provide 3.5 MG of treated water storage. The proposed brine storage tanks would be of similar volume (approximately three MG of storage each) and of similar dimensions (approximately 35 ft tall and 103 ft in diameter) to other infrastructure approved on the site as part of the MPWSP. Additionally, the proposed brine storage tanks would be constructed using materials similar to the treated water storage tanks and colors consistent with those used for other infrastructure at the site.

The brine storage tanks would be located entirely within the desalination plant construction footprint evaluated in the Final EIR/EIS and would reduce the permanent desalination plant footprint by approximately 0.5 acres. The construction of additional above-ground infrastructure in this same area as previously evaluated MPWSP improvements would not introduce above-ground infrastructure into undeveloped areas. Moreover, the new above-ground brine storage tanks would be at the same location as other MPWSP improvements evaluated in the Final EIR/EIS. This option would involve changes that are consistent with other desalination plant site improvements for the MPWSP, which the Final EIR/EIS concluded would not result in substantial adverse aesthetic impacts. Therefore, the operational impacts associated with the brine storage tanks would not change the level of aesthetic-related impacts beyond those disclosed in the Final EIR/EIS (i.e., less than significant).

While the Final EIR/EIS concluded there would be no significant aesthetic impacts related to development at the desalination plant site, thus no mitigation was required to reduce impacts, the Final EIR/EIS nonetheless included recommended mitigation for all above-ground components of the MPWSP to ensure impacts would be minimized. Specifically, the Final EIR/EIS included recommended **Mitigation Measure 4.14-3a** (Facility Design) and **Mitigation Measure 4.14-3b** (Facility Screening). While the Proposed Modifications would not result in additional impacts and mitigation is not necessary to reduce impacts at the desalination plant site, the Proposed Modifications would be designed to remain consistent with the requirements of **Mitigation Measure 4.14-3a** and **Mitigation Measure 4.14-3b**, to the extent feasible, to further reduce impacts. For the reasons described in this section, the Proposed Modifications would not change the level of impacts compared with the impacts identified in the Final EIR/EIS for the MPWSP. Overall, the Proposed Modifications would result in the same level of impacts to aesthetic resources as the MPWSP.

3.7.3 Conclusion

The Proposed Modifications would not result in additional significant impacts or more severe significant impacts to aesthetic resources beyond those identified in the Final EIR/EIS for the MPWSP. The only component of the Proposed Modifications that has the potential to introduce new aesthetic impacts would be the expanded brine storage at the desalination plant site. Expanded brine storage would be located entirely within the disturbed construction footprint of the MPWSP and would be consistent with other improvements at the site that were evaluated as part of the MPWSP and which the Final EIR/EIS concluded would be less than significant. New, above-ground infrastructure would not be introduced into an undeveloped area on the desalination plant site that was not previously evaluated. Further, while mitigation is not required to reduce impacts at the desalination plant site, the Proposed Modifications would be designed to remain consistent with the requirements of **Mitigation Measure 4.14-3a**, to the extent feasible, which would further reduce potential impacts. Further, there are no changed circumstances surrounding the Proposed Modifications or new information of substantial importance that affect the Final EIR/EIS's conclusions. Accordingly, the Proposed Modifications would not result in any additional significant environmental effects or increase the severity of a previously identified significant impact related to aesthetic resources. No additional mitigation measures are necessary.

3.8 CULTURAL AND PALEONTOLOGICAL RESOURCES

3.8.1 Summary of Prior Environmental Analysis

3.8.1.1 Final Environmental Impact Report/Environmental Impact Statement

The Final EIR/EIS evaluated potential cultural and paleontological resource related impacts associated with the MPWSP. **Table 3.8-1** summarizes the impacts associated with the MPWSP and identifies the Final EIR/EIS's significance determination for each impact category. The following analysis specifically evaluates

whether the Proposed Modifications would result in any new significant impacts or would substantially increase the severity of a previously identified significant impact related to cultural and paleontological resources.

Table 3.8-1
Cultural and Paleontological Resources Impacts Analyzed in the MPWSP Final Environmental Impact Report/Environmental Impact Statement

Impacts	Significance Determinations
Impact 4.15-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5 during construction.	NI
Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.	**LSM**
Impact 4.15-3: Directly or indirectly destroy a unique paleontological resource or site, or unique geological feature during construction.	LS
Impact 4.15-4: Disturbance of any human remains, including those interred outside of formal cemeteries, during construction.	**LSM**
Impact 4.15-C: Cumulative impacts related to cultural and paleontological resources.	LS

NOTES:
NI = No Impact
LS = Less than Significant impact, no mitigation required
LSM = Less than Significant impact with Mitigation
Bold = potentially significant impacts identified in connection with activities associated with outfall modifications
Source: Final EIR/EIS, Table 4.15-4 Summary of Impacts – Cultural and Paleontological Resources

The Final EIR/EIS concluded that the MPWSP could result in potentially significant impacts to cultural and paleontological resources due to potential disturbance of an unknown cultural resource or unknown human remains during MPWSP construction of the Castroville Pipeline at Tembladero Slough and the Source Water Pipeline at the CEMEX site (Impacts 4.15-2 and 4.15-4). The Final EIR/EIS determined implementation of mitigation could reduce these potentially significant impacts to less than significant levels. Specifically, the Final EIR/EIS identified **Mitigation Measure 4.15-2b** and **Mitigation Measure 4.15-4** to establish protocols for inadvertent discovery of cultural resources and human remains. The Final EIR/EIS determined that no impacts to cultural or paleontological resources would occur in connection with any other MPWSP components because no archaeological resources eligible for listing in the California Register or the National Register are located within the APE for all other MPWSP components. Please refer to **Appendix B** for more information concerning applicable mitigation measures.

3.8.2 Impact Analysis

The Proposed Modifications would involve additional temporary ground disturbance beyond what was evaluated for the MPWSP during excavation and backfill of access and grouting pits to install protective lining along the onshore outfall. All other components of the Proposed Modifications would occur within the construction footprint for the MPWSP previously evaluated in the Final EIR/EIS. Therefore, the following discussion focuses only on installing slip lining, which could result in additional impacts

to cultural resources during installation activities. No impacts would occur in association with operation of the protective slip liner.

Onshore Outfall Protective Slip Liner

The Final EIR/EIS did not identify cultural resource impacts related to slip liner installation; however, the Final EIR/EIS identified potentially significant impacts from MPWSP pipeline construction at the CEMEX site, due to the potential presence of cultural resources on the property. The Proposed Modifications would involve the addition of three grouting pits and additional temporary work area around one access pit located on the CEMEX site. This would involve approximately 0.6 acre of additional surface-level temporary ground disturbance at the CEMEX site for construction access, staging, and stockpiling and approximately 392 sf (0.009 acre) of additional earthmoving activities at this location. This represents a negligible increase compared to what was considered for the MPWSP and would occur entirely within the APE for the MPWSP in areas that would be disturbed during construction of MPWSP components at the CEMEX site. Further, the additional 0.009 acre of earthmoving would occur within the existing outfall utility easement, which was previously evaluated in the Final EIR/EIS. The entire outfall alignment was also previously disturbed in connection with construction of the outfall in the 1980s; therefore, it is unlikely any unknown cultural resources would be discovered during installation of the liner. Excavation of the additional access pit and grouting pits would occur directly above the outfall in areas previously excavated and would not involve excavation below the depth previously excavated for outfall installation. Therefore, no additional impacts are expected to occur as a result of slip liner installation. Nonetheless, the Proposed Modifications must comply with applicable mitigation measures identified in the MPWSP EIR/EIS – specifically **Mitigation Measure 4.15-2b** and **Mitigation Measure 4.15-4**, which would ensure impacts remain less than significant by immediately halting work in the vicinity of any discovered cultural resources if cultural resources or human remains are inadvertently discovered during excavations. Overall, the Proposed Modifications would result in the same level of impacts to cultural and paleontological resources as the MPWSP.

3.8.3 Conclusion

The Proposed Modifications would not result in additional significant impacts or more severe significant impacts to cultural resources beyond those identified in the Final EIR/EIS for the MPWSP. Construction activities would primarily be within previously disturbed areas or within the MPWSP construction footprint. Additional ground disturbance extending outside of the MPWSP footprint at CEMEX, where the Final EIR/EIS identified potential impacts to cultural resources would be minimal (i.e., an additional 0.6 acre of temporary surface-level ground disturbance and 0.009 acre of temporary earthmoving) and would be within previously disturbed areas along the outfall alignment where excavation already occurred to install the outfall in the 1980s. Additionally, the Proposed Modifications must comply with mitigation identified in the Final EIR/EIS, including **Mitigation Measure 4.15-2b** and **Mitigation Measure 4.15-4**,

to ensure potential impacts remain less than significant. Further, there are no changed circumstances surrounding the Proposed Modifications, or new information of substantial importance that affect the Final EIR/EIS's conclusions. Accordingly, the Proposed Modifications would not result in any additional significant environmental effects or increase the severity of a previously identified significant impact related to cultural resources. No additional mitigation measures are necessary.

3.9 AGRICULTURAL RESOURCES

3.9.1 Summary of Prior Environmental Analysis

3.9.1.1 Final Environmental Impact Report/Environmental Impact Statement

The Final EIR/EIS evaluated potential agricultural resource related impacts associated with the MPWSP. **Table 3.9-1** summarizes the impacts associated with the MPWSP and identifies the Final EIR/EIS's significance determination for each impact category. The following analysis specifically evaluates whether the Proposed Modifications would result in any new significant impacts or would substantially increase the severity of a previously identified significant impact related to agricultural resources.

Table 3.9-1
Agricultural Resources Impacts Analyzed in the MPWSP Final Environmental Impact Report/Environmental Impact Statement

Impacts	Significance Determinations
Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use.	**LSM**
Impact 4.16-2: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.	LS
Impact 4.16-3: Conflict with zoning for agricultural uses or with Williamson Act contracts.	LS
Impact 4.16-C: Cumulative impacts related to agricultural resources.	LSM

NOTES:
LS = Less than Significant impact, no mitigation required
LSM = Less than Significant impact with Mitigation
Bold = potentially significant impacts identified in connection with activities associated with outfall modifications
Source: Final EIR/EIS, Table 4.16-3 Summary of Impacts – Agricultural Resources

The Final EIR/EIS concluded that the MPWSP could result in potentially significant impacts to agricultural resources resulting from disruption of agricultural activities during construction and from permanent conversion of farmland to non-agricultural use (Impact 4.16-1). The Final EIR/EIS also identified a potentially significant cumulative impact related to temporary disruption of agricultural productivity during construction. However, the Final EIR/EIS concluded that implementation of **Mitigation Measure 4.16-1** (Minimize Disturbance to Farmland) would reduce all potentially significant impacts of the MPWSP to a less than significant level. Please refer to **Appendix B** for more information concerning mitigation measures.

The Final EIR/EIS analyzed potential impacts specifically associated with modifications to the M1W outfall. The Final EIR/EIS determined excavation of access pits to install protective lining would result in temporary impacts to agricultural land; however, work would be coordinated with landowners and timed to minimize impacts. Additionally, landowners would be reimbursed for costs related to lost production during construction and disturbed agricultural land would be restored to allow for a return to agricultural production following the temporary construction activities associated with liner installation. Therefore, the Final EIR/EIS concluded impacts associated with outfall modifications would be less than significant with mitigation.

3.9.2 Impact Analysis

Consistent with the MPWSP, the Proposed Modifications would involve temporary disturbance to agricultural land for excavation and backfill of access and grouting pits during installation of protective lining along the onshore outfall. All other components of the Proposed Modifications would be located outside of active agricultural land and would not directly or indirectly impact agricultural activities.

Therefore, the following discussion focuses only on the installation of the slip liner, as the component of the Proposed Modifications that could result in additional impacts to agricultural resources during installation activities. No operational impacts would occur in association with the protective slip liner.

Onshore Outfall Protective Slip Liner

The installation of the slip liner would require excavating four (4) additional access pits beyond what was analyzed in the Final EIR/EIS. Additionally, installing the slip liner would involve excavating 11 grouting pits. These activities would result in approximately 2.8 acres of additional construction access, staging, and stockpiling, 1.2 acres of which would occur in agricultural land. This additional disturbance would be associated with temporary construction access, staging, and stockpiling. Additionally, the Proposed Modifications would involve approximately 0.04 acre of additional earthmoving in agricultural land to excavate additional access pits and grouting pits.

This increase in temporary construction-related impacts to agricultural land would not change the level of significance of impacts identified in the Final EIR/EIS for the MPWSP because (i) these impacts would occur along the outfall alignment and along existing agricultural access roads wherever feasible to reduce potential impacts to crop production during construction and (ii) the additional earthmoving activities for pit excavations would occur within the existing outfall easement, which was previously evaluated for the MPWSP. Additionally, consistent with the MPWSP analyzed in the Final EIR/EIS, all impacts would be temporary. Disturbed agricultural land would be restored following construction activities, and landowners would be compensated appropriately for the cost of lost production during construction. Further, as described in the Final EIR/EIS, work in agricultural land would be coordinated with landowners to minimize impacts. Lastly, the Proposed Modifications would be required to comply with

Mitigation Measure 4.16-1, which requires CalAm and their construction contractor(s) to implement project-specific construction measures to minimize disturbance to farmland. Implementation of this mitigation would ensure any additional impacts to agricultural land from the expanded work areas would be less than significant by notifying property owners prior to commencing construction; minimizing the extent of disturbance in farmland to the extent feasible; and ensuring excavated soils are returned to their pre-construction or near-pre-construction soil profile, level of compaction, and soil density. Therefore, the Proposed Modifications would not change the level of impacts compared with the impacts identified for the MPWSP in the Final EIR/EIS (less than significant with mitigation). For more information, please refer to **Appendix A.**

3.9.3 Conclusion

The Proposed Modifications would not result in additional significant impacts or substantially more severe significant impacts to agricultural resources beyond those identified in the Final EIR/EIS for the MPWSP. The Proposed Modifications would result in approximately one acre of additional temporary ground disturbance within agricultural land, which would be a minor increase in impacts compared to what was identified in the Final EIR/EIS. Consistent with the MPWSP, these impacts would be temporary and work would be coordinated with landowners prior to construction to minimize impacts. Additionally, landowners would be compensated for any disruption to agricultural productivity during construction, and disturbed land would be restored to pre-construction conditions following the completion of temporary construction activities. Further, the Proposed Modifications must comply with applicable mitigation identified in the Final EIR/EIS, including **Mitigation Measure 4.16-1**, to ensure potential impacts would be less than significant by minimizing disturbance to farmland to the extent feasible. Moreover, there are no changed circumstances surrounding the Proposed Modifications or new information of substantial importance that affect the Final EIR/EIS's conclusions. Accordingly, the Proposed Modifications would not result in any additional significant environmental effects or increase the severity of a previously identified significant impact related to agricultural resources. No additional mitigation measures are necessary.

4.0 DETERMINATION AND ADDENDUM CONCLUSION

As detailed in the analysis presented above, the Central Coast Water Board, as a CEQA Responsible Agency, prepared this Addendum to evaluate the Proposed Modifications. The analysis supports the conclusion that the Proposed Modifications would not result in any new significant environmental effects or a substantial increase in the severity of previously identified environmental effects that were analyzed and disclosed in the Final EIR/EIS for the MWPSP. The analysis demonstrates that there is no new information that shows the Proposed Modifications would result in new significant or more severe effects or that new or previously infeasible mitigation measures are now feasible and would substantially reduce significant effects.

Specifically, the Central Coast Water Board has determined, based on substantial evidence considering the whole record, that none of the following circumstances exist regarding the Proposed Modifications and the previously certified Final EIR/EIS:

- Substantial changes proposed in the project which would require major revisions of the Final EIR/EIS due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects (CEQA Guidelines, § 15162, subd. (a)(1)).
- Substantial changes that would occur with respect to the circumstances under which CalAm and M1W undertake the Proposed Modifications, which would require major revisions of the Final EIR/EIS due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects (CEQA Guidelines, § 15162, subd. (a)(2)).
- New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time of certification of the Final EIR/EIS by the CPUC (CEQA Guidelines, § 15162, subd. (a)(3)).

Given that none of the conditions described in State CEQA Guidelines § 15162 have occurred, and only minor changes or additions to the previously certified Final EIR/EIS are necessary, the Central Coast Water Board has determined that no subsequent or supplemental EIR is necessary, and, consistent with State CEQA Guidelines § 15164, an Addendum is the appropriate State CEQA document to evaluate the potential effects associated with the Proposed Modifications.

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5.0 ADDENDUM PREPARATION AND RESOURCES

5.1 ADDENDUM PREPARERS

CDM Smith, Inc.
Tom Visosky, PE, Senior Vice President
Kristin Tirado, PE, Senior Project Manager
Tyler Marriott, Project Manager

Central Coast Regional Water Quality Control Board
Harvey Packard, Manager (Retired)
Tamara Anderson, Supervising Water Resource Control Engineer
Arwen Wyatt-Mair, Senior Water Resource Control Engineer
Mark Lemus, Water Resource Control Engineer

Denise Duffy and Associates, Inc.
Denise Duffy, Principal
Tyler Potter, J.D., AICP, Project Director
Oliviya Wyse, Project Manager
Conor O'Toole, Deputy Project Manager/Air Quality Specialist
Leianne Humble, Senior Planner
Mikaela Bogdan, Associate Planner

AECOM
Jeff Thomas, Senior Manager
Rosemary Laird, Senior Biologist

Applied Marine Sciences
Aroon Melwani, Applied Marine Sciences
Theresa Venello, formerly with Applied Marine Sciences

Other Environmental Consultants
Eric Zigas, formerly with Environmental Science Associates

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Appendix A

Proposed Modifications Summary of Environmental Impacts

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Monterey Peninsula Water Supply Project ("MPWSP") – Monterey One Water ("M1W") Outfall-Related Improvements
Summary of Impacts Comparison Chart

Impact	MPWSP	Proposed Modifications	Notes
Section 4.2: Geology, Soils, and Seismicity			
Impact 4.2-1: Substantial soil erosion or loss of topsoil during construction.	**LSM**	**LSM =**	The Proposed Modifications would occur in the same general area and construction footprint previously evaluated in the Final EIR/EIS and would involve the same general construction methods, materials, equipment, and schedule. Consistent with the Final EIR/EIS, the Proposed Modifications would implement a Stormwater Pollution Prevention Plan ("SWPPP") and project-specific construction best management practices ("BMPs") to minimize erosion-related impacts. Further, the Proposed Modifications must comply with mitigation measures identified in the Final EIR/EIS, which would ensure impacts do not exceed those identified in the Final EIR/EIS. Operation of the Proposed Modifications would not involve changes that could result in impacts related to geology, soils, and seismicity. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified by the Proposed Modifications, would remain unchanged.
Impact 4.2-2: Exposure of people or structures to substantial adverse effects related to fault rupture.	**LS**	**LS =**	
Impact 4.2-3: Exposure of people or structures to substantial adverse effects related to seismically induced ground shaking.	**LS**	**LS =**	
Impact 4.2-4: Exposure of people or structures to substantial adverse effects related to seismically induced ground failure, including liquefaction, lateral spreading, or settlement.	**LS**	**LS =**	
Impact 4.2-5: Exposure of people or structures to substantial adverse effects related to landslides or other slope failures.	**LS**	**LS =**	
Impact 4.2-6: Exposure of people or structures to substantial adverse effects related to expansive soils.	**LS**	**LS =**	
Impact 4.2-7: Exposure of structures to substantial adverse effects related to corrosive soils.	**LS**	**LS =**	
Impact 4.2-8: Exposure of people or structures to substantial adverse effects related to land subsidence.	**NI**	**NI =**	
Impact 4.2-9: Exposure of people or structures to substantial adverse effects related to alternative wastewater disposal systems.	**LS**	**LS =**	
Impact 4.2-10: Accelerate and exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment.	**LSM**	**LS =**	

Impact 4.2-C: Cumulative impacts related to Geology, Soils, and Seismicity.	**LSM**	**LSM** **=**	
Section 4.3: Surface Water Hydrology and Water Quality			
Impact 4.3-1: Degradation of water quality associated with increased soil erosion and inadvertent releases of hazardous chemicals during general construction activities.	**LS**	**LS** **=**	The Proposed Modifications would involve temporary impacts to marine water quality during implementation of the diffuser modifications and the Brine Discharge Monitoring Program ("BDMP"). Impacts would be consistent with those identified in the Final EIR/EIS (i.e., temporary impacts from short-term increases in turbidity that would occur over several hours to up to one or two days when work is conducted). The Final EIR/EIS concluded these impacts would be less than significant and would not require mitigation to reduce impacts. The installation of protective slip lining in the onshore outfall and expansion of brine storage at the desalination plant site would result in temporary erosion-related water quality impacts during construction. However, all temporary construction-related effects associated with the slip liner would be negligible and temporary construction impacts from expanding brine storage would occur in areas that already will be disturbed in connection with construction of the desalination plant. In other words, the additional brine storage options would be constructed entirely within the existing construction footprint previously evaluated in the Final EIR/EIS. As a result, the Proposed Modifications would not change the overall desalination plant construction footprint. Offshore Outfall Diffuser Modifications: The Proposed Modifications would include retrofitting the diffuser with inclined ports and modifying the end gate, consistent with the diffuser modifications considered and analyzed in the Final EIR/EIS. However, the Proposed Modifications would involve opening 29 additional diffuser ports (for a total of 158 diffuser ports) compared to 129 total diffuser ports proposed in the Final EIR/EIS. Additionally, the Proposed Modifications would include fitting the end gate with a neoprene seal, as opposed to replacing the entire end gate as contemplated in the Final EIR/EIS. These Proposed Modifications would not substantially increase the level of impacts identified in the Final EIR/EIS because construction activities would remain consistent with those described in the Final EIR/EIS. The Proposed Modifications would not require construction of new structures on the existing outfall or on the seafloor, and all impacts would be temporary, consistent with the Final EIR/EIS's analysis. In addition, any construction-related disturbance to water quality would involve short-term increases in turbidity that would occur over several hours to one (1) or two (2) days when work is conducted.

			Moreover, the installation of the Proposed Modifications is consistent with M1W's existing outfall maintenance activities (i.e., replacing degraded or corroded hardware, flushing the outfall to unclog sediment from the diffuser ports, and conducting video surveillance and leak detection testing). These existing maintenance activities require temporary, localized disturbance by divers around the diffuser, similar to what would occur during the opening of additional ports and end gate installation under the Proposed Modifications (AMS, 2025). Because the Proposed Modifications would generally involve the same improvements to the diffuser identified in the Final EIR/EIS, would require the same construction activities as the MPWSP studied in the Final EIR/EIS, and would be consistent with M1W's current outfall maintenance activities, construction-related water quality impacts would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, impacts would remain unchanged. Brine Discharge Monitoring Program: Similar to the diffuser modifications, installing monitoring equipment would cause localized temporary increases in turbidity from sea floor disturbance associated with installing each CTD sonde anchor and the environmental data buoy anchor. The total footprint on the sea floor associated with the nine (9) CTD anchors would be 11.125 sf, and the footprint of the single data buoy anchor would be 5.0 sf. These areas represent a small fraction of the total sea floor area of the MBNMS; therefore, the localized water quality impacts associated with higher turbidity while installing anchors to the sea floor would be negligible compared to existing background conditions. These impacts would also be consistent with the impacts associated with installing the outfall diffuser modifications and those identified in the Final EIR/EIS for potential outfall modifications (i.e., localized temporary, short-term increases in turbidity that would last for several hours to up to one or two days at the time when the work is conducted). As a result, potential temporary impacts associated with the installation of monitoring equipment would not exceed the level of impacts previously identified in the Final EIR/EIS related to offshore construction activities. Onshore Outfall Protective Slip Liner: Compared to what was analyzed in the Final EIR/EIS, installation of the slip liner would involve temporary excavation of four (4) additional access pits and 11 new grouting pits along the approximately 13,000-foot onshore segment of the outfall. This would result in approximately 0.08

			acres of additional earthmoving and 2.85 acres of additional temporary construction access, staging, and stockpiling. The increase of 0.08 acres of earthmoving would be a negligible increase in overall ground disturbance associated with the MPWSP. Consistent with the Final EIR/EIS's evaluation, all construction-related impacts would be temporary; excavated soils would be replaced to pre-construction or near pre-construction conditions following liner installation. Further, all ground-disturbing construction activities must comply with the requirements of a SWPPP prepared for the MPWSP, ensuring impacts remain less than significant. For these reasons, liner installation would not result in new or more severe impacts compared to those identified in the Final EIR/EIS. As a result, impacts would remain unchanged. Brine Storage: Expanding brine storage capacity at the desalination plant site would involve either constructing an additional brine storage pond ("Option 1") or constructing two (2) storage tanks and an overflow pond in lieu of the single brine storage pond described in the Final EIR/EIS ("Option 2"). Option 1 would increase the overall permanent facility footprint at the desalination plant site by approximately 0.24 acres beyond the approximately 15 acres of permanent impacts identified in the Final EIR/EIS. Option 1 would require an additional 7,542 CY of grading. However, all grading would occur entirely within the existing MPWSP construction footprint identified in the Final EIR/EIS; therefore, additional ground disturbing activities would not increase the previously evaluated construction footprint. Construction of an additional brine storage pond must also comply with the SWPPP for the MPWSP to avoid or minimize impacts. Implementation of the SWPPP would ensure the Proposed Modifications implement project-specific BMPs and other standard construction measures to reduce and monitor erosion-related sedimentation as well as prevent spills. These requirements would avoid or minimize construction-related impacts such that the level of impacts would remain unchanged from those analyzed in the Final EIR/EIS (less than significant). Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. Therefore, impacts associated with this option would remain the same as what was identified in the Final EIR/EIS. Option 2 for expanding brine storage would reduce permanent impacts at the desalination plant site by approximately 0.5 acres. Similar to Option 1, this brine storage option would be constructed entirely within the existing temporary construction footprint

			evaluated in the Final EIR/EIS. Therefore, grading activities would not result in additional ground disturbance beyond the area evaluated in the Final EIR/EIS. Additionally, as discussed above, consistent with the MPWSP, construction of this option must comply with the SWPPP for the MPWSP to avoid or minimize construction-related impacts. Compliance with the SWPPP requirements would ensure that the level of potential impacts would remain unchanged. For these reasons, this option would not result in new or more severe impacts compared to those identified in the Final EIR/EIS. As a result, impacts would remain unchanged from what was identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
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.	**LSM**	**LSM** **=**	Not applicable to the Proposed Modifications. The Proposed Modifications do not involve well drilling. The Proposed Modifications also do not include discharges of dewatering effluent from open excavations during construction.
Impact 4.3-3: Degradation of water quality from discharges of treated water and disinfectant from existing and newly installed pipelines during construction.	**LS**	**LS** **=**	Not applicable to the Proposed Modifications. No components of the Proposed Modifications involve discharging treated water and disinfectant from existing or newly installed pipelines during construction.
Impact 4.3-4: Violate water quality standards or waste discharge requirements or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant.	**LSM**	**LSM** **=**	Consistent with the Final EIR/EIS's analysis, MPWSP brine commingled with secondary treated wastewater from the M1W Regional Treatment Plant ("RTP") and reverse osmosis concentrate ("ROC") from the Advanced Water Purification Facility ("AWPF") would be discharged through the existing M1W outfall after implementation of the Proposed Modifications. The Final EIR/EIS identified that diffuser modifications would be necessary to ensure that commingled discharge complies with the California Ocean Plan. Specifically, the Final EIR/EIS identified Mitigation Measure 4.3-5, which included modifying the diffuser and end gate. The Final EIR/EIS also identified Mitigation Measure 4.3-4 to further ensure compliance with the Ocean Plan through long-term water quality monitoring of receiving waters. Mitigation Measure 4.3-4 requires CalAm to implement a Brine Discharge Monitoring Program to assess effluent and receiving water salinity and benthic community composition in the ZID and BMZ to monitor MPWSP compliance with the Ocean Plan during operations.
Impact 4.3-5: Violate water quality standards or waste discharge requirements or degrade water quality as a result of brine discharge from the operation of the MPWSP Desalination Plant.	**LSM**	**LSM** **=**	

			Offshore Outfall Diffuser Modifications: The Proposed Modifications are consistent with the modifications described in the Final EIR/EIS, except the Proposed Modifications would open 29 additional ports for a total of 158 diffuser ports (compared to 129 total ports as described in the Final EIR/EIS) and retrofit the end gate with a seal (as opposed to removing it entirely). Consistent with the Final EIR/EIS's analysis, the Proposed Modifications would change flow velocity of discharges through the outfall and consequently affect dilution at the discharge site. These modifications are necessary for achieving compliance with applicable Ocean Plan water quality objectives. Extensive dilution and compliance modeling identified the Proposed Modifications as the optimal diffuser design configuration to adequately dilute brine discharge to remain compliant with the California Ocean Plan and NPDES permitting requirements during MPWSP operations (Trussell, 2025; Roberts, 2025; Larry Walker Associates ["LWA"], 2025). The updated modeling conducted by Trussell, Roberts, and LWA demonstrates that these changes to the diffuser and end gate will result in adequate dilution of brine discharge – for both dense and buoyant plumes – to remain compliant with the California Ocean Plan and NPDES permitting requirements during MPWSP operations. After implementation, the peak salinity increase beyond ambient conditions at the edge of the ZID would be 0.40 ppt, below the incremental increase of 1.6 ppt identified in the Final EIR/EIS. Since the salinity increment associated with the Proposed Modifications would be below 0.40 ppt by the time the discharge plume reaches the seafloor, salinity would never approach the 2.0-ppt Ocean Plan salinity threshold at the edge of the BMZ. These results are consistent with the Final EIR/EIS's conclusion that the discharge plume would be below the Ocean Plan's 2.0-ppt salinity threshold when contacting the seafloor at the edge of the BMZ, under all discharge scenarios. Additionally, the Proposed Modifications would reduce the volume of water where salinity increases beyond the Ocean Plan's 2.0-ppt salinity threshold from 8.5 cubic feet around each diffuser port, as identified in the Final EIR/EIS, to four (4) cubic feet around each diffuser port. The Proposed Modifications would also reduce the area of the ZID affected by elevated constituent concentrations in the discharge from 228 sf (0.99% of the total ZID area) identified in the Final EIR/EIS to 210 sf, or 0.70% of the total ZID area. Because the Proposed Modifications are consistent with the mitigation identified in the Final EIR/EIS and have been shown to increase the dilution of discharges from the diffuser compared to what was analyzed in

			the Final EIR/EIS, the Proposed Modifications would result in the same level of operational impacts identified in the Final EIR/EIS. Brine Discharge Monitoring Program: Operation of the monitoring equipment could result in very minor, temporary turbidity increases consistent with the short-term, small-scale turbidity increases described above under Impact 4.3-1, in association with installation activities, and in the Final EIR/EIS as they relate to offshore work. Operational turbidity increases would occur from (i) quarterly maintenance of the nine CTD sondes and (ii) movement of the data buoy anchor chain along the sea floor. The area of benthic disturbance from retrieval and redeployment of the nine (9) CTD sondes as part of quarterly retrieval is expected to remain below a total of 45 sf – representing disturbance of only 0.00000003 percent of the MBNMS annually. The area of periodic, temporary disturbance caused by the sweeping of the environmental data buoy anchor chain along the sea floor would be 3,380 sf – the equivalent of 0.000002 percent of the MBNMS over the duration of the monitoring activities (AMS, 2026). This level of disturbance associated with operation is negligible. Further, the CTD sondes and environmental data buoy are designed to minimize physical disturbance during operation. Specifically, the nine (9) CTD sondes use custom retrievable anchors with a relatively small static benthic footprint (approximately 1.5 sf) so periodic retrieval of the sondes would result in minimal sea floor disturbance. Similarly, maintenance of the environmental data buoy would involve the use of a temporary float during servicing to keep the mooring line at the surface, thus minimizing sediment disturbance from contact of the mooring line with the sea floor (AMS, 2026). For the reasons described above, brine discharge monitoring would not result in new or more severe impacts compared to those identified in the Final EIR/EIS. As a result, impacts would remain unchanged. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified by the Proposed Modifications, would remain unchanged.
Impact 4.3-6: Degradation of water quality due to discharges associated with maintenance of the subsurface slant wells and the ASR -5 and ASR-6 Wells.	**LS**	**LS** **=**	Not applicable to the Proposed Modifications.
Impact 4.3-7: Alteration of drainage patterns such that there is a resultant	**LS**	**LS** **=**	Construction activities associated with the Proposed Modifications would not result in alterations to drainage patterns that could result

increase in erosion, siltation, or the rate or amount of surface runoff.			in additional erosion, siltation, or increased runoff. Erosion-related impacts during construction that could potentially result from additional earthmoving and are discussed separately under Impact Discussion 4.3-1, above. The following discussion focuses on permanent impacts to drainage patterns associated with the Proposed Modifications. The Proposed Modifications would require additional permanent impervious surfaces at the desalination plant site to increase brine storage capacity. The additional impervious cover could contribute to altered drainage patterns at the site; however, these impacts would remain entirely within the existing construction footprint evaluated for the MPWSP in the Final EIR/EIS. Therefore, construction impacts would not extend into areas beyond those previously evaluated in the Final EIR/EIS. Additionally, construction of the expanded brine storage would be consistent with the construction of other improvements at the desalination plant site included as part of the MPWSP (i.e., brine storage pond, water storage tanks). <u>Brine Storage</u>: Option 1 for expanding brine storage would increase permanent impacts associated with the desalination plant by 0.24 acres beyond the 15-acre permanent footprint identified in the Final EIR/EIS. While the addition of 0.24 acres of permanent impacts due to the Proposed Modifications could contribute to altered drainage patterns at the desalination plant site, these impacts would remain entirely within the existing 25-acre temporary construction footprint that the Final EIR/EIS evaluated for the MPWSP. As a result, impacts would not extend into previously undisturbed areas. This option would not substantially increase impervious surface beyond what was considered in the Final EIR/EIS or modify drainage patterns in such a way that would noticeably increase runoff when compared to the MPWSP evaluated in the Final EIR/EIS. Moreover, consistent with the MPWSP evaluated in the Final EIR/EIS, this component of the Proposed Modifications would be required to comply with the RWQCB's most recent post-construction stormwater control requirements, which are enforced by local jurisdictions in accordance with the Monterey Regional Stormwater Management Program and the NDPES Municipal Stormwater Permit. These requirements include, but are not limited to, implementing site design measures to reduce runoff generation by reducing impervious surfaces and preserving natural drainage patterns; implementing BMPs for managing stormwater; and
Impact 4.3-8: Alteration of drainage patterns such that there is an increase in flooding on- or offsite or the project exceeds the capacity of the stormwater drainage system.	**LS**	**LS** **=**	

			preparing and implementing a stormwater control or a post-construction stormwater management plan. Compliance with these requirements would ensure impacts would remain within the level of significance that was identified in the Final EIR/EIS. Therefore, operational impacts to surface water quality and hydrology from the addition of a brine storage pond would remain unchanged from those disclosed in the Final EIR/EIS (less than significant). Option 2 for expanding brine storage would occupy a smaller surface area compared to the development on the desalination plant site evaluated in the Final EIR/EIS. As described above, the Final EIR/EIS conservatively evaluated a larger permanent facility footprint consisting of 15 acres to allow for flexibility in the MPWSP's final design. The final desalination plant design would reduce the facility's permanent footprint by approximately 1.7 acres. The addition of two brine storage tanks and an overflow pond to the final design would result in a permanent facility footprint of approximately 14.5 acres, which would result in a net reduction of permanent impacts (compared to the findings contained in the Final EIR/EIS) by approximately 0.5 acres. Since this option would reduce permanent impacts compared to the MPWSP, this option would not result in an increase in impermeable surfaces. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.3-9: Impedance or redirection of flood flows due to the siting of project facilities in a 100-year flood hazard area.	**LS**	**LS** **=**	The Proposed Modifications involve modifications to existing infrastructure and changes to MPWSP components located within the previously evaluated MPWSP footprint. As such, the Proposed Modifications would not result in impacts related to flooding or inundation as a result of project siting. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.3-10: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to a tsunami.	**LS**	**LS** **=**	
Impact 4.3-11: Exposure of people or structures to a significant risk of loss, injury, or death from flooding due to sea level rise.	**LS**	**LS** **=**	
Impact 4.3-C: Cumulative impacts related to Surface Water Hydrology and Water Quality.	**LSM**	**LSM** **=**	See Impacts 4.3-1 – 4.3-11, above. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed

			Modifications that would affect hydrology or water quality involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.4: Groundwater Resources			
Impact 4.4-1: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during construction.	**NI**	**NI** **=**	The Proposed Modifications would not involve changes to MPWSP construction or operation in a manner that could impact groundwater quality or groundwater availability. With the Proposed Modifications, the MPWSP would be in the same groundwater basin (the Salinas Valley Groundwater Basin ["SVGB"]) evaluated in the Final EIR/EIS and would involve the same construction methods, materials, equipment, and schedule that the Final EIR/EIS previously considered. Consistent with the Final EIR/EIS's analysis, the Proposed Modifications would not require groundwater extraction from the SVGB for construction. As such, construction of the Proposed Modifications would not result in any additional groundwater-related impacts. The Proposed Modifications would also not involve changes to MPWSP operations that could impact groundwater quality or groundwater availability. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.4-2: Violate any groundwater quality standards or otherwise degrade groundwater quality during construction.	**LS**	**LS** **=**	
Impact 4.4-3: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations so as to expose well screens and pumps.	**LS**	**LS** **=**	
Impact 4.4-4: Violate any groundwater quality standards or otherwise degrade groundwater quality during operations.	**LSM**	**LSM** **=**	
Impact 4.4-C: Cumulative impacts related to Groundwater Resources.	**LS**	**LS** **=**	
Section 4.5: Marine Biological Resources			
Impact 4.5-1: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans	**LS**	**LS** **=**	The Proposed Modifications involve offshore modifications to the ocean outfall diffuser and implementation of the BDMP that could impact marine biological resources. All other components of the Proposed Modifications would be outside of the marine environment and would not impact marine biological resources. As a result, the following analysis only evaluates Proposed Modifications related to changes to M1W's ocean outfall and implementation of the BDMP that have the potential to affect marine resources.

(including protected wetlands or waters, critical habitat, essential fish habitat (EFH); or as identified by the CDFW, USFWS, and NMFS during construction.			Offshore Outfall Diffuser Modifications: The Proposed Modifications' changes to the outfall diffuser and end gate are generally consistent with the outfall improvements that were described as part of Mitigation Measure 4.3-5 in the Final EIR/EIS but would increase the number of open diffuser ports by 29 (for a total of 158 open diffuser ports along the outfall) as compared to 129 total ports described in the Final EIR/EIS. Additionally, the Proposed Modifications would fit the end gate with a neoprene seal (as opposed to replacing it entirely as described in the Final EIR/EIS). Consistent with the impacts described in the Final EIR/EIS, implementation of these Proposed Modifications would temporarily increase turbidity and disturb benthic communities immediately surrounding the diffuser and end gate. Increasing the number of open ports on the outfall diffuser by 29 and fitting the end gate with a neoprene seal do not alter the MPWSP construction footprint evaluated in the Final EIR/EIS. Divers would still need to access the diffuser and end gate by boat, temporarily remove the end gate to remove sediment, drill holes into existing anchor bolts on the diffuser, then bolt the new ports in place and re-install the end gate. These activities would cause temporary seabed disturbance and higher turbidity for a limited duration, as described in the Final EIR/EIS (p. 4.3-109). Additionally, implementation of the Proposed Modifications would be consistent with existing outfall maintenance activities performed by M1W (i.e., replacing degraded or corroded hardware, flushing the outfall to unclog sediment from the diffuser ports, and conducting video surveillance and leak detection testing), which involve temporary, localized disturbance by divers around the diffuser (AMS, 2025). Further, no sensitive species which could be impacted by construction activities are known to be present near the diffuser, and BMPs would be implemented during construction activities to further minimize potential impacts to marine organisms (AMS, 2025). Because construction activities for the diffuser modifications would be consistent with those activities described in the Final EIR/EIS, including existing outfall maintenance activities performed by M1W, construction impacts associated with the Proposed Modifications would result in substantially the same level of impacts as those identified in the Final EIR/EIS. Brine Discharge Monitoring Program: Installing monitoring equipment would involve placing nine (9) anchors on the sea floor for each of the CTD sondes and one (1) anchor for the
Impact 4.5-2: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during construction.	**LS**	**LS** **=**	
Impact 4.5-3: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors or impede the use of native marine wildlife nursery sites during construction.	**LS**	**LS** **=**	

			environmental data buoy. This would cause localized temporary disturbance to benthic communities, consistent with the impacts from offshore work around the diffuser that were identified in the Final EIR/EIS. The Final EIR/EIS determined that offshore construction activities would result in “minor disturbance over a small area” (see Final EIR/EIS, p. 4.3-109). The Final EIR/EIS also concluded that disturbance to benthic communities would be “short in duration and of low intensity and benthic communities would likely recover to baseline conditions” (ibid.). Consistent with the Final EIR/EIS’ analysis, impacts from installing monitoring equipment would be minor, temporary, and would not impact marine species or habitat such that new or more severe impact would occur. As described above (see Impact 4.3-1), the nine (9) CTD anchors would have a total footprint on the sea floor of 11.125 sf, and the footprint of the single data buoy anchor would be 5.0 sf. These areas represent a very small fraction (approximately 0.00000003 percent) of the total sea floor area of the MBNMS; therefore, any disturbance of benthic organisms associated with installing anchors to the sea floor would be negligible. Another 0.000002 percent of the total MBNMS would be periodically and temporarily disturbed by the anchor chain from the environmental data buoy over the duration of the BDMP. Additionally, anchors for all monitoring equipment (i.e., the nine [9] CTD sondes and the single environmental data buoy) would be placed on soft sandy substrate to avoid biogenic habitat and the existing hard-substrate community located on and around the M1W outfall structure. Further, no sensitive species are known to be present in the sandy substrate where anchors are proposed (AMS, 2026). Due to the absence of suitable habitat and the very low probability of contacting sensitive species, given the low abundance of these species in the MBNMS and the small individual disturbance footprint of each anchor, equipment installation is not expected to result in adverse impacts to sensitive species (ibid.). Potential impacts to marine organisms from installation activities would be consistent with the offshore impacts to marine resources described in the Final EIR/EIS. Therefore, the installation of monitoring equipment would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact beyond those identified in the Final EIR/EIS when considered with the effects of the MPWSP Overall, construction of the Proposed Modifications located offshore, including diffuser modifications and installation of

			monitoring equipment, would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.5-4: Result in a substantial adverse effect, either directly or through habitat modifications, including direct disturbance, removal, filling, hydrological interruption, or discharge, on any marine species, natural community, or habitat, including candidate, sensitive, or special-status species identified in local or regional plans, policies, regulations or conservation plans (including protected wetlands or waters, critical habitat, EFH; or as identified by the CDFW, USFWS, and NMFS during operations.	**LS**	**LS** **=**	The Proposed Modifications could result in impacts to marine biological resources during operation as a result of (i) exposing organisms to higher salinity levels, (ii) exposing organisms to higher constituent concentrations at the discharge site, (iii) exposing organisms to greater shear stress at the discharge site, and (iv) temporarily disturbing benthic communities from monitoring equipment maintenance, sediment sampling, and movement of the environmental data buoy anchor along the sea floor. Potential impacts from marine mammal entanglement would be avoided through CTD sonde and buoy design. Offshore Outfall Diffuser Modifications: As discussed under *Impact 4.3-5*, the Proposed Modifications were identified as the optimal design configuration for maximizing dilution while minimizing marine life impacts from entrainment, based on extensive updated modeling. The updated modeling demonstrates that, consistent with the Final EIR/EIS's mitigation requirements, the Proposed Modifications would ensure water quality constituent concentrations and salinity levels remain below the levels allowed by the Ocean Plan during MPWSP operation. *Effects of Elevated Salinity*: The Final EIR/EIS specifically evaluated the potential impacts associated with elevated salinity levels on market squid (*Doryteuthis opalescens*) and red abalone (*Haliotis rufescens*). The Final EIR/EIS concluded that impacts would be less than significant to these species. With implementation of the Proposed Modifications, the area of seafloor rendered unsuitable for squid spawning by elevated salinity is zero. Further, no suitable habitat for red abalone exists near the outfall. Therefore, impacts would remain unchanged from those identified in the Final EIR/EIS (less than significant). In addition, the Final EIR/EIS found that discharges would meet Ocean Plan requirements and are not likely to result in hypoxia on the ocean floor. Consistent with the Final EIR/EIS, discharge associated with the Proposed Modifications would remain well below the Ocean Plan's 2.0-ppt salinity threshold and would not result in dense, negatively buoyant plumes causing adverse effects from elevated salinity or hypoxic conditions within or outside of the BMZ (AMS, 2026). Impacts would therefore remain less than significant under the Proposed Modifications.
Impact 4.5-5: Threaten to eliminate a marine plant or animal wildlife community or cause a fish or marine wildlife population to drop below self-sustaining levels during operations.	**LS**	**LS** **=**	
Impact 4.5-6: Interfere substantially with the movement of any native marine resident or migratory fish or marine wildlife species or with established native resident or migratory marine wildlife corridors or impede the use of native marine wildlife nursery sites during operations.	**LS**	**LS** **=**	

			Effects of Elevated Constituent Concentrations: The Final EIR/EIS evaluated effects of elevated constituent concentrations in terms of what percentage of the ZID would be affected. The Final EIR/EIS determined the total seafloor area affected by elevated constituent concentrations would be 228 sf (0.99% of the total ZID area). The total seafloor area affected by elevated constituent concentrations associated with the Proposed Modifications would be reduced to 210 sf (0.70% of the total ZID area). Additionally, bioaccumulation of discharged constituents from benthic infauna to higher trophic levels would remain limited by the very small area of seafloor affected by the discharges, consistent with the Final EIR/EIS's conclusions. Because the benthic area affected by the discharged constituents would be smaller than the area identified in the Final EIR/EIS, the Proposed Modifications would not change the level of impacts beyond those identified in the Final EIR/EIS (less than significant). *Effects of Shear Stress*: The Final EIR/EIS concluded that potential impacts associated with marine life mortality and brine discharge would remain less than significant through compliance with the Ocean Plan and associated NPDES permit requirements. The MPWSP incorporates several design features to avoid or minimize marine life impacts associated with seawater intake and brine discharge, consistent with the preferred intake and discharge technologies identified in the Ocean Plan. Commingling brine discharge with treated wastewater dilutes the combined effluent, thus minimizing the salinity difference between the discharge and receiving water so that its density is closer to that of the receiving seawater. Commingled discharge would result in localized plankton mortality associated with shear stress within the discharge plume; however, commingled discharge would not cause measurable population-level reductions in any zooplankton taxon group. Proportional mortality associated with commingled discharge would represent less than 0.003% of the nearshore plankton in the Monterey Bay. Maximum annual loss would be 0.0221%. These findings are consistent with the Final EIR/EIS's conclusion that MPWSP operation would result in a "maximum annual loss of less than 1 percent" (Final EIR/EIS, p. 4.5-66). Therefore, potential impacts to marine biological resources resulting from MPWSP operation, including the Proposed Modifications, would be consistent with the impacts identified in the Final EIR/EIS (less than significant).

			Brine Discharge Monitoring Program: Benthic communities located at each anchor location could be periodically disturbed during retrieval and redeployment of the nine (9) CTD sondes and from movement of the data buoy anchor chain on the sea floor. Retrieval and redeployment of the CTD sondes would only affect 0.00000003 percent of the MBNMS annually, and only 0.000002 percent would be periodically and temporarily disturbed by the environmental data buoy anchor chain. Based on the small area of disturbed benthic habitat within the MBNMS and the temporary time period over which the habitat would be unavailable for use, the loss is expected to be undetectable. These impacts are also consistent with the short-term, small-scale benthic disturbance described above. In addition, the nine (9) CTD sondes and the environmental data buoy are designed to minimize disturbance of benthic communities by using retrievable anchors with relatively small, stationary footprints to minimize periodic disturbance during retrieval and redeployment. Similarly, the environmental data buoy includes the use of a float to keep the buoy mooring line at the water surface, minimizing benthic disturbance during maintenance activities. Further, consistent with the Final EIR/EIS, if monitoring demonstrates that DO is not a concern, and/or use of the second control CTD is determined to be redundant, one (1) or more CTD sondes may be removed, which would lessen the area of periodic disturbance. As a result, the installation of monitoring equipment would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact. Finally, the BDMP has been designed to avoid and minimize potential impacts related to marine mammal entanglement. For instance, the nine (9) CTD sondes will be deployed and anchored to the seafloor with a pop-up acoustic release mechanism that eliminates the need for vertical buoy lines in the water column. This design feature eliminates one of the primary sources of entanglement and is consistent with ropeless fishing technology approved for use in California. Similarly, the environmental data buoy has been designed to avoid potential marine mammal entanglement. The environmental data buoy will be moored using a 1.5:1 scope ratio to limit slack and reduce the probability of mooring line entanglement. In addition, the buoy will be equipped with GPS and a movement alert system to provide notification of an unusual displacement consistent with an entanglement event to ensure a rapid response to further minimize the risk of potential entanglement. As a result, the operation of the monitoring

			equipment would not introduce new significant impacts or increase the severity of a previously identified significant impact. Therefore, impacts would remain unchanged from those identified in the Final EIR/EIS for operation of the MPWSP (less than significant). Overall, the Proposed Modifications, including the modifications to the outfall diffuser and implementation of the BDMP, would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.5-C: Cumulative impacts on Marine Resources.	**LS**	**LS** **=**	See Impacts 4.5-1 – 4.5-6, above. Impacts associated with construction and operation of the Proposed Modifications would remain less than significant. Consistent with the Final EIR/EIS's conclusions, cumulative impacts on marine biological resources would be less than significant given compliance with regulatory requirements under the Ocean Plan limitations. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect marine biological resources involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.6: Terrestrial Biological Resources			
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special status, either directly or through habitat modification, during construction.	**LSM**	**LSM** **=**	Slip liner installation could result in construction-related impacts to terrestrial biological resources due to minor changes in the temporary construction footprint to account for more refined design and construction specificity. The other components of the Proposed Modifications, including the brine storage options at the desalination plant site, would not change the temporary impact footprint analyzed in the Final EIR/EIS; therefore, the following discussion focuses on construction-related impacts associated with slip liner installation. Installation of a protective slip liner along the land outfall would require excavating four (4) additional access pits and 11 new grouting pits, compared to what was analyzed in the Final EIR/EIS. This would result in approximately 0.08 acres of additional earthmoving for excavation of pits and approximately 2.85 acres for temporary construction access, staging, and stockpiling. Approximately 1.38 acres of the additional temporary impacts would occur in agricultural or developed land and approximately 1.47 acres would occur in dune habitat and potential ESHA. While
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction.	**LSM**	**LSM** **=**	
Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the State during construction.	**LSM**	**LSM** **=**	

			slip liner installation would result in construction-related ground disturbance, all impacts would be temporary. Moreover, construction-related ground disturbance in dune habitat and potential ESHA would not exceed the amount of temporary ground disturbance in these areas identified in the Final EIR/EIS, as described further below. Impacts in potential ESHA would occur entirely within the MPWSP's Area of Potential Effect ("APE") and in areas that have been heavily disturbed in connection with former sand mining operations at CEMEX. The California Coastal Commission ("CCC") considered potential impacts to ESHA following certification of the Final EIR/EIS and approved modifications proposed by CalAm to avoid or reduce some of the previously anticipated impacts identified in the Final EIR/EIS. These modifications included design refinements, such as using tunneling techniques rather than trenching to install several sections of MPWSP pipelines, as well as modifications to access roads and slant well pads that were proposed in connection with the phased construction of the MPWSP. These CCC-approved modifications to the MPWSP would result in 22.22 acres of temporary impacts and 1.94 acres of permanent impacts to ESHA, resulting in a total impact reduction of 13.31 acres compared to the total ESHA impacts disclosed in the Final EIR/EIS. As a result, MPWSP design refinements would substantially lessen potential impacts to ESHA compared to what was evaluated in the Final EIR/EIS. Any temporary ESHA impacts from implementation of the Proposed Modifications therefore would be offset by the ESHA reductions associated with CCC's approved design refinements. As a result, the Proposed Modifications would not increase impacts to ESHA beyond those identified in the Final EIR/EIS. In fact, temporary impacts to ESHA would be below the levels identified in the Final EIR/EIS. The Proposed Modifications would also further reduce disturbance to dune habitat for work related to WEKO seal replacement by approximately 0.3 acres, which would further decrease temporary ESHA impacts resulting from slip liner installation. In addition, the Proposed Modifications would implement mitigation measures identified in the Final EIR/EIS, including Mitigation Measures 4.6-1a through 4.6-1l, 4.6-1o, 4.6-1p, 4.6-2a, 4.6-1b, 4.7-2b, 4.12-1b, 4.12-5, and 4.14-2, to ensure impacts would be less than significant. Additional impacts related to policy inconsistencies from development in ESHA are discussed in more detail under *Impact 4.6-4*, below. Overall, the Proposed Modifications would not increase the severity of a previously

			identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance with local tree ordinances.	**SU**	**SU** **=**	Installing protective slip lining along the land outfall would require excavation of four (4) additional access pits and 11 grouting pits, compared to what was analyzed in the Final EIR/EIS. This would result in approximately 0.08 acres of additional earthmoving for excavation of pits and approximately 2.85 acres for temporary construction access, staging, and stockpiling. Approximately 1.47 acres would occur in dune habitat and potential ESHA. . Thus, from a land use consistency perspective, slip liner installation remains inconsistent with the City of Marina's Local Coastal Program ("LCP") policies. Although the Final EIR/EIS identified a significant and unavoidable land use policy conflict, the CCC subsequently considered potential impacts to ESHA and approved a phased version of the MPWSP that would reduce temporary ESHA impacts by up to 8.6 acres. Similarly, the CCC identified that CalAm's phased approach would reduce the initial ESHA impacts at the MPWSP's well field by about 0.5 acres. As a result, actual impacts to ESHA associated with the MPWSP have been substantially reduced through the CDP process. Therefore, temporary ground-disturbing activities associated with slip liner installation would not increase temporary impacts beyond the levels considered in the Final EIR/EIS. In other words, any temporary ESHA impacts have been offset by modifications approved by the CCC to reduce temporary ESHA impacts associated with the MPWSP. Further, the Proposed Modifications would reduce disturbance to dune habitat for work related to WEKO seal replacement by approximately 0.3 acres, which would further offset temporary ESHA impacts from liner installation. Lastly, the Proposed Modifications would implement previously identified mitigation measures, which would ensure impacts remain unchanged. While the Proposed Modifications would result in temporary ESHA impacts associated with the slip liner installation, the Proposed Modifications would not increase the overall amount of temporary ESHA impacts identified in the Final EIR/EIS. As a result, the previously identified inconsistency with applicable City of Marina LCP policies remains unchanged. These actions would not materially change the nature of the underlying policy conflict. The presence of development within ESHA either conflicts with the LCP policies or it does not; the degree of temporary disturbance does not create a gradation of that policy conflict once the conflict has

			been identified as significant. Accordingly, while the previously identified significant and unavoidable impact related to ESHA and LCP consistency would remain, the Proposed Modifications would not substantially increase the severity of that impact or result in a new significant impact. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.6-5: Introduce or spread an invasive non-native species during construction.	**LSM**	**LSM =**	See notes above regarding Impacts 4.6-1 through 4.6-3.
Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations.	**LSM**	**LSM =**	The expanded brine storage component of the Proposed Modifications could result in operational impacts to terrestrial biological resources due to the potential loss of habitat. Other components of the Proposed Modifications would not involve changes resulting in operational impacts. As a result, the following discussion focuses on operational impacts associated with brine storage expansion. As discussed above, expanding brine storage capacity at the desalination plant site would involve one (1) of two (2) options (see Impact Discussion 4.3-1 for detailed descriptions of brine storage expansion options). Option 1 would increase the overall permanent impact footprint at the desalination plant site by approximately 0.24 acres beyond the approximately 15 acres of permanent impacts identified in the Final EIR/EIS. This would result in a minor increase in permanent impacts to special-status species; however, this minor increase in permanent impacts would occur entirely within areas that already would be disturbed in connection with desalination plant construction. As a result, the additional permanent impact footprint would not affect undisturbed wildlife habitat at the desalination plant site. Operation of the additional brine storage pond could also result in impacts to migratory birds, consistent with the impacts identified in the Final EIR/EIS. However, in compliance with Mitigation Measure 4.6-6, this option would be required to install bird deterrents, conduct periodic monitoring, and implement adaptive management strategies to ensure impacts are reduced to a less than significant level. Implementation of this mitigation would ensure operational impacts remain unchanged. Option 2 would decrease overall permanent impact footprint at the desalination plant site by approximately 0.5 acres. As a result, this
Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations.	**LSM**	**LSM =**	
Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the State during project operations.	**LSM**	**LSM =**	
Impact 4.6-9: Introduce or spread an invasive non-native species during project operations.	**LSM**	**LSM =**	

			option would reduce potential permanent impacts associated with the MPWSP desalination plant. This option would result in substantially similar impacts to migratory bird species because the tanks and related infrastructure (i.e., overflow pond) would be uncovered. These impacts would remain unchanged through the implementation of required mitigation for the same reasons described above for Option 1. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.6-10: Conflict with the provisions of an adopted Habitat Conservation Plan, natural community conservation plans or other approved local, regional, or state habitat conservation plan.	**LSM**	**LSM** **=**	Not applicable to the Proposed Modifications. No components of the Proposed Modifications are in an area with an adopted Habitat Conservation Plan, natural community conservation plans or other approved local, regional, or state habitat conservation plan.
Impact 4.6-C: Cumulative impacts related to Terrestrial Biological Resources.	**SU**	**SU** **=**	See Impacts 4.6-1 – 4.6-10, above. Impacts associated with the Proposed Modifications would remain substantially the same as those identified in the Final EIR/EIS. The Proposed Modifications would primarily occur in previously disturbed areas. Additionally, the CCC approved modifications to the MPWSP that substantially reduced potential temporary impacts to ESHA from MPWSP construction. These modifications would offset temporary ESHA impacts resulting from the Proposed Modifications. Moreover, the Proposed Modifications would be required to implement mitigation measures identified in the Final EIR/EIS to ensure both construction and operation of the Proposed Modifications do not result in impacts beyond those identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect terrestrial biological resources involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.7: Hazards and Hazardous Materials			
Impact 4.7-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction.	**LS**	**LS** **=**	The Proposed Modifications would occur in the same general area and construction footprint previously evaluated in the Final EIR/EIS and would involve the same general construction methods, materials, equipment, and schedule. Additionally, operation of the Proposed Modifications would not involve changes that could result in impacts related to hazards or hazardous materials. Overall, the

			Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction.	**LSM**	**LSM =**	
Impact 4.7-3: Project facilities would be located on a known hazardous materials site.	**LS**	**LS =**	
Impact 4.7-4: Handle hazardous materials or emit hazardous emissions within 0.25 mile of schools during construction.	**LS**	**LS =**	
Impact 4.7-5: Increase risk of wildland fires during construction.	**LS**	**LS =**	
Impact 4.7-6: Create a significant hazard to the public or the environment through the routine transport, use, disposal, or accidental release of hazardous materials during project operations.	**LS**	**LS =**	
Impact 4.7-C: Cumulative impacts related to Hazards and Hazardous Materials.	**LSM**	**LSM =**	
Section 4.8: Land Use, Land Use Planning, and Recreation			
Impact 4.8-1: Consistency with applicable plans, policies, and regulations related to land use and recreation adopted for the purpose of mitigating an environmental effect.	**LS**	**LS =**	See discussion under *Impact 4.6-4*, above. Installation of the slip liner would result in impacts to ESHA, which would conflict with applicable City of Marina LCP policies. Thus, while the previously identified significant and unavoidable impact related to ESHA and LCP consistency identified in the Final EIR/EIS would remain, the Proposed Modifications would not substantially increase the severity of that impact. Impacts to ESHA resulting from the Proposed Modifications would be offset by CCC-approved modifications to the MPWSP and CalAm's phased approach to constructing the MPWSP. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.8-2: Disrupt or preclude public access to or along the coast during construction.	**LSM**	**LSM =**	The Final EIR/EIS identified a potentially significant impact related to limited public access associated with construction of the New Transmission Main. The Final EIR/EIS determined activities associated with other MPWSP components would result in less than significant impacts related to public access along the coast. The Proposed Modifications would not occur in the same area as

			the New Transmission Main – activities along the coast would occur in the same general area and construction footprint at the CEMEX site that was previously evaluated in the Final EIR/EIS and would involve the same general construction methods, materials, equipment, and schedule. Additionally, operation of the Proposed Modifications would not involve changes that could impact land use, land use planning, or recreation. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.8-C: Cumulative impacts related to Land Use, Land Use Planning, and Recreation.	**LSM**	**LSM =**	See Impacts 4.8-1 – 4.8-2 above. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect land use, land use planning, and recreation involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.9: Traffic and Transportation			
Impact 4.9-1: Temporary traffic increases on regional and local roadways due to construction-related vehicle trips.	**LSM**	**LSM =**	The Proposed Modifications would occur in the same general area and construction footprint previously evaluated in the Final EIR/EIS and would involve the same general construction methods, materials, equipment, and schedule. As such, construction would not result in additional traffic-related impacts. Additionally, the Proposed Modifications would not involve changes to operation of the MPWSP that could result in traffic-related impacts. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.9-2: Temporary reduction in roadway capacities and increased traffic delays during construction.	**LSM**	**LSM =**	
Impact 4.9-3: Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways during construction.	**LSM**	**LSM =**	
Impact 4.9-4: Impaired emergency access during construction.	**LSM**	**LSM =**	
Impact 4.9-5: Temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction.	**LSM**	**LSM =**	
Impact 4.9-6: Increased wear-and-tear on the designated haul routes used by construction vehicles.	**LSM**	**LSM =**	
Impact 4.9-7: Parking interference during construction.	**LSM**	**LSM =**	
Impact 4.9-8: Long-term traffic increases on regional and local	**LS**	**LS =**	

roadways during project operations and maintenance.			
Impact 4.9-C: Cumulative impacts related to Traffic and Transportation.	**SU**	**SU** **=**	
Section 4.10: Air Quality			
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction.	**SU**	**SU** **=**	The offshore diffuser modifications, implementation of the BDMP, brine mixing structure ("BMS") installation, and WEKO seal components of the Proposed Modifications would not involve any additional earthmoving or equipment that could result in impacts beyond those evaluated and disclosed in the Final EIR/EIS. As such, the following discussion focuses on the Proposed Modifications that would require additional earthmoving that could result in additional air quality impacts related to (i) expanded brine storage and (ii) installation of the slip liner. Brine Storage: As identified above, expanding brine storage capacity at the desalination plant site would involve one (1) of two (2) options (see Impact Discussion 4.3-1 for detailed descriptions of brine storage expansion options). Both options would involve the use of a variety of diesel-fueled equipment, including graders, backhoes, excavators, and loaders, that would emit exhaust containing air pollutants. Additionally, construction vehicles and workers' vehicles would generate exhaust emissions offsite and generate fugitive dust onsite through ground disturbing activities. Option 1 would increase permanent impacts at the desalination plant site by approximately 0.24 acres beyond the 15 acres identified in the Final EIR/EIS. This would result in additional temporary construction-related air quality emissions; however, these emissions would be consistent with those previously identified in the Final EIR/EIS (i.e., temporary air quality emissions associated with the operation of construction equipment). Additionally, all excavated material would be balanced onsite. Therefore, no additional truck trips to haul materials offsite, nor additional equipment – which could contribute higher emissions – would be needed for this option. Further, the increased air quality emissions associated with this option would represent a less than 1% increase in maximum daily emissions from what the Final EIR/EIS evaluated, which would not cause an exceedance of an existing Monterey Bay Air Resources District ("MBARD") threshold such that a new significant air quality impact would occur. ROG, CO, and $PM_{2.5}$ emissions – which the Final EIR/EIS identified would be below MBARD's thresholds for construction of the entire MPWSP – would remain below MBARD's thresholds of
Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan.	**SU**	**SU** **=**	

			significance with implementation of this option. The Final EIR/EIS identified that the MPWSP's maximum daily construction emissions would exceed MBARD's thresholds of significance for NO_x and PM_{10} and concluded that temporary PM_{10} emissions would be reduced to a less than significant level through implementation of Mitigation Measures 4.10-1a – 4.10-1e, while NO_x related impacts would remain significant and unavoidable after implementing mitigation. Construction of the additional brine storage pond would increase maximum daily emissions for NO_x and PM_{10} by less than 1% compared to what the Final EIR/EIS evaluated. This increase in temporary air quality emissions would not substantially increase the severity of a previously identified significant air quality impact for the following reasons. First, the Final EIR/EIS assumed CalAm would construct all components of the MPWSP concurrently. As a result, the Final EIR/EIS conservatively identified maximum daily emissions for construction of the entire MPWSP. Actual construction, however, would not occur simultaneously. CalAm has already constructed several MPWSP components, thereby reducing the potential maximum daily emissions associated with MPWSP construction. For instance, emissions associated with construction of the Carmel Valley Pump Station, which CalAm constructed in 2020 comprise a total of 4% of the maximum daily emissions for NO_x and PM_{10}, combined. Because this MPWSP component has already been constructed, this offsets the incremental increase in maximum daily emissions that could occur from simultaneous construction of the additional brine storage pond with the remaining MPWSP components to be constructed. Second, this option would not cause an increase in localized emissions associated with construction on the desalination plant site such that emissions associated with the desalination plant would exceed MBARD thresholds. The total emissions for construction on the desalination plant site, including the additional brine storage pond, would be orders of magnitude less than the applicable MBARD thresholds. Therefore, this option would not result in a significant air quality impact from construction at this site. In addition, the additional earthmoving for this option would occur over the course of several weeks and would therefore not result in earthmoving greater than MBARD's thresholds of 2.2 acres of major earthmoving (i.e., excavation) per day or 8.1 acres of earthmoving per day for projects that require minimal earthmoving activities. Finally, consistent with the Final EIR/EIS's analysis, the Proposed Modifications would be subject to Mitigation

			Measures 4.10-1a – 4.10-1e. These measures would ensure that the temporary air quality emissions remain below MBARD's applicable thresholds for criteria pollutants and therefore do not result in additional impacts beyond those identified in the Final EIR/EIS. Since construction activities associated with Option 1 would result in minor (i.e., less than 1%) additional temporary emissions that would not substantially increase construction impacts when considered with other MPWSP components and would implement mitigation that would further reduce impacts, construction of this option would result in substantially the same impacts as those identified in the Final EIR/EIS. Therefore, construction of the additional brine storage pond would not result in a new significant impact or increase the severity of a previously identified significant air quality impact. As a result, under this option, overall impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS. Option 2 would reduce overall disturbance at the desalination plant site by approximately 0.5 acres. As a result, overall temporary emissions would decrease due to the reduction in ground-disturbance for this option. Therefore, this option would result in fewer air quality-related impacts compared to what the Final EIR/EIS evaluated. As such, this option would not increase the severity of a previously identified significant impact or result in a new significant impact. Similar to Option 1, air quality impacts related to construction of this option would be temporary and would cease upon completion of construction activities. Further, no additional truck trips or equipment would be needed, as materials would be balanced onsite. Earthmoving activities would occur over several weeks and thus would not exceed MBARD's daily earthmoving thresholds. As a result, under this option, overall impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS. Further, as discussed for Option 1, the Final EIR/EIS evaluated a "worst-case" scenario for daily emissions that assumed CalAm would construct all components of the MPWSP simultaneously (see Final EIR/EIS, p. 4.10-21). However, CalAm has already constructed several MPWSP components, including the Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Project, and a one (1)-mile segment of the New Transmission Main. As a result, the worst-case scenario evaluated in the Final EIR/EIS, based on maximum daily emissions, has already been reduced. In

			addition, this option would further reduce overall emissions, even when assuming all components would be constructed concurrently. Therefore, Option 2 would not result in a new significant impact or increase the severity of a previously identified significant impact. Moreover, all mitigation measures identified in the Final EIR/EIS, including Mitigation Measures 4.10-1a – 4.10-1e, would apply to construction-related activities for Option 2. Since Option 2 would result in relatively minor decrease in emissions, overall air quality impacts would remain unchanged with the implementation of previously identified mitigation measures. Onshore Protective Slip Liner: Slip liner installation would involve construction equipment and worker vehicles that would produce temporary air quality emissions. Modifications to this MPWSP component would involve approximately 0.08 acres of additional earthmoving to excavate access and grouting pits beyond what was identified in the Final EIR/EIS. The additional short-term emissions associated with liner installation would be negligible in comparison to overall MPWSP construction emissions. In addition, this component would not change the construction methods, equipment, or schedule evaluated in the Final EIR/EIS, and all excavated material would be balanced onsite. Therefore, no additional truck trips to haul materials offsite, nor additional equipment or a longer construction duration – all of which could contribute higher emissions – would be needed for the minor increase in earthmoving. As discussed above, the Final EIR/EIS estimated the total maximum daily emissions for the entire MPWSP, assuming CalAm would construct all components simultaneously. However, CalAm, has already constructed several MPWSP components, including the Carmel Valley Pump Station. As a result, the total maximum daily emissions associated with the MPWSP have already been reduced. Any temporary incremental increases in ROG and NO_x emissions associated with slip liner installation would be fully offset by prior construction of the Carmel Valley Pump Station; therefore, the slip liner would not increase the previously identified significant and unavoidable impact associated with NOx emissions. Prior construction of the Carmel Valley Pump Station would also substantially offset any minor increases in emissions of CO, PM_{10}, and $PM_{2.5}$. Finally, the Proposed Modifications would be required to implement Mitigation Measures 4.10-1a – 4.10-1e, which the Final EIR/EIS determined would reduce impacts to a less than significant level

			(see Final EIR/EIS, p. 4.13-35). Since the additional earthmoving needed for this component represents a minor increase in ground-disturbing activities, and the Proposed Modifications would implement existing mitigation to further reduce impacts, there would be no change in the level of construction-related air quality impacts beyond those identified in the Final EIR/EIS. In conclusion, the Proposed Modifications would not contribute substantial construction-related emissions that could result in new significant impacts, or a substantial increase in the severity of identified significant impacts, beyond those identified in the Final EIR/EIS. The combined incremental increase in emissions would be insignificant and fully offset by the fact that CalAm has already constructed certain MPWSP, including the Carmel Valley Pump Station, which reduces the maximum daily construction emissions in the Final EIR/EIS that were conservatively estimated assuming all MPWSP components are constructed concurrently. Further, the Proposed Modifications must comply with the mitigation measures identified in the Final EIR/EIS, including Mitigation Measures 4.10-1a through 4.10-1e, to ensure impacts remain unchanged from what was identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged. For more information, please refer to *MPWSP – RWQCB Addendum to the MPWSP Final Environmental Impact Report/Environment Impact Statement – Air Quality & Greenhouse Gas Memorandum*.
Impact 4.10-3: Expose sensitive receptors to substantial pollutant concentrations and *Coccidioides immitis* (Valley Fever) spores or create objectionable odors affecting a substantial number of people during construction.	**LS**	**LS** **=**	The Proposed Modifications would occur in the same general area and construction footprint previously evaluated in the Final EIR/EIS and would involve the same general construction methods, materials, equipment, and schedule. As such, the Proposed Modifications would not introduce new sensitive receptors to substantial pollutant concentrations, Valley Fever spores, or objectionable odors. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.10-4: Long-term increase of criteria pollutant emissions that could contribute to a violation of an ambient air quality standard during operations.	**LS**	**LS** **=**	The Proposed Modifications do not involve changes to operational activities that could result in operational emissions, pollution concentrations or odors beyond those identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase

Impact 4.10-5: Expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people during operations.	**LS**	**LS** **=**	the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.10-C: Cumulative impacts related to Air Quality.	**SU**	**SU** **=**	See Impacts 4.10-1 – 4.10-5, above. The Proposed Modifications would involve additional earthmoving which could result in temporary increases in emissions during construction activities; however, the Proposed Modifications would not exceed the maximum daily emissions identified in the Final EIR/EIS. Because the additional emissions related to the Proposed Modifications would not individually contribute enough emissions to cause the MPWSP to exceed established air quality thresholds, the additional emissions would not cause a cumulatively considerable air quality impact beyond what the Final EIR/EIS identified. The Proposed Modifications would still be required to implement previously identified mitigation to ensure impacts remain unchanged from the level of impacts identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect air quality involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.11: Greenhouse Gas ("GHG") Emissions			
Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project.	**LSM**	**LSM** **=**	The Proposed Modifications would involve slightly increased earthmoving work necessary for expanding brine storage and installing protective slip lining, which could contribute additional temporary GHG emissions. The diffuser modifications, implementation of the BDMP, BMS installation, and WEKO seal components do not involve any additional earthmoving or changes to construction methods or equipment that could result in impacts beyond those evaluated in the Final EIR/EIS. Additionally, all GHG impacts associated with the Proposed Modifications would be temporary during construction, and no new impacts would occur from operation of the Proposed Modifications. Therefore, the following analysis is limited to construction-related impacts associated with expanded brine storage and slip liner installation. <u>Brine Storage</u>: Option 1 for expanded brine storage would involve constructing an additional brine storage pond at the desalination plant site, which would increase site disturbance by 0.24 acres
Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal.	**LSM**	**LSM** **=**	
Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan.	**LSM**	**LSM** **=**	

			compared to footprint evaluated in the Final EIR/EIS. The Final EIR/EIS identified that GHG emissions generated by MPWSP construction would total approximately 14,291 metric tons of carbon dioxide equivalent ("CO_2e") over the 24-month construction period, which equates to a 40-year amortized annual average value of approximately 357 metric tons CO_2e. Construction-related activities associated with the additional brine storage pond would increase GHG emissions by less than 1% , representing an insignificant increase compared to overall MPWSP emissions (for a total revised 40-year amortized annual average value of 358 metric tons of CO_2e). However, construction of the additional brine storage pond also would be required to comply with mitigation measures identified in the Final EIR/EIS, including Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1, which require the preparation of a GHG Emissions Reduction Plan and a Construction Equipment and Vehicle Efficiency Plan. The sum of the 40-year amortized construction GHG emissions (358 metric tons of CO_2e) and the total net MPWSP operational emissions (8,008 metric tons of CO_2e), with the additional brine storage pond, would be approximately 8,366 metric tons CO_2e per year pre-mitigation. After implementation of mitigation measures from the Final EIR/EIS, the sum of the 40-year amortized construction GHG emissions would be reduced to approximately 1,482 metric tons of CO_2e per year. This is substantially below MBARD's recommended threshold of 2,000 metric tons CO_2e per year. Therefore, the nominal increase in GHG emissions associated with the construction of an additional brine storage pond would not significantly increase amortized emissions such that they would exceed MBARD's recommended threshold of significance. As a result, this option would not conflict with applicable plans and policies related to GHG emissions and would not cause a new significant GHG impact or increase the severity of a previously identified significant GHG impact. Option 2 for expanding brine storage would involve constructing two (2) brine storage tanks and an overflow pond at the desalination plant site. As described above, the Final EIR/EIS identified that GHG emissions generated by construction of the MPWSP would total approximately 14,291 metric tons CO_2e over the 24-month construction period, which equates to a 40-year amortized annual average value of approximately 357 metric tons CO_2e. Construction of this brine storage option would reduce

			overall ground disturbance at this site by approximately 0.5 acres. As a result, anticipated ground-disturbing activities would be less than what the Final EIR/EIS analyzed and construction-related activities would result in a decrease in total GHG emissions by approximately 68 metric tons of CO_2e per year, equating to a decrease in 40-year amortized annual average emissions by approximately 1.7 metric tons CO_2e (for a total revised 40-year amortized annual average value of 355 metric tons of CO_2e). In addition to reducing overall GHG emissions, construction of this option also would be required to comply with mitigation measures previously identified in the Final EIR/EIS, including Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1, which require the preparation of a GHG reduction plan and construction equipment and vehicle efficiency plan. The Final EIR/EIS concluded that implementation of Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1 would ensure that the MPWSP is constructed in an energy-efficient manner and that the MPWSP's GHG impacts would be less than significant. The sum of the 40-year amortized construction GHG emissions (355 metric tons of CO_2e) and the total net MPWSP operational emissions, with the brine storage tanks (8,008 metric tons of CO_2e), would be approximately 8,363 metric tons of CO_2e per year. After implementation of Mitigation Measure 4.11-1, total amortized emissions would be reduced to approximately 1,478 metric tons of CO_2e per year (as compared to 1,480 metric tons of CO_2e per year evaluated in the Final EIR/EIS). This would be below MBARD's recommended threshold of 2,000 metric tons CO_2e per year. Therefore, the decrease in GHG emissions associated with the construction of this option would slightly decrease amortized emissions compared to the MPWSP, as evaluated in the Final EIR/EIS. For these reasons, construction of this option would not change the level of impact beyond what was evaluated in the Final EIR/EIS. <u>Onshore Outfall Slip Liner</u>: Installation of the slip liner would involve approximately 2.85 acres of temporary construction access, staging, and stockpiling; and 0.08 acres of additional earthmoving associated with excavating four (4) additional access pits and 11 grouting pits. Consistent with the Final EIR/EIS analysis, these activities would involve construction equipment and worker vehicles that would produce GHG emissions. The 0.08 acres of additional excavation represents a very small increment of construction-related earthmoving relative to the overall MPWSP footprint evaluated in the Final EIR/EIS. Construction-related GHG emissions are primarily associated with diesel combustion from

			grading and construction equipment; therefore, given the limited extent of additional disturbance and short duration of excavation activities, any incremental emissions would be minimal. In addition, the Proposed Modifications would be required to comply with Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1 to ensure impacts remain unchanged from the level of impacts identified in the Final EIR/EIS. The sum of the 40-year amortized construction GHG emissions and the total net operation emissions of the MPWSP with slip liner installation would be approximately 8,367 metric tons of CO_2e per year. Implementation of Mitigation Measure 4.11-1, however, would reduce total amortized emissions from 8,367 metric tons of CO_2e per year to approximately 1,481.82 metric tons of CO_2e per year (as compared to 1,480 metric tons of CO_2e per year for the MPWSP evaluated in the Final EIR/EIS). This would be below MBARD's significance threshold of 2,000 metric tons per year; therefore, the incremental change in temporary emissions would remain several orders of magnitude below the amount necessary to exceed MBARD's threshold. As a result, it would not alter the Final EIR/EIS's previous significance determination. Overall, slip liner installation would not increase the severity of a previously identified significant impact or result in a new significant impact. In conclusion, the combined increase in total amortized GHG emissions associated with the Proposed Modifications (i.e., construction of additional brine storage and modifications to the slip liner) would be nominal compared to the entirety of the MPWSP. In addition, the Proposed Modifications must comply with the mitigation measures identified in the Final EIR/EIS, including Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1, ensuring impacts would be below applicable thresholds and remain less than significant with mitigation – consistent with what was identified in the Final EIR/EIS. The Proposed Modifications would not substantially increase GHG emissions beyond the levels previously evaluated in the Final EIR/EIS, would remain subject to previously adopted mitigation measures, and would not exceed applicable significance thresholds. As a result, the Proposed Modifications would not conflict with Executive Order B-30-15 or AB32. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS. For more information, please refer to *MPWSP – RWQCB Addendum to the MPWSP Final Environmental Impact*

			Report/Environment Impact Statement – Air Quality & Greenhouse Gas Memorandum.
Impact 4.11-C: Cumulative impacts related to Greenhouse Gas Emissions.	**LSM**	**LSM** **=**	See Impacts 4.11-1 – 4.11-3, above. The Proposed Modifications would result in a minor increase in GHG emissions during construction; however, any increase in temporary GHG emissions would be several orders of magnitude lower than the amount necessary to exceed MBARD's threshold of 2,000 metric tons CO_2e. The Proposed Modifications also would be required to implement mitigation measures identified in the Final EIR/EIS that would ensure the level of impacts remain the same as what the Final EIR/EIS identified. The combined increase in amortized GHG emissions for all components of the Proposed Modifications would be negligible compared to what the Final EIR/EIS evaluated and concluded would be less than significant with mitigation. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect GHG emissions involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.12: Noise and Vibration			
Impact 4.12-1: Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction.	**SU**	**SU** **=**	Construction and operation of the Proposed Modifications would not result in changes to previously identified impacts related to noise and vibration. The Proposed Modifications would be in the same areas that were previously analyzed in the Final EIR/EIS and would involve the same construction methods, materials, equipment, and schedule as what the Final EIR/EIS previously evaluated. Additionally, operation of the Proposed Modifications would not involve changes that could result in noise and vibration-related impacts. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.12-2: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during construction.	**LSM**	**LSM** **=**	
Impact 4.12-3: Exposure of people to or generation of excessive groundborne vibration during construction.	**LSM**	**LSM** **=**	
Impact 4.12-4: Consistency with the construction time limits established by the local jurisdictions.	**LSM**	**LSM** **=**	
Impact 4.12-5: Substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project during operations.	**LSM**	**LSM** **=**	

Impact 4.12-6: Expose people to or generate operational noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during operation.	**LS**	**LS** **=**	
Impact 4.12-C: Cumulative impacts related to Noise and Vibration.	**SU**	**SU** **=**	
Section 4.13: Public Services and Utilities			
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction.	**LSM**	**LSM** **=**	Construction of the Proposed Modifications would not result in additional impacts to public services and utilities during construction. The Proposed Modifications would involve expanded grading and soil excavation beyond what the Final EIR/EIS evaluated; however, all construction activities would occur in the same areas previously evaluated in the Final EIR/EIS and excess materials would be balanced on-site and would not require disposal off-site. Therefore, new utility relocation or landfill disposal would not be required. Additionally, existing mitigation measures identified in the Final EIR/EIS would further ensure that impacts do not exceed those previously identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.13-2: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during construction.	**LSM**	**LSM** **=**	
Impact 4.13-3 Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during operations.	**LS**	**LS** **=**	The Proposed Modifications would not involve changes to MPWSP operations that could affect public utilities and service systems beyond those identified in the Final EIR/EIS. The Proposed Modifications would not produce additional solid waste or wastewater beyond the levels identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.13-4: Exceed wastewater treatment requirements of the Central Coast RWQCB or result in a determination by the wastewater treatment provider that it has inadequate treatment or outfall capacity to serve the project.	**LSM**	**LSM** **=**	
Impact 4.13-5: Increased corrosion of the MRWPCA outfall as a result of brine discharge associated with project operations.	**LSM**	**LSM** **=**	The Proposed Modifications to implement Mitigation Measures 4.13-5a and 4.13-5b from the Final EIR/EIS, which require replacing WEKO seals in the nearshore portion of the outfall and installing a protective slip liner in the land outfall to reduce potentially significant corrosion-related impacts to the existing outfall. As such, these components of the Proposed Modifications would reduce potential corrosion impacts to the existing outfall consistent with applicable mitigation required by the Final EIR/EIS.

			Other components of the Proposed Modifications would not involve changes that could result in additional impacts to the outfall or result in increased corrosion. Therefore, the Proposed Modifications would result in the same level of impacts or would reduce the level of impacts to the outfall compared to what was identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.13-C: Cumulative impacts related to Public Services and Utilities.	**LSM**	**LSM** **=**	See Impacts 4.13-1 – 4.13-5 above. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect public services and utilities involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.14: Aesthetic Resources			
Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	**LS**	**LS** **=**	Most components of the Proposed Modifications would result in temporary construction-related aesthetic impacts, consistent with impacts evaluated in the Final EIR/EIS. The only components that would result in permanent above-ground infrastructure are the BMS at the RTP and expanded brine storage at the desalination plant site. <u>BMS</u>: The Proposed Modifications would relocate the BMS from an undeveloped area of the RTP to developed land above a portion of the outfall at the RTP. The Final EIR/EIS determined the RTP is not a scenic area and did not identify aesthetic impacts associated with construction or operation of a BMS at the RTP. Consistent with the Final EIR/EIS's analysis, the BMS would remain outside of publicly accessible scenic viewpoints and no additional impacts would occur at this location as a result of the Proposed Modifications. <u>Brine Storage</u>: Option 1 for expanding brine storage capacity at the desalination plant site would involve constructing a second brine storage pond entirely within the construction footprint of the MPWSP that was evaluated by the Final EIR/EIS. The Final EIR/EIS determined the desalination plant site is not in a visually sensitive area and has a low aesthetic resource value. Additionally, views of the site are generally obstructed by vegetation to the west and south (see Final EIR/EIS, p. 4.14-30). Further, the additional brine storage pond would be consistent with other desalination
Impact 4.14-2: Temporary sources of substantial light or glare during construction.	**LSM**	**LSM** **=**	
Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings.	**LSM**	**LSM** **=**	
Impact 4.14-4: Permanent new sources of light or glare.	**LSM**	**LSM** **=**	

			plant site improvements for the MPWSP. Since the additional pond would be within the same location evaluated in the Final EIR/EIS and would involve changes that are consistent with the desalination site improvements for the MPWSP, the additional brine storage pond would not change the level of significance of aesthetic-related impacts beyond the levels disclosed in the Final EIR/EIS. Similarly, Option 2 for expanding brine storage would introduce new above-ground, vertical infrastructure; however, this option would also be installed entirely within the construction footprint of the MPWSP on the desalination plant site, which the Final EIR/EIS determined was not a visually sensitive area. Additionally, this option would be consistent with other MPWSP desalination plant site improvements evaluated, which the Final EIR/EIS concluded would not result in substantial adverse aesthetic impacts (e.g., structures generally ranging from 6,000 to 30,000 sf; 1.25-acre brine storage pond; two 300,000-gallon backwash and filtered water equalization tanks; and 35-ft-tall, 103-ft-diameter treated water storage tanks, etc.). The proposed brine storage tanks would be of similar volume (approximately three [3] MG of storage each) and of similar dimensions (approximately 35 ft tall and 103 ft in diameter) to other on-site infrastructure approved as part of the MPWSP. Additionally, the proposed brine storage tanks would be designed using materials similar to the treated water storage tanks and colors consistent with those used for other infrastructure at the site. This option would also reduce the permanent desalination plant footprint by approximately 0.5 acres. As identified above and discussed in the Final EIR/EIS, views of the desalination plant site are generally obstructed by existing vegetation to the west and south. Since this option would be constructed in the same location evaluated in the Final EIR/EIS, and the height of the brine storage tanks would remain below the maximum height of other approved on-site MPWSP infrastructure (i.e., 45 ft), this option would not change the level of aesthetic-related impacts from what was identified in the Final EIR/EIS. Furthermore, while the Final EIR/EIS concluded no mitigation was required to reduce aesthetic impacts at the desalination plant site, both brine storage expansion options would comply with other mitigation measures identified in the Final EIR/EIS (Mitigation Measures 4.14-3a and 4.14-3b) to the extent feasible to further reduce impacts. For these reasons, the Proposed Modifications would not result in additional aesthetic-related impacts from new above-ground infrastructure. Overall, the Proposed Modifications

			would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.14-C: Cumulative impacts related to Aesthetic Resources	**LSM**	**LSM** **=**	See Impacts 4.14-1 – 4.14-4, above. The Proposed Modifications would introduce new above-ground infrastructure; however, new infrastructure would be consistent with the improvements evaluated in the Final EIR/EIS. Additionally, the Proposed Modifications are located entirely within either the RTP or in the construction footprint of the MPWSP, which the Final EIR/EIS determined are not visually sensitive areas and that public views of these sites are generally obstructed. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect aesthetic resources involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.15: Cultural and Paleontological Resources			
Impact 4.15-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5 during construction.	**NI**	**NI** **=**	The Proposed Modifications would involve temporary ground disturbance during excavation and backfill of access and grouting pits to install protective lining along the onshore outfall. All other components of the Proposed Modifications would occur within the existing construction footprint evaluated in the Final EIR/EIS. Therefore, the following discussion focuses only on slip line installation, which could result in impacts to cultural resources during installation activities. No impacts would occur in association with operation of the protective slip liner. Slip liner installation would result in an additional 0.08 acres of earthmoving to excavate access and grouting pits and 2.85 acres of temporary construction access, staging, and stockpiling. All temporary disturbance would occur along the existing outfall alignment, which was previously evaluated in the Final EIR/EIS and was heavily disturbed in connection with original outfall construction when any potential resources or human remains would have been discovered. The additional ground disturbance for the slip liner installation also would occur in areas heavily disturbed by former sand mining operations at the CEMEX site and in areas routinely impacted by agricultural operations. Given the historical disturbance associated with the construction of M1W's existing outfall, as well as prior sand mining operations, it is unlikely any unknown cultural resources would be affected during
Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.	**LSM**	**LSM** **=**	
Impact 4.15-3: Directly or indirectly destroy a unique paleontological resource or site, or unique geological feature during construction.	**LS**	**LS** **=**	
Impact 4.15-4: Disturbance of any human remains, including those interred outside of formal cemeteries, during construction.	**LSM**	**LSM** **=**	

			installation of the liner. Therefore, no additional impacts are expected to occur as a result of slip liner installation. Nonetheless, the Proposed Modifications must comply with applicable mitigation measures identified in the Final EIR/EIS – specifically Mitigation Measure 4.15-2b and Mitigation Measure 4.15-4, which would ensure impacts remain less than significant. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.15-C: Cumulative impacts related to Cultural and Paleontological Resources.	**LS**	**LS** **=**	See Impacts 4.15-1 – 4.15-4, above. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect cultural resources involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.16: Agricultural Resources			
Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use.	**LSM**	**LSM** **=**	Consistent with the Final EIR/EIS's analysis of slip liner improvements to the outfall, the Proposed Modifications would involve temporary disturbance to agricultural land for excavation and backfill of access and grouting pits to install protective slip lining along the onshore outfall. All other components of the Proposed Modifications would be located outside of active agricultural land and would not directly or indirectly impact agricultural activities. No operational impacts to agricultural resources would occur as a result of the Proposed Modifications. Slip liner installation would require approximately 1.2 acres of additional construction access, staging, and stockpiling in agricultural land and approximately 0.04 acres of additional earthmoving in agricultural land for excavation of additional pits. This relatively minor increase in temporary impacts to agricultural land would not change the level of impact significance identified in the Final EIR/EIS because (i) these impacts would occur along the outfall alignment and along existing agricultural access roads wherever feasible to reduce potential impacts to crop production during construction, and (ii) the additional earthmoving would occur within the existing outfall easement which the Final EIR/EIS previously evaluated. Additionally, consistent with the Final EIR/EIS analysis, all impacts would be temporary. Disturbed agricultural land would be restored following construction activities, and landowners would be compensated appropriately for the cost of
Impact 4.16-2: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.	**LS**	**LS** **=**	
Impact 4.16-3: Conflict with zoning for agricultural uses or with Williamson Act contracts.	**LS**	**LS** **=**	

			lost production during construction. Further, the Proposed Modifications would be required to comply with Mitigation Measure 4.16-1, which requires CalAm and their contractors to implement project-specific construction measures to minimize disturbance to farmland, to ensure impacts to agricultural resources remain less than significant. There also would be no permanent conversion of agricultural land to a non-agricultural use. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.16-C: Cumulative impacts related to Agricultural Resources.	**LSM**	**LSM** **=**	See Impacts 4.16-1 – 4.16-3, above. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect agricultural resources. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Section 4.17: Mineral Resources			
Impact 4.17-1: Loss of availability of known mineral resources that are of value to the region or residents of the state or result in the loss of a locally recognized important mineral resource recovery site.	**LS**	**LS** **=**	The Proposed Modifications would occur in the same general area and construction footprint previously evaluated in the Final EIR/EIS and would involve the same general construction methods, materials, equipment, and schedule. The Final EIR/EIS concluded that potential impacts involving mineral resources would be less than significant in the area evaluated. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.17-C: Cumulative impacts related to Mineral Resources.	**LS**	**LS** **=**	
Section 4.18: Energy Conservation			
Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction.	**LSM**	**LSM** **=**	The Proposed Modifications would not result in additional effects beyond those identified in the Final EIR/EIS. Construction activities would result in the use of fuel and energy to facilitate construction; however, the Proposed Modifications would involve the same general construction methods, materials, equipment, and schedule as what the Final EIR/EIS considered. Additionally, the Proposed Modifications would not involve operational changes that could result in new energy-related impacts. Therefore, the Proposed Modifications would not constitute the unnecessary, wasteful, or inefficient use of energy resources. Overall, the Proposed Modifications would not increase the severity of a previously
Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations.	**LS**	**LS** **=**	
Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and	**LS**	**LS** **=**	

base periods of electrical demand during operations.			identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged. Also, see Impact Discussion 4.10 and Impact Discussion 4.11 for additional detail regarding construction and operational impacts related to air quality and GHG emissions.
Impact 4.18-C: Cumulative impacts related to Energy Resources.	**LSM**	**LSM =**	
Section 4.19: Population and Housing			
Impact 4.19-1: Induce substantial population growth directly during project construction.	**LS**	**LS =**	The Proposed Modifications would occur in the same general area and construction footprint previously evaluated in the Final EIR/EIS and would involve the same general construction methods, materials, equipment, and schedule. Additionally, the Proposed Modifications do not involve construction of new infrastructure such as residences that could result in impacts related to population and housing. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.19-2: Induce substantial population growth directly during project operations.	**LS**	**LS =**	
Impact 4.19-C: Cumulative impacts related to Population and Housing.	**LS**	**LS =**	
Section 4.20 Socioeconomics and Environmental Justice			
Impact 4.20-1: Reductions in the rate of employment, total income, or business activity in Monterey County.	**LSM**	**LSM =**	CEQA does not require an evaluation of potential socioeconomic or environmental justice issues. Nevertheless, the Proposed Modifications would not result in any additional socioeconomic or environmental justice impacts beyond those identified in the Final EIR/EIS. The Proposed Modifications would be in the same general area evaluated in the Final EIR/EIS and would not involve construction or operational changes to the MPWSP that could affect employment, income, or business activities in the area; nor would the Proposed Modifications involve changes to the MPWSP that could adversely affect low-income or minority populations. The Final EIR/EIS identified a potentially significant socioeconomic impact; however, this potentially significant impact was related to loss of business during pipeline construction. The Proposed Modifications do not involve changes related to pipeline construction. The Proposed Modifications involve improvements to existing infrastructure or minor modifications to the desalination plant site that would not cause a socioeconomic impact in the region. Therefore, the Proposed Modifications would not increase the severity of a previously identified significant socioeconomic impact or result in a new significant socioeconomic impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged. The Final EIR/EIS also identified a potentially significant cumulative impact related to disproportionately affecting minority populations from increased air quality emissions; however, the Final EIR/EIS concluded this impact could be reduced to less than
Impact 4.20-2: Disproportionately high and adverse effects on low-income or minority populations.	**LS**	**LS =**	

			significant with implementation of Mitigation Measures 4.10-1a – 4.10-1e. As discussed in Impact Discussion 4.10 above, the Proposed Modifications would not result in a substantial contribution to air quality emissions beyond what was identified in the Final EIR/EIS and would therefore not result in new significant cumulative air quality impacts. Additionally, the Proposed Modifications would be required to implement applicable mitigation measures identified in the Final EIR/EIS, including Mitigation Measures 4.10-1a and 4.10-1b, to reduce air quality-related impacts that could disproportionately affect low-income or minority populations. Implementation of existing mitigation measures would ensure impacts from the Proposed Modifications do not exceed the impacts identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 4.20-C: Cumulative impacts related to Socioeconomics and Environmental Justice**.**	**LSM**	**LSM** **=**	See Impacts 4.20-1 – 4.20-2, above. The Proposed Modifications do not involve changes to the MPWSP that could result in new adverse socioeconomic and environmental justice impacts. The Proposed Modifications would also be required to implement applicable mitigation measures to ensure potential impacts do not exceed those identified in the Final EIR/EIS. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. No cumulative projects are proposed in the vicinity of the Proposed Modifications that would affect socioeconomics and environmental justice involving the MPWSP. As a result, cumulative impacts associated with the MPWSP, as modified, would remain unchanged from what was identified in the Final EIR/EIS.
Growth Inducement			
Impact 6.3-1: Secondary effects of planned growth.	**LS**	**LS** **=**	The Proposed Modifications would not result in growth-inducing related impacts. The Proposed Modifications would not involve changes to MPWSP construction or operation that could induce population growth. The Proposed Modifications involve improvements to existing infrastructure or minor modifications to the desalination plant site that would not affect population growth in the area. Overall, the Proposed Modifications would not increase the severity of a previously identified significant impact or result in a new significant impact. As a result, overall impacts associated with the MPWSP, as modified, would remain unchanged.
Impact 6.3-C: Cumulative impacts related to growth inducement.	**SU**	**SU** **=**	

Appendix B

MPWSP Final EIR/EIS Mitigation Monitoring and Reporting Program

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MITIGATION MONITORING AND REPORTING PROGRAM

CalAm Monterey Peninsula Water Supply Project

As the CEQA and NEPA Lead Agencies, the CPUC and MBNMS, respectively, are responsible for ensuring the required mitigation measures are implemented appropriately and effectively. This Mitigation Monitoring and Reporting Program (MMRP) for the Project establishes the approach to successful implementation of the mitigation measures that were identified in the EIR/EIS and that have been required as conditions of Project approval. CalAm, as the Applicant and project proponent, will be responsible for implementing all mitigation measures, as well as any additional conditions imposed by any permits or regulations administered by other responsible or trustee agencies and for reporting the implementation to the Lead Agencies. Following project approval, a detailed Mitigation Monitoring, Compliance, and Reporting Program (MMCRP) will be developed, as described in Section 5: MMCRP, to set forth additional details concerning how the CPUC will ensure appropriate implementation of the MMRP by CalAm.

