Salton Sea Management Program
Phase 1: 10-Year Plan
Imperial and Riverside Counties, California

DRAFT
Environmental Assessment

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Acronyms

10-Year Plan	Salton Sea Management Program's Phase 1: 10-Year Plan
AADT	annual average daily traffic
AAQS	Ambient Air Quality Standards
ACEC	Areas of Critical Environmental Concern
AFY	acre-feet per year
ATL	Advisory Tissue Levels
BIA	Bureau of Indian Affairs
BLM	United States Bureau of Land Management
BMPs	best management practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CALEEMOD	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALFIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CCR	California Code of Regulations
CDC	Center for Disease Control and Prevention
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
Corps	United States Army Corps of Engineers
CRBRWQCB	Colorado River Basin Regional Water Quality Control Board
CSP	Concentrating solar thermal power
CUPA	Certified Unified Program Agency
CVSWC	Coachella Valley Storm Water Channel
CVWD	Coachella Valley Water District

CWA	Clean Water Act
DA	Department of the Army
DDD	DDT and its derivatives dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DFA	Development Focus Areas
DFG	Department of Fish and Game
DOC	Department of Conservation
DoD	Department of Defense
DOI	Department of Interior
DRECP	Desert Renewable Energy Conservation Plan
DSAP	Dust Suppression Action Plan
DSOD	Division of Safety of Dams
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EA	Environmental Assessment
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
FACU	facultative upland species
FCG	Fish Contaminant Goals
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zone
FIRM	Flood Insurance Rate Map
FLPMA	Federal Land Policy and Management Act
FP	Fully Protected
FRA	Federal Responsibility Area
FUDS	Formerly Used Defense Sites
GHG	Greenhouse gases
GWP	Global Warming Potential
HAP	Hazardous Air Pollutants
HCPS	Hantavirus cardiopulmonary syndrome
HPS	Hantavirus pulmonary syndrome
HSWA	Hazardous and Solid Waste Amendments
I	Interstate

ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
IMPROVE	Interagency Monitoring of PROtected Visual Environments
IPCC	Intergovernmental Panel on Climate Change
ITA	Indian trust assets
KGRA	Known Geothermal Resource Area
KOP	Key observation points
LIDAR	Light Detection and Ranging
LLNL	Lawrence Livermore National Laboratory
LOS	Level of Service
LRA	Local Responsibility Area
LUP	Land use permit
LUPA	Land Use Plan Amendment
LZDP	Land Use, Zoning and Development Plan
MOA	Military Operations Area
msl	mean sea level
MT	Metric tons
NAAQS	National Ambient Air Quality Standards
NAF	Naval Air Facility
NAHC	Native American Heritage Commission
NAVD	North American Vertical Datum
NAVFAC	Naval Facilities Engineering Command
NEI	National Emission Inventory
NEPA	National Environmental Policy Act
Ng/g	nanograms per gram
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
O_3	ozone
OBL	obligate species

OEHHA	Office of Environmental Health Hazard Assessment
OHWM	Ordinary high-water mark
Pb	lead
PEIR	Programmatic Environmental Impact Report
PFYC	Potential Classification Yield Classification
PHPTP	Programmatic Historic Properties Treatment Plan
PM_{10}	particulate matter 10 microns or smaller in diameter
$PM_{2.5}$	particulate matter, fine, 2.5 micrometers or smaller in diameter
PPE	Personal protective equipment
ppt	parts per thousand
PRC	Public Resources Code
PV	photovoltaic
QSA	Quantification Settlement Agreement
RARE	Rare, Threatened, or Endangered
RCP	Regional Comprehensive Plan
RCRA	Resource Conservation and Recovery Act of 1976
RDA	Recommended Dietary Allowance
Reclamation	United States Bureau of Reclamation
RMP	Resource Management Plans
ROG	Reactive organic gases
ROI	Region of Influence
ROW	Rights-of-way
RWQCB	Regional Water Quality Control Boards
SBSSNWR	Sonny Bono Salton Sea National Wildlife Refuge
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCH	Species Conservation Habitat
SDCWA	San Diego County Water Authority
Sea	Salton Sea
SFHA	Special flood hazard area
SIP	State Implementation Plan
SLF	Sacred Lands File
SLV_{BH}	Sediment Bioaccumulation Screening levels
SO_2	sulfur dioxide
SOD	Safety of Dams
SR	State Route
SRA	State Responsibility Areas

SSA	Salton Sea Authority
SSC	Species of Special Concern
SSMP	Salton Sea Management Program
SSTB	Salton Sea Test Base
State	State of California
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total dissolved solids
TMDL	Total Maximum Daily Load
TSCA	Toxic Substance Control Act
UPL	upland species
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USG	United States Gypsum
USGS	United States Geological Survey
UXO	Unexploded ordnance
VectorSurv	California Vectorborne Disease Surveillance System

1.0 INTRODUCTION

This Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act (NEPA) and analyzes and discloses the effects of the implementation of the Salton Sea Management Program's (SSMP's) Phase 1: 10-Year Plan (SSMP 10-Year Plan or Applicant's Proposed Project) being proposed by CNRA (California Natural Resource Agency), California Department of Water Resources (DWR), and the California Department of Fish and Wildlife (CDFW), collectively known as the SSMP team. The SSMP team is seeking Department of the Army (DA) authorization from the United States Army Corps of Engineers (Corps), Los Angeles District, pursuant to Section 404 of the Clean Water Act (CWA; 33 USC §1344). The SSMP 10-Year Plan proposes to implement a total of 29,800 acres of aquatic habitat restoration and dust suppression projects around the perimeter of the Salton Sea. At least 50 percent of the project acreage will be created as habitat for fish and wildlife that depend on the Salton Sea ecosystem and the remainder will be projects to suppress dust.

Regulations for implementing Section 404 of the CWA are contained in the Code of Federal Regulations, 33 CFR Parts 320–328 and 330–332. In its regulatory capacity, the Corps is neither a proponent nor an opponent of projects seeking federal approvals; rather, as identified in 33 CFR § 320.1[a][1], the Corps conducts a "public interest review" that seeks to balance a proposed action's beneficial impacts against its detrimental impacts. Additionally, as identified in 33 CFR §325.2[a][6], the Corps is also required to review actions in accordance with guidelines developed by the United States Environmental Protection Agency (USEPA) under Section 404(b)(1) of the CWA (33 USC §1344(b)(1)) [hereinafter "404(b)(1) Guidelines"]. The Corps' permit and decision-making processes trigger the requirement for an environmental review under NEPA. This EA is being developed to determine if the proposed federal action would result in significant effects to the human environment.

Proposed activities in waters of the United States associated with the implementation of the SSMP 10-Year Plan would result in the discharge of dredged and/or fill material into waters of the United States and require DA authorization from the Corps, pursuant to Section 404 of the federal CWA.

1.1 PROPOSED FEDERAL ACTIONS

Under Section 404 of the CWA, the issuance of a DA permit constitutes the federal action analyzed in this EA. Since federal permit authorization and approval is likely to result in the development of the Proposed Project or a combination of the Proposed Project and the alternatives, this EA analyzes environmental effects associated with the full implementation of the Proposed Project and alternatives. The Corps is acting as the federal lead agency, as defined by the NEPA (10 CFR § 900.5) (Table 1-1) for the Proposed Project. Additionally, the Proposed Action includes actions by several federal agencies as presented in Table 1-1. These actions include the issuance of land use authorizations by the United States Bureau of Land Management (BLM) for habitat restoration and dust suppression projects on lands under its jurisdiction, pursuant to the Federal Land Policy and Management Act (FLPMA). The Proposed Action also includes rights of ways agreements for Tribal Trust Lands. In addition, the Proposed Action includes the issuance of use authorizations by the United States Bureau of Reclamation (Reclamation) for habitat restoration and dust suppression projects on lands under its jurisdiction and for funding assistance. Similarly, the United States Fish and Wildlife Service (USFWS) has jurisdiction over activities occurring within the boundaries of the Sonny Bono

Salton Sea National Wildlife Refuge (SBSSNWR), therefore, actions, such as those related to habitat restoration, dust suppression, and/or the extension of pipelines or access roads through Refuge lands, would require a special use permit and a determination that the proposed action is compatible with the purpose for which the Refuge was established, in accordance with the National Wildlife Refuge System Improvement Act of 1997. Furthermore, the Proposed Action includes United States Department of Agriculture-Natural Resources Conservation Service (NRCS) technical and funding assistance under the Watershed Protection and Flood Prevention Act of 1954 (Public Law 83-566), as amended. The SSMP 10-Year Plan will improve the watershed by implementing habitat restoration and dust suppression projects within the exposed lakebed[1] of the Salton Sea.

Table 1-1 Lead and Cooperating Agencies

Agency	Role	Jurisdiction/ Authority	Actions
Corps	Lead Agency	Federal Waters of the United States Section 404 of the CWA	Issuance of Letter of Permission Procedures
BIA	Cooperating Agency	Tribal Trust Lands/ Right of Way Agreement 25 CFR Part 169 Rights-of-Way over Indian Land	Right(s) of Way Approval
BLM	Cooperating Agency	Landowner/ Right of Way Agreement Federal Land Policy and Management Act	Authorization of projects on BLM-administered public lands through the issuance of rights-of-way and/or land use permits
Reclamation	Cooperating Agency	Landowner/ Right of Way Agreement/ Funding Source Reclamation Act of 1902	Authorization of projects on Reclamation-managed lands through the issuance of licenses, entry permits, and special use permits; funding assistance
NRCS	Cooperating Agency	Funding source/ National Watershed Program Watershed Protection and Flood Prevention Act	With an approved watershed plan, can approve design and implementation funding for eligible partners, lands and practices
USFWS Refuges	Cooperating Agency	Landowner/ Special Use Authorization National Wildlife Refuge System Improvement Act	Authorization of projects or activities within the boundaries of the SBSSNWR that are deemed compatible with refuge purposes through the issuance of special use permits
USFWS Regulatory	Cooperating Agency	Federal Endangered Species Act	Issuance of a Biological Opinion with incidental take statement.

[1] The bottom of a lake.

1.2 SALTON SEA BACKGROUND

The Salton Sea (Sea), located in southern Riverside and northern Imperial counties in Southern California, is California's largest lake (Figure 1-1). Although large seas have cyclically formed and dried in the basin throughout time due to natural flooding from the Colorado River, the current Sea was formed when Colorado River floodwater breached an irrigation canal that was being constructed in the Imperial Valley in 1905 and flowed into the Salton Sink. The hydrology to the Sea has since been maintained by irrigation runoff in the Imperial and Coachella valleys and local rivers. Because the Sea is a terminal lake[2], increasingly concentrated salts have resulted in salinity that is approximately twice that of the ocean.

In addition to functioning as a reservoir (sump) for agricultural runoff, the Sea is also an important wildlife area. Although it has only existed for about 100 years, the Sea has become a critical resource for many species of resident and migratory birds, including several species of special concern, due to the widespread loss of wetland habitat elsewhere in the United States and Mexico.

The Quantification Settlement Agreement (QSA)[3] is one of the factors contributing to declining inflows to the Sea. California has historically used more than its normal year apportionment of Colorado River water, but that is unlikely to continue in the future. After prolonged negotiations between the federal government and the California water districts that have entitlements to Colorado River water, a series of agreements, collectively known as the QSA, were made among the federal government, State of California, IID, Metropolitan Water District of Southern California, San Diego County Water Authority (SDCWA), and Coachella Valley Water District in October 2003. The QSA imposes water conservation measures within the IID service area to allow the transfer of this water elsewhere, reducing the use of water from the Colorado river which results in the decreasing volume of agricultural runoff that constitutes the Sea's chief source of water. The QSA required IID to provide conserved water to the Sea to mitigate the effects of the transfer on salinity until 2017, at which point the delivery of mitigation water ceased. As a result of the significantly smaller inflows to the Sea, salinity is increasing, and more lakebed is being exposed.

Fugitive dust emissions from the exposed lakebed will likely reduce air quality at the Sea and may impact surrounding communities. Dust, or particulate matter, is hazardous to human health. Particulate matter measurements at the Salton Sea Air Basin indicate this area met state and federal particulate matter (10 microns or smaller in diameter [PM_{10}]) air quality standards 36 percent of the days in 2018 (California Air Resources Board [CARB] 2019).

2 Terminal lakes are bodies of water that do not flow into other bodies of water.

3 The Quantification Settlement Agreement consists of more than 30 agreements executed concurrently among certain Southern California water agencies in 2003. The State of California, the federal government, and others signed some of the agreements. That set of agreements is commonly referred to as the *QSA*.

Figure 1-1 Project Location Overview

Declining inflows to the Sea have caused increased salinity that exceeds tolerance limits of most fish species and has resulted in a loss of the majority of the fishery, declines in bird populations from the loss of food, and wind erosion of recently exposed lakebed soils. Further loss of water in future years is projected to continue the degradation of the Sea ecosystem due to increasing salinity and other water quality issues, including temperature extremes, eutrophication (increased nutrient loads), related anoxia (oxygen deficiency), and algal productivity. Reduction of river inflows to the Sea from other factors, such as water recycling and diversion to the Hardy River in Mexico, is also contributing to increases in salinity and a declining sea elevation.

1.3 SSMP PHASE 1: 10-YEAR PLAN BACKGROUND

The Sea continues to decline in elevation and exposure of lakebed negatively impacts surrounding communities and reduces remaining habitat for fish and wildlife. Improving air quality and creating habitat at the Salton Sea are key priorities for Governor Gavin Newsom and the CNRA.

The State Water Resources Control Board (SWRCB) approved the QSA water transfer in Revised Water Rights Order (WRO) 2002-0013. In 2014, IID asked the SWRCB to enter an order to ensure the success of Salton Sea restoration. The SWRCB responded with a revision to its 2002-0013 order in the form of Order WR 2017-0134, which set annual restoration targets for the state and a framework for Salton Sea restoration efforts. The order requires the State of California, through the CNRA, to restore approximately 30,000 acres of exposed lakebed of the Salton Sea through habitat and dust suppression projects by December 31, 2028. The acreage targets in WRO 2017-0134 were included in the SSMP 10-Year Plan (CNRA et al. 2018). The SSMP team is focused on implementing the SSMP 10-Year Plan to improve conditions around the Sea.

The SSMP team released its SSMP 10-Year Plan in 2017 and updated it in 2018 to guide the State's projects at the Sea over the next decade (2018–2028). The SSMP 10-Year Plan identifies a sequence of habitat and dust control projects around the perimeter of the Sea consistent with the preferred alternative from the *Salton Sea Species Conservation Habitat* (SCH) *Project Final Environmental Impact Statement/ Environmental Impact Report (EIS/EIR)* (Corps and CNRA 2013), the *SCH EIR Addendum* (CNRA 2017), and the *Salton Sea Ecosystem Restoration Program Programmatic Environmental Impact Report* (PEIR; DWR and CDFG 2007). The SSMP 10-Year Plan identifies projects to be implemented on areas of lakebed that have been, or will be, exposed at the Sea by 2028. Dust suppression techniques to mitigate air quality impacts and related human health impacts generated from the exposed lakebed are described in several documents, including the PEIR (DWR and CDFG 2007); the Dust Suppression Action Plan (DSAP) (CNRA et al. 2020); Proactive Dust Control Plans (Imperial Irrigation District [IID] 2018a, 2019, and 2020a); and the Salton Sea Air Quality Mitigation Program (IID 2016).

The SSMP team described the activities and projects in the SSMP-10 Year Plan in more detail and circulated it as the *Draft Salton Sea Management Program Phase 1: 10-Year Plan Project Description* in September 2020. In March 2021, the SSMP team released the *Updated Draft SSMP Phase 1: 10-Year Plan Project Description (*CNRA 2021*)*, which has been further refined in this document and is referred to as the Applicant's Proposed Project.

1.3.1 Watershed Plan

Certain sites and activities within the Proposed Project will be implemented in accordance with the conservation practices described in the National Watershed Program Manual as required by the NRCS to receive technical and financial assistance for project implementation through the Watershed Protection and Flood Prevention Act of 1954. The eligible sites and activities in the Proposed Project are analyzed in the EA and would be developed to meet all of the requirements in the Watershed Program Manual. The covered activities are discussed in Tables 3-2 and 3-4 (Section 3.3). They would be carried out within the SSMP 10-Year Plan project planning area by the State, which is described in more detail in Appendix B.

1.4 PRIOR ENVIRONMENTAL ANALYSIS

Prior environmental review documents include the following: the Salton Sea Ecosystem Restoration PEIR, the SCH EIS/EIR, and the CEQA Addendum to the SCH EIS/EIR. These documents covered many of the same types of projects and covered activities as well as many of the same project areas as this Draft EA. Thus, the analyses from these documents provide a basis for this Draft EA with consideration of changes to existing conditions and new information.

Species Conservation Habitat EIS/EIR (Corps and CNRA 2013). CNRA was the lead agency under CEQA and the Corps was the lead agency under NEPA. This document analyzed six alternative habitat pond projects to support the fish and wildlife species that depend on the Sea along with a “no project” alternative. The six alternatives all included habitat ponds, pumped or gravity diversions, and different amounts of independent or cascading pond units at the south end of the Sea.

Approximately 4,110 acres of ponds are being constructed to restore piscivorous bird habitat lost due to the Sea’s increasing salinity and reduced area. The SCH ponds will be located below the -228 feet mean sea level (msl) based on the North American Vertical Datum of 1988 (NAVD 1988)[4] in areas northeast of the New River and shoreline areas to the southwest and west. SCH ponds will include berms and channels to manage water movement in the newly created habitat areas. The water supply will be a mix of brackish river water and hypersaline water from the Sea to produce salinity levels suitable for fish and other wildlife (Corps 2013).

CEQA Addendum/Findings Analysis for the Salton Sea Species Conservation Habitat Project EIS/EIR (CNRA 2017). This document expanded the scope of the SCH EIS/EIR to analyze the SSMP 10-Year Plan. The analysis includes additional locations and increased acreage for ponds and associated infrastructure along with additional dust suppression measures located on exposed lakebed.

Salton Sea Ecosystem Restoration Program PEIR (DWR and CDFG 2007). Prior to the SCH EIA/EIR, the PEIR was prepared to evaluate alternatives for restoring the Sea ecosystem and provide permanent protection to the fish and wildlife species that depend on that ecosystem. This document analyzed eight alternatives to the proposed action and addressed environmental mitigation for which the State assumed responsibility under legislation related to the QSA. Alternatives analyzed encompassed all of the physical area that would be affected under the SSMP 10-Year Plan and many of the project types.

[4] The conversion for this coordinate system is NAVD 1988=NGVD 29+2.1.

2.0 PROJECT PURPOSE, NEED, AND OBJECTIVES

2.1 PURPOSE AND NEED

The Corps has determined that the project purpose of the SSMP Phase 1: 10-Year Plan, pursuant to NEPA, is to implement a minimum of 29,800 acres of habitat restoration and dust suppression projects on lakebed areas that have been, or will be, exposed at the Sea by 2028. The need of the Proposed Project is to provide habitat for species that depend on the Sea ecosystem and to reduce dust emissions from the increased extent of exposed lakebed that may impact public health.

At least 14,900 acres of projects implemented under the SSMP are planned to be aquatic habitat restoration projects that convert exposed lakebed areas to pond habitat suitable for fish and wildlife. Dust suppression projects, on the remaining acres, may also have habitat benefits by establishing vegetation or creating freshwater wetlands on exposed areas. To the extent practicable, the Proposed Project would strive to provide multiple benefits that combine dust suppression with habitat restoration.

The declining inflows and to a lesser extent, evaporation have resulted in higher salinity and more declining lake surface area, affecting many of the approximately 400 species of birds that use the Sea. Increased salinity has extirpated most of the fish species that once thrived at the Sea, leaving a declining population of non-native tilapia to support piscivorous birds. As the Sea continues to become more saline, there is a need to create aquatic habitat with suitable environmental conditions to support fish populations that provide forage for piscivorous birds. Moreover, the restoration of aquatic habitat would also address the need of protecting and conserving the endangered desert pupfish (*Cyprinodon macularis*) by creating pupfish habitat and enhancing connectivity among pupfish populations as the Sea becomes unsuitable.

In addition to the ecological decline resulting from the receding Sea, fugitive dust emissions from the exposed lakebed contribute to poor air quality and can affect human health. Exposure to PM_{10} increases the risks to humans, especially children and the elderly, of developing long-term lung issues and diseases (like asthma) (Audubon California 2020). This area met state and federal PM_{10} air quality standards for 54 percent of the days in 2019 (CARB 2021). As more of the Sea lakebed becomes exposed in the future, additional emissions of fine particulate matter are predicted, potentially resulting in an increase in the severity of dust events, the number of days the region is not in attainment of National Ambient Air Quality Standards, and the land area that experiences dust impacts. Consequently, the Proposed Project is needed to reduce the amount of emissive exposed lakebed.

2.2 PROJECT GOALS AND OBJECTIVES

The following goals and objectives provide additional detail of the Proposed Project purpose and need. Implementing the goals and objectives described below will provide the basis to meet the program targets for dust suppression and habitat restoration.

As previously described, the Sea currently supports a variety of bird species and a limited aquatic community. Over many decades, the composition of the aquatic community has shifted in response to receding water levels and increasing salinity. Declining inflows in future years will result in the continued degradation of the Sea ecosystem due to increasing salinity and other water quality stresses, such as temperature extremes, eutrophication, and related anoxia due to algal productivity. In 2020, the Sea's salinity exceeded 70 parts per thousand [ppt], which is too saline to support most fish species.

In addition to the ecological decline, fugitive dust emissions from the previously inundated lakebed contribute to poor air quality and can affect human health. As more of the Sea lakebed is exposed in the future, additional emissions of fine particulate matter are predicted, potentially increasing the severity of dust events, the number of non-attainment days for state and federal air quality standards, and the land area that experiences dust impacts. Aquatic habitat projects and water-reliant dust suppression projects would reduce the area of exposed lakebed, reducing the available emissive area. Waterless dust suppression projects, which would reduce the emissivity of exposed lakebed, are also proposed in this Project Description to further address air quality concerns.

Consistent with the project purpose and need, the following goals and accompanying objectives have been developed.

Goal 1: Develop a range of aquatic habitats to support fish and wildlife species dependent on the Salton Sea.

The first goal of the Proposed Project is to create at least 14,900 acres of aquatic habitat replacement by 2028 for near- and mid-term habitat losses. The Proposed Project's target species are those that use the Sea and depend on its ecosystem for essential habitat requirements and the viability of a significant portion of their populations. Habitat components would provide habitat diversity to support bird and other species that use the Sea's ecosystem. Created habitat may include mudflats and shallow water, mid-depth water, deep water, and permanently vegetated wetlands[5]. Along with the proposed aquatic habitats, wetland and upland habitats would be considered during the design of dust suppression projects, when feasible.

The following objectives have been identified:

> Provide appropriate foraging habitat for fish;
> Develop habitats, including through the use of native vegetation, required to support a variety of bird species;
> Create heterogeneity of conditions such as salinity, flow, water depth, bathymetry, substrate, and vegetation to support diverse fish and invertebrate communities and enhance foraging opportunities for birds;
> Support a sustainable, productive aquatic community;
> Provide suitable water quality for fish;
> Design and create habitat and habitat connectivity that support desert pupfish;
> Minimize the risk from selenium toxicity impacts;
> Minimize the risk from disease/toxicity impacts; and

[5] Vegetated wetlands include those that are dominated by herbaceous or woody species and can be freshwater, saline, or hypersaline. In addition, they can include wetlands that are managed for specific characteristics or unmanaged wetlands that form at the outlets of agricultural drains. See Chapter 4 for information on vegetation that occurs in these areas.

> Adaptively manage the projects under the SSMP 10-Year Plan.

Goal 2: Develop a range of dust suppression projects to address air quality concerns at the Salton Sea.

The second goal of the Proposed Project is to address air quality issues at the Sea that affect human health in communities surrounding the Sea by reducing emissions of fugitive dust from soils on the exposed lakebed. The balance of the remaining acreage (up to 14,900 acres) that is not designed as aquatic habitat would be proposed for dust suppression projects. Projects would target areas that have the most emissions potential, based on factors such as wind speed and soil characteristics. Depending on the project location and site-specific conditions, dust suppression activities could include but would not be limited to creating vegetated uplands and additional wetlands, applying temporary surface and/or engineered roughening, or applying soil stabilizers. Desired vegetation communities planned for freshwater wetlands and upland habitat locations would depend on site-specific conditions, including water availability and soil suitability.

The following objectives have been identified:

> Reduce the amount of dust-emissive surface on the exposed lakebed;

> Reduce the total dust emissivity of exposed lakebed at the Sea; and

> Adaptively manage the projects under the SSMP 10-Year Plan.

3.0 PROPOSED PROJECT AND ALTERNATIVES

This section describes the location and key elements of the Proposed Project and alternatives, including the locations, types, and features of the aquatic habitat restoration projects and the locations, phasing, and techniques of the dust suppression projects. Projects considered under this Proposed Project (1) will require water to meet the needs of the project (as applicable); (2) will require existing or obtainable land rights for the project itself and any needed access corridors; and (3) will need to provide a public benefit consistent with the SSMP 10-Year Plan and the State's ecosystem and habitat restoration goals as described in the Salton Sea Restoration Act, Fish and Game Code section 2930, *et seq*.

This section also provides a description of the project alternatives. Finally, this section describes design considerations to support implementing the Proposed Project and alternatives; land access and ownership considerations; public use activities; project operations; best management practices (BMPs) to minimize effects on the environment during construction operations, and maintenance; data collection to support site suitability; and air quality monitoring activities. The environmental setting is provided in Chapter 4 and the effects analysis is provided in Chapter 5.

The Applicant's Proposed Project (Proposed Project) was developed through public comments on the *Draft Salton Sea Management Program Phase 1: 10-Year Plan Project Description* in late September 2020, and further refined based on public comment based on the Corp's public notice on the development of this EA. Public input received from this Draft EA will inform the final analysis of alternative project and activities scenarios to be evaluated in the Final EA. After completion of the Final EA, the State will make a decision whether to implement the Proposed Project, an alternative described in this chapter, a combination of the Proposed Project and one or more alternatives, or take no action at this time. In the event that any substantive deviations from the activities or locations described in the Final EA are desired, additional evaluation under NEPA may be required.

3.1 PROJECT OVERVIEW

The Proposed Project would be implemented primarily within the exposed lakebed areas surrounding the Sea. The Planning Area[6] for the Proposed Project and alternatives is 63,008 acres generally between the 2003 and projected 2028 water surface elevation levels. Table 3-1 presents the projected decline and newly exposed lakebed areas between 2018 and 2028. The Planning Area is more extensive than shown in Table 3-1 because it includes areas exposed between 2003 and 2018 as well as some area upslope of the 2003 shoreline. Within the Planning Area, opportunity areas have been identified for the Proposed Project, and alternatives further refine the potential locations of aquatic habitat restoration and dust suppression projects. The opportunity areas represent the locations and project types that may be built under the Proposed Project. The opportunity areas shown in Figure 3-1 will help determine a regional analysis for the NEPA process and allow for design and permitting within the larger area. The projects undertaken to meet the SSMP program goal of 29,800 acres of habitat and dust suppression would be located within the opportunity areas according to the greatest need and best opportunity. Projects would generally be placed on available land at elevations below -228 feet msl (NAVD 1988).

[6] The Planning Area represents all of the areas that are currently under consideration for the Proposed Project and all of the alternatives.