Table 1 of this MMRP is organized first by environmental topic/impact statements in the order they are presented in the EIR/EIS, with the mitigation measures identified for such impacts. Table 1 includes:

- Mitigation measures that CalAm must implement as part of the approved project;
- Monitoring and reporting requirements;
- Effectiveness criteria in order to judge whether the mitigation measure achieves its intended results. If the mitigation measure does not achieve the intended results, then the CPUC and MBNMS may adjust the mitigation measure in consultation with the applicable responsible or trustee agency, as described in more detail in Section 3, Roles and Responsibilities; and
- Timing and location of implementation for each measure so as to clearly specify which element(s) of the Project trigger each mitigation measure.

1. Authority for the Mitigation Monitoring and Reporting Program

The California Public Utilities Code confers authority upon the CPUC to regulate the terms of service and the safety, practices, and equipment of utilities subject to its jurisdiction. It is CPUC practice, pursuant to its statutory responsibility, to protect the environment and to require that mitigation measures imposed as conditions of approval be properly implemented, monitored, and reported. This requirement is codified statewide in Public Resources Code (PRC) §21081.6, which requires a public agency to adopt a mitigation monitoring or reporting program when it approves a project that is subject to preparation of an EIR and where the EIR for the project identifies significant adverse environmental effects. CEQA Guidelines Section 15097 describes agency requirements for mitigation monitoring or reporting. This MMRP implements the CPUC's responsibilities under PRC §21081.6. This MMRP will also be used by MBNMS to track implementation of required mitigation measures within the sanctuary, in compliance with 32 CFR 651.15, which addresses mitigation and monitoring.

The purpose of the MMRP is to ensure the measures adopted to mitigate or avoid significant impacts of a project are implemented, and to report on their implementation. The MMRP can be a working guide to facilitate not only the implementation of mitigation measures by the project proponent, but also the monitoring, compliance, and reporting activities of the CPUC and MBNMS and any monitors they may designate.

2. Roles and Responsibilities

Responsibility for implementing the adopted mitigation measures rests with CalAm, unless otherwise specified in the mitigation measure.

As the Lead Agency under CEQA, the CPUC is responsible for monitoring an approved project to ensure that required mitigation measures are implemented. CPUC will be tracking the implementation of the mitigation measures and associated monitoring on behalf of MBNMS and the two Lead Agencies will coordinate on any issues relating to the monitoring reports. MBNMS will also plan to conduct random inspections for compliance of mitigation measures required of activities that may affect sanctuary resources. The purpose of the MMRP is to document that the mitigation measures required by the CPUC are implemented and that mitigated environmental impacts are reduced to the level identified in the EIR/EIS and the CEQA findings adopted by the CPUC. The CPUC may delegate duties and responsibilities for monitoring implementation to environmental monitors or consultants working on behalf of the CPUC (referred to as Third-Party Monitors).

While the implementation by CalAm of some of the mitigation measures will also require reporting to responsible or trustee agencies where areas or resources under their jurisdiction are potentially affected or involved, CalAm must ultimately demonstrate to the Lead Agencies that the mitigation measures have been appropriately implemented.

CalAm will deploy its monitors to ensure implementation of its commitments and execution of its responsibilities as detailed in the MMRP. The number of CalAm construction monitors assigned to the Project to meet the requirements of the MMRP will be determined by CalAm and will depend on the number of concurrent construction activities underway, their locations, and the types of resources potentially affected. Per this MMRP, CalAm is required to demonstrate to the Lead Agencies that all persons assigned monitoring duties and responsibilities are qualified to undertake those duties.

When a mitigation measure requires that a study or plan be developed during the design or pre-construction phase of the Project, CalAm must submit the final study or plan to CPUC and MBNMS for review and approval. Any study or plan that requires approval of the CPUC and MBNMS must allow at least 60 days for adequate review unless noted otherwise in the mitigation measure or the MMRP. Other agencies and jurisdictions with authority over aspects of the Project or particular resources may require additional review time. CalAm will be responsible for confirming to the Lead Agencies that appropriate agency reviews have occurred and required approvals were obtained.

2.1 Project Changes

This section describes the CPUC's process for staff approval of Project changes that may be necessary due to changes needed after the Applicant's final engineering of elements of the Project or if circumstances arise during the course of construction that require deviations from the Project as approved, including changes to mitigation measures listed herein. The CPUC's designated Project Manager, along with MBNMS and the Third-Party Monitors, will evaluate any proposed deviations from the approved Project to ensure they are consistent with CEQA and NEPA requirements. Depending on its nature, a requested deviation would be processed as a Minor Project Change (MPC) or a Petition for Modification (PFM). MPCs would be strictly limited to minor project changes that do not trigger additional permit requirements, do not increase the severity of an impact or create a new impact, and are within the geographic scope of the EIR/EIS. If a project change would create or have the potential to create a new significant impact, increase the severity of an impact, or occur outside the geographic area evaluated in the EIR/EIS, CalAm would be required to submit to the CPUC a PFM. The CPUC would evaluate the PFM under CEQA, as appropriate, to determine what form of supplemental environmental review, if any, would be required.

- Requests for CPUC Project Manager approval of a change must be made in writing and should include the following:

- A detailed description of the proposed change(s), including an explanation of why the deviation is necessary;

- Identification of the mitigation measure, project parameter, or other project attribute for which the change is being requested, and citations for associated approved documents;

- Photographs, maps, and other supporting documentation illustrating the difference between the existing conditions in the project area, the approved project, and the proposed change;
- The potential impacts of the proposed change, including a discussion of each environmental issue area that could be affected by the deviation with accompanying verification, and whether there would be an increase in significant impacts on resources affected by the Project and/or any new significant impacts, after application of previously adopted mitigation measure(s);
- Whether the change conflicts with any mitigation measures;
- Whether the change conflicts with any applicable guideline, ordinance, code, rule, regulation, order, decision, statute, or policy; and
- The date of expected construction at the location of the change.

The CPUC Project Manager may request additional information, agency consultations, or a site visit in order to determine the appropriate vehicle for approval and to process the request.

2.2 Enforcement Responsibility

The CPUC will be responsible for monitoring implementation of the MMRP and for enforcing the procedures adopted herein. Generally, this would be accomplished through the CPUC Energy Division CEQA Unit. The CPUC will also employ Third-Party Monitors to assist in certain efforts.

CalAm monitors will be required in some instances to coordinate the implementation of mitigation with the responsible or trustee agencies for situations falling within the purview of those agencies. In such instances, CalAm is required to demonstrate coordination with those agencies to the CPUC. The Third-Party Monitors will also coordinate with the appropriate responsible and trustee agencies or individuals to confirm compliance and effectiveness, or to coordinate on the need for further corrective actions.

As the State's regulator of investor-owned utilities, the CPUC has the authority to halt any construction, operation, or maintenance activity associated with the Project if the activity is determined to be a deviation from the approved project or from the adopted mitigation measures. As such, any member of the CPUC environmental monitoring team has the authority to issue a Stop Work Order that requires the contractors to temporarily halt or redirect Project activities if a sensitive resource is put in undue risk beyond previously authorized or permitted levels, and if mitigation measure(s) are not meeting the effectiveness criteria identified in the MMRP. In addition, a Stop Work Order may be issued if unauthorized Project activities are observed, such as the use of a work area that was not approved or if significant compliance risks remain unresolved. The CPUC will make any final determinations regarding Stop Work Orders for the Project.

2.3 Compliance Responsibility

CalAm will be responsible for successfully implementing all of the adopted mitigation measures, based on the criteria that define whether mitigation is successful, as provided in the table of mitigation measures below. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as obtaining permits or avoiding a specific impact entirely.

Additional mitigation success thresholds may be established through the review and approval of specific plans required under mitigation measures. Other requirements may be stipulated by another agency with applicable jurisdiction during that agency's permitting process.

CalAm will inform the CPUC and the Third-Party Monitors in writing of any mitigation measures that are not being, or cannot be, successfully implemented and provide alternative approaches for successful mitigation implementation. The CPUC, in coordination with its Third-Party Monitors, will review the alternative approach to determine if it is adequate and whether an MPC or PFM would apply (see Section 2.1).

In cases where CalAm is found to be in non-compliance, the CPUC may exercise the CEQA Citation Program, adopted by the Commission in Resolution E-4550, which authorizes Commission staff to efficiently issue citations and levy fines when needed to quickly address non-compliance incidents occurring on the Project site.

3. Dispute Resolution

Even with the best preparation, disputes may occur. In such an event, the following procedure will be observed for dispute resolution between CPUC staff and the applicant:

- Disputes and complaints should be directed to the CPUC Project Manager for resolution
- Should this informal process fail, the CPUC Project Manager may initiate enforcement or compliance actions as described in Section 2.3 to address deviations from the approved project.

Parties may also seek review by the CPUC through existing procedures specified in the CPUC′s Rules of Practice and Procedure for formal and expedited dispute resolution, although a good faith effort should be made to use the foregoing procedure first.

4. General Monitoring Procedures

4.1 Environmental Monitors

Many of the monitoring procedures will be conducted during the construction phase of the project. CalAm is responsible for appointing appropriately qualified on-site monitors as defined in the mitigation measures and MMRP, and for integrating mitigation monitoring activities into

the construction process. Qualified monitors are to be on-site during all fencing and ground disturbance activities, or as defined in the specific mitigation measures. The CPUC Project Manager and Third-Party Monitors will coordinate with MBNMS and with CalAm's on-site monitors to verify compliance with the MMRP, and the effectiveness of the mitigation.

The number of on-site construction monitors assigned to the Project will depend on the number of concurrent construction activities and their locations. The CPUC, MBNMS, or their designee(s), however, will ensure that each person delegated any duties or responsibilities is qualified to monitor compliance.

4.2 Construction Personnel

A key element in the success of mitigation implementation and mitigation monitoring is the full cooperation of construction personnel and supervisors. Successful implementation of many of the mitigation measures requires specific actions and behaviors on the part of the construction supervisors or crews. To ensure success, the following actions, detailed in specific mitigation measures, will be taken:

- Procedures to be followed by construction companies engaged to do the work will be written into their contracts with CalAm. Procedures to be followed by construction crews will be written into a separate agreement that all construction personnel will be asked to sign, denoting consent to the procedures.

- As specified by the MMRP, a Worker Environmental Awareness Training and Education Program will be conducted to inform and train construction personnel about the requirements of the monitoring program. The CPUC Third-Party Monitors will verify that each crew member receives the required training.

- A written summary of mitigation monitoring procedures will be provided to construction supervisors for all mitigation measures requiring their attention.

4.3 Reporting Procedures

CalAm is required to prepare and maintain daily monitoring reports that are entered into a field record environmental database (FRED) or similar system, and made available to the CPUC and MBNMS. CalAm will also provide the CPUC and MBNMS (or their Third-Party Monitors) with written weekly, monthly and quarterly summary reports of the Project construction activities, which shall include a chronological log including the progress of construction, and all monitoring activities conducted during the reporting period including the identification of any impacts on resources, mitigation measures implemented, and all other noteworthy elements of the Project.

Construction is not allowed to start in a particular area until the required pre-construction surveys and flagging/staking are completed, and the CPUC Third-Party Monitor has validated compliance and the CPUC has issued a Notice to Proceed to CalAm to start that construction.

4.4 Public Access to Records

The public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CPUC upon request. The CPUC and CalAm will develop a filing and tracking system. For additional information on mitigation monitoring and reporting for the project, the CPUC Energy Division CEQA Unit will maintain an Internet website. To facilitate the public's awareness of and access to this information, the CPUC will make monthly reports available on the website.

5. Mitigation Monitoring, Compliance, and Reporting Program

The CPUC will prepare the Mitigation Monitoring, Compliance, and Reporting Program (MMCRP) in cooperation with MBNMS in order to meet both agencies' mitigation monitoring and reporting needs. The MMRCP will incorporate and will be based on this MMRP. The MMCRP will serve as a self-contained guide for implementing the MMRP throughout Project construction. The MMCRP will include more detailed content than is required for compliance with PRC §21081.6, it will incorporate the mitigation monitoring and reporting needs of other agencies that have yet to take action on the Project, and it will include agency, applicant, and third-party contact information that cannot be known with specificity at this time. The CPUC Project Manager, in coordination with MBNMS, will approve the completed MMCRP prior to the start of Project construction.

The MMCRP will contain a concise overview and description of the approved Project, outline its physical locations and geographic limits, and, to the extent known, provide the Project construction schedule. It will include all adopted mitigation measures and will specify the master reference document(s) that the monitors and CalAm will use in carrying out the MMRP (e.g., the Final EIR/EIS, detailed working maps and plans, issued permits, etc.).

The MMCRP will include a list of the agencies having jurisdiction over various aspects of the Project, and a description of where these respective jurisdictions occur. For example, the MMCRP will state which CDFW regional office has jurisdiction and will provide contact information, including the designated representative's name, address, email, and telephone numbers.

The MMCRP will also define the manner in which CalAm's monitoring team will interact with the CPUC staff and consultants. In addition, the MMCRP will define CalAm's required submittals to the agencies, and protocol for interactions among agency and CalAm team members.

The MMCRP must address the following topics, and others as deemed appropriate:

1. Introduction
    a. Authority and Purpose of the MMCRP
    b. Jurisdictional Agencies

c. Project Description

d. Organization of the MMCRP

2. Roles and Responsibilities

a. Monitoring Responsibility

b. Enforcement Responsibility

c. Mitigation Compliance Responsibility

d. Communications

e. Dispute Resolution

f. CalAm Roles

i. Identification of the qualified CalAm team members who would verify that all adopted measures and conditions have been successfully implemented.

ii. Organization of the CalAm team, including specifying duties, roles, and responsibilities.

iii. Identification of primary CalAm contacts for CPUC environmental monitoring staff liaison.

3. General Monitoring and Compliance Procedures

a. Environmental Monitors

b. Construction Personnel

c. General Reporting Requirements

i. CalAm Daily Incident Summary format and protocol

ii. CalAm Weekly Monitoring Report format and content

iii. CalAm Annual Monitoring Report format and content

d. Records Management and Public Access to Records

4. Mitigation Measure Tables

TABLE 1
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.2: Geology, Soils, and Seismicity									
Impact 4.2-1: Substantial soil erosion or loss of topsoil during construction. **Mitigation Measures 4.6-2b and 4.16-1**	X		X	X	X	X	See below under Mitigation Measures 4.6-2b and 4.16-1		
Impact 4.2-10: Accelerate and/or exacerbate natural rates of coastal erosion, scour, or dune retreat, resulting in damage to adjoining properties or a substantial change in the natural coastal environment. **Mitigation Measure 4.2-10: Slant Well Abandonment Plan.** CalAm shall monitor and report the rate of coastal retreat and implement the following corrective measure: 1. CalAm shall conduct annual monitoring of the rate of coastal retreat relative to the slant wells at the CEMEX site by measuring the distance from the wellhead to the western dune face. The data shall be reported no later than June 30 each year to the agencies issuing and authorizing the Coastal Development Permit and shall establish an annual erosion rate to be used to estimate the year at which the wells and associated pipelines have 5 years before exposure, assuming that at least one 100-year storm event will have occurred within that exposure timeframe. 2. Beginning at least 5 years prior to the anticipated exposure of the slant wells, CalAm shall implement the planning and permitting necessary to decommission the slant wells in accordance with state well destruction standards. An application to destroy the slant well would be submitted to the Monterey County Environmental Health Bureau, Drinking Water Protection Services Unit, for approval. The decommissioning plans shall be prepared in coordination with the property owner and permit authorizing agencies. 3. Once an estimated exposure window is established through annual monitoring and a removal date is identified, CalAm shall remove the slant wells from service prior to their exposure. Slant well decommissioning activities would be restricted to the snowy plover non-nesting season (October 1 through February 28) to avoid impacts on nesting plovers and other sensitive species. The wellhead vault, electrical panel, buried electrical conduit, and discharge piping would all be excavated and removed, followed by backfilling and compaction of the excavated vault location and trenches. The well decommissioning shall be conducted in coordination with the property owner. 4. The slant well casing shall be pressure grouted such that the screened section is sealed, pursuant to the requirements of State of California Well Standards Bulletin 74-81 and 74-90, Part III Section 23. The section of well casing and pipelines at risk of exposure shall be cut and removed to a depth of five feet below the 2060, 100-year lower profile envelope as determined by the 2014 Coastal Erosion Study (ESA, 2014) or as directed by any permit condition.	X						CalAm shall conduct annual monitoring of coastal erosion and provide monitoring data to the CPUC and the agencies issuing and authorizing the Coastal Development Permit no later than June 30 each year of the rate of coastal retreat relative to the slant wells at the CEMEX site and establish an annual erosion rate (to be recalculated each year) to estimate the year at which the wells have 5 years before exposure. At least five years prior to the estimated exposure of the slant wells, CalAm shall notify CPUC of planned slant well decommissioning and shall obtain all required permit(s) for decommissioning of slant well(s) from Monterey County and other applicable responsible and trustee agencies. CalAm shall provide the CPUC and agencies issuing and authorizing the CDP with all approved permit(s) for recordation and coordination for monitoring during slant well decommissioning.	During operation	Monitor and report annual erosion rate and to provide adequate time of at least five years for CalAm to plan for, apply for/receive all permits required to decommission the slant wells before coastal erosion exposes the wells and/or their associated pipelines.
Impact 4.2-C: Cumulative impacts related to geology, soils, and seismicity. **Mitigation Measure 4.2-10**	X						See above under Mitigation Measure 4.2-10		
Section 4.3: Surface Water Hydrology and Water Quality									
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. **Mitigation Measure 4.7-2b**	X			X			See below under Mitigation Measure 4.7-2b		

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.3: Surface Water Hydrology and Water Quality (cont.)									
Impact 4.3-4: Violate water quality standards or waste discharge requirements or degrade water quality from increased salinity as a result of brine discharge from the operation of the MPWSP Desalination Plant. **Mitigation Measure 4.3-4: Operational Discharge Monitoring, Analysis, Reporting, and Compliance.** To ensure that the operational discharges from the MPWSP are in compliance with the 2 ppt receiving water salinity limitation at the Brine Mixing Zone (BMZ) compliance point required by the California Ocean Plan, the discharger(s) shall implement a Monitoring and Reporting Plan (Plan). The Plan shall, at a minimum, include protocols for monitoring of effluent and receiving water salinity characteristics as well as protocols for determining statistically significant changes in benthic community composition within the maximum extent of the Zone of Initial Dilution (ZID) as compared to baseline conditions (established a minimum of one year prior to operations) that is directly associated with changes in salinity resulting from operational discharges (with consideration given to natural and seasonal variations and long-term regional trends). Such protocols shall include, but not be limited to, monitoring for benthic community health, aquatic life toxicity, and hypoxia, within the ZID. The Plan shall be consistent with the standard monitoring procedures detailed in Appendix III of the Ocean Plan. Such monitoring protocols specify monitoring plan framework, scope, and methodological design for determining compliance with the Ocean Plan defined receiving water limitations relating to salinity. Prior to implementation, the Plan shall be approved by the RWQCB and MBNMS. Following implementation, the Plan shall be reviewed by the RWQCB, and revised if necessary, as part of the NPDES permit renewal process. As part of the Plan, receiving water monitoring for salinity shall be conducted at times when the monitoring locations are most likely to be potentially adversely affected by the discharge. The Plan shall establish protocols to establish baseline biological conditions at the discharge location as well as at a reference location outside the influence of the discharge for at least one year prior to commencement of project construction. To determine impacts on marine biological resources against baseline biological conditions, the discharger(s) shall conduct biological surveys (e.g., Before-After Control-Impact studies), that evaluate and quantify the differences between biological communities at a reference site and at the discharge location before and after the discharge(s) commence. All monitoring data, results, and analyses shall be compiled and submitted to the RWQCB and MBNMS for review. Such monitoring shall continue until the RWQCB and MBNMS determines that a regional monitoring program is adequate to ensure compliance with the receiving water limitation. ***Water Quality Monitoring.*** At a minimum, the Plan shall include the following water quality monitoring protocols and monitoring frequencies to assess baseline conditions and to track the compliance of the Project with the performance standard of ensuring operational discharges do not exceed ambient salinity by more than 2 ppt at the edge of the BMZ, as well as to assess the efficacy of any operational or design features implemented: A. At least one year prior to implementing operational discharges, the discharger(s) shall install continuously recording automated water quality monitoring equipment, such as automatically recording water quality data sondes (water quality monitoring instrument), to monitor salinity and dissolved oxygen levels at one hour intervals in the receiving waters of Monterey Bay. The discharger(s) shall install water quality monitoring equipment at a minimum of four locations within 3 meters of the ocean floor as follows: a. 1 monitoring station at the edge of the Zone of Initial Dilution, but not more than 10 meters from the outfall diffuser. b. 1 monitoring station at the edge of the Brine Mixing Zone, representing the point of compliance with the Ocean Plan salinity standard (not more than 100 meters from the outfall diffuser). c. A representative reference location at least 1000 meters from the outfall diffuser, situated on the same elevation contour as that of the outfall diffuser, in an area outside the influence of operational discharges or other inputs to Monterey Bay, such as operational discharges from other facilities or fresh water inputs in the form of major surface water inputs. B. Monitoring will be conducted for one year prior to the commencement of operational discharges to confirm baseline conditions.		X					CalAm shall prepare and submit the required water quality monitoring and reporting plan to RWQCB and MBNMS for approval, and provide a copy of the approved plan to the CPUC. Upon receiving the approvals and providing the CPUC with copies of the same, CalAm shall install monitoring equipment and begin water quality monitoring pursuant to the approved plan at least 1 year before the commencement of project operations. CalAm shall only use qualified professionals approved by RWQCB, CPUC and MBNMS for all required monitoring and analysis and shall promptly submit the required monitoring data and analysis to the RWQCB, CPUC, and MBNMS simultaneously. Review of the monitoring data and reports will identify the need for and details concerning any corrective measures, unless and until it is determined that it is no longer required, per the mitigation measure. For the required biological surveys, survey protocols and qualifications for professionals conducting the surveys shall be submitted to MBNMS for approval. Survey reports shall be submitted to MBNMS in a format approved by MBNMS.	Prior to and during operation at intervals specified in the mitigation measure.	Establish and incorporate comprehensive biological resources baseline data into the approved water quality monitoring and reporting plan and implement the plan, and revise it as deemed necessary by RWQCB and MBNMS, to ensure compliance with the 2 ppt receiving water quality limitation at the BMZ.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.3: Surface Water Hydrology and Water Quality (cont.)									
C. Once operational discharges commence, the discharger(s) shall continue monitoring (for a minimum of five years, as described below) to confirm compliance of operational discharges with the Ocean Plan receiving water salinity limitation, which specifies discharges shall not exceed a daily maximum of 2 parts per thousand (ppt) above natural background salinity, as measured no further than 100 meters (328 ft) horizontally from the discharge point. The discharger(s) shall retrieve all data from deployed water quality monitoring instrumentation at least four times a year at quarterly annual intervals during both the one-year period of baseline monitoring and during the salinity standard compliance monitoring associated with operations. Following data collection, data shall be analyzed for compliance with the receiving water salinity standard defined in the Ocean Plan. Additionally, the salinity and dissolved oxygen data retrieved shall be used, in conjunction with biological survey data, to assess changes to benthic community composition within the ZID. The analyses and monitoring data shall be summarized and submitted to the RWQCB and MBNMS as annual reports as well as made publicly available via the project website. Reports shall include summary graphs of all quality assured/quality controlled data as well as statistical analyses of the data relative to historic baselines. Reports shall assess water quality data within the context of relevant water quality standards. The reports shall describe any measured adverse water quality related changes, such as high salinity or low dissolved oxygen levels that potentially impact marine habitat quality or benthic communities. The reports shall include assessment of the extent to which any measured changes were attributable to controllable factors, such as the variation of combined flows as part of operational discharges. The analysis and reporting conducted as part of the Plan shall determine the need for corrective actions to be implemented in the form of the design features and operational measures prescribed in **Mitigation Measure 4.3-5** to reduce identified impacts to less-than-significant levels. As part of such a determination for implementation of corrective actions, a schedule for implementation shall be provided, as well as rationale for how such design features and/or operational measures were selected and the expected results following implementation. All analysis and reporting, including determinations for the need for corrective actions to be implemented, the schedule for implementation, and the rationale for selected corrective actions shall be approved by the RWQCB and MBNMS. If at the end of five complete years of monitoring operational discharges, the 24-hour average salinity measured at the edge of the BMZ is less than 75% of the salinity performance standard for 45 days without interruption under all discharge scenarios representative of typical operations (i.e. irrigation season and non-irrigation season operations), and with approval by the RWQCB and MBNMS, the discharger(s) may terminate the monitoring and reporting specified as part of this mitigation measure (but not terminate monitoring and reporting required as part of compliance with NPDES permit conditions or Ocean Plan monitoring and reporting requirements for discharges into California ocean waters).									
Impact 4.3-5: Violate water quality standards or waste discharge requirements or degrade water quality as a result of brine discharge from the operation of the MPWSP Desalination Plant. **Mitigation Measure 4.3-5: Implement Protocols to Avoid Exceeding Water Quality Objectives.** ***Compliance with Water Quality Objectives.*** Prior to MPWSP operations, and as part of the Monterey One Water (M1W, formerly MRWPCA) NPDES Permit amendment process (Order No. R3-2014-0013, NPDES Permit No. CA0048551), the permittee shall complete a water quality assessment. As part of the water quality assessment, the permittee shall: • Quantify the projected final design discharge volume(s) by month based on project design and historic and projected monthly wastewater discharge volumes. • Collect samples of the source waters and operational discharges and analyze them in a certified laboratory for the constituents listed in Table 1 of the California Ocean Plan (Ocean Plan Water Quality Objectives). Sampling must be completed in accordance with protocols approved by the US EPA and RWQCB.		X	X				RWQCB to review and enforce NPDES permit for brine discharge. CalAm's water quality assessment shall be reported to and reviewed by RWQCB, CPUC, and MBNMS to demonstrate compliance with the NPDES permit conditions and related Ocean Plan requirements.	Prior to and during operation	Compliance with NPDES permit and related Ocean Plan requirements.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** *CalAm Reports On, and the CPUC Monitors all Mitigation Measures*	**Implementation Schedule**	
Section 4.3: Surface Water Hydrology and Water Quality (cont.)									
• Demonstrate compliance for the full range of regulated water quality constituents specified in the Ocean Plan and NPDES water quality requirements in the context of minimum initial dilution values at the edge of the Zone of Initial Dilution (ZID) for the point of discharge. If the results of the water quality assessment and waste disposal study find that operational discharges will not meet the NPDES water quality requirements, including the Ocean Plan receiving water limitation for salinity, at the edge of the zone of initial dilution (ZID) and the Brine Mixing Zone (BMZ), respectively (incorporated here as performance standards), then the MPWSP operational discharges shall not be released as proposed. Such operational discharges shall be subject to additional design features, engineering solutions, and/or operational measures to reduce the concentration of water quality constituents to be in conformance with the Ocean Plan water quality objectives and NPDES permit requirements at the edge of the ZID or BMZ, as applicable. Such necessary design features and operational measures shall either be implemented individually or in combination to achieve compliance (unless the RWQCB determines that different but equally effective measures be employed). Such possible additional design features and operational measures include: (1) *Retrofitting the existing outfall to increase dilution:* If this operational measure is implemented, the dischargers shall retrofit the outfall diffuser to include inclined diffuser jets positioned at the optimum angle to achieve maximum dilution. (2) *Additional pre-treatment of source water to the Desalination Plant:* Feasible methods to remove polychlorinated biphenyls (PCBs) and other organic compounds from the source water include additional filtration or use of granular activated carbon (GAC) - a U.S. Environmental Protection Agency-approved method. (3) *Treatment of discharge:* The dischargers must consider one or more of the alternative feasible methods that remove residual compounds from the discharge to meet water quality objectives at the edge of the ZID. These methods include the following: (a) Use of GAC (similar to that under the additional pre-treatment of source water described above, but here such treatment would be applied to the effluent following processing at the desalination facility instead of to the source water from the slant wells); or (b) Advanced oxidation with ultraviolet light with concurrent addition of hydrogen peroxide. (4) *Flow Augmentation:* If this operational measure is implemented, the dischargers shall decrease the density difference of the discharge and the receiving water through the addition of up to 5 mgd of flows with densities close to freshwater to increase the minimum dilution of dense discharges. (5) *End gate modification:* If this operational measure is implemented, the dischargers shall retrofit the outfall diffuser end gate to replace the existing opening with a minimum of one 6-inch Tideflex (or similar) check valve (Hydraulic Code 355) installed at an inclined (upward) angle greater than 20°, with an optimum angle of 60° to maximize dilution.									
Impact 4.3-C: Cumulative impacts related to surface water hydrology and water quality. **Mitigation Measures 4.3-4, 4.3-5, and 4.7-2b**		X					See above under Mitigation Measures 4.3-4 and 4.3-5, and below under Mitigation Measure 4.7-2b		

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.4: Groundwater Resources									
Impact 4.4-3: Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level during operations.	X						CalAm shall prepare the Program to be reviewed and approved by MCWRA. The MCWRA-approved Program will be sent to CPUC for confirmation prior to operation of the slant wells. CPUC will monitor and review procedures to prevent harm to local groundwater supply well owners and ensure their receipt of replacement water, as directed in the mitigation measure.	Prior to and during operation	No harm or injury to existing active groundwater supply wells.
Applicant Proposed Measure 4.4-3: Groundwater Monitoring and Avoidance of Well Damage. Prior to the start of MPWSP slant well construction, CalAm, working with MCWRA, shall develop a groundwater monitoring and reporting program (the "Program") to the satisfaction of MCWRA. All costs of Program development and implementation shall be borne by CalAm either directly or through funding of MCWRA's staff, consultants and Program activities. The Program shall augment the MCWRA's existing regional groundwater monitoring network to focus on the area that could be affected by the proposed slant wells. The geographic area of the Program shall be within the model domain of the North Marina Groundwater Model, also referred to as NMGWM[2016] and include the Dune Sand Aquifer, the 180-Foot Aquifer, the 400-Foot Aquifer and the Deeper Aquifer (i.e., the 900-Foot Aquifer) of the Salinas Valley Groundwater Basin (the "Monitoring Area"). The purpose of the Program is to ensure that owners of existing public or private groundwater supply wells within the Monitoring Area on the date the MPWSP commences slant well pumping ("Active Supply Wells") suffer no harm as a result of MPWSP slant well pumping. The elements of the Program proposed under this measure are described below. 1. A network of monitoring wells has been completed on and near the CEMEX property as part of the CalAm test slant well project. These well clusters monitor water elevation and quality at various depth intervals within the Dune Sand Aquifer, the 180-Foot Aquifer, and the 400-Foot Aquifer and shall be included in the Program's monitoring network. These existing monitoring wells are subject to relocation, replacement, or substitution by new or other monitoring wells developed as part of the Program as determined by MCWRA. 2. In addition, using information from the Groundwater Extraction Management System (GEMS) maintained by MCWRA and from the State Water Resources Control Board's Division of Drinking Water, CalAm, in coordination with MCWRA, shall identify Active Supply Wells in the Monitoring Area and offer to owners of identified Active Supply Wells the opportunity to participate in the Program for groundwater elevation and water quality monitoring. The owners of Active Supply Wells in the Monitoring Area will receive at least 60 days' notice (via email, if available, and via certified mail) of the opportunity to participate in the Program, and may elect in writing to participate in the Program as to their Active Supply Wells ("Participating Active Supply Wells"). This opt-in process must occur sufficiently in advance of MPWSP slant well pumping so that information on pre-MPWSP conditions can be obtained for each Participating Active Supply Well. Prior to the start of MPWSP slant well pumping, an independent California-certified hydrogeologist retained and directed by MCWRA (the "Hydrogeologist") shall evaluate the conditions and characteristics (e.g., well depth, well screen interval, pump depth and condition, flow rates, and drawdown) of each Participating Active Supply Well to develop pre-pumping data for each well. Water elevation and quality monitoring pursuant to the Program shall begin following initial groundwater well assessment, and shall continue at intervals specified in the Program (e.g., more frequently at the beginning of MPWSP slant well pumping and less often after stabilization of groundwater levels) until the well owner ceases pumping from the monitored well, or until the well owner agrees that monitoring is no longer required. 3. Prior to the start of MPWSP slant well pumping, CalAm and MCWRA shall review the current (as updated if needed) inventory of monitoring wells within the Monitoring Area, and identify locations within the Monitoring Area lacking monitoring coverage and that warrant monitoring in order to evaluate potential effects on Participating Active Supply Wells from MPWSP slant well pumping. Based upon that review, MCWRA may require that CalAm fund the installation of new monitoring wells in the Monitoring Area to be installed before MPWSP slant well pumping begins. The number of new monitoring well sites in the Monitoring Area and the location of those new monitoring well sites shall be determined by MCWRA. The area of groundwater monitoring under the Program may be extended outside of the Monitoring Area if warranted to evaluate potential MPWSP slant well pumping effects on Participating Active Supply Wells and recommended by the Hydrogeologist.									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** *CalAm Reports On, and the CPUC Monitors all Mitigation Measures*	**Implementation Schedule**	
Section 4.4: Groundwater Resources (cont.)									
4. The groundwater data developed through the Program shall be collected by or provided to MCWRA at intervals identified in the Program, but in no event longer than 45 days from such data being obtained, to evaluate whether MPWSP slant well pumping is causing consistent and measurable drawdown of local groundwater levels that is distinguishable from seasonal or multi-year groundwater level fluctuations. In the event that MCWRA identifies a consistent and measurable drawdown in groundwater levels and determines that such drawdown is potentially attributable to MPWSP slant well pumping and independent of seasonal or multi-year groundwater level fluctuations or any regional trends, the Hydrogeologist shall then determine if the observed degree of drawdown would damage or otherwise adversely affect any existing Participating Active Supply Wells. Adverse effects from lowered groundwater levels in Participating Active Supply Wells may include water elevation acute and long-term declines that draw water below pump intakes, causing cavitation due to exposure of the well screen, reduced well yields and pumping rates, increased energy costs to power the well, or changes in groundwater quality indicating that MPWSP slant well pumping is drawing lower quality water toward the well. Active Supply Wells that are not Participating Active Supply Wells will be considered for a determination by the Hydrogeologist of potential damage or adverse effects reasonably attributable to MPWSP slant well pumping (as described above) if substantial, credible evidence is submitted by the owners of such Active Supply Wells concerning damage or adverse effects at such wells, and such effects are verified by CalAm and the Hydrogeologist. If the Hydrogeologist determines that a Participating Active Supply Well or an Active Supply Well that CalAm and the Hydrogeologist have verified for damage or adverse effects pursuant to Section 4 above, has been damaged or otherwise negatively affected by MPWSP slant well pumping, CalAm and the Hydrogeologist shall coordinate with the well owner to develop and implement a mutually agreed upon course of action. Such course of action may include but not be limited to repairing or deepening the existing well, restoring groundwater yield by improving well efficiency, facilitating an interim or long-term replacement of water supply, constructing a new well, or compensating the owner for increased pumping costs. Any interim or long-term replacement water supply shall be of the same or better quality (i.e., potable or non-potable) and predicted quantity as the existing supply of the Active Supply Well and shall be suitable for the purposes served by the existing Active Supply Well. Before CalAm undertakes any course of action to remedy the MPWSP slant well pumping effects on an Active Supply Well, the Hydrogeologist shall authorize such action and provide notice of such action to MCWRA. **Applicant Proposed Measure 4.4-3** would monitor changes in the groundwater surface elevations caused by the proposed pumping at the slant wells through a voluntary program and use of new groundwater monitoring wells. If it is determined that the project is causing groundwater levels to damage local active wells within the Dune Sand, 180-Foot/FTE, 400-Foot Aquifer or Deeper Aquifer, this measure would ensure that active wells are repaired or replaced. Implementation of **Applicant Proposed Measure 4.4-3** is not necessary to address any significant project effect.									
Impact 4.4-4: Violate any groundwater quality standards or otherwise degrade groundwater quality during operations. **Mitigation Measure 4.4-4: Groundwater Monitoring and Avoidance of Impacts on Groundwater Remediation Plumes.** Prior to the start of MPWSP construction, CalAm shall incorporate the future quarterly groundwater elevation monitoring results for the OUCTP A-Aquifer and 180-Foot Aquifer (upper and lower) 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. • CalAm shall incorporate into its well monitoring program (described above for **Applicant Proposed Measure 4.4-3**), the most recent monitoring reports available through the U.S. Army and its contractors for the monitoring wells that are necessary to characterize the flow direction and water quality of the three OUCTP plumes located in the A-Aquifer, the Upper 180-Foot Aquifer and the Lower 180-Foot Aquifer.	X						CalAm will conduct quarterly groundwater monitoring program to monitor the potential effect of drawdown on the OUCTP plumes prior to their remediation. Results of the monitoring program will be incorporated in the MCWRA-approved Program and sent to CPUC for review. CalAm will coordinate with the U.S. Army on the monitoring program results. CalAm will inform U.S. Army, RWQCB, DTSC, and U.S. EPA, and CPUC simultaneously if the monitoring program results show the 1-foot contour approaching the OUCTP plumes. CalAm, in coordination with the U.S. Army, RWQCB, DTSC, and U.S. EPA are responsible for developing a plan if drawdown affects remediation of the plumes.	Prior to and during operation	No intersection with or impact on the OUCTP plumes by slant well pumping.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** *CalAm Reports On, and the CPUC Monitors all Mitigation Measures*	**Implementation Schedule**	
Section 4.4: Groundwater Resources (cont.)									
• The groundwater elevation results shall be evaluated by CalAm and its consultants on a quarterly basis to assess whether the -1-foot drawdown contour from the proposed subsurface intake system is approaching the edge of the OUCTP plumes. CalAm shall continuously coordinate with and include the U.S. Army in all pertinent correspondence during the groundwater data evaluation stages. If the analysis concludes that the slant well pumping could intersect or could influence the flow direction of the OUCTP plumes, then CalAm shall contact the U.S. Army, the Regional Water Quality Control Board – Central Coast Region, the California Department of Toxic Substance Control, and the U.S. EPA 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 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 OUCTP plumes has been completed and the RWQCB authorizes closure of the two OUCTP plumes remediation activities, this mitigation measure shall no longer apply.									
Section 4.5: Marine Biological Resources									
Impact 4.5-C1: Cumulative impacts on marine biological resources. **Mitigation Measure 4.3-4**		X					See above under Mitigation Measure 4.3-4		
Section 4.6: Terrestrial Biological Resources									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.** Prior to initiation of construction, CalAm and/or representatives of CalAm shall retain a qualified Lead Biologist to oversee compliance with avoidance and minimization measures for all special-status species and sensitive habitats. The Lead Biologist shall be onsite, or shall appoint qualified biologists and/or qualified biological monitors to be onsite, during all fencing and ground disturbance activities. The Lead Biologist, qualified biologists, and qualified biological monitors shall be subject to approval by resource agencies with jurisdiction over the special-status species with potential to occur at the project site (and local agencies, if required). Only the Lead Biologist and/or qualified biologists may lead protocol surveys and relocate special-status species, as authorized by the resource agencies with jurisdiction over these species. In the event that construction-related activities have the potential to violate the prescribed special-status species and habitat protection measures, the project Lead Biologist, or other appointed qualified biological monitors shall report to construction or operational site supervisors with authority to stop work to prevent any violations. Work shall proceed only after the construction-related hazards to special-status species and habitats are removed. If a special-status wildlife species is present, work shall proceed only if the species is no longer at risk of injury or death. Violations shall be thoroughly documented as part of compliance monitoring activities. The Lead Biologist shall ensure that all compliance monitoring activities are documented on a daily basis, and shall prepare a summary monitoring report on a monthly basis to be submitted to regulatory agencies upon their request. The monthly summary monitoring report shall provide information regarding the worker awareness training (see Mitigation Measure 4.6-1b below), surveys, and any observed special-status species, including any accidental injuries or fatalities. The monthly report shall also document the effectiveness and practicality of the prescribed avoidance and minimization measures and recommend modifications to the measures if needed. The Lead Biologist shall supply agency staff with copies of compliance records, including any reports of non-compliance, upon request.	X		X	X	X	X	CalAm will secure approvals from all resource agencies, with jurisdiction of special-status species with potential to occur on the Project site, of the qualifications and the retention of a Lead Biologist. In addition, CalAm will secure approvals for any qualified biologists and qualified monitors from the same resource agencies. CalAm will provide CPUC with copies of the approvals for the Lead Biologist, qualified biologists, and qualified monitors to CPUC prior to project construction. CalAm will provide daily and monthly compliance summary monitoring reports containing all information required by the mitigation measure to the resources agencies and CPUC.	Prior to and during construction activities and during maintenance activities at the slant well sites.	No violation of prescribed special-status species and habitat protection measures, and if work is stopped to prevent any such violation, work shall proceed only after the construction-related hazards to special-status species and habitats are removed (i.e., the species is no longer at risk of injury or death).

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
The Lead Biologist shall have in her/his possession a copy of all compliance measures while work is being conducted onsite, and shall ensure that CalAm's onsite representatives and contractors also maintain copies of the compliance measures on the site. To facilitate the Lead Biologist's role, CalAm shall ensure that the Lead Biologist is fully apprised of all decisions that change or materially affect the schedule, methods, and location of work that is subject to the protective measures for biological resources. This measure also applies to periodic maintenance of the subsurface slant wells.									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1b: Construction Worker Environmental Awareness Training and Education Program.** Prior to starting work, all construction workers at the project areas shall attend a Construction Worker Environmental Awareness Training and Education Program developed and presented by the Lead Biologist, appointed qualified biologist, and/or qualified biological monitor. The program shall include information on each federal and state-listed species, as well as other special-status wildlife and plant species and sensitive natural communities that may be encountered during construction activities. The training shall include: information on special-status species' life history and legal protections; the definition of "take" under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA); the measures CalAm and/or its contractors have committed to implementing to protect special-status species and sensitive natural communities; reporting requirements and communication protocols; specific measures that each worker shall employ to avoid "take" of special-status species; and penalties for violation of FESA and/or CESA. Training shall be documented as follows: 1. An acknowledgement form shall be signed by each worker indicating that environmental training has been completed. 2. A sticker shall be placed on hard hats indicating that the workers have completed the environmental training. Construction workers shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker. 3. A copy of the training transcript/training video and/or DVD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms, shall be submitted to the CPUC. This measure also applies to periodic maintenance of the subsurface slant wells.	X		X	X	X	X	CalAm will incorporate contract conditions requiring their contractors' employees to attend the required Construction Worker Environmental Training and Education Program and provide CalAm with signed copies of the contracts prior to construction. CalAm will provide a copy of the transcript and/or DVD developed and presented by CalAm's Lead Biologist containing all components of the required Construction Worker Environmental Training and Education Program and the names and signed acknowledgement forms of all construction workers that completed the Program to CPUC prior to construction.	Prior to construction activities and subsequent maintenance activities at the slant well sites.	All construction workers complete Construction Worker Environmental Training and Education Program and only those workers with a sticker on their hard hat so indicating are permitted to operate equipment within the construction area.
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1c: General Avoidance and Minimization Measures.** CalAm's construction contractor(s) shall implement the following general avoidance and minimization measures to protect special-status species and sensitive natural communities at the facility sites during construction: 1. The construction footprint, staging areas, equipment access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and flagging prior to construction to avoid natural resources outside of the project area. Any construction-related disturbance outside of these boundaries, including driving, parking, temporary access, sampling or testing, or storage of materials, shall be prohibited without explicit approval of the Lead Biologist. 2. New access driveways shall not extend beyond the delineated construction work area boundary. Construction vehicles shall pass and turn around only within the delineated construction work area boundary or local road network. Where new access is required outside of existing roads or the construction work area, the route shall be clearly marked (i.e., flagged and/or staked) prior to being used, subject to review and approval of the Lead Biologist. 3. Vehicle speeds within the project area shall not exceed 15 miles per hour on roads within the sites.	X		X	X	X	X	A Lead Biologist hired by CalAm will oversee compliance with avoidance and minimization measures for special-status species and sensitive natural communities and as directed in permit conditions approved and monitored by USFWS and CDFW. CalAm will include contract specifications that include the general avoidance and minimization measures from the mitigation measure and provide CPUC with copies of the signed contracts prior to construction. Documentation of these measures, including species found on-site and additional avoidance, minimization, or mitigation measures necessary, will be sent to CPUC, USFWS, and CDFW for monitoring of effectiveness.	Prior to and during construction activities and during maintenance activities at the slant well sites.	Implementation of avoidance and minimization measures prior to the start of construction, during construction, and during maintenance of the slant wells. Halting construction work if special-status species are found present during construction activities or maintenance of the slant wells. Consultation by the Lead Biologist, along with CPUC and MBNMS, with resource agencies to apply additional measures necessary to move or mitigate for on-site special status species.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** *CalAm Reports On, and the CPUC Monitors all Mitigation Measures*	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
4. Excavated soils shall be stockpiled in disturbed areas lacking native vegetation. Stockpile areas shall be marked by the Lead Biologist to define the limits where stockpiling can occur.									
5. Standard best management practices (such as setbacks and use of silt fences and fiber rolls) shall be employed to prevent loss of habitat due to erosion caused by project related impacts (i.e., grading or clearing for new roads). All detected erosion shall be remedied immediately upon discovery.									
6. Fueling of construction equipment shall take place within existing paved areas, and at least 50 feet from drainages (including streams, creeks, ditches, culverts, or storm drain inlets) and native habitats. Contractor equipment shall be checked for leaks prior to operation and repaired when leaks are detected. Fuel containers shall be stored within appropriately-sized secondary containment barriers.									
7. The introduction of exotic plant species shall be avoided through physical or chemical removal and prevention. Measures to prevent the introduction of exotic plants into the construction site via vehicular sources shall include implementing Track clean or other method of vehicle cleaning for vehicles coming to the site and leaving the site. Earthmoving equipment shall be cleaned prior to transport to the project area. Weed-free rice straw or other certified weed-free straw shall be used for erosion control. Weed populations introduced into the site during construction shall be eliminated by chemical and/or mechanical means approved by California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS).									
8. Use of herbicides as vegetation control measures shall be used only when mechanical means have been deemed ineffective. All uses of such herbicidal compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and state and federal legislation as well as additional project-related restrictions deemed necessary by the CDFW and/or USFWS. No rodenticides shall be used.									
9. Prior to the start of construction at any proposed facility site where special-status amphibians, reptiles and mammals have a moderate or high potential to occur, the construction work area boundary shall be fenced with a temporary exclusion fence to prevent special-status wildlife from entering the site during construction (see **Table 4.6-6** for the list of special-status species that could be significantly impacted at each project facility site). The exclusion fencing shall be constructed of metal flashing, plastic sheeting, or other materials that will prohibit California horned lizards, Monterey shrews, and other special-status reptiles, amphibians, and rodents from climbing the fence. If meshing is used it shall be of a size that would not catch wildlife. The fencing shall be buried a minimum of 6 inches below grade to secure the fence and extend a minimum of 30 inches above grade. The fencing shall be inspected by the Lead Biologist or qualified biological monitor on a daily basis during construction activities to ensure fence integrity. Any needed repairs to the fence shall be performed on the day of their discovery. Fencing shall be installed and maintained during all phases of construction. Final fence design and location shall be determined in consultation with USFWS and CDFW. Exclusion fencing shall be removed once construction activities are complete.									
10. If special-status wildlife species are found on the site immediately prior to construction or during project construction, construction activities shall cease in the vicinity of the animal until the animal moves on its own (if possible, as determined by the Lead Biologist or biological monitor) outside of the project area. Additional mitigation measures specific to special-status plants; Smith's blue butterfly; black legless lizard, silvery legless lizard, and coast horned lizard; western burrowing; American badger; Monterey dusky-footed woodrat, California red-legged frog and California tiger salamander are described in Mitigation Measure 4.6-1f, 4.6-1g, 4.6-1h, 4.6-1j 4.6-1k, and 4.6-1o. The Lead Biologist and Lead Agencies shall consult with wildlife resource agency(ies) with jurisdiction over the species regarding any additional avoidance, minimization, or mitigation measures that may be necessary if the animal does not move on its own. A report shall be prepared by the Lead Biologist to document the activities of the animal within the site; all fence construction, modification, and repair efforts; and movements of the animal once again outside the exclusion fence. This report shall be submitted to the CPUC and pertinent wildlife agencies with jurisdiction over the wildlife species.									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
11. Vegetation removal and grading activities shall be conducted during daylight hours. Immediately prior to conducting vegetation removal or grading activities inside fenced exclusion areas, the Lead Biologist or a qualified biologist shall survey within the exclusion area to ensure that no special-status species are present. The Lead Biologist or a qualified biologist shall also monitor vegetation removal or grading activities inside fenced exclusion areas for the presence of special-status species. If special-status species are present, then measure 10 above shall be implemented.									
12. To prevent the inadvertent entrapment of special-status wildlife during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall be covered with plywood or similar materials at the close of each working day, or escape ramps constructed of earth fill or wooden planks shall be positioned within the excavations to allow special-status wildlife to escape on their own. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If listed species are trapped, they shall only be relocated with authorization from USFWS and/or CDFW, as appropriate.									
13. All construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods and with a diameter of 4 inches or more shall be inspected for special-status wildlife before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a special-status animal is discovered inside a pipe, that section of pipe shall not be moved until the appropriate resource agency, with jurisdiction over that species, has been consulted to determine the appropriate method for relocation. If necessary, under the direct supervision of the qualified biologist, the pipe may be moved once to remove it from the path of construction activity until the animal has escaped.									
14. All vertical tubes used in project construction, such as chain link fencing poles or signage mounts, shall be temporarily or permanently capped at the time they are installed to avoid the entrapment and death of special-status birds.									
15. Water used for dust abatement shall be minimized in an effort to avoid the formation of puddles that could attract common ravens and other predators to the construction work areas.									
16. No vehicle or equipment parked in the project area shall be moved prior to inspecting the ground beneath the vehicle or equipment for the presence of wildlife. If present, the animal shall be left to move on its own.									
17. All vehicles and equipment shall be in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Lead Biologist shall be informed of any hazardous spills within 24 hours of the incident. Hazardous spills shall be immediately cleaned up and the contaminated soil shall be properly disposed of at a licensed facility.									
18. A trash abatement program shall be implemented during construction. Trash and food items shall be contained in closed containers and removed from the construction site daily to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.									
19. Workers shall be prohibited from feeding wildlife and bringing pets and firearms to the construction work areas.									
20. Intentional killing or collection of wildlife species, including special-status species in the project area and surrounding areas shall be strictly prohibited.									
21. All temporarily disturbed areas shall be returned to pre-project conditions or better. Existing access roads within the CEMEX site shall be returned to their existing use.									
This measure also applies to periodic maintenance of the subsurface slant wells.									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover.** Construction contractors shall be required to implement the following measures to protect western snowy plover: 1. CalAm shall require that its construction contractor(s) implement all avoidance and minimization measures required by USFWS as part of the FESA Section 7 consultation between the ONMS and USFWS. 2. Construction work at the slant well heads and along the segment of the Source Water Pipeline located west of the CEMEX processing plant shall occur during the western snowy plover non-breeding season (defined as October 1 through February 28) unless otherwise approved by the USFWS. 3. For work that cannot be completed during the non-nesting season, the following steps to obtaining USFWS approval shall be implemented: a. CalAm shall include in final design submittals to the Lead Agencies and USFWS proposed feasible methods of avoidance and minimization of impacts on nesting western snowy plovers. Such measures may include, but are not limited to, installation of visual or noise barriers, limiting the type of construction, installation of noise controls on equipment, and other measures that achieve visual separation and/or noise reduction. CalAm shall obtain concurrence from Lead Agencies and USFWS on this proposed suite of avoidance and minimization measures prior to start of construction of the subsurface slant wells and Source Water Pipeline. Measures shall be implemented as necessary as described in item d, below. b. CalAm shall engage the services of Point Blue or other qualified western snowy plover biologist (subject to approval by USFWS) to perform one year of surveys during the nesting season preceding construction to determine whether nesting is occurring within sight or audible range of the slant well head locations or Source Water Pipeline. c. If findings from the nesting season survey are negative, then the qualified western snowy plover biologist shall conduct additional pre-construction nesting surveys within 24 hours of initiation of construction activities within 300 feet of all construction work areas to determine if any snowy plover nests are present. If there is a break of 3 days or more in construction activities, a survey shall be conducted before construction begins again. d. If nests are observed within 300 feet of construction activities, the qualified biologist shall notify and consult with USFWS to determine whether construction may proceed, based on detailed information on location of nest(s), proximity to construction, topography, and noise environment. Additional avoidance or minimization measures shall be implemented prior to initiating construction activities. Construction may proceed if, with the incorporation of such avoidance or minimization measures, the work would not cause an adult to abandon an active nest or young, change an adult's behavior so it could not care for an active nest or young, or directly impact an adult or young, or as allowed within the take provisions authorized by USFWS. e. The biologist shall conduct periodic monitoring during construction to determine if there are any nest starts. Nest starts shall be reported to USFWS to determine whether construction on all or portions of the slant wells or Source Water Pipeline need to be suspended for the duration of nesting and fledging. The biologist will inform the decision with detailed information on location of nest(s), proximity to construction, topography, and noise environment. Construction may continue, subject to USFWS approval, if, with the incorporation of avoidance or minimization measures identified under item a, above, and deemed necessary by USFWS, the work would not cause an adult to abandon an active nest or young, change an adult's behavior so it could not care for an active nest or young, or directly impact an adult or young, or as allowed within the take provisions authorized by USFWS.	X						CalAm shall provide and obtain approval from CPUC and USFWS of final design submittals and provide a copy of all permits and approvals issued by USFWS as well as any subsequent modifications approved and related avoidance and minimization measures required by USFWS. The Lead Biologist hired by CalAm will oversee compliance with avoidance and minimization measures for Western Snowy Plover and their habitat and as directed in permit conditions approved and monitored by USFWS. Documentation of these measures, including species found on-site, will be sent to ONMS, CPUC, and USFWS for monitoring of effectiveness.	Prior to and during construction activities and during maintenance activities at the slant well sites.	Implementation of all avoidance and minimization measures required by USFWS for Western Snowy Plover, including those in this mitigation measure, prior to the start of construction, during construction, and during maintenance of the slant wells to ensure that impacts on Western Snowy Plovers and their nests are avoided or that all conditions of any take permits/authorizations are successfully implemented.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
4. For construction during the breeding season that is approved by USFWS, visual barriers shall be installed around any work area located within line of sight of potential nesting habitat. Visual barriers shall be constructed at an adequate height and width to visually block construction equipment and construction crews from snowy plover nesting habitat. Final designs of the visual barriers shall be coordinated with USFWS. Existing sand dunes may serve as visual barriers.									
5. For work conducted during the non-nesting season, a qualified biologist will evaluate the nature and extent of wintering plover activity in the project area no more than 3 days prior to construction and inform CalAm so they can implement avoidance and minimization measures, such as those listed in subsection 3a, that avoid or minimize disturbance to plovers. The biologist shall conduct periodic monitoring during construction to ensure that minimization measures are implemented to avoid or minimize disturbance to plovers. The measures shall ensure that wintering plovers are not directly impacted by construction activities.									
6. CalAm shall restore all temporarily impacted potential snowy plover habitat following construction. At a minimum the restored site shall meet the following performance standards by the fifth year following restoration: a. Temporarily impacted areas are returned to pre-project conditions or greater b. Native vegetation cover shall be at least 70 percent of baseline native vegetation cover c. The restoration area shall have no more cover by invasives than the baseline Restoration and performance standards shall be described in a Habitat Mitigation and Monitoring Plan consistent with **Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan)**.								
7. Anti-perching devices, such as bird spikes or wire strips, shall be installed and maintained on the top of the proposed electrical control cabinets to discourage potential plover predators.									
8. Permanent loss of western snowy plover habitat, to be determined based on final design and construction specifications, will be compensated at a minimum ratio of 3:1. Compensation may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat for western snowy plover. Prior to project implementation, CalAm shall prepare a Habitat Mitigation and Monitoring Plan, as described in Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan), which will describe either onsite or offsite creation, restoration, enhancement, or preservation. The plan will include actions to benefit western snowy plover, in conjunction with providing mitigation for special-status plants, as described in Mitigation Measure 4.6-1e, below. The plan will be subject to USFWS input and approval. It will describe creation, restoration, and/or enhancement methods that may include, but not be limited to removal of ice plant, stabilization of dune sand, planting, seeding or other means of re-establishing native plant species. It will describe measures to manage recreational activities to benefit western snowy plover. Measures may include requiring that dogs are on leash, fencing is installed around breeding areas, and kite flying is restricted in the breeding season. CalAm will identify and secure access rights and other approvals to implement the plan, and will execute the plan. CalAm will conduct, or will support a qualified third party monitor to conduct annual monitoring of performance measures for a minimum of five years, such as cover, density and diversity of native plant species, thresholds of non-native plant abundance, and stability of dune sands. At a minimum, the compensation areas shall meet the following performance standards by the fifth monitoring year: a. Native vegetation cover shall be at least 70 percent of the native vegetation cover in the impact area. b. The compensation areas shall not be heavily vegetated. c. Invasive species cover shall be less than or equal to the invasive species cover in the impact area. d. No barrier between the compensation site and the water. e. No significant erosion.								

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** *CalAm Reports On, and the CPUC Monitors all Mitigation Measures*	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
This measure also applies to periodic maintenance of the subsurface slant wells, which would result in a permanent loss of western snowy plover habitat. Compensatory mitigation for permanent loss from periodic maintenance of the subsurface slant wells would only be applied once and would not be applied for each five-year maintenance event.									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1e: Avoidance and Minimization Measures for Special-status Plants.** Prior to construction, CalAm or its contractor shall conduct focused botanical survey(s) for special-status plants in all potentially suitable habitat during the appropriate blooming period for each species and in accordance with the guidelines established by California Department of Fish and Game in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG, 2009). Maps depicting the results of these surveys shall be prepared for use in final design. If more than two years elapse between the focused botanical surveys and commencement of ground disturbance activities, a final set of appropriately-timed focused botanical surveys shall be conducted and populations mapped. The results of these final surveys shall be combined with previous survey results to produce habitat maps showing habitat where the special-status plants have been observed during either of the focused botanical surveys conducted for each facility site. Special-status plant species are widespread throughout the project area, and could occur at the following facility locations: subsurface slant well site, MPWSP Desalination Plant site, ASR-5 and ASR-6 Wells sites, and along the Source Water Pipeline, new Desalinated Water Pipeline and new Desalinated Water Pipeline Optional Alignment, the Castroville Pipeline and Castroville Pipeline Optional Alignments, new Transmission Main and new Transmission Main Optional Alignment, ASR Conveyance Pipeline, ASR Pump-to-Waste Pipeline, and ASR Recirculation Pipeline, Ryan Ranch-Bishop Interconnection Improvements, and Main System-Hidden Hills Interconnection Improvements, and at proposed staging areas. 1. To the extent feasible, project facilities shall be sited to avoid permanent and temporary impacts on special-status plants and their required constituent habitat elements. 2. Special-status plants located within temporary construction areas shall be fenced or flagged for avoidance (if feasible) prior to construction. The Lead Biologist or the appointed biological monitor shall ensure compliance with off-limits areas. If avoidance is not feasible, seasonal avoidance measures (i.e., limited operating periods based on timing of annual plant dormancy), or temporarily placing heavy fabric or wooden mats over the affected habitat shall be applied as appropriate. Topsoil salvage and site restoration may also be implemented, to be determined by the Lead Biologist and USFWS and CDFW, as appropriate, to ensure the site is returned to pre-construction conditions. 3. For potential impacts on listed plant species, such as Menzies' wallflower, sand gilia, Monterey spineflower, and Yadon's rein orchid, CalAm shall comply with the FESA CESA by implementing any requirements from USFWS and CDFW consultation. For state listed rare plants, a state Incidental Take Permit (ITP) may be required which would provide conditions for allowable take and measures to compensate impacts on rare plants. 4. For HMP plant species on former Fort Ord lands, plants shall be salvaged, under the direction of a qualified biologist, as necessary, per the requirements of the HMP, and in accordance with any requirements from USFWS and CDFW. 5. If avoidance is not feasible, compensation for temporary or permanent loss of special-status plant occurrences, in the form of land purchase or restoration, shall be provided at a minimum 1:1 ratio for temporary impacts and 2:1 ratio for permanent impacts. Compensation for loss of special-status plant populations may include the restoration or enhancement of temporarily impacted areas, purchase and permanent stewardship of known occupied habitat or the restoration and reintroduction of populations in degraded, unoccupied habitat. Restoration or reintroduction may	X		X	X	X	X	CalAm shall provide and obtain approval from CPUC and USFWS/CDFW of final design submittals which incorporate the required botanical surveys and habitat maps and demonstrate either that facilities are sited to avoid impacts on special-status plants/habitat elements or that required restoration will be achieved by way of a Habitat Mitigation and Monitoring Plan or compensatory credits approved by all required resource and local agencies consistent with the requirements of this MM. A Lead Biologist hired by CalAm will oversee compliance with avoidance and minimization measures for special-status plant species and sensitive natural communities and as directed in permit conditions approved and monitored by USFWS and CDFW.	Prior to construction activities and subsequent maintenance activities at the slant well sites.	Use of maps prepared with location of special-status plants in final design drawings and documented evidence that permanent and temporary impacts on special-status plants and their required constituent habitat elements are avoided. Compensation, by restoration or credits, shall be provided as approved by all required resource and local agencies when avoidance is not possible.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
be located on- or offsite. At a minimum, the compensation areas shall meet the following performance standards by the fifth year following initiation of compensation efforts: a. The compensation area shall be at least the same size as the impact area. b. Native vegetation cover shall be at least 70 percent of the native vegetation cover in the impact area c. Population of the impacted special-status species shall have either: i. at least 60 percent cover of the impact area, or ii. at least 70 percent survival of installed plants d. Invasive species cover shall be less than or equal to the invasive species cover in the impact area Additionally, restored populations shall have greater than the number of individuals of the impacted population, in an area greater than or equal to the size of the impacted population, for at least 3 consecutive years without irrigation, weeding, or other manipulation of the restoration site. 6. CalAm shall prepare a **Habitat Mitigation and Monitoring Plan, as described in Mitigation Measure 4.6-1n** (Habitat Mitigation and Monitoring Plan), which will describe either onsite or offsite restoration. Alternatively, compensatory credits may be purchased through a USFWS- and/or CDFW-approved mitigation bank, or USFWS-approved Habitat Conservation Plan. This measure also applies to periodic maintenance of the subsurface slant wells, which would result in a permanent loss of special-status plants occurring at that site. Compensatory mitigation for permanent loss from periodic maintenance of the subsurface slant wells would only be applied once and would not be applied for each five-year maintenance event.									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly.** CalAm or its construction contractor(s) shall implement the following measures to reduce impacts on Smith's blue butterfly during construction: 1. CalAm shall require that its construction contractor(s) implement all avoidance and minimization measures required by USFWS as part of the FESA Section 7 consultation between ONMS and USFWS. 2. Floristic botanical surveys of all suitable habitat for coast buckwheat and seacliff buckwheat, both of which are host plants to Smith's blue butterfly, shall be conducted by a qualified biologist during project design and prior to project implementation. Maps depicting the results of these surveys shall be prepared to document the location of the host plants within or adjacent to the project area. 3. Construction of project elements shall be planned to avoid mapped host plants for Smith's blue butterfly whenever feasible. 4. If it is not feasible to avoid disturbance to host plants during project construction, the following shall be implemented: a. Prior to the start of construction activities and before conducting preconstruction surveys for Smith's blue butterfly, the Lead Biologist or an appointed qualified biologist shall prepare a protect-in-place and relocation plan for Smith's blue butterfly and its host plants. If either is found in areas subject to permanent habitat or plant loss, then plants would be salvaged and relocated in accordance with the plan. The relocation plan shall be submitted to USFWS for approval. The relocation plan shall define the study area, describe appropriate handling and relocation methods (such as digging up and removing individual plants, duff, and/or soil and	X		X	X	X	X	CalAm shall obtain approval from USFWS/ONMS, and shall provide copies thereof to CPUC, along with final design submittals and a protect in place and relocation plan which incorporates the required botanical surveys and habitat maps and demonstrate either that facilities are sited to avoid impacts on Smith's blue butterfly and its host plants or that required restoration will be achieved by way of a Habitat Mitigation and Monitoring Plan or compensatory credits approved by all required resource and local agencies consistent with the requirements of this MM. A Lead Biologist hired by CalAm will oversee compliance with avoidance and minimization measures for Smith's blue butterfly and sensitive natural communities and as directed in permit conditions approved and monitored by USFWS and CDFW. Documentation of these measures, including species found on-site, will be sent to CPUC, USFWS, and CDFW for monitoring of effectiveness and for compensatory mitigation.	Prior to and during construction activities and during maintenance activities at the slant well sites.	Use of maps prepared with location of Smith's blue butterfly and its habitat in final design drawings and documented evidence that permanent and temporary impacts on special-status plants and their required constituent habitat elements are avoided. Compensation, by restoration or credits, shall be provided as approved by all required resource and local agencies when avoidance is not possible.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** *CalAm Reports On, and the CPUC Monitors all Mitigation Measures*	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
moving them to a new location), and identify appropriate relocation sites. Surveys shall be conducted at relocation sites to determine the existing Smith's blue butterfly population size and ensure that the relocation sites will not become overpopulated. Only relocation sites that are not overpopulated and have suitable habitat conditions (e.g. soils, vegetation, etc.) shall be used.									
b. If preconstruction surveys identify butterflies or host plants in areas subject only to temporary disturbance that do not require plant removal, then the plants, and leaf litter and soil which may hold dormant butterfly pupae, would be protected in place with heavy fabric, plywood or other mats (depending on the stability of the underlying soil) to allow construction vehicles to pass over. Following construction, the fabric or mats would be carefully removed and the area allowed to recover. Short-term damage to buckwheat populations is expected to be low.									
c. A qualified biologist shall survey the work area no more than 30 days before the onset of ground disturbance. If any life stage of the Smith's blue butterfly or its host plants is found within the project area boundary, the Lead Biologist or qualified biologist shall relocate plants, duff, and/or soil, from the site before construction begins per the relocation plan described above.									
5. Upon completion of construction activities, CalAm shall restore Smith's blue butterfly habitat temporarily impacted during construction. Compensatory mitigation for permanent impacts shall be provided either onsite or offsite at a minimum ratio of 2:1. Compensation for loss of host plant populations may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration:									
a. Temporarily impacted areas are returned to pre-project conditions or greater									
b. Native vegetation cover shall be at least 70 percent of baseline/impact area native vegetation cover									
c. The population of coast buckwheat and/or seacliff buckwheat shall have either:									
i. at least 60 percent cover of the baseline/impact area, or									
ii. at least 70 percent survival of installed plants									
d. No more cover by invasives than the baseline/impact area									
Restoration and mitigation activities shall be described in the Habitat Mitigation and Monitoring Plan prescribed by **Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan)**.									
Alternatively, compensatory credits may be purchased through an approved mitigation bank, or approved Habitat Conservation Plan.									
This measure also applies to periodic maintenance of the subsurface slant wells, which would result in a permanent loss of Smith's blue butterfly habitat. Compensatory mitigation for permanent loss from periodic maintenance of the subsurface slant wells would only be applied once and would not be applied for each five-year maintenance event.									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1g: Avoidance and Minimization Measures for Black Legless Lizard, Silvery Legless Lizard, and Coast Horned Lizard.** The Lead Biologist shall appoint a qualified biologist possessing a Scientific Collecting Permit issued by CDFW for black legless lizard, silvery legless lizard, and coast horned lizard to conduct preconstruction surveys for legless lizards and coast horned lizards within 24 hours prior to the initiation of ground disturbing activities or vegetation clearing in suitable habitats such as central dune scrub, coast sage scrub, and central maritime chaparral. 1. Prior to conducting the surveys, the qualified biologist shall prepare a relocation plan that describes the appropriate survey and handling methods for the lizards, and identifies nearby relocation sites where the lizards would be relocated if found during the preconstruction surveys. Surveys shall be conducted at relocation sites to determine the existing lizard population size and ensure that the relocation sites will not become overpopulated. Only relocation sites that are not overpopulated and have suitable habitat conditions (e.g., soils, moisture content, vegetation, aspect) shall be used. The relocation plan shall be submitted to CDFW for approval prior to the start of construction activities. 2. Legless lizard surveys shall be conducted by hand raking soil and leaf litter beneath brush. If Legless lizards are encountered, they shall be salvaged and relocated per the relocation plan. 3. Coast horned lizard surveys shall be conducted by walking transects spaced appropriately to allow for 100 percent visual coverage in search of lizards under shrubs, along gravelly-sandy areas, or any other suitable habitat. Any lizard encountered shall be relocated per the relocation plan. This measure also applies to periodic maintenance of the subsurface slant wells.	X		X	X	X	X	CalAm shall provide the CPUC with the name of the biologist to conduct preconstruction lizard surveys, a copy of his/her valid Scientific Collecting Permit and the CDFW-approved relocation plan. A Lead Biologist hired by CalAm will oversee compliance with avoidance and minimization measures for black legless lizard, silvery legless lizard, and coast horned lizard and as directed in conditions approved and monitored by CDFW. Documentation of these measures, including species found on-site and collected, will be sent to CPUC and CDFW for monitoring of effectiveness and for compensatory mitigation.	Prior to construction activities and subsequent maintenance activities at the slant well sites.	Preconstruction surveys demonstrate absence of lizards or if present lizards are relocated to CDFW-approved relocation site.
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1h: Avoidance and Minimization Measures for Western Burrowing Owl.** The following measures shall be implemented to avoid and minimize impact on western burrowing owl: 1. Prior to the start of construction activities in or around suitable burrowing owl habitat, the Lead Biologist shall appoint a qualified biologist to conduct protocol surveys for burrowing owl. The survey methodology shall be consistent with the methods outlined in the *Staff Report on Burrowing Owl Mitigation* (CDFG, 2012). The surveys shall consist of walking parallel transects spaced 7 to 20 meters (23 to 65 feet) apart, adjusting for vegetation height and density as needed, and noting any potential burrows with fresh burrowing owl sign or presence of burrowing owls. A copy of the protocol survey results shall be submitted to the CPUC and CDFW upon request. Protocol surveys shall be conducted within both the breeding and non-breeding seasons to determine the presence/absence of burrowing owls. 2. A qualified biologist shall conduct preconstruction surveys of the permanent and temporary impact areas in or around suitable burrowing owl habitat to locate active breeding or wintering burrowing owl burrows less than 14 days prior to construction and/or prior to exclusion fencing installation. The methodology for the preconstruction surveys shall be consistent with the methods outlined in the *Staff Report on Burrowing Owl Mitigation*. 3. If no burrowing owls are detected, no additional action is necessary. 4. In areas positive for burrowing owl presence, the Lead Biologist or qualified biological monitor shall be onsite during all construction activities in areas where burrowing owls are determined to be present.	X		X	X	X	X	CalAm shall provide the CPUC with the name of the biologist(s) to conduct protocol and preconstruction owl surveys, copies of all survey results and copies of all CDFW-approved owl buffers and related plans (e.g., Burrowing Owl Exclusion Plan, Burrowing Owl Habitat Mitigation Plan, and any other related buffer coordination/authorizations).	Prior to and during construction activities and during subsequent maintenance activities at the slant well sites.	Protocol and preconstruction surveys demonstrate absence of burrowing owls or if present that all applicable CDFW-approved buffers, Exclusion and Mitigation Plans are fully implemented and/or compensatory mitigation provided.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s): Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	Monitoring and Reporting Program: Monitoring and Reporting Actions: *CalAm Reports On, and the CPUC Monitors all Mitigation Measures*	Monitoring and Reporting Program: Implementation Schedule	Effectiveness Criteria
Section 4.6: Terrestrial Biological Resources (cont.)									
5. If burrowing owls are detected during the nesting and fledging seasons (April 1 to August 15 and August 16 to October 15, respectively), no ground-disturbing activities shall be permitted within the distances specified in **Table 4.6-8** from an active burrow, unless otherwise authorized by CDFW. The specified buffer distance ranges from 656 feet to 1,640 feet, according to the time of year and the level of disturbance. Buffers shall be established in accordance with **Table 4.6-8** and occupied burrows shall not be disturbed during the nesting season unless a qualified biologist approved by CDFW verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. Burrowing owls shall not be moved or excluded from burrows during the breeding season (April 1 to October 15). The buffer distance can be reduced with authorization from CDFW if construction activities would not cause an adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young. 6. During the non-breeding (winter) season (October 16 to March 31), consistent with **Table 4.6-8**, ground-disturbing work shall maintain a distance ranging from 164 to 1,640 feet from any active burrows, depending on the level of disturbance, to be determined through coordination with CDFW. The buffer distance can be reduced with authorization from CDFW if construction activities would not cause the owl to abandon its winter burrow. If active winter burrows are found that would be directly affected by ground-disturbing activities, owls can be displaced from winter burrows according to recommendations made in the *Staff Report on Burrowing Owl Mitigation*.									

TABLE 4.6-8
BURROWING OWL BURROW BUFFERS

Location	Time of Year	Level of Disturbance: Low	Medium	High
Nesting sites	April 1–August 15	656 feet	1,640 feet	1,640 feet
Nesting sites	August 16–October 15	656 feet	656 feet	1,640 feet
Any occupied burrow	October 16–March 31	164 feet	328 feet	1,640 feet

SOURCE: CDFG, 2012.

7. Burrowing owls shall not be excluded from burrows unless or until a Burrowing Owl Exclusion Plan is developed by the Lead Biologist, approved by CDFW, and submitted to the CPUC. At a minimum, the plan shall include the following: a. Confirmation by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding the use of a scope to visually inspect the burrow; b. Specifications regarding the type of scope to be used and the appropriate timing of using a scope to visually inspect burrows to avoid disturbance of individual owls; c. Occupancy factors to look for and what shall guide determination of vacancy and excavation timing; d. Methods for burrow excavation. Excavation using hand tools with refilling to prevent reoccupation is preferable; e. Removal of other potential owl burrow surrogates or refugia onsite; f. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.6: Terrestrial Biological Resources (cont.)									
g. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use and to avoid take; h. Methods to ensure the impacted site shall continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete. 8. Site monitoring shall be conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Prior to exclusion activities, daily monitoring shall be conducted for one week to confirm young owls have fledged if the exclusion occurs immediately after the end of the breeding season. 9. 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 burrowing owl *Staff Report on Burrowing Owl Mitigation* guidance and in consultation with CDFW. If compensatory mitigation is necessary, CalAm shall detail the compensatory mitigation in a Burrowing Owl Habitat Mitigation Plan (which shall be incorporated into the Habitat Mitigation and Monitoring Plan described in **Mitigation Measure 4.6-1n**). At a minimum, the following measures shall be implemented: a. Temporarily disturbed habitat shall be restored to pre-construction conditions, including soil decompaction and revegetation. b. Permanent impacts on nesting, occupied and satellite burrows, and any other burrowing owl habitat shall be mitigated such that the habitat acreage, number of burrows, and number of burrowing owls impacted are replaced. Compensatory mitigation may include the permanent conservation of lands with similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) as those lands where the permanent loss of habitat would occur. Conservation lands shall provide habitat for burrowing owl nesting, foraging, wintering, and/or dispersal (i.e., during breeding and nonbreeding seasons) comparable to or better than that of the impact area, and with sufficiently large acreage, and presence of fossorial mammals. Alternatively, compensatory credits may be purchased through an approved mitigation bank, or approved Habitat Conservation Plan.									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1i: Avoidance and Minimization Measures for Nesting Birds.** This measure applies to all nesting birds protected by the federal Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code, except for western snowy plover and western burrowing owl, which are addressed in Mitigation Measure 4.6-1d and 4.6-1h, respectively. Nesting birds may be present at all of the proposed facility sites. A qualified biologist shall conduct preconstruction avian nesting surveys prior to initiation of construction activities at all facility sites, unless otherwise indicated below. 1. No preconstruction surveys or avoidance measures are required for construction activities that would be completed entirely during the non-nesting season (September 16 to January 31). 2. For all construction activities scheduled to occur during the nesting season (February 1 to September 15), the qualified biologist shall conduct a preconstruction avian nesting survey no more than 10 days prior to the start of staging, site clearing, and/or ground disturbance. Copies of the survey results shall be submitted to the CPUC. 3. If construction activities at any given facility site begins in the non-breeding season and proceeds continuously into the breeding season, no surveys are required as long as a similar type of construction continues. 4. If there is a break of 10 days or more in construction activities during the breeding season, a new nesting bird survey shall be conducted before reinitiating construction.	X		X	X	X	X	CalAm shall provide to the CPUC the name of the biologist(s) to conduct required preconstruction nesting surveys and construction monitoring, copies of all surveys and monitoring reports prepared by the biologist(s) and copies of all related CDFW buffer and mitigation consultations, approvals and/or authorizations.	Prior to and during construction activities and during subsequent maintenance activities at the slant well sites.	Preconstruction surveys demonstrate absence of active nests or if present that all applicable CDFW-approved buffers and avoidance/ minimization measures are fully implemented.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
5. The surveying biologist shall be capable of determining the species and nesting stage without causing intrusive disturbance. The surveys shall cover all potential nesting sites within 500 feet of the project area for raptors and within 300 feet for other birds. If active nests are found in the project area or vicinity (500 feet for raptors and 300 feet for other birds), the nests shall be continuously surveyed for the first 24 hours prior to any construction related activities to establish a behavioral baseline and, once work commences, all nests shall be continuously monitored to detect any behavioral changes as a result of the project, if feasible. If behavioral changes are observed, work causing the change shall cease and CDFW shall be consulted for additional avoidance and minimization measures. The avoidance and minimization measures shall ensure that the construction activities do not cause the adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young. If continuous monitoring is not feasible, a no-disturbance buffer (at least 500 feet for raptors and 250 feet for other birds [or as otherwise determined in consultation with CDFW and USFWS] shall be created around the active nests). The buffer distance can be reduced with authorization from CDFW if construction activities would not cause an adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young. If the nest(s) are found in an area where ground disturbance is scheduled to occur, the project operator shall require that ground disturbance be delayed until after the birds have fledged. This measure also applies to periodic maintenance of the subsurface slant wells.									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1j: Avoidance and Minimization Measures for American Badger.** The following measures shall be implemented to avoid and minimize impacts on American badger: 1. A qualified biologist shall conduct preconstruction surveys for American badger dens prior to the start of construction at potentially affected sites. The survey results shall be submitted to the CPUC. 2. Areas of suitable habitat for American badger in the project area include fallow agricultural and grazing land and non-native grasslands. Surveys shall be conducted wherever these vegetation communities exist within 100 feet of the project area boundary. Along pipeline alignments surveys shall be phased to occur within 14 days prior to disturbance along that portion of the alignment. Game cameras shall be used to record any movements at potentially active dens for no less than three (3) nights. 3. Areas of suitable habitat for American badger in the project area include fallow agricultural and grazing land and non-native grasslands. Surveys shall be conducted wherever these vegetation communities exist within 100 feet of the project area boundary. Along pipeline alignments surveys shall be phased to occur within 14 days prior to disturbance along that portion of the alignment. 4. If no potential American badger dens are found during the preconstruction surveys, no further action is required. 5. If the biologist determines that any potential dens identified during the preconstruction surveys are inactive, the biologist shall excavate the dens by hand with a shovel to prevent use by badgers during construction. 6. If active badger dens are found during the course of preconstruction surveys, the following measures shall be taken to avoid and minimize adverse effects on American badger: a. Relocation shall be prohibited during the badger pupping season (typically February 15 to June 1). b. Construction activities shall not occur within 50 feet of active badger dens observed outside of the project area. c. The Lead Biologist shall contact CDFW immediately if natal badger dens are detected. Construction activities shall not occur within 200 feet of an active natal badger den. This buffer may be reduced, if approved by CDFW, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals.	X		X	X	X	X	CalAm shall provide the name and qualifications of the biologist(s) to conduct required preconstruction badger surveys to the CPUC for approval. CalAm shall also provide to the CPUC construction monitoring reports, copies of all surveys prepared by the biologist(s), copies of all related CDFW-approved buffers, den excavations and/or badger relocations and documentary evidence of compliance therewith.	Prior to and during construction activities.	Preconstruction surveys demonstrate absence of badgers and active dens or if present that all applicable CDFW-approved buffers, den excavations and/or badger relocations are fully implemented.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
If the biologist determines that potential dens within the project area, and outside the breeding season, may be active, the biologist shall notify the CDFW. Badgers shall be passively relocated from active dens during the nonbreeding season. Passive relocation may include incrementally blocking the den entrance with soil, sticks, and debris for three to five days to discourage use of these dens prior to project disturbance. After the qualified biologist determines that badgers have abandoned any active dens found within the project area, the dens shall be hand-excavated with a shovel to prevent re-use during construction.									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1k: Avoidance and Minimization Measures for Monterey Dusky-Footed Woodrat.** The following measures shall be implemented to avoid and minimize impacts on Monterey dusky-footed woodrat: 1. A qualified wildlife biologist shall conduct preconstruction surveys for Monterey dusky-footed woodrat. The surveys shall be conducted within 14 days prior to the start of construction in suitable habitat and shall identify any woodrat nests located within 50 feet of anticipated construction disturbance areas. 2. If woodrat nests are found during the preconstruction surveys, the wildlife biologist shall conduct additional surveys throughout the duration of construction activities at the potentially affected facility site to identify any newly constructed woodrat nests. 3. If nests are observed outside of the construction area, the qualified biologist shall demarcate a minimum 50-foot buffer area with orange construction fencing and require that all construction activities and disturbance remain outside of the fencing. 4. Active woodrat nests located within the anticipated construction disturbance areas shall be relocated. Nests shall be relocated outside of the peak breeding season, (peak breeding season is typically February through November) to minimize disturbance to young woodrats. Relocation of woodrats and/or their nests shall be conducted by the Lead Biologist or qualified wildlife biologist as follows: a. Clear understory vegetation from around the nest using hand tools. b. After all vegetative cover has been cleared around the nest, the biologist shall gently disturb the nest to encourage the woodrat(s) to abandon the nest and seek cover in adjacent habitat. c. Once the woodrats have left the nest, the biologist shall carefully relocate the nest sticks to suitable habitat outside of the construction disturbance area, piling the sticks at the base of trees or large shrubs if available. If multiple nests are relocated, the stick piles shall be placed at least 25 feet from one another. d. The Lead Biologist shall ensure potential health hazards to the biologists moving nests are addressed to minimize the risk of contracting diseases associated with woodrats and woodrat nests. These include hantavirus, Lyme disease, and plague. The biologists that relocate nests shall take the following precautionary safety measures: i. Wear a Cal/OSHA-certified facial respirator to reduce inhalation of potential disease causing organisms. ii. Wear a white Tyvec protective suit to provide a barrier for ticks and fleas and facilitate their detection and removal and use gloves. e. If young are encountered during dismantling of the nest, nest material shall be replaced and a 50-foot no-disturbance buffer shall be established around the active nest. The buffer shall remain in place until young have matured enough to disperse on their own accord and the nest is no longer active. Nesting substrate shall then be collected and relocated to suitable oak woodland habitat outside of the project area.	X		X	X	X	X	CalAm shall provide the name and qualifications of the biologist(s) to conduct required preconstruction dusky-footed woodrat surveys to the CPUC for approval. CalAm shall also provide to the CPUC construction monitoring reports, copies of all surveys prepared by the biologist(s) and copies of all related CDFW-approved buffers, active nest relocations and documentary evidence of compliance therewith.	Prior to and during construction.	Surveys demonstrate absence of dusky-footed woodrats and active nests or if present that all applicable CDFW-approved buffers, nest relocations and related biologist safety measures are fully implemented.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction.	X		X	X	X	X	CalAm shall provide the name and qualifications of the biologist(s) to conduct required preconstruction bat habitat assessment and surveys to the CPUC for approval. CalAm shall also provide to the CPUC copies of all assessments/surveys and construction monitoring prepared by the biologist(s) and copies of all related CDFW-approved buffers, avoidance and protection measures and documentary evidence of compliance therewith.	Prior to and during construction activities and during maintenance activities at the slant well sites.	Surveys demonstrate absence of bat habitat and active roost sites or if present that all applicable CDFW-approved buffers and avoidance and protection measures are fully implemented.
Mitigation Measure 4.6-1l: Avoidance and Minimization Measures for Special-status Bats. A qualified biologist who is experienced with bat surveying techniques (including auditory sampling methods), behavior, roosting habitat, and identification of local bat species shall be consulted prior to initiation of construction activities to conduct a preconstruction habitat assessment to characterize potential bat habitat and identify active roost sites. The preconstruction habitat assessment shall be conducted within 100 feet of construction activities. Should potential roosting habitat or potentially active bat roosts be identified during the habitat assessment in trees and/or structures to be disturbed under the project, the following measures shall be implemented: 1. Removal or disturbance of trees or structures identified as potential bat roosting habitat or active roosts shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, to the extent feasible. These dates avoid bat maternity roosting season (approximately April 15 – August 31) and periods of winter torpor (approximately October 15 – February 28). 2. If removal or disturbance of trees and structures identified as potential bat roosting habitat or active roosts during the periods when bats are active is not feasible, a qualified biologist will conduct pre-construction surveys within 14 days prior to disturbance to further evaluate bat activity within the potential habitat or roost site. a. If active bat roosts are not identified in potential habitat during preconstruction surveys, no further action is required prior to removal of- or disturbance to trees and structures within the preconstruction survey area. b. If active bat roosts or evidence of roosting is identified during pre-construction surveys, the qualified biologist shall determine, if possible, the type of roost and species. i. If special-status bat species or maternity or hibernation roosts are detected during these surveys, appropriate species- and roost-specific avoidance and protection measures shall be developed by the qualified biologist in coordination with CDFW. Such measures may include postponing the removal of structures or trees, or establishing exclusionary work buffers while the roost is active. A minimum 100-foot no disturbance buffer shall be established around special-status species, maternity, or hibernation roosts until the qualified biologist determines they are no longer active. The size of the no-disturbance buffer may be adjusted by the qualified biologist, in coordination with CDFW, depending on the species present, roost type, existing screening around the roost site (such as dense vegetation or a building), as well as the type of construction activity that would occur around the roost site, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals. Under no circumstances shall active maternity roosts be disturbed until the roost disbands at the completion of the maternity roosting season or otherwise becomes inactive, as determined by the qualified biologist. ii. If a non-maternity or hibernation roost (e.g., bachelor daytime roost) is identified, disturbance to- or removal of trees or structures may occur under the supervision of a qualified biologist as described under 3). 3. The qualified biologist shall be present during tree and structure disturbance or removal if active non-maternity or hibernation bat roosts or potential roosting habitat are present. Trees and structures with active non-maternity or hibernation roosts or potential habitat shall be disturbed or removed only under clear weather conditions when precipitation is not forecast for three days and when nighttime temperatures are at least 50°F, and when wind speeds are less than 15 mph. a. Trimming or removal of trees with active (non-maternity or hibernation) or potentially active roost sites shall follow a two-step removal process:									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using hand tools (e.g., chainsaws). ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using hand tools or other equipment (e.g. excavator or backhoe). iii. All felled trees shall remain on the ground for at least 24 hours prior to chipping, off-site removal, or other processing to allow any bats to escape, or be inspected once felled by the qualified biologist to ensure no bats remain within the tree and/or branches. b. Disturbance to or removal of structures containing or suspected to contain active bat (non-maternity or hibernation) or potentially active bat roosts shall be done in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. Removal will be completed the subsequent day. 4. Bat roosts that begin during construction are presumed to be unaffected as long as a similar type of construction continues, and no buffer would be necessary. Direct impacts on bat roosts or take of individual bats will be avoided.									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1m: Avoidance and Minimization Measures for Native Stands of Monterey Pine.** A qualified botanist or arborist shall conduct surveys for native stands of Monterey pine prior to completion of final project design documents. Individual Monterey pine trees existing within the construction work area shall be evaluated to determine if they are native occurrences, relics, or otherwise naturally-occurring remnants of the past historic range. Maps depicting the results of these surveys shall be prepared for consideration during final facility design. Native stands of Monterey pine could occur at the identified facility sites and pipeline alignments based on the historical extent of native Monterey pines and biological reconnaissance surveys. To the extent feasible, project facilities shall be sited and construction activities planned to avoid impacts on native stands of Monterey pine. Any native stands of Monterey pines located within the anticipated construction disturbance area shall be fenced or flagged for avoidance prior to construction, and a biological monitor shall be present to ensure compliance with off-limits areas. If removal of native stands of Monterey pine cannot be avoided, trees shall be replaced at a 2:1 ratio for trees removed or directly impacted by construction activities. Only local Monterey pine genetic stock shall be used for replanting at the project site. Replacement plantings shall be planted contiguous with other individuals of the same species in areas that are determined to have suitable site conditions. Protective fencing shall be installed around the seedlings to protect against disturbance. Replacement trees shall be maintained and monitored for a period of five years and have a minimum of 70 percent survival in the fifth monitoring year to ensure success. The Habitat Mitigation and Monitoring Plan to be prepared in accordance with **Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan)** shall detail the monitoring requirements and success criteria. This mitigation measures applies to native stands of Monterey pines. Independent of whether Monterey pines in the project area are considered native stands, individual trees may be subject to local tree ordinances; see **Mitigation Measure 4.6-5 (Compliance with Local Tree Policies and Ordinances)**.	X		X	X	X	X	CalAm shall provide the name and qualifications of the botanist(s) to conduct required preconstruction surveys to the CPUC for approval. CalAm shall also provide to the CPUC copies of all assessments/surveys and construction monitoring prepared by the botanist(s) and copies, and avoidance and protection measures and documentary evidence of compliance therewith. CalAm shall also provide and obtain approval from CPUC and all other required regulatory and local agencies of final design submittals which incorporate the required surveys and demonstrate either that facilities are sited to avoid impacts on native stands of Monterey pine or that required replacement will be achieved by way of a Habitat Mitigation and Monitoring Plan approved by all required resource and local agencies consistent with the requirements of this mitigation measure.	Prior to construction activities and subsequent maintenance activities at the slant well sites.	Surveys and final design plans demonstrate avoidance of all native stands of Monterey pine or compensatory mitigation by replanting at a 2:1 replacement ratio and monitoring of success to ensure a minimum of 70 percent survival in the fifth monitoring year if avoidance is not possible.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** *CalAm Reports On, and the CPUC Monitors all Mitigation Measures*	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction.	X		X	X	X	X	CalAm shall provide the CPUC with the required HMMP and all approvals thereof issued by the resource and local agencies.	Prior to construction.	Approved HMMP fully implemented and all compensatory mitigation achieved.
Mitigation Measure 4.6-1n: Habitat Mitigation and Monitoring Plan. CalAm shall develop and submit a Habitat Mitigation and Monitoring Plan (HMMP) to the appropriate resource agencies (CCC, CDFW, CCRWQCB, USACE, USFWS, and local agencies that require a habitat mitigation and monitoring plan) for approval prior to project construction. The HMMP will be a comprehensive document that will describe all of restoration and compensatory mitigation requirements, including the required performance standards, identified in **Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover, Mitigation Measure 4.6-1e: Avoidance and Minimization Measures for Special-status Plants, Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly, Mitigation Measure 4.6-1h: Avoidance and Minimization Measures for Western Burrowing Owl, Mitigation Measure 4.6-1m: Avoidance and Minimization Measures for Native Stands of Monterey Pine, Mitigation Measure 4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander and Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas**. The HMMP shall be implemented at all areas where special-status species habitat or sensitive natural communities will be restored, created, or enhanced to mitigate for project impacts either prior to, concurrently with, or following project construction, as specified in the HMMP. The HMMP shall outline measures to be implemented to, depending on the mitigation requirements, restore, improve, or re-establish special-status species habitat, sensitive natural communities, and critical habitat on the site, and shall include the following elements: 1. Name and contact information for the property owner of the land on which the mitigation will take place 2. Identification of the water source for supplemental irrigation 3. Identification of depth to groundwater 4. Site preparation guidelines to prepare for planting, including coarse and fine grading 5. Plant material procurement, including assessment of risk of introduction of plant pathogens through use of nursery-grown container stock vs. collection and propagation of site-specific plant materials, or use of seeds 6. Planting plan outlining species selection, planting locations and spacing, for each vegetation type to be restored 7. Planting methods, including containers, hydroseed or hydromulch, weed barriers and cages, as needed 8. Soil amendment recommendations 9. Irrigation plan, with proposed rates (in gallons per minute), schedule (i.e. recurrence interval), and seasonal guidelines for watering 10. Site protection plan to prevent unauthorized access, accidental damage and vandalism 11. Weeding and other vegetation maintenance tasks and schedule, with specific thresholds for acceptance of invasive species 12. Performance standards by which successful completion of mitigation can be assessed in comparison to a relevant baseline or reference site, and by which remedial actions will be triggered; success criteria shall include the minimum performance standards described in **Mitigation Measure 4.6-1d: Protective Measures for Western Snowy Plover, Mitigation Measure 4.6-1e: Avoidance and Minimization Measures for Special-status Plants, Mitigation Measure 4.6-1f: Avoidance and Minimization Measures for Smith's Blue Butterfly, Mitigation Measure 4.6-1h: Avoidance and Minimization Measures for Western Burrowing Owl, Mitigation Measure 4.6-1m: Avoidance and Minimization Measures for Native Stands of Monterey Pine, Mitigation Measure 4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander and Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas**.									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
13. Monitoring methods and schedule 14. Reporting requirements and schedule 15. Adaptive management and corrective actions to achieve the established success criteria 16. Educational outreach program to inform operations and maintenance departments of local land management and utility agencies of the mitigation purpose of restored areas to prevent accidental damages 17. Description of any other compensatory mitigation in the form of land purchase, establishment of conservation easements or deed restrictions, contribution of funds in lieu of active restoration, or purchase of mitigation bank credits, or other means by which the mitigation site will be preserved in perpetuity.									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1o: Avoidance and Minimization Measures for California Red-legged Frog and California Tiger Salamander.** A preconstruction survey for California red-legged frog and California tiger salamander shall be conducted by a qualified biologist in suitable habitat where there is a moderate to high potential for these species to occur prior to vegetation removal or grading, as specified below: 1. Prior to conducting the surveys, the qualified biologist shall prepare a relocation plan that describes the appropriate survey and handling methods for California red-legged frog and California tiger salamander, and identifies nearby relocation sites where individuals would be relocated if found during the preconstruction surveys. The relocation plan shall be submitted to USFWS and CDFW for approval prior to the start of construction activities. The animal shall be relocated to a similar type of habitat or better from where it was relocated and shall only be relocated with authorization from USFWS and CDFW, as appropriate. 2. Preconstruction surveys shall be conducted within 5 days prior to, and immediately prior to, vegetation removal, grading, or installation of exclusion fence to identify any California red-legged frog, California tiger salamander, and any small mammal burrows. 3. Small mammal burrows identified during preconstruction surveys shall be surveyed (through hand-excavation, scoping, or other suitable methods to be determined in consultation with USFWS and CDFW) to identify any California red-legged frog or California tiger salamander. Once the burrow is confirmed to be vacant, the burrow shall be collapsed. 4. If California red-legged frog or California tiger salamander are observed within the construction area, a qualified biologist shall relocate the individual according to the relocation plan above and only with authorization from USFWS and CDFW, as appropriate. 5. Exclusion fencing shall be installed around construction areas where there is a moderate to high potential for these species to occur as specified in **Mitigation Measure 4.6-1c (General Avoidance and Minimization Measures)** and only with authorization from USFWS and CDFW. 6. The qualified biologist shall monitor vegetation removal and grading inside the exclusion fence as specified in **Mitigation Measure 4.6-1c (General Avoidance and Minimization Measures)**. 7. If take authorization is not obtained from CDFW and USFWS for California tiger salamander, 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.	X		X	X	X	X	CalAm shall provide the name and qualifications of the biologist(s) to conduct required preconstruction to the CPUC for approval. CalAm shall also provide to the CPUC copies of all frog/salamander surveys and relocation plans, copies of all such surveys and plans, and copies of all related USFWS/CDFW-approved plans and related consultations with and authorizations provided by USFWS/CDFW, and avoidance and protection measures and documentary evidence of compliance therewith.	Prior to, during, and after construction activities.	Surveys demonstrate absence of frogs/salamanders/habitat or if present that all applicable USFWS/CDFW-approved permits, avoidance and minimization measures, mitigation plans and compensatory mitigation are fully implemented/achieved.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
Upon completion of construction activities, CalAm shall restore California tiger salamander and California red-legged frog habitat temporarily impacted during construction. Compensatory mitigation for permanent impacts shall be provided either onsite or offsite at a minimum ratio of 2:1. Compensation for permanent impacts may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum, the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration: a. Temporarily impacted areas are returned to pre-project or improved conditions; b. Vegetation cover shall be at least 80 percent of baseline vegetation cover in the impact area; and c. No more cover by invasive plants than in the baseline conditions of the impact area. ***Restoration and mitigation activities shall be described in the Habitat Mitigation and Monitoring Plan prescribed by*** *Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan)****. Alternatively, compensatory credits may be purchased through an approved mitigation bank, or approved Habitat Conservation Plan.***									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1p: Control Measures for Spread of Invasive Plants.** Construction best management practices shall be implemented in construction areas within or adjacent to lands with native plant communities that may be susceptible to non-native plant species invasion to prevent the spread of invasive plants, seed, propagules, and pathogens through the following actions: 1) Avoid driving in or operating equipment in weed-infested areas outside of fenced work areas and restrict travel to established roads. 2) Avoid leaving exposed soil or construction materials in areas with the potential for invasive plants (e.g., in staging areas). Non-active stockpiles shall be covered with plastic or a comparable material. 3) Clean tools, equipment, and vehicles before transporting materials and before entering and leaving worksites (e.g., wheel washing stations at Project site access points). Inspect vehicles and equipment for weed seeds and/or propagules stuck in tire treads or mud on the vehicle to minimize the risk of carrying them to unaffected areas. Designate areas within active construction sites for cleaning and inspections. 4) An environmental inspector, under direction of the Lead Biologist or appointed qualified biologist (see **Mitigation Measure 4.6-1a**) shall inspect vehicles and equipment prior to project initiation at applicable work areas (listed above) for weed seeds and plant fragments that could colonize within the site or be transported to other sites. At project initiation, all construction vehicles must be cleaned to remove soil and plant fragments at designated locations, and vehicles or equipment that are not clean shall be rejected until clear of weed seed and plant fragments. Wheel washing stations or other methods to remove and contain seeds or other plant fragments from vehicles, equipment, boots, and tools shall be established in designated areas. 5) All equipment and tools involved in soil disturbance at applicable work areas shall be disinfected using a 10% bleach or 70% isopropyl alcohol solution prior to initial use or prior to returning to applicable work areas if used on another project site. 6) Only certified, weed-free, plastic-free imported erosion control materials (or rice straw in upland areas) shall be used for the project. 7) 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). This measure also applies to periodic maintenance of the subsurface slant wells.	X		X	X	X	X	CalAm's environmental monitor shall provide monthly documentation demonstrating oversight and implementation of best management practices for the prevention of spreading of invasive plants.	During construction activities and subsequent maintenance activities at the slant well sites.	Compliance with and implementation of all applicable construction best management practices and documentation that doing so prevented spreading of invasive plants during construction and maintenance activities.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.6: Terrestrial Biological Resources (cont.)									
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measure 4.6-1q: Frac-out Contingency Plan.** CalAm shall retain a licensed geotechnical engineer to develop a Frac-out Contingency Plan (Plan). CalAm will submit the plan to the appropriate resource agencies (CDFW, CCRWQCB, USACE, USFWS, NMFS, and local agencies with land use jurisdiction) for approval prior to the start of construction of any pipeline that will use HDD installation. The Plan shall be implemented at all areas where HDD installation under a waterway would occur to avoid, minimize, or mitigate for project impacts either prior to, concurrently with, or following HDD installation, as specified in the Plan. The plan shall include, at a minimum: 1) Measures describing training of construction personnel about monitoring procedures, equipment, materials and procedures in place for the prevention, containment, clean-up (such as creating a containment area and using a pump, using a vacuum truck, etc.), and disposal of released bentonite slurry, and agency notification protocols; 2) Methods for preventing frac-out including maintaining pressure in the borehole to avoid exceeding the strength of the overlying soil. 3) Methods for detecting an accidental release of bentonite slurry that include: (a) monitoring by a minimum of one biological monitor throughout drilling operations to ensure swift response if a frac-out occurs; (b) continuous monitoring of drilling pressures to ensure they do not exceed those needed to penetrate the formation; (c) continuous monitoring of slurry returns at the exit and entry pits to determine if slurry circulation has been lost; and (d) continuous monitoring by spotters to follow the progress of the drill bit during the pilot hole operation, and reaming and pull back operations. 4) Protocols CalAm and/or its contractors will follow if there is a loss of circulation or other indicator of a release of slurry. 5) Cleanup and disposal procedures and equipment CalAm and/or its contractors will use if a frac-out occurs. 6) If a frac-out occurs, CalAm and/or its contractors shall immediately halt work, implement the measures outlined in Item 5 of the Plan to contain, clean-up, and dispose of the bentonite slurry, and notify and consult with the staffs of the agencies listed above before HDD activities can begin again. CalAm shall implement this plan to ensure that measures are implemented to prevent frac-out and if a frac-out occurs, then CalAm and/or its contractor shall implement measures to contain, clean-up, and dispose of the bentonite slurry.						X	CalAm shall provide to CPUC prior to construction a copy of the required Frac-out Contingency Plan and all approvals thereof issued by the appropriate resource and local agencies. A licensed geotechnical engineer hired by CalAm will prepare the Plan for submission and approval by the resources agencies. CalAm will implement the plan through contract specifications with the HDD contractors. Reporting of implementation and any frac-out incidents will be reported to the resources agencies.	Prior to and during construction.	Compliance with all components of the approved Frac-out Contingency Plan and documentation that doing so avoided injury to or loss of special status plants.
Impact 4.6-1: Result in substantial adverse effects on species identified as candidate, sensitive, or special-status, either directly, indirectly or through habitat modification, during construction. **Mitigation Measures 4.12-1b and 4.14-2**	X		X	X	X	X	See below in Mitigation Measures 4.12-1b and 4.14-2		
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction. **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1d, 4.6-1n, 4.6-1o, 4.6-1p, and 4.6-1q**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1d, 4.6-1n, 4.6-1o, 4.6-1p, and 4.6-1q		
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction. **Mitigation Measure 4.6-2a: Consultation with Local Agencies and the California Coastal Commission regarding Environmentally Sensitive Habitat Areas.** Some parts of the project area occur within the Coastal Zone and development within the Coastal Zone would require a Coastal Development Permit.	X		X	X		X	CalAm shall provide the CPUC with copies of all approved Coastal Development Permits issued by the CCC and applicable local agencies prior to initiation of ground disturbing activities.	Prior to construction.	Compliance with all components of all Coastal Development Permits approved for the MPWSP for protection of ESHA.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
Prior to the initiation of ground-disturbing activities CalAm shall consult with the CCC or local jurisdiction and obtain the necessary permit(s) in order to proceed with the MPWSP. The CCC or local agency would authorize the project if it conforms to ESHA policies or other policies of the Coastal Act.									
Impact 4.6-2: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during construction. **Mitigation Measure 4.6-2b: Avoid, Minimize, and Compensate for Construction Impacts to Sensitive Communities and Environmentally Sensitive Habitat Areas.** CalAm and/or its construction contractor(s) shall implement the following avoidance, minimization, and compensation measures for sensitive natural communities, the special-status species that utilize these sensitive communities, environmentally sensitive habitat areas (ESHA) as defined by the California Coastal Commission (CCC) or in a local coastal plan (LCP), and primary habitat as defined in the City of Marina's Local Coastal Land Use Plan (LCLUP). Compensatory mitigation for permanent loss from periodic maintenance of the subsurface slant wells shall only be applied once and would not be applied for each five-year maintenance event. a) Project facilities shall be sited and designed to avoid disturbance of central maritime chaparral, central dune scrub, coast live oak woodland, and riparian woodland and scrub, any areas defined as ESHA by the CCC or in a LCP, primary habitat as defined in the LCLUP, any sensitive communities defined by local jurisdictions, and any other sensitive natural communities, including critical habitat, identified within the project area. b) Where direct impacts on sensitive natural communities, ESHA, primary habitat, or critical habitat cannot feasibly be avoided, CalAm shall implement the following measures: i. Any temporarily impacted sensitive natural communities, ESHA, primary habitat, and critical habitat, shall be restored to previous conditions or better at the end of construction. Compensatory mitigation for permanent impacts on sensitive natural communities shall occur at a ratio of 2:1 or greater. Compensation for loss of sensitive natural communities may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration: a. Temporarily impacted areas are returned to pre-project conditions or greater b. Native vegetation cover shall be at least 70 percent of baseline/impact area native vegetation cover c. No more cover by invasives than the baseline/impact area Restoration and mitigation activities shall be described in the Habitat Mitigation and Monitoring Plan prescribed by Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan). Alternatively, credits purchased through an approved mitigation bank, or approved Habitat Conservation Plan. ii. Topsoil shall be salvaged during grading and earthmoving activities, stockpiled separately from subsoil, and protected from erosion (e.g., covered or watered). Composting additives shall be used to amend the soil, if needed, and compacted topsoil shall be properly prepared prior to reuse for post-construction restoration of temporarily disturbed areas. A minimum of 12 inches of topsoil shall be salvaged (or if there is less than 12 inches of topsoil initially, as much as is available practicable). iii. For HMP sensitive natural communities on former Fort Ord lands, plants shall be salvaged, under the direction of a qualified biologist, as necessary per the requirements of the HMP, and in accordance with any requirements from USFWS and CDFW.	X		X	X	X	X	CalAm shall provide and obtain approval from CPUC of final design submittals demonstrating avoidance of sensitive natural communities and species that utilize them, ESHA and primary/secondary habitat or provide the CPUC with copies of all approved Coastal Development Permits issued by the CCC and applicable local agencies prior to initiation of ground disturbing activities. CalAm's environmental monitor shall provide CPUC with monthly reports demonstrating oversight and successful implementation of the required avoidance, minimization and compensation measures to ensure construction is limited to the design footprint and avoids sensitive communities/species/ habitat or that compensatory mitigation was provided.	Prior to and during construction.	Compliance with all components of all Coastal Development Permits approved for the MPWSP and their conditions for the protection for sensitive natural communities, the special-status species that utilize these sensitive communities, ESHA as defined by the CCC or in a LCP, and primary habitat.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.6: Terrestrial Biological Resources (cont.)									
c) Any areas used for staging, laydown, material storage, equipment storage, job trailers, employee parking, or other project-related support activities that do not need to be located adjacent to the active construction area shall be located away from jurisdictional areas, sensitive communities, and shall be protected from stormwater runoff using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers. d) All potential contaminants shall be stored on impervious surfaces, plastic ground covers, or in secondary containment to prevent any spills or leakage from contaminating the ground, and shall be located at least 100 feet from adjacent habitat, unless required for construction activities to be located adjacent to the active construction area. e) Any spillage of pollutants or construction material shall be contained immediately in accordance with the project SWPPP. The contaminated area shall be cleaned and any contaminated materials properly disposed of. The Lead Biologist shall be notified of all spills. Further, CalAm and/or its construction contractor(s) shall implement the following avoidance, minimization, and compensation measures for any areas that are identified as secondary habitat as defined in the City of Marina's LCLUP (and not within ESHA as defined by the CCC) through the coastal permitting process: a) Development shall be designed to prevent significant adverse impacts on primary habitat areas. Adverse impacts that shall be avoided may include indirect impacts such as operational noise impacts on wildlife, introduction of the spread of invasive plant and wildlife species, increased erosion, introduction of trash that would invite predators, increased human disturbance, and decreased water quality. b) All temporarily impacted areas shall be restored to pre-construction conditions or better at the end of construction. Compensatory mitigation for permanent impacts on sensitive natural communities shall occur at a ratio of 1:1 or greater. Compensation for loss of sensitive natural communities may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration: i. Temporarily impacted areas are returned to pre-project conditions or greater ii. Native vegetation cover shall be at least 70 percent of baseline/impact area native vegetation cover iii. No more cover by invasives than the baseline/impact area Restoration and mitigation activities shall be described in the Habitat Mitigation and Monitoring Plan prescribed by Mitigation Measure 4.6-1n (Habitat Mitigation and Monitoring Plan). Alternatively, credits purchased through an approved mitigation bank, or approved Habitat Conservation Plan.									
Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction. **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, and 4.6-1q**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, and 4.6-1q		
Impact 4.6-3: Result in substantial adverse effects on federal wetlands, federal other waters, and/or waters of the state during construction. **Mitigation Measure 4.6-3: Avoid, Minimize, and or Mitigate Impacts to Wetlands.** 1. A jurisdictional wetland delineation shall be conducted to determine the extent of waters of the U.S. and waters of the state within the project component footprints and anticipated construction disturbance area. 2. The proposed project shall be designed to avoid and/or minimize direct impacts on wetlands and/or waters under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Wildlife, and/or the California Coastal Commission to the extent feasible. Horizontal Directional Drilling or other trenchless or above water methods will be used at all pipeline crossings of wetlands and other waters of the U.S. and of the state except some small order seasonal or ephemeral drainages which do not support riparian	X		X	X	X	X	CalAm shall provide a copy of the required jurisdictional wetland delineation and all concurrences, approvals and/or related permits issued by the U.S. Army Corps of Engineers, RWQCB, CDFW, and/or the California Coastal Commission. CalAm's environmental monitor shall provide CPUC with monthly reports demonstrating avoidance and/or minimization of impacts on wetlands and/or waters of the U.S. or that compensatory mitigation was provided.	Prior to, during, and after construction.	Documented avoidance, minimization, and/or mitigation of impacts on wetlands consistent with the required jurisdictional wetland delineation and all concurrences ,approvals and/or related permits issued by the U.S. Army Corps of Engineers, RWQCB, CDFW, and/or the California Coastal Commission

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
woodland, riparian scrub, marsh or other wetland vegetation, and which would be crossed during the dry season in the absence of flow or standing water. 3. Where disturbance to jurisdictional waters cannot be avoided, any temporarily impacted jurisdictional water shall be restored to pre-construction conditions or better at the end of construction. Compensation for permanent impacts shall be provided at a 2:1 or greater ratio. Compensation for loss of jurisdictional waters may be in the form of permanent on-site or off-site creation, restoration, enhancement, or preservation of habitat. At a minimum the restoration or compensation sites shall meet the following performance standards by the fifth year following restoration: a. Temporarily impacted areas are returned to pre-project conditions or greater b. Wetlands restored or constructed as federal wetlands meet the federal criteria for jurisdictional wetlands and wetlands restored or constructed as state wetlands meet the state criteria for jurisdictional wetlands c. No more cover by invasives than the baseline/impact area Compensation shall be detailed on a project-specific basis and shall include development of a Wetland Mitigation and Monitoring Plan (WMMP), which shall be developed prior to the start of construction and in coordination with permit applications and/or conditions. At a minimum, the WMMP shall include: a. Name and contact information for the property owner of the land on which the mitigation will take place; b. Identification of the source for supplemental irrigation; c. Identification of depth to groundwater; d. Baseline information, including a summary of the findings in any other recent wetland delineations applicable to the project disturbance area; e. Anticipated habitat enhancements to be achieved through compensatory actions; f. Monitoring methods and schedule; g. Performance and success criteria for wetland creation and/or enhancement, with success criteria in tabular form. h. Roles and responsibilities for mitigation funding, implementation, maintenance, monitoring, and reporting. i. Identification of the mechanism that will preserve the mitigation site in perpetuity, if necessary. Alternatively, offsite mitigation credits may be purchased at an approved mitigation bank; if no banks are available, then alternative mitigation may be achieved through payment of in-lieu fees.									
Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. **Mitigation Measure 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1n, and 4.6-2b**	X		X	X	X	X	See above in Mitigation Measures 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1n, and 4.6-2b		

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
Impact 4.6-4: Be inconsistent with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. **Mitigation Measure 4.6-4: Compliance with Local Tree Ordinances.** 1. The project applicant shall perform a comprehensive survey within the project footprint to identify, measure, and map trees subject to local tree removal ordinances (as specified in Table 4.6-10) at least 30 days prior to start of planned ground disturbance or tree removal. 2. Any trees that are subject to local tree removal ordinances shall be avoided to the extent practicable. 3. If tree removal cannot be avoided by project construction, then the applicant shall comply with the applicable local tree policies or ordinances, obtain appropriate tree removal permits from applicable local agencies, and comply with those permits. 4. Tree removal, preservation, or mitigation on Army property would be done in accordance with the Integrated Natural Resource Management Plan Presidio of Monterey and Ord Military Community (November, 2008).	X		X	X	X	X	CalAm shall provide the name and qualifications of the biologist(s) to conduct the comprehensive tree survey to the CPUC for approval. CalAm shall also provide to the CPUC a copy of the survey and related maps and copies of all required tree removal permits issued by applicable local agencies prior to construction.	Prior to and during construction.	Final design plans demonstrate that all trees subject to local tree removal ordinances will be avoided and if not compliance with all tree removal permits and related conditions issued by applicable local agencies shall be implemented.
Impact 4.6-5: Introduce or spread an invasive non-native species during construction. **Mitigation Measures 4.6-1a and 4.6-1p**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a and 4.6-1p		
Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations. **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1g, 4.6-1i, 4.6-1n, 4.6-1p, 4.12-1b, 4.12-5, and 4.14-2**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1g, 4.6-1i, 4.6-1n, 4.6-1p, 4.12-1b, 4.12-5, and 4.14-2		
Impact 4.6-6: Result in substantial adverse effects on candidate, sensitive, or special-status species during project operations. **Mitigation Measure 4.6-6: Installation and Monitoring of Bird Deterrents at the Brine Storage Basin.** Bird deterrents (such as reflective flagging, whistles, or a falconer) shall be utilized at the Brine Storage Basin. The type of bird deterrent shall be determined by the lead biologist and shall be modified if, through monitoring (as described below), the bird deterrents are either not sufficient at deterring birds from the Brine Storage Basin or pose a risk to wildlife. Monitoring of the Brine Storage Basin shall include the following: • ***Daily Monitoring:*** CalAm operational staff will monitor the brine pond on a daily basis as part of their regular routine. If staff see regular use of the pond by birds, any dead animals, or any unusual siting, USFWS will be notified within one working day. • ***Monthly Monitoring***: A qualified biologist and/or qualified biological monitor shall regularly survey the Brine Storage Basin at least once per month starting with the first month of operation of the Brine Storage Basin. The purpose of the surveys shall be to determine if the bird deterrents are effective in excluding birds and to assess whether the deterrents serve as a hazard to birds or wildlife. The monthly surveys shall be conducted in one day for a minimum of two hours following sunrise (i.e., dawn), a minimum of one hour mid-day (i.e., 1100 to 1300), and a minimum of two hours preceding sunset (i.e., dusk) in order to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Operations staff at the MPWSP Desalination Plant shall also report finding any dead birds or other wildlife at the Brine Storage Basin to the Lead Biologist within one day of the detection of the carcass. The Lead Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to CalAm, CDFW, and USFWS.			X				CalAm shall provide to the CPUC information regarding all bird deterrents utilized, copies of all staff monitoring reports, biologist/biological monitor survey reports and any related correspondence to or additional bird deterrent conditions required or authorizations provided by USFWS/CDFW. A Lead Biologist hired by CalAm will oversee the installation and monitoring of bird deterrents at the Brine Storage Basin. The Lead Biologist will report deaths or entanglements of any birds or wildlife to CPUC, CalAm, CDFW, and USFWS. The Lead Biologist will review deterrent monitoring reports and modify the bird deterrent program through adaptive management measures.	During the operation of the Brine Storage Basin.	Successful deterrent of birds documented in monitoring reports.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.6: Terrestrial Biological Resources (cont.)									
• ***Quarterly Monitoring*:** If after 12 consecutive monthly site visits (described above) no bird or wildlife deaths are detected at the Brine Storage Basin by or reported to the Lead Biologist, monitoring can be reduced to quarterly visits. • ***Biannual Monitoring*:** If after 12 consecutive quarterly site visits (described above) no bird or wildlife deaths are detected by or reported to the Lead Biologist, future surveys may be reduced to two surveys per year, during the spring nesting season and during fall migration. • ***Modification of Monitoring Program*:** The Lead Biologist shall modify the monitoring program based on information acquired during monitoring if any changes are needed, and determine adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are observed.									
Impact 4.6-7: Result in substantial adverse effects on riparian habitat, critical habitat, or other sensitive natural communities during project operations. **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1d, 4.6-1n, 4.6-1p, 4.6-2a, and 4.6-2b**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1d, 4.6-1n, 4.6-1p, 4.6-2a, and 4.6-2b		
Impact 4.6-8: Result in substantial adverse effects on federal wetlands, federal other waters, and waters of the state during project operations. **Mitigation Measures 4.6-1a, 4.6-1b, and 4.6-1c**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a, 4.6-1b, and 4.6-1c		
Impact 4.6-9: Introduce or spread an invasive non-native species during project operations. **Mitigation Measures 4.6-1a and 4.6-1p**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a and 4.6-1p		
Impact 4.6-10: Be inconsistent with the provisions of an adopted Habitat Conservation Plan, natural community conservation plan or other approved local, regional, or state habitat conservation plan. **Mitigation Measures 4.6-1a, 4.6-1n, and 4.6-2b**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a, 4.6-1n, and 4.6-2b		
Impact 4.6-C: Cumulative impacts related to terrestrial biological resources. **Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1g, 4.6-1h, 4.6-1i, 4.6-1j, 4.6-1k, 4.6-1l, 4.6-1m, 4.6-1n, 4.6-1o, 4.6-1p, 4.6-2a, 4.6-2b, 4.6-3, 4.6-4, 4.6-6, 4.12-1b, 4.12-5, and 4.14-2**	X		X	X	X	X	See above in Mitigation Measures 4.6-1a, 4.6-1b, 4.6-1c, 4.6-1d, 4.6-1e, 4.6-1f, 4.6-1g, 4.6-1h, 4.6-1i, 4.6-1j, 4.6-1k, 4.6-1l, 4.6-1m, 4.6-1n, 4.6-1o, 4.6-1p, 4.6-2a, 4.6-2b, 4.6-3, 4.6-4, and 4.6-6, and below in Mitigation Measures 4.12-1b, 4.12-5, and 4.14-2		
Section 4.7: Hazards and Hazardous Materials									
Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction. **Mitigation Measure 4.7-2a: Health and Safety Plan.** The construction contractor(s) shall prepare and implement a site-specific Health and Safety Plan as required by and in accordance with 29 CFR 1910.120 to protect construction workers and the public during all excavation and grading activities. This plan shall be submitted to the California Public Utilities Commission for review prior to commencement of construction. The Health and Safety Plan shall include, but is not limited to, the following elements: • Designation of a trained, experienced site safety and health supervisor who has the responsibility and authority to develop and implement the site health and safety plan; • A summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals;	X		X	X	X	X	Through contract specifications, CalAm's contractors will prepare Health and Safety Plans, as reviewed and approved by CPUC prior to construction.	Prior to and during construction.	Compliance with all components of the approved Health and Safety Plan.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.7: Hazards and Hazardous Materials (cont.)									
• Specified personal protective equipment and decontamination procedures, if needed; • Emergency procedures, including route to the nearest hospital; and • Procedures to be followed in the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered. These procedures shall be in accordance with hazardous waste operations regulations and specifically include, but are not limited to, the following: immediately stopping work in the vicinity of the unknown hazardous materials release, notifying Monterey County Department of Environmental Health, and retaining a qualified environmental firm to perform sampling and remediation.									
Impact 4.7-2: Encountering hazardous materials from other hazardous materials release sites during construction. **Mitigation Measure 4.7-2b: Soil and Groundwater Management Plan.** In support of the Health and Safety Plan described above, CalAm or its contractor shall develop and implement a Soil and Groundwater Management Plan that includes a materials disposal plan specifying how the construction contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. The plan must identify protocols for soil testing and disposal, identify the approved disposal site, and include written documentation that the disposal site will accept the waste. Contract specifications shall mandate full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials, including those encountered in excavated soil or dewatering effluent. As part of the Soil and Groundwater Management Plan, CalAm or its contractor shall develop a groundwater dewatering control and disposal plan specifying how contaminated groundwater (dewatering effluent), if encountered, will be handled and disposed of in a safe, appropriate and lawful manner. The plan must identify the locations at which groundwater dewatering is likely to be required, the method to analyze groundwater for hazardous materials, and the appropriate treatment and/or disposal methods. If the dewatering effluent contains contaminants that exceed the requirements of the *General WDRs for Discharges with a Low Threat to Water Quality* (Order No. R3-2011-0223, NPDES Permit No. CAG993001), the construction contractor shall contain the dewatering effluent in a portable holding tank for appropriate offsite disposal or discharge (see Section 4.5.3 in Section 4.3, Surface Water Hydrology and Water Quality, for more information regarding this NPDES permit). The contractor can either dispose of the contaminated effluent at a permitted waste management facility or discharge the effluent, under permit, to a publicly owned treatment works such as the M1W Regional Wastewater Treatment Plant. This plan shall be submitted to the California Public Utilities Commission and Monterey Bay National Marine Sanctuary for review and approval prior to commencement of construction.	X		X	X	X	X	CalAm, or its contractor through contract specifications, shall prepare and provide a Soil and Groundwater Management Plan for review and approval by CPUC and MBNMS prior to commencement of construction.	Prior to and during construction.	Compliance with all components of the approved Soil and Groundwater Management Plan.
Impact 4.7-C: Cumulative impacts related to hazards and hazardous materials. **Mitigation Measures 4.7-2a and 4.7-2b**	X		X	X	X	X	See above in Mitigation Measures 4.7-1a and 4.7-1b		
Section 4.8: Land Use, Land Use Planning, and Recreation									
Impact 4.8-2: Disrupt or preclude public access to or along the coast during construction. **Mitigation Measure 4.9-1**	X		X			X	See below in Mitigation Measure 4.9-1		
Impact 4.8-C: Cumulative impacts related to land use and recreation. **Mitigation Measure 4.9-1**							See below in Mitigation Measure 4.9-1		

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.9: Traffic and Transportation									
Impact 4.9-1: Temporary traffic increases on regional and local roadways due to construction-related vehicle trips. **Mitigation Measure 4.9-1: Traffic Control and Safety Assurance Plan.** CalAm and/or the construction contractor(s) shall obtain any necessary road encroachment permits (e.g., from Caltrans and/or the U.S. Army) prior to constructing each project component and shall comply with the conditions of approval attached to all project permits and approvals. As part of the road encroachment permit process, a qualified traffic engineer shall prepare a traffic control and safety assurance plan in accordance with professional engineering standards and submit the plan to the agencies with jurisdiction over the affected roads and recreational trails, as well as to the California Public Utilities Commission, for review and approval. For all project construction activities that could affect the public right-of-way (e.g., roadways, sidewalks, and walkways), the plan shall include measures that would provide for continuity of vehicular, pedestrian, and bicyclist traffic; reduce the potential for traffic accidents; and ensure worker safety in construction zones. Where project construction activities could disrupt mobility and access for bicyclists and pedestrians, the plan shall include measures to ensure safe and convenient access, including recreation and coastal, would be maintained. The traffic control and safety assurance plan shall be developed on the basis of detailed design plans for the approved project. The plan shall include, but not necessarily be limited to, the elements listed below: • Develop circulation and detour plans to minimize impacts on local streets. Haul routes that minimize truck traffic on local roadways and residential streets shall be used. As necessary, signage and/or flaggers shall be used to guide vehicles through the construction work areas. • Control and monitor construction vehicle movements by enforcing standard construction specifications through periodic onsite inspections. • Install traffic control devices where traffic conditions warrant, as specified in the applicable jurisdiction's standards (e.g., the *California Manual of Uniform Traffic Controls for Construction and Maintenance Work Zones*). • Schedule truck trips outside of peak morning and evening commute hours to minimize adverse impacts on traffic flow (i.e., if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications). • Post detour signs along affected roadways to notify motorists of alternative routes. • Perform construction that crosses on-street and off-street bikeways, sidewalks, and other walkways in a manner that allows for safe access for bicyclists and pedestrians. Alternatively, provide safe detours to reroute affected bicycle/pedestrian traffic. • At least two weeks prior to construction, post signage along all potentially affected recreational trails and coastal access point; Class I, II, and II bicycle routes; and pedestrian pathways, including the Monterey Peninsula Recreational Trail, to warn bicyclists and pedestrians of construction activities. The signs shall include information regarding the nature of construction activities, duration, and detour routes. Signage shall be composed of or encased in weatherproof material and posted in conspicuous locations, including on park message boards, and existing wayfinding signage and kiosks, for the duration of the closure period. At the end of the closure period, CalAm or its contractors shall retrieve all notice materials. • CalAm and its contractors shall schedule construction activities to minimize impacts during heavy recreational use periods (e.g., weekends and holidays).	X		X	X	X	X	CalAm, or its contractor through contract specifications, shall prepare the required Traffic Control and Safety Assurance Plan based on final detailed project design plans and provide it to the CPUC for review and approval, together with copies of all road encroachment permits approved/issued by Caltrans, the U.S. Army and/or local agencies, prior to construction.	Prior to and during construction.	Compliance with all components of the CPUC-approved Traffic Control and Safety Assurance Plan and all road encroachment permits (and conditions thereto) required and approved/issued for the MPWSP.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.9: Traffic and Transportation (cont.)									
• Implement a public information program to notify motorists, bicyclists, nearby residents, and adjacent businesses of the impending construction activities (e.g., media coverage, email notices, websites, etc.). Notices of the location(s) and timing of road closures shall be published in local newspapers and on available websites to allow motorists to select alternative routes. This provision shall be implemented in conjunction with **Mitigation Measure 4.12-1a (Neighborhood Notice)**. • Consult with non-jurisdictional parties (e.g., CEMEX), as appropriate, regarding strategies for reducing increased traffic on roads that would provide access to construction work areas. • Store all equipment and materials in designated contractor staging areas. • Maintain alternate one-way traffic flow past the construction zone where possible. • Install detour signs to direct traffic to alternative routes around the closed road segment if alternate one-way traffic flow cannot be maintained past the construction zone. • Limit lane closures during peak hours. • Restore roads and streets to normal operation by covering trenches with steel plates outside of normal work hours or when work is not in progress. • Comply with roadside safety protocols to reduce the risk of accidents. Provide "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone. Train construction personnel to apply appropriate safety measures as described in the traffic control and safety assurance plan. • Maintain access for emergency vehicles at all times. Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, transit stations, hospitals, and schools. Provide advance notification to local police, fire, and emergency service providers of the timing, location, and duration of construction activities that could affect the movement of emergency vehicles on area roadways. • • 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). • Avoid truck trips through designated school zones during the school drop-off and pickup hours to the extent feasible. • Provide flaggers in school areas at street crossings to manage traffic flow and maintain traffic safety during the school drop-off and pickup hours on days when pipeline installation would occur in designated school zones. • Coordinate with Monterey-Salinas Transit so the transit provider can temporarily relocate bus routes or bus stops in work zones as deemed necessary.									
Impact 4.9-2: Temporary reduction in roadway capacities and increased traffic delays during construction. **Mitigation Measure 4.9-1**	X		X	X	X	X	See above in Mitigation Measure 4.9-1		
Impact 4.9-3: Increased traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways during construction. **Mitigation Measure 4.9-1**	X		X	X	X	X	See above in Mitigation Measure 4.9-1		
Impact 4.9-4: Impaired emergency access during construction. **Mitigation Measure 4.9-1**	X		X	X	X	X	See above in Mitigation Measure 4.9-1		

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.9: Traffic and Transportation (cont.)									
Impact 4.9-5: Temporary disruptions to public transportation, bicycle, and pedestrian facilities during construction. **Mitigation Measure 4.9-1**	X		X	X	X	X	See above in Mitigation Measure 4.9-1		
Impact 4.9-6: Increased wear-and-tear on the designated haul routes used by construction vehicles. **Mitigation Measure 4.9-6: Roadway Rehabilitation Program.** Prior to commencing project construction, CalAm and the affected jurisdiction(s) shall enter into an agreement detailing the preconstruction condition of all major project-related construction access and haul routes, in addition to any appropriate post-construction roadway rehabilitation requirements (e.g., who would make the roadway repair, and by when). Temporary detour routes may also be included in the inventory of preconstruction road conditions, if appropriate. The construction routes identified in the rehabilitation program must be consistent with those identified in the construction traffic control and safety assurance plan developed under Mitigation Measure 4.9-1. Roads damaged by project-related construction vehicles shall be repaired to a structural condition equal to that which existed prior to construction activities. CalAm shall be responsible for paying for all repairs needed to fix the damage caused by project-related construction vehicles.	X		X	X	X	X	CalAm shall provide a fully-executed copy of the agreement it enters into with affected jurisdictions to the CPUC, to document pre- and post-construction road conditions and identify road segments for post-construction rehabilitation measures. CPUC and affected jurisdictions will monitor the documentation procedures and rehabilitation measures.	Prior to and after construction.	Rehabilitation of roads and road segments affected by project construction to pre-construction or better conditions, as identified by required agreement between CalAm and affected jurisdictions.
Impact 4.9-7: Parking interference during construction. **Mitigation Measure 4.9-7: Construction Parking Requirements.** Prior to commencing project construction, the construction contractor(s) shall coordinate with the affected jurisdictions (i.e., Monterey County, Cal State Monterey, and the cities of Marina and Seaside), and affected parties (i.e., the Walmart Superstore at 150 Beach Road), to design the staging areas to avoid or minimize parking impacts in the publicly used parking lots.	X		X	X	X	X	CalAm shall provide the CPUC with copies of its construction contracts and related documentation demonstrating that CalAm's contractor(s) satisfactorily coordinated with affected jurisdictions and parties to avoid or minimize construction staging area parking impacts in public parking lots. CPUC and local jurisdictions will monitor the parking coordination.	Prior to and during construction.	Coordination of contractors with affected jurisdictions and parties that avoids or minimizes parking impacts in public parking lots.
Impact 4.9-C: Cumulative impacts related to traffic and transportation. **Mitigation Measures 4.9-1, 4.9-6, and 4.9-7**	X		X	X	X	X	See above in Mitigation Measures 4.9-1, 4.9-6, and 4.9-7		
Impact 4.9-C: Cumulative impacts related to traffic and transportation. **Mitigation Measure 4.9-C: Construction Traffic Coordination Plan.** CalAm shall coordinate with the appropriate planning agency within each affected jurisdiction to develop and implement a Construction Traffic Coordination Plan. The purpose of the plan shall be to lessen the cumulative effects of MPWSP and local development project construction-related traffic delays and congestion. The plan shall address construction-related traffic associated with all project sites in the vicinity of MPWSP project components (i.e., within 1 mile or would use the same roads) and whose construction schedules overlap that of the MPWSP. The construction traffic coordination plan shall, at a minimum, include the following components: • Identification of all projects located in the vicinity of MPWSP project components (within 1 mile or would use the same roads) and whose construction schedules overlap that of the MPWSP. • Consideration for the types of construction-related vehicles and corresponding numbers and timing of trips associated with each said project. • An evaluation of roadways affected by construction activities and measures to minimize roadway and traffic disturbances (e.g., lane closures and detours). Impact minimization measures shall include, but not necessarily be limited to, elements that are part of the MPWSP's Traffic Control and Safety Assurance Plan (Mitigation Measure 4.9-1). • Phasing of construction activities, as necessary to prevent degradation of levels of service on affected roadways.	X		X	X	X	X	CalAm will coordinate with affected jurisdictions to develop and implement the required Construction Traffic Coordination Plan and provide the CPUC with a copy of said Plan and related documentation demonstrating CalAm satisfactorily coordinated with the planning agencies of each affected jurisdiction. CPUC and affected local jurisdictions will monitor the implementation of the Plan.	Prior to and during construction.	Implementation of a Construction Traffic Coordination plan by CalAm that reduces cumulative effect of overlapping construction traffic in the affected jurisdictions. Continuous coordination between CalAm and affected jurisdictions that result in adjustments and refinements reducing traffic impacts.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.9: Traffic and Transportation (cont.)									
• A program that provides for continual coordination with the affected agencies to allow for adjustments and refinements to the plan once construction is underway. The construction traffic plan may be modeled after or included within the plan described in **Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan)**. If necessary, separate construction traffic coordination plans (i.e., one for each affected jurisdiction) may be prepared, provided each is compatible.									
Section 4.10: Air Quality									
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction. **Mitigation Measure 4.10-1a: Equipment with High-Tiered Engine Standards.** For diesel-fueled off-road construction equipment of more than 50 horsepower, CalAm and/or its construction contractor shall make a good faith effort to use available construction equipment that meets the highest USEPA-certified tiered emission standards or is alternatively powered (e.g., with electricity, natural gas, propane, methanol and ethanol blends, or gasoline) construction equipment. For all pieces of equipment that would neither meet Tier 4 emission standards nor be alternatively powered, CalAm or its construction contractor shall provide to the CPUC documentation from two local heavy construction equipment rental companies that indicate that the companies do not have access to higher-tiered equipment or alternatively powered equipment for the given class of equipment. Such documentation shall be provided to the CPUC at least two weeks prior to the anticipated use of those pieces of equipment.	X	X	X	X	X	X	CalAm shall provide the CPUC with documentation demonstrating that its construction contractor(s) successfully procured non-diesel-fueled construction equipment or diesel-fueled equipment that meets U.S. EPA Tier 4 emission standards or, in the alternative, documentation from two local heavy construction equipment rental companies indicating that the companies do not have access to such Tier 4 compliant or nondiesel-fueled equipment prior to commencement of construction. CPUC will monitor the efforts of CalAm and its contractors use of high-tiered construction equipment.	Prior to and during construction.	Documented use of available Tier 4 compliant or non-diesel-fueled construction equipment.
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction. **Mitigation Measure 4.10-1b: Idling Restrictions.** In order to ensure that idling time for on road vehicles with a gross vehicular weight rating of 10,000 pounds or greater does not exceed the 5-minute limit established in Section 2485 of Title 13 CCR Section 2485, and that idling time for off-road engines does not exceed the 5 minute limit established in Title 13 CCR Section 2449(d)(3), CalAm and/or its construction contractor(s) shall prepare and implement a written idling policy and distribute it to all equipment operators. The idling policy shall extend the 5-minute idling limit to cover all on road vehicles (regardless of gross vehicular weight rating) and shall further require that for all diesel-powered off-road engines, the idling limit is reduced to 2 minutes, while maintaining the exceptions specified in Title 13 CCR Section 2449(d)(3). Clear signage of these requirements shall be provided for construction workers at all access points to construction areas.	X	X	X	X	X	X	CalAm shall provide the CPUC and all of its construction equipment operators with a copy of the required written idling policy and evidence of signs containing the requirements of the policy provided/placed at all access points to construction areas prior to the use of any such area. or its contractors through contract specifications, will prepare and implement a written idling policy and distribute to all equipment operators with idling time restrictions for all vehicles. Signage of the idling requirements will be posted at all construction sites. CPUC will review and monitor idling policy implementation.	Prior to and during construction.	Compliance with all components of the required idling policy.
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction. **Mitigation Measure 4.10-1c: Construction Fugitive Dust Control Plan.** CalAm shall require its construction contractor(s) to implement a dust control plan that includes, at minimum, the following dust control measures: • Water all active construction areas at least three times daily; • Cover all trucks hauling soil, sand, and other loose materials and require trucks to maintain at least 2 feet of freeboard; • Apply water three times daily, or apply (non-toxic) soil stabilizers, on unpaved access roads, parking areas, and staging areas at construction sites; • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites;	X	X	X	X	X	X	CalAm shall provide the CPUC with evidence, via copies of its construction contracts, signage or otherwise, demonstrating the measures included in and methods of implementing the required Fugitive Dust Control Plan (including its dust complaint requirements) prior to the commencement of construction. CPUC will monitor the efforts of CalAm and its contractors implementation of the dust plan.	Prior to and during construction.	Compliance with all components of the required Fugitive Dust Control Plan.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.10: Air Quality (cont.)									
• Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets; • Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more); • Enclose, cover, or water twice daily exposed stockpiles (dirt, sand, etc.); • Limit traffic speeds on unpaved roads to 15 miles per hour; • Install sandbags or other erosion control measures to prevent silt runoff to public roadways; • Replant native, drought-tolerant vegetation in disturbed areas as quickly as possible; • Wheel washers shall be installed and used by truck operators at the exits of the construction sites to the MPWSP Desalination Plant, the slant wells, and the ASR well facilities; and • Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District (MBUAPCD) shall also be visible to ensure compliance with MBUAPCD rules.									
Impact 4.10-1: Generate emissions of criteria air pollutants and contribute to a violation of an ambient air quality standard during construction. **Mitigation Measure 4.10-1e: Off-site Mitigation Program.** CalAm shall work with the Monterey Bay Air Resources District (MBARD) and put forth a good faith effort to fund an off-site mitigation program that would be contemporaneous with project construction to offset construction-related NOx. CalAm shall provide to the lead agencies documentation showing that it has reached an agreement with MBARD to fund an off-site emissions mitigation program that shall include offsets to be executed during construction of the project. If such a program is determined by CalAm and MBARD to be infeasible given the construction schedule of the project, CalAm shall provide documentation to the Lead Agencies that substantiates such a determination. All documentation shall be provided to the Lead Agencies at least two weeks prior to the commencement of construction.	X	X	X	X	X	X	CalAm shall provide the CPUC at least two weeks prior to commencement of construction with a fully-executed copy of the agreement entered into with MBARD to fund the required off-site mitigation program, or documentation demonstrating that CalAm and MBARD determined such a program was infeasible given the MPWSP construction schedule.	At least two weeks prior to and during construction.	Fund and implement off-site mitigation for NOx emissions at the same time as construction activities in compliance with CalAm's agreement, if any, with MBARD.
Impact 4.10-2: Construction activities could conflict with implementation of the applicable air quality plan. **Mitigation Measures 4.10-1a, 4.10-1b, and 4.10-1e**	X	X	X	X	X	X	See above under Mitigation Measures 4.10-1a, 4.10-1b, and 4.10-1e		
Impact 4.10-C: Cumulative impacts related to air quality. **Mitigation Measures 4.10-1a through 4.10-1e**	X	X	X	X	X	X	See above under Mitigation Measures 4.10-1a through 4.10-1e		
Section 4.11: Greenhouse Gas Emissions									
Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project. **Mitigation Measure 4.11-1: GHG Emissions Reductions Plan.** (a) ***Energy Conservation Technologies.*** CalAm shall have a qualified professional (a licensed mechanical engineer or other appropriately certified professional approved by the CPUC) prepare and submit a GHG Emissions Reduction Plan (Plan) to the CPUC for approval prior to the start of project construction activities. Once approved by the CPUC, 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 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.	X	X	X	X	X	X	CalAm shall submit to the CPUC for review and approval the name and credentials of the qualified professional proposed to prepare the required GHG Emissions Reductions Plan; The Plan shall be submitted to CPUC for approval prior to commencement of construction. CPUC will monitor the progress and effectiveness of the Plan.	Prior to project construction and during project operation.	Implementation of and compliance with the required GHG Emissions Reduction Plan to achieve the required net zero emissions standard.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.11: Greenhouse Gas Emissions (cont.)									
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 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.									
(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 CO2e 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.									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.11: Greenhouse Gas Emissions (cont.)									
Impact 4.11-1: Incremental contribution to climate change from GHG emissions associated with the proposed project. **Mitigation Measure 4.18-1**	X	X	X	X	X	X	See below under Mitigation Measure 4.18-1		
Impact 4.11-2: Conflict with the Executive Order B-30-15 Emissions Reduction Goal. **Mitigation Measures 4.11-1 and 4.18-1**	X	X	X	X	X	X	See above under Mitigation Measure 4.11-1 and below under Mitigation Measure 4.18-1		
Impact 4.11-3: Conflict with AB 32 Climate Change Scoping Plan. **Mitigation Measure 4.11-1**	X	X	X	X	X	X	See above under Mitigation Measure 4.11-1		
Impact 4.11-C: Cumulative impacts related to greenhouse gas emissions **Mitigation Measures 4.11-1 and 4.18-1**	X	X	X	X	X	X	See above under Mitigation Measure 4.11-1 and below under Mitigation Measure 4.18-1		
Section 4.12: Noise and Vibration									
Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction. **Mitigation Measure 4.12-1a: Neighborhood Notice and Construction Disturbance Coordinator** The combination of public notice and the establishment of a construction disturbance coordinator can result in a lessening of the adversity of the impact at a given receptor by allowing them to prepare for pending construction activities and providing a contact to report any disturbances or violations to CalAm for appropriate response actions, including additional mitigation. Residents and other sensitive receptors within 300 feet of a daytime construction area and within 900 feet of a nighttime construction area shall be notified of the construction location, nature of activities, and schedule, in writing, at least 14 days prior to the commencement of construction activities. The notice shall also be posted along the proposed pipeline alignments, near the proposed facility sites, and at nearby recreational facilities. CalAm or the contractor(s) shall designate a construction disturbance coordinator who would be responsible for responding to construction complaints. The coordinator shall determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem. CalAm and/or its contractor shall return all calls within 24 hours to answer noise questions and handle complaints. Documentation of the complaint and resolution shall be submitted to the CPUC weekly. A contact number for the construction disturbance coordinator shall be conspicuously placed on construction site fences and included in the notice. Prior to distributing the notice to nearby residences, CalAm or the contractor(s) shall first submit the notice to the respective city planning and services manager for review and approval. This measure shall be implemented in conjunction with the noticing provisions in Mitigation Measure 4.9-1 (Traffic Control and Safety Assurance Plan).	X	X	X	X	X	X	CalAm shall provide the CPUC with the name of CalAm's Construction Disturbance Coordinator and copies of the required notice(s) and evidence of all approvals thereof by city planning managers before commencement of construction; CalAm shall also provide documentation and evidence demonstrating the timely provision and posting of required notices as well as weekly documentation of all complaints and resolution efforts during project construction.	Prior to and during construction.	Implementation of neighborhood notices prior to construction activities and timely response to inquiries and resolution of complaints by residents.
Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction. **Mitigation Measure 4.12-1b: General Noise Controls for Construction Equipment and Activities.** The construction contractor(s) shall assure that construction equipment with internal combustion engines have sound control devices at least as effective as those provided by the original equipment manufacturer. No equipment shall be permitted to have an unmuffled exhaust.	X	X	X	X	X	X	CalAm shall provide the CPUC and all of its construction equipment operators with a copy of the required noise controls directed by CalAm's Construction Disturbance Coordinator. CalAm shall also provide documentation and evidence demonstrating the required noise controls on construction equipment as documented in weekly reports prepared the environmental monitor(s). CPUC will monitor the efforts of CalAm and its contractors implementation of noise controls.	Prior to and during construction.	Implementation of noise controls on construction equipment.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.12: Noise and Vibration (cont.)									
Impact tools (i.e., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler shall be placed on the compressed air exhaust to lower noise levels by up to approximately 10 dBA. External jackets shall be used on impact tools, where feasible, in order to achieve a further reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible. The construction contractor(s) shall locate staging areas and stationary noise sources as far from nearby receptors as possible, and shall muffle and enclose them in temporary sheds, incorporate noise barriers, or implement other noise control measures to the extent feasible. The noise controls shall be sufficient to reduce noise levels during drilling and development of ASR-5 and ASR-6 Wells, and pump station construction activities below the threshold of 70 dBA L_{eq}.									
Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction. **Mitigation Measure 4.12-1c: Noise Control Plan for Nighttime Pipeline Construction.** CalAm or a representative of CalAm shall submit a Noise Control Plan for all nighttime pipeline work to the California Public Utilities Commission for review and approval prior to the commencement of project construction activities. The Noise Control Plan shall identify all feasible noise control procedures to be implemented during nighttime pipeline installation in order to reduce noise levels to the extent practicable at the nearest residential or noise sensitive receptor. At a minimum, the Noise Control Plan shall require use of moveable noise screens, noise blankets, or other suitable sound attenuation devices be used to reduce noise levels during nighttime pipeline installation activities below 60 dBA L_{eq}.	X	X	X	X	X	X	CalAm shall prepare and provide the required Noise Control Plan for nighttime pipeline construction to the CPUC for approval prior to the commencement of any such nighttime pipeline construction. CPUC will monitor the efforts of CalAm and its contractors' implementation of the noise control plan.	Prior to and during nighttime pipeline construction.	Compliance with the approved Noise Control Plan and achievement of its less than 60 dBA L_{eq} performance standard.
Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction. **Mitigation Measure 4.12-1d: Additional Noise Controls for ASR-5 and ASR-6 Wells.** In addition to the general noise controls that will be implemented as part of Mitigation Measure 4.12-1b (General Noise Controls for Construction Equipment), CalAm or its construction contractor(s) for the ASR-5 and ASR-6 Wells shall identify feasible noise controls for implementation during well drilling development activities at the Fitch Park military housing community. The construction contractor(s) shall locate all stationary noise-generating equipment as far as possible from nearby noise-sensitive receptors. Drill rigs within 500 feet of noise-sensitive receptors shall be equipped with noise-reducing engine housings or other noise-reducing technology. Additionally, acoustic barriers and/or enclosures shall be used with a goal of reducing noise from well drilling activities to 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area. There are a number of options available to achieve this performance standard. Barrier blankets are available with a sound transmission class rating of 32, which can provide 16 to 40 dBA of sound transmission loss, depending on the frequency of the noise source (ENC, 2014). The realized sound transmission reduction of barrier blankets needs to be sufficient to achieve the performance standard of 60 dBA, L_{eq} or less at a distance of 50 feet from the construction work area.				X			CalAm shall provide the CPUC with the required additional noise controls proposed to be implemented for the ASR-5 and ASR-6 Wells for approval before commencement of any such well drilling activities, through contract specifications, will ensure contractors use noise controls on construction equipment at the ASR-5 and -6 wells. CPUC will monitor the efforts of CalAm and its contractors' implementation of noise controls.	Prior to and during ASR-5 and ASR-6 Well construction.	Compliance with the approved additional noise controls on construction equipment at the ASR-5 and -6 wells and achievement of the required less than 60 dBA L_{eq} performance standard.
Impact 4.12-1: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction. **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: 1. That would be exposed to 24-hour project 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.		X	X	X	X	X	CalAm shall provide the CPUC with documentation demonstrating that it provided the required temporary hotel accommodations and per diem allowances prior to the commencement of any such 24-hour project construction activities capable of exceeding the mitigation measure's windows closed/open thresholds. CPUC will monitor CalAm's nighttime construction noise monitoring and provision of accommodations.	Prior to and during construction.	Provision of temporary accommodations and per diem allowances to affected receptors.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.12: Noise and Vibration (cont.)									
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.									
Impact 4.12-2: Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies during construction. **Mitigation Measures 4.12-1b and 4.12-1c**	X	X	X	X	X	X	See above under Mitigation Measures 4.12-1b and 4.12-1c		
Impact 4.12-3: Expose people to or generate excessive groundborne vibration during construction. **Mitigation Measure 4.12-3: Vibration Reduction Measures.** Construction practices shall be utilized that do not generate vibration levels at the closest sensitive land uses above 0.1 in/sec PPV. The following measures, at a minimum, shall be employed to ensure this threshold is met: a. Vibration monitoring shall be conducted for the first 500 feet of pipeline construction for each segment to confirm vibration levels do not exceed the above vibration threshold. If vibration levels exceed the limits of this mitigation measure, construction practices shall be modified to use smaller types of construction equipment or excavator-mounted compaction wheels, operate the equipment in a manner to reduce vibration, or use alternate construction methods, (such as use of manual shoring jacks), and monitoring shall continue for an additional 200 feet or until construction practices meet the required vibration levels. The monitoring in this mitigation measure shall be repeated if the construction methods change in a manner that would increase vibration levels, or when structures are closer to the limits of construction than previous vibration monitoring have confirmed is below the vibration thresholds. b. Smaller vibratory rollers shall be used to minimize vibration levels during repaving activities where needed to meet vibration limits. c. Sheet pile driving for trenchless pipeline installation shall be conducted during daytime hours and access pits shall be located greater than 45 feet from standard structures and 80 feet from historic resources.	X	X	X	X	X	X	CalAm shall provide the CPUC with vibration monitoring reports/documentation demonstrating the construction practices used to achieve compliance with the 0.1 in/sec PPV standard. CPUC will monitor the effectiveness of construction vibration suppression measures.	During construction.	Vibration at the closest sensitive land use not exceeding the 0.1 in/sec PPV threshold.
Impact 4.12-4: Conflict with the construction time limits established by the local jurisdictions. **Mitigation Measure 4.12-1c**	X	X	X	X	X	X	See above under Mitigation Measure 4.12-1c		
Impact 4.12-4: Conflict with the construction time limits established by the local jurisdictions. **Mitigation Measure 4.12-4: Nighttime Construction Restrictions in Marina** Open trench pipeline construction work within 500 feet to residential uses or transient lodging shall be restricted to the hours of 7:00 a.m. to 7:00 p.m. (standard time) Monday through Saturday, and 10:00 a.m. to 7:00 p.m. (standard time) on Sundays and holidays. During daylight savings time, construction hours may be extended to 8:00 p.m.						X	CalAm shall provide the CPUC with documentation demonstrating compliance with the required open trench pipeline construction restrictions. CPUC will monitor construction activities in Marina.	Prior to and during construction.	Compliance with the nighttime open trench pipeline construction restrictions in Marina.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	Applicable Site(s)						Monitoring and Reporting Program		Effectiveness Criteria
	Intake Site	Offshore Brine Discharge Site	Desalination Plant Site	ASR	Carmel Valley Pump Station	Conveyance Pipelines	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	Implementation Schedule	
Section 4.12: Noise and Vibration (cont.)									
Impact 4.12-5: Result in a substantial permanent increase in ambient noise levels in the project vicinity during project operations. **Mitigation Measure 4.12-5: Stationary-Source Noise Controls.** CalAm shall retain an acoustical engineer to design stationary-source noise controls and ensure the applicable noise standards are met. At a minimum, all stationary noise sources (e.g., pump station, emergency generators, variable-frequency-drive motors, well heads with motors) shall be located within enclosed structures and with adequate noise screening, as needed, to maintain noise levels to no greater than 5 dBA above the existing monitored ambient values and 60 CNEL, at the property lines of nearby residences and other noise-sensitive receptors. Once the stationary noise sources have been installed, the contractor(s) shall conduct a single long-term (24-hour) monitoring of noise levels to ensure compliance with local noise standards. CalAm shall submit a compliance monitoring report to the CPUC.	X		X	X	X		CalAm shall provide the CPUC with the name and credentials of the acoustical engineer for approval and documentation showing the stationary-source noise controls the engineer designed as well as demonstrating that implementation of those controls achieved the required noise standards. CPUC will monitor the effectiveness of noise controls.	Prior to project operations.	Compliance with stationary-source noise standard (e.g., no greater than 5 dBA above the existing monitored ambient values and 60 CNEL, at the property lines of nearby residences and other noise-sensitive receptors).
Impact 4.12-C: Cumulative impacts related to noise and vibration. **Mitigation Measures 4.12-1a, 4.12-1b, 4.12-1c, 4.12-1d, 4.12-1e, and 4.12-3**	X	X	X	X	X	X	See above under Mitigation Measures 4.12-1a, 4.12-1b, 4.12-1c, 4.12-1d, 4.12-1e, and 4.12-3		
Section 4.13: Public Services and Utilities									
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction. **Mitigation Measure 4.13-1a: Locate and Confirm Utility Lines.** Before excavation begins, CalAm or its contractor(s) shall locate all overhead and underground utility lines (such as natural gas, electricity, sewage, telephone, fuel, and water lines) that are reasonably expected to be encountered during excavation. When a project excavation is within the approximate location of a subsurface utility, CalAm or its contractor shall determine the exact location of the underground utility by safe and acceptable means, including the use of hand tools and modern techniques. Information regarding the size, color, and location of existing utilities shall be confirmed before construction activities begin. These utilities shall be highlighted on all construction drawings.	X	X	X	X	X	X	CalAm shall provide to the CPUC final design drawings which highlight all utilities expected to be encountered during excavation for approval before commencement of any excavation and provide documentation demonstrating that the exact location, size and color of all such utilities were confirmed when excavation is within the approximate location of such utilities shown on the design drawings. CPUC and local utilities will review locations identified by the contractors.	Prior to and during construction.	Map utilities on design drawings prior to and confirm and report on exact location, size and color of utilities during excavation.
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction. **Mitigation Measure 4.13-1b: Coordinate Final Construction Plans with Affected Utilities.** CalAm or its contractor(s) shall coordinate final construction plans, schedule, and specifications with affected utilities. Arrangements shall be made with these entities regarding the appropriate protection, relocation, or temporary disconnection of services. If any interruption of service is required, CalAm or its contractor(s) shall notify residents and businesses in the project corridor of any planned utility service disruption at least 2 working days and up to 14 calendar days in advance, in conformance with county and state standards.	X	X	X	X	X	X	CalAm shall provide to the CPUC documentation demonstrating that it coordinated final construction plans, schedule and specifications with all affected utilities and reporting on all arrangements required by the utilities and timely notices provided to residents/business concerning any related utility service disruptions. CPUC and local utilities will monitor the arrangements and notifications.	Prior to and during construction.	Compliance with arrangements made in advance with local utilities for the protection, relocation, or temporary disruption in service and timely provision of utility service disruptions to affected customers (i.e., at least 2 working but not more than 14 calendar days in advance of disruption in service).

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.13: Public Services and Utilities (cont.)									
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction. **Mitigation Measure 4.13-1c: Safeguard Employees from Potential Accidents Related to Underground Utilities.** When any excavation is open, the construction contractor(s) shall protect, support, or remove underground utilities as necessary to safeguard employees. The contractor(s) shall be required to provide weekly updates to CalAm and construction workers regarding the planned excavations for the upcoming week, and to specify when construction will occur near a high-priority utility (i.e., pipelines carrying petroleum products, oxygen, chlorine, or toxic or flammable gases; natural gas pipelines greater than 6 inches in diameter or with normal operating pressures greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths). Construction managers shall hold regular tailgate meetings with construction staff on days when work near high-priority utilities will occur to review all safety measures regarding such excavations, including measures identified in the Mitigation Monitoring and Reporting Program and in construction specifications. The contractor shall designate a qualified Health and Safety Officer who shall specify a safe distance to work near high-priority utilities. Excavation near such utility lines shall not be authorized until the designated Health and Safety Officer confirms and documents in the construction records that: (1) the line was appropriately located in the field by the utility owner using as-built drawings and a pipeline-locating device; and (2) the location was verified by hand by the construction contractor.	X	X	X	X	X	X	CalAm shall provide the CPUC with copies of construction contracts containing the requirements of this mitigation, the required weekly updates in advance of construction near high-priority utilities, and evidence that construction managers held safety meetings before work near these utilities occurs. CPUC and local utilities will monitor the safety practices of contractors for work near high-priority utilities.	Prior to and during construction.	Compliance with required safety procedures for work near high-priority utilities.
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction. **Mitigation Measure 4.13-1d: Emergency Response Plan.** Before commencement of construction, CalAm or its contractor(s) shall develop an emergency response plan that outlines procedures to follow in the event of a leak or explosion and submit a copy to the CPUC and MBNMS. The emergency response plan shall identify the names and phone numbers of staff at the potentially affected utilities that would be available 24 hours per day in the event that construction activities cause damage to or rupture of a high-risk utility. The plan shall also detail emergency response protocols, including notification, inspection, and evacuation procedures; any equipment and vendors necessary to respond to an emergency (such as an alarm system); and routine inspection guidelines.	X	X	X	X	X	X	CalAm shall prepare and provide the required Emergency Response Plan to the CPUC for approval prior to commencement of construction and provide documentation demonstrating that the approved Plan is posted at all job sites. CPUC and MBNMS will review the plan and monitor its implementation by contractors.	Prior to and during construction.	Compliance with all components of the approved Emergency Response Plan and post a copy of the Plan at all job sites.
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction. **Mitigation Measure 4.13-1e: Notify Local Fire Departments.** CalAm or its contractor(s) shall notify local fire departments in advance of any work that is to be performed within or adjacent to a right-of-way that contains a gas utility line, or any time damage to a gas utility line results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.	X	X	X	X	X	X	CalAm shall provide copies of all construction contracts demonstrating contractors are required to notify local fire departments in advance of any work in or adjacent to gas utility lines or any time a gas leak occurs/is suspected or damage to a utility results in a public safety threat as well as copies of all such notifications provided to local fire departments. CPUC and MBNMS will monitor notifications.	Prior to and during construction.	Notification of local fire departments in advance of any work in or adjacent to gas utility lines.
Impact 4.13-1: Disrupt or relocate regional or local utilities during construction. **Mitigation Measure 4.13-1f: Ensure Prompt Reconnection of Utilities.** CalAm or its contractor(s) shall promptly contact utility providers to reconnect any disconnected utility lines as soon as it is safe to do so.	X	X	X	X	X	X	CalAm shall provide the CPUC with documentation demonstrating that prompt contact with utility providers requesting the reconnection of any disconnected utility lines was made. CPUC and MBNMS will monitor notifications.	During construction.	Notification of local utilities to reconnect service lines when it is safe to do so.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.13: Public Services and Utilities (cont.)									
Impact 4.13-2: Exceed landfill capacity or be out of compliance with federal, state, and local statutes and regulations related to solid waste during construction. **Mitigation Measure 4.13-2: Construction Waste Reduction and Recycling Plan.** The construction contractor(s) shall prepare and implement a construction waste reduction and recycling plan identifying the types of debris the project will generate and the manner in which those waste streams will be handled. In accordance with the California Integrated Waste Management Act of 1989, the plan shall emphasize source reduction measures, followed by recycling and composting methods, to ensure that construction and demolition waste generated by the project is managed consistent with applicable statutes and regulations. In accordance with the California Green Building Standards Code and local regulations, the plan shall specify that all trees, stumps, rocks, and associated vegetation and soils, and 50 percent of all other nonhazardous construction and demolition waste, be diverted from landfill disposal. The plan shall be prepared in coordination with the Monterey Regional Waste Management District and be consistent with Monterey County's Integrated Waste Management Plan. Upon project completion, CalAm shall collect the receipts from the contractor(s) and submit them to the CPUC as documentation that the waste reduction, recycling, and diversion goals have been met.	X	X	X	X	X	X	CalAm shall coordinate with the Monterey Regional Waste Management District in preparing and provide the CPUC with the required Construction Waste Reduction and Recycling Plan for approval prior to the commencement of construction. CalAm shall also collect and provide the CPUC with all receipts and other documentation demonstrating that the Plan's waste reduction, recycling and diversion goals were achieved. CPUC and MBNMS will review the plan and monitor its implementation.	Prior to and during construction.	Compliance with all components of the Construction Waste Reduction and Recycling Plan and document achievement of the Plan's waste reduction, recycling and diversion goals.
Impact 4.13-4: Exceed wastewater treatment requirements of the Central Coast RWQCB, or result in a determination by the wastewater treatment provider that it has inadequate treatment or outfall capacity to serve the project. **Mitigation Measures 4.3-4 and 4.3-5**	X	X	X	X	X	X	See above in Mitigation Measures 4.3-4 and 4.3-5		
Impact 4.13-5: Increased corrosion of the M1W outfall as a result of brine discharges associated with project operations. **Mitigation Measure 4.13-5a: Replacement of WEKO seal clamps, Periodic Inspections, and As-Needed Repairs for Offshore Segment of M1W Ocean Outfall.** Prior to operation of the MPWSP Desalination Plant, and as part of an agreement with M1W to use the outfall for brine discharge, CalAm shall protect the offshore segment of the M1W ocean outfall from corrosion, by replacing the existing WEKO seal clamps in the nearshore portion of the ocean outfall with new corrosion-resistant clamps. Installation of the WEKO seal clamps shall occur prior to relocation of the existing beach junction box to allow for optimal access to the outfall. Construction shall occur in late summer/early fall, during the irrigation season, when flows in the outfall would typically be de minimis; this timing would also be late in the snowy plover nesting season when eggs would have hatched. Access to the offshore portion of the outfall shall be through the existing beach junction box and de minimus flows will continue to be released through the outfall during the installation process. Any emergency high effluent flows resulting from process upsets at the treatment plant or rainfall events, shall be stored and then released through the outfall after the divers have safely exited the outfall. Construction access shall follow along the existing outfall access road. The staging and work area shall be created on already disturbed ground at the western end of the access road and consist of no larger than a 50 square foot area for divers and diving equipment, a 20-foot container for equipment storage and a 5kw generator (in a sound enclosure) to be used if power is not available onsite. If the beach junction box and discharge pipeline are covered by sand, or if sand needs to be removed for staging, excavation would be accomplished using a backhoe or excavator. Up to one-half acre around the junction structure may be disturbed. Three working shifts per day may be required, and the installation would take approximately 6-8 weeks. During construction, beach access shall remain open, with the potential exception of extreme high tide events. The contractor shall install temporary fencing around the construction site and construction shall be prohibited outside of the defined construction, staging, and storage areas. Construction work shall not be conducted seaward of the mean high water line unless tidal waters have receded from the authorized work areas. Construction vehicles operating on		X					Prior to the operation of the MPWSP Desalination Plant, CalAm shall enter into the required agreement with the M1W and provide a copy of that agreement and documentation to the CPUC demonstrating that the existing WEKO seal clamps were replaced in compliance with the MM's timing requirements. CalAm shall also enter into an agreement with M1W to perform the required periodic inspections of the offshore portion of the M1W outfall and diffuser and provide a copy of that agreement to the CPUC as well as documentation and photographs demonstrating compliance with the required inspections and condition of the outfall and diffuser. CPUC, MBNMS, and M1W will monitor the protection of the outfall.	Prior to and during operation of the MPWSP Desalination Plant.	Installation of new corrosion-resistant clamps prior to operations. Periodic inspections of the offshore portion of the M1W outfall and diffuser and any necessary replacement or maintenance required.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.13: Public Services and Utilities (cont.)									
the beach shall be rubber-tired, and while in operation shall remain as high on the upper beach as possible to avoid contact with ocean waters and intertidal areas. Any construction materials and equipment placed on the beach shall be stored beyond the reach of tidal waters. Materials intended to be left on the beach overnight must be approved by the Coastal Development Permit issuing and authorizing agencies and shall be subject to a contingency plan for moving materials in the event of a tidal wave/surge. All accessways impacted by construction activities shall be restored to their pre-construction condition or better within 3 days of completion of construction. Any beach sand in the area that is impacted by construction shall be filtered as necessary to remove construction debris. Construction areas shall maintain good construction site housekeeping controls and procedures (leak/spill clean-up; cover equipment in rain; cover exposed piles of soil/waste; dispose of waste properly; remove construction debris from beach). All construction activities that result in discharge of materials, polluted runoff, or wastes to the beach or the adjacent marine environment are prohibited. All exposed slopes and soil surface in and/or adjacent to the construction area shall be stabilized with erosion control best management practices. CalAm shall enter into an agreement with M1W to perform periodic inspections of the offshore portion of the M1W outfall and diffuser. Annual inspections shall occur for the first three years after the MPWSP Desalination Plant is brought online. Thereafter, the offshore portion of the outfall shall be inspected every five years. During each inspection, photo documentation shall be provided for all areas of inspections, regardless of findings, to provide for photographic comparison over time. All inspections shall include documentation of the thickness of scaling, any exposure or corrosion of reinforcing steel, significant cracking or spalling of concrete, and any pitting of metals. Any necessary repairs to the outfall and/or diffuser shall be identified and performed.									
Impact 4.13-5: Increased corrosion of the M1W outfall and diffuser as a result of brine discharges associated with project operations. **Mitigation Measure 4.13-5b: Install Protective Lining in Land Segment of M1W Ocean Outfall.** Prior to operation of the MPWSP Desalination Plant, and as part of an agreement with M1W to use the outfall for brine discharge, CalAm shall line the land segment of the outfall with a protective liner system. Installation of the liner shall occur only during the irrigation season (April through September), when flows in the outfall would be minimal. Installation of the liner in any given portion of the land segment is not expected to exceed 7 to 10 days. M1W has identified 10 locations within the M1W right-of-way (see Figure 4.13-1) from which CalAm or its contractor can access the land segment for installation of the liner; only these locations shall be used. Contractors shall install temporary fencing to denote the access limits for construction crews. The excavation pit at each access point shall be located directly above the outfall pipe and shall not exceed a size of 12 feet by 25 feet. Soils shall be stockpiled within the existing outfall right-of-way, and topsoil shall be stored in a separate pile for use in restoration following installation. Erosion and dust control measures shall comply with the applicable Stormwater Pollution Prevention Plan (SWPPP). After liner installation, the contractor shall restore soil in the pits to nearly pre-construction compaction levels and shall replace stockpiled topsoil to match pre-construction elevations. To address the small amount of effluent flowing through the portion of the land segment to be lined between April and September, the contractor shall plug and dewater the outfall segment being lined, if needed, and use a 24-inch diameter bypass pipe to divert flows around the affected portion of the outfall.		X					Prior to operation of the MPWSP Desalination Plan CalAm shall provide the CPUC with documentation demonstrating that it lined the land segment of the outfall with a protective liner system during the irrigation season and information on the type and specifications of the protective lining system used.	Prior to operation of the MPWSP Desalination Plant.	Installation of liner system during irrigation season prior to operation of the MPWSP Desalination Plant.
Impact 4.13-C: Cumulative impacts related to public services and utilities. **Mitigation Measures 4.3-4, 4.3-5, 4.13-1a, 4.13-1b, 4.13-1c, 4.13-1d, 4.13-1e, 4.13-1f, 4.13-2, 4.13-5a, and 4.13-5b**	X	X	X	X	X	X	See above in Mitigation Measures 4.3-4, 4.3-5, 4.13-1a, 4.13-1b, 4.13-1c, 4.13-1d, 4.13-1e, 4.13-1f, 4.13-2, 4.13-5a, and 4.13-5b		

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.14: Aesthetic Resources									
Impact 4.14-1: Construction-related impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings. **Mitigation Measure 4.14-1: Maintain Clean and Orderly Construction Sites.** As part of contract specifications, CalAm shall include a requirement that the construction contractor(s) keep staging and construction areas as clean and inconspicuous as practicable by storing construction materials and equipment at the proposed construction staging areas or in areas that are generally away from public view when not in use, and by removing construction debris promptly at regular intervals. If necessary, additional appropriate screening (e.g., temporary opaque fencing) shall be used at construction sites to buffer views of construction equipment and material, where the use of such screening materials would not further degrade the visual character or further obstruct views of scenic resources or vistas in the area. Screening is not required for pipeline construction areas.	X		X	X	X	X	CalAm shall provide the CPUC with copies of all construction contracts demonstrating inclusion of the required clean and orderly construction site provisions prior to the commencement of construction, CPUC will monitor the maintenance of construction sites.	Prior to and during construction.	Maintain clean and orderly construction site.
Impact 4.14-2: Temporary sources of substantial light or glare during construction. **Mitigation Measure 4.14-2: Site-Specific Nighttime Lighting Measures.** To prevent exterior lighting from affecting nighttime views, the design, construction, and operation of lighting at MPWSP facilities, shall adhere to the following requirements: • Use of low-intensity street lighting and low-intensity exterior lighting shall be required. • Lighting fixtures shall be cast downward and shielded to prevent light from spilling onto adjacent offsite uses. • Lighting fixtures shall be designed and placed to minimize glare that could affect users of adjacent properties, buildings, and roadways. • Fixtures and standards shall conform to state and local safety and illumination requirements. CalAm shall ensure these measures are implemented at all times during nighttime construction and for the duration of all required nighttime construction activity.	X	X	X	X	X	X	CalAm shall provide the CPUC with documentation demonstrating that all planned construction lighting complies with this measure's requirements prior to the commencement of construction. CPUC will monitor the nighttime lighting measures.	Prior to and during construction.	Prevention of nighttime lighting from affecting nighttime views.
Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings. **Mitigation Measure 4.14-3a: Facility Design.** CalAm shall avoid reflective exterior finishes and treat visible structures with earth-tone finishes to reduce contrast with the ground surface and increase compatibility with the visual setting. Primary structures shall be treated with complementary colors in the brown, tan, gray, or green color spectrum, or with other natural colors. Choose paint and exterior finishes to ensure that structures blend into the surrounding landscape.	X		X	X	X	X	CalAm shall provide the CPUC with documentation and photos/colors of the proposed finishes/colors for all exterior finishes and visible structures for approval to ensure all such finishes/structures will be treated with non-reflective, earth-tone finishes as required by this MM. CPUC will review and approve the choice of finishes prior to application.	After construction and during operations.	Application of approved finishes/colors that are compatible with surrounding visual settings.
Impact 4.14-3: Permanent impacts on scenic resources (vistas, roadways, and designated scenic areas) or the visual character of the project area and its surroundings. **Mitigation Measure 4.14-3b: Facility Screening.** CalAm shall ensure that fencing is designed to be minimally intrusive and to complement the architectural character of the proposed facility and the community. Fencing design shall be coordinated with nearby landscaping and MPWSP facility design to ensure all project components blend with the surrounding community and/or natural setting. Native plants, trees, or shrubs shall be used whenever practicable to screen views of the proposed aboveground facilities. Facility screening shall be in keeping with the character of the site and setting, and walled perimeters shall be avoided in natural settings to minimize the dominance of structures.	X		X	X	X	X	CalAm shall provide the CPUC with documentation demonstrating proposed fencing, landscaping and other proposed facility screening methods for approval prior to operation of the facilities.	After construction and during operations.	Installation of approved fencing, landscaping and other facility screening methods to ensure project facilities blend in with surrounding community and/or natural settings.
Impact 4.14-4: Permanent new sources of light or glare. **Mitigation Measure 4.14-2**	X	X	X	X	X	X	See above under Mitigation Measure 4.14-2		

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.14: Aesthetic Resources (cont.)									
Impact 4.14-C: Cumulative impacts related to aesthetic resources.	X	X	X	X	X	X	See above under Mitigation Measure 4.14-2		
Mitigation Measure 4.14-2									
Section 4.15: Cultural and Paleontological Resources									
Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5.	X	X	X	X	X	X	CalAm shall provide the CPUC with the name and qualifications of its archaeologist and a copy of the required Archaeological Monitoring Plan (including a proposed Archaeological Research Design and Treatment Plan) for approval prior to commencement of construction. CPUC and MBNMS will monitor the implementation of the plan.	Prior to and during construction.	Compliance with all components of the approved Plan and protecting archaeologically sensitive areas. Implementation of the ARDTP.
Mitigation Measure 4.15-2a: Establish Archaeologically Sensitive Areas. CalAm shall contract with a qualified archaeologist meeting the Secretary of the Interior's Qualification Standard (Lead Archaeologist) to prepare and implement an Archaeological Monitoring Plan, and oversee and direct all archaeological monitoring activities during project construction. Archaeological monitoring shall be conducted for all subsurface excavation work within 100 feet of the Castroville Pipeline at Tembladero Slough and the Salinas River; and the Source Water Pipeline in the Lapis Sand Mining Plant Historic District. At a minimum, the Archaeological Monitoring Plan shall: • Detail the cultural resources training program that shall be completed by all construction and field workers involved in ground disturbance; • Designate the person(s) responsible for conducting monitoring activities, including Native American monitor(s), if deemed necessary; • Establish monitoring protocols to ensure monitoring is conducted in accordance with current professional standards provided by the California Office of Historic Preservation; • Establish the template and content requirements for monitoring reports; • Establish a schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports; • Establish protocols for notifications in case of encountering cultural resources, as well as methods for evaluating significance, developing and implementing plan to avoid or mitigate significant resource impacts, Native American participation and consultation, collection and curation plan, and consistency with applicable laws including Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code; • Establish methods to ensure security of cultural resources sites; • Describe the appropriate protocols for notifying the County, Native Americans, and local authorities (i.e. Sheriff, Police) should site looting and other illegal activities occur during construction with reference to Public Resources Code 5097.99. During the course of the monitoring, the Lead Archaeologist may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to encounter resources. If archaeological materials are encountered, all soil disturbing activities within 100 feet of the find shall cease until the resource is evaluated. The Lead Archaeologist shall immediately notify the CPUC and MBNMS of the encountered archaeological resource. The Lead Archaeologist shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological resource, present the findings of this assessment to the Lead Agencies. In the event archaeological resources qualifying as either historical resources pursuant to CEQA Section 15064.5 or as unique archaeological resources as defined by Public Resources Code 21083.2 are encountered, preservation in place shall be the preferred manner of mitigation.									

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.15: Cultural and Paleontological Resources (cont.)									
If preservation in place is not feasible, the applicant shall implement an Archaeological Research Design and Treatment Plan (ARDTP). The Lead Archaeologist, Native American representatives, MBNMS and the CPUC shall meet to determine the scope of the ARDTP. The ARDTP will identify a program for the treatment and recovery of important scientific data contained within the portions of the archaeological resources located within the project Area of Potential Effects (APE); would preserve any significant historical information obtained and will identify the scientific/historic research questions applicable to the resources, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. The results of the investigation shall be documented in a technical report that provides a full artifact catalog, analysis of items collected, results of any special studies conducted, and interpretations of the resource within a regional and local context. All technical documents shall be placed on file at the Northwest Information Center of the California Historical Resources Information System.									
Impact 4.15-2: Cause a substantial adverse change during construction in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines or historic properties pursuant to 36 CFR 800.5. **Mitigation Measure 4.15-2b: Inadvertent Discovery of Cultural Resources.** Following implementation of Mitigation Measure 4.15-2a, if prehistoric or historic-era cultural materials are encountered, all construction activities within 100 feet shall halt and the Lead Agencies shall be notified. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. For discoveries on lands other than Army-owned lands, a Secretary of the Interior-qualified archaeologist shall inspect the find within 24 hours of discovery. If the find is determined to be potentially significant, the archaeologist, in consultation with MBNMS, the CPUC and the appropriate Native American representative shall determine whether preservation in place is feasible. Consistent with CEQA Guidelines Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance is not feasible, a qualified archaeologist, in consultation with the Lead Agency and the appropriate Native American representative, shall prepare and implement a detailed Archaeological Research Design and Treatment Plan (ARDTP). Treatment of unique archaeological resources shall follow the applicable requirements of Public Resources Code Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The ARDTP shall include provisions for analysis of data in a regional context, reporting of results within a timely manner and subject to review and comments by the appropriate Native American representative before being finalized, curation of artifacts and data at a local facility acceptable to the appropriate Native American representative, and dissemination of final confidential reports to the appropriate Native American representative, the Northwest Information Center of the California Historical Resources Information System, the CPUC, MBNMS and interested professionals. 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. 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.	X	X	X	X	X	X	The archaeologist hired by CalAm will notify MBNMS and CPUC if prehistoric or historic-era cultural materials are encountered and will halt construction activities within 100 feet of the found materials. If the find is determined to be potentially significant, the archaeologist, in consultation with MBNMS, the CPUC and the appropriate Native American representative shall determine whether preservation in place is feasible. If avoidance is not feasible, the archaeologist will prepare implement an ARDTP. CPUC, MBNMS, the U.S. Army, and Native American representatives will monitor the implementation of protocols and the ARDTP in the event of a find.	Prior to and during construction.	Implementation of construction protocols to protect cultural resources found during construction. Halting construction and implementation of the ARDTP.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.15: Cultural and Paleontological Resources (cont.)									
Impact 4.15-4: Disturbance of any human remains, including those interred outside of formal cemeteries, during construction. **Mitigation Measure 4.15-4: Inadvertent Discovery of Human Remains.** In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find shall cease. For discoveries on lands other than Army-owned lands, the Monterey County Coroner shall be contacted immediately. The Coroner then has two working days to determine if the remains are Native American. If the remains are determined to be Native American, and no investigation of the cause of death is required, the Native American Heritage Commission (NAHC) shall be contacted within 24 hours. The NAHC shall then identify and contact the person or persons it believes to be the Most Likely Descendant (MLD)" of the deceased Native American(s), who in turn would make recommendations to the project applicant, MBNMS and the CPUC for the appropriate means of treating the human remains and any grave goods. 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.	X	X	X	X	X	X	In the event human remains are found during construction, all work shall stop and the archaeologist will contact either the Monterey County Coroner or the Army CRM for their assessment. If the remains are determined to be Native American, the archaeologist will contact the NAHC for further identification and notification of Native American representatives. CPUC, MBNMS, the U.S. Army, and Native American representatives will monitor the implementation of protocols.	During construction.	Implementing protocols of identification and notification in the event human remains are encountered.
Section 4.16: Agricultural Resources									
Impact 4.16-1: Result in changes in the existing environment that, due to their location or nature, could temporarily disrupt agricultural activities or result in the permanent conversion of farmland to non-agricultural use. **Mitigation Measure 4.16-1: Minimize Disturbance to Farmland.** CalAm and its construction contractor(s) shall incorporate the following measures into construction plans and specifications for all construction activities located in farmland areas to minimize adverse impacts on farmland: • CalAm shall notify affected property owners at least 90 days prior to initiating construction activities that have the potential to interfere with agricultural operations. • Construction contractor(s) shall minimize the extent of the construction disturbance, including construction access, in agricultural areas to the maximum extent feasible. Minimization efforts shall include, but not be limited to, consulting with affected property owners to schedule construction activities to minimize impacts during planting, growing, and/or harvest seasons. • During excavation and other earthmoving activities in designated farmland areas, the surface and subsurface soil layers shall be stockpiled separately when trenches are excavated. Segregated topsoil and subsoil shall be maintained and kept separated throughout all construction activities, and these soils shall subsequently be used to backfill excavations and shall be returned to its appropriate location in the soil profile. • To avoid over-compaction of the top layers of soil, soil densities shall be measured prior to the start of construction activities, and surface soil (roughly the upper 3 feet of soil) shall be backfilled to within 5 percent of the original density. • If necessary, following construction activities, the uppermost 3 feet of soil shall be ripped to achieve the appropriate soil density (within 5 percent of the original). Ripping may also be used in areas where vehicle and equipment traffic has compacted the topsoil layers.			X			X	CalAm shall provide the CPUC with documentation that the required farmland disturbance minimization measures are incorporated into all construction plans and specifications for construction activities located in farmland areas prior to the commencement of construction and provide the CPUC copies of all required notices provided to affected property owners. CPUC and MBNMS will monitor implementation of measures to minimize disturbance to farmlands.	Prior to and during construction.	Implementation of measures to minimize disturbance to farmland.

TABLE 1 (Continued)
CALAM MONTEREY PENINSULA WATER SUPPLY PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Impact **Mitigation Measure**	**Applicable Site(s)**						**Monitoring and Reporting Program**		**Effectiveness Criteria**
	Intake Site	**Offshore Brine Discharge Site**	**Desalination Plant Site**	**ASR**	**Carmel Valley Pump Station**	**Conveyance Pipelines**	**Monitoring and Reporting Actions:** ***CalAm Reports On, and the CPUC Monitors all Mitigation Measures***	**Implementation Schedule**	
Section 4.16: Agricultural Resources (cont.)									
• Existing agricultural drainage systems shall be inspected before and after construction to ensure they function as needed. • Disturbed areas shall be restored to pre-construction conditions following construction.									
Impact 4.16-C: Cumulative impacts related to agricultural resources. **Mitigation Measure 4.16-1**			X			X	See above under Mitigation Measure 4.16-1		
Section 4.18: Energy Conservation									
Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction and decommissioning. **Mitigation Measure 4.10-1b**	X	X	X	X	X	X	See above under Mitigation Measure 4.10-1b		
Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction and decommissioning. **Mitigation Measure 4.18-1: Construction Equipment and Vehicle Efficiency Plan.** CalAm shall contract a qualified professional (i.e., construction planner/energy efficiency expert) to prepare a Construction Equipment Efficiency Plan that identifies the specific measures and performance standards that CalAm (and its construction contractors) will implement as part of project construction and decommissioning to increase the efficient use of construction equipment and vehicles to the maximum extent feasible. Such measures shall include, but not necessarily be limited to: procedures to ensure that all construction equipment is properly tuned and maintained at all times; requirement to provide options for worker carpooling; a commitment to utilize existing electricity sources where feasible rather than portable diesel-powered generators; and identification of procedures (including the routing of haul trips) that will be followed to ensure that all materials and debris hauling is conducted in a fuel-efficient manner. The plan shall be submitted to CPUC and the Sanctuary for review and approval at least 30 days prior to the beginning of construction activities and at least 30 days prior to the beginning of decommissioning activities.	X	X	X	X	X	X	CalAm shall provide the CPUC with the name and qualifications of the professional who prepared as well as a copy of the required Construction Equipment Efficiency Plan for approval at least 30 days prior to commencement of construction and at least 30 days prior to subsequent decommissioning activities. CPUC and MBNMS will review and approve the plan and monitor its implementation.	Prior to and during construction.	Compliance with all components of the approved Construction Equipment Efficiency Plan to ensure increased energy efficiency during construction and decommissioning.
Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations. **Mitigation Measure 4.11-1**	X	X	X	X	X	X	See above under Mitigation Measure 4.11-1		
Impact 4.18-C: Cumulative impacts related to energy conservation. **Mitigation Measures 4.10-1b and 4.18-1**	X	X	X	X	X	X	See above under Mitigation Measures 4.10-1b and 4.18-1		
Section 4.20: Socioeconomics and Environmental Justice									
Impact 4.20-1: Reductions in the rate of employment, total income, or business activity in Monterey County. **Mitigation Measure 4.9-1**	X	X	X	X	X	X	See above under Mitigation Measure 4.9-1		
Impact 4.20-2: Disproportionately high and adverse effects on low-income or minority populations. **Mitigation Measures 4.10-1a through 4.10-1e**	X	X	X	X	X	X	See above under Mitigation Measures 4.10-1a through 4.10-1e		
Impact 4.20-C: Cumulative impacts related to socioeconomics and environmental justice.	X	X	X	X	X	X	See above under Mitigation Measures 4.9-1 and 4.10-1a through 4.10-1e		

Appendix C

Technical Memorandum: MPWSP Marine Resources Assessment of Proposed Outfall Modifications

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Technical Memorandum
CalAm Monterey Peninsula Water Supply Project: Marine Resources Assessment of Proposed Outfall Modifications

December 2025

Prepared for:

Denise Duffy and Associates
947 Cass St Suite 5, Monterey, CA, 93940
and
California American Water
511 Forest Lodge Road #100, Pacific Grove, CA 93950

Prepared by:

APPLIED MARINE SCIENCES

4749 Bennett Drive, Suite L
Livermore, CA 94551

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II. Introduction

This document was prepared to provide a brief update on the environmental effects associated with modifying Monterey One Water's (M1W's) ocean outfall (Proposed Modifications) to accommodate brine discharge from the Monterey Peninsula Water Supply Project (MPWSP). M1W was formerly known as the Monterey Regional Water Pollution Control Agency (MRWPCA). Specifically, this document evaluates whether the environmental effects of the Proposed Modifications would result in any additional environmental impacts beyond those previously identified in the 2018 MPWSP Final Environmental Impact Report/Environmental Impact Statement (Final EIR/EIS) prepared by the California Public Utilities Commission (CPUC). This document also provides information about special status species that have been listed or have been proposed for listing under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA) since certification of the Final EIR/EIS.

This review relied on outfall survey data from ABA Consultants (1999), the Final EIR/EIS (CPUC 2018), design plans for the Proposed Modifications (Brown and Caldwell 2025), and video footage of the M1W outfall recorded by Ballard Marine Construction, LLC in 2014 and 2023.

III. Project Description of the Planned Modifications to the Outfall

2018 Final EIR/EIS

The Final EIR/EIS (CPUC 2018) presented details concerning anticipated modifications to the M1W outfall that would be needed to accommodate MPWSP brine discharge. This section provides excerpts from the Final EIR/EIS that describe the anticipated M1W outfall modifications. The details provided in the Final EIR/EIS are key to evaluating whether the Proposed Modifications are consistent with the modifications described in the Final EIR/EIS and determining whether the Proposed Modifications would result in any new impacts to marine resources within Monterey Bay.

- "The project area extends approximately 18 miles, from the town of Castroville in the north to the City of Carmel-by-the-Sea in the south (see Figure ES-1). The MPWSP would include a source water intake system, which would consist of 10 subsurface slant wells (eight active and two on standby) extending offshore into the submerged lands of MBNMS [Monterey Bay National Marine Sanctuary] and a Source Water Pipeline that would convey the source water from the well sites to the desalination plant. The slant wells would be constructed at the CEMEX sand mining site in the northern coastal area of the City of Marina and would extract 24.1 million gallons per day (mgd) of source water through the seafloor in MBNMS." (Executive Summary, Page ES-7, 8, and 9).

- "A 9.6 million gallons per day (mgd) capacity desalination plant would be constructed in unincorporated Monterey County on Charles Benson Road, northeast of the City of Marina and would produce approximately 10,750 acre-feet per year (afy) of desalinated water. Related facilities would include pretreatment, reverse osmosis (RO), and post-treatment systems; backwash supply and filtered water equalization tanks; treated water storage tanks; chemical feed and storage facilities; brine storage and conveyance facilities; and other associated non-process facilities. The proposed project would also include improvements to the existing Seaside Groundwater Basin aquifer storage and recovery (ASR) system facilities, which would enable CalAm to inject desalinated product water into the groundwater basin for subsequent extraction and distribution to customers. The expanded ASR system would include two additional injection/extraction wells, the ASR-5 and ASR-6 Wells, and three parallel pipelines, the ASR Conveyance Pipeline, ASR Pump-to Waste Pipeline, and ASR Recirculation Pipeline, and would improve the reliability of the existing ASR system. The proposed project would also include a pump station in Carmel Valley and about 21 miles of water conveyance pipelines."(Executive Summary, Page ES-8)

- "The desalination plant and brine discharge/outfall discharge facilities would be the same as the proposed project." (Executive Summary, Page ES-12).

- "The existing 2.1-mile-long MRWPCA outfall pipeline ends with a 1,100-foot-long, underwater diffuser that rests on rock ballast rock. The ports are approximately 6 inches above the ballast rock and nominally 54 inches above the seafloor, although this varies. For the dilution calculations, they are assumed to be 4 feet above the seafloor at approximately 90 to 110 feet below sea level. The diffuser is equipped with 172 ports (129 open and 43 closed), each 2 inches in diameter and spaced 8 feet apart." (Section 3.2.2.5, Page 3-30).

- "Retrofitting the existing outfall to increase dilution: Diffusers for discharging dense effluents typically consist of nozzles that are inclined upwards to increase dilution and mixing. Such methods for dilution have been extensively studied (Roberts, 2016). These studies have demonstrated that retrofitting the existing outfall to include inclined diffuser jets (jets are currently oriented horizontally) increases dilution substantially. The optimum angle to the horizontal for the discharge of dense plumes for increasing initial dilution is 60° as this maximizes the path length and dilution of the dense discharge at the point of contact on the seafloor. For example, modeled dilution increases from 16:1 to 46:1 for the proposed MPWSP brine only discharge scenario when all diffuser ports are assumed to be inclined jets angled at 60° to the horizontal in model analyses (Appendix D1). Inclined jets can be achieved by retrofitting the existing check valves with upwardly inclined nozzles. From model analysis, all diffuser ports would require retrofit to achieve substantially increased dilution (i.e., not a subset)." (Section 4.3, Page 4.3-117)

- "Retrofitting the end gate to increase dilution: The minimum dilution of discharges exiting the outfall diffuser end gate would be substantially increased by modifying the existing 2-inch opening with a Tideflex check valve installed at an upward angle to maximize dilution of dense discharges, as described above for retrofitting the existing

outfall to increase dilution. As modeled by Roberts (2017; Appendix D1, Supplemental Report), it was demonstrated that modifying the end gate with an inclined check valve would slightly reduce flow volume and increase exit velocity, resulting in an increased minimum dilution at the end gate, as compared to existing conditions. As described in detail in Section 3.1 of Roberts (2017), any upward angle greater than about 20° would result in dilutions that meet the BMZ salinity requirements, with an optimum angle to maximize dilution calculated as being 60° (see Figures 2 and 3, Roberts 2017, Appendix D1)." (Section 4.3, Page 4.3-118).

- "Retrofitting the existing MRWPCA outfall diffuser would be achieved by installing inclined nozzles on the existing diffuser check valves and/or replacing the existing end gate opening with a minimum of one 6-inch Tideflex (or similar) check valve. The impacts associated with the physical construction of such a retrofit would likely be minor and temporary, consisting primarily of minor construction-related sea-bed disturbance and water quality degradation in the form of increased turbidity and disturbance of benthic organisms on and adjacent to the outfall diffuser. Such temporary disturbances to the seafloor and increases in associated turbidity would be minor, primarily occurring over several hours to a day or two, through the process of divers staging and installing equipment to complete the retrofit of the diffuser." (Section 4.3, Page 4.3-119).

- "The additional total head loss through the outfall diffuser overall due to the check valve is negligible, about 0.01 ft. Therefore, modification of the end gate would have only a negligible effect on overall dilution from the outfall diffuser ports for all assessed discharge scenarios." (Section 4.3, Page 4.3-119)

Proposed Outfall Modifications (Brown and Caldwell Basis of Design Report - 2025)

Diffuser Port Modification

The existing M1W ocean outfall was designed with 168, 2-inch diameter diffuser ports located on alternating sides of the pipeline in a horizontal orientation. One hundred and twenty-nine of the ports are open and are equipped with check valves, consisting of a neoprene duckbill secured to a square rubber flange. The other 39 ports are closed with rubber plugs. In March 2025, M1W proposed modifications to the MPWSP including opening 29 of the 39 closed ports and equipping them with check valves. Additionally, diffuser ports 1 through 158 will be retrofitted with new duckbills with a 60-degree elbow (Section 3.1, Page 3-1).