Table 3-1 2018–2028 Projected Exposure

Year	Newly Exposed Acres[1]
2018	3,500
2019	3,000
2020	5,000
2021	5,600
2022	5,500
2023	5,300
2024	4,900
2025	4,300
2026	3,900
2027	3,300
2028	2,800
Total	**47,100[1]**

[1]Source: CNRA et al. 2018; IID 2020b

The locations, types, and extents of projects for aquatic habitat creation and dust suppression would be based on the availability of a water supply, soil properties, and landscape/habitat compatibility. Naturally forming wetlands along the exposed lakebed at the outlets of irrigation drains and other drainages would be avoided or enhanced, if feasible, where selenium concentrations would not increase risks to wildlife. Construction of habitat projects would begin in areas of exposed lakebed near water sources and would move downslope as the Sea recedes and more lakebed surfaces with potentially emissive dust becomes exposed over time. Construction of habitat and dust suppression projects in areas that eventually become exposed lakebed, but are currently under water, would begin when portions of those areas are dry enough to allow equipment access. Construction of projects could require removal, enhancement or maintenance of existing features. The Red Hill Bay Project is shown on the figures for the Proposed Project and Alternatives 1 through 5 (Figures 3-1 through 3-6) to provide context for large-scale restoration in the project vicinity, but it is not part of the Proposed Project.

3.2 PROPOSED PROJECT

The Proposed Project would be implemented at various locations around the perimeter of the Sea in Riverside and Imperial counties and includes aquatic habitat ponds and dust suppression projects. The amounts, types, and locations of aquatic habitat and dust suppression projects would be based on location and availability of a water supply, suitable soils, landscape/habitat compatibility, and the amount of emissions from the exposed lakebed. Figure 3-1 also shows Sea surface water elevations in 2003 along with projected levels for 2023, 2028, and 2047, demonstrating the rapid decline of the Sea exposure of the lakebed. Associated project infrastructure, such as access areas, staging areas, and/or visitor facilities could be located outside the exposed lakebed areas shown on Figure 3-1.

Between 10,790 and 19,062 acres of aquatic habitat restoration projects will be analyzed for coverage as part of the Proposed Project. The 10,790 acres represent the minimum planned habitat acreage of 14,900 acres minus the already approved 4,110-acre SCH Project currently under development. The high end of the range represents the total amount of aquatic habitat that could be created within all proposed aquatic habitat restoration opportunity areas and would be in addition to the SCH Project. Up to 14,900 acres of dust suppression and restoration opportunity areas may be built within the mapped dust suppression and restoration opportunity areas on Figure 3-1. This acreage maximum represents half of the minimum total project area. Some of the dust suppression projects are water dependent and may be constructed where water sources are available; others are not water dependent and could be built anywhere on the exposed lakebed.

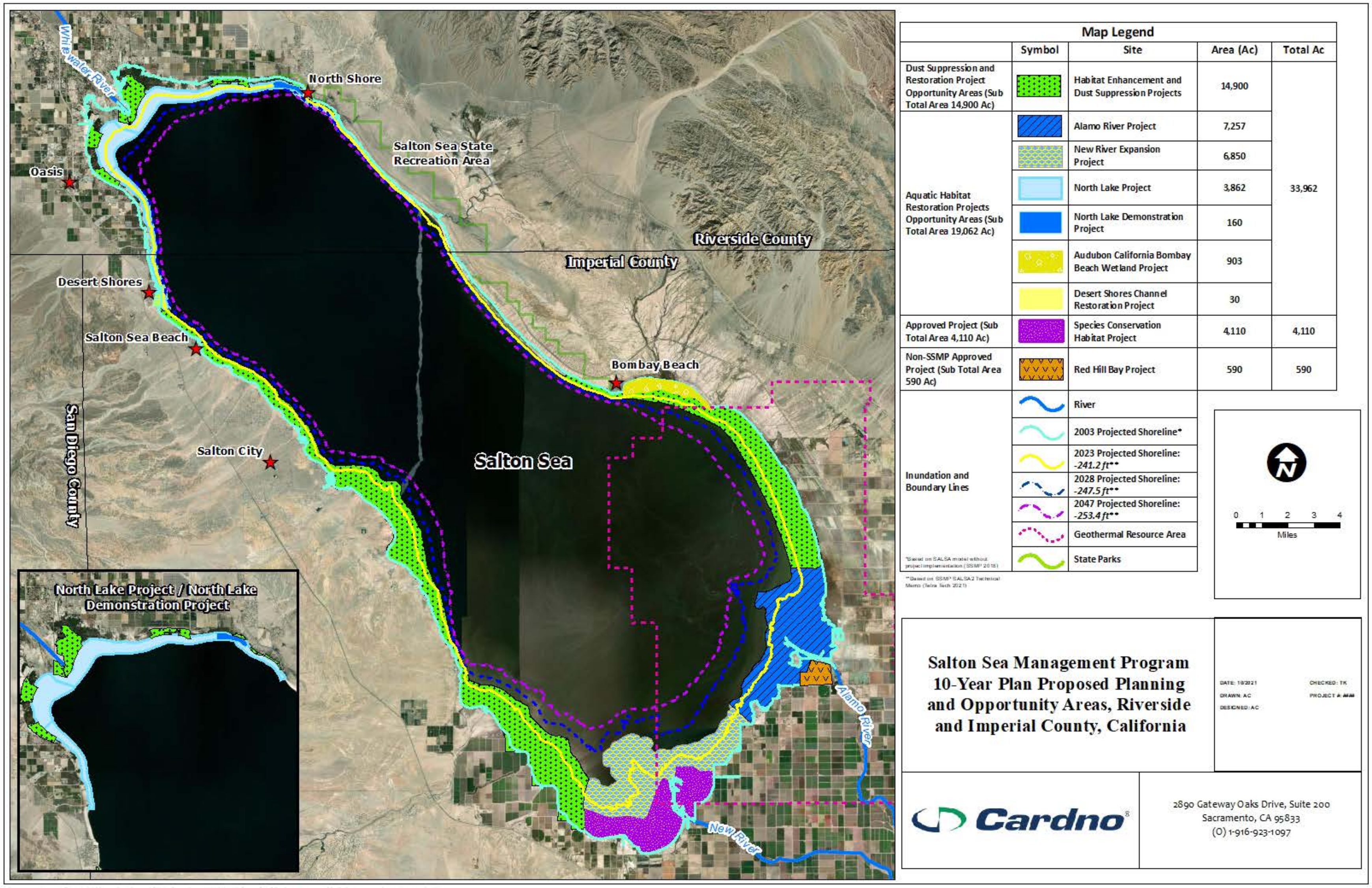

Figure 3-1 Proposed Project Areas

3.3 PROJECT COMPONENTS

The Proposed Project and alternatives would implement aquatic habitat restoration and dust control suppression projects within the 63,008-acre Planning Area. Within the Planning Area, opportunity areas have been identified which represent the locations and project types that may be built under the Proposed Project or alternatives, as described below. A subset of these projects may be eligible for funding by the NRCS under the Watershed Plan.

Aquatic habitat and restoration projects, and dust suppression and vegetation enhancement projects will prioritize inclusion of public amenities, such as picnic areas and walking trails, provided that the amenities do not conflict with the overall purpose and need of the Proposed Project.

3.3.1 Aquatic Habitat Restoration Opportunity Areas

Aquatic habitat restoration activities would include the construction of aquatic habitat ponds and wetlands. Aquatic habitat restoration opportunity areas are proposed in areas near the New, Alamo, and Whitewater rivers (shown on Figures 3-2 through 3-7). The aquatic habitat restoration projects, which are intended to support resources provided by the Open Water habitat type, would consist of one or more large, ponded units that may be subdivided into one or more smaller ponds created by internal subdivision berms. Depending on site characteristics, projects would be designed to consist of suitable shallow, mid-depth, and deep aquatic habitat to support fish and piscivorous birds. They would also be designed to provide connectivity between currently occupied pupfish habitat. The primary water supply for the ponds would be a combination of brackish river water and hypersaline water from the Sea, but other sources may be used as well. Aquatic habitat restoration projects could also include mudflats and permanent vegetated wetlands in conjunction with the ponds to support shorebird and marsh bird foraging and nesting.

Cumulatively, these projects would provide habitat for invertebrates, fish (including desert pupfish), and a variety of bird species. Development of pond habitat around the Sea would be designed to support robust non-native fish populations, which would in turn provide food for piscivorous birds. Some of the projects would also provide habitat and connectivity for native desert pupfish.

Projects being proposed are summarized below and include the North Lake Demonstration Project, North Lake Project, Desert Shores Channel Restoration Project, New River Expansion Project, Alamo River Project, and Bombay Beach Project. In addition, proposed aquatic habitat restoration projects would include one or more aquatic habitat types and features as described in sections below.

3.3.1.1 Aquatic Habitat Restoration Project Components

North Lake Demonstration Project: The North Lake Demonstration Project, a joint Salton Sea Authority (SSA) and State Proposed Project, consists of an approximately 160-acre lake located at the northern end of the Sea in Riverside County northwest of the Salton Sea State Recreation Area. The demonstration project is proposed as a stand-alone, first-phase component of a larger North Lake Project. It would be considered the first phase of a project in the Whitewater Area identified in the SSMP 10-Year Plan and presented in dark blue on Figure 3-1.

The proposed demonstration project is located near the existing North Shore Yacht Club, approximately 1,000 feet west of Highway 111, between Mecca Avenue on the southeast end of the site to north of Desert Beach, and south of 72nd Avenue. The lake would have shallow- and deep-water fish and bird habitat, that would also support recreation. Water would be supplied to the project via agricultural drainage, well water, canal water, or temporary use of canal water in the required amount of 1,900–2,650 acre-feet per year (AFY). Additional recreational opportunity would be provided with the construction of a concrete boat ramp and a trail with interpretive signage.

This project is included as part of the Proposed Project and in Alternatives 1, 2, 3, and 5.

North Lake Project: Following implementation of the demonstration project by the SSA, a subsequent North Lake Project of about 3,862 acres is proposed. Three or more interconnecting ponds would be constructed on both sides of the mouth of the Whitewater River/Coachella Valley Storm Water Channel (CVSWC) Delta at the north end of the Sea. The shoreline of the North Lake ponds would run from the west near Desert Shores to the east near the northern portion of the Salton Sea State Recreation Area.

An allowance would be made to pass flood flows from the CVSWC into the Sea. Several methods are being investigated that would provide this flood protection. The ponds would provide both shallow- and deep-water fish and bird habitat and dust control and potentially provide opportunities for public use. The habitat would be brackish to saline, and the deep-water habitat area would be 8 to 12 feet deep. Three sources of water may be available to sustain these ponds: (1) the Whitewater River/CVSWC; (2) local agricultural drains; and (3) the Sea. The estimated inflow required for the North Lake would be about 50,000 AFY, of which 20 percent, or 10,000 AFY, would need to be from saline water pumped from the Sea, and the remaining 40,000 AFY would need to be supplied by local surface water flows. Ponds would be created by constructing berms 10 to 15 feet high along the -245 to -250 feet elevation contours, with the water surface in the ponds planned at -237 feet below sea level.

This project is included as part of the Proposed Project and under Alternatives 1, 2, 3, and 5.

Desert Shores Channel Restoration Project: The Desert Shores Channel Restoration Project is intended to provide habitat and emission reduction benefits by refilling channels located between residences in the disadvantaged community of Desert Shores located along the western Sea shoreline.

The Desert Shores Marina adjacent to the Desert Shores Community has become disconnected from the Sea, and channels are drying out as the water elevation continues to recede. Implementation of the Desert Shores Channel Restoration Project would refill the five southernmost boat channels in the marina with water, covering a project area of 30 acres. Water may be obtained from any of the following sources or a combination thereof: (1) a well to supply fresh water and/or brackish water along with associated pumps and infrastructure, (2) a pump in the Sea with pipelines and infrastructure to bring the water to the project location, and/ or (3) a fresh water source to be determined.

The project involves constructing a berm across the former boat channel connection to the Sea. Water would then be pumped into the channels contained by the berm at a rate sufficient to refill the channels, offset losses from evaporation and seepage, and circulate water.

This project aims to meet the project goals of habitat restoration and dust suppression by providing water cover over the exposed lakebed. In addition, habitat benefits are anticipated through revegetation and creation of conventional or floating islands. The salinity will be suitable for a variety of fish species and may support piscivorous bird species. Windrows of drought-tolerant native trees could be planted as a screen for dust mitigation and would contribute habitat benefits. Native, salt-tolerant vegetation would be planted along the edges of channels to increase habitat and air quality benefits.

This project is included as part of the Proposed Project and Alternative 5.

New River Expansion Project: Up to an approximately 6,850-acre aquatic habitat restoration opportunity area is proposed for aquatic habitat ponds near the outlet of the New River,[7] surrounding the SCH Project. The New River Expansion Project would be similar in nature to the planned habitat within the SCH Project, including both shallow- and deep-water brackish and saline habitat. Water from the SCH ponds could be released down gradient to the expanded area and likely be combined with water directly from the New River and saltwater pumped from the Sea. The expanded area could run west and north in the direction of the former Salton Sea Navy Test Base, east toward Red Hill Bay, and down slope toward elevations lower than the SCH Project. Like the SCH Project, the proposed expansion habitat area would be designed and constructed with a series of berms to form tiers of ponds and include multiple bird islands.

This project is included as part of the Proposed Project and under Alternatives 1, 2, 3, and 5. The project footprint is different under each alternative, but components would be similar. The project footprints for Alternatives 1 and 2 are more similar in extent to the Proposed Project configuration, and Alternatives 3 and 5 have larger footprints than the Proposed Project.

Alamo River Project: Up to approximately 8,310 acres of aquatic habitat restoration opportunity area is proposed for aquatic habitat ponds at the Alamo River. The features of the Alamo River Project would be like those described for the New River Expansion Project. This project would include brackish and saline, shallow- and deep-water habitat, and likely would include features such as bird islands. Water would be supplied from the Alamo River and combined with saltwater pumped from the Sea. The aquatic habitat ponds would likely be located on either side of the river mouth and could run west toward Red Hill Bay and east in the direction of the Wister Unit of the Imperial Wildlife Area. Like the SCH Project, the Alamo River habitat area would be constructed with a series of berms.

This project is included as part of the Proposed Project and under Alternatives 1, 2, 3, and 5. The project footprint is different under each alternative, but components would be similar. The project footprints for Alternatives 1, 2, and 3 are smaller than the Proposed Project configuration, and Alternative 5 has a larger footprint than the Proposed Project.

Audubon California Bombay Beach Wetland Project: This project would be located on the southeast shore of the Sea in Imperial County about 3 miles east of the community of Bombay Beach. As the Sea's elevation has declined, water from a confluence of surface water flow and groundwater discharges has created various types of wetlands along the Sea's exposed lakebed. The Bombay Beach Wetlands Project occurs in an area that receives ephemeral stormwater runoff, perennial flow from upstream discharges, and shallow groundwater discharge. Because of the existing site topography, which includes beach ridges that form on the playa as the Sea recedes and temporarily retain surface water runoff, a network of ponds, wetlands, and channels have formed that support vegetation and habitat for waterbirds including shorebirds and rails. However, under natural conditions, these habitats tend to drain and dry out as the beach ridges are eroded and breached by episodic flood flows. Because of these changing conditions, tamarisk, a non-native shrub or tree, has invaded the upslope areas, consuming large amounts of the available water and degrading habitat quality. The Bombay Beach Wetlands Project would stabilize and enhance these existing habitat areas and divert and disperse water for additional aquatic and wetland habitat creation.

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[7] This total acreage is in addition to the SCH Project, which was previously approved and is under construction; the SCH Project is not part of this document's scope of work.

Up to approximately 903 acres of aquatic habitat stabilization, enhancement, and expansion opportunity area is proposed for aquatic habitat, wetland habitat, and dust suppression projects at the Bombay Beach site. Of this area, approximately 22 percent is existing wetland area proposed for stabilization and enhancement, an additional approximately 22 percent is proposed for wetland expansion, and the opportunity exists to deliver water to up to an additional approximately 56 percent to support vegetation-based dust control. The opportunity may exist to add additional acreage of wetland expansion and vegetation-based dust control as the Sea levels continue to decline.

The project would stabilize, preserve, and enhance (where feasible) native emergent wetland and brine pool habitat on the exposed lakebed and make surplus water available for aquatic and wetland habitat and additional vegetation-based dust control on the adjacent exposed lakebed. The project would be designed as a multi-benefit project to protect and enhance existing habitat, provide additional habitat, protect public health through dust suppression and provide opportunities for recreational use, education, and community involvement. The project would also demonstrate approaches to the optimization of environmental water use in the Sea environment.

This project is included as part of the Proposed Project and under Alternatives 1, 2, and 5.

3.3.1.2 Aquatic Habitat Restoration Types and Features

Proposed aquatic habitat ponds would provide suitable water quality and physical conditions to support a variety of aquatic habitats. They would incorporate fresh and saline water in amounts that provide salinity ranges to support fish species not able to survive in the increasingly saline Sea. Aquatic habitat ponds would have different water depths to provide fish refugia and accommodate shoreline habitat in the project location. Desert pupfish habitat would be designed into projects where connectivity and habitat benefits could be achieved.

Several available technical reports and habitat mapping efforts identify types and locations of habitats around the Sea. The United States Geological Survey (USGS) prepared the *Salton Sea Ecosystem Monitoring and Assessment Plan* (USGS 2013), which outlines habitat types and biological monitoring protocols. The State also contracted with Audubon California to develop the technical report *Quantifying Bird Habitat at the Salton Sea* (Audubon California 2016). The report identifies and quantifies the current acreage of each habitat type and compares it to the amount of habitat in previous years. The State used this report to inform habitat types needed for the Proposed Project.

The development of the habitat types listed below would provide habitat diversity across projects to support fish and wildlife that depend on the Sea ecosystem. Because each aquatic habitat restoration project would be designed based on site conditions and feasibility, all habitat types would not necessarily be proposed for each project. The following are descriptions of habitat types comprising the aquatic habitat restoration projects:

- **Mudflats and Shallow-Water – Water depth less than 6 inches.** The shallow-water habitat would contain areas of this habitat type along the shallower end of each aquatic habitat pond. The mudflats and shallow-water habitats would support shorebirds.
- **Mid-Depth Habitat – Water depth 6 inches up to 4.5 feet.** While a considerable amount of mid- to deep-water habitat currently exists at the Sea, the increases in salinity are rendering it unsuitable for fish. New, mid-depth habitat areas would range from 6 inches up to 4.5 feet deep and support habitat for a broad range of aquatic bird species.
- **Deep-Water Habitat – Water depth 4.5 feet and above.** These aquatic habitat ponds would be designed with varying depths with the deepest portions designed as fish refugia areas. This habitat

would support plunging and diving birds that are mainly piscivorous, such as double-crested cormorants (*Phalacrocorax auritus*), brown pelicans (*Pelecanus occidentalis*), and American white pelicans (*Pelecanus erythrorhynchos*). The habitat would support other groups of birds that may feed on the edges of the aquatic habitat pond and use the structures such as islands. While a considerable amount of mid- to deep-water habitat exists at the Sea, the increases in salinity are rendering that habitat unsuitable to sustain fish populations.

> **Permanent Vegetated Wetlands – Water depth less than 3 feet.** These wetland areas would support habitat for California black rail (*Laterallus jamaicensis coturniculus*), Yuma Ridgway's rail (*Rallus obsoletus yumanensis*), fulvous whistling-duck (*Dendrocyna bicolor*), and other secretive marsh birds, waterfowl, and shorebirds. The marshes would use water with less than 20 ppt salinity to develop suitable wetland vegetation communities. Hydrology for wetlands could be unmanaged or managed to be seasonally or permanently wet.

Interim dust suppression measures could be implemented within the aquatic habitat project footprints. This dust suppression is considered an interim solution to address air quality issues and may include the range of dust control measures as described in Section 3.3.2 below, such as temporary surface roughening.

3.3.1.3 Avian Habitat Features

The proposed aquatic habitat ponds would provide suitable water quality and physical conditions to support a productive bird community. They would incorporate habitat features to increase foraging, nesting, and roosting. The type and placement of such features would depend on the habitat needs of different species, site conditions, and feasibility and would be varied to test performance of different techniques. Examples of habitat features being considered for potential inclusion include the following:

> **Islands –** Islands for roosting, nesting, and foraging would provide bird habitat that is relatively protected from land-based predators. Aquatic habitat ponds would be designed to include zero to several islands, which could be designed as roosting islands or large or small nesting islands. The number and placement of islands would be determined by the pond size, shape, and depth. Islands would be placed at a distance from shore and at a depth to discourage access by land-based predators such as coyotes and raccoons.

The islands would be constructed by excavating and mounding existing lakebed sediments to create a low-profile embankment approximately 1 to 4 feet above the waterline and covered with appropriate substrate for the targeted species. The islands may also be constructed by mounding sediments to create a tall profile (up to 10 feet) and armored with riprap to create rocky terraces. Nesting islands would be designed to be compatible with the habitat needs of waterbird chicks.

An alternative to this island habitat technique could be constructing islands that would float on the aquatic habitat pond's surface, rather than using conventional excavation and placement of lakebed sediment. Floating islands could be made of mats of vegetation or human-made floating objects.

> **Snags or other vertical structures –** Snags or other vertical structures could be installed in the ponds to provide roosting or nesting sites. Options for such structures include dead branches or artificial branching structures mounted on power poles. They would be optional pond features, depending on presence of existing snags and roosts, availability of materials, and cost feasibility.

- **Seasonal flooding –** Seasonal flooding may be used to manage water use at some of the aquatic habitat pond areas. This would be achieved by flooding ponds during the migration and/or nesting season to optimize bird habitat quality, followed by reduced water levels in other seasons designed to keep the surface saturated. This technique may be most feasible at the north end of the Sea where groundwater levels are closer to the surface (CNRA et al. 2018).

3.3.1.4 Fish Habitat Features

The proposed aquatic habitat ponds, which would provide suitable water quality and physical conditions to support a productive aquatic community including fish and invertebrates, would incorporate habitat features to increase microhabitat diversity and provide cover and attachment sites (e.g., for barnacles). The type and placement of such features would depend on habitat needs of different species, site conditions, and feasibility and would be varied to test performance of different techniques. Examples of habitat features being considered for potential inclusion include the following:

- **Swales or channels –** These features would be excavated through the middle of aquatic habitat ponds to the exterior berm[8] approximately 2 to 4 feet below the surface of the pond bottom and approximately 20 to 150 feet wide. The channels would be sloped toward the exterior berm to be self-draining if a pond's water level were lowered or the pond were emptied for emergency purposes. The width of the swales would be greater depending on soil conditions and the need to prevent sloughing of soil into the channel during pond operation. The swales or channels would create variable depths to enhance habitat diversity and would provide connectivity along a depth gradient from shallower habitat to deeper areas toward the Sea. Swales could be created along the sides of the pond in the process of excavating and constructing berms.
- **Hard substrate on berms –** Berms would be armored with riprap to protect the toe and would span an approximate 1- to 2-foot depth at the waterline. This rocky substrate would also provide diverse microhabitat amid the interstitial spaces and hard attachment points for algae or invertebrates.
- **Bottom hard substrate –** The projects could include some patches of submerged hard substrate (e.g., riprap, concrete) in certain aquatic habitat ponds to increase the amount of cover and attachment sites for sessile or benthic organisms (e.g., benthic macroinvertebrates and algae) that support food for fish.
- **Floating islands –** Another feature being considered for possible inclusion would be floating islands to provide cover for fish from bird predators and possible attachment sites for sessile organisms. Experimental concepts to be evaluated would include the size, number, and seasonal placement of islands within the aquatic habitat ponds.

3.3.1.5 Watershed Plan

Certain sites within the Proposed Project and alternatives 1 through 5 are eligible to receive technical and financial assistance for project implementation through the Watershed Protection and Flood Prevention Act of 1954. These specific sites will be implemented in accordance with the conservation practices described in NRCS's National Watershed Program Manual (see Section 1.3.1). Table 3-2 provides a crosswalk between NRCS Conservation Practices and SSMP aquatic habitat types and features.

[8] Exterior berms are the berms that face the Sea.

Table 3-2 Cross-walk between SSMP aquatic habitat types and features and NRCS Conservation Practices

SSMP Aquatic Habitat Types and Features	NRCS Conservation Practices
Ponds	378 CA CPS Pond 2016
Earthen berms	402 CA CPS Dam 2018; 356 CA CPS Dike 2008
Mudflats/shallow-water habitat	646 CA CPS Shallow Water Development and Management 2011
Permanent vegetated wetlands	390 CA CPS Riparian Herbaceous Cover 643 CA CPS Restoration of Rare or Declining Natural Communities 2012 657 CA CPS Wetland Restoration 2011 659 CA CPS Wetland Enhancement 2011
Managed wetlands	644 CA CPS Wetland Wildlife Habitat Management 2011 659 CA CPS Wetland Enhancement 2011
Flood control associated with North Lake Project	582 CA CPS Open Channel 2015
Pumps	533 CA CPS Pumping Plant 2011
Pipelines, water conveyance	430 CA CPS Irrigation Pipeline 2011
Seasonal flooding	646 CA CPS Shallow Water Development and Management 2011
Bird islands; floating islands	644 CA CPS Wetland Wildlife Habitat Management 649 CA CPS Structures for Wildlife 2014
Snags or other vertical structures	649 CA CPS Structures for Wildlife 2014
Bottom hard substrate and hard substrate on berms in ponds	N/A
Swales or channels	582 CA CPS Open Channel 2015; 412 CA CPS Grassed Waterway 2015; 658 CA CPS Wetland Creation 2011
Water conveyance and supply system: sedimentation/mixing basins	638 CA CPS Water and Sediment Control Basin 2018; 587 CA CPS Structure for Water Control 2018
Public amenities, recreation access	575 CA CPS Trails and Walkways 2014
Monitoring wells	353 CA CPS Monitoring Well 2015 355 CA CPS Groundwater Testing 2015
Weirs and other structures in waterways to divert water	362 CA CPS Diversion 2017; 587 CA CPS Structure for Water Control 2018
Staging areas	N/A
Boat ramps	N/A
Operational facilities	N/A

Note: N/A – Not applicable

3.3.2 Dust Suppression and Vegetation Enhancement Project Opportunity Areas

Projects would be considered dust suppression and vegetation enhancement projects because they would both (1) suppress dust and (2) enhance vegetation and habitat value for birds and other species. These projects would be located in opportunity areas to target the most emissive exposed lakebed areas as the Sea recedes where dust suppression projects using vegetation and other dust suppression treatments could be co-located for the Proposed Project and Alternatives 4 and 5 (shown in green on Figures 3-1, 3-5, and 3-6). Dust suppression projects are intended to reduce the emission of airborne particulates from exposed lakebed areas using a variety of dust control treatments that are appropriate to a project site. A suite of potential dust suppression measures, both dry and wet, have been developed for consideration. Many of these projects would have habitat benefits, including planting native vegetation and permanent or temporary flooding. Projects that include waterless techniques to suppress dust may be implemented as a temporary proactive measure to limit potential emissions from exposed lakebed areas.

To accelerate project completion, some dust suppression projects under the SSMP that could be implemented quickly and would require minimal or no federal permitting are identified in the DSAP (CNRA et al. 2020). Dust suppression projects are intended primarily to reduce the emission of airborne particulates from exposed lakebed areas. Projects may be designed to provide vegetation enhancement but developed in a stepwise approach, with temporary waterless activities to increase surface stability and limit dust emissions, implemented initially. Projects comprised of waterless techniques could transition to provide dust suppression and habitat restoration benefits by creating aquatic habitat ponds or establishing vegetation. Water sources may include surface water from a variety of sources (e.g., agricultural drains, washes, and streams) and/or water produced by wells. Proposed habitat enhancement and dust suppression projects that are included in the Proposed Project are shown in Figure 3-1. As the Sea recedes further, additional vegetation enhancement and dust suppression projects would be implemented on the newly exposed lakebed. These projects are collectively described as dust suppression, and the opportunity areas for these projects are shown in Figures 3-1, 3-5, and 3-6.

The State cannot be sure how many acres and which projects would be completed for the DSAP, separate from this EA, and how many would be completed under the Proposed Project and alternatives. Therefore, the Proposed Project would include the full range of potential dust suppression projects, needed to meet the total acreage targets for the SSMP 10-Year Plan.

Dust suppression projects can be constructed with and without the use of water. Water-reliant dust suppression techniques would include vegetation establishment, shallow-water habitat and freshwater wetlands, shallow flooding, and stormwater spreading.[9] Vegetation establishment would use different plant communities that vary in their tolerance to salinity and drought. Water requirements would vary by plant community and soil type for use in soil reclamation, irrigation needed to establish vegetation and to ensure long-term vegetation survival. Waterless dust suppression techniques depend on soil type. Treatments include temporary surface roughening, dust suppressant applications, sand fencing, engineered roughening, gravel or other cover, and soil crust enhancement. These waterless techniques may require an initial application of water, but they generally do not depend on periodic surface water application. Project sites with initial waterless dust control methods, such as temporary surface roughening, would transition in the future to more sustainable treatments such as vegetation

[9] Although habitat ponds serve the same purpose as water-reliant dust suppression, the acreage for habitat projects is discussed separately in this document and is not included as dust suppression projects.

planting and shallow-water habitat as water becomes available and infrastructure is developed. The Proposed Project would strive to provide projects that combine dust suppression with habitat values such as freshwater wetlands, vegetation establishment, and water spreading to create shallow-water habitat.

Descriptions of the different dust suppression techniques are presented below (Section 3.3.2.3). A single technique or a combination of these techniques would be applied at dust suppression sites. The specific methods to be used would depend on characteristics such as soil properties, wind velocity and direction, local topography, and water availability and would be an explicit part of the project design for each project area. Data collection may be necessary to determine site suitability for implementing a specific technique in a project design. Data collection may encompass soil sampling for laboratory analysis, drone flights to map the existing site features (e.g., vegetation), drilling monitoring wells, and installing stream gages. Road improvements may be required for equipment needed for data collection.

3.3.2.1 Current Proposed Dust Suppression

The SSMP team developed a DSAP to guide expedited implementation of dust suppression and associated vegetation enhancement projects around the Sea. The DSAP identifies and prioritizes a planning area of approximately 7,900 acres across nine sites around the perimeter of the Sea based on the best available scientific data, proximity to populated areas, ease of securing landowner access and environmental permitting, potential availability of short- and long-term water supplies, and information obtained through public input. The DSAP also identifies potential dust suppression treatments that inform the current proposed dust suppression treatments described in Section 3.3.2.3.

The current proposed dust suppression areas are listed in Table 3-3 and include Wister-Frink; Kane Spring; Bombay Beach; San Felipe Fan; Tule Wash; Clubhouse; Coachella Exposed Lakebed; and North Shore. These areas are grouped as dust suppression projects and displayed in Figure 3-1. Since DSAP publication in 2020, the State has identified an additional dust suppression and vegetation enhancement site named West Bombay Beach, which is north of the town of Bombay Beach.

These areas were identified based on four factors: (1) an evaluation of soil emissivity, (2) the potential for timely environmental permitting authorizations and land access, (3) the potential availability of short- and long-term water supplies, and (4) the proximity to residential populations.

Table 3-3 Potential Dust Suppression Project Acreages[10]

Project Area	Total Acreage
Wister-Frink	1,000
Kane Spring	1,100
Bombay Beach	880
San Felipe Fan	860
Tule Wash	1,850
Club House	780

[10] These proposed project areas are in addition to the SCH project, which has some temporary dust suppression activities implemented prior to developing habitat ponds and was previously reviewed/approved under a separate process.

Project Area	Total Acreage
Coachella Exposed Lakebed	1,340
North Shore	90
West Bombay Beach	90
Approximate Total Acres	7,990

Source: CNRA et al. 2020

Implementation of the SSMP dust suppression projects would include coordination with IID, Coachella Valley Water District, QSA Water Transfer Joint Powers Authority, South Coast Air Quality Management District, ICAPCD, and the California Air Resources Board.

3.3.2.2 Future Dust Suppression

Future dust suppression projects are located outside the DSAP areas, but within the opportunity areas and would be implemented on current or anticipated high-emission source areas as well as on areas that are currently underwater and are expected to become exposed in the future. Figure 3-2 shows the emissivity of soils in the project area. One or more of the dust suppression methods outlined in Section 3.3.2.3 may be considered for these areas. The proposed layout of the future dust suppression areas will be designed to improve cumulative effectiveness across dust suppression areas. Lessons learned and information that is available prior to project design and development will be considered in planning, consistent with Goal 2 and the Adaptive Management Plan (see Sections 2.2 and 3.15.1).

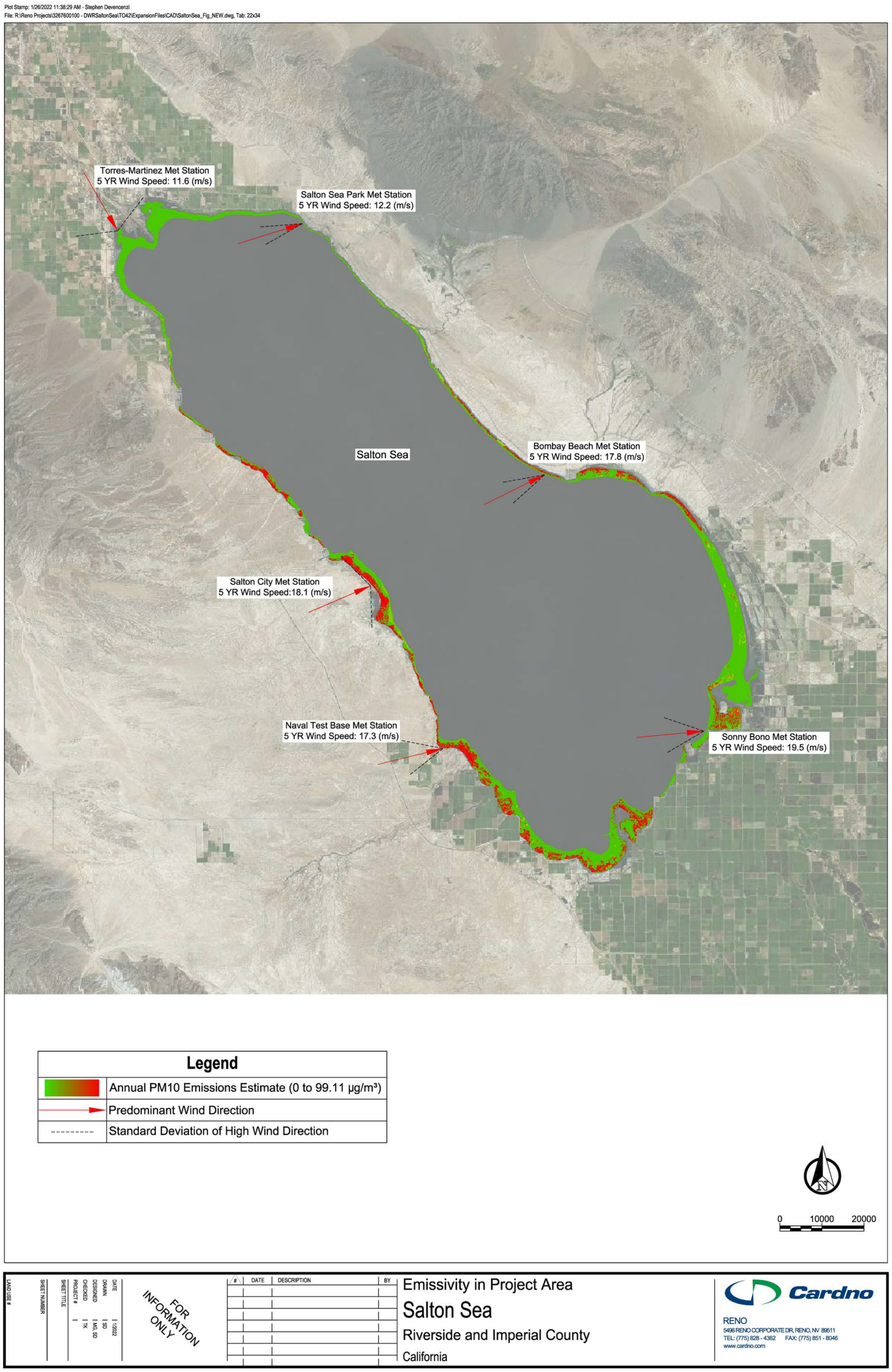


Figure 3-2 Emissivity in Project Area

3.3.2.3 Dust Suppression Techniques

A description of dust suppression techniques is provided below.

Temporary Waterless Techniques

Surface Roughening

For areas in immediate need of control for dust emissions, temporary waterless techniques merit consideration, followed by other more permanent methods described below. Temporary surface roughening has been shown to reduce dust emissions by decreasing wind velocity near the surface. This method uses berms and ditches, created by deep tillage perpendicular to the predominant high wind direction. The ridge and furrow pattern can be changed to achieve a target effectiveness. The surface features may require monitoring to ensure desired performance. This method may need to be repeated over time because surface features may degrade, or material may accumulate in roughened areas. Other measures, such as vegetation establishment, can be added to temporary surface roughening to increase its effectiveness.

Dust Suppressant Application

Dust suppressants or surface stabilizers may be suitable in dust control areas where surface roughening or other methods are not feasible. These products may also be suitable to apply to roadways and construction laydown/staging areas during construction activities.

Suppressants are used to control fugitive dust by improving the adhesion of soil particles. Typical application uses water with one or a combination of surfactant materials (e.g., organic, mineral, or engineered polymers). They control dust by keeping soil surfaces wet longer, drawing moisture from the air, encapsulating soil particles, or binding soil particles. Surfactants will be used within dry, exposed lakebed areas, and avoid aquatic features and vegetated areas. BMPs such as buffer zones will be implemented based on the surfactant used, the location, and the amount of area to be covered.

Because most suppressants are water-soluble, rainwater can dissolve them. Transport by water from a dust suppression area to the Sea is of limited concern because of minimal rainfall and runoff. However, to avoid water quality concerns, suppressant selection will focus on non-toxic natural products as ecosystem-friendly options effective for planned operations. Suppressant application is planned with the use of trucks or aircraft depending on access to specific locations.

Soil binders are a class of substances that bind with soils upon application and create a hardened surface that can withstand heavy vehicle traffic. They are water resistant, water-insoluble, and more chemically stable under desert conditions. Commercially available options include polymer emulsions manufactured from recycled products, with proven benign environmental properties, and which may be suitable for application in the Sea environment. Under harsh conditions, binders can be more effective than other methods in managing different sizes of particles.

Sand Fencing

Sand fences and/or sand fence arrays may be constructed to reduce wind velocity and trap blowing sand. Typically, fences would be placed perpendicular to the prevailing wind direction and supported by sturdy posts. Posts may be made of light wood or other material wired together. The feasibility of this method is under consideration (CNRA et al. 2020).

Fences of various construction materials and design to prevent particulate matter in soils and sediments from becoming airborne are used elsewhere to control the location and rate of erosion and deposition of sand and snow. Similarly, they could be used at the Sea's exposed lakebed to reduce movement of very fine sand and smaller particulate matter. The drifting and settling of sand behind and in front of a porous fence occurs because the wind speed on both the upwind and downwind sides is less than that far upwind of a fence, and particles are slowed as they pass through the openings in the fence material. The slowing of the wind and particles allows deposition to occur, mainly at the sheltered side of the fence. In areas of abundant sand supply, fences become buried over time, requiring either the removal of accumulated sand or the installation of additional sand fences on top, upwind, or downwind of the buried fences.

Combining this type of dust control method with other dust suppression methods may support vegetation enhancement in the most emissive areas of the exposed lakebed where only limited water sources are available.

Engineered Roughening

The method of engineered roughness to control wind erosion involves placing large roughness elements of prescribed size and distribution on a surface that is susceptible to dust emissions. The size and spatial distribution of the roughness elements determines the effectiveness of silt and sand control. The roughness elements can be manufactured, or assembled using available agricultural byproduct material, such as straw bales, if it can be processed into large and stable forms. Engineered roughness can be a temporary control method that applies immediate control of dust emissions, or it can be used to create conditions of reduced sand movement and enhanced moisture to provide a more suitable environment to support vegetation establishment and growth. The vegetation can eventually replace the roughness elements to control sand movement and dust emissions.

Gravel and Other Cover

Gravel cover as a dust control measure involves placing a layer of gravel, or gravel with a geotextile base, on emissive exposed lakebed surfaces to protect them from the wind and reduce dust emissions. This measure would reduce the movement of finer particulates from the surface of the exposed lakebed. Gravel blanket coverage is very effective at controlling dust during periods of high wind velocity because sand particles are captured within the interstitial spaces in the gravel.

Once the gravel cover has been applied to the exposed lakebed, limited maintenance is required; however, ongoing site inspection for erosion and the presence of fine sands is required. Fine particles covering or significantly in-filling the gravel can render the method ineffective.

This dust control method is considered in conjunction with other methods, especially in areas where no other options are feasible because of topography, soil type, and water supply. At the Sea, the use of gravel cover may be effective for higher traffic areas or access roads or in combination with other methods in smaller areas with high dust emissivity.

Operations and maintenance typically include the following actions:

1. Conduct visual monitoring to ensure that the gravel blanket has not been filled with sand particles, eroded by flooding, or filled with flood-borne silt;
2. Restore the gravel to the surface with limited disturbance and with measures in place to limit the potential of fine particles becoming airborne; and
3. If the gravel blanket requires maintenance due to in-filling, apply additional gravel to the exposed lakebed so that the original blanket performance standard is maintained.

Enhancing Soil Crusts

Crusts can be formed by biotic or abiotic processes. Crusting or soil aggregation that results from either process can be enhanced by adding amendments, which make the surface more resistant to wind erosion processes. A potential biotic-based crust enhancement technique is biocementation, which, for example, uses soil microbes to precipitate the mineral calcite to enhance inter-particle bonding.

Abiotic amendments can also enhance soil crusting and aggregation thus improving their ability to resist erosion, but they have not been widely applied and are still in the development phase. For example, Feizi et al. (2019) investigated the feasibility of using clay mineral bentonite and polyvinyl acetate to reduce wind erosion in desert areas. Their wind tunnel experiments demonstrated that bentonite-amended soils were the most effective soil erosion control measure for reducing soil loss. This control method requires a thorough characterization of soil properties to develop an appropriate amendment mixture. Wind tunnel tests with cyanobacterial polysaccharides and calcium carbonate produced from soil bacteria indicate that desert soil microbiota are capable of producing highly wind-resistant biological soil crusts to reduce emissivity (Fattahi et al. 2021).

Long-term Habitat Enhancement Techniques

Vegetation Establishment

Vegetation establishment is a roughness-based dust control method in which plants are used as porous, three-dimensional barriers. The barriers (plants) cause friction on air flow, reducing the wind shear at the soil surface that causes particulate matter to become airborne. Additionally, plants that tolerate abrasion and burial can actively trap and store particulate matter.

The effectiveness of plants to reduce wind erosion and dust emissions over large areas is a function of their individual aerodynamic properties and distribution density across the area. Establishing vegetation at appropriate levels offers an effective means to control wind erosion and dust emissions. Vegetation establishment should be prioritized for soils that support native vegetation in the Salton Sea basin. Such soils are broadly characterized as coarse textured and with favorable internal drainage. The aim of selecting areas for vegetation planting based on soil suitability is to maximize their long-term survival. The direction of planting of hedgerows may be adapted based on prevailing wind directions at a site.

In addition to suitable soils, the amount and salinity of available water to support vegetation will determine the location and types of vegetation included in dust suppression project design. Habitats for consideration include desert scrub habitats that range from very low to low water use and require irrigation every 2 to 5 years and scrub and tree habitats that require more frequent irrigation and would mimic ephemeral to intermittent streams.

Two distinct zones occur along the transitional area from the desert to the lakebed: one zone higher in elevation in which areas away from washes and drains are dominated by creosote bush (*Larrea tridentata*) and a second zone lower in elevation in which areas away from drain spills are dominated by iodine bush (*Allenrolfea occidentalis*). The difference between the two zones can likely be explained by groundwater depth and the subsequent concentration of salts at the soil surface.

Creosote bush would be the recommended target species for the upslope zone. Additionally, the presence of honey mesquite (*Prosopis glandulosa*) in that zone suggests it might be able to support this small tree, which has the potential to grow taller than other upslope species and therefore affect airflow to a greater degree. It is recommended that iodine bush be used as the target species for the downslope zone. In addition, the presence of four-wing saltbush (*Atriplex canescens* var. *macilenta*) and big saltbush (*Atriplex lentiformis*) suggests that the zone can support those species, which when co-planted could provide a hedgerow that is resilient to stressful environmental conditions.

Shallow-Water Habitat Dust Suppression

Shallow-Water Habitat Dust Suppression would be designed based on a proposal for an integrated habitat and dust control project that could enhance an existing wetland near Bombay Beach (Audubon California 2019). If successful, this proposal could potentially be applied to other exposed lakebed areas around the Sea with freshwater inflow. It is based on the knowledge that invasive tamarisk uses large amounts of water and continues to encroach upon wetted areas, choking out native vegetation. Water that is saved by removing tamarisk can be used to supply water to the wetland and irrigate upland species in the dust control areas adjacent to the wetland. Tamarisk removal methods are described under the Audubon California Bombay Beach Wetland Project in Section 3.3.1.1. Wetland vegetation management could also include planting native plants in these wetted areas. By making water source–specific adjustments, this concept of dual-purpose water infrastructure could be applied to other lakebed areas around the Sea.

A surface cover of water on a potentially dust emissive surface is a highly effective dust control method, and as long as the cover of water is maintained, it should be 100 percent effective. The exposure of dry areas would potentially reduce the effectiveness if those areas were to be subjected to erosive winds.

The strategic placement of new berms and reinforcement of existing berms would increase the residence time of surface water within these systems. This increase in residence time can translate into a larger, managed wetted footprint. The benefits of expanding the wetted footprint include an increased food supply and availability of various habitat types for migrating and resident bird species (e.g., foraging, nesting, and refugia). Berm construction may include reworking exposed lakebed by grading and excavating. Depending on the site conditions, berm construction could occur in wetted areas.

In upland dust suppression areas where water is available, opportunities exist to create additional wetland habitat that includes habitat islands, permanent vegetated wetlands, and shallow-water habitat (see Section 3.3.1.2 for additional detail on these habitat types). Proposed habitat enhancements would vary by habitat type:

- **Habitat islands:** Increase vegetation structure and topographic diversity; provide habitat for roosting, foraging, and nesting; and enhance adjacent channels and open-water features;
- **Permanent vegetated wetlands:** Increase edge vegetation coverage and density; enhance emergent vegetation establishment; and improve hydrologic connectivity, water residence times, and depth of channels and shallow pond areas; and
- **Shallow-water habitat:** Improve hydrologic connectivity by creating small drainage channels and shoreline-fringe habitat and increase habitat diversity to support nesting, foraging, and resting sites.

Shallow Flooding

Shallow flooding would involve keeping the land surface moist year-round to keep dust emissions at a minimum. Wet surfaces are more resistant to wind-blown dust emissions because the saturated soil at the ground surface is heavier than dry soil. As the surface soil aggregates dries and moisture evaporates, the bonds in the soil cause the particles to form a weak crust that resists wind shear and particle entrainment in the absence of physical disturbance.

The water demand for shallow flooding is approximately 3 to 4 AFY of water to suppress dust from an acre of lakebed. This water would be pulse-flowed in monthly applications between October and June of each year. To apply the shallow flooding control method at the Sea, water use agreements and substantial infrastructure would be needed to supply enough water at specific areas.

Shallow flooding can be applied using different techniques. These techniques can be grouped into two categories: sheet flooding and pond flooding. Sheet flooding is similar to surface irrigation and may consist of preparing a subarea by leveling the land and bounding it by shallow earthen banks. Water may then be applied at the top end of a cell and be permitted to advance over the length of the cell in the form of a thin sheet. Pond flooding is similar to constructed ponds. Pond flooding consists of preparing a near-level cell bounded by deep rock–faced water containment berms. Large volumes of water are applied to submerge the cell with enough water to counter the water loss from soil infiltration and evaporation.

Stormwater Spreading

Stormwater spreading is a method by which stormwater is spread laterally across the landscape and retained. This method would be used in conjunction with vegetation establishment. At a few locations around the Sea lakebed, the right combination of environmental conditions has yielded natural stormwater spreading events. These conditions consisted of low-velocity stormwater or drain water intersecting shallow, on-contour wave action berms. The goal of a stormwater spreading project is to mimic this natural process of groundwater recharge and optimize the use of ephemeral surface water runoff.

Stormwater spreading can result in deep infiltration of water (more than 1 foot of water) that exceeds a heavy rain event (typically no greater than 0.2 foot of water). Stormwater runoff events generally occur during the cool months of mid-November through March when evaporation is low. Low evaporation enables the surface soil moisture to persist for a longer duration than the flood event. The coupling of deep infiltration and low evaporation can also leach salts from the soil surface. In addition, as the stormwater slows, suspended seeds and fine sediment settle, resulting in favorable soil-seed contact that enables germination and plant establishment.

This method can be applied to distribute water from a range of discharge events. It is likely that no appreciable discharge would occur in some years. Conversely, a large discharge might prove unmanageable using modest infrastructure, such as compost socks, furrows, or check dams. Nonetheless, this method of water distribution provides a means to slow the flow of high-quality stormwater so that it can contribute to establishing and/or enhancing upland vegetation on the exposed lakebed. This technology would be especially valuable in locations with few water-source options, such as along the western shore of the Sea. To ensure a reliable irrigation water supply during drought periods, this technology could be coupled with an on-demand water source.

Stormwater spreading directly reduces dust emissions for surfaces that are submerged beneath water and remains effective until the soil moisture content drops to just above a few percent (Gillies 2013). Stormwater spreading indirectly reduces sand transport and dust emissions if it results in supporting an increased plant density. Plants are highly effective at controlling sand transport and dust emissions once they reach critical density distributions and surface coverage.

3.3.2.4 Watershed Plan

Certain sites within the Proposed Project and alternatives are eligible to receive technical and financial assistance for project implementation through the Watershed Protection and Flood Prevention Act of 1954. These specific sites will be implemented in accordance with the conservation practices described in the National Watershed Program Manual (see Section 1.3.1). Table 3-4 provides a crosswalk between NRCS Conservation Practices and SSMP Dust Suppression Techniques.

Table 3-4 Cross Walk between SSMP Dust Suppression Techniques and NRCS Conservation Practices

SSMP Dust Suppression Techniques	NRCS Conservation Practices
Temporary Waterless Techniques	
Temporary surface roughening	609 CA CPS Surface Roughening 2015
Dust suppressants or surface stabilizers	373 CA CPS Dust Control on Unpaved Roads and Surfaces 2019
Sand fencing	N/A
Engineered roughness	N/A
Gravel and other cover	484 CA CPS Mulching 2020
Long-term Habitat Enhancement Techniques	
Vegetation establishment	327 CA CPS Conservation Cover 2016; 342 CA CPS Critical Area Planting 2017; 589C CA CPS Cross Wind Trap Strips 2015; 612 CA CPS Tree/Shrub Establishment 2017; 380 CA CPS Windbreak-Shelterbelt Establishment 2013
Shallow flooding	646 CA CPS Shallow Water Development and Management 2011
Stormwater spreading	362 CA CPS Diversion 2017; 373 CA CPS Dust Control on Unpaved Roads and Surfaces 2019; 640 CA CPS Water spreading 2021
Enhancing soil crusts	373 CA CPS Dust Control on Unpaved Roads and Surfaces 2019

N/A – Not applicable

3.4 ALTERNATIVES CONSIDERED BUT ELIMINATED

A number of alternatives presented by the public during the public comment period in March 2021 were considered. In addition, several members of the public suggested importing water, either from the Pacific Ocean or the Gulf of California. While both of those are under consideration for the long-term plan for the Salton Sea, they exceed the timeframe, budget, and goals for this plan and, therefore, are not analyzed in this document. Only projects that meet the purpose and need and program goals and objectives, as described below, are presented as the Proposed Project or alternatives, with the exception of the No Federal Action (Alternative 6) and No Action (Alternative 7) Alternatives.

3.5 ALTERNATIVE 1: MAXIMUM LAKE EDGE

This alternative would be implemented at various locations around the perimeter of the Sea in Riverside and Imperial counties and includes aquatic habitat ponds. Alternative 1 would create lake edge from the Salton Sea State Recreation Area near the community of North Shore in a counter-clockwise direction around to just north of Bombay Beach (Figure 3-3). The northern part of this project would be the North Lake Project that is currently under design, which is also included in the Proposed Project. The remainder of the project would be similar to the North Lake Project, but it would be extended around the remaining parts of the Sea to Bombay Beach. Alternative 1 includes a total of 25,690 acres.

This alternative would provide open water areas adjacent to most inhabited communities, consistent with community requests during public comments. Under this alternative, a total of 25,690 acres of open water would be constructed, and water sources would include the Whitewater River, Alamo River, New River, and a variety of agricultural drains around the Sea. The open water areas may consist of large ponds or lakes. These sources could also include ground or drain water. Habitat types would include the following:

- Deep water;
- Mid-depth water;
- Shallow water; and
- Wetlands (seasonal and permanent).