- Diffuser ports 1-129: Check valves will be replaced with new check valves with the duckbill oriented upward and using existing hardware.
- Diffuser ports 130-158 will be fitted with new check valves and new hardware identical to Diffuser ports 1-129.
- Mounting hardware for Diffuser ports 1-129 will be reused. New hardware will be needed to retrofit Diffuser ports 130-158 elbow (Section 3.1, Page 3-1).

End Gate Structure

Accumulated sediment within the outfall pipe has inhibited the function of the diffusers. The Proposed Modifications will involve temporarily removing the end gate to clear sediment and fitting the end gate with a new neoprene seal that prevents further sediment intrusion. The sediment in the 50-foot final pipe segment downstream of the end gate structure will be removed. Removed sediment will be captured on a barge. Potential removal options include air lift pumping and lift bags (Section 4.2, Page 4-1).

Comparison of Final EIR/EIS Outfall Modifications and Proposed Modifications

Final EIR/EIS Outfall Modifications

As presented and analyzed in the 2018 Final EIR/EIS (CPUC 2018), the 168 existing outfall diffuser ports were to be retrofitted with new duckbill diffuser ports and repositioned at an angle of 60 degrees. This work was to be conducted as part of routine outfall maintenance. Additionally, the Final EIR/EIS (CPUC 2018) included potential repair or modifications to the existing M1W end gate to either accommodate improved pressure and flow regulation within the pipeline or to improve outfall operation and function.

Proposed Modifications

As presented by Brown and Caldwell in their 2025 Basis of Design Report for the M1W outfall (Brown and Caldwell 2025), the 168 existing outfall diffuser ports will be retrofitted with new duckbill diffuser ports repositioned at an angle of 60 degrees, consistent with the modifications described in the Final EIR/EIS (CPUC 2018). Additionally, proposed end gate modifications to improve outfall operation will not be required; however, consistent with the Final EIR/EIS, accumulated sediment blocking some diffuser ports will be removed. The end gate will also be fitted with a new neoprene seal to prevent future intrusion of sediment into the outfall pipeline.

The Proposed Modifications are generally consistent with existing routine outfall maintenance activities performed by M1W (i.e., replacing degraded or corroded hardware, flushing the outfall to unclog sediment from the diffuser ports, and conducting video surveillance and leak detection testing). These existing maintenance activities require temporary, localized disturbance by divers around the diffuser, similar to what would occur during installation of the Proposed Modifications. M1W performs routine outfall maintenance to ensure structural integrity of the outfall and continued compliance with their National Pollutant Discharge Elimination System (NPDES) permit. The Proposed Modifications are necessary for compliance with the California Ocean Plan (SWRCB 2019) and NPDES permit requirements. As such, the Proposed Modifications are considered routine maintenance necessary for continued operation of the M1W outfall during MPWSP operation.

In conclusion, the Proposed Modifications to the M1W outfall are consistent with the anticipated modifications presented in the Final EIR/EIS (CPUC 2018) and ongoing routine outfall maintenance activities.

IV. Marine Resources Assessments

2018 Final EIR/FEIS

The Final EIR/EIS (CPUC 2018) presented details concerning the existing biological community on and around the ocean outfall. This section provides the Final EIR/EIS's description of the existing conditions at the ocean outfall diffuser, where the Proposed Modifications would occur. Additionally, this section summarizes the findings of surveys conducted by ABA Consultants between 1977 and 1994 that were used to inform the Final EIR/EIS' analysis.

The Final EIR/EIS (CPUC 2018) described the biological community on and around the ocean outfall as:

"…In addition to macrophytes like giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis* spp.) that anchor on hard substrate, highly diverse invertebrate and fish assemblages also inhabit rocky areas. These include multiple species of bryozoans, anemones, shrimp, solitary and branching corals, hydrocorals, sponges, scallops, crabs, tubeworms, tunicates, and fish, including rockfish (*Sebastes*), sculpins, lingcod, and greenlings. NOAA, as part of their coastal marine resource mapping efforts (NOAA, 2014a), indicates on one of their sensitivity index maps the potential presence of a small area of rocky subtidal habitat supporting kelp at the very southern end of the study area (see Figure 4.5-1). Additionally, hard substrate subtidal habitat has been identified (MBNMS, 2016d) that coincides with the ballast rock that is used to secure the MRWPCA outfall on the seabed (see Figure 4.5-2) (MBNMS, 2016d). As described above, the majority of the study area is soft bottom substrate and there are no SESAs in the study area. Video obtained during a recent inspection of the MRWPCA outfall revealed a rich hard-substrate assemblage on the ballast rock. Numerous species of rockfishes, sea cucumbers, anemones, solitary cup corals, and sponges were observed (by Ballard 2014)."

The primary references used in the 2018 MPWSP FEIR/FEIA (ESA 2018) were ABA Consultants (1999) and Ballard Marine Construction, LLC (2014). ABA Consultants (1999) conducted monitoring surveys in support of M1W's NPDES permit for the outfall, which at the time was the MRWPCA outfall. Ballard Marine Construction, LLC (2014) later conducted an updated outfall pipeline survey. In 2023, Ballard Marine Construction, LLC conducted another survey of the outfall.

ABA Consultants (1999) monitored the outfall from 1977 to 1994 and found no bioaccumulation of harmful contaminants in tissues or other impacts to the benthic community from the outfall discharge. Similarly, there were no negative changes to the physical and chemical properties of the water column and sediment near the outfall. ABA Consultants (1999) reported that the outfall structure stabilized the sediment which allowed a community of polychaete tubeworms

(*Diopatra ornata)* to establish in the area which locally increased species diversity and abundance. This study primarily focused on benthic infauna rather than epifauna. In 2014, outfall video recorded by Ballard Marine Construction, LLC presented a rich, hard-bottom community living on the ballast rock surrounding the outfall.

Pipeline Inspection Report and Videos (J.F. Brennan Company, Inc. – 2023)

J.F. Brennan Company, Inc. (Brennan) captured images and video footage during a December 2023 M1W outfall inspection (Brennan 2023). These images and videos provide insight into the habitat and taxa present along the outfall (see **Table 1**). The habitat is composed of both natural and artificial hard substrate with the pipeline comprising the artificial hard substrate and the ballast rock representing the natural hard substrate. Both substrate types provide hardbottom habitat and were covered in turf (a combination of algae, hydroids, bryozoans and other taxa) and other sessile invertebrates. The most prominent species observed along the outfall was the white-plumed anemone (*Metridium farcimen*). Other Cnidarians such as strawberry anemones (*Corynactis californica*) and orange cup corals (*Balanophyllia elegans*) were abundant, while hydroids (Hydrozoans) were infrequently observed. The duckbills were heavily encrusted in white-plumed anemones (*M. farcimen*) and strawberry anemones (*C. californica*). Echinoderms such as bat stars (*Patiria miniata*), ochre stars (*Pisaster ochraceous*), and warty sea cucumbers (*Apostichopus parvimensis*) were noted. Arthropods such as giant acorn barnacles (*Balanus nubilus*) were very common, while only one red crab (*Cancer productus*) and one spot prawn (*Pandalus platyceros*) were recorded. Several mollusks were visible in the video footage including rock scallops (*Hinnites giganteus*) and other bivalves, as well as a marine snail (Gastropoda). Various encrusting sponges (Porifera), including red volcano sponges (*Acarnus erithacus*) were identified as well as fluted bryozoans (*Hippodiplasia insculpta*) and worm casings (Polychaetes), likely *D. ornata*. Additionally, several species of rockfish (*Sebastes* spp.), including gopher (*Sebastes carnatus*), kelp (*Sebastes atrovirens*), halfbanded (*Sebastes semicinctus*), and unidentified rockfish (*Sebastes* spp.), lingcod (*Ophiodon elongatus*), painted greenling (*Oxylebius pictus*), kelp greenling (*Hexagrammos decagrammus*), Cabezon (*Scorpaenichthys mamoratus*), California scorpionfish (*Scorpaena guttata*), and unidentified roundfish were observed in the video footage. This marine community assemblage is typical for hard substrate habitat in water depths under 300 feet in Central California (Brown et al. 2013; Wolf and Pattengill-Semmens 2013; Oliver et al. 2020) and what was assumed to be present during the analysis conducted for the 2018 MPWSP FEIR/FEIA (ESA 2018).

Special Status Species

Since certification of the Final EIR/EIS (CPUC 2018), there have been changes to the protection status of some marine species that may be present in Monterey Bay. Species that may be present in the MPWSP marine study area with the potential to be affected by the Proposed Modifications are presented below.

Table 1. Marine taxa identified from the December 2023 M1W outfall video footage captured by J.F. Company, Inc. commercial divers (Brennan 2023).

Scientific Name	Common Name
Annelida	
Diopatra ornata	Ornate tube worm
Arthropoda	
Balanus nubilus	Giant acorn barnacle
Cancer productus	Red crab
Pandalus platyceros	Spot prawn
Bryozoa	
Hippodiplosia insculpta	Fluted bryozoan
Chordata	
Scorpaenichthys mamoratus	Cabezon
Scorpaena guttata	California scorpionfish
Sebastes carnatus	Gopher rockfish
Sebastes semicinctus	Halfbanded rockfish
Hexagrammos decagrammnus	Kelp greenling
Sebastes atrovirens	Kelp rockfish
Ophiodon elongatus	Lingcod
Oxylebius pictus	Painted greenling
Sebastes spp.	Unidentified rockfish
Perciformes	Unidentified roundfish
Cnidaria	
Hydrozoa	Hydroids
Balanophyllia elegans	Orange cup coral
Corynactis californica	Strawberry anemone
Metridium farcimen	White-plumed anemone
Echinodermata	
Patiria miniata	Bat star
Pisaster ochraceous	Ochre star
Apostichopus parvimensis	Warty sea cucumber
Porifera	
Acarnus erithacus	Red volcano sponge
Porifera	Unidentified sponge
Mollusca	
Bivalvia	Bivalve
Hinnites giganteus	Rock scallop
Gastropoda	Unidentified snail
Other	
Turf complex	Turf

Red Abalone (Haliotis rufescens)

Red abalone (*H. rufescens*) are large, sedentary marine snails found from Southern Oregon to Baja California, Mexico, but are most commonly found in Northern California. They are the largest species of abalone in the world and inhabit intertidal and shallow subtidal rocky reefs and kelp beds 6-30 m (20-100 ft) deep. Red abalone are strict herbivores feeding primarily on macroalgae and phytoplankton. In the southern extent of their range, they feed mainly on giant kelp (*M. pyrifera*), and in the northern extent of their range they predominantly consume bull kelp (*Nereocystis luetkeana*). Red abalone are broadcast spawners, that reach maturity within four years (Middlebrook 1999; CDFW 2025a).

Historically, all species of abalone were part of a commercial and recreational fishery offshore California. The red abalone (*H. rufescens*) fishery was the last to be closed in 2018 following a series of unprecedented extreme environmental conditions (CDFW 2025b). A harmful algal bloom event in August 2011 released toxins killing large numbers of marine invertebrates, and an extreme warm water event from 2014 to 2015 decimated kelp populations, the primary food source of red abalone (CDFW 2016). Today they are considered a California species of special concern (CDFW 2025b). Although it is unlikely that any red abalone would be present along the M1W outfall, it does fall within their historic range. Red and green abalone *(H. fulgens*) were discussed in the Final EIR/EIS (CPUC 2018). However, since then, both fisheries have been completely closed to commercial and recreational harvest.

Sunflower Sea Star (*Pycnopodia helianthoides*)

The sunflower sea star (*P. helianthoides*) is a multi-armed sea star that inhabits intertidal and subtidal habitats from the Aleutian Islands in Alaska to northern Baja California, Mexico. They are voracious predators that can be found to a depth of at least 132 m (435 ft). This species was once numerous in the Northeastern Pacific Ocean but has declined significantly due to sea star wasting syndrome. In 2023, the sunflower sea star was proposed to be listed as threatened under the FESA (NOAA 2024b; Prentice et al. 2025). Sunflower sea stars feed on sea urchins, mollusks and other marine invertebrates (Shivji et al. 1983; Galloway et al. 2023).

Summary of Marine Resources Assessment

The 2023 Brennan pipeline survey videos show the same hard substrate marine biological community described in the Final EIR/EIS (CPUC 2018). No special status species were observed. Improvements in underwater camera technology allowed for the identification of more taxa in the 2023 video footage than in the 2014 video footage; however, the habitat and biological community largely remained the same along the M1W outfall between the 2014 and 2023 surveys. The biological community present around the M1W outfall is similar to other marine biological communities observed in similar water depths throughout Central California (Brown et al. 2013; Wolf and Pattengill-Semmens 2013; Oliver et al. 2020).

V. Conclusions

Based on the assessments of hard substrate marine taxa inhabiting the M1W outfall by Brennan (2023), Ballard Marine Construction, LLC (2014), and the Final EIR/EIS (CPUC 2018), there have been no noticeable changes to the marine biological resources at the outfall. Therefore, existing biological conditions at the site are consistent with the conditions described in the Final EIR/EIS. As such, there are no changed circumstances or new information of substantial importance that affect the Final EIR/EIS' analysis of impacts to marine biological resources. Additionally, the Proposed Modifications, as presented in the Brown and Caldwell (2025) Basis of Design Report, are consistent with those described and analyzed in the Final EIR/EIS (CPUC 2018). Therefore, the Proposed Modifications would not result in any additional potential impacts beyond what was identified in the Final EIR/EIS (CPUC 2018). Further, the construction

of the Proposed Modifications would be consistent with existing routine M1W outfall maintenance activities and are not expected to significantly impact any marine resources or biota in and around the M1W outfall beyond existing conditions.

VI. References

ABA Consultants. 1999. Analysis of MRWPCA Marine Outfall Benthic Monitoring Program. Prepared for Monterey Regional Water Pollution Control Authority.

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Appendix D

Technical Memorandum: Diffuser Design for Commingled Discharge into Monterey Bay

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Diffuser Design for Commingled Discharge into Monterey Bay

Philip J. W. Roberts, PhD, PE
Consulting Engineer
Atlanta, Georgia, USA

May 22, 2025

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EXECUTIVE SUMMARY

This report presents the results of modeling analyses to inform modifications to an existing outfall and diffuser to accommodate the discharge of a composite effluent, consisting of treated wastewater effluent and brine from a proposed desalination plant, into Monterey Bay. Due to the different regulatory considerations that apply to dense and buoyant discharges and because the effluent flow rates vary widely, the approach to assess outfall specifications to ensure compliance with water quality standards was carefully assessed. The diffuser modifications needed to meet specific hydraulic criteria and to optimize dilution and maintain efficient discharge of the commingled effluent are discussed.

An existing outfall and diffuser operated by Monterey One Water (M1W) was used as the basis for the analysis. The diffuser has a total of 168 ports, 39 of which are presently closed, leaving 129 operational ports. The open ports are fitted with horizontal "duckbill" check valves, which expand as flow increases allowing for a variable cross-sectional area.

The diffuser modifications are to accommodate a future composite effluent that may include combinations of secondary effluent, secondary effluent passed through an Advanced Water Purification Facility (AWPF) that produces a Reverse Osmosis Concentrate (ROC), and brine from the proposed seawater desalination plant. The permitted average dry weather secondary effluent flow can range from 0 to 29.6 million gallons per day (mgd), with maximum wet weather flows up to 75.6 mgd. ROC flow could range from 0 to 1.78 mgd, and up to 8.66 mgd of brine may be produced by the desalination plant. Dilution simulations were made for three seasonal ocean density profiles; the profiles are tabulated in Appendix A. A total of 122 potential flow combinations were analyzed, with their properties summarized in Appendix B.

The diffuser design must satisfy water quality criteria and hydraulic constraints. The water quality criteria are specified in the California Ocean Plan. Trussell Technologies (Trussell) used the dilution results presented in this TM to evaluate compliance with the California Ocean Plan Table 3 water quality objectives through the water column at the end of initial mixing. Their analysis approach and results are provided in a separate TM. In addition, the dense discharges must not cause an increment in ocean salinity of more than 2 ppt along the ocean floor at the end of the brine mixing zone that extends 100 m from the diffuser.

Seawater entrainment into the dense discharge jets must be calculated to assess the impact of turbulent shear on mortality of marine organisms. The optimal diffuser design should minimize both entrainment and

associated mortality. Additionally, the incremental increase in entrainment for buoyant discharges due to the commingling of the brine discharge must also be estimated. Calculation of entrainment using these dilution results is considered fully in the Marine Life Mortality Report currently in preparation.

The hydraulic criteria require that the total head at the beginning of the diffuser must be less than 25 ft to protect the structural integrity of the outfall pipe. The total head at the beach junction structure located at the shoreline must not exceed 62 ft (LWA 2024) to prevent flooding of the treatment plant. These criteria must be met at a peak wet weather flow of 75.6 mgd.

Two types of check valves were evaluated: the existing valves, designated as HC61, and stiffer valves, designated as HC24.

Since buoyant and dense discharges exhibit different mixing behaviors, two distinct modeling approaches were applied. For buoyant discharges, the UM3 mathematical model from the Visual Plumes modeling suite was used, while semi-empirical equations based on experimental studies were used for dense discharges.

To support the alternatives analysis, extensive simulations were performed for the 122 flow scenarios, three density profiles, two valve types, various numbers of open ports, and various port orientations.

The hydraulic criteria could be satisfied by the existing (HC61) valves. However, in coordination with Trussell, it was found that the HC61 valves do not provide sufficient dilution to comply with the Ocean Plan objectives and meet project goals for permitting.

Diffuser port combinations with HC24 valves could meet the hydraulic criteria, and Trussell determined that the water quality objectives could also be met with this diffuser type. The minimum number of ports (to facilitate construction and cost) required is 158, and the optimum orientation (to minimize entrainment and therefore minimize impacts to marine mortality) was found to be angled upward 60 degrees. The modeling results for this recommended diffuser configuration are summarized in Appendix C.

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1. INTRODUCTION

1.1 Background

Monterey One Water (M1W) and the Monterey Peninsula Water Management District implemented the Pure Water Monterey Groundwater Replenishment Project (PWM Project). The Project involves treating secondary effluent from M1W's Regional Treatment Plant (RTP) through an Advanced Water Purification Facility (AWPF). The AWPF produces a reverse osmosis (RO) concentrate (ROC) that is discharged with excess RTP secondary effluent through an existing outfall and diffuser used for treated wastewater disposal into Monterey Bay.

California American Water Company (Cal-Am) is planning to construct the Monterey Peninsula Water Supply Project (MPWSP) Desalination Plant. This will produce a brine discharge that will be commingled with M1W's current waste streams and discharged through the M1W outfall. The commingled discharge will vary in flow and water quality seasonally due to ranges in anticipated flows from each waste stream. The permitted average dry weather secondary effluent flow can range from 0 to 29.6 million gallons per day (mgd), with maximum wet weather flows up to 75.6 mgd. ROC flow could range from 0 to 1.78 mgd. Up to 8.66 mgd of brine may be produced by the desalination plant. The outfall and the project are described in Larry Walker Associates (LWA) (2024).

The composition of the effluent flow scenarios ranges from secondary effluent and/or ROC to brine only. The secondary effluent and ROC are less dense than seawater (positively buoyant, henceforth referred to as buoyant), and the brine is denser than seawater (negatively buoyant, henceforth referred to as dense), so the various flow mixtures may be buoyant or dense relative to the receiving seawater.

The combined discharge will require an NPDES permit amendment to meet the Water Quality Control Plan for Ocean Waters of California (henceforth referred to as the Ocean Plan) provisions for desalination facilities, approve new dilution ratios and Instream Waste Concentrations (IWC), and revise the Monitoring and Reporting Program (MRP).

Because of the widely varying flows and flow characteristics, especially the accommodation of buoyant and dense discharges, the diffuser will require special considerations and modifications to provide the necessary dilution to meet the water quality criteria of the Ocean Plan and to meet hydraulic criteria for all flow scenarios. In this report, modeling results and a recommended diffuser design modification to meet the hydraulic requirements are discussed. Compliance with the Ocean Plan was evaluated via a collaboration with Trussell Technologies (Trussell). Results of their analysis are provided in a separate TM.

1.2 Environmental and Discharge Conditions

In a previous report, Roberts (2016), oceanographic measurements obtained near the diffuser were discussed. Traditionally, three oceanic seasons have been defined in Monterey Bay: Upwelling (March-September), Oceanic (September-November), and Davidson (November-March). Density profiles were averaged by season to obtain representative profiles for the dilution simulations. These profiles were updated in LWA (2024) to incorporate more recent ocean measurements. These updated profiles are used here. The profiles are shown in Figure 1 and are tabulated in Appendix A. The computations for the dense discharges require salinity and density at the diffuser depth; they are summarized in Table 1.

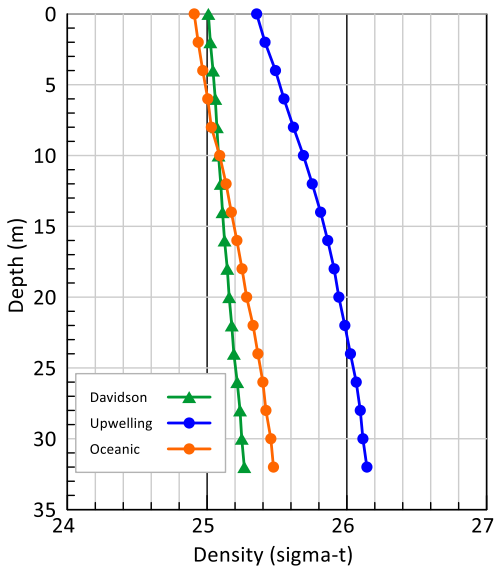


Figure 1. Seasonally averaged density profiles used for dilution simulations.

Table 1. Ocean Receiving Water Properties at Diffuser Depth

Ocean Season								
Upwelling			Oceanic			Davidson		
Temp. (°C)	Salinity (PSU)	Density (kg/m³)	Temp. (°C)	Salinity (PSU)	Density (kg/m³)	Temp. (°C)	Salinity (PSU)	Density (kg/m³)
11.5	34.27	1,026.14	13.4	33.97	1,025.48	14.5	33.90	1,025.27

The effluent properties that are required for dilution modeling are summarized by season in Table 2.

Table 2. Effluent Constituent Properties

Constituent	Ammonia (mg/l)	TDS (mg/l)	Ocean Season					
			Upwelling		Oceanic		Davidson	
			Temp. (°C)	Density (kg/m^3)	Temp. (°C)	Density (kg/m^3)	Temp. (°C)	Density (kg/m^3)
Secondary effluent	45.6	1,000	24.0	998.06	24.0	998.06	20.0	998.97
ROC	208.4	5,400	24.4	1001.27	24.4	1001.27	20.2	1001.27
Brine	0.1	60,000	9.5	1046.72	9.5	1046.72	9.5	1046.72

The flow scenarios consist of varying combinations of secondary effluent, ROC, and brine. 122 flow scenarios were considered; their properties are summarized in Appendix B. Flow ranges of each waste stream considered in the modeling were:

- Secondary effluent flow ranges from zero to 75.6 mgd,
- ROC from zero to 1.78 mgd, and
- Brine from 0 to 8.66 mgd.

Effluent densities ranged from 998.1 to 1046.7 kg/m^3, salinity from 1.0 to 60.0 ppt, and ammonia (a critical water quality constituent) from 0.14 to 54.8 mg/L.

1.3 Diffuser and Outfall

The present outfall and diffuser are described in Roberts (2016). The outfall at Marina, shown in Figure 2, conveys the effluent to the Pacific Ocean to a depth of about 100 ft below Mean Sea Level (MSL). The ocean segment extends a distance of 9,892 ft from the Beach Junction Structure (BJS). Beyond this there is a diffuser section 1,406 ft long.



Figure 2. The Monterey One Water outfall (formerly MRWPCA)

The outfall pipe consists of a 60-inch internal diameter (ID) reinforced concrete pipe (RCP), and the diffuser consists of 480 ft of 60-inch RCP with a single taper to 840 ft of 48-inch ID. The diffuser has 168 ports of two-inch diameter: 62 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 ft on each side except for one port in the taper section that discharges vertically for air release. The 39 ports closest to shore are presently closed, so there are 129 open ports distributed over a length of approximately 1024 ft. The 129 open ports are fitted with four-inch Tideflex "duckbill" check valves. (The four-inch refers to the inner diameter of the barrel section of the valve not the valve opening). The valves open as the flow through them increases so the cross-sectional area is variable (Attachment C, Port Condition, Diam). The end gate is currently open about two inches.

The diffuser section sits on rock ballast as shown in Figure 3. The ports are approximately six inches above the rock ballast and nominally 54 inches above the seabed, although this varies. The diffuser is laid on a slope of about 0.011 and the depths of the open ports range from about 98 to 110 ft below MSL.

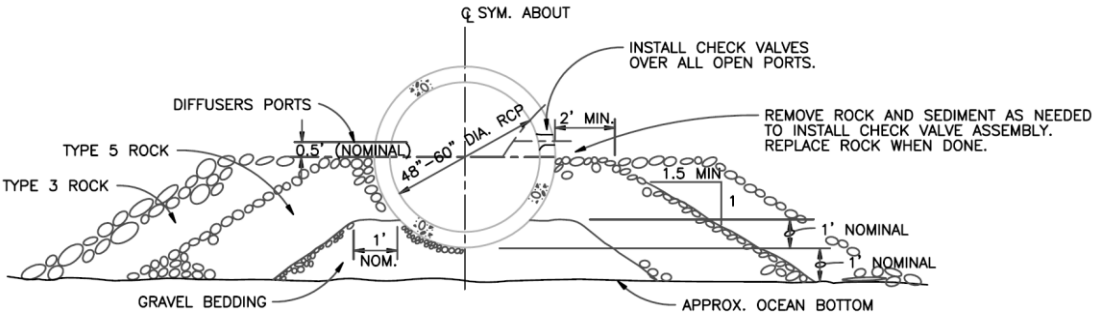


Figure 3. Typical diffuser cross section

The procedure for analyzing the internal hydraulics of the outfall and diffuser is discussed in Roberts (2016), Appendix A.

2. MATHEMATICAL MODELING

2.1 Introduction

The flow scenarios summarized in Appendix B show flows ranging from 5.6 mgd (pure brine) to 30.0 mgd (secondary effluent), with densities ranging from 998.1 kg/m^3 to 1046.7 kg/m^3. The effluents may be positively or negatively buoyant compared to ocean density that is approximately 1025 kg/m^3 (Table 1). Because of the different mixing characteristics of dense and buoyant effluents different modeling approaches are used that are appropriate for each case. In addition, dense brine discharges are required by the Ocean Plan to have calculations of entrainment of seawater into the diffuser jets that are used to estimate mortality of marine organisms due to diffuser-induced turbulence. The approaches to these issues are discussed in this section.

2.2 Buoyant Discharges

To model the buoyant discharges, the model UM3 in the US EPA modeling suite Visual Plumes was used. Visual Plumes (Frick et al., 2003; Frick, 2004; Frick and Roberts, 2016) is a widely used model suite that is available for download from the California State Water Resources Control Board. Zero current speed was assumed in all cases as required in the Ocean Plan, and UM3 default parameter settings were used.

Buoyant discharges rise in the water column entraining seawater that dilutes the effluent as it rises. Individual plumes may merge. The ambient density stratification may trap the rising plumes below the water surface and limit dilution; the density profiles are therefore critical parameters for buoyant jet mixing.

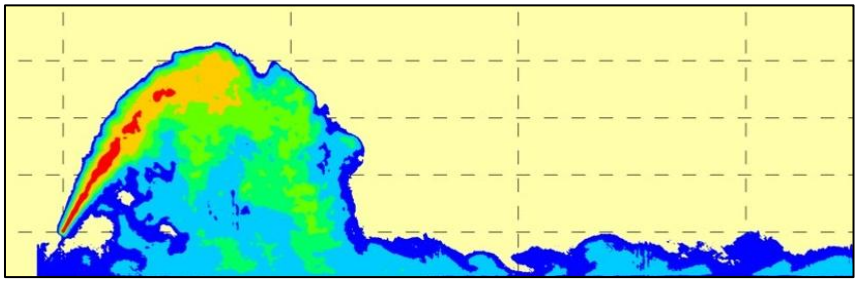
2.3 Dense Discharges

The dynamics of dense discharges from multiport diffusers are discussed extensively in Roberts (2018). Brines are typically discharged from upwardly inclined nozzles at high velocities. Entrainment of ambient seawater into the rising jets rapidly mixes and dilutes the brine. Because the density of the effluent is greater than seawater, the jets reach a terminal rise height and then fall back to the seabed. They then spread on the seabed with further mixing and dilution before reaching the end of the near field, or hydrodynamic mixing zone. These processes are illustrated in Figure 4.

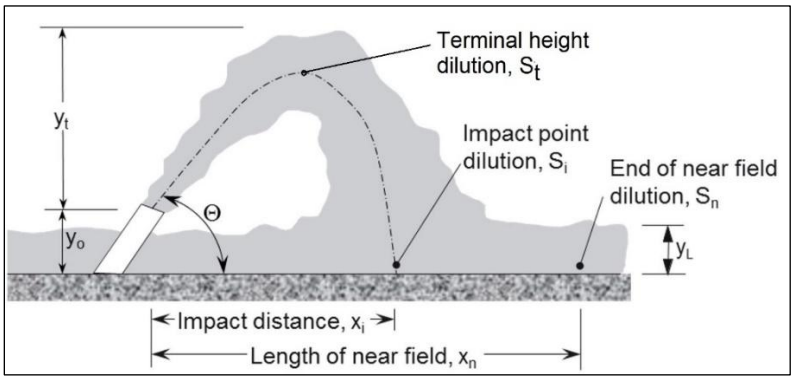
Brine diffusers are typically oriented upwards at an angle of 60°. This gives the highest near-field dilutions. The diffusers on the present outfall discharge horizontally.

The effect of nozzle angle on dense jets has been investigated by Abessi and Roberts (2015). Figure 5 shows central plane tracer concentrations (inverse of dilution) obtained by laser-induced fluorescence for dense jets with angles ranging

from 15° to 85°. For very shallow angles, e.g. 15°, the jet impacts the bed quickly, reducing dilution. For steep angles, e.g. 85°, the trajectory is also truncated and the jet falls back on itself, which also reduces dilution.



a) LIF image



b) Major characteristics

Figure 4. a) LIF image and b) definition of major characteristics of an inclined dense jet. After Roberts et al. (1997).

Dilution behavior as inclination angle changes is illustrated by Figure 6, which shows the variation with nozzle angle on normalized impact dilution (S_i/F_j) and near field dilution (S_n/F_j) for single jets. Because of the complexity of the mixing processes, entrainment models such as UM3 considerably underestimate the dilution at the end of the near field (Palomar et al. 2012).

A procedure for predicting dilution for multiport diffusers with varying nozzle angles is presented in Roberts (2018). The recommended equation for near field dilution for inclined jets at varying angles is (Roberts, 2018, Eq. 7):

$$\frac{S_n}{F} = -1.23\times10^{-5}\Theta^3 + 8.23\times10^{-4}\Theta^2 + 2.80\times10^{-2}\Theta + 5.37\times10^{-1} \quad (1)$$

where S_n is the near field dilution, F the jet densimetric Froude number, and Θ is the angle of the nozzle to the horizontal (in degrees).

For the purposes of meeting the Ocean Plan salinity requirement of 2 ppt, the minimum dilution on the lower boundary is used as computed by Eq. 1. The purpose of using the minimum dilution (which always occurs on the seabed) is to

protect benthic organisms from excessive salinity. To compute ammonia concentrations, the average dilution is used as is assumed in the Ocean Plan. In UM3 computations, the average dilution is output directly by default and is always twice the centerline dilution. For a dense discharge, the variation in salinity across the bottom spreading layer is closely linear (see Figure 7 of Roberts et al., 1997 for example) so the average dilution for a dense discharge is also twice the minimum value.

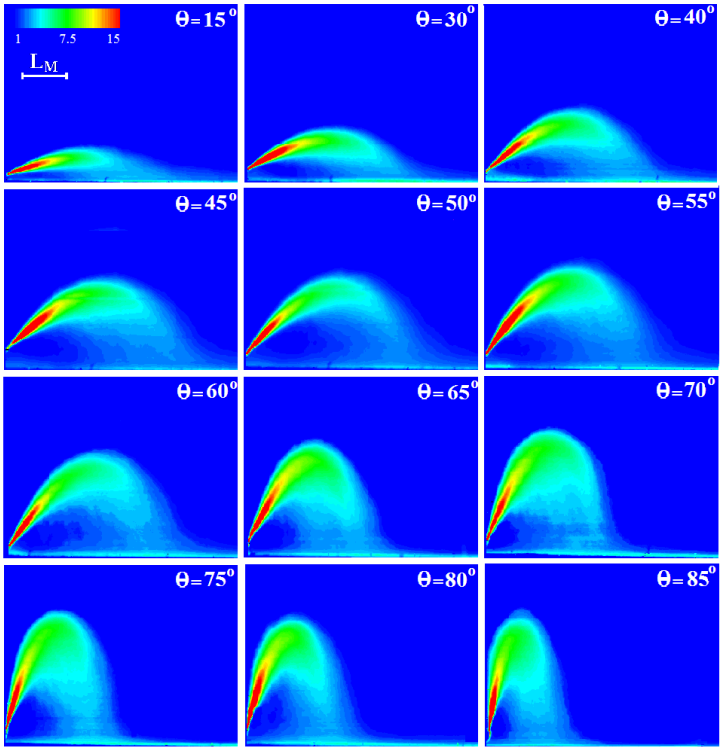


Figure 5. Center-plane tracer concentrations for single dense jets at various nozzle angles from 15° to 85°. After Abessi and Roberts (2015).

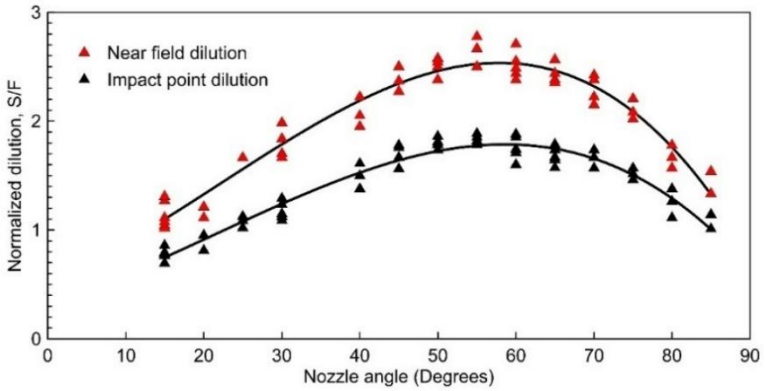
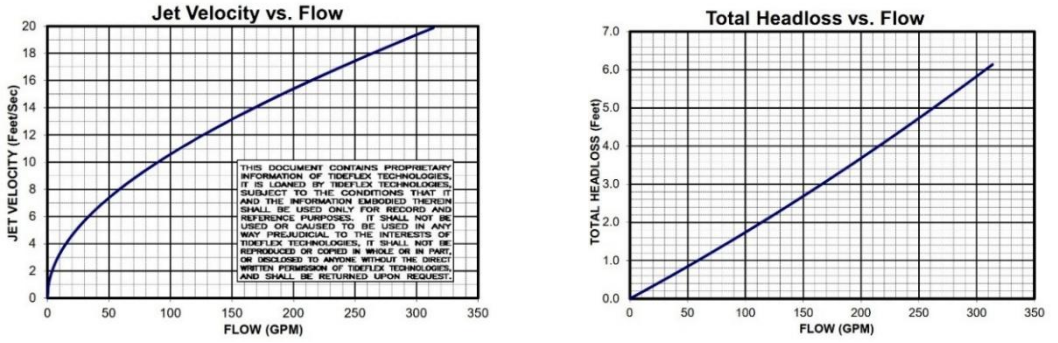


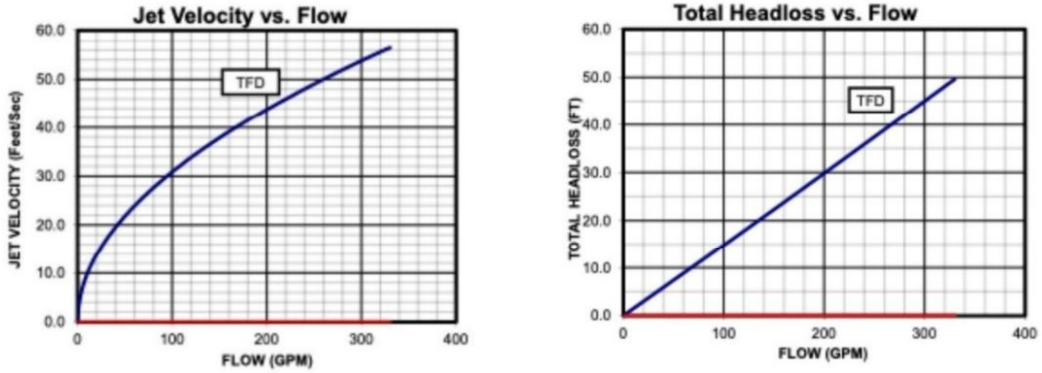
Figure 6. Effect of nozzle angle on normalized dilution of dense jets. After Abessi and Roberts (2015).

2.4 Outfall Hydraulics

As discussed in Roberts (2016) the ports of the diffuser are presently fitted with "duckbill" check valves. These valves close when there is no flow and gradually open as the flow increases. For these computations, two valves with different characteristics were considered: The present ones, with hydraulic code HC61, and stiffer ones with hydraulic code HC24. Some characteristics, provided by Tideflex, of these valves are shown in Figure 7. At the same flow rate, the jet velocity and head loss of the HC24 valve is considerably higher than the HC61 valve.



a) HC61 Existing



b) HC24 Proposed

Figure 7. Characteristics of TideFlex check valves considered.

The procedure to compute the flow distribution in the diffuser was detailed in Roberts (2016) Appendix A. Empirical equations were fitted to the characteristic curves of Figure 7 and used to compute the port diameters for each flow rate. For the flows considered here (Appendix B), the operating diameters of the HC61 valve ranged from 1.0 to 2.0 inches, and of the HC24 valve from 1.1 to 2.1 inches.

The hydraulic criteria that must be satisfied (LWA, 2024) are:

- The head at the beginning of the diffuser is less than 25 ft;
- The total head at the onshore headworks is less than 62 ft at a peak design flow of 75.6 mgd.

2.5 Shear Mortality

Chapter III.M.2.e.(1)(b) of the Ocean Plan contains the following requirement for mitigation of marine life or habitat lost due to a desalination facility:

> *"…The report shall use any acceptable approach approved by the regional water board for evaluating mortality that occurs due to shearing stress resulting from the facility's discharge, including any incremental increase in mortality resulting from a commingled discharge."*

The impact of turbulent shear in brine diffuser jets on marine organism mortality is discussed in Roberts (2018) and Preston et al. (2021). Planktonic organisms, which cannot swim away from the jets, are the most vulnerable to injury as they become entrained into the flow. Biological evidence suggests that turbulence primarily affects these organisms through shear stresses caused by small eddies (the Kolmogorov scale eddies), which are comparable to or smaller than their body size (Preston et al. 2021). While some natural mortality due to turbulent shear occurs in the ocean, the primary concern is the incremental mortality caused by jet turbulence. This incremental mortality will arise in situations where energy dissipation rates are greater than natural levels, i.e. where the Kolmogorov scales are smaller than ambient oceanic values, which is typically around 1 mm. Analysis of these dilution scenarios to determine entrainment and the resulting effect on planktonic organisms is discussed fully in the forthcoming Marine Life Mortality Report.

2.6 Results

The following procedure was followed: First, the hydraulics program was run for each flow scenario to determine the average nozzle diameter. Next, for the buoyant discharges, the UM3 model was used to calculate the initial (near-field) dilution, while for the dense discharges, Eq. 1 was applied to predict the minimum dilution required for the salinity increment calculations. For ammonia calculations, the near-field dilution was assumed to be twice the minimum dilution, as previously discussed. All calculations were done for each flow scenario for the three seasonal oceanic density profiles, resulting in a total of 366 simulations for each diffuser design considered.

The salinity increment over natural oceanic salinity for dense discharges of less than 2 ppt. LWA (2024) identified ammonia as the limiting water quality criterion listed in the Ocean Plan, which has been applied here. If ammonia levels are met, all other water quality criteria would also be satisfied. The most conservative of the ammonia criteria in the Ocean Plan (Ocean Plan, Table 3) is the 6-month median ammonia concentration of 600 µg/L. Following LWA (2024) recommendation, we assumed a conservative limit of 80% of this value, or 480 µg/L, was required.

Extensive simulations were run for various diffuser designs with varying numbers of ports and port orientations to find the optimum designs that would meet the water quality and hydraulic constraints.

Diffusers with Hydraulic Code 61 valves (HC61, the existing valves) met the hydraulic criteria but the lowest dilution was determined by Trussell to be insufficient for compliance with the Ocean Plan objectives and preferred permitting approach.

Diffusers with Hydraulic Code 24 valves (HC24, the proposed valves) with a minimum 158 open ports at a 60-degree orientation can meet both water quality and hydraulic criteria for the modeled scenarios, with no exceptions. The number and orientation of the valves were varied to determine their optimum combination. The minimum number of valves required, based on hydraulic constraints and to minimize replacement cost, was 158. The optimum orientation was 60° to minimize jet entrainment. At a peak design flow of 75.6 mgd, the hydraulic characteristics were found to exhibit a head at the beginning of the diffuser of 25 ft and overall head loss of 51 ft. The hydraulic calculations for this case are summarized in Appendix D. These characteristics aligned with the specified hydraulic constraints of the outfall.

The mathematical modeling results for this diffuser configuration are summarized in Appendix C for the three ocean density profiles. For the three profiles (only the worst case, the Upwelling Profile is shown) dilutions ranged from 102:1 to 2746:1. Salinity increments ranged from 0.0 to 0.3 ppt, well within the Ocean Plan requirement of 2 ppt.

The buoyant plume behavior depends strongly on the shape of the density profile (Figure 1), but dilutions are generally very high. The Upwelling profile (Figure 1) exhibits the strongest stratification (largest density difference over the water column) so gives the lowest dilutions and deepest plume submergence.

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APPENDIX A. DENSITY PROFILES

The seasonally averaged density profiles assumed for modeling purposes are summarized below (After LWA, 2024).

Depth (m)	Density (sigma-t units)		
	Upwelling	Davidson	Oceanic
0	25.35	25.01	24.91
2	25.41	25.02	24.94
4	25.49	25.04	24.97
6	25.55	25.06	25.00
8	25.62	25.07	25.03
10	25.69	25.08	25.09
12	25.75	25.10	25.14
14	25.81	25.11	25.17
16	25.86	25.12	25.21
18	25.91	25.14	25.25
20	25.94	25.16	25.28
22	25.99	25.18	25.33
24	26.03	25.19	25.36
26	26.07	25.22	25.40
28	26.10	25.24	25.42
30	26.11	25.25	25.46
32	26.14	25.27	25.47

APPENDIX B. MODELED FLOW SCENARIOS

Case ID	Constituent flows			Final effluent				
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/L)	(ppt)	(kg/m^3)	(kg/m^3)
	0	0	0					
1	0	0	6.40	6.4	0.14	60.0	1046.7	-20.6
2	0	0	6.20	6.2	0.14	60.0	1046.7	-20.6
3	0	0	6.00	6.0	0.14	60.0	1046.7	-20.6
4	0	0	5.80	5.8	0.14	60.0	1046.7	-20.6
5	0	0	5.60	5.6	0.14	60.0	1046.7	-20.6
6	0	1.78	6.40	8.2	45.46	48.1	1036.8	-10.7
7	0	1.78	6.20	8.0	46.60	47.8	1036.6	-10.4
8	0	1.78	6.00	7.8	47.79	47.5	1036.3	-10.2
9	0	1.78	5.80	7.6	49.05	47.2	1036.0	-9.9
10	0	1.78	5.60	7.4	50.37	46.8	1035.8	-9.6
11	1	0	6.40	7.4	6.29	52.0	1040.1	-14.0
12	1	0	6.20	7.2	6.46	51.8	1040.0	-13.8
13	1	0	6.00	7.0	6.64	51.6	1039.8	-13.6
14	1	0	5.80	6.8	6.83	51.3	1039.6	-13.4
15	1	0	5.60	6.6	7.03	51.1	1039.3	-13.2
16	1	1.78	6.40	9.2	45.47	43.0	1032.6	-6.5
17	1	1.78	6.20	9.0	46.48	42.6	1032.3	-6.1
18	1	1.78	6.00	8.8	47.54	42.2	1032.0	-5.8
19	1	1.78	5.80	8.6	48.64	41.8	1031.6	-5.5
20	1	1.78	5.60	8.4	49.80	41.4	1031.3	-5.1
21	2	0	6.40	8.4	10.97	46.0	1035.1	-9.0
22	2	0	6.20	8.2	11.23	45.6	1034.9	-8.7
23	2	0	6.00	8.0	11.51	45.3	1034.6	-8.4
24	2	0	5.80	7.8	11.80	44.9	1034.2	-8.1
25	2	0	5.60	7.6	12.11	44.5	1033.9	-7.8
26	2	1.78	6.40	10.2	45.49	38.9	1029.2	-3.1
27	2	1.78	6.20	10.0	46.40	38.4	1028.9	-2.7
28	2	1.78	6.00	9.8	47.34	38.0	1028.5	-2.4
29	2	1.78	5.80	9.6	48.33	37.5	1028.1	-2.0
30	2	1.78	5.60	9.4	49.35	37.1	1027.7	-1.6
31	3	0	6.40	9.4	14.65	41.2	1031.2	-5.0
32	3	0	6.20	9.2	14.97	40.8	1030.9	-4.7
33	3	0	6.00	9.0	15.30	40.3	1030.5	-4.4
34	3	0	5.80	8.8	15.64	39.9	1030.1	-4.0
35	3	0	5.60	8.6	16.00	39.4	1029.7	-3.6
36	3	1.78	6.40	11.2	45.50	35.5	1026.4	-0.3
37	3	1.78	6.20	11.0	46.32	35.0	1026.1	0.1
38	3	1.78	6.00	10.8	47.18	34.6	1025.7	0.5
39	3	1.78	5.80	10.6	48.07	34.1	1025.3	0.9
40	3	1.78	5.60	10.4	48.99	33.6	1024.9	1.3
41	4	0	6.40	10.4	17.63	37.3	1028.0	-1.9
42	4	0	6.20	10.2	17.97	36.9	1027.6	-1.5

Case ID	Constituent flows			Final effluent				
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/L)	(ppt)	(kg/m^3)	(kg/m^3)
43	4	0	6.00	10.0	18.33	36.4	1027.3	-1.1
44	4	0	5.80	9.8	18.70	35.9	1026.9	-0.7
45	4	0	5.60	9.6	19.08	35.4	1026.4	-0.3
46	4	1.78	6.40	12.2	45.51	32.6	1024.1	2.0
47	4	1.78	6.20	12.0	46.26	32.2	1023.7	2.4
48	4	1.78	6.00	11.8	47.05	31.7	1023.3	2.8
49	4	1.78	5.80	11.6	47.86	31.2	1022.9	3.2
50	4	1.78	5.60	11.4	48.69	30.7	1022.5	3.6
51	5	0	6.40	11.4	20.08	34.1	1025.4	0.8
52	5	0	6.20	11.2	20.44	33.7	1025.0	1.1
53	5	0	6.00	11.0	20.81	33.2	1024.6	1.5
54	5	0	5.80	10.8	21.19	32.7	1024.2	2.0
55	5	0	5.60	10.6	21.58	32.2	1023.8	2.4
56	5	1.78	6.40	13.2	45.51	30.2	1022.1	4.0
57	5	1.78	6.20	13.0	46.21	29.8	1021.7	4.4
58	5	1.78	6.00	12.8	46.93	29.3	1021.4	4.8
59	5	1.78	5.80	12.6	47.68	28.8	1020.9	5.2
60	5	1.78	5.60	12.4	48.44	28.3	1020.5	5.6
61	6	0	6.40	12.4	22.14	31.5	1023.2	3.0
62	6	0	6.20	12.2	22.50	31.0	1022.8	3.4
63	6	0	6.00	12.0	22.87	30.5	1022.4	3.8
64	6	0	5.80	11.8	23.26	30.0	1022.0	4.2
65	6	0	5.60	11.6	23.66	29.5	1021.6	4.6
66	6	1.78	6.40	14.2	45.52	28.2	1020.4	5.7
67	6	1.78	6.20	14.0	46.17	27.7	1020.0	6.1
68	6	1.78	6.00	13.8	46.84	27.3	1019.7	6.5
69	6	1.78	5.80	13.6	47.52	26.8	1019.3	6.9
70	6	1.78	5.60	13.4	48.23	26.3	1018.9	7.3
71	7	0	6.40	13.4	23.89	29.2	1021.3	4.8
72	7	0	6.20	13.2	24.25	28.7	1020.9	5.2
73	7	0	6.00	13.0	24.62	28.2	1020.5	5.6
74	7	0	5.80	12.8	25.00	27.7	1020.1	6.0
75	7	0	5.60	12.6	25.40	27.2	1019.7	6.5
76	7	1.78	6.40	15.2	45.52	26.4	1019.0	7.2
77	7	1.78	6.20	15.0	46.13	25.9	1018.6	7.6
78	7	1.78	6.00	14.8	46.75	25.5	1018.2	7.9
79	7	1.78	5.80	14.6	47.39	25.0	1017.8	8.3
80	7	1.78	5.60	14.4	48.05	24.5	1017.4	8.7
81	8	0	6.40	14.4	25.40	27.2	1019.7	6.5
82	8	0	6.20	14.2	25.75	26.8	1019.3	6.8
83	8	0	6.00	14.0	26.12	26.3	1018.9	7.2
84	8	0	5.80	13.8	26.49	25.8	1018.5	7.6
85	8	0	5.60	13.6	26.88	25.3	1018.1	8.0
86	8	1.78	6.40	16.2	45.53	24.8	1017.7	8.5
87	8	1.78	6.20	16.0	46.10	24.4	1017.3	8.8
88	8	1.78	6.00	15.8	46.68	23.9	1016.9	9.2

Case ID	Constituent flows			Final effluent				
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/L)	(ppt)	(kg/m^3)	(kg/m^3)
89	8	1.78	5.80	15.6	47.28	23.5	1016.5	9.6
90	8	1.78	5.60	15.4	47.89	23.0	1016.1	10.0
91	9	0	6.40	15.4	26.71	25.5	1018.3	7.9
92	9	0	6.20	15.2	27.06	25.1	1017.9	8.2
93	9	0	6.00	15.0	27.42	24.6	1017.5	8.6
94	9	0	5.80	14.8	27.79	24.1	1017.1	9.0
95	9	0	5.60	14.6	28.16	23.6	1016.7	9.4
96	9	1.78	6.40	17.2	45.53	23.4	1016.5	9.6
97	9	1.78	6.20	17.0	46.07	23.0	1016.2	10.0
98	9	1.78	6.00	16.8	46.62	22.6	1015.8	10.3
99	9	1.78	5.80	16.6	47.18	22.1	1015.4	10.7
100	9	1.78	5.60	16.4	47.75	21.6	1015.0	11.1
101	10	0	6.40	16.4	27.86	24.0	1017.0	9.1
102	10	0	6.20	16.2	28.20	23.6	1016.7	9.5
103	10	0	6.00	16.0	28.55	23.1	1016.3	9.8
104	10	0	5.80	15.8	28.91	22.7	1015.9	10.2
105	10	0	5.60	15.6	29.28	22.2	1015.5	10.6
106	10	1.78	6.40	18.2	45.54	22.2	1015.5	10.6
107	10	1.78	6.20	18.0	46.04	21.8	1015.2	11.0
108	10	1.78	6.00	17.8	46.56	21.4	1014.8	11.3
109	10	1.78	5.80	17.6	47.09	20.9	1014.4	11.7
110	10	1.78	5.60	17.4	47.63	20.5	1014.1	12.1
A1	3	1.78	5.80	10.6	48.07	34.1	1025.3	0.9
A2	6	0	8.66	14.7	18.75	35.9	1026.8	-0.7
A3	9	0	0	9.0	45.60	1.0	998.1	28.1
A4	12	0	0	12.0	45.60	1.0	998.1	28.1
A5	15	0	0	15.0	45.60	1.0	998.1	28.1
A6	18	0	0	18.0	45.60	1.0	998.1	28.1
A7	21	0	0	21.0	45.60	1.0	998.1	28.1
A8	24	0	0	24.0	45.60	1.0	998.1	28.1
A9	27	0	0	27.0	45.60	1.0	998.1	28.1
A10	30	0	0	30.0	45.60	1.0	998.1	28.1
B1	29.6	1.78	0	31.4	54.83	1.2	998.2	27.9
B2	75.6	1.78	0	77.4	49.34	1.1	998.1	28.0

APPENDIX C. MODEL RESULTS

Recommended diffuser design: 158 ports, nozzle angle = 60°, Hydraulic Code 24 valves (HC24).

Upwelling Profile

Upwelling profile

Ocean salinity = 34.27 No of ports = 158 **Hydraulic code HC24** Coeff1= 1.590 (gpm)

Ocean density = 1026.14 Nozzle angle= 60 Coeff2= 0.511

Dense discharges

Case ID	Constituent flows			Final effluent					Port conditions				Near field (BMZ) Predictions				UM3 Entrainment	
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference	Diam.	Velocity	Froude no.	s/dF	Centerline dilution	Average dilution	Salinity increment	Ammonia	Average dillution at apex	Entrained flow
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/l)	(ppt)	(kg/m^3)	(kg/m^3)	(in)	(ft/s)					(ppt)	(µg/l)		(mgd)
	0	0	0															
1	0	0	6.40	6.4	0.14	60.0	1046.7	-20.6	1.15	8.7	35	4.8	89	178	0.3	1	22	133
2	0	0	6.20	6.2	0.14	60.0	1046.7	-20.6	1.14	8.6	35	4.9	88	176	0.3	1	22	128
3	0	0	6.00	6.0	0.14	60.0	1046.7	-20.6	1.13	8.5	34	5.0	87	173	0.3	1	21	122
4	0	0	5.80	5.8	0.14	60.0	1046.7	-20.6	1.12	8.3	34	5.1	86	171	0.3	1	21	117
5	0	0	5.60	5.6	0.14	60.0	1046.7	-20.6	1.11	8.2	33	5.2	84	169	0.3	1	21	111
6	0	1.78	6.40	8.2	45.46	48.1	1036.8	-10.7	1.22	9.9	54	2.9	136	271	0.1	168	33	260
7	0	1.78	6.20	8.0	46.60	47.8	1036.6	-10.4	1.21	9.8	54	2.9	136	272	0.1	171	33	255
8	0	1.78	6.00	7.8	47.79	47.5	1036.3	-10.2	1.20	9.7	54	3.0	136	273	0.1	175	33	251
9	0	1.78	5.80	7.6	49.05	47.2	1036.0	-9.9	1.19	9.5	54	3.0	137	274	0.1	179	34	247
10	0	1.78	5.60	7.4	50.37	46.8	1035.8	-9.6	1.19	9.4	54	3.0	137	275	0.1	183	33	236
11	1	0	6.40	7.4	6.29	52.0	1040.1	-14.0	1.19	9.4	45	3.6	114	228	0.2	28	28	198
12	1	0	6.20	7.2	6.46	51.8	1040.0	-13.8	1.18	9.3	45	3.6	113	227	0.2	28	28	192
13	1	0	6.00	7.0	6.64	51.6	1039.8	-13.6	1.17	9.2	45	3.7	113	226	0.2	29	28	187
14	1	0	5.80	6.8	6.83	51.3	1039.6	-13.4	1.16	9.0	45	3.7	113	225	0.2	30	28	181
15	1	0	5.60	6.6	7.03	51.1	1039.3	-13.2	1.15	8.9	44	3.7	112	224	0.1	31	28	177
16	1	1.78	6.40	9.2	45.47	43.0	1032.6	-6.5	1.25	10.5	72	2.1	182	365	0.0	125	43	390
17	1	1.78	6.20	9.0	46.48	42.6	1032.3	-6.1	1.25	10.4	73	2.1	185	371	0.0	125	43	381
18	1	1.78	6.00	8.8	47.54	42.2	1032.0	-5.8	1.24	10.3	75	2.1	189	378	0.0	126	44	380
19	1	1.78	5.80	8.6	48.64	41.8	1031.6	-5.5	1.23	10.2	76	2.0	193	386	0.0	126	46	382
20	1	1.78	5.60	8.4	49.80	41.4	1031.3	-5.1	1.22	10.0	78	2.0	198	396	0.0	126	47	382
21	2	0	6.40	8.4	10.97	46.0	1035.1	-9.0	1.22	10.0	59	2.6	149	299	0.1	37	36	298
22	2	0	6.20	8.2	11.23	45.6	1034.9	-8.7	1.22	9.9	60	2.6	150	301	0.1	37	36	287
23	2	0	6.00	8.0	11.51	45.3	1034.6	-8.4	1.21	9.8	60	2.6	152	303	0.1	38	36	283
24	2	0	5.80	7.8	11.80	44.9	1034.2	-8.1	1.20	9.7	61	2.6	153	306	0.1	39	37	281
25	2	0	5.60	7.6	12.11	44.5	1033.9	-7.8	1.20	9.5	61	2.6	155	309	0.1	39	37	272
26	2	1.78	6.40	10.2	45.49	38.9	1029.2	-3.1	1.28	11.1	109	1.4	275	551	0.0	83	59	592
27	2	1.78	6.20	10.0	46.40	38.4	1028.9	-2.7	1.28	11.0	115	1.3	290	581	0.0	80	60	588
28	2	1.78	6.00	9.8	47.34	38.0	1028.5	-2.4	1.27	10.9	123	1.2	310	620	0.0	76	62	600
29	2	1.78	5.80	9.6	48.33	37.5	1028.1	-2.0	1.26	10.7	133	1.1	336	671	0.0	72	65	612
30	2	1.78	5.60	9.4	49.35	37.1	1027.7	-1.6	1.26	10.6	148	1.0	372	745	0.0	66	67	616

31	3	0	6.40	9.4	14.65	41.2	1031.2	-5.0	1.26	10.6	83	1.8	208	417	0.0	35	48	444
32	3	0	6.20	9.2	14.97	40.8	1030.9	-4.7	1.25	10.5	85	1.8	214	428	0.0	35	49	445
33	3	0	6.00	9.0	15.30	40.3	1030.5	-4.4	1.25	10.4	87	1.8	220	441	0.0	35	50	442
34	3	0	5.80	8.8	15.64	39.9	1030.1	-4.0	1.24	10.3	91	1.7	228	457	0.0	34	52	448
35	3	0	5.60	8.6	16.00	39.4	1029.7	-3.6	1.23	10.2	94	1.7	238	476	0.0	34	54	455
36	3	1.78	6.40	11.2	45.50	35.5	1026.4	-0.3	1.31	11.6	373	0.4	940	1880	0.0	24	77	846
37	3	1.78	6.20	11.0	46.32	35.0	1026.1	0.1	1.31	11.5	671	0.2	-	102	-	453	102	1,112
38	3	1.78	6.00	10.8	47.18	34.6	1025.7	0.5	1.30	11.4	286	0.5	-	104	-	453	104	1,112
39	3	1.78	5.80	10.6	48.07	34.1	1025.3	0.9	1.30	11.3	209	0.7	-	105	-	459	105	1,098
40	3	1.78	5.60	10.4	48.99	33.6	1024.9	1.3	1.29	11.2	170	0.9	-	108	-	453	108	1,113
41	4	0	6.40	10.4	17.63	37.3	1028.0	-1.9	1.29	11.2	141	1.1	357	713	0.0	25	66	673
42	4	0	6.20	10.2	17.97	36.9	1027.6	-1.5	1.28	11.1	157	1.0	395	790	0.0	23	68	688
43	4	0	6.00	10.0	18.33	36.4	1027.3	-1.1	1.28	11.0	180	0.8	454	909	0.0	20	70	687
44	4	0	5.80	9.8	18.70	35.9	1026.9	-0.7	1.27	10.9	223	0.7	562	1124	0.0	17	73	702
45	4	0	5.60	9.6	19.08	35.4	1026.4	-0.3	1.27	10.8	340	0.4	859	1717	0.0	11	76	718
46	4	1.78	6.40	12.2	45.51	32.6	1024.1	2.0	1.34	12.2	143	1.0	-	112	-	408	112	1,346
47	4	1.78	6.20	12.0	46.26	32.2	1023.7	2.4	1.34	12.0	131	1.1	-	116	-	399	116	1,378
48	4	1.78	6.00	11.8	47.05	31.7	1023.3	2.8	1.33	11.9	121	1.2	-	120	-	391	120	1,405
49	4	1.78	5.80	11.6	47.86	31.2	1022.9	3.2	1.33	11.8	112	1.3	-	123	-	389	123	1,414
50	4	1.78	5.60	11.4	48.69	30.7	1022.5	3.6	1.32	11.7	105	1.4	-	127	-	385	127	1,428
51	5	0	6.40	11.4	20.08	34.1	1025.4	0.8	1.32	11.7	229	0.6	-	104	-	193	104	1,174
52	5	0	6.20	11.2	20.44	33.7	1025.0	1.1	1.31	11.6	185	0.8	-	107	-	191	107	1,185
53	5	0	6.00	11.0	20.81	33.2	1024.6	1.5	1.31	11.5	159	0.9	-	110	-	189	110	1,198
54	5	0	5.80	10.8	21.19	32.7	1024.2	2.0	1.30	11.4	140	1.1	-	112	-	189	112	1,198
55	5	0	5.60	10.6	21.58	32.2	1023.8	2.4	1.30	11.3	126	1.2	-	117	-	185	117	1,229
56	5	1.78	6.40	13.2	45.51	30.2	1022.1	4.0	1.37	12.7	105	1.3	-	129	-	354	129	1,682
57	5	1.78	6.20	13.0	46.21	29.8	1021.7	4.4	1.36	12.6	100	1.4	-	133	-	349	133	1,708
58	5	1.78	6.00	12.8	46.93	29.3	1021.4	4.8	1.36	12.5	95	1.5	-	136	-	346	136	1,721
59	5	1.78	5.80	12.6	47.68	28.8	1020.9	5.2	1.35	12.4	91	1.6	-	140	-	340	140	1,751
60	5	1.78	5.60	12.4	48.44	28.3	1020.5	5.6	1.35	12.3	87	1.6	-	144	-	337	144	1,765
61	6	0	6.40	12.4	22.14	31.5	1023.2	3.0	1.35	12.3	120	1.2	-	119	-	186	119	1,462
62	6	0	6.20	12.2	22.50	31.0	1022.8	3.4	1.34	12.2	112	1.3	-	122	-	184	122	1,480
63	6	0	6.00	12.0	22.87	30.5	1022.4	3.8	1.34	12.1	105	1.4	-	126	-	181	126	1,502
64	6	0	5.80	11.8	23.26	30.0	1022.0	4.2	1.33	12.0	99	1.5	-	132	-	177	132	1,540
65	6	0	5.60	11.6	23.66	29.5	1021.6	4.6	1.33	11.9	94	1.5	-	134	-	176	134	1,547
66	6	1.78	6.40	14.2	45.52	28.2	1020.4	5.7	1.39	13.1	91	1.5	-	142	-	322	142	1,992
67	6	1.78	6.20	14.0	46.17	27.7	1020.0	6.1	1.39	13.0	88	1.6	-	144	-	321	144	1,996
68	6	1.78	6.00	13.8	46.84	27.3	1019.7	6.5	1.38	12.9	85	1.6	-	148	-	317	148	2,023
69	6	1.78	5.80	13.6	47.52	26.8	1019.3	6.9	1.38	12.8	82	1.7	-	151	-	314	151	2,042
70	6	1.78	5.60	13.4	48.23	26.3	1018.9	7.3	1.37	12.7	79	1.8	-	156	-	308	156	2,079
71	7	0	6.40	13.4	23.89	29.2	1021.3	4.8	1.37	12.8	97	1.4	-	136	-	176	136	1,808
72	7	0	6.20	13.2	24.25	28.7	1020.9	5.2	1.37	12.7	93	1.5	-	139	-	175	139	1,818

73	7	0	6.00	13.0	24.62	28.2	1020.5	5.6	1.36	12.6	89	1.6	-	143	-	172	143	1,845
74	7	0	5.80	12.8	25.00	27.7	1020.1	6.0	1.36	12.5	85	1.7	-	147	-	170	147	1,873
75	7	0	5.60	12.6	25.40	27.2	1019.7	6.5	1.35	12.4	82	1.7	-	151	-	169	151	1,884
76	7	1.78	6.40	15.2	45.52	26.4	1019.0	7.2	1.42	13.6	83	1.6	-	150	-	304	150	2,260
77	7	1.78	6.20	15.0	46.13	25.9	1018.6	7.6	1.41	13.5	81	1.7	-	156	-	296	156	2,316
78	7	1.78	6.00	14.8	46.75	25.5	1018.2	7.9	1.41	13.4	78	1.7	-	159	-	295	159	2,331
79	7	1.78	5.80	14.6	47.39	25.0	1017.8	8.3	1.40	13.3	76	1.8	-	163	-	290	163	2,366
80	7	1.78	5.60	14.4	48.05	24.5	1017.4	8.7	1.40	13.2	74	1.9	-	168	-	286	168	2,401
81	8	0	6.40	14.4	25.40	27.2	1019.7	6.5	1.40	13.2	86	1.6	-	146	-	175	146	2,081
82	8	0	6.20	14.2	25.75	26.8	1019.3	6.8	1.39	13.1	83	1.7	-	150	-	172	150	2,116
83	8	0	6.00	14.0	26.12	26.3	1018.9	7.2	1.39	13.0	81	1.7	-	154	-	169	154	2,145
84	8	0	5.80	13.8	26.49	25.8	1018.5	7.6	1.38	13.0	78	1.8	-	157	-	168	157	2,158
85	8	0	5.60	13.6	26.88	25.3	1018.1	8.0	1.38	12.9	75	1.8	-	164	-	164	164	2,210
86	8	1.78	6.40	16.2	45.53	24.8	1017.7	8.5	1.44	14.0	79	1.7	-	158	-	289	158	2,537
87	8	1.78	6.20	16.0	46.10	24.4	1017.3	8.8	1.43	14.0	77	1.7	-	163	-	282	163	2,594
88	8	1.78	6.00	15.8	46.68	23.9	1016.9	9.2	1.43	13.9	75	1.8	-	166	-	282	166	2,599
89	8	1.78	5.80	15.6	47.28	23.5	1016.5	9.6	1.42	13.8	73	1.8	-	173	-	274	173	2,674
90	8	1.78	5.60	15.4	47.89	23.0	1016.1	10.0	1.42	13.7	71	1.9	-	177	-	271	177	2,699
91	9	0	6.40	15.4	26.71	25.5	1018.3	7.9	1.42	13.7	80	1.7	-	156	-	171	156	2,390
92	9	0	6.20	15.2	27.06	25.1	1017.9	8.2	1.42	13.6	78	1.7	-	160	-	169	160	2,414
93	9	0	6.00	15.0	27.42	24.6	1017.5	8.6	1.41	13.5	76	1.8	-	165	-	166	165	2,459
94	9	0	5.80	14.8	27.79	24.1	1017.1	9.0	1.41	13.4	74	1.9	-	167	-	166	167	2,458
95	9	0	5.60	14.6	28.16	23.6	1016.7	9.4	1.40	13.3	72	1.9	-	174	-	162	174	2,521
96	9	1.78	6.40	17.2	45.53	23.4	1016.5	9.6	1.46	14.5	76	1.7	-	168	-	271	168	2,869
97	9	1.78	6.20	17.0	46.07	23.0	1016.2	10.0	1.46	14.4	74	1.8	-	171	-	270	171	2,882
98	9	1.78	6.00	16.8	46.62	22.6	1015.8	10.3	1.45	14.3	72	1.8	-	172	-	271	172	2,871
99	9	1.78	5.80	16.6	47.18	22.1	1015.4	10.7	1.45	14.2	71	1.9	-	177	-	267	177	2,911
100	9	1.78	5.60	16.4	47.75	21.6	1015.0	11.1	1.44	14.1	69	1.9	-	183	-	262	183	2,973
101	10	0	6.40	16.4	27.86	24.0	1017.0	9.1	1.44	14.1	76	1.7	-	165	-	169	165	2,686
102	10	0	6.20	16.2	28.20	23.6	1016.7	9.5	1.44	14.1	75	1.8	-	167	-	169	167	2,689
103	10	0	6.00	16.0	28.55	23.1	1016.3	9.8	1.43	14.0	73	1.8	-	171	-	167	171	2,718
104	10	0	5.80	15.8	28.91	22.7	1015.9	10.2	1.43	13.9	71	1.9	-	175	-	165	175	2,749
105	10	0	5.60	15.6	29.28	22.2	1015.5	10.6	1.43	13.8	69	1.9	-	180	-	163	180	2,788
106	10	1.78	6.40	18.2	45.54	22.2	1015.5	10.6	1.48	14.9	73	1.8	-	173	-	264	173	3,122
107	10	1.78	6.20	18.0	46.04	21.8	1015.2	11.0	1.48	14.8	72	1.8	-	173	-	266	173	3,100
108	10	1.78	6.00	17.8	46.56	21.4	1014.8	11.3	1.47	14.7	71	1.8	-	179	-	260	179	3,168
109	10	1.78	5.80	17.6	47.09	20.9	1014.4	11.7	1.47	14.7	69	1.9	-	182	-	259	182	3,177
110	10	1.78	5.60	17.4	47.63	20.5	1014.1	12.1	1.46	14.6	68	1.9	-	187	-	255	187	3,233

A1	3	1.78	5.80	10.6	48.07	34.1	1025.3	0.9	1.30	11.3	209	0.7	-	105	-	459	105	1,098
A2	6	0	8.66	14.7	18.75	35.9	1026.8	-0.7	1.40	13.4	271	0.5	684	1368	0.0	14	75	1,079
A3	9	0	0	9.0	45.60	1.0	998.1	28.1	1.25	10.4	34	4.5	-	311	-	147	311	2,791
A4	12	0	0	12.0	45.60	1.0	998.1	28.1	1.34	12.1	38	3.7	-	280	-	163	280	3,342
A5	15	0	0	15.0	45.60	1.0	998.1	28.1	1.41	13.5	42	3.2	-	257	-	177	257	3,843
A6	18	0	0	18.0	45.60	1.0	998.1	28.1	1.48	14.8	45	2.9	-	240	-	190	240	4,306
A7	21	0	0	21.0	45.60	1.0	998.1	28.1	1.53	16.0	48	2.6	-	227	-	201	227	4,742
A8	24	0	0	24.0	45.60	1.0	998.1	28.1	1.58	17.2	50	2.4	-	216	-	211	216	5,158
A9	27	0	0	27.0	45.60	1.0	998.1	28.1	1.63	18.2	53	2.2	-	207	-	221	207	5,551
A10	30	0	0	30.0	45.60	1.0	998.1	28.1	1.67	19.3	55	2.1	-	199	-	229	199	5,934
B1	29.6	1.78	0	31.4	54.83	1.2	998.2	27.9	1.69	19.7	56	2.0	-	196	-	280	196	6,103
B2	75.6	2	0	77.4	49.34	1.1	998.1	28.0	2.11	31.3	80	1.1	-	143	-	345	143	10,988

Davidson Profile

Davidson profile

Ocean salinity = 33.90 No of ports = 158 **Hydraulic code HC24** Coeff1= 1.590 (gpm)

Ocean density = 1025.27 Nozzle angle= 60 Coeff2= 0.511

Dense discharges

Case ID	Constituent flows			Final effluent					Port conditions				Near field (BMZ) Predictions				UM3 Entrainment	
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference	Diam.	Velocity	Froude no.	s/dF	Centerline dilution	Average dilution	Salinity increment	Ammonia	Average dillution at apex	Entrained flow
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/l)	(ppt)	(kg/m^3)	(kg/m^3)	(in)	(ft/s)					(ppt)	(µg/l)		(mgd)
	0	0	0															
1	0	0	6.40	6.4	0.14	60.0	1046.7	-21.5	1.15	8.7	34	4.9	87	174	0.3	1	21	129
2	0	0	6.20	6.2	0.14	60.0	1046.7	-21.5	1.14	8.6	34	5.0	86	172	0.3	1	21	124
3	0	0	6.00	6.0	0.14	60.0	1046.7	-21.5	1.13	8.5	34	5.1	85	170	0.3	1	21	119
4	0	0	5.80	5.8	0.14	60.0	1046.7	-21.5	1.12	8.3	33	5.2	84	167	0.3	1	21	113
5	0	0	5.60	5.6	0.14	60.0	1046.7	-21.5	1.11	8.2	33	5.3	83	165	0.3	1	20	108
6	0	1.78	6.40	8.2	45.46	48.1	1036.8	-11.6	1.22	9.9	52	3.1	130	261	0.1	174	31	248
7	0	1.78	6.20	8.0	46.60	47.8	1036.6	-11.3	1.21	9.8	52	3.1	131	261	0.1	179	31	243
8	0	1.78	6.00	7.8	47.79	47.5	1036.3	-11.1	1.20	9.7	52	3.1	131	261	0.1	183	32	239
9	0	1.78	5.80	7.6	49.05	47.2	1036.0	-10.8	1.19	9.5	52	3.1	131	262	0.1	187	32	235
10	0	1.78	5.60	7.4	50.37	46.8	1035.8	-10.5	1.19	9.4	52	3.1	131	263	0.1	192	31	224
11	1	0	6.40	7.4	6.29	52.0	1040.3	-15.0	1.19	9.4	44	3.7	110	220	0.2	29	27	189
12	1	0	6.20	7.2	6.46	51.8	1040.1	-14.8	1.18	9.3	43	3.7	110	219	0.2	29	27	184
13	1	0	6.00	7.0	6.64	51.6	1039.9	-14.6	1.17	9.2	43	3.8	109	218	0.2	30	28	186
14	1	0	5.80	6.8	6.83	51.3	1039.7	-14.4	1.16	9.0	43	3.8	109	217	0.2	31	27	174
15	1	0	5.60	6.6	7.03	51.1	1039.5	-14.2	1.15	8.9	43	3.9	108	216	0.2	33	26	168
16	1	1.78	6.40	9.2	45.47	43.0	1032.7	-7.4	1.25	10.5	67	2.3	170	340	0.1	134	41	363
17	1	1.78	6.20	9.0	46.48	42.6	1032.4	-7.1	1.25	10.4	68	2.3	172	344	0.1	135	40	354
18	1	1.78	6.00	8.8	47.54	42.2	1032.1	-6.8	1.24	10.3	69	2.2	175	349	0.0	136	41	352
19	1	1.78	5.80	8.6	48.64	41.8	1031.7	-6.5	1.23	10.2	70	2.2	178	355	0.0	137	42	353
20	1	1.78	5.60	8.4	49.80	41.4	1031.4	-6.1	1.22	10.0	72	2.2	181	362	0.0	137	43	351
21	2	0	6.40	8.4	10.97	46.0	1035.4	-10.1	1.22	10.0	56	2.8	141	282	0.1	39	34	278
22	2	0	6.20	8.2	11.23	45.6	1035.1	-9.8	1.22	9.9	56	2.8	142	283	0.1	40	34	269
23	2	0	6.00	8.0	11.51	45.3	1034.8	-9.5	1.21	9.8	56	2.8	142	285	0.1	40	34	265
24	2	0	5.80	7.8	11.80	44.9	1034.5	-9.2	1.20	9.7	57	2.8	143	287	0.1	41	34	261
25	2	0	5.60	7.6	12.11	44.5	1034.2	-8.9	1.20	9.5	57	2.8	144	289	0.1	42	34	252
26	2	1.78	6.40	10.2	45.49	38.9	1029.4	-4.1	1.28	11.1	94	1.6	238	475	0.0	96	54	541
27	2	1.78	6.20	10.0	46.40	38.4	1029.0	-3.8	1.28	11.0	98	1.5	246	493	0.0	94	55	541
28	2	1.78	6.00	9.8	47.34	38.0	1028.7	-3.4	1.27	10.9	102	1.5	257	514	0.0	92	57	545
29	2	1.78	5.80	9.6	48.33	37.5	1028.3	-3.0	1.26	10.7	107	1.4	270	541	0.0	89	59	556
30	2	1.78	5.60	9.4	49.35	37.1	1027.9	-2.6	1.26	10.6	114	1.3	287	575	0.0	86	61	558
31	3	0	6.40	9.4	14.65	41.2	1031.5	-6.2	1.26	10.6	74	2.0	188	375	0.0	39	44	403
32	3	0	6.20	9.2	14.97	40.8	1031.1	-5.9	1.25	10.5	76	2.0	191	383	0.0	39	45	406

33	3	0	6.00	9.0	15.30	40.3	1030.8	-5.5	1.25	10.4	77	2.0	196	391	0.0	39	45	398
34	3	0	5.80	8.8	15.64	39.9	1030.4	-5.2	1.24	10.3	79	2.0	200	401	0.0	39	47	402
35	3	0	5.60	8.6	16.00	39.4	1030.1	-4.8	1.23	10.2	82	1.9	206	413	0.0	39	48	402
36	3	1.78	6.40	11.2	45.50	35.5	1026.7	-1.4	1.31	11.6	168	0.9	423	846	0.0	54	71	782
37	3	1.78	6.20	11.0	46.32	35.0	1026.3	-1.0	1.31	11.5	194	0.8	488	977	0.0	47	73	794
38	3	1.78	6.00	10.8	47.18	34.6	1025.9	-0.7	1.30	11.4	241	0.6	609	1218	0.0	39	77	818
39	3	1.78	5.80	10.6	48.07	34.1	1025.5	-0.3	1.30	11.3	378	0.4	954	1908	0.0	25	80	834
40	3	1.78	5.60	10.4	48.99	33.6	1025.1	0.1	1.29	11.2	507	0.3	-	108	-	454	108	1,111
41	4	0	6.40	10.4	17.63	37.3	1028.4	-3.1	1.29	11.2	110	1.4	277	554	0.0	32	59	604
42	4	0	6.20	10.2	17.97	36.9	1028.0	-2.7	1.28	11.1	116	1.3	293	585	0.0	31	61	617
43	4	0	6.00	10.0	18.33	36.4	1027.6	-2.4	1.28	11.0	124	1.2	313	625	0.0	29	63	622
44	4	0	5.80	9.8	18.70	35.9	1027.2	-2.0	1.27	10.9	135	1.1	340	679	0.0	28	66	637
45	4	0	5.60	9.6	19.08	35.4	1026.8	-1.6	1.27	10.8	150	1.0	378	757	0.0	25	68	645
46	4	1.78	6.40	12.2	45.51	32.6	1024.4	0.9	1.34	12.2	219	0.7	-	112	-	405	112	1,356
47	4	1.78	6.20	12.0	46.26	32.2	1024.0	1.2	1.34	12.0	183	0.8	-	118	-	393	118	1,398
48	4	1.78	6.00	11.8	47.05	31.7	1023.6	1.6	1.33	11.9	158	0.9	-	123	-	382	123	1,440
49	4	1.78	5.80	11.6	47.86	31.2	1023.2	2.0	1.33	11.8	141	1.0	-	127	-	378	127	1,453
50	4	1.78	5.60	11.4	48.69	30.7	1022.8	2.4	1.32	11.7	128	1.1	-	135	-	360	135	1,526
51	5	0	6.40	11.4	20.08	34.1	1025.8	-0.5	1.32	11.7	281	0.5	708	1416	0.0	14	78	874
52	5	0	6.20	11.2	20.44	33.7	1025.4	-0.1	1.31	11.6	544	0.3	1373	2746	0.0	7	81	901
53	5	0	6.00	11.0	20.81	33.2	1025.0	0.3	1.31	11.5	391	0.4	-	108	-	194	108	1,172
54	5	0	5.80	10.8	21.19	32.7	1024.6	0.7	1.30	11.4	242	0.6	-	112	-	189	112	1,202
55	5	0	5.60	10.6	21.58	32.2	1024.2	1.1	1.30	11.3	187	0.8	-	116	-	186	116	1,217
56	5	1.78	6.40	13.2	45.51	30.2	1022.5	2.8	1.37	12.7	126	1.1	-	135	-	336	135	1,771
57	5	1.78	6.20	13.0	46.21	29.8	1022.1	3.2	1.36	12.6	118	1.2	-	143	-	323	143	1,842
58	5	1.78	6.00	12.8	46.93	29.3	1021.7	3.6	1.36	12.5	111	1.3	-	147	-	319	147	1,870
59	5	1.78	5.80	12.6	47.68	28.8	1021.3	4.0	1.35	12.4	104	1.4	-	153	-	311	153	1,915
60	5	1.78	5.60	12.4	48.44	28.3	1020.9	4.4	1.35	12.3	99	1.4	-	160	-	302	160	1,971
61	6	0	6.40	12.4	22.14	31.5	1023.6	1.7	1.35	12.3	161	0.9	-	120	-	184	120	1,481
62	6	0	6.20	12.2	22.50	31.0	1023.2	2.0	1.34	12.2	144	1.0	-	127	-	178	127	1,534
63	6	0	6.00	12.0	22.87	30.5	1022.8	2.4	1.34	12.1	131	1.1	-	134	-	171	134	1,594
64	6	0	5.80	11.8	23.26	30.0	1022.4	2.8	1.33	12.0	120	1.2	-	141	-	165	141	1,648
65	6	0	5.60	11.6	23.66	29.5	1022.0	3.2	1.33	11.9	112	1.3	-	147	-	161	147	1,692
66	6	1.78	6.40	14.2	45.52	28.2	1020.8	4.5	1.39	13.1	103	1.3	-	158	-	287	158	2,232
67	6	1.78	6.20	14.0	46.17	27.7	1020.4	4.8	1.39	13.0	98	1.4	-	166	-	278	166	2,307
68	6	1.78	6.00	13.8	46.84	27.3	1020.1	5.2	1.38	12.9	94	1.5	-	169	-	277	169	2,318
69	6	1.78	5.80	13.6	47.52	26.8	1019.7	5.6	1.38	12.8	90	1.5	-	177	-	268	177	2,396
70	6	1.78	5.60	13.4	48.23	26.3	1019.3	6.0	1.37	12.7	87	1.6	-	185	-	260	185	2,467
71	7	0	6.40	13.4	23.89	29.2	1021.8	3.5	1.37	12.8	114	1.2	-	146	-	163	146	1,948
72	7	0	6.20	13.2	24.25	28.7	1021.4	3.9	1.37	12.7	108	1.3	-	152	-	160	152	1,988
73	7	0	6.00	13.0	24.62	28.2	1021.0	4.3	1.36	12.6	102	1.4	-	159	-	155	159	2,057
74	7	0	5.80	12.8	25.00	27.7	1020.6	4.7	1.36	12.5	97	1.5	-	165	-	151	165	2,104
75	7	0	5.60	12.6	25.40	27.2	1020.2	5.1	1.35	12.4	92	1.5	-	172	-	148	172	2,151
76	7	1.78	6.40	15.2	45.52	26.4	1019.4	5.9	1.42	13.6	92	1.5	-	178	-	256	178	2,681

77	7	1.78	6.20	15.0	46.13	25.9	1019.0	6.3	1.41	13.5	89	1.5	-	183	-	252	183	2,723
78	7	1.78	6.00	14.8	46.75	25.5	1018.6	6.6	1.41	13.4	86	1.6	-	192	-	244	192	2,823
79	7	1.78	5.80	14.6	47.39	25.0	1018.2	7.0	1.40	13.3	83	1.7	-	196	-	242	196	2,845
80	7	1.78	5.60	14.4	48.05	24.5	1017.8	7.4	1.40	13.2	80	1.7	-	205	-	235	205	2,929
81	8	0	6.40	14.4	25.40	27.2	1020.2	5.1	1.40	13.2	97	1.4	-	168	-	151	168	2,411
82	8	0	6.20	14.2	25.75	26.8	1019.8	5.5	1.39	13.1	93	1.5	-	174	-	148	174	2,455
83	8	0	6.00	14.0	26.12	26.3	1019.4	5.8	1.39	13.0	90	1.5	-	180	-	145	180	2,510
84	8	0	5.80	13.8	26.49	25.8	1019.0	6.2	1.38	13.0	86	1.6	-	189	-	140	189	2,600
85	8	0	5.60	13.6	26.88	25.3	1018.6	6.6	1.38	12.9	83	1.7	-	195	-	138	195	2,640
86	8	1.78	6.40	16.2	45.53	24.8	1018.1	7.2	1.44	14.0	86	1.6	-	193	-	236	193	3,111
87	8	1.78	6.20	16.0	46.10	24.4	1017.8	7.5	1.43	14.0	83	1.6	-	166	-	278	166	2,638
88	8	1.78	6.00	15.8	46.68	23.9	1017.4	7.9	1.43	13.9	81	1.7	-	171	-	272	171	2,689
89	8	1.78	5.80	15.6	47.28	23.5	1017.0	8.3	1.42	13.8	79	1.7	-	177	-	267	177	2,744
90	8	1.78	5.60	15.4	47.89	23.0	1016.6	8.6	1.42	13.7	76	1.8	-	183	-	262	183	2,791
91	9	0	6.40	15.4	26.71	25.5	1018.8	6.5	1.42	13.7	88	1.5	-	187	-	143	187	2,869
92	9	0	6.20	15.2	27.06	25.1	1018.4	6.8	1.42	13.6	86	1.6	-	193	-	140	193	2,923
93	9	0	6.00	15.0	27.42	24.6	1018.1	7.2	1.41	13.5	83	1.6	-	199	-	138	199	2,969
94	9	0	5.80	14.8	27.79	24.1	1017.7	7.6	1.41	13.4	80	1.7	-	171	-	163	171	2,510
95	9	0	5.60	14.6	28.16	23.6	1017.3	8.0	1.40	13.3	78	1.8	-	177	-	160	177	2,562
96	9	1.78	6.40	17.2	45.53	23.4	1017.0	8.3	1.46	14.5	81	1.6	-	172	-	264	172	2,941
97	9	1.78	6.20	17.0	46.07	23.0	1016.6	8.6	1.46	14.4	79	1.7	-	177	-	260	177	2,995
98	9	1.78	6.00	16.8	46.62	22.6	1016.3	9.0	1.45	14.3	77	1.7	-	182	-	257	182	3,032
99	9	1.78	5.80	16.6	47.18	22.1	1015.9	9.3	1.45	14.2	76	1.8	-	187	-	252	187	3,084
100	9	1.78	5.60	16.4	47.75	21.6	1015.5	9.7	1.44	14.1	74	1.8	-	193	-	248	193	3,138
101	10	0	6.40	16.4	27.86	24.0	1017.6	7.7	1.44	14.1	83	1.6	-	167	-	167	167	2,727
102	10	0	6.20	16.2	28.20	23.6	1017.2	8.0	1.44	14.1	81	1.7	-	173	-	163	173	2,780
103	10	0	6.00	16.0	28.55	23.1	1016.9	8.4	1.43	14.0	79	1.7	-	177	-	161	177	2,816
104	10	0	5.80	15.8	28.91	22.7	1016.5	8.8	1.43	13.9	77	1.8	-	182	-	159	182	2,866
105	10	0	5.60	15.6	29.28	22.2	1016.1	9.2	1.43	13.8	75	1.8	-	188	-	156	188	2,916
106	10	1.78	6.40	18.2	45.54	22.2	1016.0	9.3	1.48	14.9	79	1.6	-	181	-	251	181	3,276
107	10	1.78	6.20	18.0	46.04	21.8	1015.7	9.6	1.48	14.8	77	1.7	-	185	-	249	185	3,310
108	10	1.78	6.00	17.8	46.56	21.4	1015.3	10.0	1.47	14.7	75	1.7	-	190	-	245	190	3,368
109	10	1.78	5.80	17.6	47.09	20.9	1015.0	10.3	1.47	14.7	74	1.8	-	194	-	242	194	3,400
110	10	1.78	5.60	17.4	47.63	20.5	1014.6	10.7	1.46	14.6	72	1.8	-	200	-	238	200	3,453

Oceanic Profile

Oceanic profile

Ocean salinity = 33.97 No of ports = 158 **Hydraulic code HC24** Coeff1= 1.590 (gpm)

Ocean density = 1025.48 Nozzle angle= 60 Coeff2= 0.511

Dense discharges

Case ID	Constituent flows			Final effluent					Port conditions				Near field (BMZ) Predictions				UM3 Entrainment	
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference	Diam.	Velocity	Froude no.	s/dF	Centerline dilution	Average dilution	Salinity increment	Ammonia	Average dillution at apex	Entrained flow
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/l)	(ppt)	(kg/m^3)	(kg/m^3)	(in)	(ft/s)					(ppt)	(µg/l)		(mgd)
	0	0	0															
1	0	0	6.40	6.4	0.14	60.0	1046.7	-21.2	1.15	8.7	35	4.8	87	175	0.3	1	21	129
2	0	0	6.20	6.2	0.14	60.0	1046.7	-21.2	1.14	8.6	34	4.9	86	173	0.3	1	21	124
3	0	0	6.00	6.0	0.14	60.0	1046.7	-21.2	1.13	8.5	34	5.0	85	171	0.3	1	21	119
4	0	0	5.80	5.8	0.14	60.0	1046.7	-21.2	1.12	8.3	33	5.1	84	168	0.3	1	21	113
5	0	0	5.60	5.6	0.14	60.0	1046.7	-21.2	1.11	8.2	33	5.3	83	166	0.3	1	20	108
6	0	1.78	6.40	8.2	45.46	48.1	1036.8	-11.3	1.22	9.9	52	3.0	132	263	0.1	173	31	248
7	0	1.78	6.20	8.0	46.60	47.8	1036.6	-11.1	1.21	9.8	52	3.0	132	263	0.1	177	31	243
8	0	1.78	6.00	7.8	47.79	47.5	1036.3	-10.8	1.20	9.7	52	3.1	132	264	0.1	181	32	239
9	0	1.78	5.80	7.6	49.05	47.2	1036.0	-10.6	1.19	9.5	52	3.1	132	265	0.1	185	32	234
10	0	1.78	5.60	7.4	50.37	46.8	1035.8	-10.3	1.19	9.4	53	3.1	133	266	0.1	190	31	224
11	1	0	6.40	7.4	6.29	52.0	1040.1	-14.7	1.19	9.4	44	3.7	111	223	0.2	28	27	191
12	1	0	6.20	7.2	6.46	51.8	1040.0	-14.5	1.18	9.3	44	3.7	111	222	0.2	29	27	185
13	1	0	6.00	7.0	6.64	51.6	1039.8	-14.3	1.17	9.2	44	3.7	110	221	0.2	30	27	180
14	1	0	5.80	6.8	6.83	51.3	1039.6	-14.1	1.16	9.0	44	3.8	110	220	0.2	31	27	174
15	1	0	5.60	6.6	7.03	51.1	1039.3	-13.9	1.15	8.9	43	3.8	109	219	0.2	32	27	170
16	1	1.78	6.40	9.2	45.47	43.0	1032.6	-7.1	1.25	10.5	69	2.2	174	347	0.1	131	40	361
17	1	1.78	6.20	9.0	46.48	42.6	1032.3	-6.8	1.25	10.4	70	2.2	176	352	0.0	132	40	352
18	1	1.78	6.00	8.8	47.54	42.2	1032.0	-6.5	1.24	10.3	71	2.2	179	358	0.0	133	41	350
19	1	1.78	5.80	8.6	48.64	41.8	1031.6	-6.1	1.23	10.2	72	2.2	182	364	0.0	133	42	351
20	1	1.78	5.60	8.4	49.80	41.4	1031.3	-5.8	1.22	10.0	74	2.1	186	372	0.0	134	43	349
21	2	0	6.40	8.4	10.97	46.0	1035.1	-9.7	1.22	10.0	57	2.7	144	288	0.1	38	34	281
22	2	0	6.20	8.2	11.23	45.6	1034.9	-9.4	1.22	9.9	57	2.7	145	290	0.1	39	34	270
23	2	0	6.00	8.0	11.51	45.3	1034.6	-9.1	1.21	9.8	58	2.7	146	292	0.1	39	34	267
24	2	0	5.80	7.8	11.80	44.9	1034.2	-8.8	1.20	9.7	58	2.7	147	294	0.1	40	35	264
25	2	0	5.60	7.6	12.11	44.5	1033.9	-8.4	1.20	9.5	59	2.7	148	297	0.1	41	35	255
26	2	1.78	6.40	10.2	45.49	38.9	1029.2	-3.7	1.28	11.1	99	1.5	250	500	0.0	91	54	537
27	2	1.78	6.20	10.0	46.40	38.4	1028.9	-3.4	1.28	11.0	103	1.5	260	521	0.0	89	54	532
28	2	1.78	6.00	9.8	47.34	38.0	1028.5	-3.0	1.27	10.9	108	1.4	274	547	0.0	87	56	541
29	2	1.78	5.80	9.6	48.33	37.5	1028.1	-2.6	1.26	10.7	115	1.3	290	581	0.0	83	58	551
30	2	1.78	5.60	9.4	49.35	37.1	1027.7	-2.2	1.26	10.6	124	1.2	312	625	0.0	79	60	552
31	3	0	6.40	9.4	14.65	41.2	1031.2	-5.7	1.26	10.6	78	2.0	196	392	0.0	37	44	406
32	3	0	6.20	9.2	14.97	40.8	1030.9	-5.4	1.25	10.5	79	1.9	200	400	0.0	37	45	406

33	3	0	6.00	9.0	15.30	40.3	1030.5	-5.0	1.25	10.4	81	1.9	205	411	0.0	37	46	401
34	3	0	5.80	8.8	15.64	39.9	1030.1	-4.7	1.24	10.3	84	1.8	211	423	0.0	37	47	404
35	3	0	5.60	8.6	16.00	39.4	1029.7	-4.3	1.23	10.2	87	1.8	219	438	0.0	37	48	408
36	3	1.78	6.40	11.2	45.50	35.5	1026.4	-0.9	1.31	11.6	204	0.7	514	1029	0.0	44	70	775
37	3	1.78	6.20	11.0	46.32	35.0	1026.1	-0.6	1.31	11.5	259	0.6	654	1309	0.0	35	72	777
38	3	1.78	6.00	10.8	47.18	34.6	1025.7	-0.2	1.30	11.4	445	0.3	1122	2243	0.0	21	75	797
39	3	1.78	5.80	10.6	48.07	34.1	1025.3	0.2	1.30	11.3	430	0.3	-	103	-	466	103	1,081
40	3	1.78	5.60	10.4	48.99	33.6	1024.9	0.6	1.29	11.2	245	0.6	-	106	-	464	106	1,086
41	4	0	6.40	10.4	17.63	37.3	1028.0	-2.5	1.29	11.2	121	1.2	306	612	0.0	29	60	610
42	4	0	6.20	10.2	17.97	36.9	1027.6	-2.2	1.28	11.1	130	1.1	329	658	0.0	27	62	622
43	4	0	6.00	10.0	18.33	36.4	1027.3	-1.8	1.28	11.0	143	1.1	360	719	0.0	25	63	621
44	4	0	5.80	9.8	18.70	35.9	1026.9	-1.4	1.27	10.9	160	0.9	405	810	0.0	23	66	635
45	4	0	5.60	9.6	19.08	35.4	1026.4	-1.0	1.27	10.8	190	0.8	480	960	0.0	20	69	648
46	4	1.78	6.40	12.2	45.51	32.6	1024.1	1.4	1.34	12.2	174	0.8	-	108	-	422	108	1,302
47	4	1.78	6.20	12.0	46.26	32.2	1023.7	1.8	1.34	12.0	154	0.9	-	109	-	423	109	1,297
48	4	1.78	6.00	11.8	47.05	31.7	1023.3	2.2	1.33	11.9	138	1.0	-	114	-	414	114	1,328
49	4	1.78	5.80	11.6	47.86	31.2	1022.9	2.6	1.33	11.8	126	1.2	-	118	-	405	118	1,358
50	4	1.78	5.60	11.4	48.69	30.7	1022.5	3.0	1.32	11.7	116	1.3	-	121	-	403	121	1,362
51	5	0	6.40	11.4	20.08	34.1	1025.4	0.1	1.32	11.7	625	0.2	-	103	-	196	103	1,159
52	5	0	6.20	11.2	20.44	33.7	1025.0	0.5	1.31	11.6	286	0.5	-	104	-	196	104	1,156
53	5	0	6.00	11.0	20.81	33.2	1024.6	0.9	1.31	11.5	210	0.7	-	105	-	198	105	1,147
54	5	0	5.80	10.8	21.19	32.7	1024.2	1.3	1.30	11.4	172	0.9	-	108	-	197	108	1,150
55	5	0	5.60	10.6	21.58	32.2	1023.8	1.7	1.30	11.3	148	1.0	-	109	-	198	109	1,143
56	5	1.78	6.40	13.2	45.51	30.2	1022.1	3.4	1.37	12.7	115	1.2	-	124	-	367	124	1,620
57	5	1.78	6.20	13.0	46.21	29.8	1021.7	3.7	1.36	12.6	109	1.3	-	127	-	364	127	1,637
58	5	1.78	6.00	12.8	46.93	29.3	1021.4	4.1	1.36	12.5	103	1.4	-	130	-	360	130	1,651
59	5	1.78	5.80	12.6	47.68	28.8	1020.9	4.5	1.35	12.4	98	1.5	-	136	-	352	136	1,693
60	5	1.78	5.60	12.4	48.44	28.3	1020.5	4.9	1.35	12.3	93	1.5	-	141	-	344	141	1,729
61	6	0	6.40	12.4	22.14	31.5	1023.2	2.3	1.35	12.3	136	1.0	-	115	-	193	115	1,411
62	6	0	6.20	12.2	22.50	31.0	1022.8	2.7	1.34	12.2	125	1.1	-	118	-	191	118	1,425
63	6	0	6.00	12.0	22.87	30.5	1022.4	3.1	1.34	12.1	116	1.2	-	121	-	189	121	1,440
64	6	0	5.80	11.8	23.26	30.0	1022.0	3.5	1.33	12.0	108	1.3	-	127	-	183	127	1,492
65	6	0	5.60	11.6	23.66	29.5	1021.6	3.9	1.33	11.9	102	1.4	-	129	-	183	129	1,488
66	6	1.78	6.40	14.2	45.52	28.2	1020.4	5.1	1.39	13.1	97	1.4	-	137	-	332	137	1,933
67	6	1.78	6.20	14.0	46.17	27.7	1020.0	5.4	1.39	13.0	93	1.5	-	142	-	326	142	1,967
68	6	1.78	6.00	13.8	46.84	27.3	1019.7	5.8	1.38	12.9	89	1.6	-	144	-	326	144	1,966
69	6	1.78	5.80	13.6	47.52	26.8	1019.3	6.2	1.38	12.8	86	1.6	-	148	-	322	148	1,994
70	6	1.78	5.60	13.4	48.23	26.3	1018.9	6.6	1.37	12.7	83	1.7	-	152	-	317	152	2,022
71	7	0	6.40	13.4	23.89	29.2	1021.3	4.2	1.37	12.8	104	1.3	-	132	-	182	132	1,750
72	7	0	6.20	13.2	24.25	28.7	1020.9	4.6	1.37	12.7	99	1.4	-	134	-	181	134	1,752
73	7	0	6.00	13.0	24.62	28.2	1020.5	5.0	1.36	12.6	94	1.5	-	140	-	176	140	1,804
74	7	0	5.80	12.8	25.00	27.7	1020.1	5.4	1.36	12.5	90	1.6	-	144	-	174	144	1,827
75	7	0	5.60	12.6	25.40	27.2	1019.7	5.8	1.35	12.4	86	1.6	-	147	-	173	147	1,836
76	7	1.78	6.40	15.2	45.52	26.4	1019.0	6.5	1.42	13.6	87	1.6	-	146	-	312	146	2,197

77	7	1.78	6.20	15.0	46.13	25.9	1018.6	6.9	1.41	13.5	85	1.6	-	149	-	309	149	2,219
78	7	1.78	6.00	14.8	46.75	25.5	1018.2	7.3	1.41	13.4	82	1.7	-	153	-	305	153	2,248
79	7	1.78	5.80	14.6	47.39	25.0	1017.8	7.7	1.40	13.3	79	1.7	-	159	-	299	159	2,299
80	7	1.78	5.60	14.4	48.05	24.5	1017.4	8.1	1.40	13.2	77	1.8	-	162	-	297	162	2,312
81	8	0	6.40	14.4	25.40	27.2	1019.7	5.8	1.40	13.2	91	1.5	-	141	-	180	141	2,015
82	8	0	6.20	14.2	25.75	26.8	1019.3	6.2	1.39	13.1	88	1.6	-	145	-	177	145	2,049
83	8	0	6.00	14.0	26.12	26.3	1018.9	6.6	1.39	13.0	84	1.6	-	150	-	174	150	2,083
84	8	0	5.80	13.8	26.49	25.8	1018.5	7.0	1.38	13.0	82	1.7	-	153	-	173	153	2,102
85	8	0	5.60	13.6	26.88	25.3	1018.1	7.4	1.38	12.9	79	1.8	-	157	-	171	157	2,126
86	8	1.78	6.40	16.2	45.53	24.8	1017.7	7.8	1.44	14.0	82	1.6	-	156	-	292	156	2,510
87	8	1.78	6.20	16.0	46.10	24.4	1017.3	8.2	1.43	14.0	80	1.7	-	160	-	288	160	2,541
88	8	1.78	6.00	15.8	46.68	23.9	1016.9	8.6	1.43	13.9	78	1.7	-	164	-	284	164	2,578
89	8	1.78	5.80	15.6	47.28	23.5	1016.5	8.9	1.42	13.8	75	1.8	-	167	-	283	167	2,589
90	8	1.78	5.60	15.4	47.89	23.0	1016.1	9.3	1.42	13.7	74	1.8	-	173	-	277	173	2,645
91	9	0	6.40	15.4	26.71	25.5	1018.3	7.2	1.42	13.7	84	1.6	-	151	-	177	151	2,310
92	9	0	6.20	15.2	27.06	25.1	1017.9	7.6	1.42	13.6	81	1.7	-	156	-	174	156	2,353
93	9	0	6.00	15.0	27.42	24.6	1017.5	8.0	1.41	13.5	79	1.7	-	159	-	172	159	2,375
94	9	0	5.80	14.8	27.79	24.1	1017.1	8.4	1.41	13.4	77	1.8	-	166	-	167	166	2,445
95	9	0	5.60	14.6	28.16	23.6	1016.7	8.8	1.40	13.3	74	1.8	-	168	-	167	168	2,444
96	9	1.78	6.40	17.2	45.53	23.4	1016.5	9.0	1.46	14.5	78	1.7	-	163	-	280	163	2,780
97	9	1.78	6.20	17.0	46.07	23.0	1016.2	9.3	1.46	14.4	76	1.7	-	168	-	274	168	2,836
98	9	1.78	6.00	16.8	46.62	22.6	1015.8	9.7	1.45	14.3	75	1.8	-	172	-	271	172	2,866
99	9	1.78	5.80	16.6	47.18	22.1	1015.4	10.1	1.45	14.2	73	1.8	-	176	-	268	176	2,900
100	9	1.78	5.60	16.4	47.75	21.6	1015.0	10.4	1.44	14.1	71	1.9	-	178	-	269	178	2,894
101	10	0	6.40	16.4	27.86	24.0	1017.0	8.4	1.44	14.1	79	1.7	-	161	-	173	161	2,624
102	10	0	6.20	16.2	28.20	23.6	1016.7	8.8	1.44	14.1	77	1.7	-	165	-	171	165	2,662
103	10	0	6.00	16.0	28.55	23.1	1016.3	9.2	1.43	14.0	75	1.8	-	169	-	169	169	2,680
104	10	0	5.80	15.8	28.91	22.7	1015.9	9.6	1.43	13.9	73	1.8	-	172	-	169	172	2,694
105	10	0	5.60	15.6	29.28	22.2	1015.5	10.0	1.43	13.8	72	1.9	-	175	-	167	175	2,719
106	10	1.78	6.40	18.2	45.54	22.2	1015.5	10.0	1.48	14.9	76	1.7	-	169	-	269	169	3,062
107	10	1.78	6.20	18.0	46.04	21.8	1015.2	10.3	1.48	14.8	74	1.8	-	173	-	266	173	3,089
108	10	1.78	6.00	17.8	46.56	21.4	1014.8	10.7	1.47	14.7	73	1.8	-	178	-	261	178	3,152
109	10	1.78	5.80	17.6	47.09	20.9	1014.4	11.0	1.47	14.7	71	1.8	-	181	-	261	181	3,156
110	10	1.78	5.60	17.4	47.63	20.5	1014.1	11.4	1.46	14.6	70	1.9	-	186	-	257	186	3,207

APPENDIX D. HYDRAULICS CALCULATIONS

The procedure for calculating the head loss and port flow distribution is an iterative one that is detailed in Appendix A of Roberts (2016). The nozzle characteristics for HC24 valves, supplied by Tideflex, are shown in Figure 7b. An empirical curve was fitted to the graph of flow velocity versus flow rate and used in the head loss calculations.