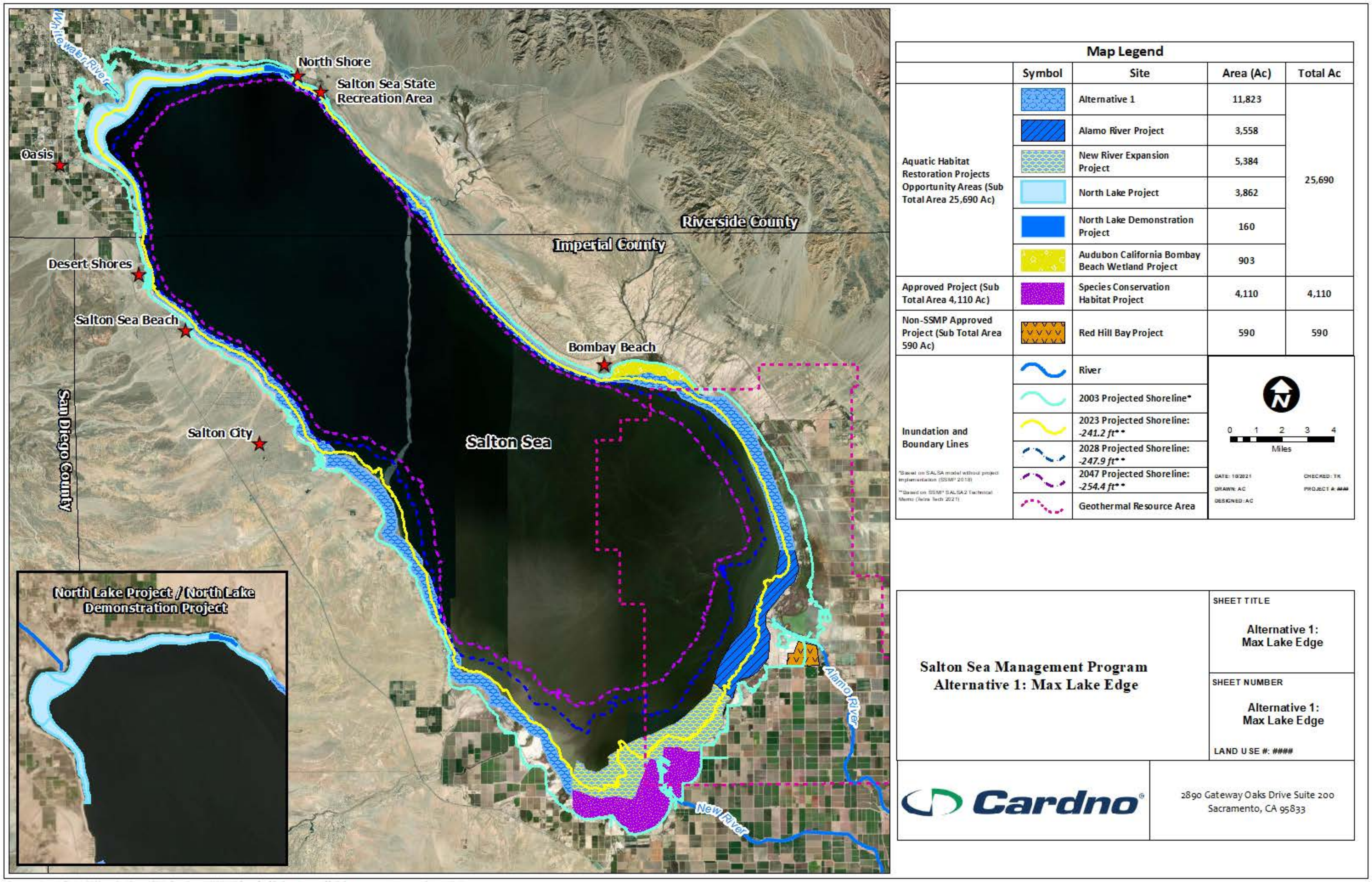


Figure 3-3 Alternative 1: Maximum Lake Edge

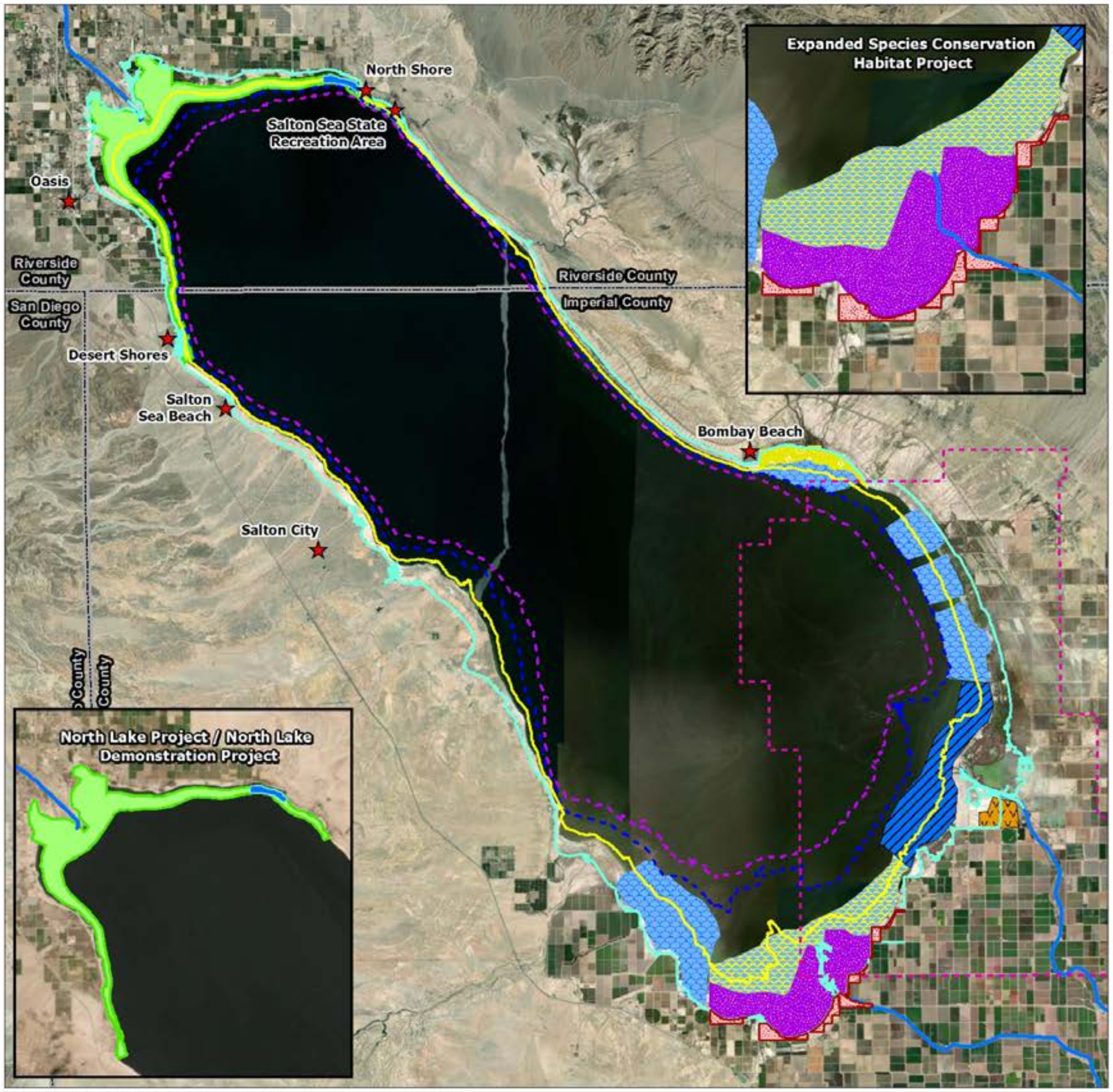
3.6 ALTERNATIVE 2: AQUATIC HABITATS AND ENHANCE AND EXPAND EXISTING WETLANDS

The alternative would be implemented at various locations around the perimeter of the Sea in Riverside and Imperial counties and includes aquatic habitat ponds and projects that expand or enhance existing unmanaged wetlands. Alternative 2 would include the North Lake Demonstration Project that is currently under design as well as the North Lake Project, the Expanded North Lake Project, Alamo River Project, and New River Expansion Project, which totals 14,571 acres of ponded habitat. Additional projects to create the required 25,690 acres (28,900 less the SCH) would be built using natural inflow sources at drains and washes around the perimeter of the Sea (Figure 3-4), as well as an expansion of the Audubon California Bombay Beach Wetlands Project and Expanded Species Conservation Habitat Project. None of the waterless dust suppression activities discussed for the Proposed Project would be conducted as part of this alternative. Types of activities to expand and enhance wetlands could include the following:

- Removing tamarisk or other invasive plant species to make more water available for other vegetation or aquatic resources;
- Planting native plants in areas that have been wetted when drain water expands out over the exposed lakebed; and
- Strategically placing new berms and reinforcing existing berms to increase the residence time of surface water and development of wetland vegetation. Berm construction may include reworking the exposed lakebed by grading and excavating. Depending on the site conditions, berm construction could occur in wetted areas.

Within upland dust suppression areas in locations where water is available, an opportunity exists to create additional wetland habitat with the following features. Proposed habitat enhancements would vary by habitat type:

- Habitat islands – Increase vegetation structure and topographic diversity; provide habitat for roosting, foraging, and nesting; and enhance adjacent channels and open-water features;
- Permanent vegetated wetlands – Increase edge vegetation coverage and density; enhance emergent vegetation establishment; and improve hydrologic connectivity, water residence times, and depth of channels and shallow pond areas; and
- Shallow-water habitat: Improve hydrologic connectivity by creating small drainage channels and shoreline-fringe habitat; and increase habitat diversity to support nesting, foraging, and resting sites.



Map Legend				
	Symbol	Site	Area (Ac)	Total Ac
Aquatic Habitat Restoration Projects Opportunity Areas (Sub Total Area 25,690 Ac)		Alternative 2	9,272	25,690
		Alamo River Project	4,500	
		New River Expansion Project	4,548	
		Expanded North Lake Project	5,363	
		North Lake Demonstration Project	160	
		Expanded Audubon California Bombay Beach Wetland Project	993	
		Expanded Species Conservation Habitat Project	854	
Approved Project (Sub Total Area 4,110 Ac)		Species Conservation Habitat Project	4,110	4,110
Non-SSMP Approved Project (Sub Total Area 590 Ac)		Red Hill Bay Project	590	590
Inundation and Boundary Lines		River		
		2003 Projected Shoreline*		
		2023 Projected Shoreline: *-241.2 ft***		
		2028 Projected Shoreline: *-247.7 ft***		
		2047 Projected Shoreline: *-254 ft***		
		Geothermal Resource Area		

*Based on SALSA model without project implementation (SSMP 2018)

**Based on SSMP SALSA2 Technical Memo (Tetra Tech 2021)

0 1 2 3 4
Miles

DATE: 03/2022
CHECKED: TK
DRAWN: AC
PROJECT #: ####
DESIGNED: AC

Salton Sea Management Program

Alternative 2:
Enhance and Expand Existing Wetlands

SHEET TITLE
Alternative 2: Enhance and Expand Existing Wetlands

SHEET NUMBER
Alternative 2: Enhance and Expand Existing Wetlands

LAND USE #: ####

Cardno

2890 Gateway Oaks Drive Suite 200
Sacramento, CA 95833

R:\Projects\QF121 Client Folders\3267600100 Salton Sea SCH Project\Update SSMP_Project_Area_Alt_2_Enhance_Existing_Habitat EXPANDED.mxd

Figure 3-4 Alternative 2: Enhance and Expand Existing Wetlands

3.7 ALTERNATIVE 3: NORTH END/SOUTH END AQUATIC HABITAT

This alternative would be implemented at the north and south ends of the Sea in Riverside and Imperial counties and includes only aquatic habitat ponds projects. Alternative 3 is similar to Alternative 2 but would involve more constructed habitat and less enhanced wetland habitat. This alternative would include the North Lake Project that is currently under design as well as additional ponds near the New and Alamo rivers, totaling 25,690 acres (Figure 3-5). Target salinity would be 20 to 40 ppt. This alternative consists primarily of aquatic habitat ponds, which are described in Section 3.3.1.2.

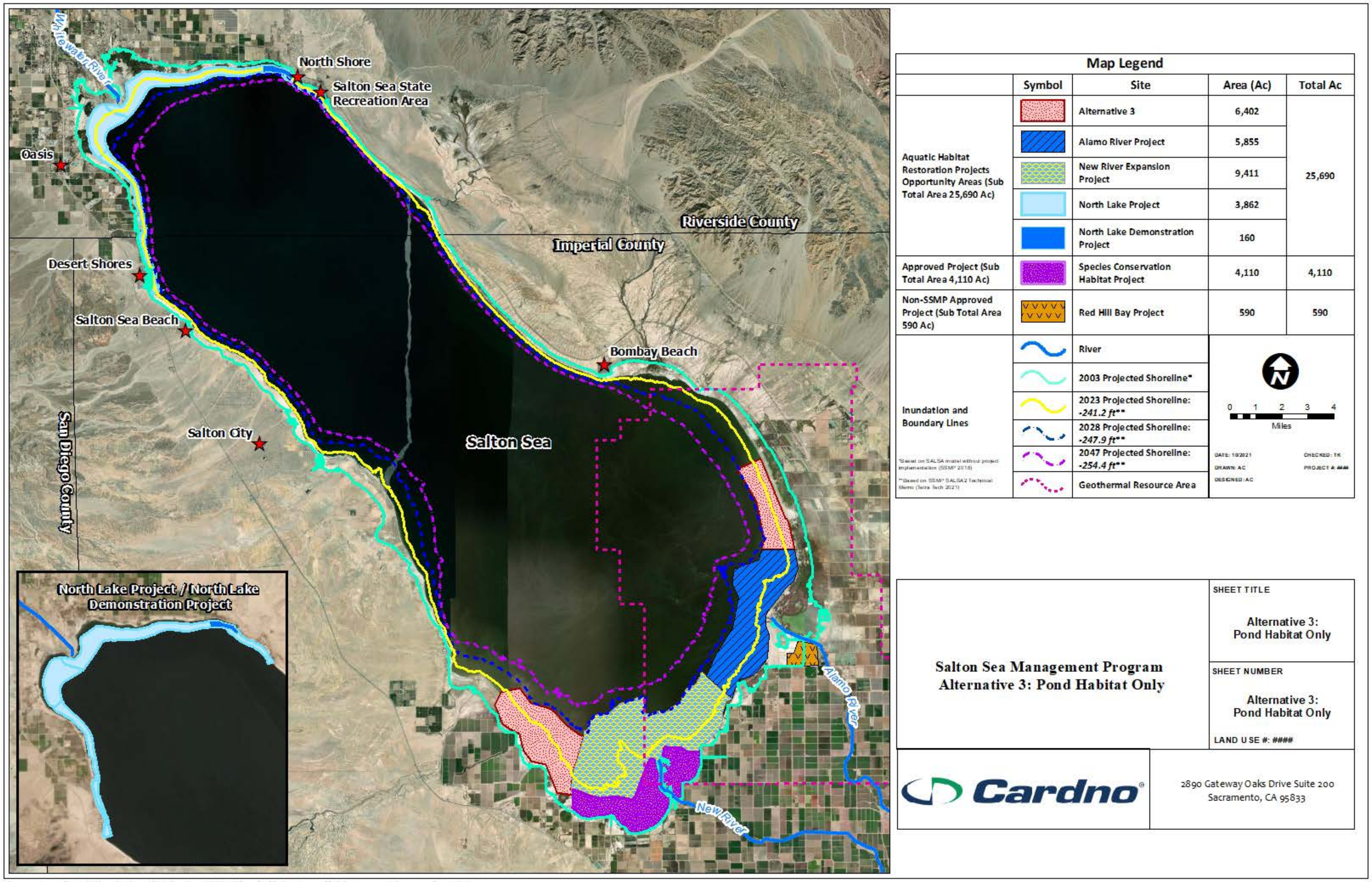


Figure 3-5 Alternative 3: North End/South End Aquatic Habitat

3.8 ALTERNATIVE 4: WATER CONSERVATION

This alternative would be implemented at various locations around the perimeter of the Sea in Riverside and Imperial counties and includes enhancing and expanding existing wetlands and wet and dry dust suppression projects. Alternative 4 is similar to Alternative 2, but it includes dust suppression and restoration projects along the east and west shoreline and does not include aquatic habitat ponds. Under Alternative 4, the aquatic habitat project area (10,790 acres) would consist of enhancing and expanding wetlands as described for Alternative 2 (Figure 3-6). This alternative would also include 14,900 acres of dust suppression projects. The total project area for this alternative is 25,690 acres.

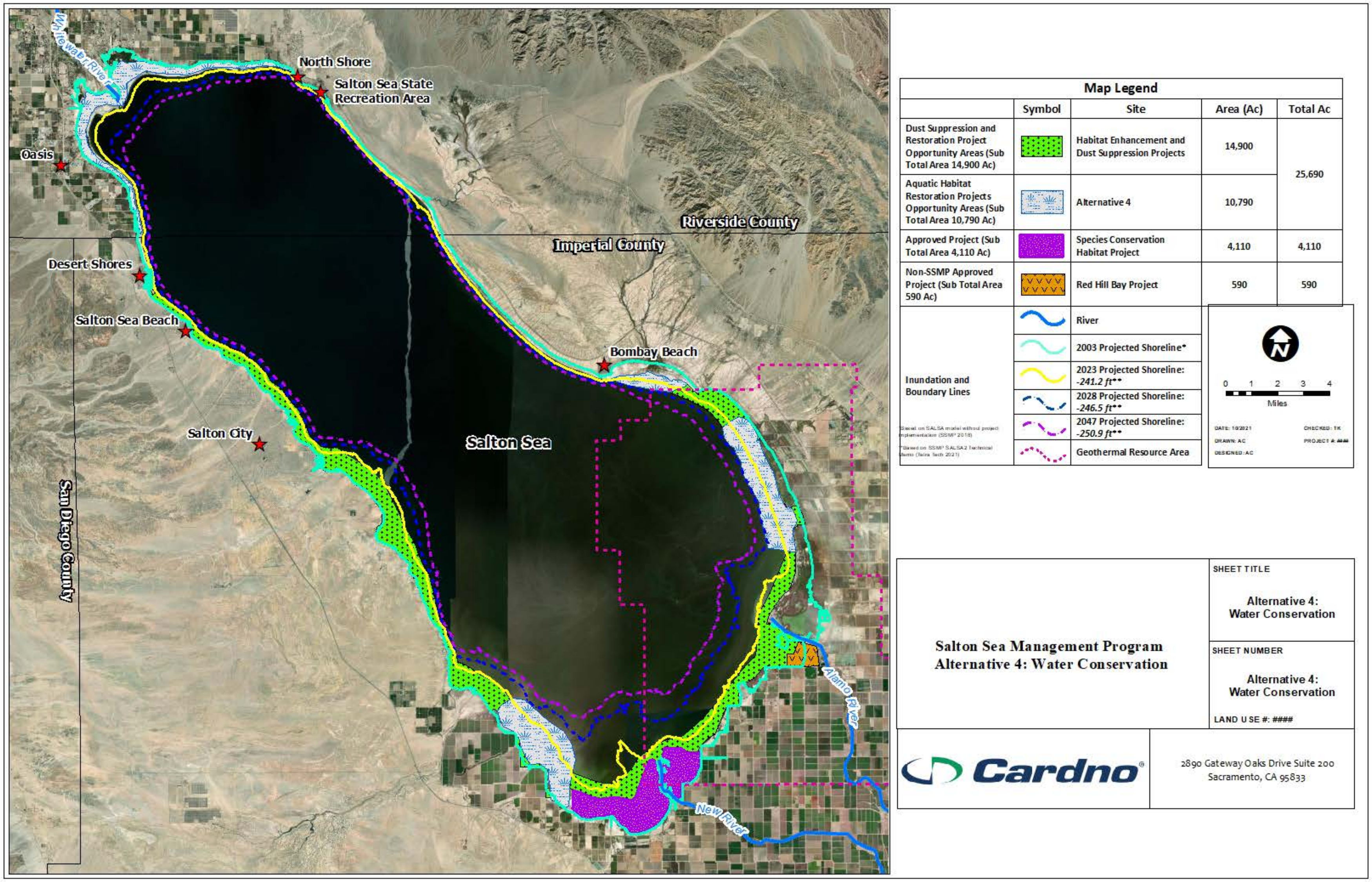


Figure 3-6 Alternative 4: Water Conservation

3.9 ALTERNATIVE 5: MAXIMUM BUILD OUT

This alternative would be implemented at various locations around the perimeter of the Sea in Riverside and Imperial counties and includes aquatic habitat ponds and wet and dry dust suppression projects. Alternative 5 would include all feasible areas, including all opportunity areas and other sites that could be developed with projects. All the opportunity areas would be built out to maximize both aquatic habitat and wet and dry dust suppression projects (Figure 3-7). Total acreage for this alternative is 48,707 acres.

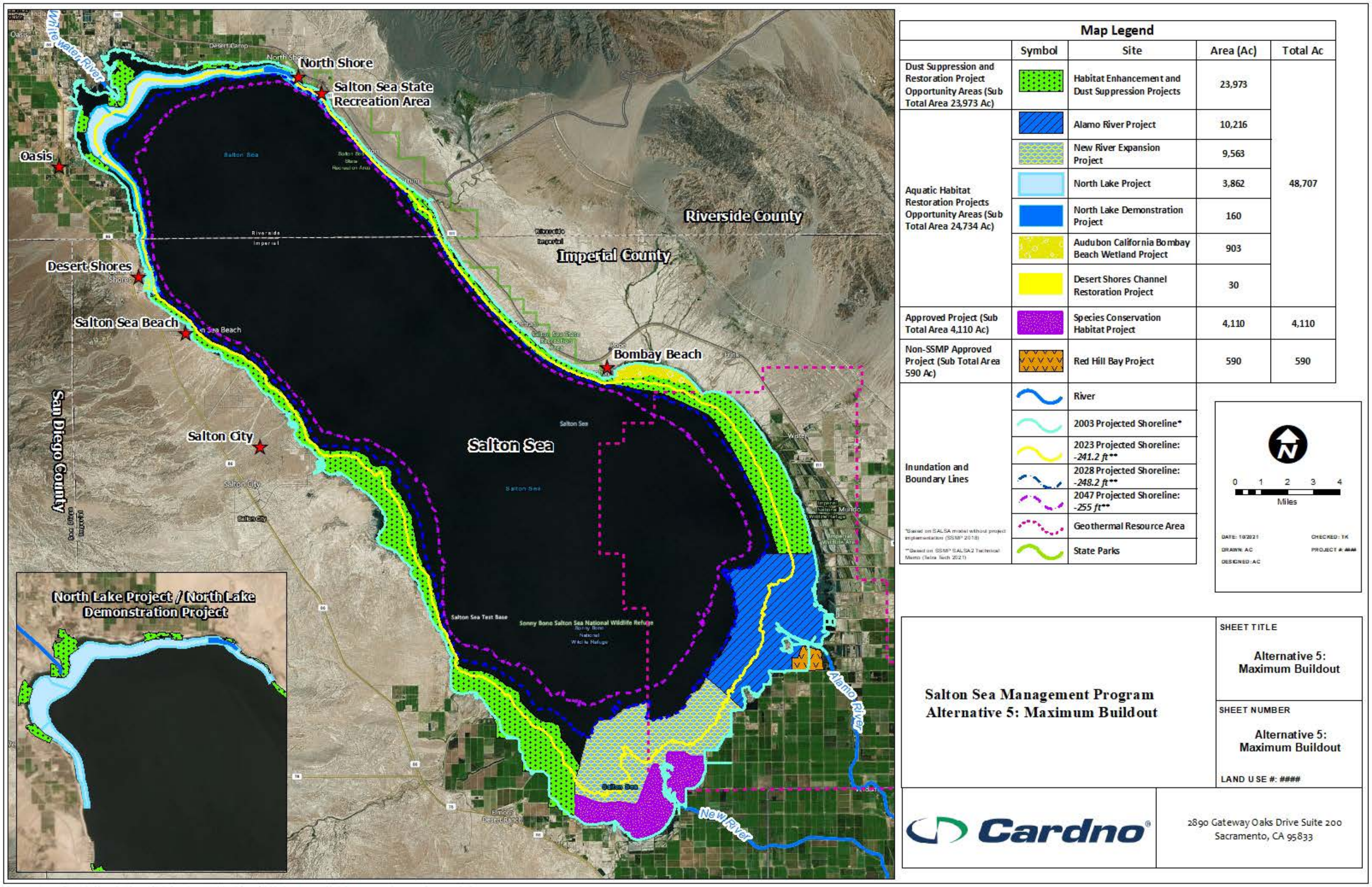


Figure 3-7 Alternative 5: Maximum Build Out

3.10 ALTERNATIVE 6: NO FEDERAL ACTION

Under Alternative 6, no projects would be built that require federal action (other than SCH, which is under construction). Under this alternative, the State would proceed with dust suppression and restoration projects that meet the following parameters for projects, access, and infrastructure:

- Are not on federal or tribal lands,
- Are not in wetlands or waters of the United States at the time of construction,
- Would not have an effect on federally listed species,
- Would not have any federal funding, and
- Do not require a diversion from waters of the United States (all water would be from wells).

3.11 ALTERNATIVE 7: NO ACTION

Under Alternative 7, the Corps would not issue a permit for the SSMP 10-Year Plan Project, and no components of the Project would be constructed (Figure 3-8). Other activities are expected to occur that would affect the Salton Sea ecosystem. The No Action Alternative is intended to reflect existing conditions (those present at the time the Notice of Preparation was issued) plus changes that are reasonably expected to occur in the foreseeable future if none of the alternatives are implemented, based on current plans and consistent with available infrastructure and community services.

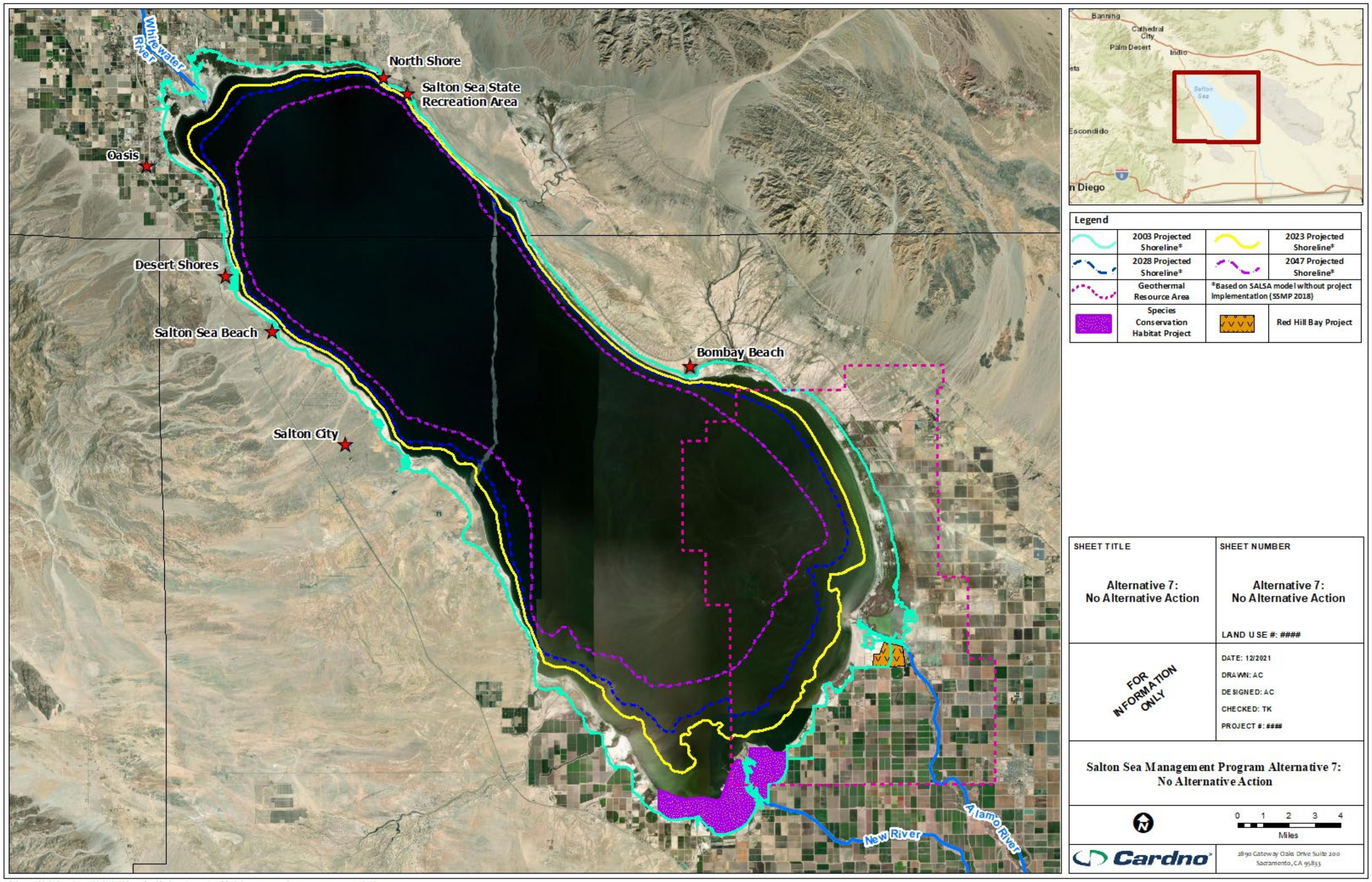


Figure 3-8 Alternative 7: No Action Project Area

3.12 DESIGN CONSIDERATIONS

Some of the design considerations included apply to both habitat and dust suppression projects, and others apply only to habitat projects. Multiple projects will be implemented over time and facility siting for each project will be determined in consideration of environmental, physical, and other constraints.

Temporary construction facilities including a trailer, staging areas, and parking would be required. Facilities would require electricity, but other needs (e.g., sewerage and drinking water) would be supplied by temporary and self-contained systems (e.g., portable toilets and bottled water).

Table 3-5 provides a list of potential project features and activities that may occur under the Proposed Project and alternatives.