The following spreadsheet shows the model output for the peak design flow rate of 75.6 mgd for 158 ports with Hydraulic Code 24 (HC24) valves. At this flow rate, the head at the beginning of the diffuser is 25.4 ft and the head at the onshore headworks is 50.8 ft.

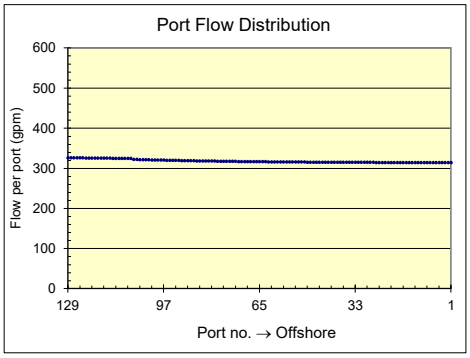
With check valves
Tideflex Series TF-2, 35, HC24

With valve expansion loss

Inputted variables

No. ports per riser, Nr =	1	Outfall pipe length, L (ft) =	10,274
Port spacing, Sr (ft) =	8	Roughness height, ks (in) =	0.066
Depth of end port, Hend (ft) =	107	Gravity, g (ft2/s) =	32.2
Slope of diffuser, Sl =	0.0110	Ambient density (kg/m3)	1024.8
Entrance loss coeff, xen =	0.63	Effluent density (kg/m3)	998.0
Expansion loss coeff, xex =	0.56	Density difference, Drho/rho =	0.026
		Kinematic viscosity, nu (ft2/s) =	1.2E-05

Head at end:	23.40	ft	Outfall friction headloss:	23.0 ft
Target flow:	**75.6**	mgd	Diffuser headloss:	25.4 ft
Computed flow difference:	**0.0**	mgd	Density head:	2.4 ft
			Total outfall head:	**50.8** ft



Pipe segment	Pipe ID	Port number	Distance from end	Depth	Total head	Flow				Velocity		Equivalent round port		Reynolds no.	Friction factor	Friction loss
						Per port	Per riser	Cumulative		Pipe	Jet	Diam.	Froude			
	(in)	n	(ft)	(ft)	(ft)	(gpm)	(gpm)	(gpm)	(ft3/s)	(ft/s)	(ft/s)	(in)				(ft)
End port					23.4	1969	1969	1969	4.4	0.3	24.5	5.73	38.4			
1	48	1	0	107.0	23.4	314	314	2283	5.1	0.4	30.0	2.07	78.8	1.3E+05	0.023	0.000
		2	8	106.9	23.4	314	314	2597	5.8	0.5	30.0	2.07	78.8	1.5E+05	0.023	0.000
		3	16	106.8	23.4	314	314	2911	6.5	0.5	30.0	2.07	78.8	1.7E+05	0.023	0.000
		4	24	106.7	23.4	314	314	3226	7.2	0.6	30.0	2.07	78.8	1.9E+05	0.023	0.000
		5	32	106.6	23.4	314	314	3540	7.9	0.6	30.0	2.07	78.8	2.1E+05	0.023	0.000
		6	40	106.6	23.4	314	314	3854	8.6	0.7	30.0	2.07	78.8	2.3E+05	0.022	0.000
		7	48	106.5	23.4	314	314	4168	9.3	0.7	30.0	2.07	78.8	2.4E+05	0.022	0.000
		8	56	106.4	23.4	314	314	4483	10.0	0.8	30.0	2.07	78.8	2.6E+05	0.022	0.000
		9	64	106.3	23.4	314	314	4797	10.7	0.9	30.0	2.07	78.8	2.8E+05	0.022	0.001
		10	72	106.2	23.4	314	314	5111	11.4	0.9	30.0	2.07	78.8	3.0E+05	0.022	0.001
		11	80	106.1	23.4	314	314	5426	12.1	1.0	30.0	2.07	78.8	3.2E+05	0.022	0.001
		12	88	106.0	23.4	314	314	5740	12.8	1.0	30.0	2.07	78.8	3.4E+05	0.022	0.001
		13	96	105.9	23.4	314	314	6054	13.5	1.1	30.0	2.07	78.8	3.6E+05	0.022	0.001
		14	104	105.9	23.4	314	314	6369	14.2	1.1	30.0	2.07	78.8	3.7E+05	0.022	0.001
		15	112	105.8	23.4	314	314	6683	14.9	1.2	30.0	2.07	78.8	3.9E+05	0.022	0.001
		16	120	105.7	23.4	314	314	6998	15.6	1.2	30.0	2.07	78.8	4.1E+05	0.022	0.001
		17	128	105.6	23.4	314	314	7312	16.3	1.3	30.0	2.07	78.8	4.3E+05	0.022	0.001
		18	136	105.5	23.4	314	314	7626	17.0	1.4	30.0	2.07	78.8	4.5E+05	0.022	0.001
		19	144	105.4	23.5	314	314	7941	17.7	1.4	30.0	2.07	78.8	4.7E+05	0.022	0.001
		20	152	105.3	23.5	315	315	8255	18.4	1.5	30.0	2.07	78.8	4.8E+05	0.022	0.001
		21	160	105.2	23.5	315	315	8570	19.1	1.5	30.0	2.07	78.8	5.0E+05	0.022	0.002
		22	168	105.2	23.5	315	315	8884	19.8	1.6	30.0	2.07	78.8	5.2E+05	0.022	0.002
		23	176	105.1	23.5	315	315	9199	20.5	1.6	30.0	2.07	78.8	5.4E+05	0.022	0.002
		24	184	105.0	23.5	315	315	9514	21.2	1.7	30.0	2.07	78.8	5.6E+05	0.022	0.002
		25	192	104.9	23.5	315	315	9828	21.9	1.7	30.0	2.07	78.8	5.8E+05	0.022	0.002
		26	200	104.8	23.5	315	315	10143	22.6	1.8	30.0	2.07	78.8	6.0E+05	0.022	0.002
		27	208	104.7	23.5	315	315	10458	23.3	1.9	30.0	2.07	78.8	6.1E+05	0.022	0.002
		28	216	104.6	23.5	315	315	10772	24.0	1.9	30.0	2.07	78.8	6.3E+05	0.022	0.002
		29	224	104.5	23.5	315	315	11087	24.7	2.0	30.0	2.07	78.8	6.5E+05	0.022	0.003
		30	232	104.4	23.5	315	315	11402	25.4	2.0	30.0	2.07	78.8	6.7E+05	0.022	0.003
		31	240	104.4	23.5	315	315	11716	26.1	2.1	30.0	2.07	78.8	6.9E+05	0.022	0.003
		32	248	104.3	23.5	315	315	12031	26.8	2.1	30.0	2.07	78.8	7.1E+05	0.022	0.003
		33	256	104.2	23.5	315	315	12346	27.5	2.2	30.0	2.07	78.8	7.2E+05	0.022	0.003
		34	264	104.1	23.5	315	315	12661	28.2	2.2	30.0	2.07	78.8	7.4E+05	0.022	0.003
		35	272	104.0	23.5	315	315	12976	28.9	2.3	30.0	2.07	78.8	7.6E+05	0.022	0.004
		36	280	103.9	23.5	315	315	13291	29.6	2.4	30.0	2.07	78.8	7.8E+05	0.022	0.004
		37	288	103.8	23.5	315	315	13606	30.3	2.4	30.0	2.07	78.8	8.0E+05	0.022	0.004
		38	296	103.7	23.5	315	315	13921	31.0	2.5	30.0	2.07	78.8	8.2E+05	0.022	0.004
		39	304	103.7	23.6	315	315	14236	31.7	2.5	30.0	2.07	78.8	8.4E+05	0.022	0.004
		40	312	103.6	23.6	315	315	14551	32.4	2.6	30.0	2.07	78.8	8.5E+05	0.022	0.004
		41	320	103.5	23.6	315	315	14866	33.2	2.6	30.0	2.07	78.8	8.7E+05	0.022	0.005
		42	328	103.4	23.6	315	315	15181	33.9	2.7	30.0	2.07	78.8	8.9E+05	0.022	0.005
		43	336	103.3	23.6	315	315	15496	34.6	2.7	30.0	2.07	78.8	9.1E+05	0.022	0.005
		44	344	103.2	23.6	315	315	15811	35.3	2.8	30.0	2.07	78.8	9.3E+05	0.022	0.005
		45	352	103.1	23.6	315	315	16126	36.0	2.9	30.0	2.07	78.8	9.5E+05	0.022	0.005
		46	360	103.0	23.6	315	315	16442	36.7	2.9	30.1	2.07	78.8	9.6E+05	0.022	0.006
		47	368	103.0	23.6	315	315	16757	37.4	3.0	30.1	2.07	78.8	9.8E+05	0.022	0.006
		48	376	102.9	23.6	315	315	17072	38.1	3.0	30.1	2.07	78.8	1.0E+06	0.022	0.006
		49	384	102.8	23.6	315	315	17388	38.8	3.1	30.1	2.07	78.8	1.0E+06	0.022	0.006
		50	392	102.7	23.6	315	315	17703	39.5	3.1	30.1	2.07	78.8	1.0E+06	0.022	0.007
		51	400	102.6	23.6	316	316	18019	40.2	3.2	30.1	2.07	78.8	1.1E+06	0.022	0.007
		52	408	102.5	23.7	316	316	18334	40.9	3.3	30.1	2.07	78.8	1.1E+06	0.022	0.007
		53	416	102.4	23.7	316	316	18650	41.6	3.3	30.1	2.07	78.8	1.1E+06	0.022	0.007
		54	424	102.3	23.7	316	316	18966	42.3	3.4	30.1	2.07	78.8	1.1E+06	0.022	0.008
		55	432	102.2	23.7	316	316	19281	43.0	3.4	30.1	2.07	78.9	1.1E+06	0.022	0.008

		56	440	102.2	23.7	316	316	19597	43.7	3.5	30.1	2.07	78.9	1.1E+06	0.022	0.008
		57	448	102.1	23.7	316	316	19913	44.4	3.5	30.1	2.07	78.9	1.2E+06	0.022	0.008
		58	456	102.0	23.7	316	316	20229	45.1	3.6	30.1	2.07	78.9	1.2E+06	0.022	0.009
		59	464	101.9	23.7	316	316	20545	45.8	3.6	30.1	2.07	78.9	1.2E+06	0.022	0.009
		60	472	101.8	23.7	316	316	20861	46.5	3.7	30.1	2.07	78.9	1.2E+06	0.022	0.009
		61	480	101.7	23.7	316	316	21177	47.2	3.8	30.1	2.07	78.9	1.2E+06	0.022	0.009
		62	488	101.6	23.8	316	316	21493	47.9	3.8	30.1	2.07	78.9	1.3E+06	0.022	0.010
		63	496	101.5	23.8	316	316	21809	48.6	3.9	30.1	2.07	78.9	1.3E+06	0.022	0.010
		64	504	101.5	23.8	316	316	22126	49.3	3.9	30.1	2.07	78.9	1.3E+06	0.022	0.010
		65	512	101.4	23.8	316	316	22442	50.0	4.0	30.1	2.07	78.9	1.3E+06	0.022	0.011
		66	520	101.3	23.8	316	316	22759	50.8	4.0	30.1	2.07	78.9	1.3E+06	0.022	0.011
		67	528	101.2	23.8	317	317	23075	51.5	4.1	30.1	2.07	78.9	1.4E+06	0.021	0.011
		68	536	101.1	23.8	317	317	23392	52.2	4.2	30.1	2.07	78.9	1.4E+06	0.021	0.012
		69	544	101.0	23.8	317	317	23709	52.9	4.2	30.1	2.07	78.9	1.4E+06	0.021	0.012
		70	552	100.9	23.9	317	317	24026	53.6	4.3	30.1	2.07	78.9	1.4E+06	0.021	0.012
		71	560	100.8	23.9	317	317	24342	54.3	4.3	30.1	2.07	78.9	1.4E+06	0.021	0.012
		72	568	100.8	23.9	317	317	24659	55.0	4.4	30.1	2.07	78.9	1.4E+06	0.021	0.013
		73	576	100.7	23.9	317	317	24977	55.7	4.4	30.1	2.07	78.9	1.5E+06	0.021	0.013
		74	584	100.6	23.9	317	317	25294	56.4	4.5	30.1	2.07	78.9	1.5E+06	0.021	0.013
		75	592	100.5	23.9	317	317	25611	57.1	4.5	30.1	2.08	78.9	1.5E+06	0.021	0.014
		76	600	100.4	24.0	317	317	25928	57.8	4.6	30.1	2.08	79.0	1.5E+06	0.021	0.014
		77	608	100.3	24.0	318	318	26246	58.5	4.7	30.1	2.08	79.0	1.5E+06	0.021	0.014
		78	616	100.2	24.0	318	318	26564	59.2	4.7	30.1	2.08	79.0	1.6E+06	0.021	0.015
		79	624	100.1	24.0	318	318	26881	59.9	4.8	30.1	2.08	79.0	1.6E+06	0.021	0.015
		80	632	100.0	24.0	318	318	27199	60.7	4.8	30.1	2.08	79.0	1.6E+06	0.021	0.016
		81	640	100.0	24.0	318	318	27517	61.4	4.9	30.2	2.08	79.0	1.6E+06	0.021	0.016
		82	648	99.9	24.1	318	318	27835	62.1	4.9	30.2	2.08	79.0	1.6E+06	0.021	0.016
		83	656	99.8	24.1	318	318	28154	62.8	5.0	30.2	2.08	79.0	1.7E+06	0.021	0.017
		84	664	99.7	24.1	318	318	28472	63.5	5.1	30.2	2.08	79.0	1.7E+06	0.021	0.017
		85	672	99.6	24.1	318	318	28790	64.2	5.1	30.2	2.08	79.0	1.7E+06	0.021	0.017
		86	680	99.5	24.1	319	319	29109	64.9	5.2	30.2	2.08	79.0	1.7E+06	0.021	0.018
		87	688	99.4	24.2	319	319	29428	65.6	5.2	30.2	2.08	79.0	1.7E+06	0.021	0.018
		88	696	99.3	24.2	319	319	29747	66.3	5.3	30.2	2.08	79.0	1.7E+06	0.021	0.019
		89	704	99.3	24.2	319	319	30066	67.0	5.3	30.2	2.08	79.0	1.8E+06	0.021	0.019
		90	712	99.2	24.2	319	319	30385	67.8	5.4	30.2	2.08	79.1	1.8E+06	0.021	0.019
		91	720	99.1	24.2	319	319	30704	68.5	5.4	30.2	2.08	79.1	1.8E+06	0.021	0.020
		92	728	99.0	24.3	319	319	31023	69.2	5.5	30.2	2.08	79.1	1.8E+06	0.021	0.020
		93	736	98.9	24.3	320	320	31343	69.9	5.6	30.2	2.08	79.1	1.8E+06	0.021	0.021
		94	744	98.8	24.3	320	320	31663	70.6	5.6	30.2	2.08	79.1	1.9E+06	0.021	0.021
		95	752	98.7	24.3	320	320	31983	71.3	5.7	30.2	2.08	79.1	1.9E+06	0.021	0.021
		96	760	98.6	24.4	320	320	32303	72.0	5.7	30.2	2.08	79.1	1.9E+06	0.021	0.022
		97	768	98.6	24.4	320	320	32623	72.7	5.8	30.2	2.08	79.1	1.9E+06	0.021	0.022
		98	776	98.5	24.4	320	320	32943	73.5	5.8	30.2	2.08	79.1	1.9E+06	0.021	0.023
		99	784	98.4	24.4	321	321	33264	74.2	5.9	30.2	2.08	79.1	2.0E+06	0.021	0.023
		100	792	98.3	24.5	321	321	33585	74.9	6.0	30.3	2.08	79.1	2.0E+06	0.021	0.024
		101	800	98.2	24.5	321	321	33906	75.6	6.0	30.3	2.08	79.2	2.0E+06	0.021	0.024
		102	808	98.1	24.5	321	321	34227	76.3	6.1	30.3	2.08	79.2	2.0E+06	0.021	0.025
		103	816	98.0	24.5	321	321	34548	77.0	6.1	30.3	2.08	79.2	2.0E+06	0.021	0.025
		104	824	97.9	24.6	322	322	34870	77.8	6.2	30.3	2.08	79.2	2.0E+06	0.021	0.025
		105	832	97.8	24.6	322	322	35191	78.5	6.2	30.3	2.08	79.2	2.1E+06	0.021	0.026
		106	840	97.8	24.6	322	322	35513	79.2	6.3	30.3	2.08	79.2	2.1E+06	0.021	0.026
2	60	107	848	97.7	24.6	322	322	35835	79.9	4.1	30.3	2.08	79.2	1.7E+06	0.020	0.008
		108	856	97.6	24.7	325	325	36160	80.6	4.1	30.4	2.09	79.4	1.7E+06	0.020	0.009
		109	864	97.5	24.7	325	325	36484	81.4	4.1	30.4	2.09	79.4	1.7E+06	0.020	0.009
		110	872	97.4	24.7	325	325	36809	82.1	4.2	30.4	2.09	79.4	1.7E+06	0.020	0.009
		111	880	97.3	24.7	325	325	37134	82.8	4.2	30.4	2.09	79.4	1.7E+06	0.020	0.009
		112	888	97.2	24.7	325	325	37459	83.5	4.3	30.4	2.09	79.4	1.8E+06	0.020	0.009
		113	896	97.1	24.7	325	325	37784	84.3	4.3	30.4	2.09	79.4	1.8E+06	0.020	0.009
		114	904	97.1	24.7	325	325	38109	85.0	4.3	30.4	2.09	79.4	1.8E+06	0.020	0.009
		115	912	97.0	24.7	325	325	38434	85.7	4.4	30.4	2.09	79.4	1.8E+06	0.020	0.010
		116	920	96.9	24.7	325	325	38759	86.4	4.4	30.4	2.09	79.4	1.8E+06	0.020	0.010
		117	928	96.8	24.8	325	325	39084	87.2	4.4	30.4	2.09	79.4	1.8E+06	0.020	0.010
		118	936	96.7	24.8	325	325	39409	87.9	4.5	30.4	2.09	79.4	1.8E+06	0.020	0.010
		119	944	96.6	24.8	325	325	39735	88.6	4.5	30.4	2.09	79.4	1.9E+06	0.020	0.010
		120	952	96.5	24.8	325	325	40060	89.3	4.5	30.4	2.09	79.4	1.9E+06	0.020	0.010
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		125	992	96.1	24.9	326	326	41689	93.0	4.7	30.4	2.09	79.4	2.0E+06	0.020	0.011
		126	1000	96.0	24.9	326	326	42015	93.7	4.8	30.4	2.09	79.4	2.0E+06	0.020	0.011
		127	1008	95.9	24.9	326	326	42341	94.4	4.8	30.4	2.09	79.4	2.0E+06	0.020	0.012
		128	1016	95.8	24.9	326	326	42667	95.1	4.8	30.4	2.09	79.4	2.0E+06	0.020	0.012
		129	1024	95.7	24.9	326	326	42994	95.9	4.9	30.4	2.09	79.4	2.0E+06	0.020	0.012
		130	1032	95.6	24.9	326	326	43320	96.6	4.9	30.5	2.09	79.5	2.0E+06	0.020	0.012
		131	1040	95.6	24.9	327	327	43646	97.3	5.0	30.5	2.09	79.5	2.0E+06	0.020	0.012
		132	1048	95.5	25.0	327	327	43973	98.1	5.0	30.5	2.09	79.5	2.1E+06	0.020	0.013
		133	1056	95.4	25.0	327	327	44300	98.8	5.0	30.5	2.09	79.5	2.1E+06	0.020	0.013
		134	1064	95.3	25.0	327	327	44627	99.5	5.1	30.5	2.09	79.5	2.1E+06	0.020	0.013

		135	1072	95.2	25.0	327	327	44954	100.2	5.1	30.5	2.09	79.5	2.1E+06	0.020	0.013
		136	1080	95.1	25.0	327	327	45281	101.0	5.1	30.5	2.09	79.5	2.1E+06	0.020	0.013
		137	1088	95.0	25.0	327	327	45608	101.7	5.2	30.5	2.09	79.5	2.1E+06	0.020	0.014
		138	1096	94.9	25.1	327	327	45935	102.4	5.2	30.5	2.10	79.5	2.2E+06	0.020	0.014
		139	1104	94.9	25.1	327	327	46262	103.2	5.3	30.5	2.10	79.5	2.2E+06	0.020	0.014
		140	1112	94.8	25.1	327	327	46590	103.9	5.3	30.5	2.10	79.5	2.2E+06	0.020	0.014
		141	1120	94.7	25.1	328	328	46918	104.6	5.3	30.5	2.10	79.5	2.2E+06	0.020	0.014
		142	1128	94.6	25.1	328	328	47245	105.4	5.4	30.5	2.10	79.5	2.2E+06	0.020	0.015
		143	1136	94.5	25.1	328	328	47573	106.1	5.4	30.5	2.10	79.5	2.2E+06	0.020	0.015
		144	1144	94.4	25.1	328	328	47901	106.8	5.4	30.5	2.10	79.5	2.2E+06	0.020	0.015
		145	1152	94.3	25.2	328	328	48229	107.6	5.5	30.5	2.10	79.5	2.3E+06	0.020	0.015
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		148	1176	94.1	25.2	328	328	49214	109.7	5.6	30.5	2.10	79.6	2.3E+06	0.020	0.016
		149	1184	94.0	25.2	329	329	49543	110.5	5.6	30.5	2.10	79.6	2.3E+06	0.020	0.016
		150	1192	93.9	25.3	329	329	49872	111.2	5.7	30.5	2.10	79.6	2.3E+06	0.020	0.016
		151	1200	93.8	25.3	329	329	50200	111.9	5.7	30.5	2.10	79.6	2.4E+06	0.020	0.016
		152	1208	93.7	25.3	329	329	50529	112.7	5.7	30.5	2.10	79.6	2.4E+06	0.020	0.017
		153	1216	93.6	25.3	329	329	50859	113.4	5.8	30.5	2.10	79.6	2.4E+06	0.020	0.017
		154	1224	93.5	25.3	329	329	51188	114.1	5.8	30.6	2.10	79.6	2.4E+06	0.020	0.017
		155	1232	93.4	25.4	329	329	51517	114.9	5.9	30.6	2.10	79.6	2.4E+06	0.020	0.017
		156	1240	93.4	25.4	330	330	51847	115.6	5.9	30.6	2.10	79.6	2.4E+06	0.020	0.017
		157	1248	93.3	25.4	330	330	52177	116.4	5.9	30.6	2.10	79.6	2.4E+06	0.020	0.018
		158	1256	93.2	25.4	330	330	52506	117.1	6.0	30.6	2.10	79.6	2.5E+06	0.020	0.018

Appendix E

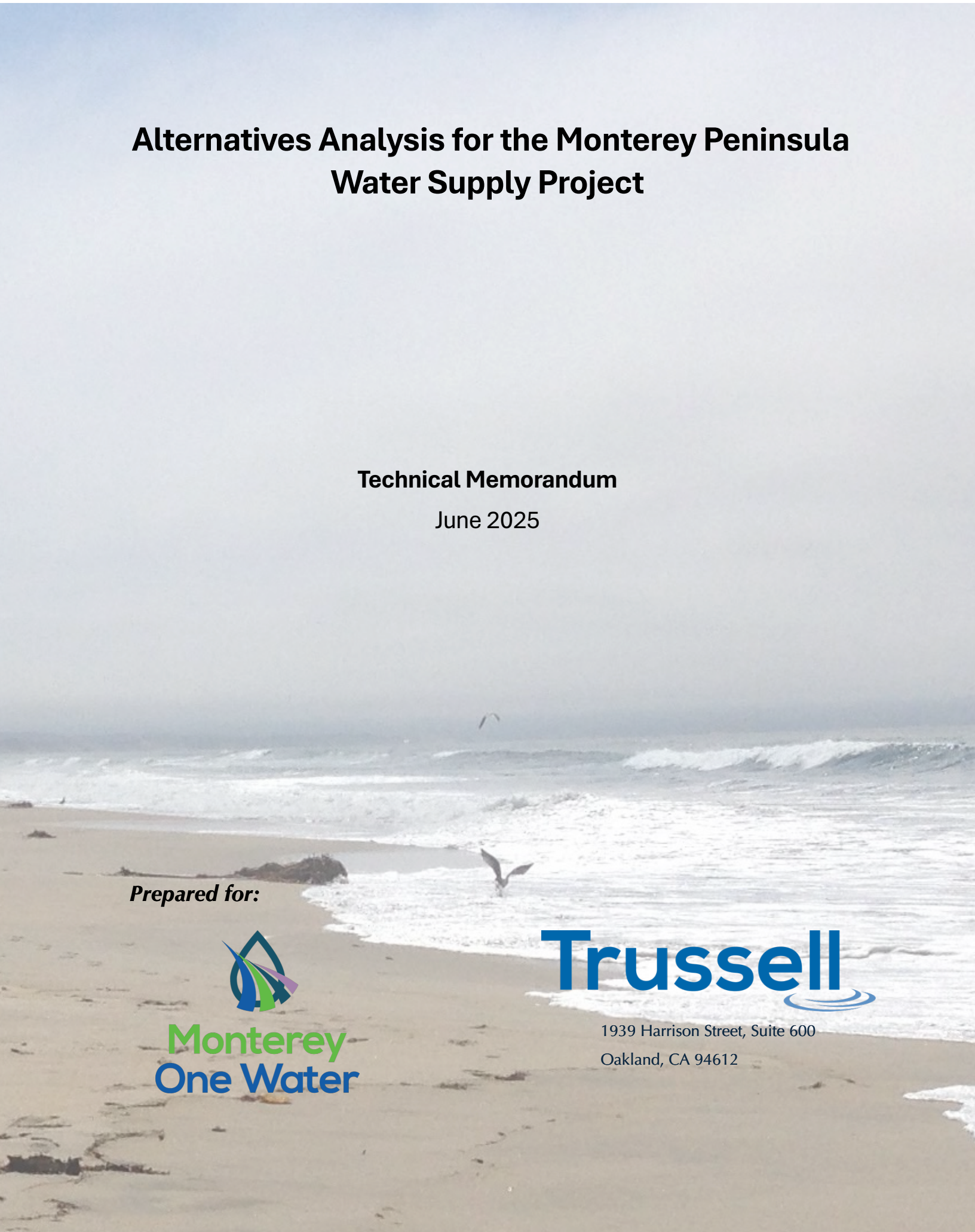
Technical Memorandum: Alternatives Analysis for the Monterey Peninsula Water Supply Project

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Alternatives Analysis for the Monterey Peninsula Water Supply Project

Technical Memorandum

June 2025



Prepared for:

Monterey One Water

Trussell

1939 Harrison Street, Suite 600

Oakland, CA 94612

Alternatives Analysis for the Monterey Peninsula Water Supply Project

Technical Memorandum

Pure Water Monterey
A Groundwater Replenishment Project

DRAFT: April 2025

FINAL: June 2025

Prepared By:

Trussell Technologies, Inc.

Brie Post, P.E.
Brandon Cruz
Michael Karish

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Background

Monterey One Water (M1W) submitted a Report of Waste Discharge (ROWD) to the Central Coast Regional Water Quality Control Board (RWQCB) in October 2024, seeking to amend its existing National Pollutant Discharge Elimination System (NPDES) permit. This amendment would authorize discharge of brine (MPWSP Brine) from California American Water Company's (Cal-Am's) proposed Monterey Peninsula Water Supply Project (MPWSP) seawater desalination facility through M1W's existing ocean outfall. Currently, M1W's NPDES permit authorizes discharges through M1W's ocean outfall, including secondary effluent from the Regional Treatment Plant (RTP), hauled saline waste (HSW) accepted at the RTP, and reverse osmosis concentrate (ROC) produced by the Pure Water Monterey (PWM) Advanced Water Purification Facility (AWPF). M1W is coordinating with(Cal-Am), on the amendment process.

To assess whether MPWSP Brine would comply with the California Ocean Plan, extensive modeling was conducted by Trussell Technologies and Larry Walker Associates (LWA) between January 2024 and August 2024. This modeling work built on an initial investigation (finalized in 2017) conducted as part of the California Public Utilities Commission's Environmental Impact Report/Environmental Impact Study (EIR/EIS) for the MPWSP. In the prior work, it was determined that outfall modifications, including angling the diffusers, would be required to mitigate the potential water quality impacts associated with the discharge of MPWSP Brine. A key update between the EIR/EIS and this current work was to incorporate the impact of the expanded AWPF from 5 mgd of product water up to 7.6 mgd. Initial analyses established that modifications to the existing outfall would still be required; however, identifying precise modifications posed significant complexity. Iterative water quality and hydrodynamic dilution modeling evaluated hundreds of discharge scenarios, ultimately identifying an outfall configuration that would meet the California Ocean Plan's applicable water quality objectives.

The ROWD submitted to the RWQCB in October 2024 proposed retrofitting the outfall by opening all 168 existing ports (there are currently 129 ports open) and adding another two ports. All 170 ports under this proposal would require new Tideflex Hydraulic Code (HC) 6.8 check valves to achieve higher ocean dilution. This configuration enabled a streamlined permitting approach which incorporated a single, conservative minimum probable initial dilution (Dm) that could apply to any MPWSP Brine discharge condition. However, hydrodynamic modeling identified the need for a pressure reducing structure (PRS) when the total discharge exceeded 25 mgd to maintain safe operating pressure levels.

Assuming the outfall retrofits described, the permitting approach proposed in the initial ROWD defined MPWSP Brine discharge rates between 3.35 and 8.66 million gallons per day (mgd). Within this flow range, the MPWSP Brine could commingle with the full range of existing and future RTP waste streams while complying with Ocean Plan numeric limits. Additionally, discharge scenarios not involving MPWSP Brine were demonstrated to be compliant under M1W's existing permitting framework for multiple Dm values (Order R3-

2024-0045), although new Dm values would be required due to the proposed outfall modifications.

The RWQCB found the initial ROWD submittal to be incomplete. The RWQCB requested further details on PRS case studies and preliminary design documentation. The PRS is new to the state of California and there are untested effects on dilution and marine life mortality. There were also concerns about pressure exceedances, the outfall pipe's structural integrity, and operability given the ocean currents and waves.

Responding to the RWQCB's comments, M1W evaluated alternative outfall designs and permitting approaches that would better align with operational and permitting objectives, as well as the previously identified outfall retrofit developed during the EIR/EIS evaluation. Cal-Am retained Dr. Philip Roberts, an expert in the field of ocean dilution modeling, to conduct extensive modeling and quantify the dilution achieved for each diffuser port arrangement. Assumptions, methodology, and results of Dr. Roberts' modeling are provided in Attachment A. This technical memorandum (TM) describes the potential alternative designs that were evaluated and the rationale for proposing the preferred alternative.

Operational and Permitting Objectives

Since receiving feedback from the RWQCB, M1W and Cal-Am revised operational and permitting objectives to identify a viable alternative for integrating MPWSP Brine discharge with existing operations of the outfall. The proposed alternative must achieve the following objectives:

- **Compliance at up to 80% Ocean Plan Objective**: Ensure discharge pollutant loading consistently remains at or below 80% of the Ocean Plan objectives, providing a conservative 20% safety margin between projected pollutant concentrations and regulatory thresholds.
- **Minimize Water Quality Variability**: The proposed alternative should minimize the frequency of changes to the discharge quality and flow.
- **Minimize Marine Life Mortality**: The proposed alternative should minimize marine life mortality. This is being evaluated and documented in a separate analysis from this TM.
- **Eliminate the Need for a PRS**: Propose a configuration maintaining diffuser head pressure below structural thresholds without requiring a PRS. Specifically, diffuser head must remain below 25 feet, and beach pressure head must not exceed 62 feet during maximum wet weather flows of 75.6 mgd (LWA, 2024). This is to ensure the proposed alternative can accommodate a 75.6 mgd peak wet weather flow without a PRS. Avoiding a PRS addresses regulatory and ecological concerns related to pressure management and structural integrity.

- **Maintain RTP Flows**: Preserve the RTP's existing permitted dry weather discharge capabilities, including up to 29.6 mgd of secondary effluent and up to 1.78 mgd of ROC flow, ensuring operational flexibility remains unaltered by the introduction of MPWSP Brine.
- **Independent Discharge of All Waste Streams**: Allow each waste stream (secondary effluent, ROC, HSW, MPWSP Brine) to discharge independently without operational interdependency or extensive coordination. Anticipated flow ranges of each waste stream are as follows[1]:
    - Secondary effluent: 0 to 29.6 mgd
    - ROC: 0 to 1.78 mgd
    - HSW: 0 to 0.05 mgd
    - MPWSP Brine: 0 to 8.66 mgd
- **Minimize Changes to NPDES Permit**: Strive for minimal modifications to the current NPDES permit structure (Order R3-2024-0045) to avoid unnecessary regulatory complexity and streamline the permitting process. This includes limiting the NPDES permit amendment to a single Dm value that would apply to all flow combinations involving MPWSP Brine.

These objectives guided the alternatives analysis, ensuring the chosen solution aligns with requirements for operational feasibility and regulatory compliance.

Alternatives

M1W conducted an iterative alternatives analysis to identify and refine feasible solutions that align with the operational and permitting objectives described previously. Several alternatives were evaluated for integrating MPWSP Brine discharge with existing RTP waste streams. This section summarizes each alternative and discusses its viability relative to the established objectives.

Alternative 1: Limit Flowrates and Remove PRS

Alternative 1 considered limiting discharge flow rates to maintain system pressures below the threshold requiring a PRS. With the HC6.8 check valve configuration proposed in the 2024 ROWD, the PRS would open to reduce pressure when the total discharge flow exceeded 25 mgd. Theoretically, flow equalization storage could reduce peak discharge

[1] M1W's NPDES permit Attachment F Section 2.1.4 Source Water and Effluent Flows states that the total discharge flow through Discharge Point 001 will not exceed the permitted flows of 29.6 MGD (Average Dry Weather Flow) and 75.6 MGD (Peak Wet Weather Flow).

flows below this 25 mgd threshold, eliminating the need for a PRS and enabling independent discharge.

However, implementing this strategy would require substantial storage capacity at the RTP. M1W must retain its ability to accept and discharge up to its full wet weather design flow of 75.6 mgd. While wet weather events may be intermittent, their occurrence necessitates designing infrastructure that can reliably accommodate them. To maintain existing RTP discharge capacity, equalization storage would need to handle up to 50.6 mgd[2] of excess flow for the duration of the wet weather event.

Moreover, the flow equalization strategy would need to account for future plant expansions and associated increases in wastewater volume due to population growth. Any storage strategy would also need to incorporate a factor of safety to ensure wastewater can always be discharged—either to the ocean or temporarily stored—when the outfall is operating at capacity. This safety factor is critical since there are no other destinations for discharge other than the ocean or an equalization tank.

Historical discharge data (2023) demonstrated frequent and prolonged periods where daily maximum flows exceeded 25 mgd, especially from January through March (Figure 1). Flows above 25 mgd are indicated in the yellow region of the figure. These periods demonstrate that flowrates above 25 mgd are possible under current operations. Daily average flowrates exceeded the 25 mgd threshold between January 12 and 14, 2023, as shown in Figure 1. This means that, for at least most of that 3-day period, a portion of the discharge flow would have to be stored, requiring very large storage facilities. Due to the large storage volume needed, Alternative 1 was deemed infeasible.

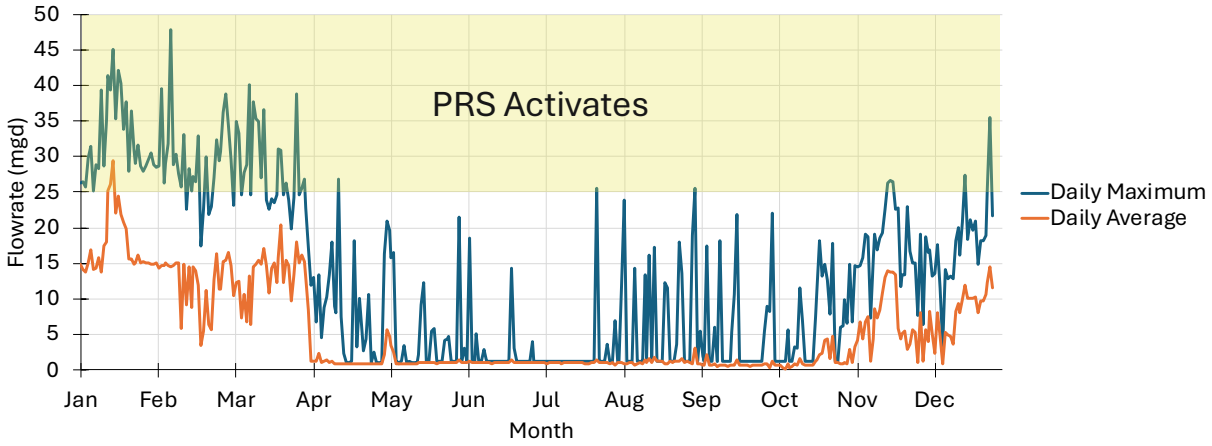


Figure 1: Daily instantaneous maximum and average discharge flows from 2023 with highlighted periods when the 25 mgd head loss limit was exceeded and the PRS would be activated

[2] 75.6 mgd wet weather design flow minus 25 mgd allowable total discharge.

Alternative 2: Mass-Based Limits

Alternative 2 considered the use of mass-based effluent limits instead of the current concentration-based framework. Generally, mass-based effluent limits refer to restrictions on the total amount (mass) of a specific pollutant that can be discharged from a point source into a water body over a specified period of time. Mass-based limits are designed to control the overall load of pollutants entering the water, regardless of the volume of water being discharged, and are designed to ensure that water quality standards are met and maintained.

Mass-based limits are different than concentration-based limits, which *do* consider the amount of water being discharged along with the pollutant mass. The Ocean Plan defines *both* mass-based and concentration-based limits, as impacts to the environment considering both metrics of water quality were determined to be important for overall environmental health protection.

This alternative to consider only the mass-based effluent limits of the Ocean Plan was briefly evaluated but it was determined that this approach should not be pursued further. A primary reason was because extensive revisions to M1W's existing NPDES permit structure would be required to implement the approach. Nearly all aspects of the permit would need to be modified—e.g., all effluent limitations, the discharge monitoring and reporting approach, California Integrated Water Quality System reporting, etc.—which would likely increase the permit timeline significantly and require extensive communication regarding approach and proposed permit modifications with the RWQCB. Other reasons why this approach was not pursued include:

- Toxicity assessments are fundamentally linked to pollutant concentrations rather than total mass discharged.
- Regulating only mass-based limits would diverge significantly from established RWQCB regulatory precedent and therefore may be difficult (or possibly infeasible) for the RWQCB to approve.

Thus, Alternative 2 was determined to be unsuitable for further consideration at this time.

Alternative 3: Outfall Diffuser Port Modifications

Alternative 3 evaluated several configurations involving modified outfall diffuser ports with various types and quantities of check valves. Hundreds of flow scenarios were modeled by Dr. Roberts (Attachment A) to quantify the minimum initial dilution achieved in the ocean. Trussell considered the ocean dilution results for each arrangement and evaluated Ocean Plan compliance to identify an outfall port configuration meeting all operational and permitting objectives.

The following terms are used throughout this section to describe the Ocean Plan compliance evaluation.

- **Discharge scenario** is a distinct combination of secondary effluent, ROC, HSW, and MPWSP Brine.
- **Modeled Dm** is the modeled minimum ocean dilution value for a discharge scenario that accounts for changes in discharge velocities, flow rates, and fluid densities, as determined by Dr. Roberts.
- **Required Dm** is the minimum initial ocean dilution needed to dilute the in-pipe maximum concentration of each constituent to achieve compliance (at or below 80% of the Ocean Plan objective).
- **Minimum Modeled Dm** is the lowest modeled Dm result considering the full range of possible discharge scenarios.

A two-step compliance evaluation was used to determine the suitability of the alternative diffuser port configurations, as described in the following subsections.

Discharge Scenario Compliance

Under this approach, Modeled Dm values were quantified for each unique discharge scenario. Each discharge scenario represented a distinct combination of secondary effluent, ROC, HSW, and MPWSP Brine flow rates. Modeled Dm values accounted for changes in discharge velocities, flow rates, and fluid densities, providing an accurate representation of dilution for each discharge scenario. A configuration was considered compliant if the *Modeled Dm* exceeded the *Required Dm* to achieve compliance at 80% of the Ocean Plan objective for each potential discharge flow scenario. Consistent with the October 2024 ROWD, this analysis identified ammonia as the constituent with the highest dilution requirement such that, if sufficient dilution is achieved for compliance with ammonia, all other pollutants would be compliant.

A sensitivity analysis indicated that the Minimum Modeled Dm value would occur in the secondary effluent flow range from 0 to 10 mgd. Therefore, while this truncated secondary effluent flow range was used to determine the minimum Dm value, it is also expected to be the lowest dilution achieved considering all potential discharge flow combinations (i.e., up to the dry weather maximum daily average flow of 29.6 mgd).

If the port configuration was shown to be compliant for all flow conditions using this Discharge Scenario Compliance approach, further analysis was conducted as described in the following section. If any of the flow conditions were not compliant, the port configuration was determined to be infeasible, and further analysis was not conducted.

Single Conservative Dm Compliance

A key objective of this evaluation was to minimize changes to M1W's existing NPDES permit. Therefore, it was recognized that assigning scenario-specific dilution values within the NPDES permit (i.e., hundreds of Modeled Dm values to cover all flow scenarios) was not desirable nor feasible. To limit changes to the NPDES permit, compliance was further evaluated using a *single*, conservative Dm value that would be applicable to all scenarios

involving MPWSP Brine discharge. Under this approach, the *Minimum Modeled Dm value* was identified considering all combinations of secondary effluent (with the flow range below 10 mgd), ROC, HSW[3], and MPWSP Brine flow. This Minimum Modeled Dm value was then compared to all potential *Required Dm* values considering any flow combination. Although some flow combinations achieved higher dilution compared to the identified Minimum Modeled Dm value, only the Minimum Modeled Dm was applied to evaluate compliance. This would ensure that the Minimum Modeled Dm proposed for the amended NPDES permit would be sufficient for Ocean Plan compliance for all flow scenarios.

By comparing the Minimum Modeled Dm with the maximum Required Dm, it was determined that the MPWSP Brine flow rate would need to be restricted to a specific flow range to achieve the operational and permitting objectives defined above. Within this MPWSP Brine flow range, the Minimum Modeled Dm value was identified. Compliance was evaluated to confirm that, assuming the single Minimum Modeled Dm, the discharge remained at or below 80% of the Ocean Plan objectives across the permitted range of waste stream flows (i.e., ROC from 0 to 1.78 mgd, HSW at 0.05 mgd, and secondary effluent from 0 to 29.6 mgd).

Summary of Results for Each Diffuser Port Configuration

Table 1 presents a summary of the outfall configurations evaluated. Each configuration varied by check valve model (Tideflex HC series), installation angle, and number of open diffuser ports.

[3] HSW (0.05 mgd) was not found to significantly impact ocean dilution and was therefore excluded when conducting the hydrodynamic modeling to determine the Dm values (Trussell, 2024).

Table 1: Evaluated Check Valve Modifications

Tideflex HC	Valve Angle	Number of Open Ports	Compliance w/ Paired Conditions	Compliance w/ Single Dm	Min MPWSP Brine Flow (mgd)	Needs Pressure Reducing Structure?
HC6.8	60	170	Yes	Yes	~3.35	Yes
HC61[a]	60	129	Yes	No	N/A	No
HC61[a]	25	129	Yes	No	N/A	No
HC61[a]	20	129	Yes	No	N/A	No
HC61[a]	Variable	129 - 170	Yes	No	N/A	No
HC24	25	170	Yes	Yes	~5.75	No
HC24	60	170	Yes	Yes	~5.75	No
HC24	60	158	Yes	Yes	~5.75	No
HC24	25	158	Yes	Yes	~5.75	No
HC24	60	158	Yes	Yes	~5.75	No
HC24	60	129	Yes	Yes	~5.75	Yes
HC24	20	129	Yes	Yes	~5.75	Yes

[a] HC 61 has the same effective diameter as the current check valve

In Table 1, Tideflex HC denotes the type of check valve for installation at each outfall port. The valve angle refers to the angle of the valve relative to the ocean floor. An angle of 0° is parallel with the ocean floor while 90° is straight up towards the water's surface. The number of open ports refers to the number of ports that are open on the outfall pipe, where each open port is fitted with a check valve. For any ports that are not open, they are assumed to be closed and fully block flow (e.g., an outfall with 129 open ports would have 39 closed ports).

The following subsections provide a summary of the compliance results for each diffuser port configuration: HC6.8, HC61, and HC24.

HC6.8—October 2024 ROWD Configuration

Single Conservative Dm Compliance was successfully demonstrated for the HC6.8 check valve configuration described in the October 2024 ROWD (i.e., with 170 open ports and a 60° valve angle). As previously described, using the HC6.8 check valve requires a PRS to manage system pressures during high-flow discharge events. Although this alternative will not be pursued, it is included in this TM as a point of reference.

To illustrate the compliance evaluation results, Figure 2 was developed to compare Modeled Dm values (data points) against estimated Required Dilution results (solid lines) across varying MPWSP Brine flow rates. Figure 2 was constructed using the following conservative assumptions:

- **Conservative Dilution Achieved**: Each plotted point represents the lowest Modeled Dm result for a given MPWSP Brine and ROC flow combination,

considering all secondary effluent flows from 0 to 29.6 mgd. This represents a conservative estimate of dilution achieved by the outfall configuration.

- **Conservative Dilution Required.** Each solid line represents the maximum Required Dm for a given MPWSP Brine and ROC flow combination across the complete secondary effluent flow range (0–29.6 mgd). This ensures the evaluation considers the worst-case flow scenario.
- **Single Dm Flow Range.** The lowest Modeled Dm within a specific **MPWSP Brine** flow range, i.e., the Minimum Modeled Dm, must meet or exceed the maximum Required Dm for all conditions within that range. This approach both achieves Ocean Plan compliance and identifies a single Dm value for the amended NPDES permit.

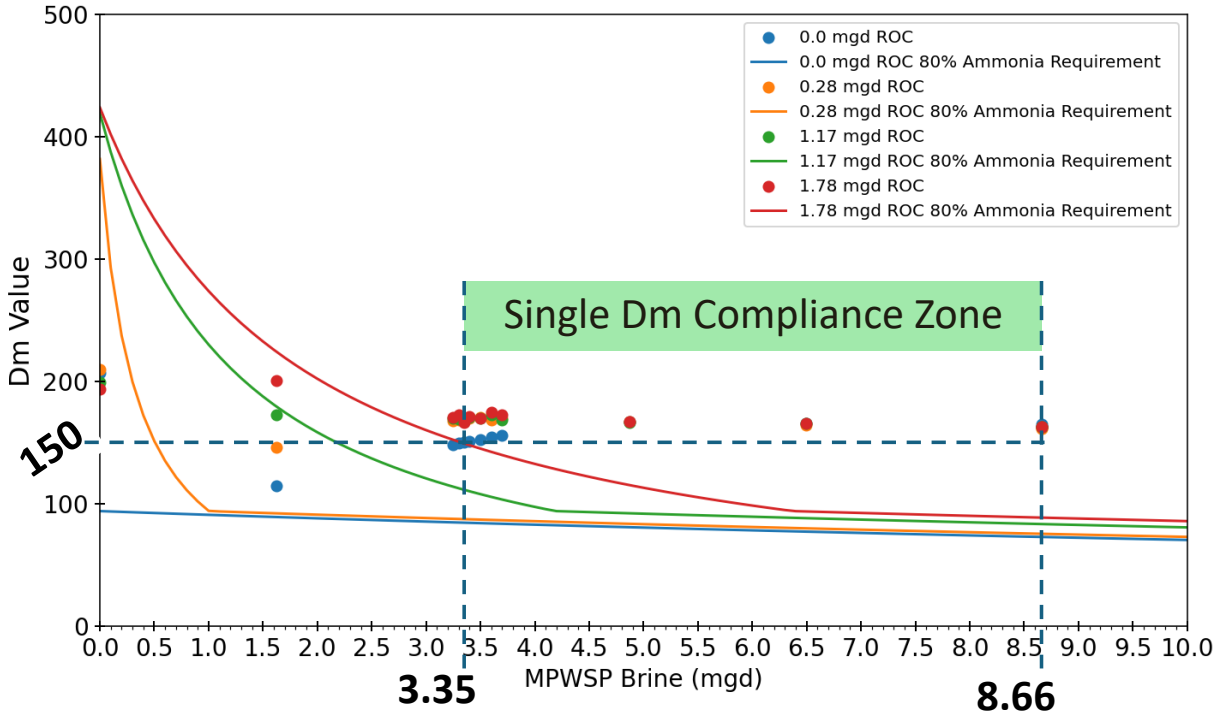


Figure 2: Modeled Dm values (point series), maximum Required Dm values (line series), and the Single Conservative Dm Compliance zone for HC6.8 at 60º and 170 open ports

The Single Conservative Dm Compliance Zone shown in Figure 2 delineates the MPWSP Brine flow that is permittable with a single Dm value. Within this flow range, the Minimum Modeled Dm (Dm = 150) consistently exceeds the maximum Required Dm. Thus, a single Dm of 150 is sufficient for compliance across the following flows:

- Secondary Effluent: 0 to 29.6 mgd
- ROC: 0 to 1.78 mgd
- MPWSP Brine: 3.35 to 8.66 mgd (maximum modeled)

Outside of the Single Conservative Dm Compliance zone shown in Figure 2, the lowest Dm of 114 provides insufficient dilution for compliance at lower MPWSP Brine flows (i.e., the required dilution shown by the solid lines exceeds 150). By limiting the MWPSP Brine to flows between 3.35 and 8.66 mgd, compliance can be maintained with a single Dm value.

While the HC6.8 configuration can be permitted using the single Dm approach within the specified MPWSP Brine flow range, it would require a PRS, which conflicts with stated operational objectives. As a result, this alternative should not be pursued because of the need for a PRS.

HC61

Outfall configurations using HC61 check valves, which have the same effective diameter as the existing valves, were evaluated across valve angles ranging from 20° to 60° and port openings between 129 and 170 (see Dr. Roberts TM, Attachment A, for further details). These configurations demonstrated compliance under the Discharge Scenario Compliance approach. However, compliance was not achieved for the Single Conservative Dm Compliance approach. Figure 3 illustrates these findings.

Across the modeled MPWSP Brine flow rates, there is no MPWSP Brine flow range that allows the Required Dm (solid orange line series) to be below the lowest Modeled Dm by HC61 valves (orange and blue point series).

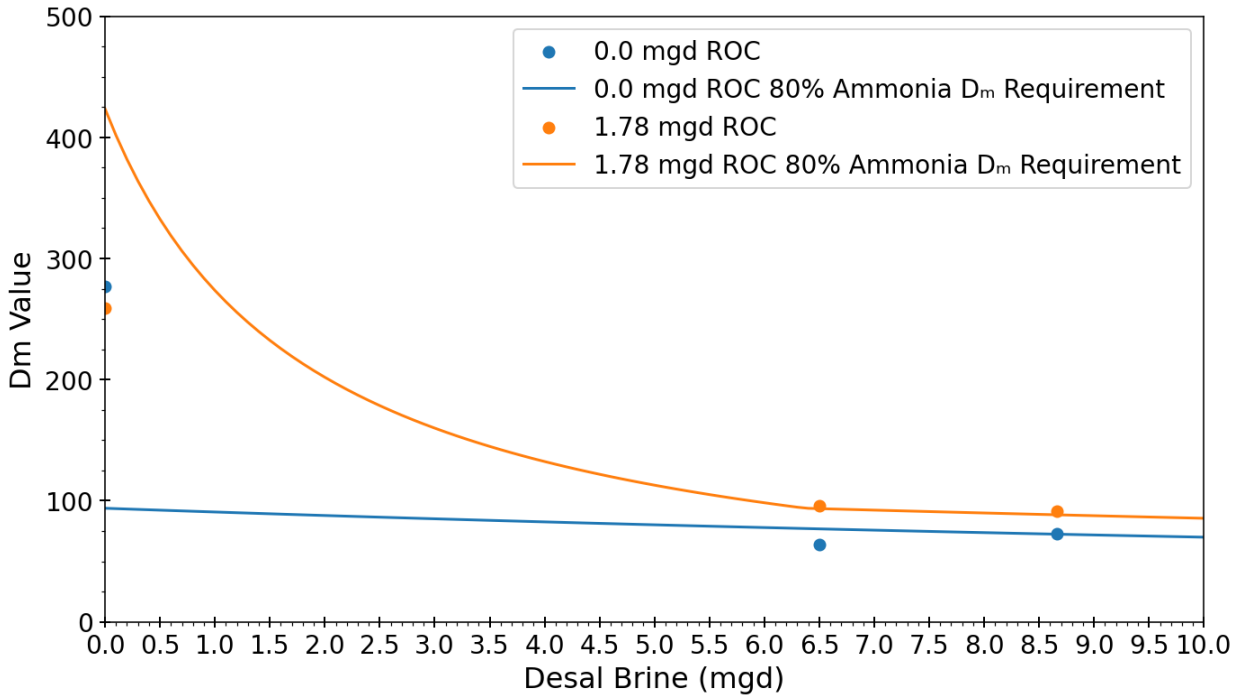


Figure 3: Modeled Dm values (point series) and maximum Required Dm values (line series) for HC61 at 25º and 129 open ports

Although each discharge scenario individually meets numeric Ocean Plan objectives using the Discharge Scenario Compliance approach, consolidating all scenarios into a single dilution value is not feasible. HC61 valves, due to their relatively large effective diameter

compared to HC6.8, provided lower achievable dilutions but do offer operational advantages. Specifically, their lower head losses eliminate the need for a PRS, satisfying the corresponding operational objective. However, this advantage is insufficient to overcome the dilution limitations under the Single Conservative Dm approach.

In summary, **HC61 valve configurations provide acceptable dilution when considering scenario-specific compliance but fail to meet the permitting objective of implementing a single Dm to cover all MPWSP Brine flow scenarios.**

HC24

Configurations involving HC24 check valves—characterized by an effective diameter approximately 80% of the current valves—were evaluated across valve angles ranging from 20° to 60° and port openings between 129 and 170. Dilution modeling demonstrated that HC24 valve arrangements could successfully achieve compliance considering both Discharge Scenario Compliance and Single Conservative Dm Compliance criteria for select port configurations.

Figure 4 illustrates results from the Single Conservative Dm Compliance evaluation for the port configuration that offered the optimal dilution for this project: HC24 valves installed at a 60° angle with 158 open ports. The lowest conservative dilution achieved by this configuration (101 at 8.66 mgd MPWSP Brine flow) consistently exceeded the highest conservative dilution required for MPWSP Brine flow rates down to 5.8[4] mgd. Thus, the compliance range defined by this single, conservative Dm value (101) covers the following flow conditions:

- Secondary effluent: 0 to 29.6 mgd
- ROC: 0 to 1.78 mgd
- MPWSP Brine: 5.8 to 8.66 mgd

[4] While 5.75 mgd was the minimum MPWSP Brine flow rate identified, it was rounded to 5.8 mgd to provide a buffer between the minimum required flow rate and what would be operationally feasible.

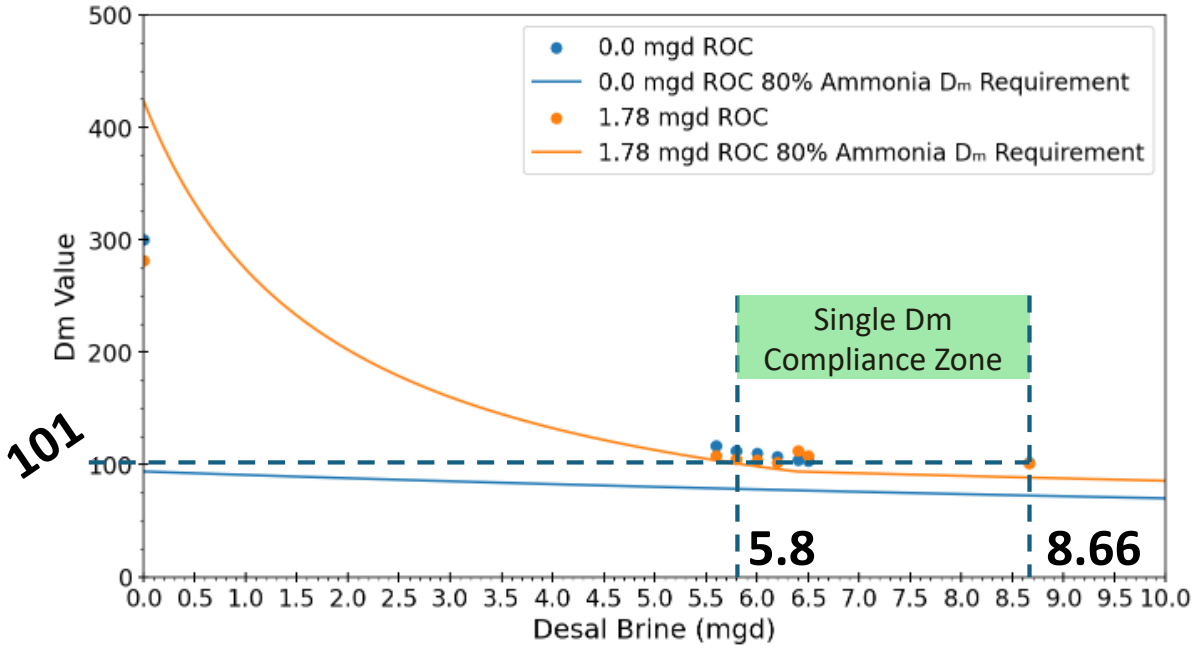


Figure 4: Modeled Dm values (point series), maximum Required Dm values (line series), and the Single Conservative Dm Compliance zone for HC24 at 60° and 158 open ports

Other HC24 configurations demonstrated varying degrees of compliance:

- **Valve Angles 25° to 60°**: Configurations within this angle range exhibited similar Single Conservative Dm Compliance zones regarding MPWSP Brine flow rates. However, a 60° valve angle was identified as optimal due to reduced marine life entrainment (which is being evaluated separately from this TM).
- **Configurations with Fewer Ports (129 open ports)**: These configurations could achieve Single Conservative Dm Compliance. However, head loss limitations would reduce the maximum discharge capacity of the outfall. Specifically, peak wet-weather flow capacity would be limited to approximately 62 mgd, which is insufficient compared to the required 75.6 mgd peak.
- **Configurations with More Ports (170 open ports)**: These configurations demonstrated single Dm compliance flow ranges similar to the 158-port scenario. However, additional port openings would cause greater modification to M1W's outfall and result in higher costs without a significant improvement in dilution or compliance ranges.

Thus, among evaluated HC24 valve configurations, the installation angle of 60° and 158 open ports emerged as the superior choice. This configuration satisfies single Dm permitting requirements without necessitating a PRS, minimizes marine life entrainment, minimizes outfall modifications and associated construction, and optimizes both performance and construction cost.

Preferred Alternative and Operational Considerations

Tideflex HC24 check valves, installed at a 60° angle with 158 open ports, emerged as the preferred alternative because this configuration best meets the established operational and permitting objectives. Namely, this option:

- Eliminates the PRS requirement because it maintains acceptable outfall pressures under wet weather flows of up to 75.6 mgd.
- Complies with a Single Conservative Dm and remains protective across the defined range of MPWSP Brine flows, 5.8 to 8.66 mgd.
- Reduces marine life entrainment compared to other check valve angles.
- Minimizes port modifications by retrofitting 158 ports (as opposed to all 168).

Although modeling confirms continuous compliance with the Ocean Plan (Section 4 of the ROWD Addendum) between 5.8 and 8.66 mgd of MPWSP Brine, Cal-Am may not always sustain a steady MPWSP Brine discharge at or above 5.8 mgd. Cal-Am increased their MPWSP Brine flow equalization storage facilities to allow 24-hour sustained required discharge flows (Section 5, ROWD Addendum).

Summary

Numerous alternatives for outfall retrofits and permitting approaches were evaluated since M1W submitted the October 2024 ROWD and are documented in this TM. These alternatives included limiting discharge with flow equalization storage facilities, transitioning to mass-based limits, and utilizing a new outfall configuration. HC24 check valves on 158 open ports at 60º was selected as the preferred alternative because it meets all the permitting objectives described in this TM.

References

Larry Walker Associates. (LWA), 2024. “Near-field Mixing Zone and Dilution Analysis for M1W Discharge Commingled with MPWSP Desal Brine.” Communication, Prepared for Bob Holden, M1W. Sep.

Trussell Technologies, Inc. (Trussell), 2024. “Ocean Plan Compliance Assessment for the Pure Water Monterey Groundwater Replenishment Project Expansion.” Communication, Prepared for Bob Holden, M1W. Apr.

Appendix F

Technical Memorandum: Near-Field Mixing Zone and Dilution Analysis for M1W Discharge Commingled with MPWSP Desal Brine

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Technical Memorandum

Mitchell J. Mysliwiec, Ph.D.
1480 Drew Avenue, Suite 100
Davis, CA 95618
530.753.6400
530.753.7030 fax
MitchM@lwa.com

DATE: May 2025

TO: Alison Imamura, Monterey One Water
Bob Holden, Monterey One Water
Tim O'Halloran, California American Water Company

CC: Denise Conners, Larry Walker Associates
Brie Post, Trussell Technologies

SUBJECT: Near-field Mixing Zone and Dilution Analysis for M1W Discharge Commingled with MPWSP Desal Brine

EXECUTIVE SUMMARY

Monterey One Water (M1W) currently discharges treated secondary effluent and reverse osmosis (RO) concentrate (ROC) through an outfall diffuser into Monterey Bay (Bay). As the RO system treats the secondary effluent in an Advanced Water Purification Facility (AWPF), the ROC is buoyant when discharged in the Bay. The discharges are regulated via NPDES Permit CA0048551 Order No. R3-2024-0045 (Permit) issued by the Central Coast Regional Water Quality Control Board. The Permit acknowledges the available dilution in the Bay and previous dilution and water quality studies used to determine four "stair-step" levels of minimum dilution (D_m) reflective of the discharged effluent character determine by the ratio of ROC to total effluent (ROC plus secondary effluent). The appropriate D_m is used to calculate effluent limitations reflective of the ROC to total effluent ratio to ensure the water quality objectives are met in the Bay after initial mixing is complete.

This memo analyzes how dilution may change if the M1W diffuser is modified to facilitate the additional discharge of desalination brine from the California American Water Company's (Cal-Am) Monterey Peninsula Water Supply Project (MPWSP). The desalination system will treat ocean water through an RO process producing a negatively buoyant brine. Commingling the MPWSP brine with the M1W discharge increases the total effluent buoyancy eventually becoming buoyant with sufficiently high M1W flowrates. This memo is Section 3 of a Report of

Waste Discharge (ROWD) Addendum to support permitting of commingled MPWSP Brine with M1W effluent. An Alternatives Analysis (Section 2 of the ROWD Addendum) determined the M1W diffuser would need modification from 129 open ports with horizontal Tideflex valves, to 158 open ports with Tideflex valves oriented upward 60 degrees. Additionally, the newly specified valves will open to approximately 80% the diameter of the current valves. This memo analyzes the dilution from the discharge of commingled effluent through the modified diffuser and assesses the internal pressures of the more restrictive Tideflex valves. A Water Quality Analysis (Section 4 of the ROWD Addendum) uses these dilutions results with water quality data to determine the appropriate D_m for the discharges with and without brine. The proposed D_m values are summarized in Table ES-1 where there are three stair-step levels when MPWSP brine is off (not being discharged) and one level when brine is being discharged. For a complete discussion of the D_m selection, refer to Section 4. This memo also analyzes the dilution for the transient periods where MPWSP Brine is switched on or is switched off. Section 5 of the ROWD Addendum considers the transient dilutions with the associated water quality to assess compliance.

Table ES-1. Summary of ROWD Addendum Proposed D_m.

Ratio of ROC to Total Discharge[a]	MPWSP Brine (mgd)	Proposed D_m
> 0.691	Off	464
0.285 - 0.690	Off	348
0 – 0.284	Off	194
Any	5.80 – 8.66[b]	101

[a] The current NPDES Permit limits ROC flowrate to a maximum of 1.78 mgd, and a secondary effluent average dry weather flowrate of 29.6 mgd.

[b] MPWSP discharges to be maintained for a minimum 24-hour period.

OVERVIEW

Monterey One Water (M1W) and the Monterey Peninsula Water Management District implement the Pure Water Monterey Groundwater Replenishment Project (PWM Project). The PWM Project involves treating secondary effluent from M1W's Regional Treatment Plant (RTP) through an Advanced Water Purification Facility (AWPF) and then injecting this highly purified recycled water into the Seaside Groundwater Basin. The AWPF produces a reverse osmosis (RO) concentrate (ROC) that is discharged with excess RTP secondary effluent through the outfall diffuser into Monterey Bay (Bay). The Central Coast Regional Water Quality Control Board (Regional Water Board) adopted NPDES Permit CA0048551 Order No. R3-2024-0045 (Permit) which includes an AWPF capacity to produce up to 7.6 mgd of purified water, increasing the ROC discharge to a maximum of 1.78 mgd. These effluent streams are buoyant in comparison to the ambient ocean.

The California Public Utilities Commission approved California American Water Company's (Cal-Am) proposed Monterey Peninsula Water Supply Project (MPWSP), which includes a desalination facility and associated infrastructure. As part of the MPWSP, sub-surface slant wells would withdraw ocean water from below the seafloor. This source water would be conveyed to

a desalination plant for RO treatment to create a potable water source. The concentrated brine that will be produced following RO treatment would be commingled with M1W's current waste streams and discharged through the M1W outfall. Prior to discharge of brine, a NPDES permit amendment will be necessary to implement Ocean Plan provisions for desalination facilities, approve new dilution ratios and Instream Waste Concentrations (IWC), and revise the Monitoring and Reporting Program (MRP).

A Report of Waste Discharge (ROWD) was submitted to the Regional Water Board in October 2024 describing the plan to incorporate MPWSP brine into the M1W discharge and demonstration of water quality protection. The ROWD included proposed diffuser modifications necessary to provide sufficient dilution necessary to achieve water quality objectives after initial mixing of the commingled M1W and MPWSP discharges (LWA 2024)[1]. Diffuser modifications were constrained by the size of the planned MPWSP storage ponds which required a discharge of a wide range of brine flowrates. The system required diffuser valves with relatively narrow openings to provide the necessary dilution to achieve water quality objectives. However, these narrow ports would result in a large backpressure within the diffuser. To protect the diffuser against high internal pressure at peak flows, a physical pressure relief structure (PRS) was designed to open at discharge flowrates over approximately 25 mgd. At these elevated flowrates the commingled discharge would be buoyant with sufficient dilution to protect beneficial uses of the ocean. The RWQCB deemed the October 2024 ROWD incomplete partially based on the need for additional information on the proposed diffuser design.

In response to the incomplete ROWD determination, an alternatives analysis[2] was performed to investigate how modifying the system constraints might remove the need for a PRS on the diffuser and still provide sufficient dilution to protect beneficial uses. As part of the alternatives analysis, an independent dilution modeling analysis[3] was performed (Roberts 2025). The preferred alternative from the analysis included increasing brine storage volume at the desalination facility to provide a minimum brine flowrate of 5.80 mgd over a 24-hour period. Modifying these constraints would allow diffuser valves with effective opening smaller than currently installed on the M1W diffuser, but large enough to operate within diffuser pressure limitations. It was found that narrowing the range of allowable brine flowrates removed the need for a PRS while maintaining the dilution necessary to achieve water quality objectives after near-field mixing.

This memo provides information and analysis to support consideration of dilution credits for discharges of commingled RTP secondary effluent, AWPF ROC, and MPWSP brine through a modified M1W outfall under different oceanic conditions. Previous M1W permits included

[1] Larry Walker Associates (2024), Near-field Mixing Zone and Dilution Analysis for M1W Discharge Commingled with MPWSP Desal Brine, Technical Memorandum to Alison Imamura and Bob Holden at Monterey One Water, and Tim O'Halloran at California American Water Company, September 2024

[2] Trussel (2025), Alternatives Analysis for the Monterey Peninsula Water Supply Project, Technical Memorandum to Monterey One Water, May 2025

[3] Roberts, Philip J. W. (2025), Diffuser Design for Commingled Discharge into Monterey Bay, Technical Memorandum, May 2025

discharge of hauled saline waste. Due to increased disposal fees and acceptability requirements, M1W has not received hauled saline waste for discharge since March 2023. Instead, hauled saline waste that was approved after screening for M1W local limits and PFAS, was directed to Bed 31 for evaporative disposal. Therefore, hauled saline waste is not explicitly considered in the following. The current Permit is based, in part, on an updated mixing zone analysis[4] (LWA 2023) to include the AWPF production of 7.6 mgd with maximum ROC discharge of 1.78 mgd, and no discharge of hauled saline waste.

This memo updates the mixing zone analyses from 2023, and 2024 to analyze the addition of MPWSP brine with the preferred alternative diffuser design. Relevant to this analysis, a dilution study[5] (Roberts 2016) was conducted as part of the CEQA analysis for the MPWSP, which considered various combinations of brine discharge with and without M1W secondary effluent and ROC. The study considered the current diffuser configuration of 129 horizontal ports and found for some commingling combinations there would not be sufficient dilution to meet all water quality objectives after initial mixing. Roberts 2016 noted several diffuser modifications to improve dilution, including: freshwater augmentation of the commingled discharge, increase the flow per port by storing MPWSP brine and pumping at high flowrates or through closing several ports, and discharge through upward inclined ports. While freshwater augmentation would be an effective means to increasing available dilution, it would not be practicable solution due to water availability constraints on the peninsula and is not considered in the current work. Increasing the flow per port was not found to have a significant effect on dilution because the duck-bill valves progressively open with higher flows counteracting the increase flow. But increasing the total flow by discharging a greater brine flowrate reduces the in-pipe concentrations of constituents of concern prior to discharge reducing the required dilution for water quality compliance. The minimum MPWSP brine flowrate necessary to balance available dilution in the ocean with in-pipe concentrations for water quality protect was determined as part of the 2025 alternatives analysis. Reconfiguration of the current diffuser was evaluated in the alternatives analysis, including various port angles which demonstrated the optimal angle of 60-degrees upward. Additionally, the Roberts 2016 dilution study included a hydraulic analysis of the diffuser to determine the flow distribution across the diffuser and discussed reconfiguration of the diffuser to maximize dilution of the commingled discharge. The modeling groundwork in each of Roberts 2016 and LWA 2024 have been incorporated into this work to model reconfiguration of the M1W diffuser and the available dilution of commingled desalination brine and M1W discharges.

This memo details the steps in assessing the commingling of MPWSP brine with M1W secondary effluent and ROC, including diffuser hydraulic modeling and reconfiguration, dilution modeling, critical minimum dilution, brine mixing zone size, and evaluation of transient flows. The models for the reconfigured diffuser were used in conjunction with a water quality analysis

[4] Larry Walker Associates (2023), Near-field Mixing Zone and Dilution Analysis for M1W and the NPDES Permit Reissuance, Technical Memorandum to Alison Imamura at Monterey One Water, and Brie Post at Trussell Technologies, September 7, 2023.

[5] Philip J.W. Roberts (2016), Modeling Brine Disposal into Monterey Bay, Final Report, Prepared for Environmental Science Associates, July 6, 2016.

(Trussell 2025)[6] to determine appropriate minimum dilutions (D_m) for discharges without MPWSP brine based the ratio of ROC to secondary effluent, and the D_m when MPWSP brine is discharged. Additionally, Trussell 2025 finds a minimum MPWSP brine flowrate of 5.80 mgd maintained over a 24-hour period would be necessary to ensure compliance with water quality objectives. The full description of D_m determination using these results coupled with monitoring data is presented in Trussell 2025. The results below are compared to those of Roberts 2025 in Appendix C. The dilutions calculated in this work corresponding to scenarios with brine are scaled down by a factor of 0.931 to match those of Roberts 2025. The scaling rectifies the results from both efforts so that consistent values are used in both the water quality analysis and the Marine Life Mortality Analysis[7]. The minimum brine flowrate is determined in Trussell 2025 to ensure water quality objectives are obtained after initial mixing for all ratios of ROC to secondary effluent at a critical with brine D_m of 101. The dilution model determined the maximum brine mixing zone would be 175 feet (53.3 m) when using the Hydraulic Code 24 valves. The change in dilution during the transient period after turning brine on (or off) at the RTP and until the brine reaches the diffuser ports (or until the brine is flushed from the outfall) were calculated to evaluate of the change in water quality during these periods and ensure both the magnitude of short duration objectives and the magnitude of the median concentration over the 6-month duration would not be exceeded. Analysis of transient conditions is presented in Section 5 of the ROWD addendum.

REGULATORY GUIDANCE

The California Ocean Plan[8] (Ocean Plan) contains water quality objectives that must be met after the initial dilution of discharge into the ocean. The Ocean Plan defines initial dilution[9] as the process resulting in the rapid and irreversible turbulent mixing of effluent with ocean water around the point of discharge. For water quality assessments and effluent limit derivation, the minimum probable initial dilution (D_m) is set to:

> …the lowest average initial dilution within any single month of the year. Dilution estimates shall be based on the observed waste flow characteristics, observed receiving water density structure (stratification), and the assumption that no currents, of sufficient strength to influence the initial dilution process, flow across the discharge structure.

Standard dilution models (such as CORMIX and Visual Plumes) are available to calculate dilution within positively buoyant plumes. Dilution modeling of dense plumes (negatively buoyant) is summarized in State Water Resources Control Board (State Water Board) guidance[10]

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[6] Trussell (2025) Updated Supplemental Ocean Plan Compliance TM, Section 4 of this ROWD

[7] Cal-Am and AMS are coordinating with RWQCB staff on the MLMR and it will be submitted at a later date

[8] State Water Resources Control Board (SWRCB 2019), Water Quality Control Plan Ocean Waters of California, Adopted August 7, 2018, Effective February 4, 2019.

[9] Expressed as parts seawater per part wastewater.

[10] Philip J.W. Roberts, Brine Diffusers and Shear Mortality, Final Report, prepared for Eastern Research Group, April 18, 2018

(Roberts 2018) where the Abessi and Roberts 2014 model is appropriate for linear multi-port diffusers. However, because not all discharges fit within the constraints of the standard models, alternative methods for calculating the initial dilution may be approved by Regional Water Quality Control Boards if found to be acceptable and appropriate. Where the standard models are not applicable, a monitoring study of the actual discharge or a bench scale physical model of the discharge is generally required.

For submarine discharges, such as the M1W outfall, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing and are well suited for standard dilution models (Visual Plumes for positively buoyant plumes and Abessi and Roberts for negatively buoyant plumes). Initial dilution of positively buoyant plumes is completed when the diluting effluent ceases to rise in the water column and first begins to spread horizontally or when the plume size increases to encompass the surface or bottom.

The Ocean Plan also includes implementation provisions for desalination facilities using seawater in Chapter III.M. The Ocean Plan requires mitigation for the operational lifetime of the facility, using the best available mitigation measures feasible to minimize intake and mortality of all forms of marine life (Ch. III.M.2.e.). This includes submitting a Marine Life Mortality Report that estimates the marine life mortality resulting from construction and operation of the facility. The reconfiguration of the M1W diffuser and the dilution analysis will inform the forthcoming Marine Life Mortality Report and mitigation analyses required by Chapter III.M.2.e.

In addition, the Ocean Plan imposes receiving water limitation for salinity (Ch. III.M.3). In particular:

> Discharges shall not exceed a daily maximum of 2.0 parts per thousand (ppt) above natural background salinity measured no further than 100 meters (328 feet) horizontally from each discharge point. There is no vertical limit to this zone.

(Ch. III.M.3.b.(1).) This limitation sets the upper limit for a brine mixing zone. The size of the near-field mixing zone will be determined by the dilution models, and the minimum of the modeled result or 100 meters will be used in assessing results.

Finally, the Ocean Plan requires the submission of a Monitoring and Reporting Plan to the Regional Water Board for approval (Ch. III.M.4.a.). The Monitoring and Reporting Plan required under Chapter III.M.4 must "include monitoring of effluent and receiving water characteristics and impacts to all forms of marine life." The Monitoring and Reporting Plan will be informed by the dilution analysis but will be developed separately from this work.

DIFFUSER RECONFIGURATION AND HYDRAULIC MODELING

Reconfiguration of the M1W diffuser would ensure discharge of commingled brine complies with Ocean Plan water quality objectives. With the addition of the brine from the MPWSP, the discharges may be denser than the ambient ocean water, resulting in a sinking plume. As the current diffuser is set along the ocean floor with horizontal ports, a dense discharge would receive little dilution in the time it falls to the ocean floor. Preliminary modeling revealed that modifications to the existing diffuser would ensure compliance with the water quality objectives

identified in the Ocean Plan. Additionally, the diffuser currently has a partially open slide gate at the end to allow sediment release but would allow dense discharges to be released directly on the ocean floor (the current buoyant discharge receives adequate dilution as discharge through the end gate rises through the water column). Diffuser modifications would address these concerns.

The existing M1W diffuser has 129 open ports with attached Tideflex Series 35 Hydraulic Code 61 "duck bill" check valves discharging horizontally.[11] Currently, there are 39 plugged ports. The benefit of the Tideflex valves is that, during periods of zero flow, they close to prevent intrusion of ocean water and organisms into the diffuser. Additionally, as the discharged flowrate increases, the valves open progressively wider, which produces a higher discharge velocity and greater dilution than would occur with a solid fixed size port. The current configuration provides exemplary dilution characteristics for the RTP secondary and AWPF ROC discharges.

To increase dilution of brine discharges, the horizontal Tideflex valves will be replaced with Tideflex valves that angle 60 degrees upward. The inclined ports shoot the dense brine up into the water column providing dilution as the momentum from the discharge is dissipated, and the plume receives additional dilution as it falls back to the ocean floor and collapses. Roberts 2018 notes the 60-degree angled ports provide the maximum dilution. A schematic of a 60-degree port added to the M1W diffuser is presented in Figure 1. Additionally, if the replacement valves are stiffer than the current valves, the effective opening area will be smaller and the discharge velocity higher for a given flowrate but will do so at a higher backpressure. The additional velocity results in a higher momentum discharge reaching higher into the water column that then has farther to fall back to the ocean floor, greatly increasing dilution.

[11] The Hydraulic Code is Tideflex terminology for the material stiffness and resistance to opening under pressure with larger numbers being more flexible and have a larger opening for a given flowrate than a lower Hydraulic Code valve.

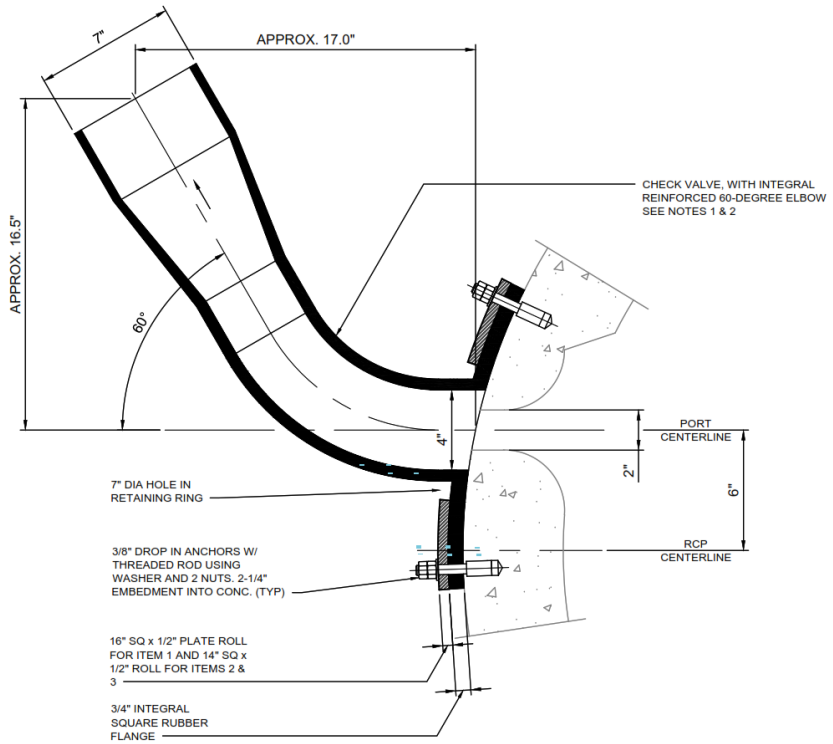


Figure 1. Schematic of 60-degree Tideflex Valve attached to M1W Diffuser

A hydraulic model of the diffuser was developed using the approach in Roberts 2016 to assess the impact of decreasing the effective port opening on the head in the diffuser. The model identifies the head surcharge above the ocean level that is needed to drive flows through the diffuser, the head in the diffuser, head loss through the diffuser, at the end gate, and the distribution of flow passing through each port. The M1W ocean and land outfall system has two head constraints:[12]a maximum pressure head of 62 feet at the beach junction structure to prevent overflows within the RTP, and the rating of the diffuser pipe sections limited to 25 feet of head (the outfall sections from the beach to the diffuser have a higher rating). The diffuser hydraulic model is detailed in Appendix A. The Alternatives Analysis (Trussell 2025) identified 158 operating diffuser ports fitted with HC 24 Tideflex valves angled upward at 60 degrees as the optimal design where a minimum of 5.80 mgd brine would be delivered over 24 hours.

DILUTION MODELING TOOLS

The near-field mixing zone model (Visual Plumes) was used to calculate dilution within the effluent plume when the discharge was buoyant. Visual Plumes is an USEPA approved mixing zone model for environmental impact assessment of regulatory mixing zones resulting from continuous discharges. The model assumes the discharge and ambient conditions are constant for long enough for the plume to reach steady state (a transition period occurs when discharge rates change). Outside transition periods, the Visual Plumes model accurately calculates the dilution. Within the transition period, the dilution varies based on ambient density and the

[12] Chris Peters, P.E., Brown and Caldwell, personal communication, Aug 5, 2024

density and flow rate of discharge. The most recent version of Visual Plumes, version 20, was applied in this study because it has been accepted by USEPA as accurate for buoyant plumes from continuous discharges.

Near-field mixing processes include buoyant jet mixing, including ambient current effects and merging of individual port's plumes, and boundary interactions, including density gradient effects. Receiving water depth and velocity, ambient stratification, outfall configuration, and discharge flow rate and density are the most important input parameters. For the M1W submerged, multi-port diffuser, the subprogram UM3 was used for all simulations. UM3 allows for arbitrary alignment of the diffuser structure within the ambient water body and for arbitrary orientation of the individual ports along the diffuser. In the Visual Plumes program, only the UM3 subprogram can simulate the ports inclined upward at 60-degrees. Visual Plumes by default reports the average dilution across the plume boundary consistent with the Ocean Plan definition of initial dilution.

Where the effluent density was greater than the ambient ocean, the semi-empirical equations from Roberts 2018 (developed by Abessi and Roberts 2014)[13] were used to evaluate near-field dilution and extent of the mixing zone. The relationships between dilution, S_n, and Froude number, F, and near-field extent, x_n, are presented in Figure 2. The input parameters for the models include:

s = port spacing (feet)

d = port diameter (feet)

$F = \frac{u}{\sqrt{g_0' d}}$ (Unitless)

u = discharge jet velocity (feet/sec)

g_0' = modified acceleration due to gravity = $g \frac{(\rho_0 - \rho_a)}{\rho_a}$

g = 32.2 feet/sec^2

ρ_a = ambient density

ρ_0 = effluent density

Note the equations are only valid for effluent density greater than the ambient density (otherwise F becomes imaginary)

[13] Abessi, O., and Roberts, P. J. W. (2014). "Multiport Diffusers for Dense Discharges." *J. Hydraul. Eng.*, 140(8) http://dx.doi.org/10.1061/(ASCE)HY.1943-7900.0000882

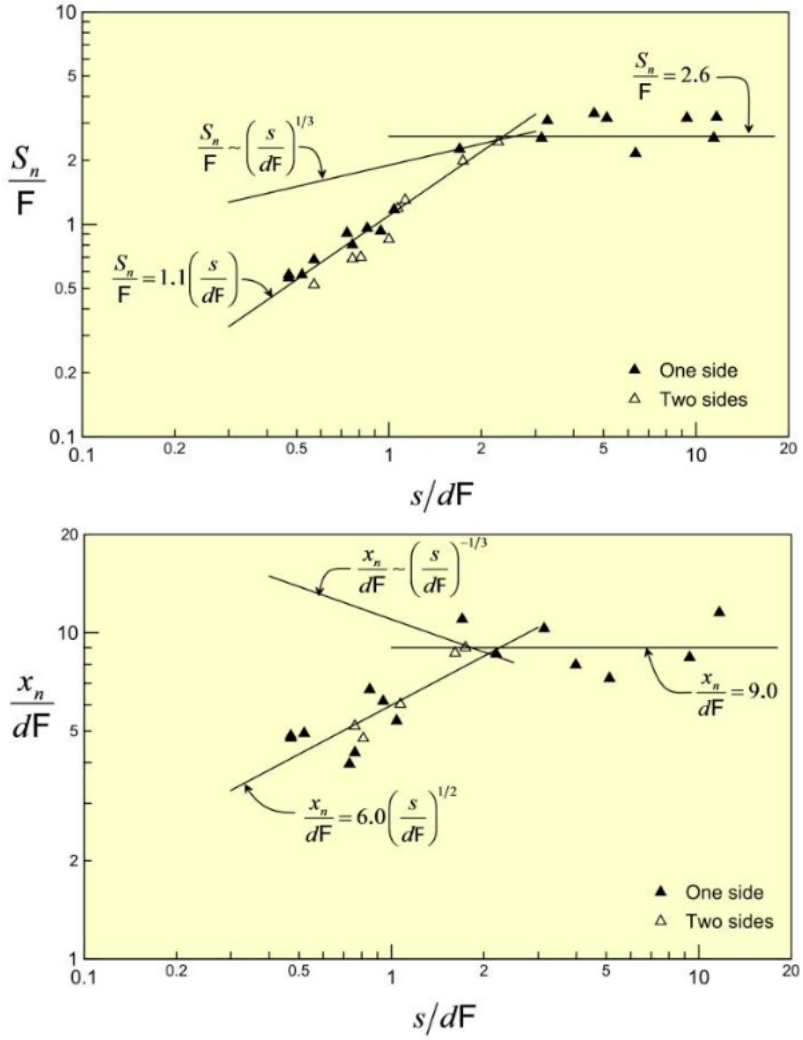


Figure 2. Properties of dense jets discharged from multiport linear diffusers (after Abessi and Roberts 2014)

As noted in Roberts 2018 the relationships in Figure 2 determine the centerline dilution, which for dense discharges is the dilution of the plume along the ocean floor. The centerline dilution is appropriate for evaluating the salinity increment due to the dense discharge per the definition of brine mixing zone in the Ocean Plan. A factor of 2.0 is used to translate the centerline dilution to the average dilution across the face of the dense plume (Roberts 2025). The average dilution over the plume face after initial mixing is the appropriate dilution for evaluating water quality objectives matching the assessments performed with Visual Plumes.

Model results delineate the effluent plume and define the edge of the mixing zone. Dilution models such as UM3 and Abessi and Roberts calculate dilution (S) as the ratio of initial concentration in the effluent to concentration at a given location in the plume, which is the inverse of 'fraction of effluent.' As applied in the Ocean Plan, the dilution credit (D_m) is defined as the parts of seawater per parts of effluent in the plume and is equal to S - 1.

MODEL SIMULATION CONDITIONS

The study area is the vicinity of M1W outfall in Monterey Bay. Water column sampling stations and the outfall are displayed in Figure 3. The ambient receiving water conditions and outfall diffuser are described in this section, along with effluent flow rate and density. Each of these parameters may affect mixing characteristics of the effluent plume.

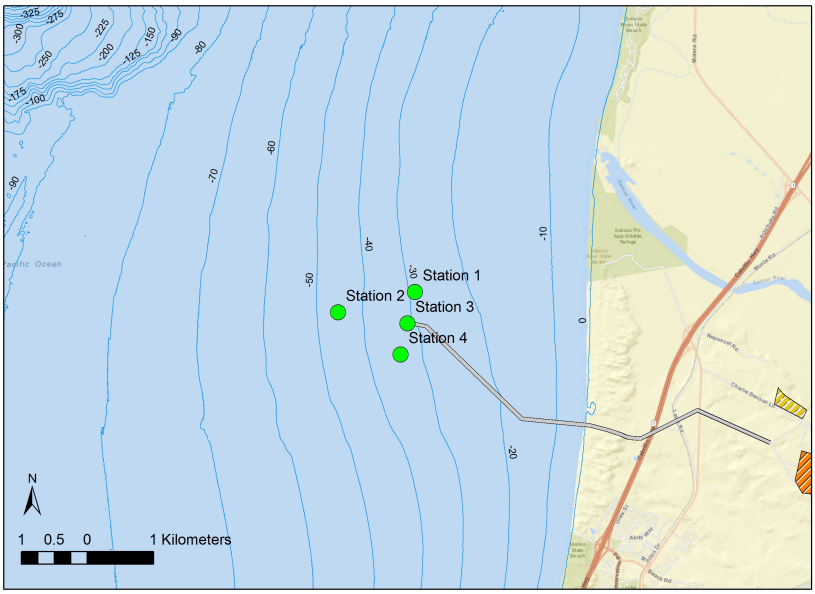


Figure 3. Sampling locations in the vicinity of the M1W discharge location near Marina, CA. Bathymetry is in meters from NOAA (Adapted from AMS 2022)[14]

Ambient Conditions

Monterey Bay is traditionally known to have three oceanic seasons: Upwelling from March to September, Oceanic from September to November, and Davidson from November to March. Conductivity-temperature-depth (CTD)[15] casts are continuing to be performed monthly since February 2014 by Applied Marine Sciences. The casts from February 2014 to October 2023 at the four locations shown in Figure 3 were utilized in this dilution study. The goal of monitoring is to gather data representative of ocean conditions during each season. For each monitoring event, profiles from the four locations per event have only slight variations as shown in Figure 4, so the data from the four monitored sites were averaged to get one profile representative of conditions at the outfall per event. Seasonal density profiles were calculated by averaging all event profiles within the seasonal date ranges to construct one profile per oceanic season for

[14] AMS (2022), Water Column Profiles of Monterey Bay for the Monterey Peninsula Water Supply Project Proposed by Cal-Am (2014-2021), Technical Memorandum, from Aroon Melwani and Ellen Goldenberg at Applied Marine Sciences, July 5, 2022.

[15] The CTD sonde measures electrical conductivity of the water and converts the readings to salinity, a measure of the total dissolved solids. The salinity and temperature are used in the calculation of density (Millero, F. J. and Huang, F.): The density of seawater as a function of salinity (5 to 70 g kg^{-1}) and temperature (273.15 to 363.15 K), Ocean Sci., 5, 91–100, https://doi.org/10.5194/os-5-91-2009, 2009).

the modeled scenarios as presented in Figure 5. The ambient conditions at the ocean floor are listed in Table 1.

Ocean current velocity is conservatively assumed to be zero, as consideration of non-zero velocities increase in-plume dilution. The Ocean Plan requires use of zero ambient current across the discharge structure when estimating minimum initial dilution.

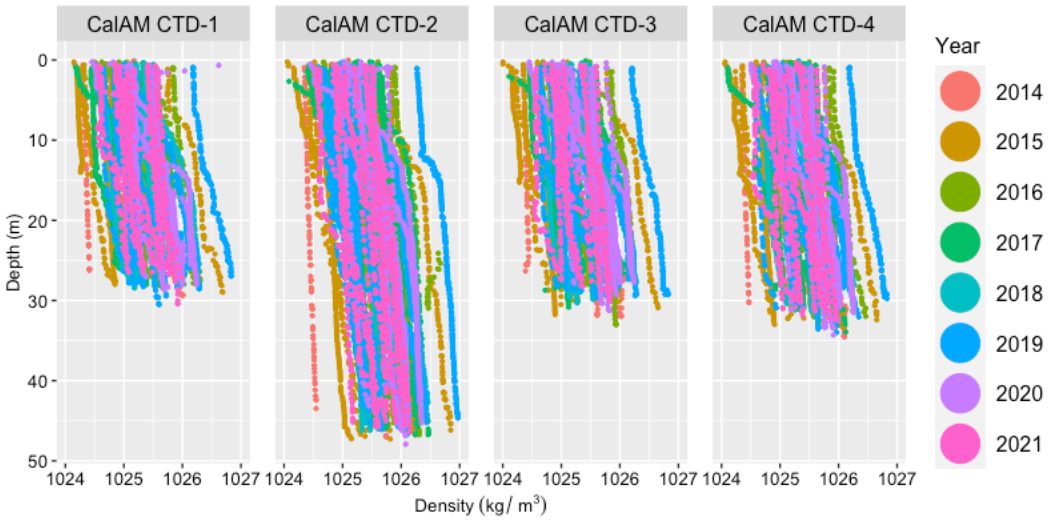


Figure 4. Water column density profiles by station from July 2014 to December 2021. Colors refer to each year sampled. (Adapted from AMS 2022)

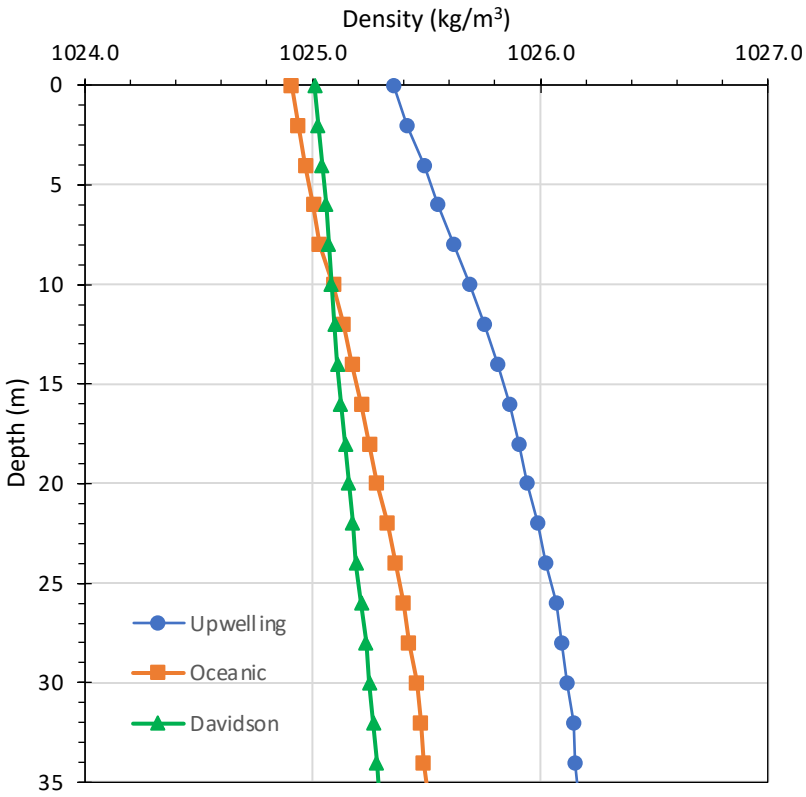


Figure 5. Seasonally averaged density profiles

Table 1. Ambient characteristics at the bottom at point of discharge (32 m depth)

Ocean Condition								
Upwelling			Oceanic			Davidson		
Temp (°C)	Salinity[1] (PSU)	Density (kg/m^3)	Temp (°C)	Salinity[1] (PSU)	Density (kg/m^3)	Temp (°C)	Salinity[1] (PSU)	Density (kg/m^3)
11.48	34.266	1,026.143	13.38	33.970	1,025.475	14.46	33.898	1,025.266

[1] Salinity measured in PSU for density calculation. (1,000 mg/L TDS = 1 PSU)

Reconfigured Diffuser Geometry

The M1W outfall diffuser cross-section design is shown in Figure 6. The diffuser is located in the Bay about 9,892 feet from shore. The existing diffuser design consists of two reinforced concrete pipe sections, including: a 60-inch internal diameter (ID) section with 61 ports, and a 48-inch ID section with 107 ports, for a total length of 1,360 feet. The ports through the concrete pipe (each 2 inches in diameter) discharge horizontally spaced at 8-foot intervals alternating on both sides of the diffuser (16-foot intervals on each side).

The proposed reconfiguration of the diffuser would open 29 currently closed ports for a total of 51 ports on the 60-inch section and 107 ports along the 48-inch section. A gasket would be attached to the bottom of the end gate to prevent discharge onto the ocean floor. The ports are spaced approximately 8 feet apart. Each of the 158 ports would be fitted with Tideflex HC 24

valves rotated upward 60-degrees as shown in Figure 1. Reconfiguration of the diffuser and hydraulic modeling of it are detailed in Appendix A. The spec sheets for the HC 24 valves are included in Appendix B. A detail of the proposed Tideflex valves affixed to the diffuser is presented in Figure 1.

The cross-sectional area of the Tideflex valve opening is a function of flowrate going through the valve. The ports were modeled as round openings with areas equivalent to the effective area of the valves per the spec sheet. Based on this assumption, the actual dilution will be slightly higher than the computed values[16]. Effective open area of the HC 24 Tideflex valves is a function of flow rate as shown in Figure 7. The average water depth in the diffuser area is 104.8 feet and the depth of the discharge is set to 100.7 feet below mean sea level.

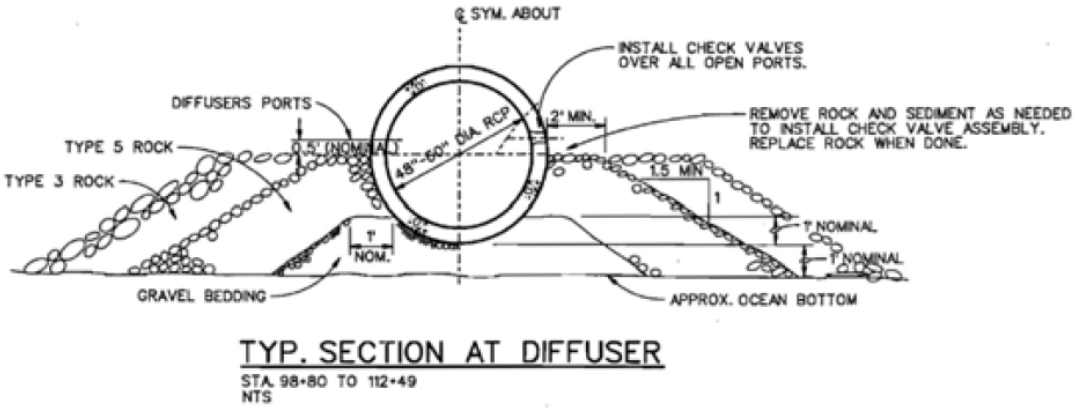


Figure 6. M1W Outfall diffuser cross-section drawing[17]

[16] Duer, M. J. (2016) Duckbill Nozzle Knowledge Base for Inland and Marine Outfall Diffuser Designers and Modelers, International Symposium on Outfall Systems

[17] Monterey Regional Water Pollution Agency (1999), MT17O002, *Outfall Details*

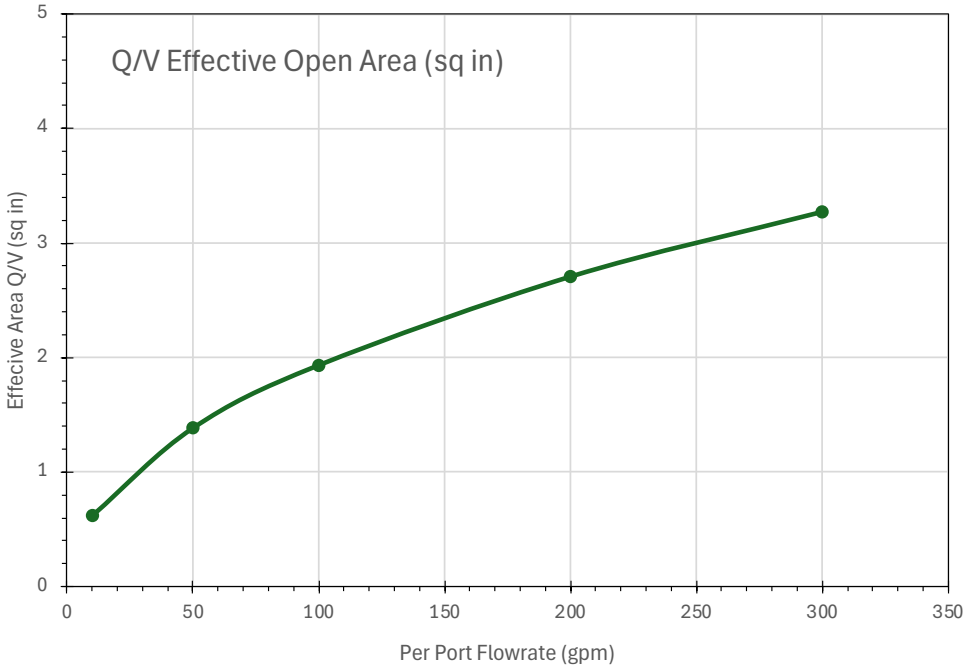


Figure 7. Effective open area for flow through 4" Tideflex HC 24 check valves

Discharge Streams

The discharge may have commingling of AWPF ROC, RTP secondary effluent, and Cal-Am brine. The dilution models require three parameters to characterize the discharge: total flow rate, the discharge density (or temperature and salinity), and the discharge concentration of the material of interest. The temperatures and salinities[18] for the discharge streams that were modeled for M1W are shown in Table 2. For each discharge scenario, a mass (or energy) balance was performed to calculate the combined temperature and salinity. A discharge concentration of 100 is assigned to all scenarios so the modeled in-plume concentrations are equivalent to percent effluent within the plume.

[18] Ocean water is typically measured in practical salinity units (PSU) equal to 1,000 mg/L of total dissolved solids

Table 2. Discharge stream characteristics

Scenario	Flow Rate Range (mgd)	Ocean Condition					
		Upwelling		Oceanic		Davidson	
		Temp (°C)	TDS[1] (mg/L)	Temp (°C)	TDS[1] (mg/L)	Temp (°C)	TDS[1] (mg/L)
Secondary Effluent	0 – 29.6	24.0	1,000	24.0	1,000	20.0	1,000
AWPF ROC	0 – 1.78	24.4	5,400	24.4	5,400	20.2	5,400
Brine[2]	5.80[3] – 8.66	9.5	60,000	9.5	60,000	9.5	60,000

[1] Total dissolved solids (TDS) typically reported in mg/L converted to salinity measured in PSU for density calculation. (1,000 mg/L = 1 PSU)
[2] Values reflect a conventional RO system.
[3] Determined in the Ocean Plan Compliance Assessment TM water quality analysis.

The parameters for the conventional desalination system are included as Table 3. Desalination system operational flowrate scenarios are listed in Table 4. Storage is required for operating three or fewer skids to generate enough brine to discharge 5.8 mgd over a 24-hour period. Temperature and total dissolved solids (TDS) in the ROC and secondary effluent are listed in Table 2.

Table 3. Desalination system parameters

Parameter	Conventional Desalination System
Recovery	42.5%
Brine Total Dissolved Solids (mg/L)	60,000
Brine Temperature (°C)	9.5
Per Skid Production (mgd)	1.2

Table 4. Conventional system product water and brine increments

Number of Skids	Feed (mgd)	Product (mgd)	Brine (mgd)
1	2.82	1.20	1.62
2	5.65	2.40	3.25
3	8.47	3.60	4.87
4	11.29	4.80	6.49
5[a]	15.06	6.40	8.66

[a] Final skid would be 1.6 mgd of product water.

MODEL RESULTS AND DILUTION CREDITS

There are two overarching evaluations performed with the dilution modeling, including: defining the dilution over the spectrum of potential commingled flows to find the critical D_m(s) for permitting; and considering transient periods where the composition of the commingled flows changes.

Critical D_m Evaluation

The dilution models were run for possible commingled flow scenarios The calculated dilutions informed a water quality analysis (Trussell 2025) used to determine the ability to comply with water quality objectives. A brine flowrate of 5.80 mgd is required for water quality compliance, corresponding to a minimum dilution (D_m) of 101[19].

The critical D_m evaluation is performed for three over-arching scenarios, including: no Cal-Am brine (0.0 mgd), minimum flowrate of Cal-Am brine (5.80 mgd), and maximum flowrate of Cal-Am brine (8.66 mgd). These three cases were run through the dilution modeling commingled with four levels of AWPF ROC and 36 levels of secondary effluent, as listed in Table 5. Each combination of commingled flow is modeled for each of the three ocean conditions. These model runs span the possible commingling combinations and are all assessed in the water quality analysis to ensure compliance with water quality objectives.

Table 5. Modeled M1W flowrates

Source	Modeled Flowrates (mgd)
AWPF ROC	0.0, 0.28, 1.17, 1.78
Secondary Effluent	0.0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 1.0, 1.3, 1.5, 1.6, 1.8, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 14.0, 16.0, 18.0, 20.0, 23.0, 25.5, 29.6

Summary figures of the dilutions corresponding to the three over-arching scenarios are plotted against secondary effluent flowrate in Figure 8. The summary plots presented as functions of the total commingled flowrate are presented in Figure 9. A dilution analysis was performed (Roberts 2025) as part of the alternatives analysis proceeding this work. Overlapping scenarios revealed the no-brine modeling results were nearly identical, however with brine results from Roberts were on average 5% lower. The model comparison and approach to rectify the two model results is discussed in Appendix C. As a conservative measure, the brine scenario results here were scaled down by approximately 7% (the difference at the critical low D_m) so that results for the water quality analysis using the results presented here would match the Marine Life Mortality Analysis currently underway that are using results from Roberts 2025. A spreadsheet containing all evaluated dilution results is included as Attachment 1 to the ROWD Addendum.

[19] The brine has low concentrations of the constituents of concern for compliance (e.g. ammonia). Increasing the brine flow in relation to the secondary effluent and ROC reduces the concentration in-pipe reducing the required dilution for compliance.

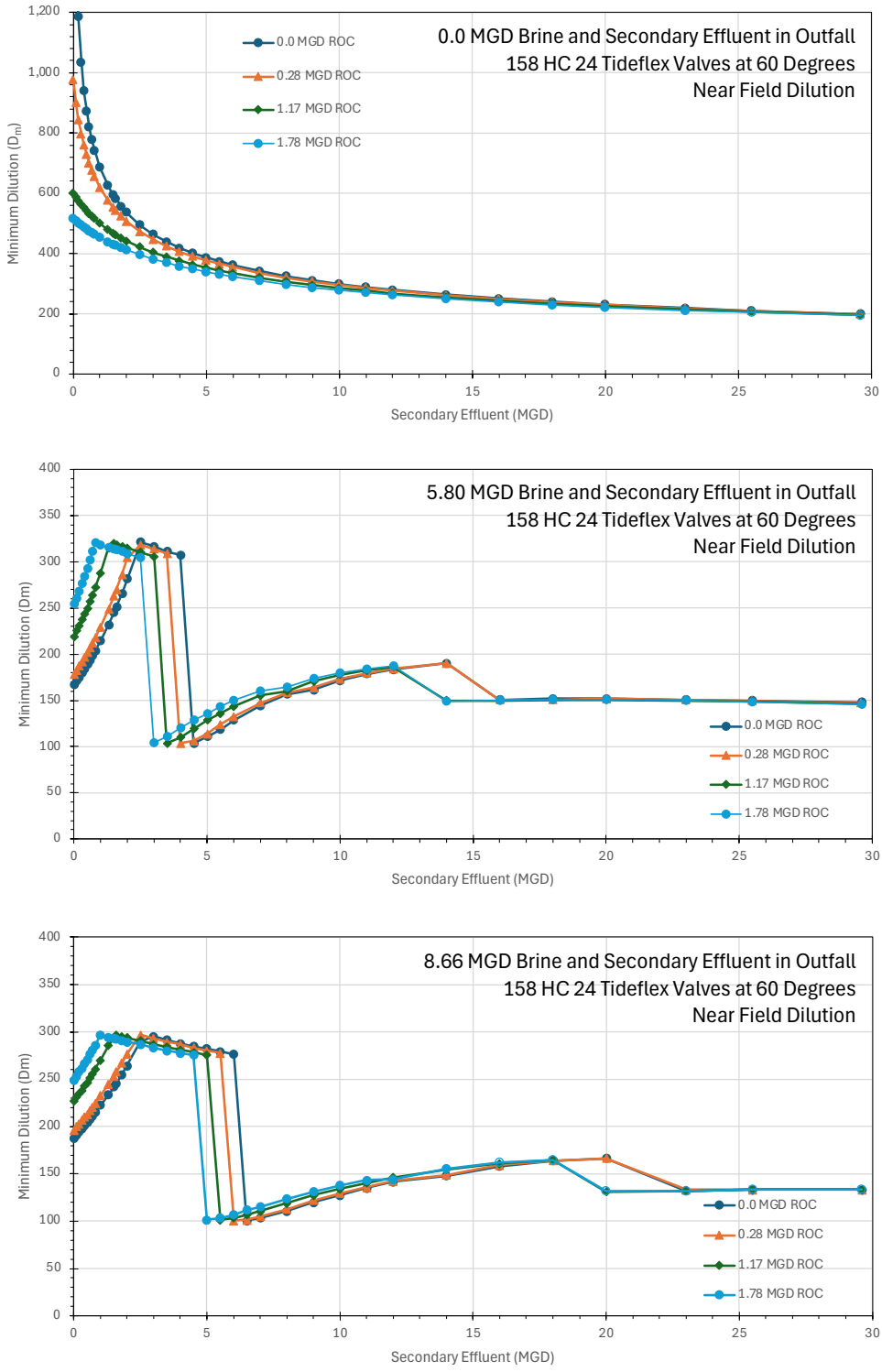


Figure 8. Critical D_m summary plotted by secondary effluent flowrate. Brine scenarios scaled to match Roberts 2025.

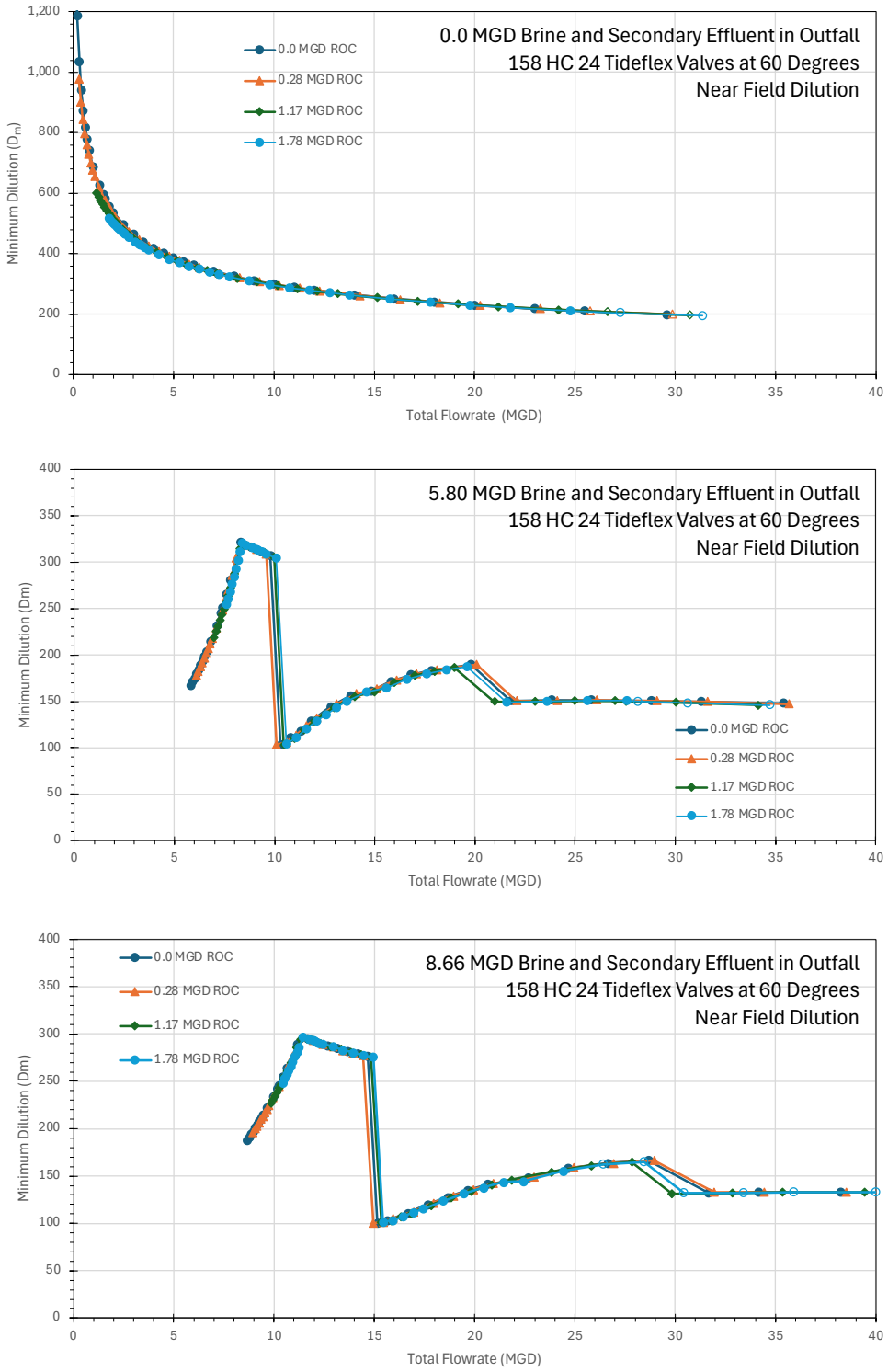


Figure 9. Critical D_m summary plotted by total commingled flowrate. Brine scenarios scaled to match Roberts 2025.

Brine Mixing Zone

Ocean Plan Chapter III.M.3 limits the salinity increase within the brine mixing zone to 2 ppt over ambient conditions. The maximum effluent salinity, C_0, would be when the discharge was comprised wholly of Cal-Am brine, which would be 60 ppt. The ambient salinity, C_S, at the diffuser is listed in Table 2 for the three ocean conditions. Table 6 lists the required dilution for a 2 ppt increase at the edge of near-field mixing. The required dilution is approximately D = 12, which is far less than the available minimum dilution D_m = 101. Alternatively, the Ocean Plan equation may be used with the D_m = 101 to determine a maximum effluent salinity of approximately 238 ppt would meet the 2 ppt increase at the end of mixing. The calculated allowable maximum effluent salinity is much greater than the maximum brine salinity of 60 ppt. The proposed discharge will comply with the 2 ppt salinity increment requirement.

Table 6. Required dilution for 2 ppt increase in salinity and allowable effluent salinity for a 2 ppt increase at the end of mixing.

Season	Salinity at Ocean Floor (ppt)	Required Dilution for 2 ppt Δ (D_m)	Allowable Effluent[1] Salinity at D_m = 101 (ppt)
Upwelling	34.266	11.9	238.3
Oceanic	33.957	12.0	238.0
Davidson	33.898	12.1	237.9

[1] For illustrative purposes only. These salinity levels would greatly reduce the Dm from 101.

The Ocean Plan limits the maximum size of a brine mixing zone to 100 meters (328 feet). The Abessi and Roberts 2014 model calculates the distance from the diffuser encompassing the near-field mixing. The sizes of the brine mixing zones for the range of scenarios are listed in Table 7. All modeled scenarios with the HC 24 valves fall below a maximum brine mixing zone of 175 feet (53.3 m), well within the prescribed Ocean Plan limit. The brine mixing zone sizes for the each of the dense discharge flow combinations considered here are included in the Attachment 1 to the ROWD Addendum spreadsheet.

Table 7. Near-field brine mixing zone size.

AWPF ROC (mgd)	Maximum Brine Mixing Zone (feet)	
	5.80 mgd Brine	8.66 mgd Brine
0.0	173.2	159.4
0.28	174.5	159.8
1.17	173.4	159.9
1.78	173.9	159.8

Transient Flow Evaluation

Transient flows were evaluated with the dilution model to assess what happens when the brine flow is turned on or turned off. Before the brine is turned on, the outfall pipe may be full of commingled AWPF ROC and secondary effluent. The commingled flow will have a certain density

defined by the mix of ROC and secondary effluent as is modeled in the Critical D_m Evaluation section. Normally, higher flow of commingled ROC and secondary effluent has a lower density; however, when the brine is first turned on, the flowrate being discharged will increase, but the density and water quality in the diffuser will remain reflective of the lower flowrate mixture. This condition will persist until the brine commingled discharge reaches the diffuser. The “old flow” must be flushed from the outfall before the “new flow” reaches the diffuser for a new steady state is achieved. Similarly, if the outfall contains commingled brine and M1W effluent but then the brine was switched off the flowrate would decrease. Under this condition a denser effluent would be discharged at a lower flowrate while the system moves to the new steady state.

A range of off-to-on and on-to-off scenarios were run in the dilution model. These scenarios included ranges of commingled secondary effluent, ROC, and MPWSP brine. A spreadsheet containing the complete set of scenarios considered in the transient analysis and their resulting dilutions is included as Attachment 2 to the ROWD Addendum. The results were used to inform the water quality monitoring analysis (Section 4 of the ROWD Addendum) and the transient analysis (Section 5 of the ROWD Addendum). These evaluations are used to assess compliance with short duration objectives (daily or instantaneous) while ensuring the long duration objectives are maintained (6-month median.)

APPENDIX

Appendicies for the Near-Field Mixing Zone and Dilution Analysis

Appendix A: M1W Diffuser Hydraulics

Appendix B: Tideflex Spec Sheets

Appendix C: Roberts and LWA Model Comparison

APPENDIX A

M1W Diffuser Hydraulics

INTRODUCTION

The calculation procedure for modeling the internal hydraulics and flow distribution between ports along the M1W diffuser is presented below. The approach largely follows previous hydraulic modeling[20] of the diffuser (Roberts, 2016).

TIDEFLEX VALVES

Example geometries and relative stiffness of Tideflex valves are presented in Figure A-1.



Figure A-1. Example geometry (left) and relative stiffness (right) of Tideflex valves[21].

The characteristics for a range of valve stiffnesses were provided by Tideflex[22]. The discharge characteristics of total head loss and the discharge velocity for the range of expected per port flowrates are the main features necessary for the hydraulic modeling. Characteristics for the Hydraulic Code (HC) 24 are presented in Figure A-2. The HC 24 valves have openings approximately 80% of the currently installed M1W valves. While the discharge total head was linear over the per port flowrate range, the jet velocity was best represented by separate functions for flowrates less than or greater than 50 gpm.

[20] Philip J.W. Roberts (2016), Modeling Brine Disposal into Monterey Bay, Final Report, Prepared for Environmental Science Associates, July 6, 2016.

[21] Duer, M. J. (2016) Duckbill Nozzle Knowledge Base for Inland and Marine Outfall Diffuser Designers and Modelers, International Symposium on Outfall Systems

[22] Duer, M. J. (2024) pers comm.

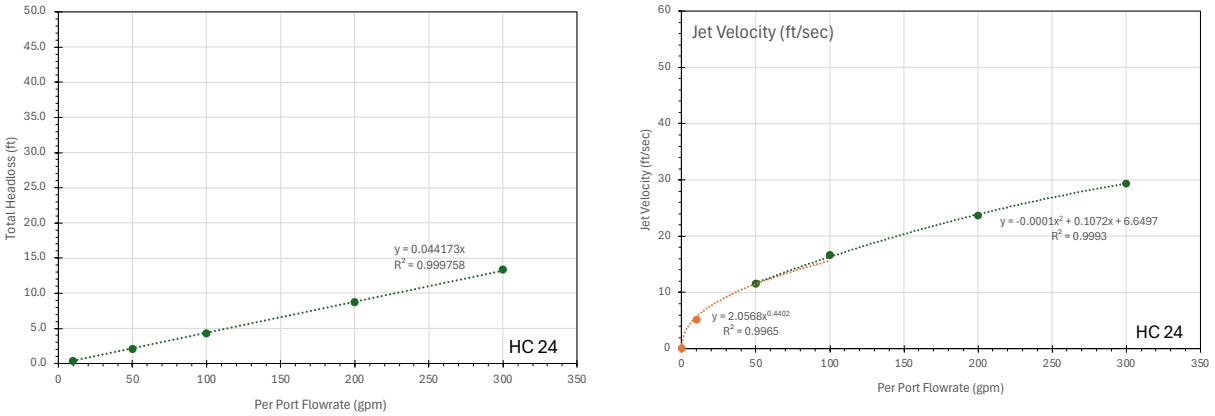


Figure A-2. Total discharge head and jet velocities for HC 24 Tideflex valves

The relationship between total discharge head, *E'*, and the flow in the j[th] valve, Q_j, is linear for each of the considered valves. The relationship for the HC24 valves is as follows:

$$E'_{HC24} = 0.04417 \cdot Q_j \quad \text{(A1)}$$

The discharge jet velocity can be determined by:

$$V_{j\,HC24} = \begin{cases} 2.0568 \cdot Q_j^{0.4402} & Q_j < 50\ gpm \\ -0.0001 \cdot Q_j^2 + 0.1072 \cdot Q_j + 6.6497 & Q_j > 50\ gpm \end{cases} \quad \text{(A2)}$$

The effective open area of the valves is given by:

$$A_j = \frac{Q_j}{V_j}$$

And the effective diameter of the opening is calculated by:

$$d_j = \sqrt{\frac{4 \cdot A_j}{\pi}}$$

PORT HEAD LOSS

A typical Tideflex valve affixed to the diffuser port is shown in Figure A-3. The spec sheets from Tideflex only include the head loss of the jet discharge from the valve, and additional minor head losses need to be added for the total port head loss[23]. Minor head losses include the entrance loss, sudden expansion from the 2-inch concrete port to the 4-inch Tideflex valve, and the 60-degree bend as follows:

$$E = (Entrance\ Loss) + (Sudden\ Expansion\ Loss) + (60°\ Bend\ Loss) + (Valve\ Loss)$$

[23] Duer, M. J. pers comm, April 2024

The entrance loss is approximated as in Roberts 2016 as follows:

Entrance Loss = $x_{en}\frac{v_d^2}{2g}$

x_{en} = entrance loss coefficient (range 0.43 to 0.63, use 0.63)

v_d = velocity in the diffuser pipe = $\frac{Flow\ in\ the\ diffuser\ at\ port\ n}{area\ of\ the\ diffuser\ at\ port\ n}$

g = gravity

Sudden Expansion Loss = $\frac{(v_p - v_v)^2}{2g}$

v_p = velocity in original 2 inch diffuser port $\left(f(Q_j)\right)$

v_v = velocity in the 4 inch tide flex $\left(f(Q_j)\right)$

60° Bend Loss = $c\frac{v_v^2}{2g}$

c = loss coefficient for the bend (range 0.11 to 0.43, use typical 90° value of 0.3)

The valve loss is calculated with equation A1.

The sum of these losses is equal to the head in the diffuser pipe at the port. The head in the diffuser pipe at the port n of HC 24 composition is:

$$E_n = \left(x_{en}\frac{v_d^2}{2g}\right) + \left(\frac{(v_p - v_v)^2}{2g}\right) + \left(c\frac{v_v^2}{2g}\right) + (0.04417Q_n) \quad \text{(A3)}$$

Note that both the velocity in the 2-inch concrete port and the velocity in the Tideflex valve are functions of the port discharge, namely Q_n divided by the respective areas. At lower flowrates these minor head losses are insignificant, but at higher flows they contribute significantly to the total port head loss. Due to the large diameter of the diffuser, the entrance loss is relatively minor at all flowrates. Substituting the flow through the port divided by respective area and rearranging into the quadratic form gives:

$$0 = \left[\left(\frac{A_v - A_p}{A_v A_p}\right)^2 + c\left(\frac{1}{A_v}\right)^2\right]Q_n^2 + [2g \cdot 0.04417]Q_n + [x_{en}v_d^2 - 2gE_n] \quad \text{(A4)}$$

The terms in the brackets are a, b, and c respectively for the quadratic equation. The flow exiting the port, Q_n, can be directly calculated given the head in the diffuser at that port.

$$Q_n = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Only the positive flow answer is appropriate for this analysis (positive flow is existing the diffuser).

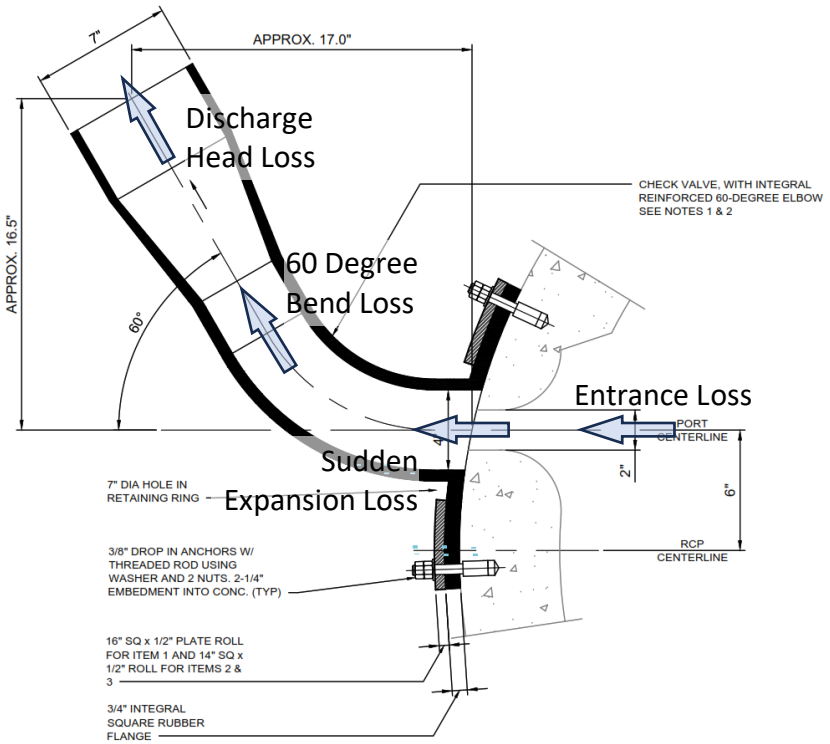


Figure A-3. 60 degree angled Tideflex valve discharge head loss and minor head losses

DIFFUSER AND OUTFALL HEAD LOSS

The diffuser head loss is calculated incrementally between ports as in Roberts 2016. The head at one port closer to shore is equal to the previous port plus the friction loss in the diffuser pipe between ports, contraction loss where pipe size changes, and the head due to the elevation difference.

$$E_{n+1} = E_n + f\frac{s}{D}\frac{v_d^2}{2g} + \frac{\left(v_{d_n} - v_{d_{n+1}}\right)^2}{2g} + \frac{\Delta\rho}{\rho_a}\Delta z \qquad \text{(A5)}$$

$f\frac{s}{D}\frac{v_d^2}{2g}$ = friction loss between ports via Darcy-Weisbach

$f = \frac{0.25}{\left[log\left(\frac{k/_D}{3.7} + \frac{5.74}{Re^{0.9}}\right)\right]^2}$ = friction factor

Re = Reynolds Number = $\frac{v_d D}{\upsilon}$

v_d = velocity in the diffuser pipe

D = pipe diameter

υ = kinematic viscosity

k = equivalent roughness height (concrete pipe ranges from 0.012 to 0.12 inches, 0.066 in used in this analysis)

s = spacing between ports

g = gravity

$\frac{(v_{d_n}-v_{d_{n+1}})^2}{2g}$ = contraction head loss (this term is zero where the pipe sections do not change size)

v_{d_n} = velocity in diffuser section n

$v_{d_{n+1}}$ = velocity in diffuser section n+1

$\frac{\Delta\rho}{\rho_a}\Delta z$ = density head

$\Delta\rho = \rho_a - \rho_o$ = density difference between ambient and discharge (negative if discharge is dense)

ρ_a = ambient density

ρ_o = discharge density

Δz = difference in port height (positive if inshore port is higher, ie sloped down moving away from the shore

DIFFUSER HEAD LOSS CACLULATION

Direct calculation of the diffuser hydraulics is not possible. An iterative procedure is used in a spreadsheet to determine the head and flow distribution along the diffuser. The fiction and density head of the outfall pipe is added to the diffuser head loss to calculate the total diffuser head loss. The calculations start at the ocean end of the diffuser, because the last remaining flow escapes through that port. The iteration is outlined as follows.

1. Select a target flowrate and specify the discharge density
2. Make an initial guess at the end of diffuser head, E_1
3. The flow, Q_1, through the end port is calculated with equation A4
4. Calculate the velocity in the diffuser pipe upstream of port 1 with the flow Q_1
5. Calculate the head in the diffuser pipe at the next upstream port, E_{n+1}, with equation A5
6. Calculate Q_{n+1} with E_{n+1} in equation A4.
7. Add Q_n and Q_{n+1} to get the flow in the diffuser upstream of port n+1
8. Repeat steps 4 through 7 until the inner most port is reached (closest to shore)
9. Calculate the total head loss of the diffuser with equation A5, using the length of the outfall pipe from the shore to the inner most port, 9,892 feet, and the associated elevation change, 92.3 feet (i.e. depth of the inner most port.)
10. Compare the calculated flowrate Q_{158} to the target flowrate. If the calculated flowrate is less than the desired target flowrate, increase the initial guess of the diffuser end head

in Step 2 and visa versa and execute remaining steps. Repeat the iteration process until the calculated flow equals the target flow to within the desired tolerance.

SUMMARY OF M1W DIFFUSER HYDRAULICS WITH HC 24 TIDEFLEX VALVES

The hydraulic model was run for various total flowrates from 1.78 mgd to 75.6 mgd to illustrate the effect on the head. The required instantaneous flow capacity is 75.6 mgd. The calculated head at the beach junction structure (ocean surface), shore end of the diffuser, and end of the diffuser are displayed in Figure A-4. An example of the spreadsheet calculations is presented in Figure A-5.

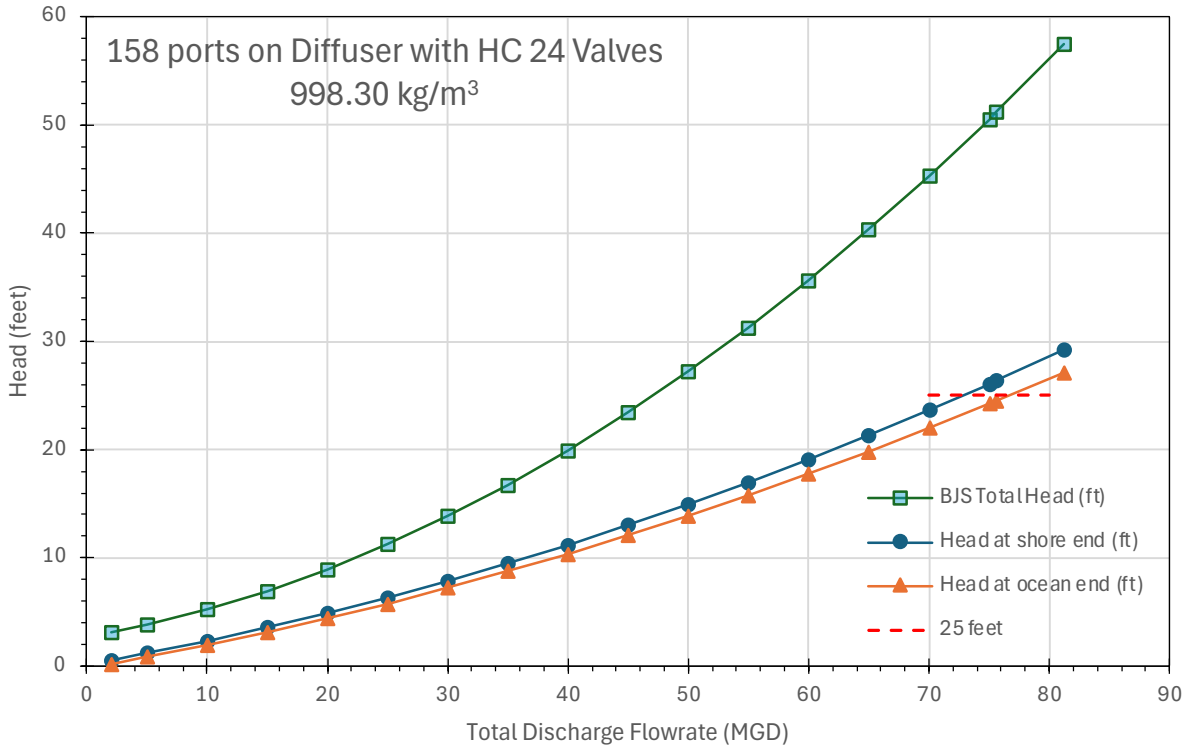
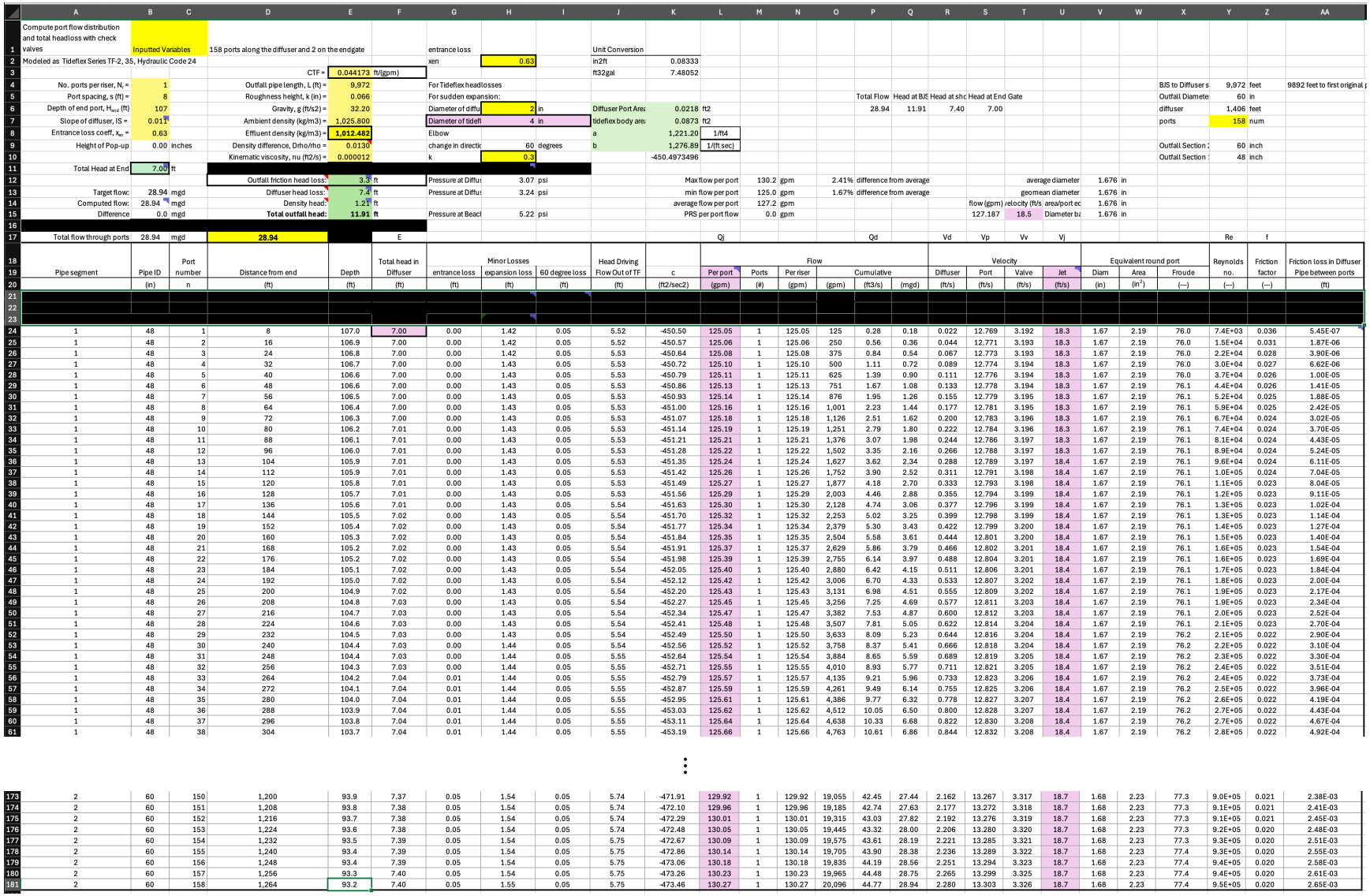


Figure A-4. Head at select locations along the outfall and diffuser



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1	Compute port flow distribution and total headloss with check valves	Inputted Variables		158 ports along the diffuser and 2 on the endgate			entrance loss			Unit Conversion																	
2	Modeled as Tideflex Series TF-2, 35, Hydraulic Code 24				CTF =	0.044173 ft/(gpm)	xen	0.63		in2ft	0.08333																
3										ft32gal	7.48052																
4	No. ports per riser, N, =	1		Outfall pipe length, L (ft) =	9,972		For Tideflex headlosses																	BJS to Diffuser s	9,972	feet	9892 feet to first original p
5	Port spacing, s (ft) =	8		Roughness height, k (in) =	0.066		For sudden expansion:											Total Flow	Head at BJS	Head at shc	Head at End Gate				Outfall Diamete	60	in	
6	Depth of end port, H_{end} (ft)	107		Gravity, g (ft/s2) =	32.20		Diameter of diffu	2	in	Diffuser Port Area	0.0218	ft2						28.94	11.91	7.40	7.00				diffuser	1,406	feet	
7	Slope of diffuser, IS =	0.011		Ambient density (kg/m3) =	1,025.800		Diameter of tideft	4	in	tideflex body are	0.0873	ft2													ports	158	num	
8	Entrance loss coeff, x_{en} =	0.63		Effluent density (kg/m3) =	1,012.482		Elbow			a	1,221.20	1/ft4															
9	Height of Pop-up	0.00	inches	Density difference, Dho/rho =	0.0130		change in directio	60	degrees	b	1,276.89	1/(ft sec)													Outfall Section 2	60	inch	
10				Kinematic viscosity, nu (ft2/s) =	0.000012		k	0.3			-450.4973496														Outfall Section 1	48	inch	
11	Total Head at End	7.00	ft																								
12				Outfall friction head loss:	3.3	ft	Pressure at Diffus	3.07	psi			Max flow per port		130.2	gpm	2.41%	difference from average				average diameter		1.676	in				
13	Target flow:	28.94	mgd	Diffuser head loss:	7.4	ft	Pressure at Diffus	3.24	psi			min flow per port		125.0	gpm	1.67%	difference from average				geomean diameter		1.676	in				
14	Computed flow:	28.94	mgd	Density head:	1.21	ft						average flow per port		127.2	gpm					flow (gpm)	velocity (ft/s	area/port ec	1.676	in				
15	Difference	0.0	mgd	**Total outfall head:**	**11.91**	**ft**	Pressure at Beacl	5.22	psi			PRS per port flow		0.0	gpm					127.187	18.5	Diameter ba	1.676	in				
16																											
17	Total flow through ports	28.94	mgd	**28.94**		E						Qj				Qd		Vd	Vp	Vv	Vj				Re	f	
18								Minor Losses				Flow						Velocity				Equivalent round port					
19	Pipe segment	Pipe ID	Port number	Distance from end	Depth	Total head in Diffuser	entrance loss	expansion loss	60 degree loss	Head Driving Flow Out of TF	c	Per port	Ports	Per riser	Cumulative			Diffuser	Port	Valve	Jet	Diam	Area	Froude	Reynolds no.	Friction factor	Friction loss in Diffuser Pipe between ports
20		(in)	n	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft2/sec2)	(gpm)	(#)	(gpm)	(gpm)	(ft3/s)	(mgd)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	(in)	(in^2)	(---)	(---)	(---)	(ft)
21																											
22																											
23																											
24	1	48	1	8	107.0	7.00	0.00	1.42	0.05	5.52	-450.50	125.05	1	125.05	125	0.28	0.18	0.022	12.769	3.192	18.3	1.67	2.19	76.0	7.4E+03	0.036	5.45E-07
25	1	48	2	16	106.9	7.00	0.00	1.42	0.05	5.52	-450.57	125.06	1	125.06	250	0.56	0.36	0.044	12.771	3.193	18.3	1.67	2.19	76.0	1.5E+04	0.031	1.87E-06
26	1	48	3	24	106.8	7.00	0.00	1.42	0.05	5.53	-450.64	125.08	1	125.08	375	0.84	0.54	0.067	12.773	3.193	18.3	1.67	2.19	76.0	2.2E+04	0.028	3.90E-06
27	1	48	4	32	106.7	7.00	0.00	1.43	0.05	5.53	-450.72	125.10	1	125.10	500	1.11	0.72	0.089	12.774	3.194	18.3	1.67	2.19	76.0	3.0E+04	0.027	6.62E-06
28	1	48	5	40	106.6	7.00	0.00	1.43	0.05	5.53	-450.79	125.11	1	125.11	625	1.39	0.90	0.111	12.776	3.194	18.3	1.67	2.19	76.0	3.7E+04	0.026	1.00E-05
29	1	48	6	48	106.6	7.00	0.00	1.43	0.05	5.53	-450.86	125.13	1	125.13	751	1.67	1.08	0.133	12.778	3.194	18.3	1.67	2.19	76.1	4.4E+04	0.026	1.41E-05
30	1	48	7	56	106.5	7.00	0.00	1.43	0.05	5.53	-450.93	125.14	1	125.14	876	1.95	1.26	0.155	12.779	3.195	18.3	1.67	2.19	76.1	5.2E+04	0.025	1.88E-05
31	1	48	8	64	106.4	7.00	0.00	1.43	0.05	5.53	-451.00	125.16	1	125.16	1,001	2.23	1.44	0.177	12.781	3.195	18.3	1.67	2.19	76.1	5.9E+04	0.025	2.42E-05
32	1	48	9	72	106.3	7.00	0.00	1.43	0.05	5.53	-451.07	125.18	1	125.18	1,126	2.51	1.62	0.200	12.783	3.196	18.3	1.67	2.19	76.1	6.7E+04	0.024	3.02E-05
33	1	48	10	80	106.2	7.01	0.00	1.43	0.05	5.53	-451.14	125.19	1	125.19	1,251	2.79	1.80	0.222	12.784	3.196	18.3	1.67	2.19	76.1	7.4E+04	0.024	3.70E-05
34	1	48	11	88	106.1	7.01	0.00	1.43	0.05	5.53	-451.21	125.21	1	125.21	1,376	3.07	1.98	0.244	12.786	3.197	18.3	1.67	2.19	76.1	8.1E+04	0.024	4.43E-05
35	1	48	12	96	106.0	7.01	0.00	1.43	0.05	5.53	-451.28	125.22	1	125.22	1,502	3.35	2.16	0.266	12.788	3.197	18.3	1.67	2.19	76.1	8.9E+04	0.024	5.24E-05
36	1	48	13	104	105.9	7.01	0.00	1.43	0.05	5.53	-451.35	125.24	1	125.24	1,627	3.62	2.34	0.288	12.789	3.197	18.4	1.67	2.19	76.1	9.6E+04	0.024	6.11E-05
37	1	48	14	112	105.9	7.01	0.00	1.43	0.05	5.53	-451.42	125.26	1	125.26	1,752	3.90	2.52	0.311	12.791	3.198	18.4	1.67	2.19	76.1	1.0E+05	0.024	7.04E-05
38	1	48	15	120	105.8	7.01	0.00	1.43	0.05	5.53	-451.49	125.27	1	125.27	1,877	4.18	2.70	0.333	12.793	3.198	18.4	1.67	2.19	76.1	1.1E+05	0.023	8.04E-05
39	1	48	16	128	105.7	7.01	0.00	1.43	0.05	5.53	-451.56	125.29	1	125.29	2,003	4.46	2.88	0.355	12.794	3.199	18.4	1.67	2.19	76.1	1.2E+05	0.023	9.11E-05
40	1	48	17	136	105.6	7.01	0.00	1.43	0.05	5.54	-451.63	125.30	1	125.30	2,128	4.74	3.06	0.377	12.796	3.199	18.4	1.67	2.19	76.1	1.3E+05	0.023	1.02E-04
41	1	48	18	144	105.5	7.02	0.00	1.43	0.05	5.54	-451.70	125.32	1	125.32	2,253	5.02	3.25	0.399	12.798	3.199	18.4	1.67	2.19	76.1	1.3E+05	0.023	1.14E-04
42	1	48	19	152	105.4	7.02	0.00	1.43	0.05	5.54	-451.77	125.34	1	125.34	2,379	5.30	3.43	0.422	12.799	3.200	18.4	1.67	2.19	76.1	1.4E+05	0.023	1.27E-04
43	1	48	20	160	105.3	7.02	0.00	1.43	0.05	5.54	-451.84	125.35	1	125.35	2,504	5.58	3.61	0.444	12.801	3.200	18.4	1.67	2.19	76.1	1.5E+05	0.023	1.40E-04
44	1	48	21	168	105.2	7.02	0.00	1.43	0.05	5.54	-451.91	125.37	1	125.37	2,629	5.86	3.79	0.466	12.802	3.201	18.4	1.67	2.19	76.1	1.6E+05	0.023	1.54E-04
45	1	48	22	176	105.2	7.02	0.00	1.43	0.05	5.54	-451.98	125.39	1	125.39	2,755	6.14	3.97	0.488	12.804	3.201	18.4	1.67	2.19	76.1	1.6E+05	0.023	1.69E-04
46	1	48	23	184	105.1	7.02	0.00	1.43	0.05	5.54	-452.05	125.40	1	125.40	2,880	6.42	4.15	0.511	12.806	3.201	18.4	1.67	2.19	76.1	1.7E+05	0.023	1.84E-04
47	1	48	24	192	105.0	7.02	0.00	1.43	0.05	5.54	-452.12	125.42	1	125.42	3,006	6.70	4.33	0.533	12.807	3.202	18.4	1.67	2.19	76.1	1.8E+05	0.023	2.00E-04
48	1	48	25	200	104.9	7.02	0.00	1.43	0.05	5.54	-452.20	125.43	1	125.43	3,131	6.98	4.51	0.555	12.809	3.202	18.4	1.67	2.19	76.1	1.9E+05	0.023	2.17E-04
49	1	48	26	208	104.8	7.03	0.00	1.43	0.05	5.54	-452.27	125.45	1	125.45	3,256	7.25	4.69	0.577	12.811	3.203	18.4	1.67	2.19	76.1	1.9E+05	0.023	2.34E-04
50	1	48	27	216	104.7	7.03	0.00	1.43	0.05	5.54	-452.34	125.47	1	125.47	3,382	7.53	4.87	0.600	12.812	3.203	18.4	1.67	2.19	76.1	2.0E+05	0.023	2.52E-04
51	1	48	28	224	104.6	7.03	0.00	1.43	0.05	5.54	-452.41	125.48	1	125.48	3,507	7.81	5.05	0.622	12.814	3.204	18.4	1.67	2.19	76.1	2.1E+05	0.023	2.70E-04
52	1	48	29	232	104.5	7.03	0.00	1.43	0.05	5.54	-452.49	125.50	1	125.50	3,633	8.09	5.23	0.644	12.816	3.204	18.4	1.67	2.19	76.2	2.1E+05	0.022	2.90E-04
53	1	48	30	240	104.4	7.03	0.00	1.44	0.05	5.54	-452.56	125.52	1	125.52	3,758	8.37	5.41	0.666	12.818	3.204	18.4	1.67	2.19	76.2	2.2E+05	0.022	3.10E-04
54	1	48	31	248	104.4	7.03	0.00	1.44	0.05	5.55	-452.64	125.54	1	125.54	3,884	8.65	5.59	0.689	12.819	3.205	18.4	1.67	2.19	76.2	2.3E+05	0.022	3.30E-04
55	1	48	32	256	104.3	7.03	0.00	1.44	0.05	5.55	-452.71	125.55	1	125.55	4,010	8.93	5.77	0.711	12.821	3.205	18.4	1.67	2.19	76.2	2.4E+05	0.022	3.51E-04
56	1	48	33	264	104.2	7.04	0.01	1.44	0.05	5.55	-452.79	125.57	1	125.57	4,135	9.21	5.96	0.733	12.823	3.206	18.4	1.67	2.19	76.2	2.4E+05	0.022	3.73E-04
57	1	48	34	272	104.1	7.04	0.01	1.44	0.05	5.55	-452.87	125.59	1	125.59	4,261	9.49	6.14	0.755	12.825	3.206	18.4	1.67	2.19	76.2	2.5E+05	0.022	3.96E-04
58	1	48	35	280	104.0	7.04	0.01	1.44	0.05	5.55	-452.95	125.61	1	125.61	4,386	9.77	6.32	0.778	12.827	3.207	18.4	1.67	2.19	76.2	2.6E+05	0.022	4.19E-04
59	1	48	36	288	103.9	7.04	0.01	1.44	0.05	5.55	-453.03	125.62	1	125.62	4,512	10.05	6.50	0.800	12.828	3.207	18.4	1.67	2.19	76.2	2.7E+05	0.022	4.43E-04
60	1	48	37	296	103.8	7.04	0.01	1.44	0.05	5.55	-453.11	125.64	1	125.64	4,638	10.33	6.68	0.822	12.830	3.208	18.4	1.67	2.19	76.2	2.7E+05	0.022	4.67E-04
61	1	48	38	304	103.7	7.04	0.01	1.44	0.05	5.55	-453.19	125.66	1	125.66	4,763	10.61	6.86	0.844	12.832	3.208	18.4	1.67	2.19	76.2	2.8E+05	0.022	4.92E-04
⋮																											
173	2	60	150	1,200	93.9	7.37	0.05	1.54	0.05	5.74	-471.91	129.92	1	129.92	19,055	42.45	27.44	2.162	13.267	3.317	18.7	1.68	2.23	77.3	9.0E+05	0.021	2.38E-03
174	2	60	151	1,208	93.8	7.38	0.05	1.54	0.05	5.74	-472.10	129.96	1	129.96	19,185	42.74	27.63	2.177	13.272	3.318	18.7	1.68	2.23	77.3	9.1E+05	0.021	2.41E-03
175	2	60	152	1,216	93.7	7.38	0.05	1.54	0.05	5.74	-472.29	130.01	1	130.01	19,315	43.03	27.82	2.192	13.276	3.319	18.7	1.68	2.23	77.3	9.1E+05	0.021	2.45E-03
176	2	60	153	1,224	93.6	7.38	0.05	1.54	0.05	5.74	-472.48	130.05	1	130.05	19,445	43.32	28.00	2.206	13.280	3.320	18.7	1.68	2.23	77.3	9.2E+05	0.020	2.48E-03
177	2	60	154	1,232	93.5	7.39	0.05	1.54	0.05	5.75	-472.67	130.09	1	130.09	19,575	43.61	28.19	2.221	13.285	3.321	18.7	1.68	2.23	77.3	9.3E+05	0.020	2.51E-03
178	2	60	155	1,240	93.4	7.39	0.05	1.54	0.05	5.75	-472.86	130.14	1	130.14	19,705	43.90	28.38	2.236	13.289	3.322	18.7	1.68	2.23	77.4	9.3E+05	0.020	2.55E-03
179	2	60	156	1,248	93.4	7.39	0.05	1.54	0.05	5.75	-473.06	130.18	1	130.18	19,835	44.19	28.56	2.251	13.294	3.323	18.7	1.68	2.23	77.4	9.4E+05	0.020	2.58E-03
180	2	60	157	1,256	93.3	7.40	0.05	1.54	0.05	5.75	-473.26	130.23	1	130.23	19,965	44.48	28.75	2.265	13.299	3.325	18.7	1.68	2.23	77.4	9.4E+05	0.020	2.61E-03
181	2	60	158	1,264	93.2	7.40	0.05	1.55	0.05	5.75	-473.46	130.27	1	130.27	20,096	44.77	28.94	2.280	13.303	3.326	18.7	1.68	2.23	77.4	9.5E+05	0.020	2.65E-03

Figure A-5. Example calculation of 28.94 mgd total flow of 1,012.482 kg/m^3 effluent

APPENDIX B

Tideflex HC24 Spec Sheet

TIDEFLEX DIFFUSER (TFD) SYSTEM DATA ANALYSIS

MEDIA:		Effluent	
	Density or		lb/ft^3
	Spec. Gravity	1	

FLOW RANGE:

	MGD =	10	gpm
	MGD =	50	gpm
	MGD =	100	gpm
	MGD =	200	gpm
	MGD =	300	gpm

AVAILABLE HEADLOSS@ DIFFUSER:	Minimum		feet
	Design		feet
	Maximum		feet
MAX. BACKPRESSURE:			feet

TFD SIZE (IN)	HYDRAULIC CODE
4	24

DATE: 07-Jun-2024

CLIENT: Monterey One Water (MOW), CA
CONTACT:

ENGINEER: Larry Walker Associates
CONTACT: Mitch Mysliwiec, Senior Engineer

PROJECT: Monterey One Water (MOW) Outfall Diffuser

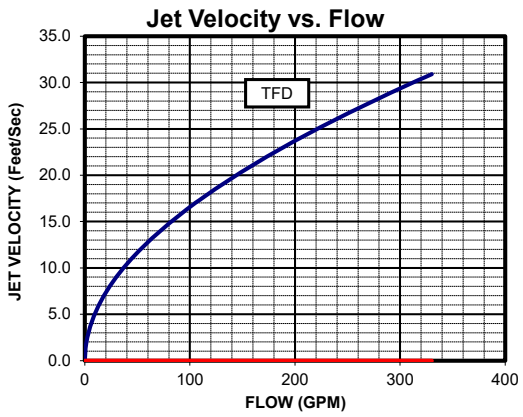
REP: Frank A. Olsen
CONTACT:

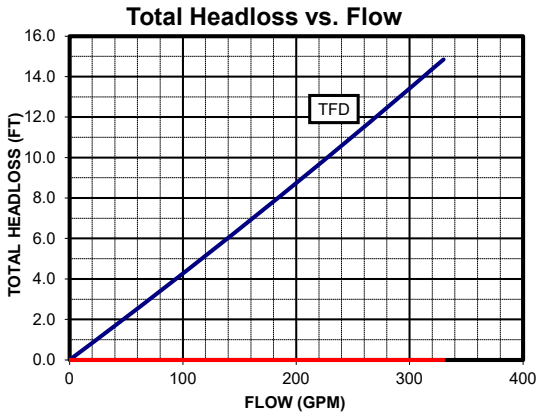
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PER TIDEFLEX DIFFUSER (TFD)

TOTAL QUANTITY	TOTAL FLOW (gpm)	FLOW (gpm)	JET VELOCITY (fps)	PRESSURE HEADLOSS (feet)	TOTAL HEADLOSS (Incl. Exit Loss) (feet)	EFFECTIVE DIAMETER (in)
1	10.0	10.0	5.2	0.4	0.4	0.9
	50.0	50.0	11.6	2.1	2.1	1.3
	100.0	100.0	16.6	4.2	4.3	1.6
	200.0	200.0	23.7	8.3	8.7	1.9
	300.0	300.0	29.4	12.5	13.4	2.0

Exceeds max. jet velocity of 40 fps





TIDEFLEX TECHNOLOGIES, 600 NORTH BELL AVE., CARNEGIE, PA 15106, (412) 279-0044 phone (412) 279-5410 fax

APPENDIX C

Roberts and LWA Model Comparison

ROBERTS AND LWA MODEL COMPARISON

No Brine Scenarios

There are limited overlapping scenarios from Roberts 2025 and LWA 2025 for the no brine discharge scenarios. However, those overlapping model runs are essentially identical (within a tenth of a dilution value). The no brine scenarios common for both Roberts and LWA are presented in Figure C-1

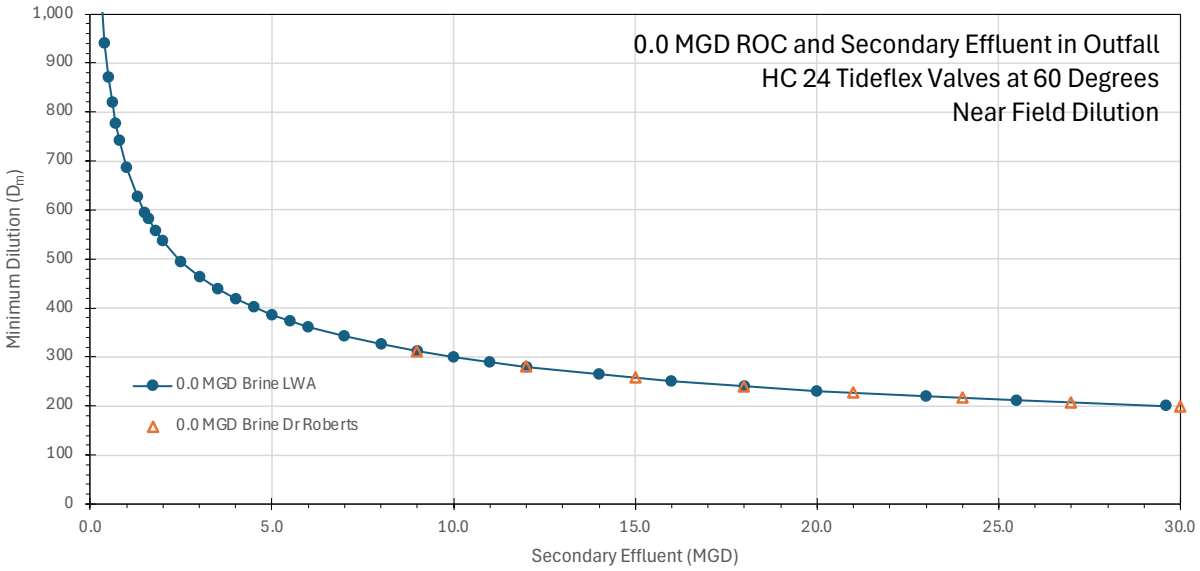


Figure C-1. No brine scenarios compared between LWA and Roberts.

With Brine Scenarios

The with brine scenarios with overlapping results include 0.0 and 1.78 mgd of ROC when 5.80 mgd of brine is discharged. Because Roberts was investigating the effect of port angle on the dilution and entrainment, the single port variable angle equation was used to calculate dense discharge dilution. There is no model available for variable angle port coupled with multiport discharge where the neighboring jets may overlap which results in a decrease in dilution. LWA only considered a diffuser with 60-degree ports for which a multiport model exists. In the region where the discharge is dense, the LWA and Roberts results match well until sufficient flow exists causing the cones from neighboring ports begin to overlap. With brine scenarios and dilution results from Roberts and LWA are presented in Figure C-2.

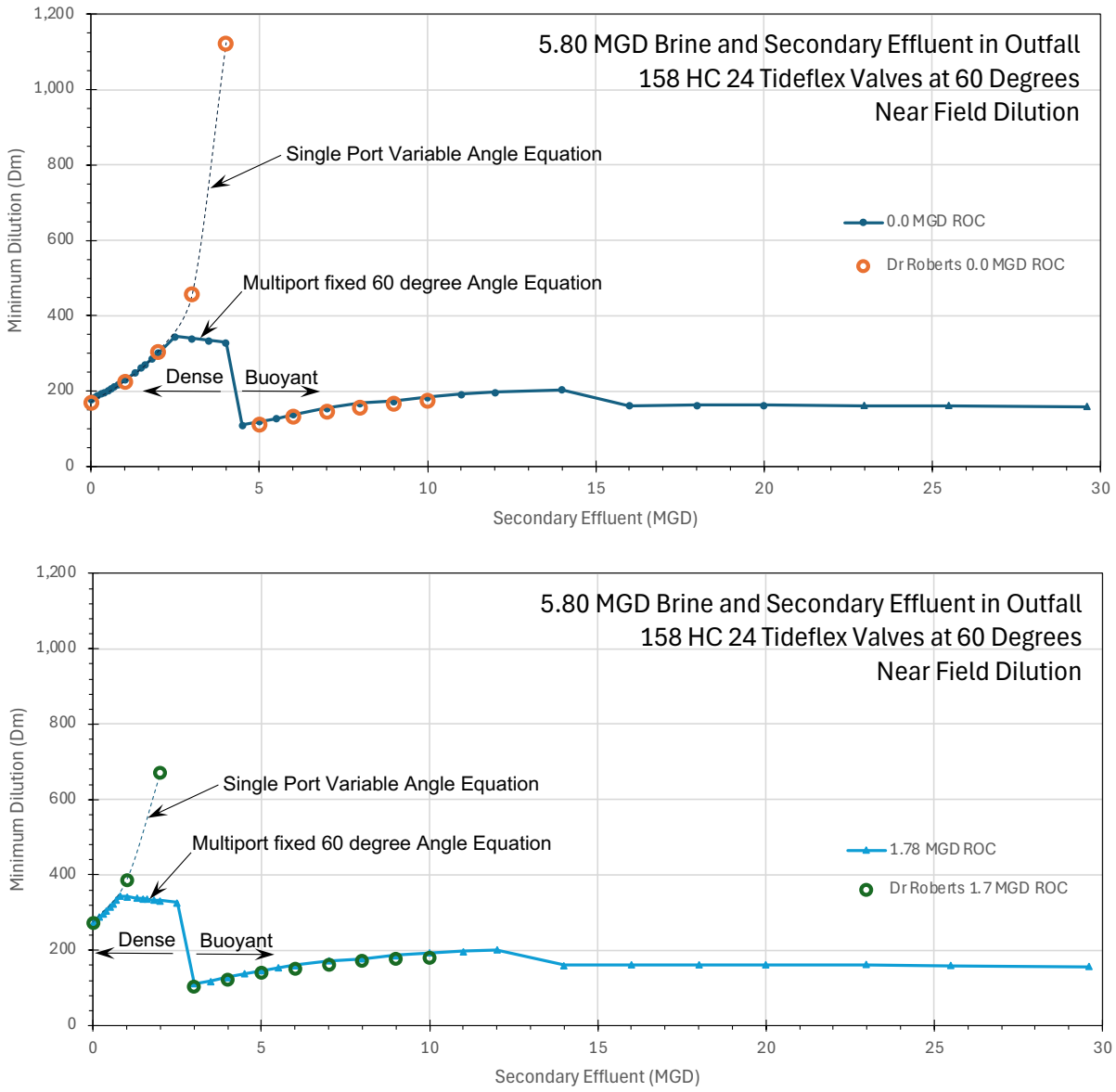


Figure C-2. Comparison of dilution scenarios that include brine discharges

Reducing the scale of the y-axis of Figure C-2 allows a better visual comparison between LWA and Roberts. LWA dilutions are slightly greater than Roberts. Between the two models the values of the port openings and the discharge density do not match precisely. The spec sheets from TideFlex provide discrete values of effective opening for a set of flowrates. To model the range of discharges a continuous relationship (curve fit) is developed to model the port opening as a function of flowrate. These curve fits are slightly different between Roberts and LWA, resulting in slightly different effective port opening for a given flowrate. For calculation of discharge density, there are empirical methods developed to translate water temperature and salinity to density. These relationships (or rounding of the coefficients in the equations) give similar but not identical results. These two factors contribute to the discrepancy between

model results. However, the average discrepancy between models is only 5%. The minimum dilution from Roberts is 101, whereas the minimum from LWA is 109, so the models differ by 7% at the minimum value.

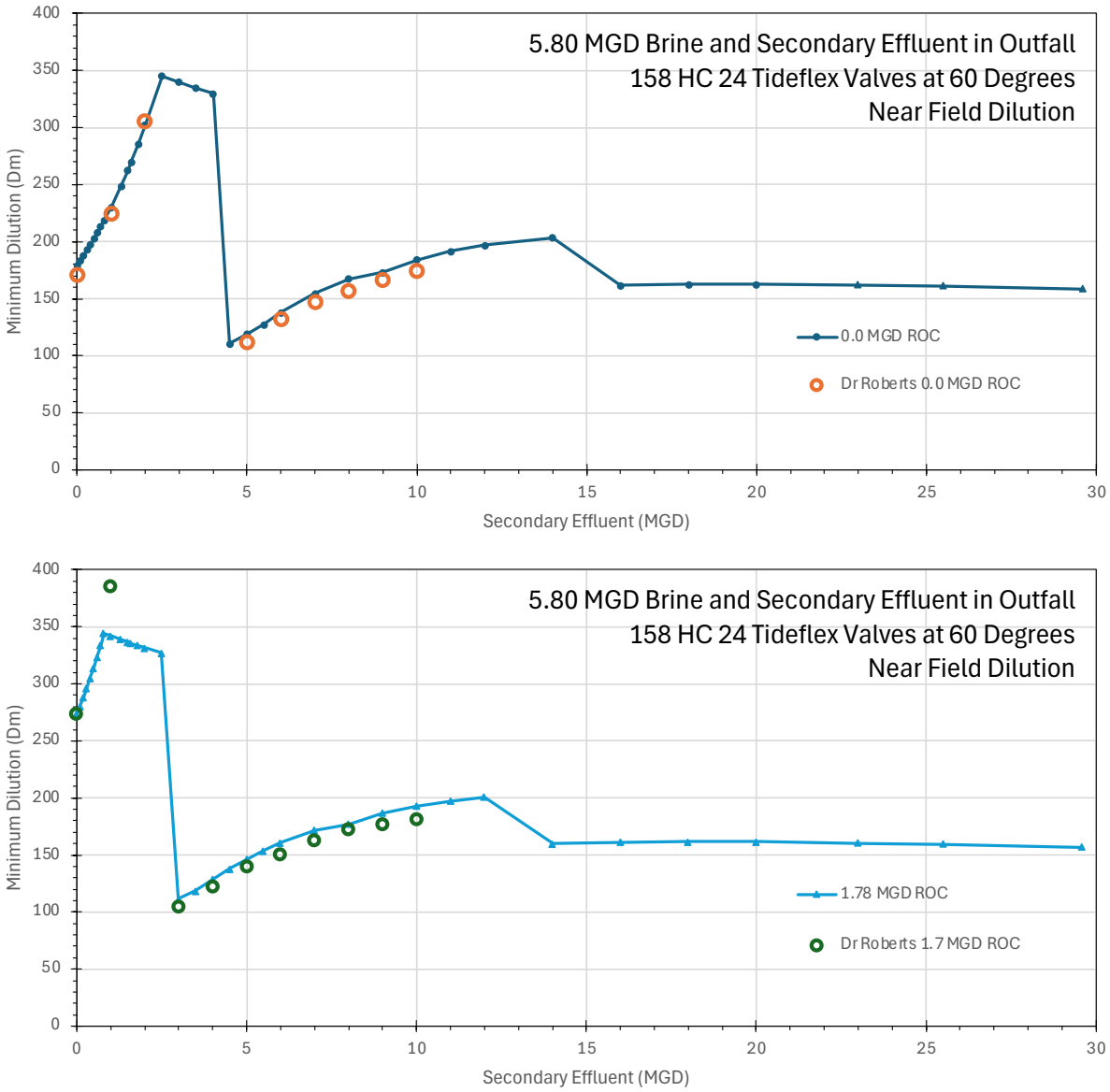


Figure C-3. Focused comparison of dilution scenarios that include brine discharges

RECONCILING LWA AND ROBERTS MODELS

No Brine Scenarios

No changes are made to the LWA model results where no brine is present. Both Roberts and LWA had identical results.

With Brine Scenarios

To be conservative, LWA calculated dilutions are multiplied by 0.931 for model scenarios where brine is present. Once the scaling factor is applied both LWA and Roberts result in a minimum dilution of 101. The scaling factor applied to the LWA calculated dilutions ensures consistent values for both the water quality compliance (using dilutions from LWA)and marine life mortality (using dilutions from Roberts) assessments.

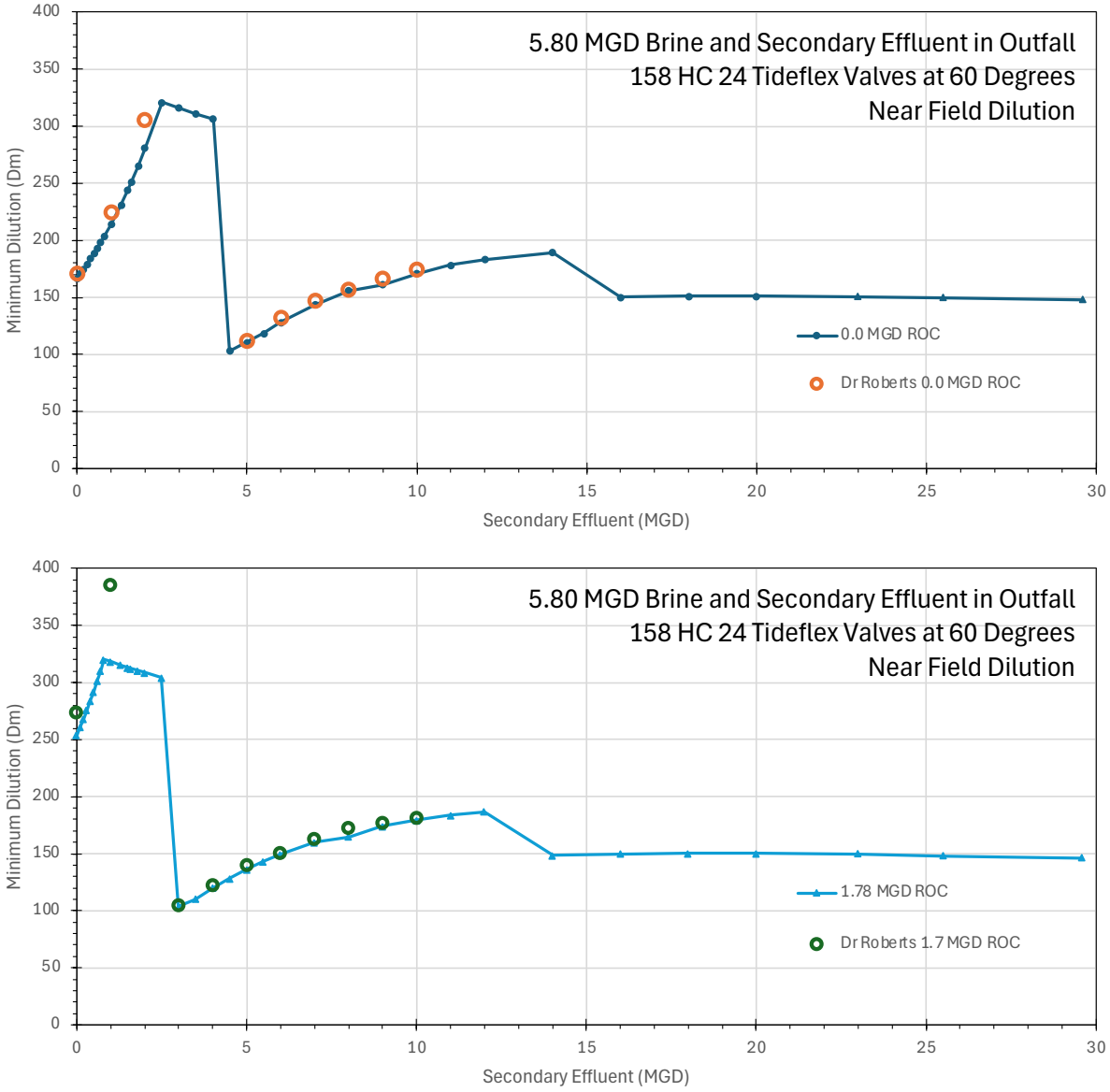


Figure C-4. Reconciled LWA dilution values compared to Roberts for scenarios that include brine discharges

Appendix G

Technical Memorandum: MPWSP Modifications and Long-Term Marine Biological Monitoring Program

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Technical Memorandum
CalAm Monterey Peninsula Water Supply Project: Marine Resources Assessment of the Proposed Outfall Modifications

December 2025

Addendum
CalAm Monterey Peninsula Water Supply Project: Modifications and Long-Term Marine Biological Monitoring Program

August 2026

Prepared for:

Denise Duffy and Associates
947 Cass St Suite 5, Monterey, CA, 93940
and
California American Water
511 Forest Lodge Road #100, Pacific Grove, CA 93950

Prepared by:

APPLIED marine SCIENCES
4749 Bennett Drive, Suite L
Livermore, CA 94551

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I. Introduction

The Monterey Peninsula Water Supply Project (MPWSP) was originally approved by the California Public Utilities Commission (CPUC) in September 2018. The MPWSP consists of the construction and operation of a maximum 6.4 million-gallon per day (mgd) desalination plant located in unincorporated Monterey County. In December 2025, Applied Marine Sciences, Inc. (AMS) prepared the Technical Memorandum for the California American Water Company (CalAm) MPWSP: Marine Resources Assessment of Proposed Outfall Modifications (AMS, 2025). This document addressed the potential for any new marine environmental impacts from modifications to the Monterey One Water (M1W) outfall as originally proposed in the Final 2018 Environmental Impact Report / Environmental Impact Statement (EIR/EIS) for the CalAm MPWSP. The 2018 Final EIR/EIS also described mitigation measures that must be implemented by the MPWSP to ensure that salinity and other water quality standards are upheld as a result of discharging desalination brine into Monterey Bay (CPUC, 2018). This requires the use of an anchored, continuous monitoring system to track changes in water quality parameters around the M1W outfall.

On April 1, 2026, M1W submitted a coastal development permit (CDP) application to the California Coastal Commission (CCC) in connection with proposed modifications to its outfall to accommodate brine discharge from the MPWSP. On April 29, 2026, CCC issued M1W a Notice of Incomplete Application that requested, among other information, "a description and site plan of the proposed monitoring buoy components, locations, anchor system design, and methods for placement and monitoring…[and to] address the technical design rationale and benthic footprint for the proposed buoy anchor system(s)" (CCC, 2026). The Monitoring and Reporting Plan for the California American Water Company Desalination Brine Discharge Monitoring Program (BDMP) (AMS, 2026) describes the locations and components of the monitoring buoy equipment.

Additionally, CCC staff asked M1W to "provide a benthic habitat and marine resource impact analysis for construction and operation of all portions of the proposed offshore outfall maintenance work and modifications including the associated monitoring buoys. This analysis should also address all mitigation measures proposed to avoid and minimize adverse impacts and the disturbance footprint." CCC staff's request encompasses two distinct components of the MPWSP: (1) construction and operation of the proposed modifications to the M1W outfall diffuser ports and end gate, and (2) installation and operation of the BDMP monitoring equipment, including the subsurface Conductivity-Temperature-Depth (CTD) instrument nodes and the surface environmental data buoy. Benthic habitat and marine resource impacts from implementation of the outfall modifications are addressed in the Technical Memorandum for the CalAm MPWSP: Marine Resources Assessment of Proposed Outfall Modifications (AMS, 2025) (the Outfall Modifications TM). As discussed in the Outfall Modifications TM, the proposed outfall modifications are consistent with those analyzed in the Final EIR/EIS (CPUC, 2018), equivalent in scope and method to routine M1W outfall maintenance, and would not result in any additional impacts to marine biological resources beyond those previously identified. This Addendum to the Outfall Modifications TM addresses the second component of staff's question—the incremental benthic and marine resource impacts associated with installation and operation of the BDMP monitoring equipment.

II. Mitigation Measures

2018 Final EIR/EIS

In considering the MPWSP, the 2018 Final EIR/EIS assessed potential impacts to marine resources associated with MPWSP construction and operation. The 2018 Final EIR/EIS concluded that all impacts of the MPWSP on marine biological resources would be less than significant and would not require separate mitigation. The 2018 Final EIR/EIS further explained that implementation of mitigation already required to address the MPWSP's water quality impacts (Mitigation Measures 4.3-4 and 4.3-5) would further ensure that MPWSP brine discharge complies with applicable regulatory requirements that are protective of marine biological resources.

Mitigation Measures 4.3-4 and 4.3-5 are copied in relevant part below.

Mitigation Measure 4.3-4 (Operational Discharge Monitoring, Analysis, Reporting, and Compliance)

In the 2018 Final EIR/EIS (CPUC, 2018) Mitigation Measure 4.3-4: Operational Discharge Monitoring, Analysis, Reporting, and Compliance states that:

"To ensure that the operational discharges from the MPWSP are in compliance with the 2 ppt [parts per thousand] receiving water salinity limitation at the BMZ [brine mixing zone] compliance point required by the California Ocean Plan [Ocean Plan], the discharger(s) shall implement a Monitoring and Reporting Plan (Plan). The Plan shall, at a minimum, include protocols for monitoring of effluent and receiving water salinity characteristics as well as protocols for determining statistically significant changes in benthic community composition within the maximum extent of the ZID [zone of initial dilution] as compared to baseline conditions (established a minimum of one year prior to operations) that is directly associated with changes in salinity resulting from operational discharges (with consideration given to natural and seasonal variations and long-regional trends). Such protocols shall include, but not be limited to, monitoring for benthic community health, aquatic life toxicity, and hypoxia, within the ZID. The Plan shall be consistent with the standard monitoring procedures detailed in Appendix III of the Ocean Plan. Such monitoring protocols specify monitoring plan framework, scope, and methodological design for determining compliance with the Ocean Plan defined receiving water limitations relating to salinity. Prior to implementation, the Plan shall be approved by the RWQCB [Regional Water Quality Control Board] and MBNMS [Monterey Bay National Marine Sanctuary]. Following implementation, the Plan shall be reviewed by the RWQCB, and revised, if necessary, as part of the NPDES [National Pollutant Discharge Elimination Systems] permit renewal process.

As part of the Plan, receiving water monitoring for salinity shall be conducted at times when the monitoring locations are most likely to be potentially adversely affected by the discharge. The Plan shall establish protocols to establish baseline biological conditions at the discharge location as well as at a reference location outside the influence of the discharge for at least one year prior to commencement of project construction. To determine impacts on marine biological resources

against baseline biological conditions, the discharger(s) shall conduct biological surveys (e.g., Before-After Control-Impact studies), that evaluate and quantify the differences between biological communities at a reference site and at the discharge location before and after the discharge(s) commence. All monitoring data, results, and analyses shall be compiled and submitted to the RWQCB and MBNMS for review. Such monitoring shall continue until the RWQCB and MBNMS determines that a regional monitoring program is adequate to ensure compliance with the receiving water limitation.

Water Quality Monitoring. At a minimum, the Plan shall include the following water quality monitoring protocols and monitoring frequencies to assess baseline conditions and to track the compliance of the Project with the performance standard of ensuring operational discharges do not exceed ambient salinity by more than 2 ppt at the edge of the BMZ, as well as to assess the efficacy of any operational or design features implemented:

A. At least one year prior to implementing operational discharges, the discharger(s) shall install continuously recording automated water quality monitoring equipment, such as automatically recording water quality data sondes (water quality monitoring instrument), to monitor salinity and dissolved oxygen levels at one hour intervals in the receiving waters of Monterey Bay. The discharger(s) shall install water quality monitoring equipment at a minimum of four locations within 3 meters of the ocean floor as follows:

   a. 1 monitoring station at the edge of the Zone of Initial Dilution, but not more than 10 meters from the outfall diffuser.

   b. 1 monitoring station at the edge of the Brine Mixing Zone, representing the point of compliance with the Ocean Plan salinity standard (not more than 100 meters from the outfall diffuser).

   c. A representative reference location at least 1000 meters from the outfall diffuser, situated on the same elevation contour as that of the outfall diffuser, in an area outside the influence of operational discharges or other inputs to Monterey Bay, such as operational discharges from other facilities or freshwater inputs in the form of major surface water inputs.

B. Monitoring will be conducted for one year prior to the commencement of operational discharges to confirm baseline conditions.

C. Once operational discharges commence, the discharger(s) shall continue monitoring (for a minimum of five years, as described below) to confirm compliance of operational discharges with the Ocean Plan receiving water salinity limitation, which specifies discharges shall not exceed a daily maximum of 2 parts per thousand (ppt) above natural background salinity, as measured no further than 328 ft (100 meters) horizontally from the discharge point.

   The discharger(s) shall retrieve all data from deployed water quality monitoring instrumentation at least four times a year at quarterly annual intervals during both the one

year period of baseline monitoring and during the salinity standard compliance monitoring associated with operations. Following data collection, data shall be analyzed for compliance with the receiving water salinity standard defined in the Ocean Plan. Additionally, the salinity and dissolved oxygen data retrieved shall be used, in conjunction with biological survey data, to assess changes to benthic community composition within the ZID. The analyses and monitoring data shall be summarized and submitted to the RWQCB and MBNMS as annual reports as well as made publicly available via the project website. Reports shall include summary graphs of all quality-assured/quality-controlled data as well as statistical analyses of the data relative to historic baselines. Reports shall assess water quality data within the context of relevant water quality standards. The reports shall describe any measured adverse water quality related changes, such as high salinity or low dissolved oxygen levels that potentially impact marine habitat quality or benthic communities. The reports shall include assessment of the extent to which any measured changes were attributable to controllable factors, such as the variation of combined flows as part of operational discharges.

The analysis and reporting conducted as part of the Plan shall determine the need for corrective actions to be implemented in the form of the design features and operational measures prescribed in Mitigation Measure 4.3-5 to reduce identified impacts to less-than significant levels. As part of such a determination for implementation of corrective actions, a schedule for implementation shall be provided, as well as rationale for how such design features and/or operational measures were selected and the expected results following implementation. All analysis and reporting, including determinations for the need for corrective actions to be implemented, the schedule for implementation, and the rationale for selected corrective actions shall be approved by the RWQCB and MBNMS. If at the end of five complete years of monitoring operational discharges, the 24-hour average salinity measured at the edge of the BMZ is less than 75% of the salinity performance standard for 45 days without interruption under all discharge scenarios representative of typical operations (i.e. irrigation season and non-irrigation season operations), and with approval by the RWQCB and MBNMS, the discharger(s) may terminate the monitoring and reporting specified as part of this mitigation measure (but not terminate monitoring and reporting required as part of compliance with NPDES permit conditions or Ocean Plan monitoring and reporting requirements for discharges into California ocean waters)."