Table 3-5 Project Features and Activities Under the Proposed Project and Alternatives

Aquatic Habitat Projects	Dust Suppression Projects

• Habitat restoration and water quality improvement projects within the SSMP 10-Year Plan (Projects).
• Construction, enhancement, or removal of berms, including: permanent berms for water diversion, temporary diversion during construction, earthen berms, installation of hard substrate or other material on berms, such as rip rap, geotextile, and/or fill materials.
• Creation of pond habitat at different water depths and timing of inundation, including: mudflats and shallow water, mid-depth habitat, deep-water habitat, swales or channels, bottom hard substrate.
• Installation of features to support bird nesting, resting, and foraging habitat, including: floating islands, islands, snags or other vertical structures, areas of seasonal flooding.
• Creation of permanent vegetated wetlands, seasonally flooded habitats, terraced wetlands, and brine pools.
• Removal or installation of water conveyance and supply systems to provide water supply to the Projects, including:
  o Sedimentation/mixing basins, weirs and other structures in waterways to divert water,
  o Placement of check dams,
  o Water storage tanks,
  o Installation, sampling and gaging monitoring and supply wells,
	• Water-reliant and waterless dust suppression techniques[11]:
	• Establishment of (non-invasive) vegetation,
	• Construction of shallow-water habitat,
	• Construction of freshwater wetlands,
	• Shallow flooding,
	• Stormwater spreading,
	• Temporary surface roughening,
	• Dust suppressant application,
	• Sand fencing,
	• Engineered roughening,
	• Gravel or other cover,
	• Enhancing soil crusts.

[11] The primary purpose of these activities is to decrease dust emissions on the exposed lakebed at the Salton Sea and are not required to demonstrate any net increase in functions of aquatic resources or meet specified ecological objectives or performance criteria.

Aquatic Habitat Projects	Dust Suppression Projects
o Drilling new groundwater wells, o Solar pump stations and well pumps installation, o Inflow and outflow structures, o Dredge channels to pump stations or project infrastructure. • Removal or installation of water dispersal and retention structures, including: o Shallow earthen swales, o Bunds and micro-catchments, o Check dams, weirs and concrete pipe culverts, o Retention basins, o Storage basins, o Irrigation network and furrows, o Pumps and other water control infrastructure, o Prefabricated concrete box/arch culvert (or bridge footing/abutment, etc.). • Installation of public amenities, passive recreation trails, ancillary public facilities within Project nexus, including hiking trails, picnic areas, parking, launch features for non-motorized boats, kayaks, paddle boards, passive recreation access compatible with an authorized aquatic resource habitat restoration or dust suppression project. • Temporary construction, access, parking, temporary office space, and dewatering involving temporary structures, work, and discharges, including cofferdams, necessary for construction activities, staging, or access fills or dewatering of construction sites, provided that the associated primary activity is an authorized project. o Upon completion of construction, temporary fill must be entirely removed to an area that has no waters of the United States, dredged material must be returned to its original location, and the affected areas must be restored to pre-construction elevations. • Linear crossings to construct, repair, or maintain roads for permanent access to aquatic restoration or dust suppression project sites. • Crossings of those waters associated with the construction, maintenance, or repair of electrical and communication utility lines and poles. Oil and gas utilities and pipelines are excluded.	

<table>
<tr><th>Aquatic Habitat Projects</th><th>Dust Suppression Projects</th></tr>
<tr><td>

Maintenance and repair of existing or constructed SSMP-related features, including:

Construction features repairs,
Sediment removal (excavation or dredging, retrenching, periodic drainage),
Facilities maintenance, including road, well, and irrigation repair
Address potential for biological fouling at pipes and pumps in maintenance plans,
Invasive vegetation monitoring and control,
Repair of storm water and erosion damage.

Pre-construction survey and investigations activities:

Monitoring and investigation/data collection activities:

Geotechnical soil sampling,
Surface water sampling,
Sediment sampling,
Biological sampling,
Biological surveys,
Drilling and operating monitoring wells,
Stream gage or weir installation.

Road improvements, if necessary to perform monitoring or data collection activities.

Compensatory mitigation.
Only non-toxic and non-hazardous materials would be placed into the aquatic environment including:

Clean earthen fill material (backfill), from dredged or excavated source material,
Ungrouted rock riprap slope protection (inert),
Galvanized corrugated metal pipe(s),
Filter fabric,
Geotextile.

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3.12.1 Water Conveyance and Supply System

Project facilities would be constructed near water sources initially, and additional projects would be constructed moving downslope as the Sea recedes. The water conveyance and supply systems would be built as the SSMP team develops additional projects and would be constructed concurrently with habitat and dust suppression projects. As future water-reliant projects are developed, existing water conveyance infrastructure would be extended incrementally to serve those projects.

The water conveyance and supply system would be designed to capture agricultural return flow that could be used for water for dust suppression and aquatic habitat projects. The water conveyance and supply system would consist of a series of outlets from the rivers and drains that supply agricultural return flow water to sedimentation/mixing basins located along the edges of the lakeshore adjacent to the rivers. Water from the Sea would be blended with river water to manage salinity and selenium concentrations (where applicable) in sedimentation/mixing basins, and the resulting brackish water would be used for the habitat projects. Water infrastructure and conveyance needed to supply water to projects would in some cases be placed outside the 2003 Sea elevation if groundwater wells or a water source was needed from another location. The sedimentation/mixing basins would also provide fish and bird habitat.

Water used for water-reliant dust suppression projects would be provided from agricultural return flow through appropriate water use agreements and water rights processes. Some projects that are too far from rivers and drains to effectively use water from those sources may be supplied by other surface water sources or by drilling new groundwater wells.

The conveyance and supply system would consist of a series of channels or pipelines that would distribute water from the sedimentation/mixing basins to the various habitat and water-reliant dust suppression projects. The sedimentation/mixing basins likely would be constructed at the highest ground elevation on the exposed lakebed as is practical to facilitate gravity delivery of water through the conveyance and supply system to the habitat and dust suppression projects. Associated power supply and infrastructure would be designed and installed to support this system. The SSMP team would coordinate with IID, Imperial County, geothermal developers, the BLM, SBSSNWR, and others to ensure that access corridors are not blocked.

3.13 LAND ACCESS AND OWNERSHIP

The Proposed Project and alternatives would be located on land primarily owned by IID, land managed by Reclamation, and land held in trust by the Bureau of Indian Affairs for the Torres Martinez Tribe (Table 3-6 and Figure 3-9). Other landowners may include the State of California, USFWS, BLM and private landholders. Right-of-way, access agreements, or special use permits would be required to locate Proposed Project facilities on federal lands or to use federal and Tribal lands for access or storage of construction materials. Lands that are partially or entirely owned by local agencies, state agencies, or private landowners would require separate access agreements for the project’s duration.

An agreement between the State and landowner would be executed prior to construction of any project elements or facilities within the project area. Other project facilities, such as pump stations, pipelines, or access roads may be located on state, BLM, Reclamation, USFWS (refuge land), tribal, IID, public rights-of-way, or private land. Access roads would be needed for construction vehicles to move from the public right-of-way to any future construction sites around the Sea. The access agreement would be structured so as not to preclude continued use of the property by the landowner. Under the agreement, the land that would be temporarily disturbed during construction would be restored when construction is complete, except at the sites of features, such as vegetation, ponds, pump stations, diversion works, and pipeline access manholes. The Proposed Project and alternative areas overlap the SBSSNWR. Portions of the refuge are located on land owned by USFWS and others are leased/administered by USFWS from other agencies/entities that own the land. The following acreage totals are for overlap of alternatives with the SBSSNWR: Proposed Project (2,457 acres), Alternative 1 (955 acres), Alternative 2 (1,477), Alternative 3 (3,609 acres), Alternative 4 (1,431 acres), Alternative 5 (4,549 acres).

Possible conflicts exist between the Proposed Project and future developments including for geothermal and lithium. The opportunity areas east of the New River are located in the Salton Sea Known Geothermal Resource Area (KGRA). The California Energy Commission (CEC) has convened the Lithium Valley Commission, which is charged with reviewing, investigating, and analyzing certain issues and potential incentives regarding lithium extraction and use in California. Modifications to aquatic habitat and dust suppression projects and associated environmental permitting to accommodate future projects including geothermal and lithium development would be the responsibility of the geothermal and lithium developers. Therefore, an analysis of such development is outside the scope of this assessment.

3.14 PUBLIC USE ACTIVITIES

The purpose of the Proposed Project is to create projects that provide wildlife habitat and suppress dust (see Section 2.0, Purpose and Need). Some public use activities would be prioritized to the extent they are compatible with the purpose and need of the Proposed Project and with the management of the dust suppression areas and aquatic habitat ponds. Such activities, if determined to be compatible, may include picnicking, hiking, birdwatching, non-powered watercraft use, and hunting.

Public access and recreational activities would be periodically reviewed for compatibility with goals and objectives. Compatible land uses, including public access, would be determined through individual agency review. However, individual projects may require a management plan that may require that certain areas be closed to public access to avoid effects to wildlife, habitat, or aquatic resources either seasonally or year-round. Fish would not be intentionally stocked for the purpose of providing angling opportunities. Nevertheless, such opportunities may be provided at the aquatic habitat ponds, in particular for tilapia. Fish populations would be monitored as a metric of the Proposed Project’s success. If populations become well established and appear to provide fish in excess of what birds are consuming, angling could potentially be allowed. Waterfowl hunting may be allowed, consistent with the protection of other avian resources and public use activities.

Table 3-6 Land Ownership Acreages by Alternative

		Proposed Project[1]	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Tribal Lands	**Tribal Trust Lands**	1,934	1,519	1,863	1,361	1,046	1,934
Federal Lands	**United States Bureau of Land Management**	1,876	1,320	1,656	1,197	1,747	2,129
	United States Bureau of Reclamation	5,923	3,698	1,432	658	4,266	6,479
	United States Fish and Wildlife Service (SBSSNWR)[2]	1,567	523	653	3,104	715	3,653
State Lands	**State Lands**	44	42	169	129	76	66
	State Lands - Undefined - Riverside Parcels	22	22	22	22	0	22
	State Park	13	149	13	13	0	134
Local / Regional	**Imperial Irrigation District**	25,082	16,423	17,491	17,262	15,185	30,630
	Coachella Valley Water District	939	633	889	633	436	939
County / Private	**Imperial County - Individual, Commercial**	2,195	1,174	1,171	1,071	1,819	2,309
	Riverside County - Individual, Commercial	367	142	289	67	396	367
Unmapped	**Unmapped (Open Water)**	41	45	43	174	0	41
	Unmapped (No Parcel Data)	0	0	0	0	3	0
	Total Acres	**40,004**	**25,690**	**25,690**	**25,691**	**25,690**	**48,704**

[1] The Proposed Project footprint includes a larger footprint where the 14,900 acres of dust suppression projects could be located. Therefore, the total acres included in Table 3-6 adds up to approximately 40,000 acres.

[2] Portions of the refuge are located on land owned by USFWS and others are leased/administered by USFWS from other agencies/entities. Therefore, the land ownership acreage totals here are not the same as the total overlap of each alternative with the SBSSNWR, which are as follows: Proposed Project (2,457 acres), Alternative 1 (955 acres), Alternative 2 (1,477), Alternative 3 (3,609 acres), Alternative 4 (1,431 acres), Alternative 5 (4,549 acres).

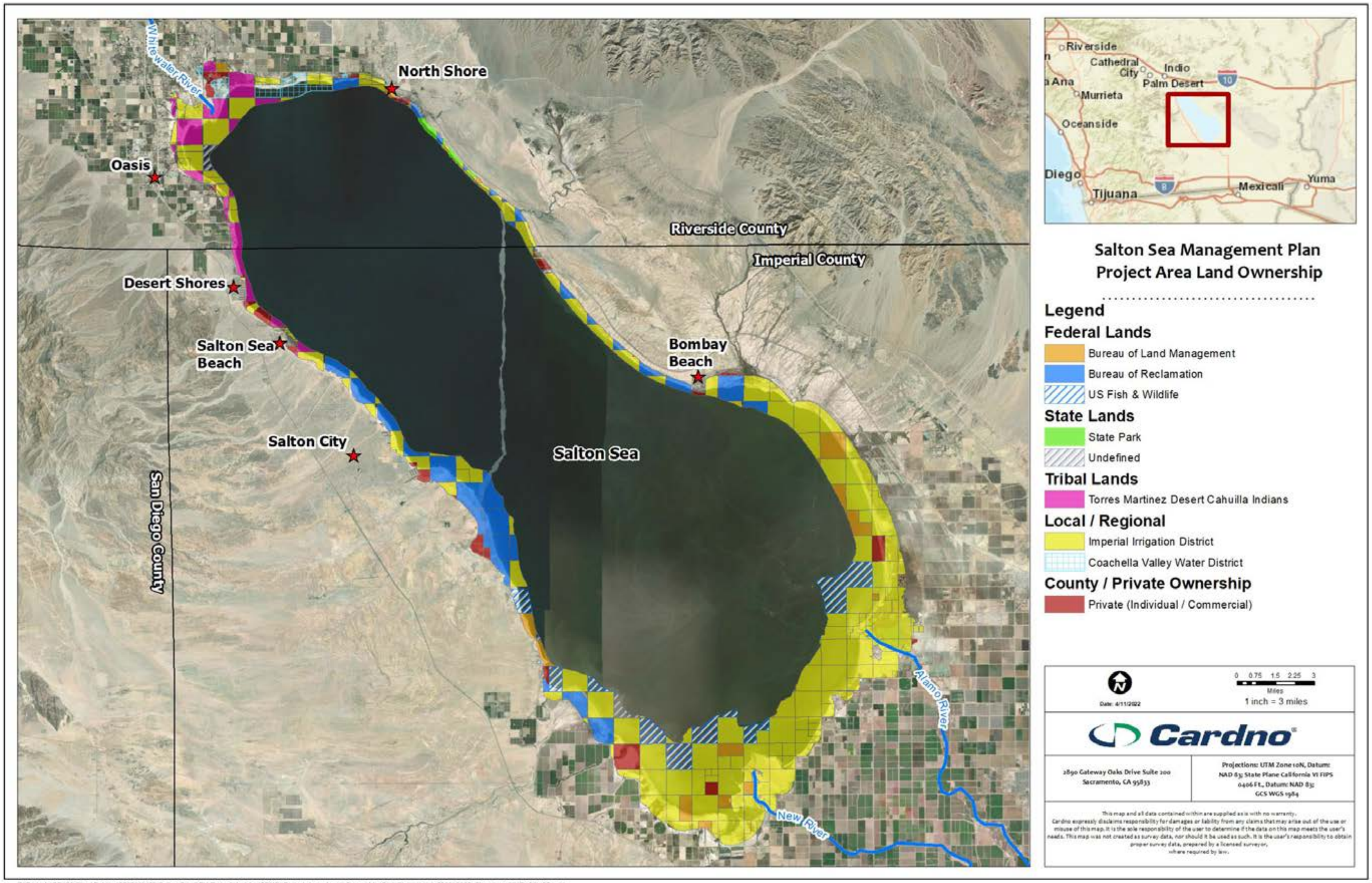


Figure 3-9 Project Area Land Ownership – 2003 to 2028 Shoreline

3.15 OPERATIONS AND MAINTENANCE

Several permanent employees would be required to manage the habitat and dust suppression projects. The final operation of projects would be determined on a project-by-project basis, incorporating adaptive management and lessons learned from continuing operations of projects. The differing operational needs of aquatic habitat and dust suppression projects are described below.

Aquatic habitat and restoration projects: The main water parameters subject to change include salinity, residence time, and depth. They can be controlled by changing the amount and salinity of water delivered in varying ratios to the project ponds, the flow-through outflow to the Sea from individual ponds, and the total storage in the ponds. Operational targets would be determined on an individual project basis, but the preliminary operational target range is:

> Salinity: Typical range of 20 to 40 ppt, occasionally up to 50 ppt;

> Residence time: 2 to 32 weeks; and

> Depth: 4 to 6 feet along the exterior berm.

The biotic community (e.g., algae, invertebrates, fish, and birds) would respond in varying ways to these operations and other environmental conditions. These operations, ecological responses to the operations, and other key indicators or events at the ponds (e.g., water temperature, salinity, bird feeding or reproduction success, fish populations) would be monitored. Any necessary adjustments to operations would be made through a monitoring and adaptive management program similar to the plan that CDFW/DWR is developing for the SCH Project.

Fish and bird die-offs could occur periodically during pond operations; if dead birds were detected, they would be removed by CDFW staff, if feasible, in keeping with current practices at the Sea.

Dust suppression and restoration projects: Routine operations of these projects are mostly passive, except for areas that require pumped groundwater to establish vegetation. However, an important component of the operations for these projects is the need for air emissions monitoring to ensure that the projects are meeting their designed emissivity reduction targets (Section 3.15.1). Although day-to-day operations are not needed for these projects, they may require maintenance on an annual cycle to ensure performance (Section 3.15.2).

3.15.1 Monitoring and Adaptive Management

An adaptive management plan would be developed and implemented to guide evaluation using specific benchmarks and metrics, improve the management of newly created habitat and areas where dust suppression is ongoing, and inform future habitat restoration and dust suppression activities. New scientific information including the adaptability of wildlife species or climate change effects on the project would be used along with information from prior projects to inform future project design to adaptively manage aquatic habitat and dust suppression projects to maximize benefits. The adaptive management plan would provide a flexible decision-making framework for ongoing knowledge acquisition, monitoring, and evaluation to continuously improve management planning and project implementation to achieve specified objectives and to schedule maintenance and trigger emergency repairs. The information obtained would be used to measure project effectiveness, refine management of project areas, reduce uncertainties about key issues, and implement subsequent project stages at the Salton Sea.

Different monitoring and adaptive management needs are associated with the different project types: aquatic habitat and restoration projects and dust suppression and restoration projects and summarized below.

Monitoring Aquatic Habitat Restoration Projects: Each aquatic habitat pond or set of ponds would be operated and monitored to evaluate project effectiveness and address key uncertainties about habitat function. A monitoring program would be implemented to collect data necessary to operate the ponds (e.g., flow and salinity), evaluate their effectiveness (e.g., water quality parameters such as dissolved oxygen and temperature, presence and abundance of fish and bird species), and assess status of threats (e.g., selenium concentration in water, sediment, and bird eggs). The frequency of data collection and evaluation would be guided by the purpose and need for monitoring. For example, operational triggers such as water supply flow rates would be monitored daily, while status of target resources would be monitored seasonally or annually. An overall data review would be conducted annually to evaluate project status and performance. A decision-making framework would be established to provide recommendations to project managers for maintaining or adjusting operations.

Monitoring Dust Suppression and Restoration Projects: Monitoring is required to evaluate performance effectiveness of dust suppression projects to meet air quality regulations. In most areas, strong winds capable of generating saltation activity and fugitive dust suspension in the air may occur from a predominant direction, and mass transport occurs along that direction. To determine the magnitude of the mass transport and effectiveness of control areas, the saltation activity and dust concentration upwind and downwind of the project areas must be measured. For this monitoring, required measurements would include: (1) saltation activity (frequency and magnitude), (2) ambient concentrations of airborne particulate matter ≤10 micrometers (PM_{10}), and (3) meteorology (i.e., wind speed, wind direction, relative humidity, temperature, barometric pressure, precipitation, and soil moisture). A 360-degree camera would also be used to collect a time series of high-resolution panoramic photos to aid in dust source area identification. Light Detection and Ranging (also known as LIDAR) from an airborne platform could be carried out on a regular basis to inform adaptive management planning and project effectiveness over time as well as provide data on elevational change in the control areas. In addition, for projects that contain ponded water, measurements would be made for concentrations of potential toxic substances such as selenium in water, sediment, and bird eggs.

3.15.2 Maintenance and Emergency Repairs

Examples of maintenance and repair needs associated with the different project types are summarized below.

Aquatic Habitat Restoration Projects: Ongoing maintenance would be an integral part of Proposed Project operations. Activities would include maintaining the sedimentation/mixing basins, interior and exterior berms, habitat features, protective riprap, pumping plants, diversion(s), and public use facilities. Sedimentation basins would be cleared of sediment by methods including excavation or dredging, retrenching, and/or periodic drainage. Material excavated from sedimentation basin(s) would be used to construct habitat features or added to the berms if the sediment is of appropriate quality. Berms would be regularly inspected for seepage, cracking, erosion, and extensive burrowing. Vegetation may also establish and require removal in ditches that connect drains to collect water used for projects. Repairs, including adding riprap, filling cracks, and other minor repairs, would be conducted as necessary. The water conveyance and supply system would be inspected, and maintenance would be conducted as needed. Habitat features would be regularly inspected and features including swales, holes, and habitat islands would be repaired as needed. These features would be adaptively managed to meet project goals. The diversion(s) would be maintained to keep the diversion facilities free of sediment and also monitor the riverbed elevation to be aware of any down cutting that may occur as the Sea's water level drops. The saline pumping facilities would be maintained to reduce fouling caused by the hypersaline water flowing through the pumps and would be moved as needed as the Sea continues to recede. In addition, maintenance to any public-serving facilities, such as parking lots, restrooms, and signage, would be conducted as needed.

It is anticipated that pipes and pumps would need to be maintained. Typically, clogging of pipes would be reduced by periodic cleaning and flushing of the pipes. However, if the buildup of organisms and other material in pipelines were to become excessive, pipe replacement may be required. Draining the ponds would not be a routine maintenance activity but may be required if a berm were damaged or were to experience another type of emergency situation as determined by the operator. Monitoring as part of the adaptive management plan would identify any invasive plant species that colonized the ponds, and eradication or control methods would be implemented as needed.

Dust Suppression and Restoration Projects. When monitoring data, described in Section 3.15.1, show that the desired dust control performance level is not occurring at a study site, corrective actions would be taken. Such actions would involve ensuring that the surface features created are in a condition as designed, such as features created through tillage, the status of vegetation established, the collection of dust over a gravel blanket, and burial of sand fences. Depending on the dust control methodology applied, repairs or maintenance would be made consistent with an adaptive management program to reduce emissivity as much as feasible.

3.16 BEST MANAGEMENT PRACTICES

Best management practices would be used to minimize effects on the environment during construction, operations, and maintenance. All applicable permits from federal, State, and local agencies would be applied for and any conditions associated with the permits would be implemented. BMPs for all parts of project construction, operations, and maintenance would be designed to meet regulatory standards.

4.0 AFFECTED ENVIRONMENT

This section provides an overview of the existing environmental conditions within the Planning Area, that the Corps determined are relevant to the Proposed Project and alternatives being considered.

4.1 AESTHETIC AND VISUAL RESOURCES (SCENIC BEAUTY)

This section describes the existing visual and aesthetic resources within the study area at the Sea. Visual and aesthetic resources include scenic beauty which is defined as viewer's positive perceived value of special, unique and memorable physical elements of a landscape. As discussed in the following sections, the aesthetic environment of the Sea is influenced by a number of factors, such as topography, vegetation, land use, human-made alterations, structures, and lake elevation.

4.1.1 Study Area

This study area is defined as the geographical area where the majority of potential effects are expected. The study area includes the locations from which views of the proposed project sites would be possible. The BLM uses key observation points (KOP) which are defined as one or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing. For the SSMP project, KOPs would include Hwy 86, Hwy 111, residential areas, State Parks, and other accessible areas. Although the Salton Sea can be viewed from hills and mountains farther away, the Proposed Project would be viewed by most people from the lands immediately adjacent to or within the study area. Locales within the study area that have views of the Sea are considered to be within the viewshed of the Sea (DWR and CDFG 2007). The area of potential effect for visual resources is limited to those areas of the Sea that could be affected by the Project, including the lakebed area that is exposed now or is anticipated to be exposed by 2028, and adjacent upland areas (primarily agricultural and undeveloped desert, but also including the SBSSNWR).

4.1.2 Regulatory Requirements

The State Scenic Highway Program classified two segments near the Sea as eligible routes; however, those routes have not been designated as scenic (Caltrans 2019). The BLM visual resource management classes are assigned through Resource Management Plans (RMPs). The BLM assignment of visual management classes, detailed in Table 4-1, is based on the management decisions made in RMP's, and activities that would result in surface disturbance are required to consider visual values and the effects the project may have on these values. The Desert Renewable Energy Conservation Plan (DRECP) includes Class II and III objectives within the project area. Future BLM management decisions must reflect the value of visual resources.

Table 4-1 Objectives for Visual Resource Classes.

Class Number	Objective
I	To preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	To retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	To provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

4.1.3 Existing Conditions

Prior to the formation of the Salton Sea in 1905, the Salton Sink was a desert landscape that flooded occasionally when the Colorado River overflowed its banks. The Sea constituted a large lake in the desert landscape. Since the Colorado River inundated the area in 1905, the northwest end of the Sea abuts the Coachella Valley, and the southeast end abuts the Imperial Valley. The Sea is a dominant visual feature within much of the basin. The water surface elevation of the Sea has fluctuated over the past 100 years. In the 1980s, the water surface elevation rose and submerged trees, roads, utility poles, buildings, and other structures that were located along the previous shoreline. These features continue to be submerged and influence the visual environment in many parts of the Sea.

The gently sloping lands on the northeastern and western sides of the Sea provide generally unobstructed views and include most of the transportation routes, communities, and recreation facilities from which people can view the water. Lands near the northwest and southeast shorelines of the Sea are irrigated agriculture lands. Fields of row crops contrast in appearance (color and texture) with native low desert scrub vegetation and wetland vegetation along the shoreline.

Developed areas such as residential communities, small commercial areas, and recreation facilities are scattered along the edges of the Sea, including North Shore, Desert Shores, Salton City, Salton Sea Beach, and Bombay Beach. These communities have a residential/suburban visual character. Publicly owned lands that provide access to the Sea include the Salton Sea State Recreation Area, located along 15 miles of the northeastern shoreline; SBSSNWR at the southern end; Imperial Wildlife Area Wister Unit (Imperial Wildlife Area); Red Hill Marina; and additional boat launches associated with nearby communities.

Because of the large numbers and diversity, birds are an important aesthetic/visual element at the Sea. Many birds congregate at or near the SBSSNWR, river deltas, and at the Imperial Wildlife Area (DWR and CDFG 2007).

In recent years declining inflows have resulted in more exposed lakebed along the shoreline. Widths of exposed shoreline vary based on slope. At the south end of the Sea larger areas of exposed lakebed have formed, while exposed areas along the eastern shoreline are narrower. The exposed lakebed appears unvegetated with a white surface. Wind erodes dust from the exposed lakebed leading to reduced visibility and air quality concerns.

4.2 LAND

This section describes existing land use within the study area and identifies the local, state, and federal regulations applicable to land use for the proposed SSMP Project.

4.2.1 Study Area

The study area is in Imperial and Riverside counties within the footprint of the proposed SSMP Project and within a 0.5-mile buffer around potential project areas.

4.2.2 Regulatory Requirements

Table 4-2 presents the regulatory requirements that are applicable to agricultural resources and land use.

Table 4-2 Regulatory Requirements for Agricultural Resources and Land Use

Domain	Regulation	Agency	Regulation Summary
Agricultural Resources			
Federal	Federal Farmland Protection Policy Act (7 USC section 4201 et seq.)		This Act applies to projects that are sponsored or financed in whole or in part by the federal government. It does not apply to projects subject to federal permitting. The proposed SSMP Project is subject to the Act because it would be partially funded by the federal government (NRCS).
State	California Conservation Act of 1965 (Williamson Act) and Assembly Bill 2530		The California Conservation Act of 1965 and Assembly Bill 2530 establish principles of compatibility for uses allowed on lands under contract. Generally, uses are compatible if they will not significantly compromise the long-term productive agricultural capability, displace or impair current or reasonably foreseeable agricultural operations, or result in removal of adjacent contracted land from agricultural open space uses. Imperial County voted not to renew Williamson Act contracts and not to accept new contracts, meaning that lands currently under Williamson Act contracts have begun the nonrenewal process and will lose their Williamson Act status by January 1, 2021 (Corps and CNRA 2013).