Mitigation Measure 4.3-5 (Implement Protocols to Avoid Exceeding Water Quality Objectives)

In the 2018 Final EIR/EIS (CPUC, 2018) Mitigation Measure 4.3-5: Implement Protocols to Avoid Exceeding Water Quality Objectives states that:

"***Compliance with Water Quality Objectives.*** Prior to MPWSP operations, and as part of the MRWPCA NPDES Permit amendment process (Order No. R3-2014-0013, NPDES Permit No. CA0048551), the permittee shall complete a water quality assessment. As part of the water quality assessment, the permittee shall:

• Quantify the projected final design discharge volume(s) by month based on project design and historic and projected monthly wastewater discharge volumes.

• Collect samples of the source waters and operational discharges and analyze them in a certified laboratory for the constituents listed in Table 1 of the California Ocean Plan (Ocean Plan Water Quality Objectives). Sampling must be completed in accordance with protocols approved by the US EPA and RWQCB.

• Demonstrate compliance for the full range of regulated water quality constituents specified in the Ocean Plan and NPDES water quality requirements in the context of minimum initial dilution values at the edge of the Zone of Initial Dilution (ZID) for the point of discharge.

If the results of the water quality assessment and waste disposal study find that operational discharges will not meet the NPDES water quality requirements, including the Ocean Plan receiving water limitation for salinity, at the edge of the zone of initial dilution (ZID) and the Brine Mixing Zone (BMZ), respectively (incorporated here as performance standards), then the MPWSP operational discharges shall not be released as proposed. Such operational discharges shall be subject to additional design features, engineering solutions, and/or operational measures to reduce the concentration of water quality constituents to be in conformance with the Ocean Plan water quality objectives and amended NPDES permit requirements at the edge of the ZID or BMZ, as applicable. Such necessary design features and operational measures shall either be implemented individually or in combination to achieve compliance (unless the RWQCB determines that different but equally effective measures be employed).”

III. Monitoring Program Methodologies

Water Quality Monitoring

To satisfy the requirements outlined in Mitigation Measures 4.3-4 and 4.3-5 of the Final EIR/EIS, water quality monitoring instrumentation will be installed to record hourly salinity and dissolved oxygen (DO) data at multiple distances from the outfall diffuser at least one year prior to first discharge by the MPWSP. As described in the Monitoring and Reporting Plan for the CalAm BDMP, CTD water quality monitoring sondes will be installed as close to the seafloor as possible at nine different locations: two at 32.8 ft (10 m) from the outfall diffuser, the maximum distance for the ZID station under Mitigation Measure 4.3-4; four at 328 ft (100 m) from the outfall diffuser, the BMZ compliance point; one at 3,280 ft (1,000 m) from the outfall diffuser, beyond the BMZ; and two at control stations, located a minimum of 3,280 ft (1,000 m) from the outfall diffuser (Figure 1). The target depths and site coordinates can be found in Table 1.

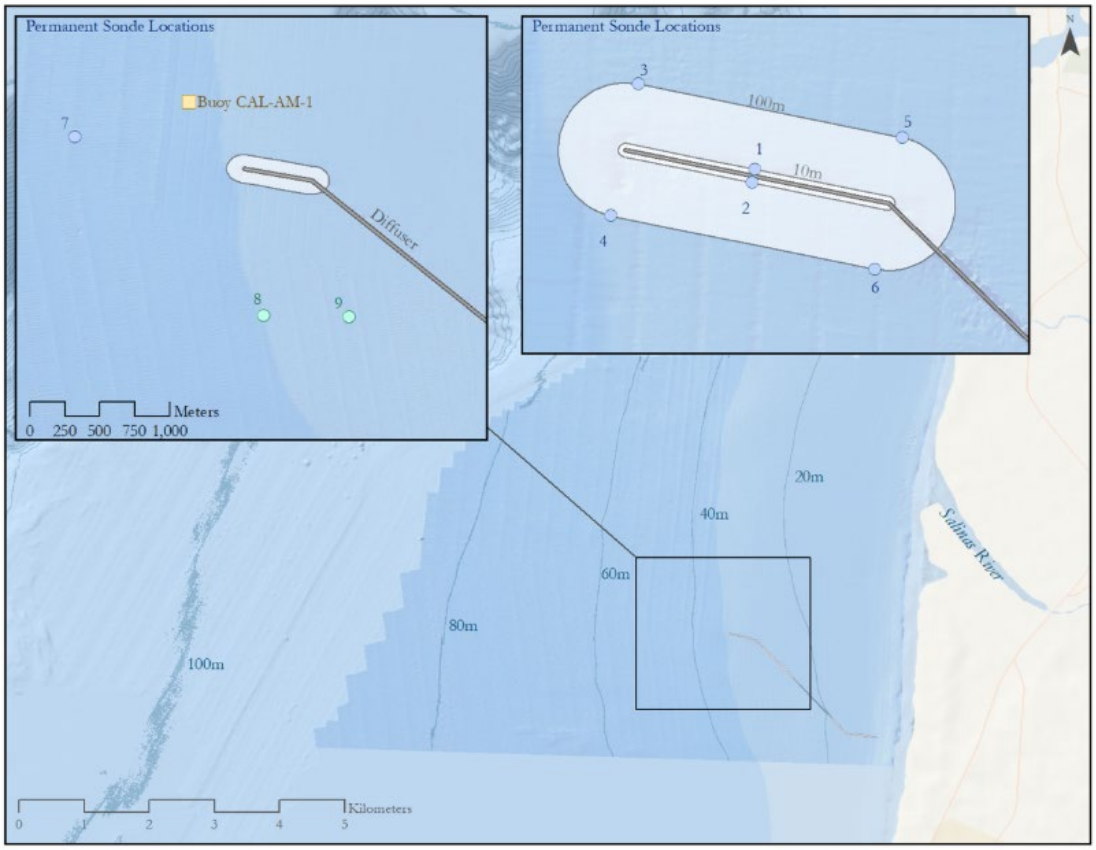


Figure 1. Locations of ocean monitoring CTD sonde deployments (blue and green circles) and data buoy (orange square) (AMS, 2026).

Table 1. Ocean monitoring locations for salinity and dissolved oxygen (AMS, 2026).

Station	Target Latitude	Target Longitude	Depth	Comments
1	36.727453	-121.836231	30 m	ZID Station; 10 m from the outfall diffuser, north
2	36.727277	-121.836278	31 m	ZID Station; 10 m from the outfall diffuser, south
3	36.728614	-121.838151	32 m	BMZ Station; 100 m from the outfall diffuser, west 1
4	36.726856	-121.838639	33 m	BMZ Station; 100 m from the outfall diffuser, west 2
5	36.727856	-121.833765	27 m	BMZ Station; 100 m from the outfall diffuser, east 1
6	36.726097	-121.834254	29 m	BMZ Station; 100 m from the outfall diffuser, east 2
7	36.729781	-121.849277	45 m	Far Field Station; 1000 m offshore from the outfall diffuser
8	36.718966	-121.837486	33 m	Background Station at least 1000 m south of the outfall diffuser, situated on the same elevation contour as stations 3 and 4 around the outfall diffuser, outside the influence of operational discharges or other inputs to Monterey Bay
9	36.718173	-121.831615	29 m	Background Station at least 1000 m south of the outfall diffuser, situated on the same elevation contour as stations 5 and 6 around the outfall diffuser, outside the influence of operational discharges or other inputs to Monterey Bay

Ocean Plan guidelines state that monitoring must continue for a minimum of five years following the commencement of operational discharge (SWRCB, 2019). However, modeling conducted for the EIR/EIS determined that DO would not be a concern as a result of mixing and entrainment of

ambient seawater at the diffusers (CPUC, 2018). If modeling demonstrates that DO would not be a concern after the first two years of discharge, CalAm may propose removing this component of the monitoring design. Similarly, if one of the two control stations is found to be redundant, CalAm may propose to eliminate or move this station (AMS, 2026).

The nine CTDs will be anchored in sand and suspended within 9.8 ft (3 m) above the seafloor in an instrument bundle. The configuration will contain a pop-up acoustic release with a float and line for easy retrieval and maintenance (Figure 2). The pop-up release mechanism negates the need for buoy lines in the water column which will reduce the risk of entangling marine mammals. Similar systems have been employed by the commercial fishing industry to protect marine mammals (Myers et al., 2019) and are now being used by the commercial crab fishery (National Fisherman, 2018). When the pop-up release is acoustically triggered and the float reaches the surface, a beacon on the float with a flashing light will begin blinking and the GPS position will be broadcasted to aid in recovery. The anchoring system for each CTD will consist of a single 300-lb (136 kg) custom retrievable iron anchor with a benthic footprint of 1.25 ft^2 (0.12 m^2). The CTDs will be powered by batteries capable of running the units between quarterly site visits by AMS scientists, in which the batteries will be replaced, and data will be downloaded (AMS, 2026).

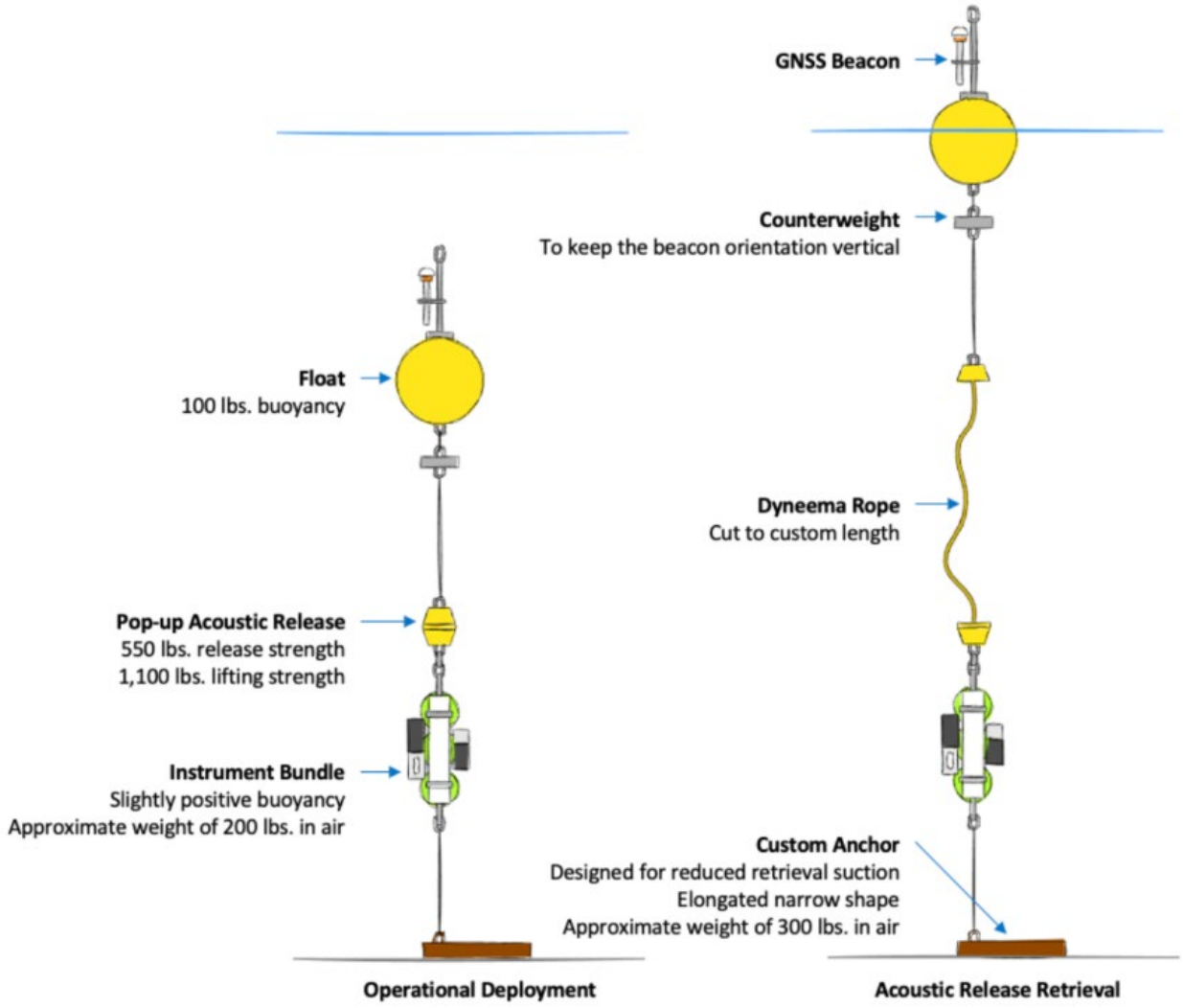


Figure 2. Sonde deployment and retrieval configuration (AMS, 2026).

A single, surface-mounted environmental data buoy will be deployed to receive acoustically transmitted data from the subsurface CTDs and relay the information for real-time monitoring (Figure 3). It will be placed in a location of Monterey Bay that is outside the area of regular vessel traffic, but will be equipped with a radar reflector, flash lamp, and bright yellow coloring to reduce the potential of collisions. The buoy will be moored to an area of sandy seafloor via a ½ in (0.64 cm) ballast chain, a riser consisting of 3/16 in (0.48 cm) stainless steel cabling, ¾ in (1.9 cm) bottom chain, and one 300-lb (136 kg) custom iron anchor, with a footprint of approximately 5 ft^2 (0.46 m^2). A 1.5:1 scope ratio will be used to limit slack and reduce the potential for marine mammal entanglement. As an added precaution, the buoy will be equipped with GPS and an alert system to notify field staff of unusual movement. When the buoy is recovered for annual maintenance, the anchor will remain, but a temporary float will be deployed to keep the mooring line at the surface until the buoy is reattached and redeployed. The anchor will be retrieved at the conclusion of the Program (AMS, 2026).

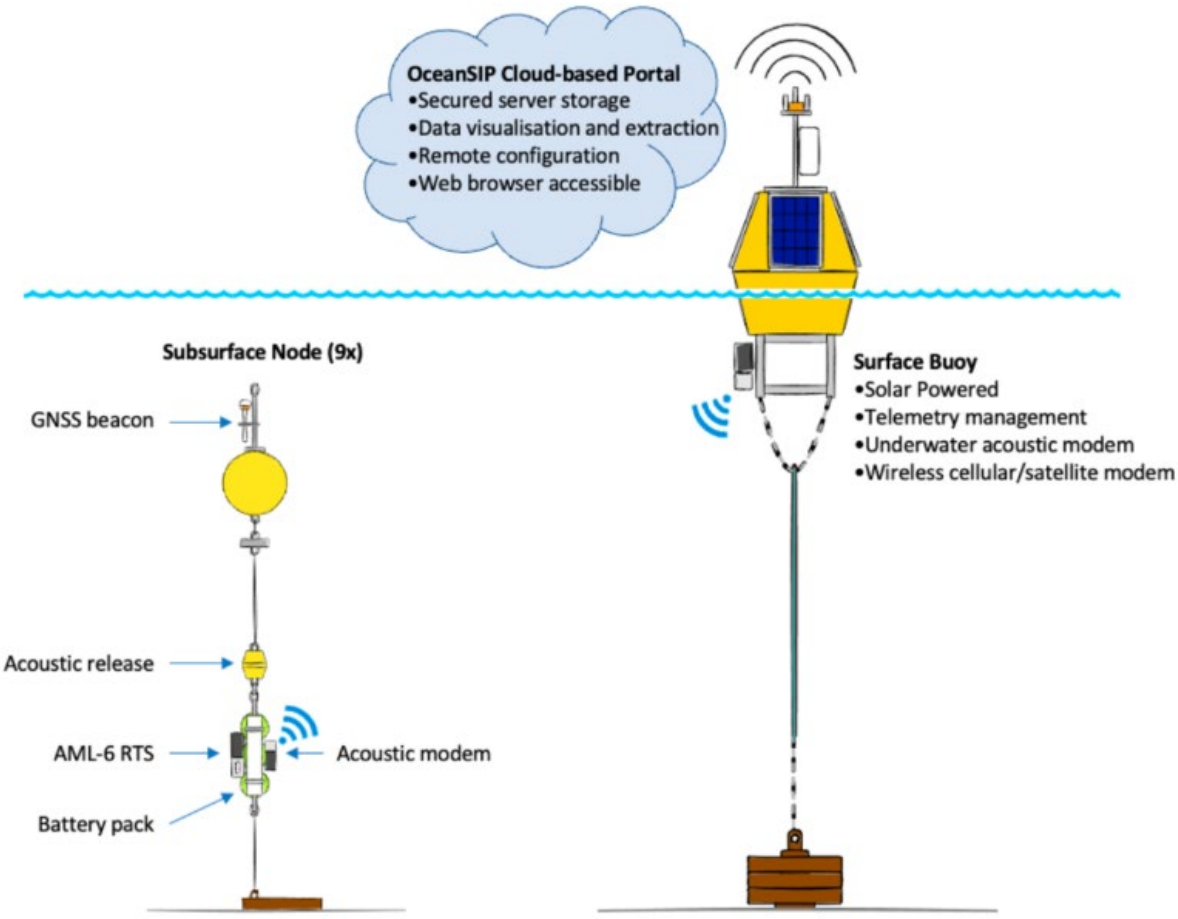


Figure 3. Buoy deployment configuration (AMS, 2026).

Benthic Monitoring

To ensure compliance with Mitigation Measure 4.3-4, benthic composition and community monitoring will also be conducted. Van-Veen sediment grabs (1.08 ft^2/0.1 m^2) will be used to assess organic pollutants, heavy metals, grain size, organic carbon, as well as the benthic infaunal assemblage. Infaunal samples will be screened through a 0.5 mm (0.02 in) nylon sieve. Five grabs will be collected at 32.8 ft (10 m) from the outfall, the maximum permitted distance for the ZID; five grabs will be collected at 328 ft (100 m) from the outfall, the maximum permitted distance of the BMZ at which the salinity receiving water limitation is measured; and five grabs will be collected at a background station, at least 3,280 ft (1,000 m) from the outfall diffuser (Figure 4). Initially sampling will occur twice-per-year in the wet and dry seasons, but this frequency may be reduced to annual, dry season sampling in subsequent years (AMS, 2026).

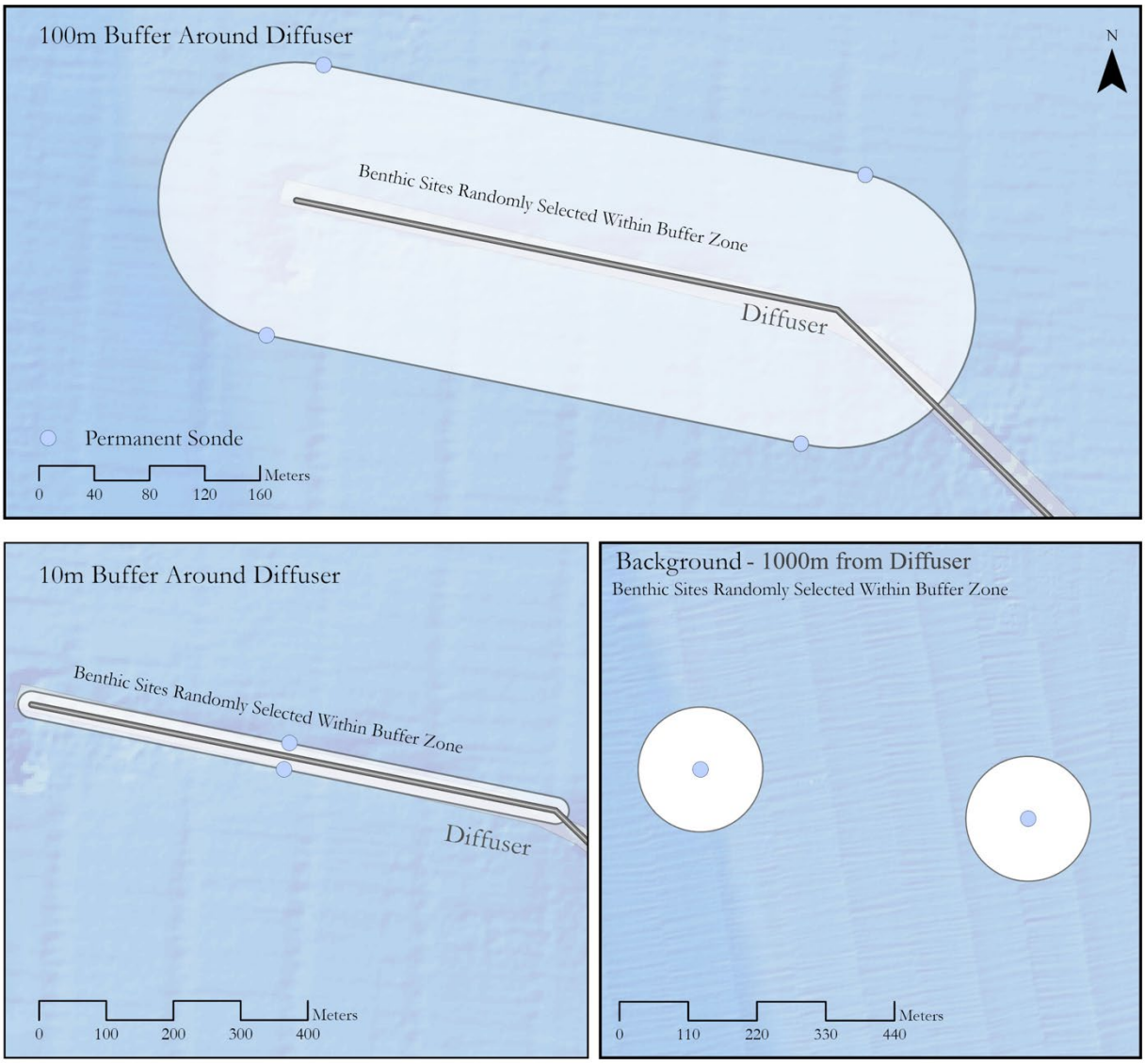


Figure 4. Sampling zones for biological effects investigations; 100 m from diffuser, 10 m from diffuser, and 1000 m from diffuser. Each biological survey will consist of five randomly selected benthic sampling stations within each sampling zone (N=15).

IV. Existing Biological Conditions

Benthic Habitat

Nearly 80 percent of the nearshore seafloor of the MBNMS is covered with soft sediment (SIMoN, 2026). As described in the Final EIR/EIS, the natural seafloor habitat around the M1W outfall is also composed of soft substrate (CPUC, 2018). Soft substrate habitats are typically less sensitive to disturbance than rocky hard bottom areas (Foden et al., 2010). Invertebrate infaunal communities found in seafloor sediments typically have short generation times and can

repopulate more quickly than the sessile slow-growing taxa often found on hard bottom substrates (Lissner et al., 1991; Zajac et al. 1998).

Special Status Species

Marine Mammals

The MBNMS is home to at least 36 species of marine mammals. They utilize the beaches for resting and breeding as well as nearshore and offshore habitats for foraging and migrating. Common taxa in Monterey Bay include southern sea otters (*Enhydra lutris nereis*), California sea lions (*Zalophus californianus*), and humpback whales (*Megaptera novaeangliae*) (NMSF, 2018). All marine mammals are protected under the Marine Mammal Protection Act of 1972, and many species found in Monterey Bay are listed as Threatened or Endangered under the Federal Endangered Species Act (FESA) in part or all of their ranges. These include, southern sea otters, humpback whales, orcas (*Orcinus orca*), gray whales (*Eschrichtius robustus*), blue whales (*Baleanoptera musculus*), fin whales (*Baleanoptera physalus*), sperm whales (*Physeter macrocephalus*), North Pacific right whales (*Eubalaena glacialis*), Sei whales (*Baleanoptera borealis*), Steller sea lions (*Eumetopias jubatus*), and Guadalupe fur seals (*Artocephalus townsendi*) (USFWS, 2023; NOAA, 2025a; NOAA, 2025b; NOAA, 2026a; NOAA, 2026b; NOAA, 2026c; NOAA, 2026d; NOAA, 2026e; NOAA, 2026f; NOAA, 2026g; NOAA, 2026h; NOAA, 2026i).

Other Special Status Species

Two special status benthic marine invertebrate species have the potential to occur within the area of implementation of the MPWSP and BDMP: red abalone (*Haliotis rufescens*) and sunflower sea stars (*Pycnopodia helianthoides*). As discussed in AMS (2025), red abalone are the world's largest species of abalone and are found along the west coast of North America from Southern Oregon to Baja California, Mexico. Red abalone inhabit intertidal and shallow subtidal rocky reefs and kelp beds 6-30 m (20-100 ft) deep where they feed on phytoplankton and macroalgae such as giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis luetkeana*) (Middlebrook, 1999; CDFW, 2025). They were once commercially harvested in California, but the fishery was closed in 2018 due to declining numbers (CDFW, 2026).

The sunflower sea star (*P. helianthoides*) has historically been found in intertidal and subtidal habitats from the Aleutian Islands in Alaska to northern Baja California, Mexico to a depth of at least 132 m (435 ft). This species was once a common predator of sea urchins, mollusks, and other marine invertebrates, but the population has declined significantly due to sea star wasting disease (SSWD). In 2023, the sunflower sea star was proposed to be listed as Threatened under the FESA (Shivji et al. 1983; Galloway et al. 2023; NOAA 2024; Prentice et al. 2025).

V. Impacts to Marine Biological Resources

Impacts from MPWSP Construction and Modifications

MPWSP Construction Activities

The MPWSP plans to use subsurface slant wells for its seawater intake, which removes the potential of impingements of marine organisms. The only potential impacts would occur during the construction phase. The 2018 EIR/EIS determined that "Underwater noise from the drilling operation itself, the potential accidental release of drilling fluid, and the possible discharge of clarified groundwater recovered during drilling operations are the only possible construction activities that could affect marine biological resources and habitat" (CPUC, 2018). Each of these potential impacts were determined to be Less than Significant (CPUC, 2018).

M1W Modifications

To successfully implement the MPWSP, the M1W outfall will require modifications. The 129 existing open outfall diffuser ports, currently fitted with horizontally oriented HC61 check valves, will be retrofitted with HC24 check valves and repositioned at an angle of 60 degrees. An additional 29 currently closed ports will be opened and fitted with the same HC24 valves, bringing the total to 158 of the 168 diffuser ports on the outfall. The end gate will also be retrofitted with a new neoprene seal to prevent sediment intrusion (Brown and Caldwell, 2025). The 60-degree diffuser retrofit was analyzed in the 2018 Final EIR/EIS (CPUC, 2018), which determined that "The impacts associated with the physical construction of such a retrofit would likely be minor and temporary, consisting primarily of minor construction-related sea-bed disturbance and water quality degradation in the form of increased turbidity and disturbance of benthic organisms on and adjacent to the outfall diffuser. Such temporary disturbances to the seafloor and increases in associated turbidity would be minor, primarily occurring over several hours to a day or two, through the process of divers staging and installing equipment to complete the retrofit of the diffuser." (Section 4.3, Page 4.3-119, CPUC, 2018). AMS (2025) reviewed the potential for impacts from the proposed modifications, including the 29 additional ports described in the ROWD Addendum and Basis of Design Report, and found no additional potential impacts beyond what was identified in the Final EIR/EIS (CPUC, 2018).

Impacts from Implementation of the Brine Discharge Monitoring Plan

Water Quality Monitoring

Benthic taxa present at the data buoy and CTD installation sites may be crushed or smothered upon deployment of the instrument bundles. Other species present nearby may experience temporary increases in turbidity. The seafloor contact area from all nine CTD anchors will be approximately 11.25 ft^2 (1.05 m^2). With quarterly CTD maintenance, the area of benthic disturbance from retrieval and redeployment should not exceed 45 ft^2 (4.2 m^2) per year. The environmental data buoy anchor will add an additional 5 ft^2 (0.46 m^2). The area of periodic and temporary disturbance caused by the sweeping of the anchor chain along the seafloor will add a maximum of 3,380 ft^2 (314 m^2) throughout the duration of the BDMP (AMS, 2026). The MBNMS covers 6,094 mi^2 of ocean (15,783 km^2), or 1.6989e^{11} ft^2 (1.5783e10 m^2) (Brown et al.,

2011). Therefore, deployment of the CTDs would only effect 0.00000003 percent of the MBNMS annually. Another 0.000000003 percent of the MBNMS would be affected by the environmental data buoy anchor, and 0.000002 percent would be periodically and temporarily disturbed by the anchor chain from the environmental data buoy over the duration of the BDMP. The area of disturbance will change and lessen depending on physical factors such as tides and currents. Additionally, if monitoring demonstrates that DO is not a concern, as described in the Final EIR/EIS (CPUC, 2018), and/or use of the second control CTD is determined to be redundant, possible removal of one or more units would minimize the duration of impact to the benthic infaunal community, and initiate the recovery and recolonization process even sooner. Based on the small area of disturbed benthic habitat within the MBNMS and the temporary time period over which the habitat would be unavailable for use, the loss is expected to be undetectable.

The introduction of anchors to the soft bottom benthic environment in the MBNMS for the implementation of the BDMP will also provide new hard bottom substrate habitat. This habitat will likely be colonized by larger, sessile invertebrates such as white-plumed anemones (*Metridium farcimen*) and strawberry anemones (*Corynactis californica*), which was the case with the outfall diffusers (Brennan, 2023). Any biota that colonizes the anchors will not be removed during quarterly CTD retrieval and maintenance (AMS, 2026).

Marine Mammal Entanglement

Multiple precautions have been included in the BDMP to prevent entanglement or other harm to marine mammals. The nine CTD units will be deployed and anchored to the seafloor with a pop-up release mechanism for easy retrieval and maintenance thus eliminating the need for buoy lines which are often responsible for marine mammal entanglement (Myers et al., 2019). The mooring system associated with the anchor of the single surface-mounted environmental data buoy will have a moderate scope ratio (1.5:1) to reduce the potential for marine mammal entanglement. The total mooring length is anticipated to be 172 ft (52.5 m), and the bottom length would be roughly 32.8 ft (10 m). The environmental data buoy will also have a GPS and an alert system to notify field staff of unusual movement, such as an entanglement event (AMS, 2026). Additionally, vessel operators transiting to and from sampling stations will operate at safe speeds and watch for the presence of marine mammals. The temporary and local increase in underwater noise from all vessels and maintenance associated with the MPWSP was addressed in the Final EIR/EIS (CPUC, 2018). BDMP vessel operations (small vessels making quarterly site visits) are limited in frequency and duration and are consistent with the vessel activity levels assessed in the Final EIR/EIS.

Impacts to Other Special Status Species

The Technical Memorandum prepared for the California American Water Company (CalAm) MPWSP: Marine Resources Assessment of Proposed Outfall Modifications by AMS (2025) addressed potential impacts to special status species. Two benthic marine invertebrates were discussed: red abalone (*H. rufescens*) and sunflower sea stars (*P. helianthoides*). Red abalone are only found on subtidal rocky reefs and kelp beds (Middlebrook, 1999). This habitat is not present within the area of impact of the BDMP, so they will be unaffected. Sunflower sea stars can

occupy soft substrate subtidal habitats and may occasionally be encountered at the depths relevant to the CTD anchor locations. However, the proposed CTD anchor footprints are confined to soft sandy substrate, each with a static benthic contact area of approximately 1.25 ft² (0.12 m²). The probability of a CTD anchor directly contacting a sunflower sea star is extremely low given both the small individual footprints and the severely reduced abundance of this species throughout Monterey Bay following the sea star wasting disease (SSWD) outbreak. As documented in AMS (2025), no sunflower sea stars were observed during the December 2023 Brennan pipeline survey of the M1W outfall and surrounding seafloor. Based on habitat type, relatively small anchor footprint, and the low probability of encounter given post-SSWD population declines, the BDMP monitoring equipment is not expected to result in take or other adverse impacts to sunflower sea stars.

Benthic Monitoring

The benthic infauna collected in the Van Veen sediment grabs will suffer mortality for community composition assessment, but similarly to the water quality monitoring component of the BDMP, the area of impact will be minimal. Additionally, fauna present near the sampling area may be subjected to temporary increases in turbidity. At the start of this monitoring effort when 15, 1.08 ft^2 (0.1 m^2) sediment grabs are collected twice annually, the area of impact will include a total footprint of 32.3 ft^2 (3 m^2). The MBNMS covers 1.6989e^{11} ft^2 (1.57832974656e10 m^2) of ocean (Brown et al., 2011). Therefore, the sediment grabs would only effect 0.00000002 percent of the seafloor within the MBNMS annually. When the effort is reduced to annual surveys, the area of impact will only include a total footprint of 16.1 ft^2 (1.5 m^2) or 0.00000001 percent of the seafloor within the MBNMS each year. This area of loss is expected to be undetectable.

Recovery and Recolonization

Following removal of CTD and environmental data buoy anchors, and completion of benthic sediment grabs, recolonization by benthic invertebrates should begin quickly. The small area of impact compared to the large unaffected area nearby means that immigration of benthic organisms can occur easily (Whitlatch et al., 1998). Recolonization typically follows a pattern of succession that can be divided into three distinct groups. After the cessation of environmental disturbance, r-selected opportunistic species are the first to return. Group I species are characterized by rapid development and short generation times and include taxa such as polychaete worms and amphipods. Group II species are lower in abundance and have slower recruitment and growth rates. They include taxa like bivalve mollusks and tube worms. Finally, Group III colonizers include larger, slower growing, K-selected taxa (McCall, 1976).

Recovery rate is heavily dependent on the type of environment (Dernie et al., 2003). Kröger (2003) examined recovery times of subtidal macroinvertebrates in soft substrate habitats following experimental disturbance. The results showed that after 378 days, macroinvertebrate assemblages in treatment plots were very similar in terms of abundance and species composition to control plots. The study concluded that full recovery should be achieved two years post-disturbance. Many studies on benthic recovery examine recolonization following dredging. Mud-sand habitats may require 18 months to return to a pre-dredging state and recovery in courser

sand habitats may take one to two years or more (Newell et al., 1998). It should be noted that the depth of penetration of a dredge can be 1.6 ft (0.5 m) or more, which is likely deeper than that of the anchors or Van Veen grab used to monitor water quality and benthic community composition in the BDMP, and recovery could occur more quickly.

VI. Best Management Practices for BDMP Installation and Operation

The CCC's request for information asks that the benthic impact analysis address all measures proposed to avoid and minimize adverse impacts and to estimate the disturbance footprint.[1] The best management practices applicable to the BDMP monitoring equipment are summarized below:

- Physical disturbance minimization — CTD anchor design: Each of the nine CTD instrument bundles is anchored with a single 300-lb (136 kg) custom retrievable anchor with a static benthic footprint of approximately 1.25 ft² (0.12 m²). Anchors are placed on soft sandy substrate, avoiding biogenic habitat and the hard-substrate community on and around the M1W outfall structure. Additionally, during annual maintenance of the environmental data buoy, a temporary float will be deployed to keep the mooring line at the surface until the buoy is reattached and redeployed (AMS, 2026).
- Marine mammal entanglement avoidance — pop-up acoustic release system: CTD units are equipped with a pop-up acoustic release mechanism that eliminates the need for vertical buoy lines in the water column. This design removes a primary source of large whale entanglement risk (Myers et al., 2019) and is consistent with ropeless fishing technology now approved for use in California waters (National Fisherman, 2018).
- Marine mammal entanglement avoidance — buoy mooring design: The surface environmental data buoy is moored using a 1.5:1 scope ratio to limit slack and reduce the probability of mooring line entanglement. The buoy is equipped with GPS and a movement alert system to notify field staff of unusual displacement consistent with an entanglement event, enabling rapid response (AMS, 2026).
- Marine mammal vessel strike avoidance: Vessel operators transiting to and from CTD maintenance stations will maintain safe operating speeds and post a dedicated marine mammal watch during all transits. This measure is consistent with MBNMS vessel operating guidelines.
- Biofouling retention: Any biota that colonizes the CTD anchors or hardware during deployment will not be deliberately removed during quarterly retrieval and maintenance operations (AMS, 2026). This preserves secondary hard substrate habitat created by anchor structures and avoids unnecessary mortality of sessile invertebrates.
- Monitoring program optimization: The BDMP design incorporates provisions to reduce the number of deployed CTD units over time if monitoring data demonstrate that dissolved oxygen is not a concern or that a second control station is redundant (AMS,

[1] Best management practices for implementation of the M1W outfall modifications are addressed in AMS (2025), which establishes that construction methods are equivalent to routine maintenance and consistent with the Final EIR/EIS analysis.

2026). Reducing the number of deployed units would further minimize the cumulative benthic footprint and initiate recovery of impacted sediment areas sooner.

VII. Conclusion

The methods described in the BDMP are designed to satisfy the requirements of Mitigation Measures 4.3-4 and 4.3-5 outlined in the Final EIR/EIS, while minimizing potential marine impacts. Implementation of the BDMP would result in largely undetectable impacts to the marine environment due to integration of specific design features and methods intended to avoid and minimize potential impacts to the extent feasible. The potential impacts identified in this memorandum are also consistent with those previously evaluated in the original California Environmental Quality Act/National Environmental Policy Act environmental assessment for the approved MPWSP (CPUC, 2018; AMS, 2026).

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Appendix H

Technical Memorandum: Updated Assessment of Salinity, Brine Constituents, and Marine Life Mortality of the Proposed M1W Outfall Diffuser Modification for the MPWSP

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TECHNICAL MEMORANDUM

TO:	Arwen Wyatt-Mair, Central Coast Regional Water Quality Control Board
CC:	NOAA / Monterey Bay National Marine Sanctuary
FROM:	Aroon R. Melwani, PhD, Applied Marine Sciences Philip J.W. Roberts, PhD, Professor Emeritus Al Preston, PhD, Geosyntec Consultants
DATE:	September 8th, 2026
SUBJECT:	Updated Assessment of Salinity, Brine Constituents, and Marine Life Mortality of the Proposed M1W Outfall Diffuser Modification (MPWSP)

1. Introduction

The Monterey Peninsula Water Supply Project (MPWSP) will produce desalination brine that is proposed to be commingled with Monterey One Water (M1W) secondary effluent and discharged to Monterey Bay through the existing M1W ocean outfall. To provide the near-field dilution required by the California Ocean Plan, M1W proposes to modify the outfall diffuser as follows: 129 horizontally oriented HC61 duckbill check valves would be replaced with stiffer HC24 valves angled 60 degrees upward, and 29 currently closed ports would be opened and fitted with HC24 valves angled 60 degrees upward, resulting in 158 open ports with HC24 valves of the 168 physical ports on the outfall (Brown and Caldwell 2025).

The marine resource impacts of the brine discharge through M1W's outfall were evaluated in the Final Environmental Impact Report/Environmental Impact Statement (Final EIR/EIS) for the MPWSP (CPUC/MBNMS 2018), which analyzed potential impacts based on the existing 129-port horizontal diffuser. Because the diffuser configuration has changed since the Final EIR/EIS, the salinity impacts, discharge constituents, and marine life analyses require updating to determine whether the proposed diffuser configuration would result in any additional environmental effects beyond those evaluated in the Final EIR/EIS. This analysis focuses on discharges that could result in effluent densities greater than seawater in keeping with the brine disposal requirements of the California Ocean Plan. For the reasons described below, the proposed diffuser modifications would not result in any new or increased environmental effects. In fact, the proposed diffuser configuration would reduce the extent of potential impacts identified in the Final EIR/EIS.

2. Purpose

This memorandum provides an updated assessment of the potential impacts of the proposed diffuser modifications on ocean salinity, discharge constituent concentrations, and marine biological resources, using the same analytical framework applied in the Final EIR/EIS so that the results are directly comparable. It addresses:

- The California Ocean Plan salinity requirements applicable to the commingled discharge, and the definition of the brine mixing zone (BMZ) used in this and prior analyses;
- The size of the zone of initial dilution (ZID) and the BMZ, and salinity at the edge of the ZID;
- The area of seafloor habitat affected by discharged brine constituents within the ZID, calculated in a manner consistent with the Final EIR/EIS method;
- Potential impacts on species and habitats of particular concern, including market squid spawning habitat and red abalone;
- Shear stress mortality of planktonic organisms, drawing on the draft Marine Life Mortality Report; and
- Vertical infiltration at the seafloor associated with the seaward extension of the subsurface slant wells.

3. Background

3.1 Regulatory framework

Chapter III.M.3 of the Ocean Plan (SWRCB, 2019) establishes the receiving water limitation for salinity. It applies to desalination facilities discharging to ocean waters and to wastewater facilities that receive brine from a seawater desalination facility and discharge to ocean waters (Ocean Plan Chapter III.M.1.d), which is the proposed use of the M1W outfall. The limitation states that discharges shall not exceed a daily maximum of 2.0 ppt above natural background salinity, measured no farther than 100 meters (328 feet) horizontally from each discharge point; there is no vertical limit to this zone.

Appendix I of the Ocean Plan defines the Brine Mixing Zone ("BMZ") as the area within which salinity from desalination facility brine discharge exceeds 2.0 ppt above natural background. For brine discharges, this is conventionally interpreted as the seabed area over which that increment is exceeded, reflecting the purpose of the objective to protect benthic organisms that cannot avoid a dense, bottom-hugging plume from sustained osmotic stress.

The Ocean Plan applies two different definitions of dilution depending on the water quality objective. Salinity is evaluated using the minimum dilution, which for a dense discharge always occurs where the jet centerline impacts the seabed. The Ocean Plan Table 3 water quality objectives are evaluated by the minimum average initial dilution (Dm), which is defined as the lowest average initial dilution, equal to the flux-averaged value at the completion of dilution. For inclined dense jets, this dilution value is approximately twice the minimum centerline dilution (Roberts et al. 1997; Roberts 2025). The salinity objective is therefore assessed against a dilution figure that is half of the value used for constituent-based objectives of Table 3.

3.2 Use of the term "brine mixing zone" in prior submittals

For purposes of evaluating potential impacts related to the proposed diffuser modifications, it is necessary to clearly define the Brine Mixing Zone ("BMZ") for consistency with the approach and methodology in the Final EIR/EIS. Several reports submitted in connection with the Report of Waste Discharge (ROWD) (M1W,

2025) use the term "brine mixing zone" to mean the horizontal extent of near-field mixing, i.e., the distance from the diffuser over which initial dilution is completed, rather than the area over which salinity exceeds 2.0 ppt above natural background:

> *"This limitation sets the upper limit for a brine mixing zone. The size of the near-field mixing zone will be determined by the dilution models, and the minimum of the modeled result or 100 meters will be used in assessing results." (LWA 2025, p. 78)*

> *"The Abessi and Roberts 2014 model calculates the distance from the diffuser encompassing the near-field mixing. All modeled scenarios with the HC 24 valves fall below a maximum brine mixing zone of 175 feet (53.3 m), well within the prescribed Ocean Plan limit." (LWA 2025, p. 92)*

On that basis, the ROWD reports near-field extents of 173-175 feet at the 5.80 mgd minimum brine flow and 159-160 feet at 8.66 mgd brine flow (LWA 2025, Table 7). That analysis was directed at demonstrating compliance with the Ocean Plan water quality objectives, for which the near-field extent is the correct spatial construct for that purpose.

That usage of "brine mixing zone", however, does not correspond to the Ocean Plan definition of the BMZ as it relates to discharges from desalination facilities. In Chapter III.M.3 of the Ocean Plan, 100 meters is the boundary at which the salinity objective is measured, not a permitted mixing zone dimension. The ROWD's reported figures of 159-175 feet describe how far the near field extends, not how far the 2 ppt exceedance extends, and the two are not interchangeable. Applying the Ocean Plan Appendix I definition of the BMZ to the modeling results for the proposed modifications is presented below in Section 4.1.

3.3 The Final EIR/EIS analysis and findings

The Final EIR/EIS evaluated brine discharge through the outfall under its existing configuration, with 129 open ports discharging horizontally. Its principal findings on the matters addressed here are summarized in Table 1.

Table 1. Summary of Final EIR/EIS findings for salinity, brine constituents, and marine life mortality of brine discharge through the M1W outfall, as evaluated for the existing 129-port horizontal diffuser. Source: CPUC/MBNMS (2018).

Topic	Final EIR/EIS finding
Zone of initial dilution	Extends 3 to 11.9 m (10 to 39 ft) from the diffuser depending on operating scenario; area taken as 21 ft wide × 1,100 ft long = 23,100 ft²
Peak salinity	35.49 ppt at edge of ZID (+1.6 ppt above peak ambient of 33.89 ppt); 35.23 ppt at edge of BMZ
Volume exceeding 2 ppt	8.5 ft³ per port × 129 ports = 1,100 ft³, in the water column above the seafloor; 0.3–1.25% of near-seafloor water volume
Squid spawning habitat	3–11.9 m half-width × 335 m × 2 sides = 2,010–7,800 m² (21,635–85,800 ft²); 0.0042–0.0163% of suitable habitat south of Monterey Submarine Canyon
Brine constituents	Dilution 15:1 to 59:1 at edge of ZID; 1.5 ft plume diameter → 1.77 ft² per plume × 129 = 228 ft², <1% of ZID area
Shear stress mortality	0.00261% of nearshore plankton per day; maximum annual loss less than 1% of the population

The Final EIR/EIS concluded that impacts to marine biological resources from brine discharge would be less than significant. The Final EIR/EIS also concluded that implementation of mitigation related to water quality (Mitigation Measures 4.3-4, 4.3-5) would further ensure that MPWSP brine discharges comply with applicable regulatory standards that are protective of marine biological resources.

3.4 Methodology and consistency with the Final EIR/EIS

The updated analysis uses the same analytical structure as the Final EIR/EIS, with model inputs revised to reflect the proposed modifications to the diffuser configuration (i.e., opening 29 closed ports for a total of 158 open ports, all fitted with stiffer HC24 valves angled at 60 degrees). Dense (brine-dominated) discharges are modeled using the semi-empirical equations for inclined dense jets of Roberts (2018); the Final EIR/EIS characterized its dense discharge plumes principally with UM3, supported by a semi-empirical analysis (Roberts 2017, Appendix D1 to CPUC/MBNMS 2018). As in the Final EIR/EIS, buoyant discharges are modeled with the UM3 model of the EPA Visual Plumes suite. However, because the modified ports will discharge at 60 degrees rather than horizontally and entrainment models (such as UM3) are known to underestimate end-of-near-field dilution for dense jets, the inclined dense jet relationships are used for this analysis instead. The analytical framework is unchanged from the Final EIR/EIS, applying the same ZID and BMZ definitions, comparison metrics and impact thresholds; only the near-field dilution method has been updated to suit the proposed port geometry.

Roberts (2025) evaluated 122 flow scenarios spanning the full permitted range of secondary effluent (0–75.6 mgd), reverse osmosis concentrate (0–1.78 mgd), and desalination brine (0–8.66 mgd), each under three seasonally averaged density profiles. The worst-case pure-brine condition — 8.66 mgd of 60 ppt brine with no dilution by wastewater, designated Case C1 — was not among those 122 scenarios and was evaluated in a supplemental model run performed specifically to address questions in this memorandum. Case C1 is the controlling case for salinity and is cited as such throughout this analysis.

Natural background salinity at diffuser depth is referenced throughout this document as 34.27 PSU (Upwelling), 33.97 PSU (Oceanic), and 33.90 PSU (Davidson) (Roberts 2025, Table 1).

Habitat and species impacts are assessed using the same comparison the Final EIR/EIS applied: the affected area is expressed as a percentage of suitable habitat, and modeled salinity is compared against published tolerance ranges for the species of concern. Shear stress mortality is assessed using the Empirical Transport Model / Area of Production Foregone (ETM-APF) framework of the draft Marine Life Mortality Report (AMS 2026), which supersedes the hydrodynamic screening estimate used in the Final EIR/EIS.

4. Analysis

Each subsection below compares the Final EIR/EIS result, the corresponding evaluation of the proposed modifications to the project analyzed in the Final EIR/EIS, and the degree of change, where applicable. As demonstrated throughout the analysis in each subsection, the proposed project modifications produce smaller affected areas, lower peak salinities, and lower mortality than the configuration evaluated in the Final EIR/EIS, notwithstanding the increase from 129 to 158 open ports.

As demonstrated, replacing the horizontally oriented HC61 valves with stiffer HC24 valves angled 60 degrees upward increases per-port jet velocity and lengthens the jet trajectory, so each jet entrains and dilutes ambient seawater more rapidly than the existing horizontal ports. The added ports also distribute

the same discharge over a larger number of smaller jets. Both changes reduce the size of the elevated-salinity field and more than offset the increase in port count.

4.1 Salinity

4.1.1 Size of the zone of initial dilution

The Final EIR/EIS defined the ZID for a dense discharge as the region between the diffuser port and the point at which the descending plume contacts the seafloor. The Final EIR/EIS stated that the ZID extends 3.0 to 11.9 meters (10 to 39 feet) from the diffuser depending on operating scenario, and for the purpose of the benthic contact calculation, adopted an area of 1,100 feet long by 21 feet wide, or 23,100 square feet.

The discharging section of the diffuser lengthens with the proposed modifications. The 29 ports to be opened (ports 130 through 158) lie inshore of the currently open ports, extending it from approximately 1,024 feet (312 m) at 129 open ports to approximately 1,256 feet (383 m) at 158 open ports, at the nominal 8-foot port spacing used in the hydraulic model (LWA 2025; Brown and Caldwell 2025).

Under the proposed configuration, the plume contacts the seafloor between 2.7 and 53.6 m (9 to 176 feet) from the diffuser, compared with 3.0 to 11.9 m (10 to 39 feet) in the Final EIR/EIS. The longer trajectories occur only where brine is commingled with secondary effluent. As effluent is added the discharge approaches neutral density, so the descending jet travels farther before contacting the seabed and dilution increases. Those cases therefore reach the seabed with the smallest salinity difference from the receiving water. In every case in which the plume reaches the seabed with a salinity increment above natural background, the salinity increment was no more than 0.40 ppt with a contact distance of between 3.7 and 6 m (12 to 21 feet) from the diffuser. In every case in which the plume contacts the seabed beyond 6 m, the associated salinity increment is 0 ppt. Thus, the most distant case where the plume reaches the seabed at 53.6 m (176 feet) arises from a density difference of 0.1 kg/m³ and a minimum dilution of 1,373:1, at which point the discharge is indistinguishable from the receiving water before it reaches the seabed.

The ZID width associated with the proposed modifications is governed by the pure-brine case, C1, which contacts the seafloor at a distance of 3.7 meters (12 feet), which is very similar to the ZID width of 3.0 meters (10 feet) for the pure brine, Scenario 2, in the Final EIR/EIS. Case C1 produces the maximum salinity attributable to the discharge, which is no more than 0.40 ppt above natural background under every modeled scenario (Table 2), compared to the maximum increment of 1.6 ppt for the Final EIR/EIS brine-only case.

Consistent with the approach in the Final EIR/EIS, the ZID for the purposes of the seafloor contact calculation is based on the pure brine scenarios, where the greatest differential between the discharge and ambient salinity occurs. As a result, a ZID width of 24 feet with the updated 1,256 feet length, produces a ZID area of 30,144 square feet. The ZID area is larger than the 23,100 square feet reported in the Final EIR/EIS because the discharging section of the diffuser is longer and the pure-brine seabed contact distance is slightly greater. The Final EIR/EIS maximum of 39 ft came from Scenario 26, 16.31 mgd brine commingled with 12 mgd of secondary effluent, a combination with no counterpart in the present matrix because the maximum brine discharge would not exceed 8.66 mgd. The ZID serves as the denominator in the seafloor contact calculation in Section 4.2.2, where the seafloor area contacted by the discharge decreases both in

absolute terms and as a proportion of the ZID. Therefore, even though the ZID is larger, the salinity increment within the ZID would be lower than what was analyzed in the Final EIR/EIS.

4.1.2 Salinity at the edge of the ZID

Under the proposed modifications, the maximum salinity increment (Table 2) at the seabed where the descending jet centerline impacts the bed is no more than 0.40 ppt under all discharge scenarios (Roberts 2025, Appendix C). As demonstrated below, this means that there are no circumstances where a salinity increase of 2.0 ppt or greater would impact the seabed.

Table 2. Peak salinity and salinity increment at the edge of the zone of initial dilution under the worst-case brine-only scenario, Final EIR/EIS compared with the proposed 158-port diffuser modifications. Sources: CPUC/MBNMS (2018); Roberts (2025).

Metric, brine-only scenario	Final EIR/EIS	Proposed modifications	Change
Peak salinity at edge of ZID	35.49 ppt	34.67 ppt	−0.82 ppt
Peak increment above ambient	+1.6 ppt	+0.40 ppt	Decrease 75%
Peak ambient at that condition	33.89 ppt (Upwelling)	34.27 ppt (Upwelling)	—
Peak salinity at edge of BMZ	35.23 ppt	34.67 ppt	−0.56 ppt

The Final EIR/EIS observed that peak ambient salinity occurs during the Upwelling season, which coincides with the maximum concentrated brine discharge in which no wastewater is discharged and that this combination produces the maximum salinity at the edge of the ZID. The same condition applies under the proposed modifications, and the seasonal maximum values are stated on that basis. As shown in Table 3, the maximum salinity occurring anywhere on the seabed under any modeled scenario is approximately 34.7 ppt (including peak ambient conditions plus brine discharge under the proposed modifications), during the Upwelling season when natural background salinity is at its seasonal maximum.

Table 3. Modeled salinity at the seabed under the proposed diffuser modifications compared to seasonally averaged ocean density profiles from Roberts (2025), Table 1.

Ocean season	Natural background	Maximum at seabed	Peak increment
Upwelling	34.27 ppt	34.67 ppt	0.40 ppt
Oceanic	33.97 ppt	34.37 ppt	0.40 ppt
Davidson	33.90 ppt	34.30 ppt	0.40 ppt

The values above describe salinity at the seabed, where the Ocean Plan salinity limitation applies. For context, the salinity of the discharge itself is much higher at the initial point of discharge. The effluent salinity for Case C1 is 60 ppt at the point of discharge. That value applies only within the jet at the point of discharge and is rapidly reduced by entrainment within a few feet. Outside the immediate vicinity of the diffuser, and at the Ocean Plan's 100 m boundary for compliance with salinity requirements, salinity is essentially indistinguishable from natural background salinity.

4.1.3 Extent of the brine mixing zone

Because the modeled seabed salinity increment does not approach 2.0 ppt anywhere within the BMZ, the seabed area over which salinity exceeds 2.0 ppt above natural background (i.e., the brine mixing zone) is zero (Table 4). The same is true of the configuration analyzed in the Final EIR/EIS, which reported a maximum seabed salinity increment of 1.6 ppt and placed the volume exceeding 2.0 ppt in the water column above the seafloor (CPUC/MBNMS 2018, , p. 4.3-85).

This follows from the jet dynamics resulting from the proposed diffuser modifications. The plumes from adjacent 60-degree ports do not merge before contacting the seafloor, so no contiguous area of elevated seabed salinity forms around the diffuser. Each jet returns to the seabed already diluted to within 0.4 ppt of ambient salinity.

Table 4. Extent of the brine mixing zone and related spatial metrics, Final EIR/EIS compared with the proposed diffuser modifications. Sources: CPUC/MBNMS (2018); LWA (2025); Roberts (2025).

Metric	Final EIR/EIS	Proposed modifications	Change
Seabed area exceeding 2 ppt (BMZ)	Zero	Zero	No change
Maximum salinity increment at edge of ZID	1.6 ppt	0.40 ppt	-75%
Maximum seabed contact distance (edge of ZID) under pure brine scenarios	3.0 m	3.7 m	+23%
Maximum seabed contact distance (edge of ZID) under all dense discharge scenarios	11.9 m (39 ft)	53.6 m (176 ft)	+350%
Maximum horizontal distance to 2 ppt contour above the seabed	2.4 m (8 ft)	1.7 m (5.6 ft)	-29%

The increase in the maximum seabed contact distance shown in Table 4 does not represent a larger area of effect, and in fact reflects a more favorable condition than the one analyzed in the Final EIR/EIS. Under the proposed modifications, the longest contact distances arise in the commingled scenarios in which the discharge is closest to neutral density and most highly diluted — up to 1,373:1 in the most distant case — so that the plume reaches the seabed with no resolvable salinity increment. The cases under the proposed modifications that produce the highest seabed salinity, by contrast, contact the bed within 3.7 to 6 m of the diffuser. The metrics relevant to impact are therefore the maximum salinity increment at contact, which decreases from 1.6 ppt in the Final EIR/EIS to 0.40 ppt under the proposed modifications; the maximum horizontal distance to the 2 ppt contour, which decreases from 2.4 m (8 feet) in the Final EIR/EIS to 1.7 m (5.6 feet) under the proposed modifications; and the volume of the water-column field exceeding 2 ppt, which decreases from approximately 1,100 in the Final EIR/EIS to 630 cubic feet under the proposed modifications (Section 4.1.4). The seabed area exceeding 2.0 ppt is zero under both the Final EIR/EIS configuration and the proposed modifications.

4.1.4 Volume of discharge exceeding 2 ppt salinity above ambient

The Final EIR/EIS presents the volume of discharge exceeding a 2 ppt salinity increment for the worst-case brine-only scenario. That volume is updated here (Table 5), with the qualification that it is a water-column

volume within the rising jets and is not a seabed area by which Ocean Plan compliance is assessed, which as demonstrated above is zero under both the Final EIR/EIS configuration and with the proposed modifications (Section 4.1.3).

Under Case C1, the region enclosed by the 2 ppt contour around each jet (Figure 1) encapsulates a volume of approximately 4 cubic feet, estimated to be 8 feet long with a maximum diameter of 1.3 feet, located approximately 2 to 7 feet above the sea floor and within a horizontal distance of less than 5.6 ft (1.7 m) from the diffuser (Attachment B).

Table 5. Volume of discharge exceeding a 2 ppt salinity increment above ambient under the worst-case brine-only scenario, Final EIR/EIS compared with the proposed diffuser modifications. Sources: CPUC/MBNMS (2018), p. 4.5-61; Roberts (2025), Case C1.

Parameter	Final EIR/EIS	Proposed modifications	Change
Open diffuser ports	129	158	+22%
Volume >2 ppt per port	8.5 ft^3	4 ft^3	−53%
Total volume >2 ppt	~1,100 ft^3 (31 m^3)	~630 ft^3 (18 m^3)	−42%

The Final EIR/EIS expressed this volume as a proportion of the near-seafloor water surrounding the diffuser and identified a band 3.0 to 11.9 m wide by 335 m long by 1.2 m (4 ft) high on two sides, or 88,000 to 343,200 cubic feet, resulting in 0.3 to 1.25% of that volume and containing approximately 8.2 to 41.4 million planktonic organisms. Under the proposed modifications, the same comparison yields a smaller proportion of the near-seafloor water surrounding the diffuser, because the total volume > 2 ppt falls to about 630 cubic feet, and the 2 ppt field is confined within about 2 m of the diffuser.

The total volume decreased despite the increase in the number of open ports, because the per-port volume decreased by more than the port count increased. The volume is also not contiguous: the plumes do not merge, so the 630 cubic feet is distributed among 158 discrete parcels of about 4 cubic feet each, none of which contacts the seafloor.

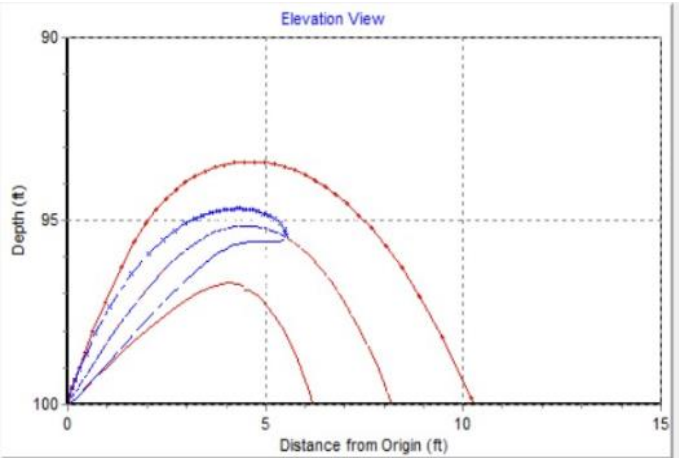


Figure 1. UM3 graphical output for the maximum brine scenario (8.66 mgd brine only, Case C1) in the Davidson Current season. The red line is the outer boundary of the jet; the blue line is the contour of 2 ppt salinity increment.

4.2 Discharge constituents

4.2.1 Constituents evaluated

The Final EIR/EIS identified six constituents detected in the test slant well samples or in M1W's wastewater at concentrations with a potential to exceed Ocean Plan objectives: copper, ammonium (ammonia), chlordanes, DDT, PCBs, and toxaphene. None were expected to approach their respective Ocean Plan objectives at the edge of the ZID, with modeled dilution factors at the edge of the ZID ranging from approximately 15:1 to 59:1 (CPUC/MBNMS 2018, p. 4.5-64, Table 4.5-12).

For the proposed modifications, ammonia is the limiting Table 3 constituent for the commingled discharge (LWA, 2024). The applicable target of 480 µg/L is 80% of the Ocean Plan 6-month median objective for ammonia of 600 µg/L, which was selected as the screening threshold to identify constituents approaching an objective (LWA 2024). To meet this objective, an average dilution on the order of 100:1 is required. The proposed diffuser modifications were selected to provide that dilution. Achieving the salinity objective, on the other hand, requires a dilution of only about 12:1 to reduce the worst-case pure-brine salinity of 60 ppt to a 2.0 ppt increment above natural background (LWA 2025, Table 6), and is thus not the binding design constraint for the modifications.

4.2.2 Seafloor habitat area affected by discharged constituents

The Final EIR/EIS assessed benthic impacts of discharged constituents by calculating the seafloor area contacted by the discharge plumes and expressing it as a percentage of the ZID. Using a plume diameter of 1.5 feet at the point of contact with the seafloor, each plume affected 1.77 square feet of seafloor, giving 228 square feet across 129 ports against a ZID area of 23,100 square feet, which equated to approximately 0.99%.

Applying the same method to the proposed modifications, using the maximum plume diameter of approximately 1.3 feet, gives 1.33 square feet per plume and approximately 210 square feet across 158 ports. This represents an 8% reduction in the area of seafloor contacted. Expressed as a percentage of the ZID, the seafloor area contacted by discharge plumes would decrease to 0.7%, because the ZID itself increased in size. The increase in ZID area relative to the Final EIR/EIS is attributable to two factors: the discharging section of the diffuser is longer (1,256 feet vs. 1,100 feet) because the 29 ports to be opened extend it inshore, and the seabed contact distance for the pure-brine case is slightly greater (3.7 m vs. 3.0 m). If the 228 square feet contacted area under the Final EIR/EIS configuration were compared to the ZID for the proposed modifications it would represent 0.76%, similar to the 0.70% for the proposed configuration. The affected area therefore decreases in both respects under the proposed modifications: less seafloor surface area is contacted (210 square feet vs. 228 square feet), and that area is a smaller proportion of the ZID (0.70% vs. 0.99%).

Table 6. Seafloor area contacted by discharge plumes and expressed as a percentage of the zone of initial dilution, calculated using the Final EIR/EIS method. Source: CPUC/MBNMS (2018), p. 4.5-64.

Parameter	Final EIR/EIS	Proposed modifications	Change
Plume diameter at contact	1.5 ft	~1.3 ft	Decrease
Seafloor area per plume	1.77 ft²	1.33 ft²	Decrease
Open ports	129	158	Increase
Total seafloor area affected	228 ft²	210 ft²	Decrease
Percentage of ZID area	0.99%	0.70%	Decrease

Overall, the reduction in per-plume contact area more than offsets the increase in port count, and the total affected area remains below 1% of the ZID. The Final EIR/EIS concluded that transfer of bioaccumulated constituents from benthic infauna to higher trophic levels would be limited by the very small area of seafloor affected by brine discharge, because transfer to predators would be proportional to the relative consumption of prey from within and outside that area (CPUC/MBNMS 2018, p. 4.5-65). The affected area is smaller under the proposed modifications than the 228 square feet on which that conclusion was based in the Final EIR/EIS, so the conclusion continues to apply with a wider margin.

4.3 Species and habitat impacts

4.3.1 Market squid spawning habitat

The Final EIR/EIS estimated the potential impact of the MPWSP on market squid (*Doryteuthis opalescens*) spawning habitat by comparing the area between the diffuser port and the edge of the ZID, on both sides of the outfall, with the total area of suitable spawning habitat south of the Monterey Submarine Canyon, on the hypothetical assumption that the elevated-salinity area were to settle on the seafloor.

The denominator is unchanged. The shelf south of the Monterey Submarine Canyon is approximately 16 km (10 miles) long, and the depth range suitable for squid spawning (18 to 55 m, or 59 to 180 ft) spans approximately 3 km (1.8 miles) from the shoreward to the seaward edge, covering 48 square kilometers (18 square miles). The length over which ports discharge increases from the 335 m (1,100 ft) assumed in the Final EIR/EIS to approximately 383 m (1,256 ft), because the 29 ports to be opened extend the discharging section inshore.

The Final EIR/EIS based the affected habitat area on the extent of the ZID rather than on the area exceeding 2 ppt salinity, as the metric relevant to market squid habitat. Retaining the approach for comparability, the affected area under the proposed modifications is slightly larger than the Final EIR/EIS pure-brine case, because the ZID is marginally wider (3.7 m vs. 3.0 m) and the discharging section of the outfall is longer (383 m vs. 335 m). Whereas the region exceeding 2 ppt salinity is smaller under the proposed modifications and lies above the seafloor. Based on the 2 ppt salinity contour basis for the proposed modifications, the half-width would be 1.7 m (5.6 ft).

Table 7. Area of suitable market squid spawning habitat potentially affected by a salinity increment exceeding 2 ppt from the Final EIR/EIS and with the proposed modifications, expressed as a proportion of suitable habitat south of the Monterey Submarine Canyon. Sources: CPUC/MBNMS (2018), p. 4.5-61; Roberts (2025).

Basis	Half-width	Area (m^2)	% of habitat
Final EIR/EIS, pure brine, ZID basis	3.0 m (10 ft)	2,010 m^2 (21,635 ft^2)	0.0042%
Final EIR/EIS, all scenarios, ZID basis	11.9 m (39 ft)	7,800 m^2 (85,800 ft^2)	0.0163%
Proposed modifications, pure brine, ZID basis	3.7 m (12 ft)	2,834 m^2 (30, 505 ft^2)	0.0059%
Proposed modifications, 2 ppt contour basis	1.7 m (5.6 ft)	1,302 m^2 (14,015 ft^2)	0.0027%

The affected area of market squid habitat therefore falls from 2,010–7,800 m^2 to approximately 1,302 to 2,834 m^2, and the proportion of suitable spawning habitat from 0.0042 - 0.0163% to 0.0027 - 0.0059%. The estimates of 1,302 m^2 and 2,834 m^2 are conservative estimates, because the region exceeding 2 ppt salinity lies 2 to 7 feet above the seafloor and does not contact it. The plume reaches the seabed with a salinity

increment of no more than 0.40 ppt under all modeled flow scenarios and all three seasonal density profiles, so the area of seafloor rendered unsuitable for squid spawning by elevated salinity is zero. That conclusion rests on the tolerance data summarized in Section 4.3.2: the maximum seabed salinity of 34.67 ppt lies within the 34 to 38 ppt range the Final EIR/EIS applied for market squid and within the range over which normal embryonic development and hatching have been reported (32 to 42 ppt; D'Aniello et al. 1989; Şen 2005), and the maximum salinity increment of 0.40 ppt under the proposed modifications is of the same order of magnitude as the 0.37 ppt seasonal variation in natural background salinity at diffuser depth.

4.3.2 Salinity tolerance of species of concern

The Final EIR/EIS applied a recommended salinity range for culturing squid of 34 to 38 ppt (Vidal and Boletzky 2014, as cited in CPUC/MBNMS 2018, p. 4.5-59), and on that basis concluded that the area outside the ZID and within the BMZ would remain suitable for squid spawning even at the higher salinities then modeled (35.49 ppt at the edge of the ZID and 35.23 ppt at the edge of the BMZ). The modeled maximum seabed salinity under the proposed modifications, 34.67 ppt, is lower than both of those values and exceeds the upper end of the natural background range at diffuser depth in Monterey Bay (33.9–34.3 ppt) by no more than 0.40 ppt, a difference of the same order as the 0.37 ppt seasonal variation in background salinity itself. Similar tolerance ranges have been reported for squid embryos, including normal development and hatching at salinities of 34–42 ppt (D'Aniello et al. 1989) and successful development across 32–38 ppt treatments (Şen 2005).

For red abalone (*Haliotis rufescens*), the Final EIR/EIS compiled salinity tolerance data (Table 4.5-9) that showed that abalone held at salinity levels of 37 to 40 ppt survived for 5.5 months with no effects on growth or fertility (Voutchkov 2006). The same result was reported for sand dollar (*Dendraster excentricus*) and purple urchin (*Strongylocentrotus purpuratus*). The lowest mean effective salinity reported for red abalone embryonic development is 36.8 ppt (Phillips et al. 2012, Final EIR/EIS, Table 4.5-10) and the lowest observed effect concentration reported for that endpoint is 35.6 ppt (Phillips et al. 2012). The modeled maximum for MPWSP brine discharge of 34.67 ppt under the proposed modifications is below all three sets of potential thresholds, and below the 35.49 ppt that the Final EIR/EIS found acceptable on the same basis.

The Final EIR/EIS further noted that red abalone occurs only on rocky substrate associated with kelp, miles from the edge of the ZID, and that the outfall is sited on a high-energy sandflat. Exposure of red abalone to any elevated salinity from this discharge is therefore not expected based on suitable habitat independent of the tolerance comparison. Red abalone was identified to be at the sensitive end of the toxicity testing compiled for the Final EIR/EIS. Phillips et al. (2012) reported median effect concentrations for eleven endpoints across eight local taxa (Table 4.5-10 of the Final EIR/EIS). Red abalone development, at 36.8 ppt, is the most sensitive endpoint in the entire compilation, with the modeled maximum for MPWSP brine discharge of 34.67 ppt being 2.1 ppt below it and 0.9 ppt below the 35.6 ppt lowest observed effect concentration reported for the same endpoint. Every other endpoint lies further above the modeled maximum.

More generally, the maximum modeled increment of 0.40 ppt is similar to that found naturally in Monterey Bay, where background salinity at diffuser depth varies by approximately 0.37 ppt across the three oceanographic seasons. The proposed discharge does not move salinity outside the range supporting

normal development or survival for the species of concern at any point on the seabed, inside or outside the ZID.

4.3.3 Coincidence with spawning season

The Final EIR/EIS describes market squid (*D. opales*cens) as inhabiting deeper offshore waters as adults and returning to shallower nearshore areas to spawn on sand and mud seafloor habitats, with larvae and juveniles occupying nearshore coastal waters (Porzio and Brady 2006). It states that peak spawning in Monterey Bay occurs in April.

Market squid spawn in Monterey Bay principally during the Upwelling season, March through August. This is also when natural background salinity is highest (34.27 ppt) and, correspondingly, when the modeled maximum seabed salinity is highest (34.67 ppt). The peak value nonetheless remains within the range supporting normal embryonic development, and the increment above background at the seabed is no more than 0.40 ppt.

The worst-case pure-brine condition arises when secondary effluent flow is at or near zero, so that no wastewater is available for commingling. That condition does coincide with most of the March-to-August spawning window.

During the dry season, April through October, M1W secondary effluent is diverted for tertiary treatment and delivered to growers for irrigation. So long as treated wastewater flows are equal to or less than demand, effluent is not discharged to the ocean, and the brine stream would be discharged without dilution. During the wet season, November through March, the brine stream is assumed to be commingled with treated wastewater before discharge at all times (CPUC/MBNMS 2018, p. 3-29).

Measured M1W final effluent flows for 2020 to 2025 confirm the above-described pattern for the spawning window, although with substantially lower discharge flows than for the period of record upon which the Final EIR/EIS relied (1998 to 2012).

Flows during the spawning window are low: the March-to-August mean is 2.10 mgd against a median of 0.91 mgd, and 58 percent of days fall below 1 mgd (Table 8). April through August is lower still, averaging 1.33 mgd. Flows during non-irrigation months (November – March) average 8.52 mgd against 1.58 mgd for April through October. Annual mean ocean discharge is 4.40 mgd compared to the 9.67 mgd implied by the 1998–2012 record, with the reduction concentrated in November through March, because Pure Water Monterey now diverts secondary effluent to potable reuse year-round.

Table 8. Monthly final effluent discharge to the ocean at EFF-001, February 2020 through December 2025, compared with the 1998–2012 monthly averages used in the Final EIR/EIS. Sources: Monterey One Water (2026); CPUC/MBNMS (2018), Table 4.3-9.

Month	2020 to 2025 mean	2020 to 2025 median	EIR/EIS 1998 to 2012 mean	Spawning
January	12.31	11.17	19.78	—
February	8.06	8.75	18.41	—
March	5.86	3.21	14.68	Yes

Month	2020 to 2025 mean	2020 to 2025 median	EIR/EIS 1998 to 2012 mean	Spawning
April	2.16	0.94	7.02	Yes
May	1.16	0.85	2.40	Yes
June	1.25	0.85	1.89	Yes
July	0.97	0.79	0.90	Yes
August	1.14	0.85	1.03	Yes
September	1.78	1.00	2.79	—
October	2.62	1.32	9.89	—
November	7.11	6.43	17.98	—
December	9.79	10.50	19.27	—
All Months	4.40	1.52	9.67	—

Applying a simple salinity mass balance to this record and taking the maximum brine rate of 8.66 mgd at 60 ppt against an Upwelling ambient of 34.27 ppt, the commingled discharge would be denser than the receiving water on approximately 92% of days between March and August and 98% of days between April and August. At the 5.80 mgd minimum brine flow modeled in the ROWD , the approximate days of dense effluent would be 90% and 97%, respectively.

Peaks in brine discharge therefore coincide with the spawning season, consistent with the evaluation in the Final EIR/EIS. However, Case C1 (8.66 mgd of pure brine; Attachment B) represents the highest seabed salinity, because no wastewater is available to dilute the brine before discharge. It is therefore a bounding case: no day in either the 1998–2012 or the 2020–2025 flow record would produce a higher seabed salinity than Case C1, and Case C1 itself produces a seabed increment of no more than 0.40 ppt.

The Final EIR/EIS examined a pure brine scenario of 13.98 mgd (Scenario 2) that coincided with 35.49 ppt salinity at the edge of the ZID, resulting in an increment of 1.6 ppt above ambient conditions. Under the proposed modifications, the maximum salinity would be reduced to 34.67 ppt at the edge of the ZID with 8.66 mgd of pure brine, resulting in an increase of less than 0.40 ppt above ambient conditions. This salinity is lower than the maximum evaluated in the Final EIR/EIS (where impacts were found to be less than significant and consistent with Ocean Plan requirements) and remains below the lowest observed effect concentration (35.6 ppt) reported for red abalone embryonic development (Phillips et al. 2012), and the lowest median effect concentration (EC50) for that endpoint, 36.8 ppt (Phillips et al. 2012; CPUC/MBNMS 2018, Table 4.5-10). Accordingly, because the Final EIR/EIS concluded that coincident occurrence with spawning season would result in less-than-significant impacts at a higher salinity, the proposed modifications would likewise remain less than significant.

4.3.4 Benthic impacts and hypoxia

When the brine plume for Case C1 contacts the seafloor, its salinity is within 0.40 ppt of ambient (Attachment B). A salinity increment of 0.40 ppt corresponds to a density excess of roughly 0.3 kg/m³, which is of the same order as the difference between the seasonally averaged density profiles at diffuser depth (Roberts 2025, Table 1). Since a density difference of this magnitude would be insufficient to

establish or maintain a stagnant bottom layer when subject to ambient currents and mixing, the Final EIR/EIS concluded that a plume would not be drawn down and adhere to the seafloor (CPUC/MBNMS 2018, p. 4.3-87; Roberts 2017). The steeper 60-degree discharge angle under the proposed modifications makes plume draw down even less likely, and the discharge therefore poses no risk of inducing hypoxic conditions at or beyond the initial point of seabed contact (i.e., well within the BMZ). This is consistent with the Final EIR/EIS finding, based on a mass-balance analysis, that oxygen supplied to the discharged plume by entrained ambient seawater exceeds that consumed by the sediments by more than a factor of 30, and with the design requirement in Ocean Plan Chapter III.M.2.d(4) that discharges not result in dense, negatively buoyant plumes causing adverse effects from elevated salinity or hypoxic conditions outside the BMZ.

The small volume of water exceeding 2 ppt salinity above ambient does not come into contact with hard-substrate organisms inhabiting the ballast rock anchoring the outfall or with benthic fauna on the seafloor. Benthic communities near the outfall would therefore not be affected by elevated salinity beyond Ocean Plan requirements, consistent with the conclusions in the Final EIR/EIS. Specifically, as demonstrated by the lower salinities modeled here compared to what was analyzed in the Final EIR/EIS, impacts to benthic communities would be less than significant with the proposed modifications and less than what the Final EIR/EIS analyzed and disclosed.

4.4 Shear stress mortality of planktonic organisms

The Final EIR/EIS estimated that shear stress associated with brine discharge would kill approximately 0.00261% of nearshore plankton in Monterey Bay per day. That figure was derived by applying an average density of 4,357 organisms per cubic meter to the nearshore area of Monterey Bay at diffuser depth (approximately 215 km^2 at an average depth of 35 m), giving a standing stock of 3.41×10^{13} organisms. On the assumption that calanoid copepods begin and end their annual lifecycles together, the daily rate was taken to imply a maximum annual loss of less than 1% of the annual productivity provided by the nearshore plankton population (CPUC/ MBNMS 2018, p. 4.5-66). Multiplying the daily rate of 0.00261% by 365 results in an annual mortality of roughly 0.953%.

The draft Marine Life Mortality Report re-evaluates potential shear stress impacts using an ETM-APF framework applied to 12 months of day-night zooplankton surveys across 18 taxonomic groups and 63 unique taxa. Proportional mortality was calculated from the incremental Kolmogorov-scale entrainment volume attributable to the modified diffuser relative to the existing diffuser, with a conservative 50% shear mortality factor and a 5 mm organism size inclusion threshold applied uniformly (AMS 2026). Scenarios A and B in Table 9 are two discharge configurations evaluated in the draft MLMR: Scenario A is based on the maximum five-year secondary effluent discharge, and Scenario B is the average five-year secondary effluent discharge. Scenario A is carried forward here as the more conservative of the two, and thus the resulting maximum proportional mortality is 0.0221% of the annual source-water population (Table 9). This compares with the higher 0.953% annual loss estimate based on the method applied in the Final EIR/EIS. The 0.0221% is the updated estimate of annual mortality, and reflects the changes in assessment method and input data set out in Table 10.

Table 9. Shear stress mortality of planktonic organisms, Final EIR/EIS estimate compared with proportional mortality estimates from the draft Marine Life Mortality Report. Sources: CPUC/MBNMS (2018), p. 4.5-66; AMS (2026).

Basis	Value	Annual equivalent	Ratio to EIR/EIS
Final EIR/EIS	0.00261% per day	0.953%	—
MLMR maximum P_m (Scenario A)	P_m = 0.000221	0.0221%	43× lower
MLMR maximum P_m (Scenario B)	P_m = 0.000145	0.0145%	66× lower

Table 10. Comparison of analytical parameters used to estimate shear stress mortality in the Final EIR/EIS and in the draft Marine Life Mortality Report, with the direction of effect on the proportional mortality estimate. Sources: CPUC/MBNMS (2018); AMS (2026).

Parameter	Final EIR/EIS (2018)	MLMR (2026)	Effect on mortality estimate
Entrainment (k-scale) volumes	Absolute entrainment by the diffuser — 1.7 to 6.4% of water passing over the outfall	Incremental entrainment only: modified HC24 diffuser minus existing HC61 diffuser	Decrease
Source-water body	215 km² area at 35m depth was used to determine the source water volume	639.68 km² area at 0-100 m depth, multiplied by the proportion sampled daily, was used to determine the source water volume	Decrease
Biological data	Three daytime plankton tows near the outfall on the same day.	Twelve months of day/night surveys, 18 taxonomic groups, 63 taxa, weighted by seasonal abundance	Decrease
Annualization	Daily rate multiplied by 365, assuming a synchronous annual calanoid cohort	ETM compounded for daily survival over a 10-day exposure window, weighted by fraction of annual population present	Decrease
Shear mortality factor	50% of entrained organisms	50% of entrained organisms	No change
Size inclusion threshold	Organisms up to 1.0 mm	Organisms up to 5 mm	Increase

The largest single driver of the change in mortality estimate is the entrainment volume attributable to the MPWSP. The Final EIR/EIS attributed all water entrained by the diffuser jets to the MPWSP, and therefore all associated mortality. The existing 129-port HC61 diffuser already entrains ambient seawater and already results in marine life mortality under baseline conditions; what the proposed modifications change is the increment. The MLMR accordingly computes the difference in Kolmogorov-scale entrainment volume between the modified and existing diffuser configurations and only attributes the difference to the proportional entrainment parameter in the mortality calculation.

The second driver is the definition of the exposed population. The Final EIR/EIS used a nearshore band of 215 km² at 35m depth as the denominator. The draft MLMR defines the source-water body matched to Monterey Bay surface-water residence time. Those trajectories supported a single bay-wide source-water body definition of 639.68 km². The source water body extent is multiplied by a 100 m depth and the proportion sampled per day. The MLMR calculations follow an ETM-APF methodology that results in a larger source water volume than assumed in the Final EIR/EIS, and as a result the mortality estimate decreased.

Lastly, the Final EIR/EIS converted a daily mortality rate to an annual loss by multiplying the daily rate by 365, on the stated assumption that all calanoid copepods begin and end their lifecycles simultaneously, a conservative assumption. The ETM -APF framework instead weights each survey period by the fraction of the annual source-water population present during that period and compounds daily survival across the exposure window, so that taxa present only briefly do not carry full-year weight and abundant taxa are weighted by their relative abundance.

In contrast to the above parameters, the size inclusion threshold for organisms was extended from 1 mm to 5 mm at the request of Regional and State Water Board staff. This approach introduced a substantially larger fraction of the zooplankton assemblage into the calculation than the Final EIR/EIS considered at risk. Shear damage occurs where an organism is comparable in size to, or smaller than, the turbulent eddies that carry the highest shear; organisms substantially larger than that scale are transported by the eddies rather than deformed by them. Applying the Foster et al. (2013) formulae to the modeled discharge velocities of 7.4 to 14.8 ft/sec, the Final EIR/EIS determined those eddies to range from approximately 0.02 to 0.63 mm and concluded on that basis that shear stress effects would be concentrated on plankton smaller than 1.0 mm (CPUC/MBNMS 2018, p. 4.5-66). Organisms at the upper end of the 5 mm inclusion threshold are roughly an order of magnitude larger than the largest of those eddies. The 50% adjusted mortality factor was retained unchanged from the Final EIR/EIS, notwithstanding the Preston et al. (2021) synthesis that found maximum adjusted mortalities of 24% for copepods and 22% for barnacle nauplii and cyprids, and mortalities below 50% occurred at all exposure durations under five minutes. Transit time through the high-shear region of a diffuser jet is on the order of tens of seconds.

The decrease in estimated mortality was anticipated in the Final EIR/EIS. Foster et al. (2013), whose formulae the certified document relied on, concluded that “the area of high shear impacted by the diffusers is relatively small and transit times through this region relatively short. Thus, it seems reasonable to expect that, while the larvae that experience the highest shear will most likely experience lethal damage, the overall increase in mortality integrated over the larger area will be low.”

4.5 Vertical infiltration and impingement at the slant wells

The subsurface slant well intake avoids impingement and entrainment because the wells terminate 190 to 200 feet below the seafloor and draw water through the intervening sediment column rather than through an open ocean intake. Extension of the slant wells so that they are translated 300 feet seaward from what was evaluated in the Final EIR/EIS requires a re-evaluation of the vertical infiltration velocity at the seafloor and whether that velocity now exceeds invertebrate plankton swimming speeds.

The Final EIR/EIS estimated the rate as source-water demand divided by intake footprint area, the footprint taken as approximately 2,000 feet of shoreline by 500 feet offshore, or 1,000,000 square feet. Dividing 24.1 mgd (3,222,000 cubic feet per day) by that area yields 3.222 feet per day, or approximately 0.011 mm/sec; a working range of 0.011 to 0.016 mm/sec was adopted, the upper value from Williams (2010).

Source-water vertical infiltration rates associated with the proposed modifications to the slant wells has decreased. Phase 1 of the MPWSP will draw in approximately 11.6 mgd of seawater (CCC 2022; AMS 2026) and the 6.4 mgd configuration will draw in approximately 15.5 mgd of seawater (CCC, 2022), which is less than the 24.1 mgd previously analyzed in the Final EIR/EIS for the 9.6 mgd Project (Table 11). In either MPWSP configuration, the slant wells are translated 300 feet seaward from what the Final EIR/EIS

analyzed, so the intake footprint is the same footprint located further offshore. Its offshore dimension is taken from the updated well design and is smaller than the 500 feet assumed in the Final EIR/EIS. The updated slant well design assumes a maximum offshore extent of 437 feet based on 2060 MHW and an onshore width of 2000 feet. Therefore, the area is reduced to 874,000 square feet along with the reduced seawater flow rate of 11.6 mgd or 15.5 mgd. Moreover, a 300-ft shift seaward of the slant well seawater intakes will not cause significant changes in the types of organisms potentially exposed to entrainment (Table 12).

Table 11. Vertical infiltration rate at the seafloor above the subsurface slant wells, calculated as source-water demand divided by intake footprint area, for the Final EIR/EIS and for MPWSP. Source: CPUC/MBNMS (2018), p. 4.5-53. Intake footprint area is 1,000,000 square feet (2,000 feet of shoreline by 500 feet offshore) as assumed in the Final EIR/EIS, and 874,000 square feet (2,000 feet by 437 feet offshore) for both MPWSP configurations, reflecting the updated slant well design and its seaward extension.

Configuration	Source water	ft/day	ft/sec	mm/sec
Final EIR/EIS proposed project (9.6 mgd product water)	24.1 mgd	3.22	0.0000373	0.0114
MPWSP as approved by CPUC (6.4 mgd product water)	15.5 mgd	2.37	0.0000274	0.0084
MPWSP Phase 1 (4.8 mgd product water)	11.6 mgd	1.77	0.0000205	0.0063

Table 4.5-8 of the Final EIR/EIS compiled published swimming speeds for plankton, larval invertebrates, and larval fish. The slowest swimming speeds in that compilation are 0.5 to 3.5 mm/sec for gastropod larvae (Chan et al. 2013), euphausiids range from 2.2 to 15.8 mm/sec (Torres and Childress 1983), and pelagic copepods from 12.9 to 500 mm/sec (Gallager et al. 2004; Browman et al. 2011; Buskey et al. 2002). The lowest value in the table overall is 0.2 mm/sec, reported by Franks (1992) for phytoplankton and protozoa.

Table 12. Published swimming speeds for plankton, larval invertebrates, and larval fish. Sources compiled in CPUC/MBNMS (2018), Table 4.5-8.

Source	Organism	Swimming Speed
Franks (1992)	Phytoplankton and Protozoa	Max = 0.2 mm/sec
Buskey et al (2002)	Pelagic copepod	Max = 500 mm/sec
Browman et al (2011)	Pelagic copepod	Max = 48.9mm/sec Avg = 34.3 mm/sec
Gallager et al (2004)	Pelagic copepods and protozoa	Max = 12.9 mm/sec
Torres and Childress (1983)	Euphausiid	Range = 2.2 – 15.8 mm/sec
Chan et al (2013)	Gastropod larvae	Range = 0.5 – 3.5 mm/sec
Paris et al (2013)	Reef fish larvae	Avg = 14.5 mm/sec
Humphrey (2011)	Larval lake trout	Max = 150 – 250 mm/sec
Fisher (2005)	Larval reef fishes	Range= 200 – 600 mm/sec

The slowest invertebrate taxon in the Final EIR/EIS compilation, gastropod larvae at 0.5 mm/sec, exceeds the infiltration rate for the proposed modifications of 0.0063 – 0.0084 mm/sec by a factor of 60 to 80. The dominant taxa in the MPWSP source-water surveys, principally copepods, exceed it by three orders of magnitude.

A review of literature published since certification of the Final EIR/EIS was undertaken to determine whether any invertebrate plankton has been reported to swim more slowly than the values relied upon in Table 12. No reported swimming speed for any invertebrate plankton taxon falls below the 0.5 mm/sec lower bound for gastropod larvae. Speeds below the 0.2 mm/sec figure in Table 12 have been reported for some motile phytoplankton (Obertegger et al. 2020). Recent studies have also documented that some planktonic forms are not merely passively carried by moving water but they can actively enhance or resist the effects of water currents on their movements (DiBenedetto et al. 2025).

For non-motile organisms, such as diatoms, fish eggs, and passively transported particles, their vertical position is governed by sinking velocity and ambient turbulence rather than by locomotion. The Final EIR/EIS documented near-seafloor wave orbital velocities of 280 to 500 cm/sec at nearshore sites around the Monterey Peninsula (Graham et al. 1997) and 250 cm/sec in the surf zone near Sand City (Weltmer 2003). These are approximately six order of magnitude greater than the vertical infiltration rate, and dominate the near-bed flow field regardless of an organism's swimming capacity.

The Final EIR/EIS additionally observed that because squid spawning typically occurs on sand and mud seafloor habitats at depths much greater than the intertidal zone where the slant wells are located, impacts on market squid eggs from slant well pumping would not occur. The seaward extension of the slant wells does not place the wells within squid spawning depths.

Therefore, there has been no change or modification to the MPWSP's slant wells or operations since the Final EIR/EIS was certified that would increase impingement from slant well operations. The vertical infiltration rate has changed in the direction of less potential for impingement, and at no point approaches the swimming speeds of the invertebrate plankton present.

5. Conclusions

Every potential impact evaluated here is the same or smaller under the proposed MPWSP modifications than under the configurations analyzed in the Final EIR/EIS, notwithstanding the increase from 129 to 158 open ports (Table 13) and the extension of the slant wells further seaward. The impacts are therefore less than those already found to be less than significant in the Final EIR/EIS, and the conclusions remain unchanged (i.e., impacts would remain less than significant).

Table 13. Summary of impacts evaluated with Final EIR/EIS conclusions compared with the proposed diffuser modifications.

Impact	Final EIR/EIS	Proposed modifications	Change
Peak salinity at edge of ZID	35.49 ppt (+1.6 ppt)	34.67 ppt (+0.40 ppt)	Decrease
Seabed area exceeding 2 ppt (BMZ)	Zero	Zero	No change
Volume exceeding 2 ppt	~1,100 ft^3	~630 ft^3	Decrease

Impact	Final EIR/EIS	Proposed modifications	Change
Squid spawning habitat affected	0.0042–0.0163% (0% on seabed)	0.0027-0.0059% (0% on seabed)	Decrease
Constituent seafloor contact area	228 ft² (0.99% of ZID)	210 ft² (0.70% of ZID)	Decrease
Shear stress plankton mortality	0.953% per year	0.0221% per year	Decrease
Slant well infiltration rate	0.011 mm/sec	0.0063-0.0084 mm/sec	Decrease

- The brine mixing zone, as defined in Ocean Plan Appendix I, has an extent of zero: no seabed area experiences a salinity increment approaching 2.0 ppt above natural background under any modeled scenario or season, as was also the case for the diffuser configuration analyzed in the Final EIR/EIS.

- The 159-to-175-foot figure reported as a "brine mixing zone" in the ROWD Addendum is the horizontal extent of near-field mixing, not the area exceeding 2.0 ppt.

- Brine constituents will contact approximately 210 ft² of seafloor, an 8% reduction from the 228 ft² evaluated in the Final EIR/EIS.

- Peak salinity at the seabed is approximately 34.7 ppt, within the 34 to 38 ppt optimal range the Final EIR/EIS applied for market squid. The salinity increase would be below both the 35.6 ppt lowest effect concentration and the 36.8 ppt lowest mean effective salinity for red abalone embryonic development, and well below the 37 to 40 ppt at which red abalone, sand dollar, and purple urchin survived 5.5 months without effect.

- Peak salinity does coincide with the March–August market squid spawning season. M1W effluent discharges during this seasonal period in 2020–2025 exhibit a median of 0.91 mgd, indicating a commingled discharge would be denser than the receiving water on approximately 92% of days in that window. The Final EIR/EIS analyzed the same coincidence and found it less than significant at 35.49 ppt, and the proposed modifications reduce the coincident peak to 34.67 ppt.

- Shear stress mortality estimated by ETM-APF is approximately 0.02% of the annual source-water population, well below the 1% threshold applied in the Final EIR/EIS. The reduction reflects attribution of the incremental rather than absolute entrainment, an empirically defined bay-wide source-water body for application in ETM-APF, and twelve months of seasonally weighted survey data.

- Vertical infiltration at the slant wells decreases and remains orders of magnitude below plankton swimming speeds, so none of the changes would increase impingement.