Domain	Regulation	Agency	Regulation Summary
State	Important Farmlands	Department of Conservation	The Farming Mapping and Monitoring Program is a state program that produces maps and statistical data used for analyzing effects on California's agricultural resources. Program categories include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance.
Local	General Plan	Imperial County; Riverside County	The Agricultural Element of the Imperial County General Plan (County of Imperial 2015a) and the Land Use Element of the Riverside County General Plan (County of Riverside 2020a) serve as the primary policy statements for implementing development policies for agricultural land use in Imperial and Riverside counties. Goals and objectives associated with the preservation of agricultural land and maximizing agricultural productivity are included.
Land Use			
Federal	Federal Land Policy and Management Act	Bureau of Land Management (BLM)	The Federal Land Policy and Management Act is a United States federal law that governs the way in which the public lands administered by the Bureau of Land Management are managed. The law was enacted in 1976 by the 94th Congress and is found in the United States Code under Title 43.
Federal	Resource Management Plans	BLM	The BLM California Desert District administers approximately 11 million acres of public lands in the California Desert Conservation Area. The California Desert Conservation Area includes those public lands within Imperial and Riverside counties. Land use decisions are governed by the California Desert Conservation Area (CDCA) Plan and the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) to the CDCA Plan. SSMP projects on BLM-administered lands must comply with the DRECP's applicable Conservation and Management Actions (CMAs) and land use allocations. See Table 4-3 below.
Federal	Comprehensive Conservation Plan/ Compatibility	USFWS	The National Wildlife Refuge System (NWRS) provides more than 150 million acres of habitat for native plants, fish, and wildlife. Refuges are guided by the purposes of the individual refuge, the Refuge's Comprehensive Conservation Plan, and the mission and goals of the NWRS. Non-refuge related activities may be allowed with a special use permit, if the proposed activity is determined to be compatible with Refuge purposes and the mission of the NWRS.
State	State programs/regulati ons	California State Lands Commission	The California State Lands Commission manages State-owned lands that underlie California's navigable and tidal waterways. The State holds these lands, known as "sovereign lands," for the benefit of all the people of the state, subject to the Public Trust for water-related commerce, navigation, fisheries,

Domain	Regulation	Agency	Regulation Summary
			recreation, open space and other recognized Public Trust uses.”
Local	Regional Comprehensive Plan	Southern California Association of Governments (SCAG)	SCAG functions as the Metropolitan Planning Organization for six counties, including Imperial and Riverside counties. SCAG adopted the Regional Comprehensive Plan (RCP) in 2008 to provide a regional framework for decisions regarding growth in Southern California. The RCP identifies regional issues of importance and outlines goals and policies applicable to regional development. The RCP identifies the Salton Sea Basin as an area of concern for air quality and one of the waterbodies in the region where water quality needs to be protected. Use of the RCP in local planning decisions is voluntary (SCAG 2008).
Local	Land Use Ordinance, Division 5, Zoning Areas Established	Imperial County	Division 5, *Zoning Areas Established*, of the Land Use Ordinance was adopted November 24, 1998, and last amended in 2019 (County of Imperial 2019). The purposes of this ordinance are to protect the public health, safety, and welfare; provide for the orderly development, classification, regulation and, where applicable, segregation of land uses; regulate the height and size of buildings; regulate the area of yards and other open spaces around buildings; regulate the density of population; and to provide the economic and social advantages resulting from orderly planned land uses and resources. Every lot or parcel of land within the county’s unincorporated area is classified in one of the base zoning areas. See Table 4-3 below.
Local	General Plan	Imperial County	The Land Use Element of the General Plan is the primary policy statement for implementing development policies in the county’s unincorporated portions. The goals and policies in the Land Use Element promote economic prominence of agricultural enterprises, determine appropriate urban development centers and encourage their economic development, protect the existing character of rural and recreational communities and areas, and preserve the unique natural and cultural resources of the Imperial Valley. The Land Use Element identifies the Salton Sea as a potential additional recreational site. The General Plan includes provisions to maintain the Salton Sea for the disposal of agricultural and natural drainage, fish and wildlife habitat, and water-based recreation. The Land Use Plan also includes a goal to maintain the salinity in the Salton Sea at levels which support fish and wildlife habitat (County of Imperial 2015b).

Domain	Regulation	Agency	Regulation Summary
Local	Riverside County General Plan policies	Riverside County	Eastern Coachella Valley Area Plan was developed to maintain the rural, agricultural, and open space character of the Eastern Coachella Valley by directing growth to existing developed areas and areas where growth is desirable to support the local economy. It identifies the Sea as a unique feature. The land uses in the Eastern Coachella Valley Area Plan within the project area are shown in Table 4-4 below.
Local	Land Use, Zoning and Development Plan (LZDP)	The Torres Martinez Desert Cahuilla Indians	The Torres Martinez Desert Cahuilla Indians adopted an LZDP in 1999 to guide development of Tribal lands. The LZDP gives preference to those goals, policies and procedures that will protect and preserve lands, culture, and traditions of the tribe. The LZDP envisions proactive comprehensive planning that will ensure the orderly transition of Tribal lands for residential, commercial, industrial, agricultural, aquaculture, recreation and open space, cultural, historic, traditional, and development use. The Torres Martinez Desert Cahuilla Indians' LZDP is the only local land use plan that includes designations for lands currently inundated by the Sea (DWR and CDFG 2007).
Local	Title 9 – Land Use Code Division 20 - Surface Mining and Reclamation	Imperial County	Imperial County Code of Ordinances states that production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment. The purpose of this ordinance is to ensure continued availability of important mineral resources, while regulating surface mining operations as required by California's Surface Mining and Reclamation Act of 1975.

BLM Land Use Designation

The BLM's Desert Renewable Energy Conservation Plan (DRECP) is a planning document that was developed by the California Energy Commission, CDFW, BLM, and USFWS to streamline energy development, protect ecosystems, and provide outdoor recreation on public lands in Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego counties (BLM 2016). DRECP land use allocations within the Proposed Project area in Imperial and Riverside counties are included in Table 4-3.

Table 4-3 DRECP Land Use Allocations

Land Use Allocation	Description
Development Focus Areas (DFAs)	DFAs represent areas within which the activities associated with solar, wind, and geothermal development, operation, and decommissioning will be allowed, streamlined and incentivized. Transmission development and operation will occur in previously designated corridors and other identified areas, both inside and outside the DFA's.

Land Use Allocation	Description
Variance Process Lands (VPLs)	VPLs consist of variance lands from the Western Solar Plan that have undergone further screening and additional lands with moderate-to-low known ecological value and ambiguous known value for renewable energy. These lands are open for solar, wind, and geothermal energy applications under the BLM LUPA. However, all solar, wind, and geothermal energy development applications have to follow a variance process before the BLM would determine whether to continue with processing them. Applications in VPLs would not receive the incentives that apply to DFAs.
General Public Lands	General Public Lands are BLM-administered lands that do not have a specific land allocation or designation, such as DFA, ACEC, SRMA, etc. These areas are open to renewable energy applications but do not benefit from the renewable energy streamlining or incentives.
Areas of Critical Environmental Concern (ACECs)	ACECs are BLM-administered lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems of processes, or to protect life and safety from natural hazards. The ACECs are part of the LUPA conservation land allocations. Defined in Section 103(a) of the Federal Land Policy and Management Act, 1976, as amended, and regulation 43 CFR 160.10-5(a).

County Land Use Ordinance/Land Use Designation

Zones/land use designations classifying land that could be included in the proposed SSMP Project in Imperial and Riverside counties are included in Tables 4-4 and 4-5.

Table 4-4 Imperial County Zoning Areas

Zone	Description
S-1 (Open Space/ Recreational) Zone	The purpose of the S-1 Zone is to designate areas that recognize the unique Open Space and Recreational character of Imperial County including the deserts, mountains, and waterfront areas. Primarily, the S-1 Zone is characterized by low-intensity human utilization and small-scale recreation-related uses.
S-2 (Open Space/Preservation) Zone	The primary intent of the S-2 Zone is to preserve the cultural, biological, and open space areas that are rich and natural as well as cultural resources. The S-2 Zone is dominated by native desert habitat and stark topographic features. While certain uses are allowed within the S-2 Zone, such uses must be compatible with the intent of the Open Space and Conservation Element of the General Plan.
R-1 (Low Density Residential) Zone	The purpose of the R-1 Zone is to designate areas that are and will be suitable for traditional smaller lot(s) with single-family homes and related compatible or accessory uses.
A-2 (General Agriculture) Zone	The purpose of the A-2 Zone is to designate areas that are suitable and intended primarily for agricultural uses (limited) and agriculture-related compatible uses. The minimum lot size is 40 acres.
A-3 (Heavy Agriculture) Zone	The purpose of the A-3 Zone is to designate areas that are suitable for agricultural land uses, prevent the encroachment of incompatible uses onto and within agricultural lands, and prohibit the premature conversion of such

Zone	Description
	lands to nonagricultural uses. It is a land use that is to promote the heaviest of agricultural uses in the county's most suitable land areas. Uses in the A-3 Zone are limited primarily to agriculture-related uses and agricultural activities that are compatible with agricultural uses.
C-2 (Medium Commercial) Zone	The purpose of the C-2 Zone is to designate areas for a wide range of retail, commercial activities, including shopping centers, and other medium to high density commercial uses.
M-2 (Medium Industrial) Zone	The purpose of the M-2 Zone is to designate areas for wholesale commercial, storage, trucking, assembly type manufacturing, general manufacturing, research and development, medium-intensity fabrication, and other similar medium-intensity processing facilities. The processing or fabrication within any of these facilities is to be limited to activities conducted either entirely within a building or within securely fenced (or obscured fencing) areas. Provided further that such facilities do not omit fumes, odor, dust, smoke, or gas beyond the confines of the property line within which their activity occurs or produce significant levels of noise or vibration beyond the perimeter of the site.
REG Renewable Energy/ Geothermal Overlay Zoning Area	Overlay zoning area boundaries are established to further regulate the use of land. These areas provide opportunities for geothermal energy generation. Imperial County regulates the use of land for geothermal purposes (exploratory, test, and production projects) through zoning and conditional use permits.
G/S (Government/Special Public) Zone	The purpose of the G/S zone is to designate areas that allow for the construction, development and operation of governmental facilities and special public facilities, primarily this zone allows for all types of government owned and/or government operated facilities, be they office or other uses.

Sources: County of Imperial 2019, 2015b

Table 4-5 Riverside County Eastern Coachella Valley Area Plan Land Use Designations in the Proposed SSMP Project Area

Foundation Component	Land Use Designation	Description
Agriculture	Agriculture (AG)	Agricultural land including row crops, groves, nurseries, dairies, poultry farms, processing plants, and other related uses. One single-family residence allowed per 10 acres, except as otherwise specified by a policy or an overlay, with a 10-acre minimum.
Open Space	Conservation Habitat (CH)	Applies to public and private lands conserved and managed in accordance with adopted Multiple Species Habitat and other Conservation Plans and in accordance with related Riverside County policies.
	Water (W)	Includes bodies of water and natural or artificial drainage corridors. Extraction of mineral resources subject to SMP may be permissible provided that flooding hazards are addressed and long-term habitat and riparian values are maintained.

Foundation Component	Land Use Designation	Description
Community Development	Medium Density Residential (MDR)	Single-family detached and attached residences with a density range of 2 to 5 dwelling units per acre. Limited agriculture and animal keeping is permitted, however, intensive animal keeping is discouraged. Lot sizes range from 5,500 to 20,000 square feet, typical 7,200-square-foot lots allowed.
	Mixed-use Area	This designation is applied to areas outside of Community Centers. The intent of the designation is not to identify a particular mixture or intensity of land uses, but to designate areas where a mixture of residential, commercial, office, entertainment, educational, and/or recreational uses, or other uses is planned.
Miscellaneous	Tribal Lands	Individual tribes retain land use jurisdiction over land within reservation boundaries.

Sources: County of Riverside 2020b

4.2.3 Existing Conditions

4.2.3.1 Agricultural Resources

Much of the study area within Imperial and Riverside counties around the Sea is used for agricultural purposes. Lands designated as Important Farmlands and Prime Farmlands in Imperial and Riverside counties are summarized in Table 4-6 and Figure 4-1.

Imperial County covers an area of 4,597 square miles, or 2,942,080 acres (County of Imperial 2015a). Approximately 16 percent of the land is irrigated for agricultural purposes, most notably the central area known as Imperial Valley, which makes up 458,411 acres of the total agricultural production areas in Imperial County, which is 480,987 acres. Agriculture remains one of the most valuable industries in Imperial County, with gross production for 2020 valued at $2,026,427,000 (Table 4-7). Cattle are the county's top commodity, followed by alfalfa, leaf lettuce, and sweet corn. Other important crops include Bermuda grass, romaine lettuce, carrots, sugar beets, head lettuce, and broccoli (County of Imperial 2021). Colorado River water is used to irrigate crops and is provided by the IID. Water availability plays a critical role for agricultural resources in Imperial County. Irrigation allows farmers to use highly productive soils that might otherwise lie fallow. Although salinity, extreme temperatures, and other environmental factors affect some crops, the existing water delivery system overcomes the lack of precipitation in this otherwise arid region that would otherwise significantly limit intensive crop production (County of Imperial 2015a).

Agriculture is one of Riverside County's most important land uses and agricultural production is one of the largest industries in terms of dollar value in the county, competing successfully in the global economy. Agricultural uses provide employment opportunities for many residents of Riverside County. Approximately 184,835 acres of unincorporated Riverside County are used for agriculture (County of Riverside 2020a). The most recent crop report for Riverside County stated a total gross valuation of $1,252,730,071 for 2012 (Table 4-8). Nursery stock is the top agricultural product valuation for Riverside, followed by milk, table grapes, hay, and eggs. Other important crops by value include bell peppers, lemons, dates, avocados, cotton, and grapefruit (County of Riverside 2012).

California Land Conservation (Williamson) Act Lands

Imperial County no longer participates in the Williamson Act program, and no lands are under Williamson Act contracts (DOC 2015). Imperial County chose to exit the program, simultaneously nonrenewing contracts that covered 117,246 acres in a 10-year wind down period (DOC 2013). As such, Imperial County was not included as a reporting jurisdiction in the most recent available Williamson Act Survey Report, and no acres for this county are included in program enrollment (DOC 2019).

Riverside County is included as a reporting jurisdiction for both 2016 and 2017, and the total acres included in the program for the South Coast Desert Region in 2016, which Riverside County is part of, was 692,180 acres (DOC 2019). The 2016 report is the most recent available report with acreages broken down by county, and it states that Riverside County had 47,910 acres of prime land and 6,089 acres of nonprime land enrolled in the Land Conservation Act in 2015 (DOC 2016). No Williamson Act Lands are located within the footprint of the Project (County of Riverside Information Technology GIS n.d.).

Table 4-6 Distribution of Important Farmlands and Prime Farmlands in 2018

Land Use Categories	Acres in Imperial County	Acres in Riverside County
Prime Farmland	189,157	116,919
Farmland of Statewide Importance	291,584	43,606
Unique Farmland	1,905	32,119
Farmland of Local Importance	39,708	221,190
TOTAL	**522,353**	**413,834**

Source: DOC 2021a

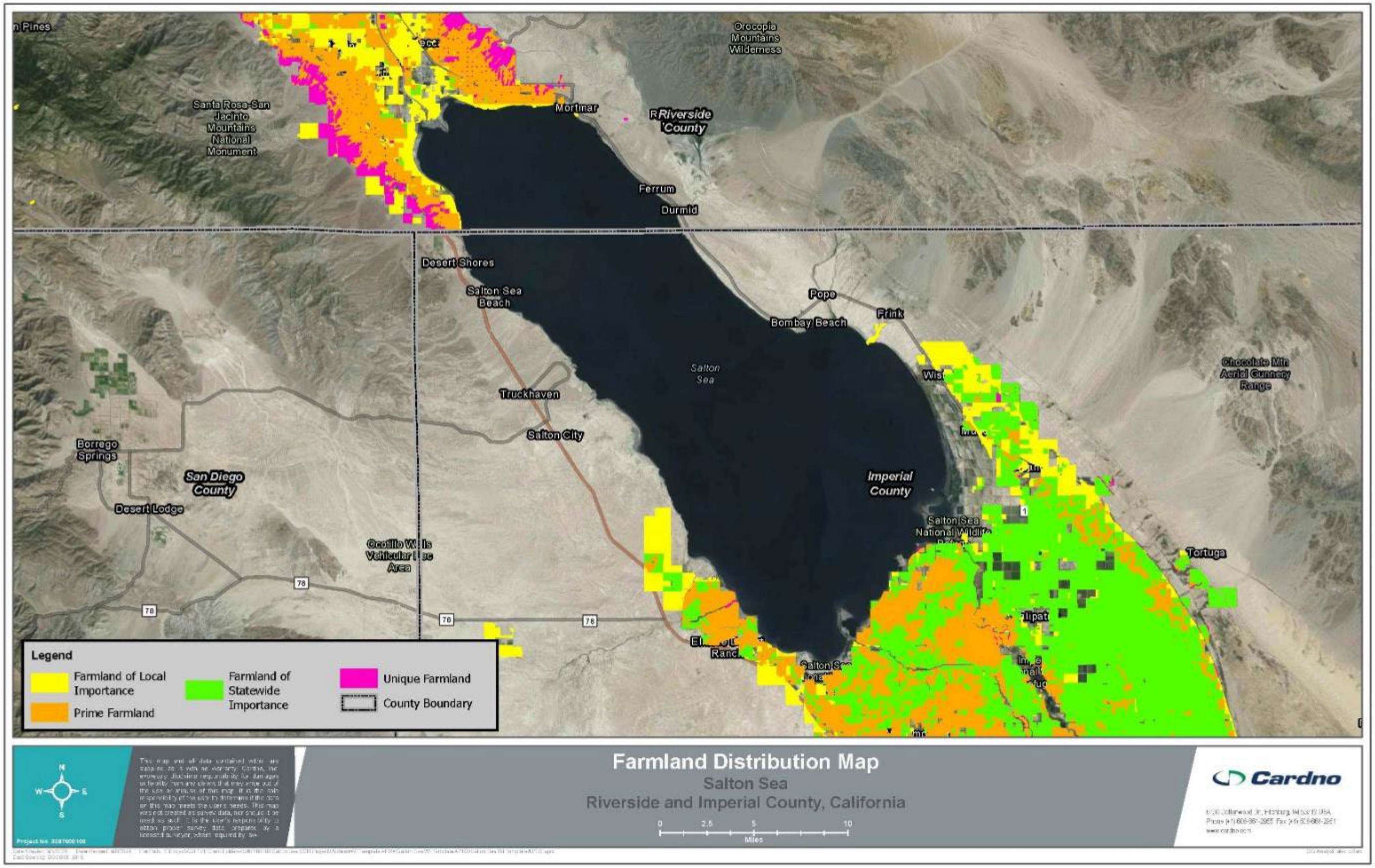


Figure 4-1 Farmland Distribution Map

Table 4-7 2020 Production Summary for Imperial County

Category	Harvested Acres		Changes in Harvested Acres	Gross Value		Changes in Gross Value
	2019	2020		2019	2020	
Livestock	--	--	--	$522,309,000	$490,633,000	-6.06%
Field Crops	344,435	331,173	-3.85%	$498,165,000	$444,693,000	-10.73%
Vegetable & Melon crops	120,415	104,235	-13.44%	$799,424,000	$895,978,000	12.08%
Fruit & Nut crops	9,606	10,844	12.89%	$75,636,000	$94,574,000	25.04%
Seed & Nursery Products	53,404	48,427	-9.32%	$113,690,000	$95,330,000	-16.15%
Apiary Products	--	--	--	$6,619,000	$5,219,000	-21.15%
Total	**527,860**	**494,679**	**-6.29%**	**$2,015,843,000**	**$2,026,427,000**	**0.53%**

Source: County of Imperial 2021

Table 4-8 Riverside County Acreage Statistics and Total Valuation by Type

Crop	Acreage 2011	Acreage 2012	Total Valuation 2011	Total Valuation 2012
Citrus	16,808	17,498	119,942,513	125,684,390
Tree and Vine	28,401	26,662	232,649,262	217,073,170
Vegetable, Melons, Misc.	37,692	40,808	278,628,295	286,172,478
Field and Seed	119,703	131,160	149,198,052	147,185,665
Nursery	7,106	6,661	200,154,964	190,878,100
Apiculture	--	--	4,844,400	4,983,400
Aquaculture	--	--	4,808,250	4,204,750
Livestock & Poultry	--	--	292,030,380	276,548,118
Total	**209,710**	**222,789**	**1,282,256,116**	**1,252,730,071**

Source: County of Riverside 2012

4.2.3.2 Land Use

Primary land uses within the proposed SSMP Project area include agriculture, energy production, recreation, wildlife management areas, and a National Wildlife Refuge. Calipatria, Westmorland, Niland, and Mecca are the closest urban areas to the proposed SSMP Project area. Tables 4-9 and 4-10 show land designations by acreage throughout Imperial and Riverside counties, respectively.

Areas around the Sea are owned by various federal, state, Tribal, and private landowners. All lands managed by Reclamation under and immediately adjacent to the Sea are withdrawn from the public domain for Reclamation project purposes.

The areas that would receive projects are within the Sea elevations (2003–2028) that have become exposed as the Sea recedes. In a few cases, project areas may be located adjacent to and upslope of the 2003 shoreline. Infrastructure including roads, electrical facilities, and water acquisition and conveyance infrastructure may be placed upslope of the 2003 elevation or downslope of the 2028 elevation as needed. The lands have different land ownership as shown in Figure 3-9.

Table 4-9 Imperial County Land Use Distribution

Land Use Type	Acres
Irrigated (Agriculture)	
Imperial Valley	512,163
Bard Valley (Including Reservation)	14,737
Palo Verde Valley	7,428
Total	534,328 (18.2%)
Developed	
Incorporated	9,274
Unincorporated	8,754
Total	18,028 (0.6%)
Salton Sea	211,840 (7.2%)
Desert/Mountains	
Federal	1,459,926
State	37,760
Indian	10,910
Private	669,288
Total	2,177,884 (74.0%)

Source: County of Imperial 2015b

Table 4-10 Unincorporated Riverside County Cumulative Acreage Summary

Land Type	Western County Area Plans Acreage	Eastern County Area Plans Acreage	Total
Agriculture	28,552 (2%)	156,283 (5%)	184,835 (4%)
Rural	251,559 (21%)	39,831 (1%)	291,390 (7%)
Rural Community	64,065 (5%)	4,079 (<1%)	68,144 (2%)
Open Space	659,418 (56%)	2,628,781 (90%)	3,288,199 (80%)
Community Development	103,725 (9%)	61,429 (2%)	164,154 (4%)
Other[1]	79,087 (7%)	30,453 (1%)	109,540 (3%)
Total	1,186,406	2,920,856	4,107,262

Source: County of Riverside 2020a

Notes: [1]Includes Indian Lands and major roadways

Tribal Lands

The Torres Martinez Reservation is located on about 24,000 acres in Riverside and Imperial counties. About 11,800 acres of the reservation are currently inundated in the northern portion of the Sea.

Natural Resource Areas

Sonny Bono Salton Sea National Wildlife Refuge

The SBSSNWR is located on the Salton Sea's southern end about 20 miles north of El Centro in Imperial County. It was established in 1930 as a sanctuary and breeding ground to support migratory birds, particularly waterfowl, and other wildlife. The NWR includes a combination of open water, managed wetlands, and upland areas. The NWR is approximately 37,900 acres, but today, most of that area is submerged beneath the Sea. Various land ownership exists within the NWR—land within the NWR is withdrawn by Reclamation and administered by USFWS, owned by USFWS, owned by IID but leased by USFWS, and leased from the CDFW.

Public uses include waterfowl hunting, wildlife observation, photography, environmental education, interpretation, and research (USFWS 2014a, 2014b, 2020a).

Imperial Wildlife Area

Imperial Wildlife Area is owned by CDFW and is approximately 7,900 acres of salt marshes, freshwater ponds, agriculture grain fields, and desert scrub. Levees and canals form terraces between seasonally flooded ponds and fields, and roads run throughout the area. Abundant waterfowl, including the fully protected Yuma Ridgeways Rail; shorebirds, and the endangered desert pupfish use the area. The Imperial Wildlife Area comprises three units: Wister, Finney-Ramer, and Hazard. Recreational uses in the area include wildlife viewing, fishing, and hunting (CDFW 2020a).

Geothermal Energy Production

The proposed SSMP Project areas in the southeast area of the Sea, including the areas around the Alamo River, are located in the Salton Sea Known Geothermal Resource Area[14] (County of Imperial 2015c) (Figure 3-1). Geothermal production wells tap into water reservoirs thousands of feet beneath the earth's surface, releasing superheated water that drives turbines to generate electricity. Imperial County, through the Planning and Development Services Department, regulates the use of land for geothermal purposes through zoning and conditional use permits. In addition, the BLM has designated certain areas as development focus areas for renewable energy within the Project area. The County Land Use Ordinance includes the Geothermal Overlay Zone, which is applied by ordinance of the Board of Supervisors, following a recommendation by the County Planning Commission. Portions of the Project area are included in a Geothermal Overlay Zone.

A number of energy companies maintain geothermal plants, wells, and other facilities throughout the study area, including several CalEnergy facilities near the Alamo River.

4.3 AIR RESOURCES

4.3.1 Air Quality

Air quality in an area is determined by its topography, meteorology, and existing air pollutant sources. This section identifies the principal regulations applicable to the proposed SSMP Project and the existing conditions of the area.

4.3.1.1 Study Area

The study area lies within the Salton Sea Air Basin.

4.3.1.2 Regulatory Setting

The Clean Air Act (CAA), passed by Congress in 1970, and last amended in 1990, is the law that defines the USEPA's responsibilities for protecting and improving the air quality in the United States. National Ambient Air Quality Standards (NAAQS) were established under the CAA and are promulgated by the USEPA. California adopted its own California Ambient Air Quality Standards (CAAQS), promulgated by the California Air Resources Board (CARB). The CAAQS predate the NAAQS and are as protective as the national standards and often more stringent. The NAAQS and the CAAQS are intended to protect human health and welfare and represent the maximum acceptable concentrations of air pollution. The state and federal Ambient Air Quality Standards (AAQS) are presented in Table 4-11.

[14] An area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary of the Interior, engender a belief in those who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose (30 USC 1001).

Table 4-11 Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b] Primary[c]	NAAQS[b] Secondary[d]
Ozone (O_3)[e]	1-hour	0.09 ppm	--	--
	8-hour	0.070 ppm	0.070 ppm	0.070 ppm
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm	0.100 ppm	--
	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	0.075 ppm	--
	3-hour (secondary)[1]	--	--	0.5 ppm
	24-hour	0.04 ppm	0.14 ppm (for certain areas)	--
	Annual arithmetic mean	--	0.030 ppm (for certain areas)	--
Carbon Monoxide (CO)	1-hour	20 ppm	35 ppm	--
	8-hour	9.0 ppm	9 ppm	--
	Lake Tahoe (8-hour)	6 ppm	--	--
Respirable Particulate Matter (PM_{10})[f]	24-hour	50 µg/m^3	150 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	--	--
Fine Particulate Matter ($PM_{2.5}$)[f]	24-hour	--	35 µg/m^3	
	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3	15 µg/m^3
Lead[h, i]	30-day Average	1.5 µg/m^3	--	--
	Calendar Quarter	--	1.5 µg/m^3 (for certain areas)	1.5 (for certain areas)
	Rolling 3-Month Average	--	0.15 µg/m^3	0.15 µg/m^3
Sulfates[g]	24-hour	25 µg/m^3	--	--
Hydrogen Sulfide	1-hour	0.03 ppm	--	--
Vinyl Chloride[h]	24-hour	0.01 ppm	--	--

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b] Primary[c]	NAAQS[b] Secondary[d]
Visibility Reducing Particles	8-hour	Extinction of 0.23 per kilometer; standard visibility of 10 miles or more (0.07 to 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.	--	--

Source: CARB 2016a

[a] California Ambient Air Quality Standards

[b] National Ambient Air Quality Standards

[c] primary standards provide public health protection, including sensitive populations

[d] secondary standards provide public welfare protection, including protection against decreased visibility, damage to animals, crops, vegetation

Notes:

ppm = part(s) per million
μg/m^3 = microgram(s) per cubic meter
-- = no standard has been adopted

Air districts in California monitor air pollutant concentrations to determine whether the NAAQS and CAAQS are being met in the air basin, and if not, what strategies will be employed to meet these standards. The proposed SSMP Project would span two air districts and would be located within the Salton Sea Air Basin. The northern portion of the proposed SSMP Project located within Riverside County is managed by the South Coast Air Quality Management District (SCAQMD) and the southern portion located in Imperial County is managed by the ICAPCD. The air basin is classified as attainment or nonattainment depending on whether the air quality standards are met or exceeded. Generally, attainment means that an area meets the AAQS. Nonattainment refers to an area that exceeds the AAQS. Unclassified means that insufficient data exist to make a determination. Designations depend on the number of times the pollutant concentration is exceeded. Table 4-12 shows the air quality attainment designations for the Salton Sea Air Basin.

Table 4-12 Salton Sea Air Basin Federal and State Air Quality Attainment Designations

Criteria Pollutant	Federal Designation	State Designation
Ozone (O_3) (1-hour)	N/A	Nonattainment
Ozone (O_3) (8-hour)	Nonattainment	
Nitrogen Dioxide (NO_2)	Attainment	Attainment
PM_{10}	Nonattainment[1]	Nonattainment
$PM_{2.5}$	Unclassified/Attainment Nonattainment[2]	Attainment / Nonattainment[3]
CO	Unclassified/Attainment	Attainment
Sulfur dioxide	Unclassified/Attainment	Attainment
Sulfates	N/A	Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen sulfide	N/A	Unclassified
Visibility Reducing Particles	N/A	Unclassified

Sources: CARB 2017

[1] Imperial County – Imperial Valley Planning Area is Nonattainment
Riverside County – Coachella Valley meets national PM_{10} standards and a request for redesignation to attainment has been submitted to USEPA.

[2] The Southeast Desert Air Basin is largely Unclassified/Attainment aside from the portion of Imperial County that includes Brawley, Calexico, El Centro, Heber, Holtville, Imperial, Seeley, and Westmorland. Air quality in this area meets the national $PM_{2.5}$ standards. A determination of attainment for the 2006 24-hour $PM_{2.5}$ standard was made by USEPA in June 2017.

[3] City of Calexico is in nonattainment

The six criteria pollutants are ground-level ozone (O_3); particulate matter, including coarse particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$); nitrogen dioxide (NO_2); carbon monoxide (CO); sulfur dioxide (SO_2); and lead (Pb). O_3 is not directly emitted into the air but rather forms in the atmosphere through chemical and photochemical reactions of reactive organic gases (ROG) and nitrogen oxides (NO_x). Therefore, O_3 is indirectly controlled through limits on emissions of ROG and NO_x.

Section 176(c)(1) of the CAA (42 USC section 7506(c)) is known as the General Conformity Rule. It prohibits the federal government from engaging in, supporting, providing financial assistance, licensing, permitting, or approving any activity that does not conform to a State Implementation Plan (SIP) which has been approved by the USEPA. The Conformity Rule is designed to ensure that federal actions do not impede local efforts to control air pollution and requires federal agencies to demonstrate that their actions do not undermine the approved SIP for the subject geographic area. The first step in determining whether conformity review is required is to assess whether the activity would take place in a federal nonattainment or maintenance area, i.e., an area that does not meet the NAAQS. If the action was to occur in such an area, then it is necessary to determine whether the action would result in the emission of an air pollutant that is regulated due to the nonattainment or maintenance status of the region. In certain circumstances, the activity may be exempt.[15] If the action is not exempt, a determination must be made as to whether the emissions from the activity would exceed threshold levels. If threshold levels were to be met or exceeded, then a conformity review is required (40 CFR section 93.153(b)).

The Salton Sea Air Basin is also subject air quality impacts from Hazardous Air Pollutants (HAPs), also referred to as Toxic Air Contaminants (TACs) or air toxics. These are air pollutants which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. Due to the large number of different HAP/TAC pollutants and their generally low concentrations, it has not been possible to set air quality standards for these pollutants or to monitor for their presence as a group. HAP emissions in the Salton Sea Air Basin are discussed below.

Air Quality Related Values, including visibility and pollutant deposition, are another way to consider air quality. Visibility is monitored at some National Parks, National Monuments, and Wilderness Areas, including sites which are identified for special protection as Class I areas by the Interagency Monitoring of PROtected Visual Environments (IMPROVE) collaborative monitoring program under the CAA. IMPROVE objectives are to provide data needed to assess the impacts of new emission sources, identify existing man-made visibility impairment, and assess progress toward the national visibility goals that define protection of the 156 Class I areas. The closest such monitoring site is located near the Black Rock Nature Center in Joshua Tree National Park, about 40 miles north northwest of the northern end of the Salton Sea. Joshua National Park is the closest Class I Area to the Salton Sea. A second monitoring site is located in Riverside County at the Agua Tibia Wilderness Area, about 50 miles west of the north end of the Salton Sea. Both sites are located outside of the Salton Sea Air Basin, although the Joshua Tree site is close to the Basin's northern boundary.

4.3.1.3 Existing Conditions

The pollutants of greatest concern in the Salton Sea Air Basin are O_3 and O_3-precursors NO_X and ROG, and particulate matter (PM_{10} and $PM_{2.5}$). NO_x, and ROGs are largely emitted from fuel systems and combustion in motor vehicles and equipment, and PM_{10} and $PM_{2.5}$ from fuel combustion and soil disturbance and wind erosion in the form of fugitive dust. Agricultural operations nearby are a significant source of pollutant emissions. Transport of pollutants from Mexico also affects local air quality conditions. Several agencies including IID, air districts, and the State are working on projects to reduce airborne particulate matter.

The most recent National Emission Inventory (NEI, USEPA 2017) provides HAP emission estimates for the Imperial County portion of the Salton Sea Air Basin. These estimates provide an indication of potential HAP emissions throughout the basin. Over 80 percent of HAPs reported in the Imperial County NEI data are emitted by livestock waste, on-road vehicles, diesel and gasoline powered non-road equipment, wildfire and prescribed fires, and consumer and commercial solvent use (Table 4-13).

[15] The exemptions are set out in 40 CFR section 93.153, subdivisions (c) and (d) and include activities that would result in no emissions increase or an increase in emissions that is clearly de minimis. None of these exemptions apply to the proposed SSMP Project.

Table 4-13 HAPs Reported in Imperial County NEI Data

Source	Representative HAPs[1]
Livestock Waste	Methanol, Toluene, Cresol/Cresylic Acid, Acetaldehyde
On-road Vehicles	Diesel Exhaust Particulates[2], Toluene, Xylenes (Mixed Isomers), Hexane, Benzene, 2,2,4-Trimethylpentane, Ethyl Benzene, Formaldehyde, Acetaldehyde, 1,3-Butadiene, Naphthalene
Non-road equipment, diesel and gasoline powered	Diesel Exhaust Particulates[2], Toluene, 2,2,4-Trimethylpentane, Xylenes (Mixed Isomers), Benzene, Hexane, Ethyl Benzene, Formaldehyde, 1,3-Butadiene, Acetaldehyde, Styrene
Fires, Wildfire and Prescribed	Formaldehyde, Methanol, Acetaldehyde, Acrolein, Naphthalene, Benzene, Toluene
Consumer and Commercial Solvent Use	Methanol, Trifluralin, Ethylene Glycol, 2,4-Dichlorophenoxy Acetic Acid, Toluene, Xylenes (Mixed Isomers)

[1] Except for Diesel exhaust particulate, HAPs are listed in order of descending emissions amounts.

[2] Diesel exhaust particulate is listed as a TAC by CARB but is not included in the USEPA HAP list.

For more information on health effects of specific HAPs, see the USEPA's *Health Effects Notebook for Hazardous Air Pollutants* (USEPA 2021).

IMPROVE visibility monitoring from the Joshua Tree National Park provides information on current conditions at the northern end of the Salton Sea Air Basin (National Park Service 2021a). The data show that Haze Index measured at the site has decreased over the past 20 years, indicating that visibility has improved and pollutant concentrations have decreased.

Exceedances of O_3, PM_{10}, and $PM_{2.5}$ for the years 2010–2019 are included in the technical appendix. Table 4-14 shows Salton Sea Air Basin 2020 estimated annual average emissions. Table 4-15 shows Salton Sea Air Basin 2020 estimated annual average PM_{10} emissions by Source, and Table 4-16 shows Salton Sea Air Basin emissions significance thresholds.

Climate and Meteorological Conditions

The climate of the Salton Sea Air Basin area has large, often extreme, daily, and seasonal fluctuations in temperature and relatively high annual average temperatures. Clear skies and rapid heating of desert soils result in high daytime temperatures followed by rapid cooling at night. Daily temperatures range from low-70s to mid-100s°F in summer, and mid-40s to low-70s°F in winter. The average daily relative humidity is low and average annual rainfall is about 3 inches, while the average annual air temperature is about 72°F.

Meteorological conditions for the Salton Sea Air Basin are influenced by large-scale warming and sinking of air in the semi-permanent subtropical high-pressure center over the Pacific Ocean. The high-pressure ridge blocks most mid-latitude storms, except in the winter when the high-pressure ridge is further south and at its weakest. Coastal mountains obstruct flow of the cool, damp air found in California's coastal regions.

The flat terrain and strong temperature differentials created by the intense heating and cooling patterns produce moderate winds and deep thermal circulation systems. Thus, even though the summers are hot, the general dispersion of local air pollution is greater than in the coastal basins where polluted inversion layers may remain for long periods.

Table 4-14 Salton Sea Air Basin 2020 Estimated Annual Average Emissions

Sources	NO_X	PM_{10}	$PM_{2.5}$	VOC (ROG)	SO_X	CO
	tons/day	tons/day	tons/day	tons/day	tons/day	tons/day
Stationary Sources	2.9	5.2	1.3	5.1	0.1	1.5
Areawide Source	0.9	299.2	39.6	11.0	0.1	14.1
Mobile Sources	25.3	2.6	1.8	11.5	0.4	78.4
Total	**29.1**	**307.0**	**42.7**	**27.7**	**0.6**	**93.9**

Source: CARB 2016b

Table 4-15 Salton Sea Air Basin 2020 Estimated Annual Average PM_{10} Emissions by Source

PM_{10} Emission Source	Riverside County	Imperial County	Total Salton Sea Air Basin
	tons/day	tons/day	tons/day
Farming Operations	1.61	8.25	8.64
Construction and demolition	19.29	3.51	16.19
Paved road dust	20.08	1.28	5.41
Unpaved road dust	6.38	51.83	53.57
Fugitive windblown dust	2.83	212.50	213.42
Total from all sources	**61.43**	**284.99**	**307.03**

Sources: CARB 2016b, 2016c, 2016d, CARB 2017

Table 4-16 Salton Sea Air Basin Emissions Significance Thresholds

Criteria Pollutant	South Coast Air Pollution Control District		Imperial County Air Pollution Control District	
	Construction	Operation	Construction	Operation
	lbs/day	lbs/day	lbs/day	lbs/day
Volatile Organic Compounds (VOCs)	75	55	75	137
Carbon Monoxide (CO)	550	550	550	550
Nitrogen Oxides (NO_X)	100	55	100	137
Sulfur Dioxides (SO_X)	150	150	--	150
Particulates (PM_{10})	150	150	150	150
Particulates ($PM_{2.5}$)	55	55	--	550
Lead (Pb)	3	3	--	--

Sources: ICAPCD 2017; SCAQMD 2019

4.3.2 Climate Change and Greenhouse Gas Emissions

This section focuses on the generation of greenhouse gas emissions during construction and operations of the proposed SSMP Project.

4.3.2.1 Regulatory Requirements

Table 4-17 below identifies the federal, state, and local regulations applicable to this proposed SSMP Project.

Table 4-17 Regulatory Requirements Applicable to this Project

Branch	Regulation	Responsible Agency	Regulation Summary
Federal	N/A	N/A	None apply
State	Executive Order S-3-05, Assembly Bill 32	CARB	Established statewide GHG emission reduction targets (i.e., 80% below 1990 levels by 2050) and required development of a plan, to be updated every 5 years, identifying how targets will be achieved and evaluate progress toward meeting GHG reduction goals.
State	Executive Order B-30-15, Senate Bill 32	CARB	Established the intermediate GHG emission reduction target of 40% below 1990 levels by 2030 that was mandated into law with the signing of SB 32. This EO also directed CARB to update the Climate Change Scoping Plan and quantify the State's 2030 GHG reduction goal. The 2017 Climate Change Scoping Plan includes a Natural and Working Lands sector recognizing the importance of this sector for both adaptation efforts and as a climate solution through protection, enhancement, and innovation on these lands. A draft of the 2030 Natural and Working Lands Climate Change Implementation Plan is available for review. Draft California 2030 Natural and Working Lands Climate Change Implementation Plan | California Air Resources Board.
State	Executive Order B-55-18	CARB	Established a new GHG target of statewide carbon neutrality no later than 2045 with negative emissions thereafter. This target includes evaluating opportunities to remove carbon from the atmosphere such as with sequestration in natural and working lands.
State	Executive Order S-13-08		Directs state agencies to evaluate and advance California's ability to adapt to the impacts of climate change, including the development of an adaptation strategy. The Safeguarding California Plan: 2018 Update – California's Climate Adaptation Strategy is the latest plan. It lays out what the state agencies are doing to protect communities, infrastructure, services, and the natural environment from climate change impacts and also identifies ongoing related work with local and regional adaptation actions.
Local	CAP	Riverside County	In 2019, Riverside County updated its CAP (County of Riverside 2019a). The 2019 CAP builds on the 2015 CAP and refines the County's efforts to meet the 2035 and 2050 GHG reduction strategies.

Notes:

CAP – Climate Action Plan

CARB – California Air Resources Board

GHG – greenhouse gas

4.3.2.2 Existing Conditions

Climate change refers to any measurable alteration in climatic conditions that last for an extended period of time—several decades or longer—including changes in temperature, precipitation, and wind patterns. Based on rigorous research globally, the scientific consensus is that greenhouse gases (GHGs) emitted by human activities are the main driver of climate change. The main GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride.CO_2 is the dominant GHG emitted, followed by CH_4, and N_2O, and accounts for roughly 98% of emissions in the United States.

The primary source of GHGs in the United States is from fossil fuel combustion with the majority of these emissions associated with transportation, electricity generation, and industrial sectors.

Since 1979, temperatures in the contiguous 48 states have increased by 0.29°F to 0.46°F per decade; faster than the global rate. Eight of the top 10 warmest years on record have occurred since 1998. Temperatures in parts of the North, the West, and Alaska have increased the most (USEPA 2017). Seemingly small changes in the average temperature of the planet can translate to large and potentially hazardous shifts in climate and weather. Higher average temperatures are linked to changes in rainfall amounts and distribution that can result in flooding, droughts, or more frequent and severe heat waves (USEPA 2017).

Greenhouse Gases

GHGs can absorb infrared radiation and trap heat in the atmosphere. Some GHGs have a stronger greenhouse effect than others because these gases differ in two key ways: (1) their ability to absorb energy, and (2) their persistence, or lifetime in the atmosphere. The Intergovernmental Panel on Climate Change (IPCC) developed the Global Warming Potential (GWP) to allow comparisons of the global warming impacts of different gases (IPCC 2018). Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of CO_2. With CO_2 used as the reference gas, the GWP-weighted emissions are measured in metric tons (MT) of CO_2 equivalent (CO_2e). The GWP is used to convert GHGs to CO_2e by multiplying the mass of the gas emitted by its GWP.

4.4 BIOLOGICAL RESOURCES

The area of potential effect for biological resources is limited to those areas of the Sea ecosystem that could be affected by the proposed SSMP Project, including the lakebed area that is exposed now or is anticipated to be exposed by 2028, the lower reaches of the New, Alamo, and Whitewater rivers, adjacent upland areas (primarily agricultural and open desert) that could be disturbed during construction and operation of water conveyance system(s) from the diversion location(s) to the created habitats, and agricultural drains. A buffer of approximately 0.5-mile from the Sea's 2003 shoreline is also included for indirect effects of noise and human presence on wildlife. Data sources used to describe the affected environment include published and unpublished literature and contacts with agency personnel from the area. Because the Sea is continually changing, the most recent available information is used. Often, however, information from previous years is all that is available to describe current conditions.

4.4.1 Study Area

The study area includes the entire area of the exposed lakebed between the 2003 and projected 2028 shoreline as well as a buffer of 0.5 mile upward from the 2003 shoreline as shown in Figure 3-1. The study area was expanded where necessary to understand how resources within the prescribed study area interact with regional factors (e.g., for migratory birds).

4.4.2 Regulatory Requirements

The regulatory framework for biological resources includes the following federal, state, and local requirements (Table 4-18). Restoration projects at the Sea could be subject to some or all of these requirements.

Table 4-18 Regulatory Requirements Biological Resources

Branch	Regulation	Agency	Regulation Summary
Biological Resources			
Federal	Clean Water Act of 1972 (33 USC section 1251 et seq.)	USEPA	Section 404 of the CWA prohibits discharges of dredged or fill materials into waters of the United States, except as permitted under separate regulations by the Corps and the USEPA. This section also provides protection to “special aquatic sites” that include sanctuaries and refuges, wetlands, and mudflats.
Federal	Endangered Species Act of 1973 (16 USC 1 section 1531 et seq.)	USFWS	Protects listed threatened or endangered species (and any designated critical habitat) from unauthorized take. It also directs federal agencies to ensure that their actions do not jeopardize the continued existence of listed species. Section 7 defines federal agency responsibilities for consultation with the USFWS, including the preparation of the federal agency’s Biological Assessments and the USFWS’s Biological Opinions. If it is determined that any of the proposed actions may affect federal listed species, then the Corps, as the lead federal agency, is required to consult with USFWS in accordance with Section 7 of the ESA.
Federal	Migratory Bird Treaty Act of 1918 (16 USC sections 703–712)	USFWS	Provides for the protection of migratory birds by making it illegal to possess, hunt, pursue, or kill any migratory bird, or conduct any transaction pertaining to any wild migratory bird, part, nest, egg or product, manufactured or not, unless specifically authorized by a regulation implemented by the Secretary of the Interior, such as designated seasonal hunting. Executive Order 13186 (2001) directs federal agencies with actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a Memorandum of Understanding with USFWS within 2 years to promote conservation of migratory bird populations relative to the proposed action.
Federal	Bald and Golden Eagle Protection Act (16 USC sections 668-668d)		Provides for the protection of bald eagles and golden eagles by making it illegal to take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald or golden eagles, including their parts, nests, or eggs, without prior authorization. Permits may be issued by the USFWS, United States Department of the Interior for scientific, educational, and depredation control purposes; for

Branch	Regulation	Agency	Regulation Summary
			the religious purposes of American Indian tribes; and to protect other interests in a particular locality.
Federal	Executive Orders 11988, *Floodplain Management*, and 11990, *Protection of Wetlands*		Require federal agencies to provide leadership to protect the natural and beneficial values served by floodplains and wetlands. Federal agencies are directed to avoid development in floodplains where possible and minimize the destruction or degradation of wetlands.
Federal	Desert Renewable Energy Conservation Plan	BLM	Section 11.4: Goals, Objectives, and Conservation and Management Actions > Section 11.4.1.1: Biological Resources (pp. 69–74) Outlines goals and objectives focused on preserving landscape and habitat connectivity, conserving ecological processes, and protecting and recovering the federally Threatened Desert Tortoise. > Section 11.4.10: Soil, Water, and Water-Dependent Resources (pp. 83–87) Describes goals and objectives relating to the management of soil and water resources, including erosion control, conservation of key hydrologic and biogeochemical functions, and the minimization of overdraft conditions. > Section 11.4.11 Special Vegetation Features (pp. 87–88) Describes goals and objectives relating to the preservation and management of special vegetative resources, including land use planning consideration, protection of undisturbed and other special habitats, and management to prioritize research needs. > Section 11.4.2: Conservation and Management Actions (pp. 90–205) Actions anticipated to achieve desired outcomes, including actions to maintain, restore, or improve land health. These actions include proactive measures, as well as measures or criteria that will be applied to guide day-to-day activities occurring on public land.
Federal	California Desert Conservation Area Plan	BLM	Chapter 3, *Plan Elements*, Wildlife Elements section and Vegetation Elements section (pp. 30–53), describes the goals and actions planned to manage wildlife and vegetative resources throughout the California desert, including special considerations for vulnerable wildlife species in the planning process, managing habitats to retain viability and integrity of natural systems, and maintaining the biological viability of vegetation resources and assemblages.
State	Porter-Cologne Water Quality Control Act (California Water Code Title 23)	SWRCB	Protects California waters, gives the SWRCB, through the Regional Water Quality Control Boards, the authority to regulate discharges of waste, including dredged or fill material, to any waters of the state. The Colorado River Basin Regional Water Quality Control Board has prepared (and amended) a basin-wide Water Quality Control Plan that serves as a guide to optimize the beneficial uses of the water within the Colorado River Basin region by preserving and protecting the quality of these waters.

Branch	Regulation	Agency	Regulation Summary
State	California Lake and Streambed Alteration Program (Fish and Game Code section 1600 et seq.)	CDFW	Requires any person, state, or local government agency, or public utility proposing a project that could divert, obstruct, or change the natural flow of any bed, channel, or bank of a river, stream, or lake to notify the CDFW before beginning the project. If CDFW determines that the project could adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required.
State	California Endangered Species Act of 1984 (Fish and Game Code section 2050 et seq.)	CDFW	Provides for the protection and preservation of threatened and endangered plants and animals, and their habitat and prohibits the taking of such species without CDFW's authorization. Section 2081 lists the conditions that must be met in order for CDFW to authorize take.
State	California Fully Protected Birds, Mammals, Reptiles and Amphibians, and Fish statutes (Fish and Game Code sections 3511, 4700, 5050, and 5515)	CDFW	Prohibit the take or possession of any fully protected bird, mammal, reptile and amphibian, or fish. Fish and Game Code section 2081.7 was amended to allow CDFW to authorize the take of species resulting from impacts attributable to the implementation of the QSA (refer to Section 1 for a discussion of the QSA). Take of fully protected species may be authorized if related to the QSA.
Local	Imperial County General Plan	Imperial County	The Imperial County General Plan (County of Imperial 2015c) contains several objectives and policies intended to protect biological resources, including those of the Sea: • Objective 9.1 – Preserve as open space those lands containing watersheds, aquifer recharge areas, floodplains, important natural resources, sensitive vegetation, wildlife habitats, historic and prehistoric sites, or lands which are subject to seismic hazards and establish compatible minimum lot sizes. • Objective 9.5 – Establish policies and programs for maintaining salinity levels in the Sea that enable it to remain a viable fish and wildlife habitat.
Local	Riverside County General Plan	Riverside County	LU 24.1. – Cooperate with the CDFW, USFWS, and any other appropriate agencies in establishing programs for the voluntary protection, and where feasible, voluntary restoration of significant environmental habitats. LU 2.1. g. – Prevent inappropriate development in areas that are environmentally sensitive or subject to severe natural hazards.

Sources:
CDFW – California Department of Fish and Wildlife
EPA – United States Environmental Protection Agency
QSA – Quantification Settlement Agreement
SWRCB – State Water Resources Control Board
USFWS – United States Fish and Wildlife Service

4.4.3 Existing Conditions

4.4.3.1 Vegetation

Vegetation in the Project area generally includes areas of exposed lakebed, which is often barren. At sites with additional water present, patches of chenopod scrub, generally dominated by iodine bush (*Allenrolfea occidentalis)* or tamarisk *(Tamarix sp.),* are present. Additionally, stands of tamarisk and/or herbaceous wetland occur in riparian areas along the banks of rivers. Where agricultural drains empty onto the exposed lakebed, plant assemblages have formed that support wetland and riparian plant species. These areas are sometimes referred to as “unmanaged wetlands” and have standing water periodically and sometimes for the entire season. Where these areas are present, they are mapped with the dominant vegetation present (e.g., tamarisk scrub or herbaceous wetland, and are not uniquely identified as unmanaged wetlands).

Populations of invasive species include tamarisk and common reed. Tamarisk is very successful in locations with increased ground water and has a high water use due to high levels of evapotranspiration. It typically occurs in riparian areas but is successful in other areas. In addition, insects, birds, and mammals that normally use native riparian vegetation which is replaced by tamarisk are generally less prevalent and/or less common in areas dominated by tamarisk. As a consequence, they tend to deplete ground water and displace native species (CALIPC 2003).

General information and analysis about vegetation around the Sea was relied upon from the PEIR (DWR and CDFG 2007) and the SCH EIS/EIR (Corps and CNRA 2013). Additional data sources for the proposed SSMP Project area include aerial photographs from June 20 through October 17, 2018. From this dataset, a map of general plant communities was created (Figure 4-2). The vegetation map covers areas between the 2003 and 2028 shoreline as well as a 0.5-mile buffer inland to cover any areas that could be affected by the proposed SSMP Project elements, diversions, and supporting infrastructure. Categories included in the plant communities’ map are described and presented in Table 4-19. Categories for vegetation mapping were derived from the *Manual of California Vegetation*, Second Edition (Sawyer et al. 2009). Adjustments were made when vegetation categories could not be discerned from aerial photography (e.g., common reed marsh and cattail marsh were grouped into “herbaceous wetland”) and when differentiation was not needed because sites already supported projects (e.g., “managed wetlands”).