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Attachment A. NOAA Comment Response Matrix

NOAA comment	Section in this document	Final EIR/EIS Statement	Proposed modifications
Changes to vertical infiltration rates for slant wells moved 300 ft seaward; comparison with plankton swimming speeds	4.5	0.011–0.016 mm/sec	0.0063–0.0084 mm/sec
Update sizes of ZID and BMZ with comparison to Final EIR/EIS	4.1.1, 4.1.3	ZID 21 ft x 1,100 ft = 23,100 ft^2; BMZ zero	ZID 24 ft × 1,256 ft = 30,144 ft^2; BMZ zero
New squid spawning habitat calculation	4.3.1	0.0042–0.0163% (0% on seabed)	0.0027-0.0059% (0% on seabed)
Peak salinity vs. ambient and species tolerance ranges; spawning season timing	4.1.2, 4.3.2, 4.3.3	35.49 ppt (1.6 ppt increment)	34.67 ppt (0.40 ppt increment)
Update volume of discharge exceeding 2 ppt, brine-only worst case	4.1.4	~1,100 ft^3	~630 ft^3
Constituent seafloor contact area as percentage of ZID; seasonal variation	4.2.1, 4.2.2	228 ft^2 = 0.99% of ZID	~210 ft^2 = 0.7% of ZID
Updated shear stress mortality percentage	4.4	0.953% per year	0.0221% per year

Attachment B. Brine Modeling Results for Dense Discharges (Roberts, 2025) with Addition of Case C1 for the Pure Brine Scenario

Davidson profile

Ocean salinity = 33.90 | No of ports = 158 | **Hydraulic code HC24** Coeff1= 1.590 (gpm)

Ocean density = 1025.27 | Nozzle angle= 60 | Coeff2= 0.511

Dense discharges

Case ID	Constituent flows			Final effluent					Port conditions				Near field (BMZ) Predictions				UM3 Entrainment					
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference	Diam.	Velocity	Froude no.	s/dF	Centerline dilution	Average dilution	Salinity increment	Ammonia	Average dilution at apex	Entrained flow	Length of near field		Impact distance	
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/l)	(ppt)	(kg/m^3)	(kg/m^3)	(in)	(ft/s)					(ppt)	(µg/l)		(mgd)	(ft)	(m)	(ft)	(m)
	0	0	0																			
1	0	0	6.40	6.4	0.14	60.0	1046.7	-21.5	1.15	8.7	34	4.9	87	174	0.3	1	21	129	34	10	10	3
2	0	0	6.20	6.2	0.14	60.0	1046.7	-21.5	1.14	8.6	34	5.0	86	172	0.3	1	21	124	33	10	10	3
3	0	0	6.00	6.0	0.14	60.0	1046.7	-21.5	1.13	8.5	34	5.1	85	170	0.3	1	21	119	32	10	9	3
4	0	0	5.80	5.8	0.14	60.0	1046.7	-21.5	1.12	8.3	33	5.2	84	167	0.3	1	21	113	32	10	9	3
5	0	0	5.60	5.6	0.14	60.0	1046.7	-21.5	1.11	8.2	33	5.3	83	165	0.3	1	20	108	31	9	9	3
6	0	1.78	6.40	8.2	45.48	48.1	1036.8	-11.6	1.22	9.9	52	3.1	130	261	0.1	174	31	248	54	16	15	5
7	0	1.78	6.20	8.0	46.60	47.8	1036.6	-11.3	1.21	9.8	52	3.1	131	261	0.1	179	31	243	53	16	15	5
8	0	1.78	6.00	7.8	47.79	47.5	1036.3	-11.1	1.20	9.7	52	3.1	131	261	0.1	183	32	239	53	16	15	5
9	0	1.78	5.80	7.6	49.05	47.2	1036.0	-10.8	1.19	9.5	52	3.1	131	262	0.1	187	32	235	53	16	15	5
10	0	1.78	5.60	7.4	50.37	46.8	1035.8	-10.5	1.19	9.4	52	3.1	131	263	0.1	192	31	224	53	16	15	5
11	1	0	6.40	7.4	6.29	52.0	1040.3	-15.0	1.19	9.4	44	3.7	110	220	0.2	29	27	189	44	13	13	4
12	1	0	6.20	7.2	6.46	51.8	1040.1	-14.8	1.18	9.3	43	3.7	110	219	0.2	29	27	184	44	13	13	4
13	1	0	6.00	7.0	6.64	51.6	1039.9	-14.6	1.17	9.2	43	3.8	109	218	0.2	30	26	186	43	13	12	4
14	1	0	5.80	6.8	6.83	51.3	1039.7	-14.4	1.16	9.0	43	3.8	109	217	0.2	31	27	174	43	13	12	4
15	1	0	5.60	6.6	7.03	51.1	1039.5	-14.2	1.15	8.9	43	3.9	108	216	0.2	33	26	168	42	13	12	4
16	1	1.78	6.40	9.2	45.47	43.0	1032.7	-7.4	1.25	10.5	67	2.3	170	340	0.1	134	41	363	72	22	21	6
17	1	1.78	6.20	9.0	46.48	42.6	1032.4	-7.1	1.25	10.4	68	2.3	172	344	0.1	135	40	354	72	22	21	6
18	1	1.78	6.00	8.8	47.54	42.2	1032.1	-6.8	1.24	10.3	69	2.2	175	349	0.0	136	41	352	73	22	21	6
19	1	1.78	5.80	8.6	48.64	41.8	1031.7	-6.5	1.23	10.2	70	2.2	178	355	0.0	137	42	353	74	22	21	6
20	1	1.78	5.60	8.4	49.80	41.4	1031.4	-6.1	1.22	10.0	72	2.2	181	362	0.0	137	43	351	75	23	22	7
21	2	0	6.40	8.4	10.97	46.0	1035.4	-10.1	1.22	10.0	56	2.8	141	282	0.1	39	34	278	58	18	17	5
22	2	0	6.20	8.2	11.23	45.6	1035.1	-9.8	1.22	9.9	56	2.8	142	283	0.1	40	34	269	58	18	17	5
23	2	0	6.00	8.0	11.51	45.3	1034.8	-9.5	1.21	9.8	56	2.8	142	285	0.1	40	34	265	58	18	17	5
24	2	0	5.80	7.8	11.80	44.9	1034.5	-9.2	1.20	9.7	57	2.8	143	287	0.1	41	34	261	58	18	17	5
25	2	0	5.60	7.6	12.11	44.5	1034.2	-8.9	1.20	9.5	57	2.8	144	289	0.1	42	34	252	58	18	17	5
26	2	1.78	6.40	10.2	45.49	38.9	1029.4	-4.1	1.28	11.1	94	1.6	238	475	0.0	96	54	541	103	31	30	9
27	2	1.78	6.20	10.0	46.40	38.4	1029.0	-3.8	1.28	11.0	98	1.5	246	493	0.0	94	55	541	106	32	31	9
28	2	1.78	6.00	9.8	47.34	38.0	1028.7	-3.4	1.27	10.9	102	1.5	257	514	0.0	92	57	545	110	34	32	10
29	2	1.78	5.80	9.6	48.33	37.5	1028.3	-3.0	1.26	10.7	107	1.4	270	541	0.0	89	59	556	115	35	33	10
30	2	1.78	5.60	9.4	49.35	37.1	1027.9	-2.6	1.26	10.6	114	1.3	287	575	0.0	86	61	558	122	37	35	11
31	3	0	6.40	9.4	14.65	41.2	1031.5	-6.2	1.26	10.6	74	2.0	188	375	0.0	39	44	403	80	24	23	7
32	3	0	6.20	9.2	14.97	40.8	1031.1	-5.9	1.25	10.5	76	2.0	191	383	0.0	39	45	406	81	25	23	7
33	3	0	6.00	9.0	15.30	40.3	1030.8	-5.5	1.25	10.4	77	2.0	196	391	0.0	39	45	398	82	25	24	7
34	3	0	5.80	8.8	15.64	39.9	1030.4	-5.2	1.24	10.3	79	2.0	200	401	0.0	39	47	402	84	26	24	7
35	3	0	5.60	8.6	16.00	39.4	1030.1	-4.8	1.23	10.2	82	1.9	206	413	0.0	39	48	402	86	26	25	8
36	3	1.78	6.40	11.2	45.50	35.5	1026.7	-1.4	1.31	11.6	168	0.9	423	846	0.0	54	71	782	187	57	54	16
37	3	1.78	6.20	11.0	46.32	35.0	1026.3	-1.0	1.31	11.5	194	0.8	488	977	0.0	47	73	794	215	66	62	19
38	3	1.78	6.00	10.8	47.18	34.6	1025.9	-0.7	1.30	11.4	241	0.6	609	1218	0.0	39	77	818	267	82	77	24
39	3	1.78	5.80	10.6	48.07	34.1	1025.5	-0.3	1.30	11.3	378	0.4	954	1908	0.0	25	80	834	417	127	120	37
41	4	0	6.40	10.4	17.63	37.3	1028.4	-3.1	1.29	11.2	110	1.4	277	554	0.0	32	59	604	121	37	35	11
42	4	0	6.20	10.2	17.97	36.9	1028.0	-2.7	1.28	11.1	116	1.3	293	585	0.0	31	61	617	127	39	37	11
43	4	0	6.00	10.0	18.33	36.4	1027.6	-2.4	1.28	11.0	124	1.2	313	625	0.0	29	63	622	135	41	39	12
44	4	0	5.80	9.8	18.70	35.9	1027.2	-2.0	1.27	10.9	135	1.1	340	679	0.0	28	66	637	146	44	42	13
45	4	0	5.60	9.6	19.08	35.4	1026.8	-1.6	1.27	10.8	150	1.0	378	757	0.0	25	68	645	162	49	47	14
51	5	0	6.40	11.4	20.08	34.1	1025.8	-0.5	1.32	11.7	281	0.5	708	1416	0.0	14	78	874	315	96	91	28
52	5	0	6.20	11.2	20.44	33.7	1025.4	-0.1	1.31	11.6	544	0.3	1373	2746	0.0	7	81	901	609	186	176	54
C1	0	0	8.66	8.7	0.14	60.0	1046.7	-21.5	1.23	10.2	39	4.0	98	143	0.3	1	24	201	41	12	12	4

HC24Da

Oceanic profile

Ocean salinity = 33.97 | No of ports = 158 | **Hydraulic code HC24** Coeff1= 1.590 (gpm)

Ocean density = 1025.48 | Nozzle angle= 60 | Coeff2= 0.511

Dense discharges

Case ID	Constituent flows			Final effluent					Port conditions				Near field (BMZ) Predictions				UM3 Entrainment					
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference	Diam.	Velocity	Froude no.	s/dF	Centerline dilution	Average dilution	Salinity increment	Ammonia	Average dilution at apex	Entrained flow	Length of near field		Impact distance	
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/l)	(ppt)	(kg/m^3)	(kg/m^3)	(in)	(ft/s)					(ppt)	(µg/l)		(mgd)	(ft)	(m)	(ft)	(m)
	0	0	0																			
1	0	0	6.40	6.4	0.14	60.0	1046.7	-21.2	1.15	8.7	35	4.8	87	175	0.3	1	21	129	34	10	10	3
2	0	0	6.20	6.2	0.14	60.0	1046.7	-21.2	1.14	8.6	34	4.9	86	173	0.3	1	21	124	33	10	10	3
3	0	0	6.00	6.0	0.14	60.0	1046.7	-21.2	1.13	8.5	34	5.0	85	171	0.3	1	21	119	32	10	9	3
4	0	0	5.80	5.8	0.14	60.0	1046.7	-21.2	1.12	8.3	33	5.1	84	168	0.3	1	21	113	32	10	9	3
5	0	0	5.60	5.6	0.14	60.0	1046.7	-21.2	1.11	8.2	33	5.3	83	166	0.3	1	20	108	31	9	9	3
6	0	1.78	6.40	8.2	45.46	48.1	1036.8	-11.3	1.22	9.9	52	3.0	132	263	0.1	173	31	248	54	16	16	5
7	0	1.78	6.20	8.0	46.60	47.8	1036.6	-11.1	1.21	9.8	52	3.0	132	263	0.1	177	31	243	54	16	16	5
8	0	1.78	6.00	7.8	47.79	47.5	1036.3	-10.8	1.20	9.7	52	3.1	132	264	0.1	181	32	239	54	16	15	5
9	0	1.78	5.80	7.6	49.06	47.2	1036.0	-10.6	1.19	9.5	52	3.1	132	265	0.1	185	32	234	53	16	15	5
10	0	1.78	5.60	7.4	50.37	46.8	1035.8	-10.3	1.19	9.4	53	3.1	133	266	0.1	190	31	224	53	16	15	5
11	1	0	6.40	7.4	6.29	52.0	1040.1	-14.7	1.19	9.4	44	3.7	111	223	0.2	28	27	191	45	14	13	4
12	1	0	6.20	7.2	6.46	51.8	1040.0	-14.5	1.18	9.3	44	3.7	111	222	0.2	29	27	185	44	13	13	4
13	1	0	6.00	7.0	6.64	51.6	1039.8	-14.3	1.17	9.2	44	3.7	110	221	0.2	30	27	180	44	13	13	4
14	1	0	5.80	6.8	6.83	51.3	1039.6	-14.1	1.16	9.0	44	3.8	110	220	0.2	31	27	174	43	13	12	4
15	1	0	5.60	6.6	7.03	51.1	1039.3	-13.9	1.15	8.9	43	3.8	109	219	0.2	32	27	170	43	13	12	4
16	1	1.78	6.40	9.2	45.47	43.0	1032.6	-7.1	1.25	10.5	69	2.2	174	347	0.1	131	40	361	73	22	21	6
17	1	1.78	6.20	9.0	46.48	42.6	1032.3	-6.8	1.25	10.4	70	2.2	176	352	0.0	132	40	352	74	23	21	7
18	1	1.78	6.00	8.8	47.54	42.2	1032.0	-6.5	1.24	10.3	71	2.2	179	358	0.0	133	41	350	75	23	22	7
19	1	1.78	5.80	8.6	48.64	41.8	1031.6	-6.1	1.23	10.2	72	2.2	182	364	0.0	133	42	351	76	23	22	7
20	1	1.78	5.60	8.4	49.80	41.4	1031.3	-5.8	1.22	10.0	74	2.1	186	372	0.0	134	43	349	77	23	22	7
21	2	0	6.40	8.4	10.97	46.0	1035.1	-9.7	1.22	10.0	57	2.7	144	288	0.1	38	34	281	60	18	17	5
22	2	0	6.20	8.2	11.23	45.6	1034.9	-9.4	1.22	9.9	57	2.7	145	290	0.1	39	34	270	60	18	17	5
23	2	0	6.00	8.0	11.51	45.3	1034.6	-9.1	1.21	9.8	58	2.7	146	292	0.1	39	34	267	60	18	17	5
24	2	0	5.80	7.8	11.80	44.9	1034.2	-8.8	1.20	9.7	58	2.7	147	294	0.1	40	35	264	60	18	17	5
25	2	0	5.60	7.6	12.11	44.5	1033.9	-8.4	1.20	9.5	59	2.7	148	297	0.1	41	35	255	60	18	17	5
26	2	1.78	6.40	10.2	45.49	38.9	1029.2	-3.7	1.28	11.1	99	1.5	250	500	0.0	91	54	537	108	33	31	10
27	2	1.78	6.20	10.0	46.40	38.4	1028.9	-3.4	1.28	11.0	103	1.5	260	521	0.0	89	54	532	112	34	32	10
28	2	1.78	6.00	9.8	47.34	38.0	1028.5	-3.0	1.27	10.9	108	1.4	274	547	0.0	87	56	541	117	36	34	10
29	2	1.78	5.80	9.6	48.33	37.5	1028.1	-2.6	1.26	10.7	115	1.3	290	581	0.0	83	58	551	124	38	36	11
30	2	1.78	5.60	9.4	49.35	37.1	1027.7	-2.2	1.26	10.6	124	1.2	312	625	0.0	79	60	552	133	40	38	12
31	3	0	6.40	9.4	14.65	41.2	1031.2	-5.7	1.26	10.6	78	2.0	196	392	0.0	37	44	406	83	25	24	7
32	3	0	6.20	9.2	14.97	40.8	1030.9	-5.4	1.25	10.5	79	1.9	200	400	0.0	37	45	406	85	26	24	7
33	3	0	6.00	9.0	15.30	40.3	1030.5	-5.0	1.25	10.4	81	1.9	205	411	0.0	37	46	401	86	26	25	8
34	3	0	5.80	8.8	15.64	39.9	1030.1	-4.7	1.24	10.3	84	1.8	211	423	0.0	37	47	404	88	27	26	8
35	3	0	5.60	8.6	16.00	39.4	1029.7	-4.3	1.23	10.2	87	1.8	219	438	0.0	37	48	408	91	28	26	8
36	3	1.78	6.40	11.2	45.50	35.5	1026.4	-0.9	1.31	11.6	204	0.7	514	1029	0.0	44	70	775	228	69	66	20
37	3	1.78	6.20	11.0	46.32	35.0	1026.1	-0.6	1.31	11.5	259	0.6	654	1309	0.0	35	72	777	289	88	83	25
38	3	1.78	6.00	10.8	47.18	34.6	1025.7	-0.2	1.30	11.4	445	0.3	1122	2243	0.0	21	75	797	493	150	142	43
41	4	0	6.40	10.4	17.63	37.3	1028.0	-2.5	1.29	11.2	121	1.2	306	612	0.0	29	60	610	133	41	39	12
42	4	0	6.20	10.2	17.97	36.9	1027.6	-2.2	1.28	11.1	130	1.1	329	658	0.0	27	62	622	142	43	41	13
43	4	0	6.00	10.0	18.33	36.4	1027.3	-1.8	1.28	11.0	143	1.1	360	719	0.0	25	63	621	155	47	45	14
44	4	0	5.80	9.8	18.70	35.9	1026.9	-1.4	1.27	10.9	160	0.9	405	810	0.0	23	66	635	174	53	50	15
45	4	0	5.60	9.6	19.08	35.4	1026.4	-1.0	1.27	10.8	190	0.8	480	960	0.0	20	69	648	205	62	59	18
C1	0	0	8.66	8.7	0.14	60.0	1046.7	-21.2	1.23	10.2	39	4.0	98	143	0.3	1	24	201	41	12	12	4

HC24Oa

Upwelling profile

Ocean salinity = 34.27 No of ports = 158 **Hydraulic code HC24** Coeff1= 1.590 (gpm)

Ocean density = 1026.14 Nozzle angle= 60 Coeff2= 0.511

Dense discharges

Case ID	Constituent flows			Final effluent properties					Port conditions				Near field predictions				UM3 Entrainment					
	Sec. effluent	ROC	Brine	Flow	Ammonia	Salinity	Density	Density difference	Diam.	Velocity	Froude no.	s/dF	Centerline dilution	Average dilution	Salinity increment	Ammonia	Average dilution at apex	Entrained flow	Length of near field		Impact distance	
	(mgd)	(mgd)	(mgd)	(mgd)	(mg/l)	(ppt)	(kg/m^3)	(kg/m^3)	(in)	(ft/s)					(ppt)	(µg/l)		(mgd)	(ft)	(m)	(ft)	(m)
	0	0	0																			
1	0	0	6.40	6.4	0.14	60.0	1046.7	-20.6	1.15	8.7	35	4.8	89	178	0.3	1	22	133	34	10	10	3
2	0	0	6.20	6.2	0.14	60.0	1046.7	-20.6	1.14	8.6	35	4.9	88	176	0.3	1	22	128	34	10	10	3
3	0	0	6.00	6.0	0.14	60.0	1046.7	-20.6	1.13	8.5	34	5.0	87	173	0.3	1	21	122	33	10	10	3
4	0	0	5.80	5.8	0.14	60.0	1046.7	-20.6	1.12	8.3	34	5.1	86	171	0.3	1	21	117	32	10	9	3
5	0	0	5.60	5.6	0.14	60.0	1046.7	-20.6	1.11	8.2	33	5.2	84	169	0.3	1	21	111	32	10	9	3
6	0	1.78	6.40	8.2	45.46	48.1	1036.8	-10.7	1.22	9.9	54	2.9	136	271	0.1	168	33	260	56	17	16	5
7	0	1.78	6.20	8.0	46.60	47.8	1036.6	-10.4	1.21	9.8	54	2.9	136	272	0.1	171	33	255	55	17	16	5
8	0	1.78	6.00	7.8	47.79	47.5	1036.3	-10.2	1.20	9.7	54	3.0	136	273	0.1	175	33	251	55	17	16	5
9	0	1.78	5.80	7.6	49.05	47.2	1036.0	-9.9	1.19	9.5	54	3.0	137	274	0.1	179	34	247	55	17	16	5
10	0	1.78	5.60	7.4	50.37	46.8	1035.8	-9.6	1.19	9.4	54	3.0	137	275	0.1	183	33	236	55	17	16	5
11	1	0	6.40	7.4	6.29	52.0	1040.1	-14.0	1.19	9.4	45	3.6	114	228	0.2	28	28	198	46	14	13	4
12	1	0	6.20	7.2	6.46	51.8	1040.0	-13.8	1.18	9.3	45	3.6	113	227	0.2	28	28	192	45	14	13	4
13	1	0	6.00	7.0	6.64	51.6	1039.8	-13.6	1.17	9.2	45	3.7	113	226	0.2	29	28	187	45	14	13	4
14	1	0	5.80	6.8	6.83	51.3	1039.6	-13.4	1.16	9.0	45	3.7	113	225	0.2	30	28	181	44	13	13	4
15	1	0	5.60	6.6	7.03	51.1	1039.3	-13.2	1.15	8.9	44	3.7	112	224	0.1	31	28	177	44	13	13	4
16	1	1.78	6.40	9.2	45.47	43.0	1032.6	-6.5	1.25	10.5	72	2.1	182	365	0.0	125	43	390	77	23	22	7
17	1	1.78	6.20	9.0	46.48	42.8	1032.3	-6.1	1.25	10.4	73	2.1	185	371	0.0	125	43	381	78	24	22	7
18	1	1.78	6.00	8.8	47.54	42.2	1032.0	-5.8	1.24	10.3	75	2.1	189	378	0.0	126	44	380	79	24	23	7
19	1	1.78	5.80	8.6	48.64	41.8	1031.6	-5.5	1.23	10.2	76	2.0	193	386	0.0	126	46	382	80	24	23	7
20	1	1.78	5.60	8.4	49.80	41.4	1031.3	-5.1	1.22	10.0	78	2.0	198	396	0.0	126	47	382	82	25	24	7
21	2	0	6.40	8.4	10.97	46.0	1035.1	-9.0	1.22	10.0	59	2.6	149	299	0.1	37	36	298	62	19	18	5
22	2	0	6.20	8.2	11.23	45.6	1034.9	-8.7	1.22	9.9	60	2.6	150	301	0.1	37	36	287	62	19	18	5
23	2	0	6.00	8.0	11.51	45.3	1034.6	-8.4	1.21	9.8	60	2.6	152	303	0.1	38	36	283	62	19	18	5
24	2	0	5.80	7.8	11.80	44.9	1034.2	-8.1	1.20	9.7	61	2.6	153	306	0.1	39	37	281	62	19	18	5
25	2	0	5.60	7.6	12.11	44.5	1033.9	-7.8	1.20	9.5	61	2.6	155	309	0.1	39	37	272	62	19	18	5
26	2	1.78	6.40	10.2	45.49	38.9	1029.2	-3.1	1.28	11.1	109	1.4	275	551	0.0	83	59	592	119	36	34	11
27	2	1.78	6.20	10.0	46.40	38.4	1028.9	-2.7	1.28	11.0	115	1.3	290	581	0.0	80	60	588	125	38	36	11
28	2	1.78	6.00	9.8	47.34	38.0	1028.5	-2.4	1.27	10.9	123	1.2	310	620	0.0	76	62	600	133	40	38	12
29	2	1.78	5.80	9.6	48.33	37.5	1028.1	-2.0	1.26	10.7	133	1.1	336	671	0.0	72	65	612	143	44	41	13
30	2	1.78	5.60	9.4	49.35	37.1	1027.7	-1.6	1.26	10.6	148	1.0	372	745	0.0	66	67	616	158	48	46	14
31	3	0	6.40	9.4	14.65	41.2	1031.2	-5.0	1.26	10.6	83	1.8	208	417	0.0	35	48	444	88	27	26	8
32	3	0	6.20	9.2	14.97	40.8	1030.9	-4.7	1.25	10.5	85	1.8	214	428	0.0	35	49	445	90	28	26	8
33	3	0	6.00	9.0	15.30	40.3	1030.5	-4.4	1.25	10.4	87	1.8	220	441	0.0	35	50	442	93	28	27	8
34	3	0	5.80	8.8	15.64	39.9	1030.1	-4.0	1.24	10.3	91	1.7	228	457	0.0	34	52	448	96	29	28	8
35	3	0	5.60	8.6	16.00	39.4	1029.7	-3.6	1.23	10.2	94	1.7	238	476	0.0	34	54	455	99	30	29	9
'	3	1.78	6.40	11.2	45.50	35.5	1026.4	-0.3	1.31	11.6	373	0.4	940	1880	0.0	24	77	846	417	127	120	37
41	4	0	6.40	10.4	17.63	37.3	1028.0	-1.9	1.29	11.2	141	1.1	357	713	0.0	25	66	673	155	47	45	14
42	4	0	6.20	10.2	17.97	36.9	1027.6	-1.5	1.28	11.1	157	1.0	396	790	0.0	23	68	688	171	52	49	15
43	4	0	6.00	10.0	18.33	36.4	1027.3	-1.1	1.28	11.0	180	0.8	454	909	0.0	20	70	687	196	60	57	17
44	4	0	5.80	9.8	18.70	35.9	1026.9	-0.7	1.27	10.9	223	0.7	562	1124	0.0	17	73	702	241	74	70	21
45	4	0	5.60	9.6	19.08	35.4	1026.4	-0.3	1.27	10.8	340	0.4	859	1717	0.0	11	76	718	367	112	106	32
A2	6	0	8.66	14.7	18.75	35.9	1026.8	-0.7	1.40	13.4	271	0.5	684	1368	0.0	14	75	1,079	324	99	94	29
C1	0	0	8.66	8.7	0.14	60.0	1046.7	-20.6	1.23	10.2	40	3.9	100	143	0.3	1	25	207	42	13	12	4

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Appendix I

Air Quality and Greenhouse Gas Memorandum

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Denise Duffy & Associates, Inc.
PLANNING AND ENVIRONMENTAL CONSULTING

MEMORANDUM

TO: Harvey Packard, Senior Engineer, Central Coast Regional Water Quality Control Board

CC: Arwen Wyatt-Mair, Senior Water Resources Engineer, Central Coast Regional Water Quality Control Board
Mark Lemus, Water Resources Engineer, Central Coast Regional Water Quality Control Board
Tim O'Halloran, Lead Project Delivery Engineer, California American Water
DJ Moore, Partner, Paul Hastings
Natalie Rogers, Counsel, Paul Hastings
Bob Holden, Principal Engineer, Monterey One Water
Tyler Potter, JD, AICP, Project Director, Denise Duffy & Associates

FROM: Conor O'Toole, Air Quality Specialist, Denise Duffy & Associates
Mikaela Bogdan, Assistant Planner, Denise Duffy & Associates

DATE: May 27, 2026

SUBJECT: Monterey Peninsula Water Supply Project ("MPWSP") – Regional Water Quality Control Board Addendum to the MPWSP Environmental Impact Report/Environment Impact Statement – Air Quality & Greenhouse Gas Memorandum

I. Introduction

This memorandum presents the results of Denise Duffy & Associates' ("DD&A") Air Quality and Greenhouse Gas ("GHG") modeling for proposed modifications to the MPWSP to accommodate brine discharge through Monterey One Water's ("M1W's") outfall pipeline. The purpose of this memorandum is to evaluate potential air quality and GHG emissions associated with these proposed modifications, as described in detail below.

This memorandum includes 1) a brief description of the Proposed Modifications, 2) the air quality and GHG modeling methods, 3) air quality and GHG modeling results, and 4) conclusion. Additionally, Attachments A – C include the Emissions Reports for the Proposed Modifications and present detailed lists of data inputs and estimated air quality and GHG emissions for the Proposed Modifications.

II. Proposed Modifications Background & Description

The MPWSP would discharge commingled brine through Monterey One Water's ("M1W's") existing outfall, which extends from M1W's existing regional wastewater treatment plant in unincorporated Monterey County to a diffuser located 11,260 feet offshore of the former CEMEX sand mining facility in the City of Marina. To accommodate the addition of brine discharge through the outfall, modifications to onshore and

offshore segments of the outfall are necessary to ensure compliance with the California Ocean Plan and integrity of the outfall. The proposed outfall improvements are generally consistent with those identified as mitigation in the Final EIR/EIS, but include minor refinements to design that were made following certification of the Final EIR/EIS. These improvements include the following components:

(1) Installing stiffer angled ports and opening existing closed ports on the outfall diffuser located offshore to maximize dilution at the point of discharge;

(2) Replacing internal joint seals inside the nearshore portion of the offshore segment of the outfall;

(3) Excavating four (4) additional access pits and 11 new grouting pits to install a protective slip liner inside the entire onshore portion of the outfall;

(4) Constructing additional brine storage at the desalination plant to maintain minimum brine flow requirements through the outfall during MPWSP operations; and

(5) Installing a brine mixing structure ("BMS") above a section of the outfall located onshore at the M1W RTP to thoroughly mix brine prior to discharging through the outfall.

These improvements are collectively referred to as the "Proposed Modifications." DD&A's air quality and GHG modeling evaluated the effects of the Proposed Modifications that could generate air quality and GHG emissions: (1) constructing additional brine storage at the desalination plant, and (2) installing a protective slip liner inside the onshore portion of the outfall. The following section summarizes the methods used to conduct the air quality and GHG analysis.

III. Air Quality & GHG Modeling Methods

Assumptions & Model Inputs

The Proposed Modifications that would generate potential additional air quality emissions consist of two (2) components: 1) expanding brine storage at the desalination plant site; and, 2) installing protective slip lining along the land outfall. The brine storage expansion component involves two (2) options: 1) constructing an additional, three (3)-million-gallon ("MG") brine storage pond (for a total of six [6] MG of brine storage, including the approved brine storage pond) that would increase permanent development at the desalination plant site by 0.24 acres; and, 2) replacing the approved brine storage pond with two (2) above-ground brine storage tanks (for a total of six [6] MG of brine storage) and an overflow pond that would decrease permanent development on the site by 0.5 acres. Slip liner installation would increase earthmoving along the outfall alignment by approximately 0.08 acres.

To quantify anticipated air quality and GHG emissions for the Proposed Modifications, DD&A reviewed the California Public Utility Commission's ("CPUC's") Final EIR/EIS and supporting technical documentation and used the same modeling methods as those used for the Final EIR/EIS. DD&A also obtained updated information concerning temporary and permanent disturbance areas based on updated design and construction information for the Proposed Modifications. Consistent with the Final EIR/EIS's analysis,

where certain project-specific information is not available, DD&A used built-in CalEEMod assumptions.[1] For this analysis, DD&A specifically used the built-in CalEEMod project assumptions for the "General Light Industry" land use type to estimate construction equipment emission factors and equipment and vehicle trips associated with the Proposed Modifications, consistent with the Final EIR/EIS' methodology.

Additionally, DD&A limited the air quality emissions in the CalEEMod analysis to assess construction-related emissions because air quality emissions associated with implementation of the Proposed Modifications would be temporary during construction. The Proposed Modifications would not result in long-term operational emissions because 1) they do not involve any changes to the approved desalination plant operations, 2) they do not involve components that would require new energy demand during MPWSP operation, and 3) ongoing maintenance activities would be substantially the same as those identified in the Final EIR/EIS and would not result in additional trips during operation. Separately, CalEEMod estimates GHG emissions from both temporary construction activities and long-term project operation. Construction emissions are calculated as a one-time total, then amortized over the 40-year lifespan of the project to convert them into an equivalent annual emissions estimate. Operational emissions are estimated on an annual basis then combined with the amortized construction emissions to estimate total annual GHG emissions for the project over its lifespan.

The Final EIR/EIS modeled a "worst-case" scenario that conservatively estimated anticipated air quality and GHG emissions associated with construction of the entire MPWSP simultaneously. For purposes of this memorandum, DD&A's analysis includes more refined assumptions regarding construction schedule since CalAm has already constructed several MPWSP components, as discussed in greater detail below. The following sections describe the specific assumptions and model inputs for each component of the Proposed Modifications.

Brine Storage

DD&A modeled two (2) potential options for expanding brine storage capacity at the desalination plant site. As described above, the first option involves constructing a second three (3) MG brine storage pond that would increase permanent development at the desalination plant site by 0.24 acres ("Option 1"). The second option involves replacing the approved brine storage pond with two (2) above-ground brine storage tanks and an overflow pond that would store a total of six (6) MG of brine and would decrease permanent development on the site by 0.5 acres ("Option 2"). The following discussion describes the assumptions made for each of these options.

Option 1 – Additional Brine Storage Pond

DD&A used the following inputs in the CalEEMod analysis to quantify air quality and GHG emissions for the additional brine storage pond: 1) an increase of approximately 10,500 square feet (0.24 acres) for the desalination plant permanent disturbance footprint and 2) an approximately nine (9)-month construction schedule. The CalEEMod analysis for Option 1 models construction emissions from the overall increase in the desalination plant permanent disturbance footprint. DD&A used the same methods used in the Final EIR/EIS to model air quality and GHG impacts. This approach involved relying on CalEEMod's built-in "General Light

[1] Where certain project-specific information is not available, CalEEMod uses default assumptions for specific land use categories in its analysis.

Industry" land use assumptions for construction equipment emission factors and equipment and vehicle trips, consistent with the methods used in the Final EIR/EIS. See **Attachment A** for a detailed list of project inputs and air quality and GHG emissions for the Additional Brine Storage Pond option.

Option 2 – Brine Storage Tanks

DD&A used the following modeling inputs in the CalEEMod analysis to quantify air quality and GHG emissions for the construction of two (2) brine storage tanks and an overflow pond at the desalination plant site: 1) a decrease of approximately 22,000 square feet (0.50 acres) for the desalination plant permanent disturbance footprint[2] and 2) an approximately nine (9)-month construction schedule. The CalEEMod analysis for the brine storage tanks models construction emissions from the net decrease in the desalination plant disturbance footprint. As with Option 1, DD&A used the same methods used in the Final EIR/EIS, which relied on CalEEMod's built-in "General Light Industry" land use assumptions for construction equipment emission factors and equipment and vehicle trips. See **Attachment B** for a detailed list of project inputs and air quality and GHG emissions for the Brine Storage Tanks option.

Onshore Outfall Protective Slip Liner

DD&A used the following inputs in the CalEEMod analysis to quantify air quality and GHG emissions for the construction activities associated with protective slip liner installation in the onshore portion of the outfall: 1) an increase of approximately 3,500 square feet (0.08 acres) for the slip liner temporary construction disturbance and 2) an approximately five (5)-month construction schedule. Consistent with the Final EIR/EIS' analysis, the construction equipment emission factors and equipment and vehicle trips are based on the CalEEMod built-in project assumptions for the "General Light Industry" land use type. See **Attachment C** for a detailed list of project inputs and air quality and GHG emissions for the protective slip liner.

IV. Air Quality and GHG Results

Air Quality Emissions

The following discussion summarizes the results of the CalEEMod analysis for each component of the Proposed Modifications to identify anticipated emissions associated with each modification. Separately, this section also identifies total projected emissions resulting from implementing all of the Proposed Modifications to fully evaluate the scope of potential air quality effects associated with these modifications.

Brine Storage

Option 1 – Additional Brine Storage Pond

This option would involve the use of diesel-fueled equipment, including graders, backhoes, excavators, and loaders, that would result in temporary air quality emissions during construction. Additionally, construction vehicles and workers' vehicles would generate emissions offsite and generate fugitive dust onsite through ground disturbing activities. Construction of this option would increase grading and would slightly increase the

[2] Option 2 would decrease the overall MPWSP footprint and permanent impact area by approximately 22,000 square feet (0.50 acres) when compared to the impact analysis in the Final EIR/EIS; therefore, the CalEEMod analysis for this option identifies the net reduction in air quality and GHG emission quantities.

permanent disturbance footprint at the desalination plant site. These actions would result in a slight increase in air quality emissions during construction. However, air quality impacts associated with these activities would be relatively minor, resulting in an increase in maximum daily air quality emissions of less than one (1) percent (see **Table 1**). This incremental increase in emissions would not substantially increase the severity of a previously identified impact for several reasons.

First, the construction-related air quality impacts associated with this option would be consistent with those previously identified in the Final EIR/EIS – i.e., temporary air quality emissions associated with the operation of construction equipment. In addition, all excavated material would be balanced onsite. Therefore, no additional truck trips to haul materials offsite would occur. Similarly, this option would not require additional construction equipment, beyond the assumptions identified in the Final EIR/EIS. As a result, this option would not result in higher emissions from the use of more equipment onsite or the addition of offsite haul trips.

Second, the Final EIR/EIS assumed that CalAm would construct all components of the MPWSP concurrently. As a result, the Final EIR/EIS conservatively identified maximum daily emissions for construction of the entire MPWSP. Actual construction, however, has not occurred concurrently. CalAm has already initiated earthmoving activities at the desalination plant site and has already constructed several MPWSP components, including the Carmel Valley Pump Station, Ryan-Ranch Interconnection Project, and a one (1)-mile segment of the Transfer Pipeline (referred to as New Transmission Main in the Final EIR/EIS). As a result, the "worst-case" scenario evaluated in the Final EIR/EIS has not occurred as originally projected and has already been reduced through the construction of other MPWSP components. As demonstrated in **Table 1**, the potential air quality emissions associated with construction of the Carmel Valley Pump Station alone comprises a total of four (4) percent of the maximum daily emissions for NO_x and PM_{10}. Because this MPWSP component has been constructed already, actual maximum daily emissions associated with concurrent construction of MPWSP components have already been reduced. This reduction offsets the incremental increase in the maximum daily emissions from the additional brine storage pond that could occur from simultaneous construction of the pond and the remaining MPWSP components.

Table 1
Construction Emissions for Criteria Air Pollutants – Brine Storage Pond

Emission Source	Emissions (lbs/day)				
	ROG	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Off-road Construction Equipment and On-road Vehicle Exhaust					
Desalination Plant	6.39	90.11	48.47	3.36	2.71
Subsurface Slant Wells	3.57	48.28	23.09	1.84	1.56
Source Water Pipeline	2.51	31.10	19.34	1.31	1.12
Brine Discharge Pipeline	2.34	26.99	17.21	1.18	1.04
Brine Mixing Box	2.34	26.99	17.21	1.18	1.04
Castroville Pipeline	2.39	27.59	17.61	1.19	1.06
Pipeline to CSIP	2.34	26.99	17.21	1.18	1.04
New Transmission Main	*2.54*	*31.52*	*19.62*	*1.32*	*1.13*
ASR Pipelines	2.47	30.74	19.10	1.30	1.10
ASR Injection and Extraction Wells	1.45	20.36	10.73	0.70	0.55
Carmel Valley Pump Station	*1.09*	*13.62*	*7.56*	*0.51*	*0.44*
Subtotal	**29.41**	**374.27**	**217.14**	**15.05**	**12.79**

Emission Source	Emissions (lbs/day)				
	ROG	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Fugitive Dust	N/A	N/A	N/A	189.88	36.04 27.56
Off-gassing from Paving	4.53	N/A	N/A	N/A	N/A
Total Maximum Daily Emissions (MPWSP):	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**
Maximum Daily Emissions (Additional Brine Storage Pond):	0.36	2.72	8.34	7.49[1]	1.35
Revised Total:	**34.30**	**376.99**	**225.48**	**212.42**	**41.70**
MBARD Significance Threshold:	137	137	550	82	55
Exceeds Threshold without Mitigation?	No	Yes	No	Yes	No
Exceeds Threshold with Mitigation?	No	Yes	No	No	No

Source: Final EIR/EIS Table 4.10-5 Estimated Maximum Daily Construction Emissions; see also **Attachment A**.
Note: Components identified in *italics* have been constructed or partially constructed.
[1]The Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

Third, as demonstrated in **Table 1**, the incremental temporary increase of less than one (1) percent in maximum daily air quality emissions would not cause an exceedance of an existing Monterey Bay Air Resources District ("MBARD") threshold such that a new significant air quality impact would occur. Emissions of ROG, CO, and $PM_{2.5}$ would continue to remain below MBARD's thresholds of significance and PM_{10} emissions would be below the MBARD threshold with implementation of mitigation. Additionally, it is worth noting that total emissions for desalination plant construction would be substantially less than applicable MBARD thresholds for construction of this component. Therefore, construction of this option at the desalination plant site would not cause an increase in localized emissions at the site such that there would be a significant air quality impact (see **Table 2**).

Table 2
Estimated Maximum Daily Construction Emissions – Desalination Plant

	Emissions (lbs/day)				
	ROG	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Desalination Plant	6.39	90.11	48.47	3.36	2.71
Additional Brine Pond	0.36	2.72	8.34	7.49[1]	1.35
Total Unmitigated	**6.75**	**92.83**	**56.81**	**10.85**	**4.06**
MBARD Significance Threshold	137	137	550	82	55
Exceeds Threshold/Significant Impact?	No	No	No	No	No

See **Attachment A** for full CalEEMod Report.
[1] The Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

Further, the additional earthmoving for this option would be temporary and would occur over the course of several weeks. Therefore, this option would not result in earthmoving greater than MBARD's thresholds of 2.2 acres of major earthmoving (i.e., excavation) per day or 8.1 acres of earthmoving per day for projects that require minimal earthmoving activities. Overall, this option would not produce additional air quality emissions such that

a new significant impact would occur, nor would additional emissions increase the severity of a previously identified significant impact. As a result, overall impacts associated with the MPWSP, as modified by this option, would remain unchanged from those identified in the Final EIR/EIS.

Finally, as discussed in the Final EIR/EIS, Mitigation Measure 4.10-1a through Mitigation Measure 4.10-1e would be implemented to ensure the temporary construction-related air quality emissions are minimized to the extent feasible. Because construction activities would result in relatively minor additional temporary emissions (less than 1%) that would not substantially increase construction impacts for the reasons described above, and would implement mitigation that would further reduce impacts, construction of the additional brine storage pond would result in substantially the same impacts as those identified in the Final EIR/EIS.

Option 2 – Brine Storage Tanks

Construction of this option would involve the same equipment discussed above for Option 1. Construction activities associated with this option would generate temporary air quality emissions that would result in potential construction-related air quality impacts, consistent with those previously identified in the Final EIR/EIS. However, this option would also reduce overall disturbance at the desalination plant site by approximately 0.5 acres. As a result, this option would reduce overall temporary emissions due to the reduction in onsite ground disturbance. Therefore, constructing the brine storage tanks and overflow pond would result in fewer air quality emissions than those previously identified in the Final EIR/EIS (see **Table 3**). Like the additional brine storage pond option, air quality impacts associated with this option would be temporary and would cease upon completion of construction activities. Additionally, earthmoving activities would occur over several weeks and thus, would not exceed MBARD daily earthmoving thresholds of 2.2 acres of major earthmoving (i.e., excavation) per day or 8.1 acres of earthmoving per day for projects that require minimal earthmoving activities.

Table 3
Construction Emissions for Criteria Air Pollutants – Brine Storage Tanks

Emission Source	Emissions (lbs/day)				
	ROG	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Off-road Construction Equipment and On-road Vehicle Exhaust					
Desalination Plant	6.39	90.11	48.47	3.36	2.71
Subsurface Slant Wells	3.57	48.28	23.09	1.84	1.56
Source Water Pipeline	2.51	31.10	19.34	1.31	1.12
Brine Discharge Pipeline	2.34	26.99	17.21	1.18	1.04
Brine Mixing Box	2.34	26.99	17.21	1.18	1.04
Castroville Pipeline	2.39	27.59	17.61	1.19	1.06
Pipeline to CSIP	2.34	26.99	17.21	1.18	1.04
New Transmission Main	*2.54*	*31.52*	*19.62*	*1.32*	*1.13*
ASR Pipelines	2.47	30.74	19.10	1.30	1.10
ASR Injection and Extraction Wells	1.45	20.36	10.73	0.70	0.55
Carmel Valley Pump Station	*1.09*	*13.62*	*7.56*	*0.51*	*0.44*
Subtotal	**29.41**	**374.27**	**217.14**	**15.05**	**12.79**
Fugitive Dust	N/A	N/A	N/A	189.88	36.04 27.56
Off-gassing from Paving	4.53	N/A	N/A	N/A	N/A
Total Maximum Daily Emissions (MPWSP):	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**

Emission Source	Emissions (lbs/day)				
	ROG	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions (Brine Tanks)*:	(0.36)	(2.72)	(8.34)	(7.49)[1]	(1.35)
Revised Total:	**33.58**	**371.55**	**208.80**	**197.44**	**39.00**
MBARD Significance Threshold:	137	137	550	82	55
Exceeds Threshold without Mitigation?	No	Yes	No	Yes	No
Exceeds Threshold with Mitigation?	No	Yes	No	No	No

Source: Final EIR/EIS Table 4.10-5 Estimated Maximum Daily Construction Emissions; see also **Attachment B**.
Note: Components identified in *italics* have been constructed or partially constructed.
* Negative values represent a decrease in maximum daily emissions compared to the total maximum daily emissions for the MPWSP.
[1] The Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

Further, as discussed above, the Final EIR/EIS evaluated a "worst-case" scenario for daily emissions that assumed CalAm would construct all components of the MPWSP simultaneously; however, CalAm has already constructed several components, and earthmoving activities have already been initiated at the desalination plant site. As a result, the worst-case scenario evaluated in the Final EIR/EIS has already been reduced and this option would further reduce overall emissions, even when assuming all components would be constructed concurrently. As a result, this option would not result in a new significant impact or increase the severity of a previously identified significant impact.

Overall, this option would reduce air quality emissions compared to the MPWSP. Therefore, this option would not result in a new significant impact or increase the severity of a previously identified significant impact. As a result, overall impacts associated with the MPWSP, as modified by this option, would remain unchanged from those identified in the Final EIR/EIS.

Onshore Outfall Protective Slip Liner

Slip liner installation would involve 0.08 acres of additional earthmoving for temporary excavation of the additional access and grouting pits, beyond what was identified in the Final EIR/EIS. As identified in **Table 4**, this increase in earthmoving would result in a negligible increase in temporary emissions as compared to overall MPWSP construction. This temporary increase in emissions would not affect the conclusions of the Final EIR/EIS. Additionally, earthmoving activities would occur over several weeks and due to the limited scale of total additional earthmoving, construction activities would not exceed MBARD daily earthmoving thresholds of 2.2 acres of major earthmoving (i.e., excavation) per day or 8.1 acres of earthmoving per day for projects that require minimal earthmoving activities.

Further, as discussed above, the Final EIR/EIS estimated total maximum daily emissions for the entire MPWSP, assuming CalAm would construct all components simultaneously. CalAm, however, has already constructed several project components, including the Carmel Valley Pump Station, Ryan Ranch-Bishop Interconnection Project, and a one (1)-mile segment of the New Transmission Main. As a result, the total maximum daily emissions associated with the MPWSP have already been reduced. Any temporary increases in emissions associated with slip liner installation would be substantially offset by the fact that CalAm has already constructed the Carmel Valley Pump Station, alone.

Table 4
Estimated Maximum Average Daily Construction Emissions – Slip Liner Installation

Emission Source	Emissions (lbs/day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Total Maximum Daily Emissions (MPWSP)	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**
Maximum Daily Emissions (Slip Liner Installation)	0.19	0.87	10.09	3.56[1]	1.48
Revised Total	**34.13**	**375.14**	**227.23**	**208.49**	**41.83**

See **Attachment C** for full CalEEMod Report.

[1]Note: Note, the Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

This component would result in a negligible increase in temporary emissions compared to the MPWSP. Therefore, this option would not result in a new significant impact or increase the severity of a previously identified significant impact. As a result, overall impacts associated with the MPWSP, as modified by this component, would remain unchanged from those identified in the Final EIR/EIS.

Combined Effects of the Proposed Modifications

Overall, the combined increase in temporary construction emissions resulting from the Proposed Modifications would not substantially increase maximum daily emissions beyond those identified in the Final EIR/EIS such that a new significant air quality impact would occur. The total combined emissions evaluated for the Proposed Modifications includes the slip liner and the Additional Brine Storage Pond option because this brine storage option would generate additional disturbance and thus additional air quality emissions. However, if Option 2 for expanded brine storage is pursued, overall air quality emissions would be reduced, since Option 2 would decrease the disturbance area at the desalination plant site and thus reduce emissions associated with improvements at this location. As a result, this analysis conservatively estimates a worst-case scenario for total combined maximum daily emissions resulting from the Proposed Modifications. If Option 2 is pursued, total air quality emissions would be below the total emissions identified in **Table 5**.

As identified in **Table 5,** the Proposed Modifications would increase total maximum daily emissions of criteria pollutants. However, this incremental increase in emissions would not constitute a significant increase in construction-related air quality emissions for the reasons identified above. As discussed above, the Final EIR/EIS conservatively modeled a worst-case scenario that assumed the entire MPWSP would be constructed concurrently. As a result, the Final EIR/EIS identified maximum daily emissions for construction of the entire MPWSP. However, CalAm has already constructed several MPWSP components thereby reducing maximum daily emissions. The air quality emissions reductions due to construction of the Carmel Valley Pump Station alone offsets any incremental increase in temporary emissions associated with the Proposed Modifications (see **Table 5**). In addition, a one (1)-mile segment of the New Transmission Main has already been constructed, therefore resulting in a further reduction in total emissions. As a result, the total increase in air quality emissions from the Proposed Modifications would be slightly less than the emissions identified in **Table 5**. Emissions would also be substantially reduced with implementation of mitigation measures identified in the Final EIR/EIS, which would further ensure air quality emissions from the Proposed Modifications do not exceed the level of impacts identified in the Final EIR/EIS (see **Table 6**). Moreover, the estimated total maximum daily emissions for the Proposed Modifications represents a conservative worst-case estimate based on emissions associated with implementing Option 1 for expanding brine storage. If the Brine Storage Tanks option is pursued instead, total maximum daily

emissions would decrease compared to emissions the Final EIR/EIS identified for the MPWSP. For these reasons, the combined emissions associated with the Proposed Modifications would not result in any additional significant environmental effects or increase the severity of a previously identified significant impact related to air quality.

Table 5
Maximum Average Daily Construction Emissions – Proposed Modifications

Emission Source	Emissions (lbs/day)				
	ROG	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Total Maximum Daily Emissions (MPWSP)	**33.94**	**374.27**	**217.14**	**204.93**	**40.35**
Slip Liner Installation	0.19	0.87	10.09	3.56	1.48
Additional Brine Pond	0.36	2.72	8.34	7.49	1.35
Subtotal	**34.40**	**377.86**	**235.57**	**215.98**	**43.18**
Carmel Valley Pump Station	*1.09*	*13.62*	*7.56*	*0.51*	*0.44*
*New Transmission Main**	*2.54*	*31.52*	*19.62*	*1.32*	*1.13*
Revised Maximum Daily Emissions (MPWSP)[1]	**33.31**	**364.24**	**228.01**	**214.15**	**41.61**

Note: CalAm constructed the Carmel Valley Pump Station in 2020. As a result, construction emissions associated with this component of MPWSP have been deducted from total maximum daily emissions to account for changes in construction timeline.

* Emissions associated with The New Transmission Main would be lower than the emissions shown due to completed construction of a one (1)-mile segment of the six (6)-mile pipeline. Therefore, emissions shown in the table represent conservative emissions estimates for this component.

[1] Revised maximum daily emissions for the MPWSP account for the emissions reduction associated with completion of the Carmel Valley Pump Station only. Emissions associated with construction of the New Transmission Main are not deducted because only a portion of the pipeline has been constructed.

Table 6
Estimated Mitigated Maximum Daily Construction Emissions – Proposed Modifications

Emission Source	Emissions (lbs./day)				
	ROG	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Total Mitigated Maximum Daily Emissions (MPWSP)	**33.94**	**316.00**	**217.14**	**68.00**	**40.35**
Slip Liner Installation (Mitigated)	0.19	0.87	10.09	3.56[1]	1.48
Additional Brine Pond (Mitigated)	0.36	2.72	8.34	7.49[1]	1.35
Total Mitigated	**34.49**	**319.59**	**235.57**	**79.05**	**43.18**
Carmel Valley Pump Station	*1.09*	*13.62*	*7.56*	*0.51*	*0.44*
Revised Total Mitigated	**33.40**	**305.97**	**228.01**	**78.54**	**42.74**
MBARD Significance Threshold	137	137	550	82	55

Note: See Final EIR/EIS, pp. 4.10-22 – 4.10-24; see also **Appendix G**

[1] The Final EIR/EIS identified off-road construction equipment and on-road vehicle exhaust separate from anticipated fugitive dust emissions. Total Maximum Daily Emissions for this component includes both construction equipment and on-road vehicle exhaust and fugitive dust emissions.

Greenhouse Gas Emissions

DD&A also evaluated construction and operational GHG emissions associated with the Proposed Modifications. The following sections summarize the results of the CalEEMod analyses for each component of the Proposed Modifications, as well as the results for total combined emissions resulting from implementing all of the Proposed Modifications.

Brine Storage

Option 1 – Additional Brine Storage Pond

This option would increase temporary GHG emissions in connection with ground-disturbing activities and use of construction-related equipment. As discussed above, this option would increase the overall desalination plant permanent disturbance footprint by 0.24 acres as compared to the MPWSP. The Final EIR/EIS identified that GHG emissions generated by construction of the MPWSP would total approximately 14,291 metric tons of carbon dioxide equivalent ("CO_2e")[3] over the 24-month construction period, which equates to a 40-year amortized annual average value of approximately 357 metric tons CO_2e. As shown in **Table 7**, construction of an additional brine storage pond would increase total MPWSP emissions by 67.54 metric tons CO_2e per year. This equates to an increase in 40-year amortized annual average emissions of approximately 1.7 metric tons CO_2e. This represents a less than one (1) percent increase in GHG emissions (see **Attachment A** for full CalEEMod report).

Table 7
Total GHG Emissions from MPWSP Construction – Brine Storage Pond

Construction Emissions Source	CO_2e
Desalination Plant	7,087.22
Subsurface Slant Wells	1,880.56
Source Water Pipeline	575.17
Brine Discharge Pipeline	198.02
Brine Mixing Box	594.06
Castroville Pipeline	271.09
Pipeline to CSIP	189.61
New Desalinated Water Pipeline	571.10
New Transmission Main	873.98
ASR Pipelines	472.24
ASR-5 and ASR-6 Wells	866.65
Carmel Valley Pump Station	249.65
Ryan Ranch-Bishop Interconnection Project	264.03
Main System-Hidden Hills Interconnection Project	198.02
MPWSP Total Emissions	**14,291.41**
40-Year Amortized Annual Average	**357.29**
Additional Brine Storage Pond	67.54
Brine Storage Pond 40-Year Amortized Annual Average	1.69
Revised Total Emissions	**14,358.95**
Revised 40-Year Amortized Annual Average	**358.98**

Source: Final EIR/EIS, p. 4.11-16; see also **Attachment A**.

Construction of the additional brine storage pond also would comply with previously identified mitigation measures, including Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1, which require the preparation of a GHG Emissions Reduction Plan and construction equipment and vehicle efficiency plan, respectively. The Final

[3] CO_2e is a standard unit for measuring the climate impact of various GHGs by converting their global warming potential into the equivalent amount of CO_2.

EIR/EIS concluded that Mitigation Measure 4.18-1 (construction equipment and vehicle efficiency plan) would minimize the generation of GHG emissions during construction. The Final EIR/EIS also concluded that implementation of Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan) would minimize generation of construction-related GHG emissions and reduce anticipated amortized emissions to approximately 1,482 metric tons of CO_2e per year. This is substantially below MBARD's recommended threshold of 2,000 metric tons CO_2e per year (see **Table 8**). Therefore, the nominal increase in GHG emissions associated with construction of an additional brine storage pond would not significantly increase amortized emissions such that they would exceed MBARD's recommended threshold of significance.

Table 8
Total Amortized Emissions – Brine Pond Storage

Emissions Source	CO_2e
Revised 40-Year Amortized Construction Emissions	358.98
Total Net Operational Emissions	8,008
Total Project Emissions (Pre-Mitigation):	**8,366.98**
Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)	(6,885)
Total Project Emissions (Post-Mitigation):	**1,481.98**
MBARD Significance Threshold:	2,000
Exceeds Threshold with Mitigation?	No

Note: See Final EIR/EIS, p. 4.11-18; see also **Attachment A**.

Overall, this option would result in a minor increase in temporary GHG emissions. This option would not result in additional emissions such that total emissions would substantially increase or result in an exceedance of MBARD's GHG emission threshold. Therefore, this option would not result in a new significant impact or increase the severity of a previously identified significant impact. As a result, overall impacts associated with the MPWSP, as modified by this option, would remain unchanged.

Option 2 – Brine Storage Tanks

Construction of brine storage tanks at the desalination plant site would not substantially increase GHG emissions. **Table 9** identifies GHG emissions associated with existing construction sources identified in the Final EIR/EIS and anticipated GHG emissions associated with construction of brine storage tanks at the desalination plant site. As identified above, construction of this option would reduce the permanent disturbance footprint at the desalination plant site by approximately 0.5 acres. As a result, anticipated ground-disturbing activities would be less than analyzed in the Final EIR/EIS, which in turn would result in a minor decrease in GHG emissions during construction.

Table 9
Total GHG Emissions from MPWSP Construction – Brine Storage Tanks

Construction Emissions Source	CO_2e
Desalination Plant	7,087.22
Subsurface Slant Wells	1,880.56
Source Water Pipeline	575.17
Brine Discharge Pipeline	198.02
Brine Mixing Box	594.06
Castroville Pipeline	271.09

Construction Emissions Source	CO_2e
Pipeline to CSIP	189.61
New Desalinated Water Pipeline	571.10
New Transmission Main	873.98
ASR Pipelines	472.24
ASR-5 and ASR-6 Wells	866.65
Carmel Valley Pump Station	249.65
Ryan Ranch-Bishop Interconnection Project	264.03
Main System-Hidden Hills Interconnection Project	198.02
MPWSP Total Emissions	**14,291.41**
40-Year Amortized Annual Average	**357.29**
Brine Storage Tanks	(67.54)
Brine Storage Tank 40-Year Amortized Annual Average	(1.69)
Revised Total Emissions	**14,223.87**
Revised 40-Year Amortized Annual Average	**355.60**

Source: Final EIR/EIS, p. 4.11-16; see also **Attachment B**

While this option would reduce overall GHG emissions, construction of this option would still be required to comply with previously identified mitigation measures, including Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1, described above. As discussed under Option 1, the Final EIR/EIS concluded that Mitigation Measure 4.18-1 (construction equipment and vehicle efficiency plan) would minimize the generation of GHG emissions during construction. Additionally, the Final EIR/EIS concluded that Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan) would reduce anticipated amortized emissions to approximately 1,482 metric tons of CO_2e per year, which is substantially below MBARD's recommended threshold of 2,000 metric tons CO_2e per year. The Brine Storage Tanks option would further reduce amortized GHG emissions to approximately 1,479 metric tons of CO_2e per year (see **Table 10**). The decrease in GHG emissions associated with this option would slightly decrease amortized emissions compared to the findings contained in the Final EIR/EIS. Therefore, this option would not result in a new significant GHG impact or increase the severity of a previously identified GHG impact.

Table 10
Total Amortized Emissions – Brine Storage Tanks

Emissions Source	CO_2e
Revised 40-Year Amortized Construction Emissions	355.60
Total Net Operational Emissions	8,008
Total Project Emissions (Pre-Mitigation):	**8,363.60**
Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)	(6,885)
Total Project Emissions (Post-Mitigation):	**1,478.60**
MBARD Significance Threshold:	2,000
Exceeds Threshold with Mitigation?	No

Note: See Final EIR/EIS, p. 4.11-18; see also **Attachment A**.

Overall, this option would result in a minor decrease in temporary GHG emissions compared to the MPWSP as analyzed in the Final EIR/EIS. As such, this option would not result in additional emissions beyond those previously evaluated for the MPWSP. Therefore, this option would not result in a new significant impact or

increase the severity of a previously identified significant impact. As a result, overall impacts associated with the MPWSP, as modified by this option, would remain unchanged.

Onshore Outfall Protective Slip Liner

As discussed above, slip liner installation would involve approximately 0.08 acres of additional earthmoving associated with excavation of four (4) additional access pits and 11 grouting pits beyond what was analyzed in the Final EIR/EIS. The increase of 0.08 acres for additional excavation represents a very small increase in construction-related disturbance relative to the overall MPWSP footprint. This would result in an estimated increase of 69.88 metric tons CO_2e – a less than one (1) percent increase compared to the MPWSP. Given the limited extent of additional disturbance and short duration of excavation activities, any incremental emissions would be minimal (see **Table 11**).

Table 11
Total GHG Emissions from MPWSP Construction – Slip Liner Installation

Construction Emissions Source	CO_2e
Desalination Plant	7,087.22
Subsurface Slant Wells	1,880.56
Source Water Pipeline	575.17
Brine Discharge Pipeline	198.02
Brine Mixing Box	594.06
Castroville Pipeline	271.09
Pipeline to CSIP	189.61
New Desalinated Water Pipeline	571.10
New Transmission Main	873.98
ASR Pipelines	472.24
ASR-5 and ASR-6 Wells	866.65
Carmel Valley Pump Station	249.65
Ryan Ranch-Bishop Interconnection Project	264.03
Main System-Hidden Hills Interconnection Project	198.02
MPWSP Total Emissions	**14,291.41**
40-Year Amortized Annual Average	**357.29**
Slip Liner Installation	69.88
Slip Line 40-Year Amortized Annual Average	1.75
Revised Total Emissions	**14,361.29**
Revised 40-Year Amortized Annual Average	**359.03**

Source: Final EIR/EIS, p. 4.11-16; see also **Attachment C**

In addition, similar to the brine storage options, the slip liner installation must comply with Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1, which the Final EIR/EIS determined would reduce construction-related GHG emissions to approximately 1,482 metric tons CO_2e per year. This is well below the significance threshold of 2,000 metric tons CO_2e per year (see **Table 12**). Given the very limited scale of the additional excavation for slip liner installation, the associated emissions would be several orders of magnitude smaller than the amount necessary to exceed the recommended threshold and therefore would not alter the prior significance determination.

Table 12
Total Amortized Emissions – Slip Liner Installation

Emissions Source	CO_2e
Revised 40-Year Amortized Construction Emissions	359.03
Total Net Operational Emissions	8,008
Total Project Emissions (Pre-Mitigation):	**8,367.03**
Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)	(6,885)
Total Project Emissions (Post-Mitigation):	**1,482.03**
MBARD Significance Threshold:	2,000
Exceeds Threshold with Mitigation?	No

Note: See Final EIR/EIS, p. 4.11-18; see also **Attachment C**

Overall, this component would result in a minor increase in temporary GHG emissions compared to the MPWSP. This component would not result in additional emissions such that total emissions would substantially change compared to the MPWSP or result in an exceedance of MBARD's GHG emission threshold. Therefore, this option would not result in a new significant impact or increase the severity of a previously identified significant impact. As a result, overall impacts associated with the MPWSP, as modified by this option, would remain unchanged from those identified in the Final EIR/EIS.

Combined Effects of the Proposed Modifications

The combined increase in total amortized GHG emissions associated with the Proposed Modifications would be nominal compared to the entirety of the MPWSP, as analyzed in the Final EIR/EIS. Similar to the air quality discussion above, the total combined amortized GHG emissions evaluated for the Proposed Modifications include the slip liner and the Additional Brine Storage Pond option, as this brine storage option would generate additional GHG emissions. However, if Option 2 for expanded brine storage is pursued, overall GHG emissions would be reduced, since Option 2 would decrease the disturbance footprint at the desalination plant site and thus reduce GHG emissions associated with improvements at that location. Therefore, this analysis conservatively estimates a worst-case scenario for total amortized emissions resulting from the Proposed Modifications. If Option 2 is pursued, total GHG emissions would be below 8,368.73 metric tons CO_2e without mitigations and below 1,483.73 metric tons CO_2e with mitigation (see **Table 13**). Further, as discussed in the Final EIR/EIS and shown in **Table 13**, with implementation of Mitigation Measure 4.11-1 and Mitigation Measure 4.18-1, GHG emissions would be well below the 2,000-metric tons of CO_2e MBARD threshold. As a result, the Proposed Modifications would not result in any additional significant impacts or increase the severity of a previously identified significant impact.

Table 13
Total Amortized Emissions – Proposed Modifications

Emissions Source	CO_2e
Revised 40-Year Amortized Construction Emissions	360.73
Total Net Operational Emissions	8,008
Total Project Emissions (Pre-Mitigation):	**8,368.73**
Mitigation Measure 4.11-1 (GHG Emissions Reduction Plan)	(6,885)
Total Project Emissions (Post-Mitigation):	**1,483.73**
MBARD Significance Threshold:	2,000

Note: See Final EIR/EIS at pg. 4.11-18; see also **Attachments A – C**

V. Conclusion

The Proposed Modifications would result in minor increases to air quality emissions and GHG emissions during construction. The increased emissions would not, however, generate substantial air quality emissions or GHG emissions that would increase the severity of a previously identified significant impact or result in a new significant impact beyond those identified in the Final EIR/EIS. Temporary construction-related air quality emissions would be almost entirely offset by components of the MPWSP that have been previously constructed. Additionally, the minor increase in GHG emissions associated with the Proposed Modifications would represent a negligible increase compared to the overall MPWSP and would not exceed MBARD's threshold of significance for GHG emissions. The Proposed Modifications would also implement mitigation measures identified in the Final EIR/EIS, including Mitigation Measures 4.10-1a through 4.10-1e, 4.11-1, and 4.18-1, which would reduce impacts to the extent feasible. For these reasons, the Proposed Modifications would not result in any new significant impacts or increase the severity of a previously identified significant impact related to air quality and GHG emissions. Please refer to **Attachments A – C** for specific data inputs and estimated air quality and GHG emissions for the Proposed Modifications.

Attachment A
CalEEMod Analysis Results for Additional Brine Storage Pond Option

MPWSP - Brine Storage Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	MPWSP - Brine Storage
Construction Start Date	5/10/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80000
Precipitation (days)	10.8000
Location	36.71733000340443, -121.77645026789011
County	Monterey
City	Unincorporated
Air District	Monterey Bay ARD
Air Basin	North Central Coast
TAZ	3216
EDFZ	6
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.41

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Light Industry	0.00000	1000sqft	0.24000	0.00000	—	—	—	—

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.05865	9.21336	10.0074	0.01582	5.67539	1.71154	1,767.45	0.07259	0.01613	0.20757	1,774.28
Mit.	0.35764	2.72026	8.33553	0.01346	5.28385	1.35352	1,511.22	0.06220	0.01406	0.20757	1,517.17
% Reduced	66%	70%	17%	15%	7%	21%	14%	14%	13%	—	14%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.55168	4.80600	6.90565	0.01205	7.59903	0.91131	1,304.47	0.05291	0.01187	0.01160	1,308.94
Mit.	0.28499	1.56794	5.33517	0.00743	7.48946	0.81131	813.883	0.03625	0.01087	0.01160	818.040
% Reduced	48%	67%	23%	38%	1%	11%	38%	31%	8%	—	38%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.32167	2.90951	3.64426	0.00598	1.11599	0.35109	657.509	0.02695	0.00571	0.01849	659.903
Mit.	0.05958	0.33274	2.19835	0.00366	1.00510	0.24963	406.412	0.01676	0.00367	0.01849	407.944
% Reduced	81%	89%	40%	39%	10%	29%	38%	38%	36%	—	38%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05870	0.53099	0.66508	0.00109	0.20367	0.06407	108.858	0.00446	0.00095	0.00306	109.254
Mit.	0.01087	0.06073	0.40120	0.00067	0.18343	0.04556	67.2862	0.00278	0.00061	0.00306	67.5398
% Reduced	81%	89%	40%	39%	10%	29%	38%	38%	36%	—	38%

2.2. Construction Emissions by Year

2.2.1. Total Construction Emissions by Year, Unmitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2026	1.05865	9.21336	10.0074	0.01582	5.67539	1.71154	1,767.45	0.07259	0.01613	0.20757	1,774.28
2027	0.11335	0.83116	1.12539	0.00173	0.01905	0.01752	133.513	0.00542	0.00108	0.00000	133.971
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2026	0.49393	4.80600	6.90565	0.01205	0.18874	0.17364	1,304.47	0.05291	0.01058	0.00000	1,308.94
2027	0.55168	4.55564	6.89930	0.01205	7.59903	0.91131	1,304.35	0.05291	0.01187	0.01160	1,308.83
Average Daily	—	—	—	—	—	—	—	—	—	—	—
2026	0.32167	2.90951	3.64426	0.00598	1.11599	0.35109	657.509	0.02695	0.00571	0.01849	659.903
2027	0.08715	0.79784	1.19251	0.00203	0.22696	0.04711	218.255	0.00893	0.00189	0.00528	219.046
Annual	—	—	—	—	—	—	—	—	—	—	—
2026	0.05870	0.53099	0.66508	0.00109	0.20367	0.06407	108.858	0.00446	0.00095	0.00306	109.254
2027	0.01590	0.14561	0.21763	0.00037	0.04142	0.00860	36.1346	0.00148	0.00031	0.00087	36.2656

2.2.4. Total Construction Emissions by Year, Mitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2026	0.35764	2.72026	8.33553	0.01346	5.28385	1.35352	1,511.22	0.06220	0.01406	0.20757	1,517.17
2027	0.02114	0.64604	0.96319	0.00173	0.00235	0.00235	133.513	0.00542	0.00108	0.00000	133.971
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2026	0.04693	0.24402	2.44023	0.00457	0.00939	0.00939	495.049	0.02008	0.00402	0.00000	496.748
2027	0.28499	1.56794	5.33517	0.00743	7.48946	0.81131	813.883	0.03625	0.01087	0.01160	818.040

Average Daily	—	—	—	—	—	—	—	—	—	—	—
2026	0.05958	0.33274	2.19835	0.00366	1.00510	0.24963	406.412	0.01676	0.00367	0.01849	407.944
2027	0.01517	0.09586	0.52514	0.00091	0.20066	0.02305	97.6601	0.00404	0.00091	0.00528	98.0373
Annual	—	—	—	—	—	—	—	—	—	—	—
2026	0.01087	0.06073	0.40120	0.00067	0.18343	0.04556	67.2862	0.00278	0.00061	0.00306	67.5398
2027	0.00277	0.01750	0.09584	0.00017	0.03662	0.00421	16.1688	0.00067	0.00015	0.00087	16.2312

3. Construction Emissions Details

3.1. Site Preparation (2026)

3.1.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33489	2.70503	3.63588	0.00524	0.15027	0.13825	568.085	0.02304	0.00461	—	570.034
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01835	0.14822	0.19923	0.00029	0.00823	0.00758	31.1279	0.00126	0.00025	—	31.2347
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00335	0.02705	0.03636	0.00005	0.00150	0.00138	5.15358	0.00021	0.00004	—	5.17127
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02275	0.01523	0.21128	0.00000	2.12317	0.21623	35.4616	0.00204	0.00148	0.13838	36.0934
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00120	0.00098	0.01048	0.00000	0.11294	0.01151	1.84020	0.00012	0.00008	0.00327	1.87081
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00022	0.00018	0.00191	0.00000	0.02061	0.00210	0.30467	0.00002	0.00001	0.00054	0.30973
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2. Grading (2026)

3.2.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13722	0.71357	8.01860	0.01346	0.02744	0.02744	1,458.02	0.05914	0.01183	—	1,463.03

Dust From Material Movement	—	—	—	—	2.07166	1.00174	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02331	0.12121	1.36206	0.00229	0.00466	0.00466	247.664	0.01005	0.00201	—	248.514
Dust From Material Movement	—	—	—	—	0.35190	0.17016	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00425	0.02212	0.24858	0.00042	0.00085	0.00085	41.0037	0.00166	0.00033	—	41.1444
Dust From Material Movement	—	—	—	—	0.06422	0.03105	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03413	0.02285	0.31692	0.00000	3.18475	0.32434	53.1925	0.00305	0.00223	0.20757	54.1401
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00560	0.00455	0.04875	0.00000	0.52515	0.05351	8.55693	0.00057	0.00038	0.01521	8.69926
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00102	0.00083	0.00890	0.00000	0.09584	0.00976	1.41670	0.00010	0.00006	0.00252	1.44026
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3. Building Construction (2026)

3.3.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04693	0.24402	2.44023	0.00457	0.00939	0.00939	495.049	0.02008	0.00402	—	496.748
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04693	0.24402	2.44023	0.00457	0.00939	0.00939	495.049	0.02008	0.00402	—	496.748
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01111	0.05778	0.57782	0.00108	0.00222	0.00222	117.223	0.00476	0.00095	—	117.625
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00203	0.01055	0.10545	0.00020	0.00041	0.00041	19.4076	0.00079	0.00016	—	19.4742
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4. Building Construction (2027)

3.4.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04693	0.24402	2.44023	0.00457	0.00939	0.00939	495.044	0.02008	0.00402	—	496.743
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00680	0.03534	0.35338	0.00066	0.00136	0.00136	71.6893	0.00291	0.00058	—	71.9353
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00124	0.00645	0.06449	0.00012	0.00025	0.00025	11.8690	0.00048	0.00010	—	11.9097
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/11/2026	6/5/2026	5.00000	20.0000	—
Grading	Grading	6/6/2026	9/1/2026	5.00000	62.0000	—
Building Construction	Building Construction	9/2/2026	3/15/2027	5.00000	139.000	—
Paving	Paving	3/16/2027	3/29/2027	5.00000	10.00000	—
Architectural Coating	Architectural Coating	3/30/2027	4/12/2027	5.00000	10.00000	—

5.2. Off-Road Equipment

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.000000	8.00000	148.000	0.41000
Grading	Graders	Diesel	Tier 4 Final	1.000000	6.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.000000	6.00000	367.000	0.40000
Building Construction	Cranes	Diesel	Tier 4 Final	1.000000	4.00000	367.000	0.29000
Paving	Cement and Mortar Mixers	Diesel	Average	4.00000	6.00000	10.00000	0.56000
Paving	Pavers	Diesel	Tier 4 Final	1.000000	7.00000	81.0000	0.42000
Paving	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.000000	7.00000	84.0000	0.37000
Architectural Coating	Air Compressors	Diesel	Tier 4 Final	1.000000	6.00000	37.0000	0.48000

5.3. Construction Vehicles

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	Worker	5.00000	9.47000	LDA,LDT1,LDT2
Site Preparation	Vendor	—	6.03000	HHDT,MHDT
Site Preparation	Hauling	0.00000	20.0000	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	7.50000	9.47000	LDA,LDT1,LDT2
Grading	Vendor	—	6.03000	HHDT,MHDT
Grading	Hauling	0.00000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	0.00000	9.47000	LDA,LDT1,LDT2
Building Construction	Vendor	0.00000	6.03000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	17.5000	9.47000	LDA,LDT1,LDT2
Paving	Vendor	—	6.03000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	0.00000	9.47000	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	6.03000	HHDT,MHDT
Architectural Coating	Hauling	0.00000	20.0000	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Per CDM Smith, the additional pond would result in additional 0.24 acres of disturbance.
Construction: Construction Phases	Construction schedule provided by CDM Smith
Construction: Dust From Material Movement	All cut and fill would be balanced on site.
Construction: On-Road Fugitive Dust	Majority of roads paved

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	0.00000	0.24000

8.4. Construction

8.4.1. Construction Phases

Phase Type	Phase Name	Model Parameter	Default Value	New Value
Site Preparation	Site Preparation	Start Date	5/25/2026	5/11/2026
Site Preparation	Site Preparation	End Date	5/26/2026	6/5/2026
Site Preparation	Site Preparation	Work Days per Phase	1.000000	20.0000
Grading	Grading	Start Date	5/27/2026	6/6/2026
Grading	Grading	End Date	5/29/2026	9/1/2026
Grading	Grading	Work Days per Phase	2.00000	62.0000
Building Construction	Building Construction	Start Date	5/30/2026	9/2/2026
Building Construction	Building Construction	End Date	10/17/2026	3/15/2027
Building Construction	Building Construction	Work Days per Phase	100.0000	139.000
Paving	Paving	Start Date	10/18/2026	3/16/2027
Paving	Paving	End Date	10/25/2026	3/29/2027
Paving	Paving	Work Days per Phase	5.00000	10.00000

Architectural Coating	Architectural Coating	Start Date	10/26/2026	3/30/2027
Architectural Coating	Architectural Coating	End Date	11/2/2026	4/12/2027
Architectural Coating	Architectural Coating	Work Days per Phase	5.00000	10.00000

8.4.4. Dust from Material Movement

Phase Name	Model Parameter	Units	Default Value	New Value
Grading	Material Imported	Cubic Yards	—	0.00000
Grading	Material Exported	Cubic Yards	—	0.00000
Grading	Total Acres Graded	acres	46.5000	3.80000

8.4.7. On-Road Fugitive Dust

Phase Name	Model Parameter	Units	Default Value	New Value
Site Preparation	Worker Trip Paved	%	52.0000	97.0000
Site Preparation	Vendor Trip Paved	%	52.0000	97.0000
Site Preparation	Hauling Trip Paved	%	52.0000	97.0000
Grading	Worker Trip Paved	%	52.0000	97.0000
Grading	Vendor Trip Paved	%	52.0000	97.0000
Grading	Hauling Trip Paved	%	52.0000	97.0000
Building Construction	Worker Trip Paved	%	52.0000	97.0000
Building Construction	Vendor Trip Paved	%	52.0000	97.0000
Building Construction	Hauling Trip Paved	%	52.0000	97.0000
Paving	Worker Trip Paved	%	52.0000	97.0000
Paving	Vendor Trip Paved	%	52.0000	97.0000
Paving	Hauling Trip Paved	%	52.0000	97.0000
Architectural Coating	Worker Trip Paved	%	52.0000	97.0000
Architectural Coating	Vendor Trip Paved	%	52.0000	97.0000
Architectural Coating	Hauling Trip Paved	%	52.0000	98.0000

Attachment B
CalEEMod Analysis Results for Two Brine Storage Tanks and Overflow Pond Option

MPWSP - Brine Storage Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	MPWSP - Brine Storage
Construction Start Date	5/10/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80000
Precipitation (days)	10.8000
Location	36.71733000340443, -121.77645026789011
County	Monterey
City	Unincorporated
Air District	Monterey Bay ARD
Air Basin	North Central Coast
TAZ	3216
EDFZ	6
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.41

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Light Industry	0.00000	1000sqft	0.50000	0.00000	—	—	—	—

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.05865	9.21336	10.0074	0.01582	5.67539	1.71154	1,767.45	0.07259	0.01613	0.20757	1,774.28
Mit.	0.35764	2.72026	8.33553	0.01346	5.28385	1.35352	1,511.22	0.06220	0.01406	0.20757	1,517.17
% Reduced	66%	70%	17%	15%	7%	21%	14%	14%	13%	—	14%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.55168	4.80600	6.90565	0.01205	7.59903	0.91131	1,304.47	0.05291	0.01187	0.01160	1,308.94
Mit.	0.28499	1.56794	5.33517	0.00743	7.48946	0.81131	813.883	0.03625	0.01087	0.01160	818.040
% Reduced	48%	67%	23%	38%	1%	11%	38%	31%	8%	—	38%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.32167	2.90951	3.64426	0.00598	1.11599	0.35109	657.509	0.02695	0.00571	0.01849	659.903
Mit.	0.05958	0.33274	2.19835	0.00366	1.00510	0.24963	406.412	0.01676	0.00367	0.01849	407.944
% Reduced	81%	89%	40%	39%	10%	29%	38%	38%	36%	—	38%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05870	0.53099	0.66508	0.00109	0.20367	0.06407	108.858	0.00446	0.00095	0.00306	109.254
Mit.	0.01087	0.06073	0.40120	0.00067	0.18343	0.04556	67.2862	0.00278	0.00061	0.00306	67.5398
% Reduced	81%	89%	40%	39%	10%	29%	38%	38%	36%	—	38%

2.2. Construction Emissions by Year

2.2.1. Total Construction Emissions by Year, Unmitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2026	1.05865	9.21336	10.0074	0.01582	5.67539	1.71154	1,767.45	0.07259	0.01613	0.20757	1,774.28
2027	0.11335	0.83116	1.12539	0.00173	0.01905	0.01752	133.513	0.00542	0.00108	0.00000	133.971
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2026	0.49393	4.80600	6.90565	0.01205	0.18874	0.17364	1,304.47	0.05291	0.01058	0.00000	1,308.94
2027	0.55168	4.55564	6.89930	0.01205	7.59903	0.91131	1,304.35	0.05291	0.01187	0.01160	1,308.83
Average Daily	—	—	—	—	—	—	—	—	—	—	—
2026	0.32167	2.90951	3.64426	0.00598	1.11599	0.35109	657.509	0.02695	0.00571	0.01849	659.903
2027	0.08715	0.79784	1.19251	0.00203	0.22696	0.04711	218.255	0.00893	0.00189	0.00528	219.046
Annual	—	—	—	—	—	—	—	—	—	—	—
2026	0.05870	0.53099	0.66508	0.00109	0.20367	0.06407	108.858	0.00446	0.00095	0.00306	109.254
2027	0.01590	0.14561	0.21763	0.00037	0.04142	0.00860	36.1346	0.00148	0.00031	0.00087	36.2656

2.2.4. Total Construction Emissions by Year, Mitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2026	0.35764	2.72026	8.33553	0.01346	5.28385	1.35352	1,511.22	0.06220	0.01406	0.20757	1,517.17
2027	0.02114	0.64604	0.96319	0.00173	0.00235	0.00235	133.513	0.00542	0.00108	0.00000	133.971
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2026	0.04693	0.24402	2.44023	0.00457	0.00939	0.00939	495.049	0.02008	0.00402	0.00000	496.748
2027	0.28499	1.56794	5.33517	0.00743	7.48946	0.81131	813.883	0.03625	0.01087	0.01160	818.040

Average Daily	—	—	—	—	—	—	—	—	—	—	—
2026	0.05958	0.33274	2.19835	0.00366	1.00510	0.24963	406.412	0.01676	0.00367	0.01849	407.944
2027	0.01517	0.09586	0.52514	0.00091	0.20066	0.02305	97.6601	0.00404	0.00091	0.00528	98.0373
Annual	—	—	—	—	—	—	—	—	—	—	—
2026	0.01087	0.06073	0.40120	0.00067	0.18343	0.04556	67.2862	0.00278	0.00061	0.00306	67.5398
2027	0.00277	0.01750	0.09584	0.00017	0.03662	0.00421	16.1688	0.00067	0.00015	0.00087	16.2312

3. Construction Emissions Details

3.1. Site Preparation (2026)

3.1.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33489	2.70503	3.63588	0.00524	0.15027	0.13825	568.085	0.02304	0.00461	—	570.034
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01835	0.14822	0.19923	0.00029	0.00823	0.00758	31.1279	0.00126	0.00025	—	31.2347
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00335	0.02705	0.03636	0.00005	0.00150	0.00138	5.15358	0.00021	0.00004	—	5.17127
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02275	0.01523	0.21128	0.00000	2.12317	0.21623	35.4616	0.00204	0.00148	0.13838	36.0934
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00120	0.00098	0.01048	0.00000	0.11294	0.01151	1.84020	0.00012	0.00008	0.00327	1.87081
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00022	0.00018	0.00191	0.00000	0.02061	0.00210	0.30467	0.00002	0.00001	0.00054	0.30973
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2. Grading (2026)

3.2.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13722	0.71357	8.01860	0.01346	0.02744	0.02744	1,458.02	0.05914	0.01183	—	1,463.03

Dust From Material Movement	—	—	—	—	2.07166	1.00174	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02331	0.12121	1.36206	0.00229	0.00466	0.00466	247.664	0.01005	0.00201	—	248.514
Dust From Material Movement	—	—	—	—	0.35190	0.17016	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00425	0.02212	0.24858	0.00042	0.00085	0.00085	41.0037	0.00166	0.00033	—	41.1444
Dust From Material Movement	—	—	—	—	0.06422	0.03105	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03413	0.02285	0.31692	0.00000	3.18475	0.32434	53.1925	0.00305	0.00223	0.20757	54.1401
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00560	0.00455	0.04875	0.00000	0.52515	0.05351	8.55693	0.00057	0.00038	0.01521	8.69926
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00102	0.00083	0.00890	0.00000	0.09584	0.00976	1.41670	0.00010	0.00006	0.00252	1.44026
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3. Building Construction (2026)

3.3.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04693	0.24402	2.44023	0.00457	0.00939	0.00939	495.049	0.02008	0.00402	—	496.748
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04693	0.24402	2.44023	0.00457	0.00939	0.00939	495.049	0.02008	0.00402	—	496.748
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01111	0.05778	0.57782	0.00108	0.00222	0.00222	117.223	0.00476	0.00095	—	117.625
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00203	0.01055	0.10545	0.00020	0.00041	0.00041	19.4076	0.00079	0.00016	—	19.4742
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4. Building Construction (2027)

3.4.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04693	0.24402	2.44023	0.00457	0.00939	0.00939	495.044	0.02008	0.00402	—	496.743
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00680	0.03534	0.35338	0.00066	0.00136	0.00136	71.6893	0.00291	0.00058	—	71.9353
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00124	0.00645	0.06449	0.00012	0.00025	0.00025	11.8690	0.00048	0.00010	—	11.9097
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/11/2026	6/5/2026	5.00000	20.0000	—
Grading	Grading	6/6/2026	9/1/2026	5.00000	62.0000	—
Building Construction	Building Construction	9/2/2026	3/15/2027	5.00000	139.000	—
Paving	Paving	3/16/2027	3/29/2027	5.00000	10.00000	—
Architectural Coating	Architectural Coating	3/30/2027	4/12/2027	5.00000	10.00000	—

5.2. Off-Road Equipment

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.000000	8.00000	148.000	0.41000
Grading	Graders	Diesel	Tier 4 Final	1.000000	6.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.000000	6.00000	367.000	0.40000
Building Construction	Cranes	Diesel	Tier 4 Final	1.000000	4.00000	367.000	0.29000
Paving	Cement and Mortar Mixers	Diesel	Average	4.00000	6.00000	10.00000	0.56000
Paving	Pavers	Diesel	Tier 4 Final	1.000000	7.00000	81.0000	0.42000
Paving	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.000000	7.00000	84.0000	0.37000
Architectural Coating	Air Compressors	Diesel	Tier 4 Final	1.000000	6.00000	37.0000	0.48000

5.3. Construction Vehicles

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	Worker	5.00000	9.47000	LDA,LDT1,LDT2
Site Preparation	Vendor	—	6.03000	HHDT,MHDT
Site Preparation	Hauling	0.00000	20.0000	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	7.50000	9.47000	LDA,LDT1,LDT2
Grading	Vendor	—	6.03000	HHDT,MHDT
Grading	Hauling	0.00000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	0.00000	9.47000	LDA,LDT1,LDT2
Building Construction	Vendor	0.00000	6.03000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	17.5000	9.47000	LDA,LDT1,LDT2
Paving	Vendor	—	6.03000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	0.00000	9.47000	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	6.03000	HHDT,MHDT
Architectural Coating	Hauling	0.00000	20.0000	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Per CDM Smith, the tank alternative would result in reduction of 0.5 acres of disturbance.
Construction: Construction Phases	Construction schedule provided by CDM Smith
Construction: Dust From Material Movement	All cut and fill would be balanced on site.
Construction: On-Road Fugitive Dust	Majority of roads paved

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	0.00000	0.50000

8.4. Construction

8.4.1. Construction Phases

Phase Type	Phase Name	Model Parameter	Default Value	New Value
Site Preparation	Site Preparation	Start Date	5/25/2026	5/11/2026
Site Preparation	Site Preparation	End Date	5/26/2026	6/5/2026
Site Preparation	Site Preparation	Work Days per Phase	1.000000	20.0000
Grading	Grading	Start Date	5/27/2026	6/6/2026
Grading	Grading	End Date	5/29/2026	9/1/2026
Grading	Grading	Work Days per Phase	2.00000	62.0000
Building Construction	Building Construction	Start Date	5/30/2026	9/2/2026
Building Construction	Building Construction	End Date	10/17/2026	3/15/2027
Building Construction	Building Construction	Work Days per Phase	100.0000	139.000
Paving	Paving	Start Date	10/18/2026	3/16/2027
Paving	Paving	End Date	10/25/2026	3/29/2027
Paving	Paving	Work Days per Phase	5.00000	10.00000

Architectural Coating	Architectural Coating	Start Date	10/26/2026	3/30/2027
Architectural Coating	Architectural Coating	End Date	11/2/2026	4/12/2027
Architectural Coating	Architectural Coating	Work Days per Phase	5.00000	10.00000

8.4.4. Dust from Material Movement

Phase Name	Model Parameter	Units	Default Value	New Value
Grading	Material Imported	Cubic Yards	—	0.00000
Grading	Material Exported	Cubic Yards	—	0.00000
Grading	Total Acres Graded	acres	46.5000	3.80000

8.4.7. On-Road Fugitive Dust

Phase Name	Model Parameter	Units	Default Value	New Value
Site Preparation	Worker Trip Paved	%	52.0000	97.0000
Site Preparation	Vendor Trip Paved	%	52.0000	97.0000
Site Preparation	Hauling Trip Paved	%	52.0000	97.0000
Grading	Worker Trip Paved	%	52.0000	97.0000
Grading	Vendor Trip Paved	%	52.0000	97.0000
Grading	Hauling Trip Paved	%	52.0000	97.0000
Building Construction	Worker Trip Paved	%	52.0000	97.0000
Building Construction	Vendor Trip Paved	%	52.0000	97.0000
Building Construction	Hauling Trip Paved	%	52.0000	97.0000
Paving	Worker Trip Paved	%	52.0000	97.0000
Paving	Vendor Trip Paved	%	52.0000	97.0000
Paving	Hauling Trip Paved	%	52.0000	97.0000
Architectural Coating	Worker Trip Paved	%	52.0000	97.0000
Architectural Coating	Vendor Trip Paved	%	52.0000	97.0000
Architectural Coating	Hauling Trip Paved	%	52.0000	98.0000

Attachment C
CalEEMod Results for Slip Liner Installation

MPWSP Slip Liningv2 Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	MPWSP Slip Liningv2
Construction Start Date	3/10/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80000
Precipitation (days)	10.8000
Location	36.71257705675674, -121.80030697552965
County	Monterey
City	Marina
Air District	Monterey Bay ARD
Air Basin	North Central Coast
TAZ	3216
EDFZ	6
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.43

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Light Industry	0.00000	1000sqft	0.08000	0.00000	—	—	—	—

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.21049	1.01892	8.72365	9.86005	0.01583	3.55788	1.47758	1,766.78	0.07244	0.01597	1,773.54
Mit.	0.19607	0.19228	0.85939	10.0888	0.01580	3.19894	1.14993	1,764.14	0.07233	0.01595	1,770.89
% Reduced	84%	81%	90%	-2%	—	10%	22%	< 0.5%	—	—	< 0.5%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.20859	1.01826	8.72951	9.84450	0.01583	3.55788	1.47758	1,763.79	0.07294	0.01614	1,770.43
Mit.	0.19418	0.19162	0.86524	10.0733	0.01580	3.19894	1.14993	1,761.15	0.07283	0.01612	1,767.78
% Reduced	84%	81%	90%	-2%	—	10%	22%	< 0.5%	—	—	< 0.5%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.20731	0.17435	1.61098	2.25565	0.00386	0.23684	0.11932	420.723	0.01714	0.00352	422.204
Mit.	0.04134	0.04120	0.20677	2.56591	0.00386	0.18165	0.06917	420.569	0.01713	0.00352	422.049
% Reduced	80%	76%	87%	-14%	—	23%	42%	< 0.5%	—	—	< 0.5%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.03783	0.03182	0.29400	0.41166	0.00070	0.04322	0.02178	69.6555	0.00284	0.00058	69.9007
Mit.	0.00754	0.00752	0.03773	0.46828	0.00070	0.03315	0.01262	69.6300	0.00284	0.00058	69.8751
% Reduced	80%	76%	87%	-14%	—	23%	42%	< 0.5%	< 0.5%	—	< 0.5%

2.2. Construction Emissions by Year

2.2.1. Total Construction Emissions by Year, Unmitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2027	1.21049	1.01892	8.72365	9.86005	0.01583	3.55788	1.47758	1,766.78	0.07244	0.01597	1,773.54
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2027	1.20859	1.01826	8.72951	9.84450	0.01583	3.55788	1.47758	1,763.79	0.07294	0.01614	1,770.43
Average Daily	—	—	—	—	—	—	—	—	—	—	—
2027	0.20731	0.17435	1.61098	2.25565	0.00386	0.23684	0.11932	420.723	0.01714	0.00352	422.204
Annual	—	—	—	—	—	—	—	—	—	—	—
2027	0.03783	0.03182	0.29400	0.41166	0.00070	0.04322	0.02178	69.6555	0.00284	0.00058	69.9007

2.2.4. Total Construction Emissions by Year, Mitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2027	0.19607	0.19228	0.85939	10.0888	0.01580	3.19894	1.14993	1,764.14	0.07233	0.01595	1,770.89
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2027	0.19418	0.19162	0.86524	10.0733	0.01580	3.19894	1.14993	1,761.15	0.07283	0.01612	1,767.78
Average Daily	—	—	—	—	—	—	—	—	—	—	—
2027	0.04134	0.04120	0.20677	2.56591	0.00386	0.18165	0.06917	420.569	0.01713	0.00352	422.049
Annual	—	—	—	—	—	—	—	—	—	—	—
2027	0.00754	0.00752	0.03773	0.46828	0.00070	0.03315	0.01262	69.6300	0.00284	0.00058	69.8751

3. Construction Emissions Details

3.1. Site Preparation (2027)

3.1.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08092	0.08092	0.42078	5.98797	0.00790	0.01618	0.01618	855.353	0.03470	0.00694	858.288
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00022	0.00022	0.00115	0.01641	0.00002	0.00004	0.00004	2.34343	0.00010	0.00002	2.35147
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00004	0.00004	0.00021	0.00299	< 0.000005	0.00001	0.00001	0.38798	0.00002	< 0.000005	0.38931
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Worker	0.02198	0.02028	0.01798	0.18668	0.00000	0.73003	0.07730	32.8050	0.00226	0.00148	33.3072
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00006	0.00006	0.00005	0.00049	0.00000	0.00194	0.00021	0.09030	0.00001	< 0.000005	0.09181
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00001	0.00001	0.00001	0.00009	0.00000	0.00035	0.00004	0.01495	< 0.000005	< 0.000005	0.01520
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2. Grading (2027)

3.2.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16121	0.16121	0.83827	9.79326	0.01580	0.03224	0.03224	1,711.94	0.06944	0.01389	1,717.82
Dust From Material Movement	—	—	—	—	—	2.07166	1.00174	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16121	0.16121	0.83827	9.79326	0.01580	0.03224	0.03224	1,711.94	0.06944	0.01389	1,717.82

Dust From Material Movement	—	—	—	—	—	2.07166	1.00174	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00883	0.00883	0.04593	0.53662	0.00087	0.00177	0.00177	93.8052	0.00381	0.00076	94.1271
Dust From Material Movement	—	—	—	—	—	0.11352	0.05489	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00161	0.00161	0.00838	0.09793	0.00016	0.00032	0.00032	15.5305	0.00063	0.00013	15.5838
Dust From Material Movement	—	—	—	—	—	0.02072	0.01002	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03487	0.03108	0.02111	0.29557	0.00000	1.09504	0.11596	52.1968	0.00289	0.00206	53.0747
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03297	0.03041	0.02697	0.28002	0.00000	1.09504	0.11596	49.2074	0.00338	0.00223	49.9607
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00179	0.00166	0.00136	0.01466	0.00000	0.05829	0.00618	2.70896	0.00018	0.00012	2.75426
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00033	0.00030	0.00025	0.00268	0.00000	0.01064	0.00113	0.44850	0.00003	0.00002	0.45600
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3. Building Construction (2027)

3.3.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12344	0.12344	0.64187	8.10192	0.01205	0.02469	0.02469	1,304.35	0.05291	0.01058	1,308.83
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03044	0.03044	0.15827	1.99773	0.00297	0.00609	0.00609	321.621	0.01305	0.00261	322.725
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00555	0.00555	0.02888	0.36459	0.00054	0.00111	0.00111	53.2480	0.00216	0.00043	53.4308
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	3/25/2027	3/26/2027	5.00000	1.000000	—
Grading	Grading	3/27/2027	4/23/2027	5.00000	20.0000	—
Building Construction	Building Construction	4/24/2027	8/27/2027	5.00000	90.0000	—

5.2. Off-Road Equipment

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Tier 4 Final	1.000000	8.00000	148.000	0.41000
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.000000	8.00000	84.0000	0.37000
Grading	Graders	Diesel	Tier 4 Final	1.000000	6.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.000000	6.00000	367.000	0.40000
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.000000	7.00000	84.0000	0.37000
Building Construction	Cranes	Diesel	Tier 4 Final	1.000000	4.00000	367.000	0.29000
Building Construction	Forklifts	Diesel	Tier 4 Final	2.00000	6.00000	82.0000	0.20000
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00000	8.00000	84.0000	0.37000

5.3. Construction Vehicles

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	Worker	5.00000	9.47000	LDA,LDT1,LDT2
Site Preparation	Vendor	—	6.03000	HHDT,MHDT
Site Preparation	Hauling	0.00000	20.0000	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	7.50000	9.47000	LDA,LDT1,LDT2
Grading	Vendor	—	6.03000	HHDT,MHDT
Grading	Hauling	0.00000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	0.00000	9.47000	LDA,LDT1,LDT2
Building Construction	Vendor	0.00000	6.03000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT

Building Construction	Onsite truck	—	—	HHDT

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Proposed Modifications would result in 0.08 acres of additional disturbance area compared to the MPWSP EIR/EIS.
Construction: Construction Phases	No demolition, paving, or architectural coatings required.
Construction: Dust From Material Movement	No material import or export. Area for grading is .08 acres
Construction: On-Road Fugitive Dust	Majority of roads are paved. All road on site are not paved.

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	0.00000	0.08000

8.4. Construction

8.4.7. On-Road Fugitive Dust

Phase Name	Model Parameter	Units	Default Value	New Value
Site Preparation	Worker Trip Paved	%	52.0000	99.0000
Site Preparation	Vendor Trip Paved	%	52.0000	99.0000
Site Preparation	Hauling Trip Paved	%	52.0000	99.0000
Grading	Worker Trip Paved	%	52.0000	99.0000
Grading	Vendor Trip Paved	%	52.0000	99.0000
Grading	Hauling Trip Paved	%	52.0000	99.0000
Building Construction	Worker Trip Paved	%	52.0000	99.0000

Building Construction	Vendor Trip Paved	%	52.0000	99.0000
Building Construction	Hauling Trip Paved	%	52.0000	99.0000