Table 4-19 Plant Communities and Land Cover Types

Vegetation Type	Acres in the Study Area[1]	Acres in Exposed Lakebed Area[1]	Description	Equivalent type in Manual of California Vegetation II
Agriculture	6,204	2	Any type of irrigated agriculture. Common types in study area include lettuce, broccoli, citrus, date palms, and alfalfa.[1]	Not Applicable
Barren Non-Lake Bottom	5,220	125	Areas that have less than 5% cover visible on aerial photographs and do not appear to have been part of a recently inundated area of the Sea. Many of these areas have been recently cleared (artificially). In addition, a large portion of the areas on the east side of the Sea have very low vegetative cover and are mapped in this category.	Not Applicable
Barren Lake Bottom	5,969	4,959	Areas that support less than 5% vegetative cover and appear to have been covered by the Sea in the recent past, generally between 2003 and present.	Not Applicable
Chenopod Scrub	8,741	929	Areas that are dominated by native shrub vegetation that is lower in stature than tamarisk. Generally dominated by iodine bush in low-lying areas exposed by the receding lakeshore. Drier areas are often dominated by different species of saltbush [e.g., big saltbush (*Atriplex lentiformis*), four-wing saltbush (*Atriplex canescens*), and/ or allscale saltbush (*Atriplex polycarpa*)]. Many upland areas that have a similar appearance are also included in this category.	Iodine Bush Scrub Four-wing Saltbush Scrub Allscale Scrub
Creosote Bush Scrub			This vegetation type typically occurs in low-slope uplands with sparse shrubs. These areas are dominated by creosote bush (*Larrea tridentata*). White bur-sage (*Ambrosia dumosa*) and brittlebush (*Encelia farinosa*) might also be present in lower proportional cover. Mapping of this vegetation type was limited by the ability to discern vegetation types based on aerial imagery.	Creosote Bush Scrub
Desert Wash Woodland	23	0	This plant community is very limited in extent. Vegetative cover is relatively sparse, but native, and consists of species requiring extra water such as honey mesquite (*Prosopis glandulosa*). Some areas that would apply to this category are mapped as tamarisk	

Vegetation Type	Acres in the Study Area[1]	Acres in Exposed Lakebed Area[1]	Description	Equivalent type in Manual of California Vegetation II
			scrub or woodland if they cannot be distinguished from aerial photography.	
Disturbed/ Developed	3,332	102	Roads, buildings, and other areas with human-built infrastructure, whether it is currently in use or not. Can include small areas of landscaping.	Not Applicable
Dust Suppression Projects	660	470	These areas are currently in use for dust suppression projects as indicated by regular furrow patterns on the landscape. Some areas have vegetation in and amongst the rows, but vegetative cover is generally very low.	Not Applicable
Herbaceous Wetland	1,599	869	These areas support herbaceous species and are periodically inundated. Common species include the non-native species common reed (*Phragmites australis*) and native species such as cattails (*Typha* spp.) and salt grass (*Distichlis spicata*). Common reed and cattails are the most common types and generally occur along waterways, just as the edges of rivers and/or drains. Common reed is more tolerant of saline conditions than cattails. Salt grass has a very low profile and tends to be in saline areas that are less consistently inundated.	
Managed Wetlands	3,862	646	Managed wetlands include areas that are part of state, federal, or private sites managed for wildlife. Generally, they consist of a series of ponds with roads around them. Vegetation is present in some areas, but not others. Habitats within the managed wetlands were not distinguished because these areas would generally be avoided when projects are developed because they currently fulfill the purpose of the project. Within the study area, they are particularly common on the south side of the Sea.	Not Applicable
Open Water	53,039	52,619	Open water consists of any area covered by water, except areas included in the managed wetlands category. Most of this area is as defined as areas below the -233.6 contour, based on a 2019 comprehensive wetland delineation conducted at the Bruchard Road Dust Suppression Project (Cardno 2019).	Not Applicable

Vegetation Type	Acres in the Study Area[1]	Acres in Exposed Lakebed Area[1]	Description	Equivalent type in Manual of California Vegetation II
Non-native Trees	20	0	Non-native trees that occur in windrows between agricultural fields and other areas to reduce wind flow.	Not Applicable
Tamarisk Woodland	3,065	1,429	Tamarisk woodland is dominated by tamarisk species (*Tamarix* sp.), which are invasive species that occur throughout much of California. These species can have variable heights depending on site factors. Tamarisk are highly invasive species and very problematic in western states. These species use a substantial amount of water, can be very deeply rooted, can withstand dry periods, and can outcompete native species in riparian areas. In the proposed SSMP Project area, they occur in patches with substantial water availability. Patches include areas that have greater than 40% cover and are generally wider than 20 feet.	Tamarisk Thickets
Tamarisk Scrub	3,255	836	Tamarisk scrub is similar to tamarisk woodland, except the vegetation is sparser, 5 to 40% cover. In addition, it tends to be lower profile.	Tamarisk Thickets

[1] The Study Area is the area that includes all potential project areas and a buffer that is 0.5 mile from the 2003 shoreline while the Exposed Lakebed Area includes only the potential project areas.

[2] Existing vegetated wetland types in the study area include: herbaceous wetland, managed wetlands, tamarisk scrub, tamarisk woodland, desert wash woodland, and chenopod scrub. Proposed projects would not include intentional establishment of tamarisk, which is an invasive species.

Vegetation/Land Use Type	Area (Ac)
Barren lake bottom	5969.39
Barren non-lake bottom	5219.76
Chenopod scrub	8741.29
Creosote bush scrub	2309.14
Desert wash woodland	22.74
Tamarisk scrub	3255.25
Tamarisk Woodland	3065.47
Non-native trees	19.86
Open water	53039.44
Herbaceous wetland	1599.39
Managed wetlands	3862.16
Disturbed/Developed	3332.3
Dust suppression projects	660.19
Agriculture	6204.23
Total	**97300.61**

Figure 4-2 Vegetation Communities at the Salton Sea

4.4.3.2 Wildlife (including Aquatic Wildlife)

Bird Species

The Sea supports a high diversity of North American bird species, with records of over 400 species of both resident and migrating birds. In addition to the high species diversity, the Sea ecosystem provides enough area to support hundreds of thousands of individuals year-round, providing important habitat for numerous nesting colonies as well as other resident, wintering, and migratory stopover areas, particularly those that support individuals migrating within the Pacific Flyway. The Sea provides an integral stopover site providing much needed resting and foraging areas for migratory birds within a region that is otherwise dry and inhospitable. For example, the Sea supports approximately 50% of the Pacific Flyway population of ruddy ducks (*Oxyura jamaicensis*) (Shuford et al. 2000).

Common shoreline, wading, and waterfowl bird species that occur in the water throughout the Sea include numerous species of gulls and terns, California brown pelican (*Pelecanus occidentalis*), American white pelican (*Pelecanus erythrorhynchos*), black-bellied plover (*Pluvialis squatarola*), willet (*Tringa semipalmata*), marbled godwit (*Limosa dedoa*), western sandpiper (*Calidris mauri*), least sandpiper (*Calidris minutilla*), dowitchers (*Limnodromus* spp.), Wilson's phalarope (*Phalaropus tricolor*), western and Clark's grebes (*Aechmophorus occidentalis* and *A. clarkii*, respectively), eared grebe (*Podiceps nigricollis*), numerous species of herons, egrets, and night-herons, American avocet (*Recurvirostra americana*), American wigeon (*Mareca americana*), black-necked stilt (*Himantopus mexicanus*), ruddy duck, American coot (*Fulica americana*), snow (*Chen caerulescens*) and Ross's (*Chen rossii*) geese, northern shoveler (*Spatula clypeata*), northern pintail (*Anas acuta*), and green-winged teal (*Anas crecca*) (Shuford et al. 2000; Jehl 1994).

Common riparian bird species that occur within or adjacent to the riparian habitat, specifically along the New and Alamo rivers, include song sparrow (*Melospiza melodia*), Abert's towhee (*Melozone aberti*), verdin (*Auriparus flaviceps*), house finch (Haemorhous mexicanus), black phoebe (Sayornis nigricans), common yellowthroat (*Geothlypis trichas*), red-winged blackbird (*Agelaius phoeniceus*), and marsh wren (*Cistothorus palustris*) (Dudek 2010).

A number of raptor species have been recorded at the Salton Sea, such as northern harrier (*Circus cyaneus*), American peregrine falcon (*Falco peregrinus anatum*), and osprey (*Pandion haliaetus*), most of which are common winter or nonbreeding summer visitors, only present to utilize the foraging habitat within marshes, open scrub habitats, and nearby agricultural fields.

Other Terrestrial Wildlife Species

Common terrestrial reptiles that occur in upland habitats around the Sea, especially in habitat associated with agricultural development, include side-blotched lizard (*Uta stansburiana*), desert spiny lizard (*Sceloporus magister*), western diamond-backed rattlesnake (*Crotalus atrox*), and gopher snake (*Pituophis catenifer*).

Common mammals that occur in riparian, upland, and agricultural habitats around the Sea include coyote (*Canis latrans*), raccoon, (*Procyon lotor*), muskrat (*Ondatra zibethicus*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), desert cottontail (*Sylvilagus audobonii*), round-tailed ground squirrel (*Spermophilus tereticaudus*), and western pocket gopher (*Thomomys bottae*).

Aquatic Wildlife Species

The Sea supports aquatic wildlife that includes invertebrates and fish. These communities have changed over the lifespan of the Sea.

Shallow waters and shoreline pools at the Sea provide habitat for fish and invertebrates, including desert pupfish (*Cyprinodon macularius)* and sailfin molly (*Poecilia latipinnna*) (Corps and CNRA 2013). CDFW conducts non-native, invasive species removal in areas around the Sea, where desert pupfish occur in selected areas as allowed by time constraints. Sailfin molly and mosquitofish (*Gambusia affinis*) are the primary species targeted during removal. Tilapia are present in irrigation drains and the associated shoreline pools, but based on annual CDFW surveys, tilapia appear to be declining in most of these waters (Keeney 2018).

Fish species that are generally not predators of desert pupfish and are either currently present or have been present recently at the Sea are being considered for introduction to constructed ponds to provide prey for piscivorous birds. Some fish species that are not generally predators on pupfish such as tilapia, mosquitofish and even mature desert pupfish, will prey on them when resources are limited. Additionally, non-native fishes can also have a negative effect on desert pupfish populations via other means, including, but not limited to, competition, habitat displacement, interference with reproduction, and disease transmission. The SCH project considered introducing fish to constructed ponds, including Mozambique tilapia, redbelly tilapia, sailfin molly, and threadfin shad. As part of the proposed SSMP Project, fish could be stocked in pools, and habitat requirements for considered species are included in Table 4-20. Salinity, temperature, and dissolved oxygen (DO) levels that support these fish species will also support invertebrates.

Table 4-20 Fish Habitat Requirements

Species	Salinity (ppt)	Temperature (°C)	Dissolved Oxygen	Food
Desert pupfish	0–68	7–42.5	Extremely low (to 0.1–0.4)	Algae, plants, small invertebrates, detritus
Mozambique tilapia (hybrid)	0–65	15–37	Relatively low	Plankton, aquatic invertebrates, decomposing organic matter
Redbelly tilapia	0–29 (45 in the Sea)	20–40	Relatively low	Plants, invertebrates
Sailfin molly	0–87	Tolerate local temps.	Relatively low	Algae/plant material, aquatic invertebrates
Threadfin shad	15–32	1–35 (die-off below 5.5)	Sensitive to changes in dissolved oxygen	Zooplankton, pelagic fish eggs/larvae, phytoplankton

Sources: CDFW 2012; Corps and CNRA 2013; USFWS 2010a

4.4.3.3 Special-status Species

Special-status species are defined as plants and wildlife that are:

> Federally and/or state listed as threatened or endangered;

> Proposed or candidates for federal or state listing;

> USFWS bird of conservation concern (BCC);

> Bureau of Land Management (BLM) designated as sensitive (BLMS);

> California Native Plant Society (CNPS) List 1B and List 2;

> CDFW listed as a Species of Special Concern (SSC); and

> CDFW listed as Fully Protected (FP).

Special Status Plant Species

To determine which special-status plant species may occur within or adjacent to the study area, species occurrences within 5 miles of the Sea from the California Natural Diversity Database (CNDDB) and species addressed in the Coachella Valley Multispecies Conservation Plan (CVAG 2016) were considered. Plant species listed in the Coachella Valley Multispecies Conservation Plan were added to the list based on records in the Consortium of California Herbaria (CCH 2021). The only plant species that is covered in the Coachella Valley Multispecies Conservation Plan but not considered is the Little San Bernardino Mountains linanthus (*Linanthus maculatus*) because its nearest known occurrence is more than 30 miles north of the exposed lakebed. Table 1 in Appendix D lists the special-status plant species known or that have the potential to occur within or adjacent to the study area.

Special Status Wildlife Species

To determine which special-status wildlife species may occur within or adjacent to the study area, species occurrences from the CNDDB within 5 miles of the Sea (CDFW 2020b) and species addressed in the Coachella Valley Multispecies Conservation Plan (CVAG 2016) were considered. Table 2 in Appendix D lists the special-status wildlife species known or that have the potential to occur within or adjacent to the study area.

Numerous special-status species have a moderate or high potential to occur within the study area. Additional detail on species listed in Appendix D that have a greater potential to occur and/or are more likely to occur in the project area is provided below.

Terrestrial Species

Nine terrestrial special-status species that are federally or state listed as threatened or endangered, or may have high sensitivity to project activities, have a moderate or high potential to occur within the study area at the Sea based on the presence of suitable habitat and occurrence records.

<u>Flat-Tailed Horned Lizard (*Phrynosoma mcallii*)</u>

The flat-tailed horned lizard is currently listed as a BLM Sensitive Species, and a California Species of Special Concern. The species was federally listed in 1993, however the listing was withdrawn in 2006. Threats to the species include a variety of human disturbances causing loss, fragmentation, and degradation of habitat, such as agricultural, urban, and geothermal developments, off-road vehicle use, military activities, sand and gravel mining, and pesticide use (USFWS 1993a). Suitable habitat occurs in areas with loose soils such as sandy or gravelly deserts with sparse vegetation and an abundance of harvester ants (the lizard's primary source of food).

CNDDB data shows numerous records located along the southwestern and eastern edges of the Sea, as close as 0.5-mile to the shoreline, within sandy areas dominated by sparse vegetation such as saltbush, creosote, and mesquite (CDFW 2020b). Records are dated from 1966 to 2015. Suitable habitat present within the study area would be located within the chenopod scrub and creosote bush scrub, and possibly within the barren non-lake bottom vegetation types.

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is currently listed as a USFWS Bird of Conservation Concern, BLM Sensitive Species, and a California Species of Special Concern. Threats to the species include loss of grassland habitat to agriculture, nearby use of pesticides and other toxins, and ground squirrel control practices. Suitable habitat occurs in open areas with grass or other low, sparse vegetation cover and an abundance of small mammal burrows. Rip-rap armoring of banks and berms also provide burrow-like structures that can function as burrows for burrowing owls. Burrowing owls have been known to occupy such structures within the rip-rap at the former sea wall at Red Hill Bay on the Sonny Bono Salton Sea NWR.

CNDDB data shows numerous recent records concentrated in the southern and southeastern edges of the Sea, as close as 0.4 mile from the shoreline, most often around agricultural and grazing fields, on the banks of irrigation canals, and sometimes within disturbed desert scrub (CDFW 2020b). Records are dated as recent as 2008. Suitable burrowing habitat present within the study area would be located within the barren lake bottom, barren non-lake bottom, and the edges of the agriculture vegetation types.

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle has been state listed as endangered since 1971. The species was federally listed as endangered in 1967 but was removed from the list in 2007. Threats to the species include loss of habitat, illegal shooting, and pesticide contamination of the species food sources. Bald eagles most commonly nest from February through July. Suitable nesting habitat occurs within forests that have tall, old-growth trees most commonly located near large bodies of water. Nesting is not known to occur at the Salton Sea. Suitable foraging habitat occurs near large bodies of water with abundant fish.

The Sea may provide suitable foraging habitat; however, no suitable nesting habitat exists within the study area. The species is only an occasional winter visitor to the Sea and therefore would only be present during the non-breeding season in the study area likely foraging over open water.

Greater Sandhill Crane (*Antigone canadensis tabida*)

The greater sandhill crane subspecies has been state listed as threatened since 1983 and includes all nesting and wintering greater sandhill cranes. Threats to the subspecies include loss of wetland habitat primarily from agricultural conversion, demands on water resources, extreme weather (drought and floods), predation by common ravens (*Corvus corax*), power line collisions, livestock grazing, mowing, decreasing groundwater tables, and disease (CDFG 1994). The Lower Colorado River Valley Population of sandhill cranes winter from approximately September to March. Suitable winter roosting habitat occurs within high quality, shallow wetlands, such as marshes and wet meadows, with an abundance of grain supply nearby (CDFG 1994).

The Lower Colorado River Valley Population of the sandhill crane is the smallest population of the species and is believed to be composed of only greater sandhill cranes (Dubovsky 2019; Grisham et al. 2018). The subspecies has been observed along the southern shore of the Sea, specifically around the Sonny Bono Salton Sea NWR during the wintering season (Dubovsky 2019; Grisham et al. 2018). Suitable wintering habitat present within the study area would be located within the herbaceous and managed wetlands.

<u>California Black Rail (*Laterallus jamaicensis coturniculus*)</u>

The California black rail is state listed as threatened, and threats to the subspecies include loss, degradation, and fragmentation of wetland habitat primarily from agricultural conversion and demands on water resources (CDFG 1987). Suitable habitat occurs in salt marshes and other shallow brackish and freshwater wetlands with abundant vegetation, especially those dominated by low-growing bulrush species.

Suitable habitat is widely present within the study area, and the California black rail is known from numerous CNDDB and other records around the Sea, particularly around the southern and southeastern shorelines, as close as 0.3-mile from the shoreline, within areas dominated by emergent wetland vegetation (CDFW 2020b; Evens et al. 1991). CNDDB records date from 1947 to 2012. Suitable habitat present within the study area would be located within the herbaceous and managed wetlands.

<u>Yuma Ridgway’s Rail (*Rallus obsoletus yumanensis*)</u>

The Yuma Ridgeway’s rail has been federally listed as endangered since 1967 and state listed as threatened since 1971. Threats to the species include loss, degradation, and fragmentation of wetland habitat primarily from agricultural conversion and demands on water resources, as well as selenium contamination (USFWS 2010b). Suitable habitat occurs in inland shallow brackish and freshwater wetlands with abundant vegetation. Breeding habitat is usually dominated by cattails and bulrush species.

Suitable habitat is widely present within the study area and the Yuma Ridgway’s rail is known from numerous CNDDB and other records around the Sea, particularly around the southern and southeastern shorelines, immediately adjacent to the shoreline, within areas dominated by emergent wetland vegetation (CDFW 2020b). CNDDB records date from 1977 to 2009. Suitable habitat present within the study area would be located within the herbaceous and managed wetlands.

<u>Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*)</u>

The western yellow-billed cuckoo has been federally listed as threatened since 2014 and state listed as endangered since 1988. Threats to the species include loss and degradation of habitat and natural stream processes from altered watercourse hydrology, livestock grazing, conversion to agriculture, and invasion of non-native plants (USFWS 2020b). Western yellow-billed cuckoos inhabit southern California for nesting season from May through September. Suitable habitat occurs within riparian woodlands with dense canopies, usually dominated by willows, cottonwoods, and mesquite.

While there are no CNDDB records for the species within 5 miles of the study area, other sources have reported sightings and the species is expected to be an occasional visitor to riparian areas near the Sea (Clark et al. 2014; USFWS 2008; F. Sirchia, personal communication, 2021). Suitable nesting habitat present within the study area would be located within the desert wash woodland and tamarisk woodland vegetation types.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

The southwestern willow flycatcher has been federally listed as endangered since 1995 and the willow flycatcher (*Empidonax traillii*) state has been listed as endangered since 1990. Threats to the species include loss and degradation of riparian habitat and natural stream processes from land conversion, livestock grazing, water resource changes, and parasitism by brown-headed cowbirds (*Molothrus ater*) (USFWS 2014c). Southwestern willow flycatchers inhabit southern California for nesting season from April through September. Suitable nesting habitat occurs within dense riparian vegetation alongside rivers, streams, or other wet areas.

CNDDB data shows one nearby record located along the East Highline Canal approximately 4.3 miles from the southeastern edge of the Sea in 2007 (CDFW 2020b). The observation was of five groups with a potential observation of one juvenile, suggesting at least one breeding pair. The area was dominated by tamarisk and honey mesquite. Suitable nesting habitat present within the study area would be located within the desert wash woodland and tamarisk woodland vegetation types.

Least Bell's Vireo (*Vireo bellii pusillus*)

The least Bell's vireo has been federally listed as endangered since 1986 and state listed as endangered since 1980. Threats to the species include loss and degradation of riparian habitat and natural stream processes, water resource changes, parasitism by brown-headed cowbirds, and invasion of non-native plants (USFWS 1998). Least Bell's vireo inhabits southern California for nesting season from March through September. Suitable nesting habitat consists of riparian areas usually in the early successional stages when dominated by shrubs and smaller trees, especially willows.

There are no CNDDB records for the species within 5 miles of the study area or confirmed sightings of the subspecies from other sources, however suitable nesting habitat present within the study area may be located within the desert wash woodland, tamarisk woodland, and tamarisk scrub vegetation types.

Aquatic Species

One aquatic special-status species that is federally or state listed as threatened or endangered, or may have high sensitivity to project activities, has a moderate or high potential to occur within the study area at the Sea based on the presence of suitable habitat and occurrence records.

Desert Pupfish (*Cyprinodon macularius*)

Desert pupfish is the only aquatic species that is federally or state listed as threatened or endangered that occurs at the Sea, and the only native fish species in the Sink. Desert pupfish are state and federally listed as endangered (USFWS 2010a). The primary threats to desert pupfish are habitat destruction and alteration, combined with the introduction of non-native species that prey on or compete with pupfish for resources, which has led to the decline of pupfish populations (CDFW 2012; USFWS 1993b). The current distribution of desert pupfish in California is limited to shoreline pools and some ponds, marinas, and other nearshore areas of the Sea, numerous irrigation drains emptying into the Sea, three streams, and 14 artificial refuge ponds (Keeney et al. in prep. 2020, as cited in Keeney 2019). The only designated critical habitat for desert pupfish is San Felipe Creek, located west of Highway 86, and its associated washes in Imperial County. San Felipe Creek is an intermittent stream with narrow, shallow channels and wide, deep pools (Keeney 2019). Critical habitat is located in San Felipe Creek approximately 7 miles upstream from the Proposed Project area, and desert pupfish have the potential to occur downstream of this area in lower San Felipe Creek during high flow events.

Natural populations of desert pupfish occur in the Sea and shoreline pools, in freshwater ponds and irrigation drains, and in portions of tributaries to the Sea (creeks/washes) (CDFW 2012). Desert pupfish numbers are relatively low and are distributed in patches throughout the Sea (Parmenter et al. 2004; Keeney 2010a, as cited in USFWS 2010a). Populations in irrigation drains entering the Sea can be abundant, but these drains are dominated by non-native fish (Keeney 2010b; Martin and Saiki 2005, as cited in USFWS 2010a). Desert pupfish continue to persist in drains and shoreline pools of the Sea, at the mouth of Salt Creek, and in lower San Felipe Creek; they occasionally are very abundant (approximately 185 individuals captured per hour) in these waters and in Upper Salt Creek, Hot Mineral Spa Creek, and the Sea. However, populations fluctuate depending on a variety of factors including water quality and quantity, water velocity, available structure for spawning, cover, type and amount of vegetation (areas with dense cattails are poor habitat), invertebrates, abundance of non-native species, and possibly slope of the habitat (Keeney 2018, 2019).

CDFW conducts annual monitoring surveys for desert pupfish in refuges, tributaries, irrigation drains and shoreline pools/ponds, and the Sea in Riverside and Imperial counties. In 2019, desert pupfish were observed in tributaries, agricultural drains, and two marinas near the Sea (Varner Harbor and North Shore Marina). Pupfish were found in all five drains surveyed at the north end of the Sea and also in drains at the south end of the Sea. Pupfish were also found in a pond at Sonny Bono Salton Sea NWR (Keeney 2019).

CDFW reported that the refuge population at Salton Sea State Recreation Area is now extirpated, noting unknown reasons, but possibly predation from raccoons (CDFW 2012).

The 2018/2019 surveys found reduced flows in previously perennial sections of San Felipe Creek. Desert pupfish are present in San Felipe Creek, but CDFW states that the longevity duration of future perennial surface flow in this creek is unknown. A small perennial pool is present between Highway 86 and the Sea, and an irrigation drain provides water to this lower section (the section below (or east) of Highway 86). CDFW determined that Salt Creek is critically important for desert pupfish, especially considering habitat loss throughout the Salton Sink and habitat changes in San Felipe Creek. Irrigation drains and the associated shoreline pools provide important habitat for desert pupfish, even though non-native species are abundant (Keeney 2018).

In 2019, an increase in non-native crayfish affected populations in Salt Creek (Keeney 2019). Hot Mineral Spa Creek (near Hot Mineral Spa Road), located south of Bombay Beach, has perennial flow provided by upstream ponds. CDFW found that desert pupfish are abundant at this location, despite the presence of non-native fishes (jumping guabine [*Anablepsoides hartii*], and mosquitofish).

<u>*Habitat Requirements*</u>

The desert pupfish is tolerant of high salinity, high temperatures, and low DO concentrations, which exceed tolerance levels for other freshwater fish (USFWS 2010a). Desert pupfish tolerate salinities that range from freshwater to 68 to 70 ppt for eggs and adults, and 90 ppt for larvae; water temperatures from 40°F up to 108°F, any oxygen levels down to 0.1 milligrams per liter (mg/L). Additionally, pupfish can tolerate daily temperature fluctuations of 72 to 80°F and rapid changes in salinity, often by moving into deeper water and diving into substrates for refuge. Larvae can also withstand sudden changes in salinity up to 35 ppt (Moyle 2002).

Desert pupfish are most frequently found in shallow water, less than about 1 foot deep with velocities less than about 1 foot/second (Black 1980, as cited in DWR and CDFG 2007). Desert pupfish are capable of moving freely between the relatively fresh water in agricultural drains and the highly saline water in the Sea (DWR and CDFG 2007). However, given the increasing salinity of the Sea, they will not be able to persist in the Sea at some point.

The desert pupfish diet consists of algae, small benthic invertebrates, and detritus. Individuals will occasionally feed on their own eggs and young. Desert pupfish grow rapidly, and some can reach maturity at a standard length of 0.6 inch, although most do not breed until they reach 1.2 to 2.0 inches in length. Spawning occurs when temperatures are above 68°F, generally from April through October. The eggs hatch in 10 days at 68°F. Larvae have a higher salinity tolerance (up to 90 ppt) than adults (68 ppt) and can withstand sudden salinity changes of up to 35 ppt. Desert pupfish generally do not live more than 2 years (Moyle 2002).

Under current conditions at the Sea, individual desert pupfish inhabiting creeks and drains that flow into the Sea are presumed to move along the Sea's margins and among drains. This movement provides the opportunity for genetic exchange among desert pupfish subpopulations and reduces the potential deleterious effects of isolation of individual populations. It also provides the opportunity to recolonize these same areas in the event a local population is extirpated (DWR and CDFG 2007). However, this movement into the Sea will likely not occur in the near future due to increasing salinity of the Sea above what desert pupfish can tolerate.

4.5 COMMUNITY RESOURCES

This section describes the demographic conditions within Riverside and Imperial counties and describes environmental justice, socioeconomics, and population and housing within the study area.

4.5.1 Study Area

The study area is defined as the geographical area within which the large majority of potential effects are expected. The study area includes both Imperial and Riverside counties, as well as those communities that are located along the shoreline. In Imperial County that includes the cities of Westmorland, Calipatria, and Brawley, and the unincorporated communities of Niland, Salton City, Desert Shores, and Bombay Beach. In Riverside County that includes the cities of Oasis, Mecca, and North Shore. The Torres Martinez Desert Cahuilla Indian Reservation, located on the Sea's northern side, is included in the study area.

4.5.2 Regulatory Requirements

The regulatory framework for environmental justice issues, socioeconomics, and population and housing includes the following federal and local requirements (Table 4-22).

Table 4-22 Regulatory Requirements for Justice Issues, Socioeconomics, Population and Housing

Branch	Law	Agency	Regulation Summary
Federal	Executive Order 12898, *Federal Actions to Address Environmental Justice and Minority Populations and Low-Income Populations*		This executive order was issued in 1994 and requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations.
State	California Code, Government Code - GOV § 65040.12		Designates the Office of Planning and Research as the coordinating agency in state government for environmental justice programs. Includes requirement to have environmental justice section in city and county general plans.
State	Public Resources Code § 71110-71116 Environmental Justice		Requires the California Environmental Protection Agency to develop an environmental justice mission statement, to develop a working group to develop a strategy, and a grant program for entities to research environmental justice issues.
State	California Government Code Section 65302(c)		Local general plans are required to include a housing element.
State	None	NA	There is no State regulation regarding population resources. The Department of Housing and Community Development administers the Regional Housing Needs Assessment Program. This program projects population and housing growth and helps local areas plan effectively for future development
County	Imperial County Initiative	Environmental Justice Task Force	
Local	General Plan	County of Imperial	The Imperial County General Plan (County of Imperial 2015d) includes elements for agriculture, housing, and land use. It does not include elements for environmental justice.
Local	General Plan	County of Riverside	The County of Riverside General Plan (Riverside County 2017) includes elements for housing, land use, air quality, environmental justice, and healthy communities.

4.5.3 Existing Conditions

To establish the demographics within the study area, race, ethnicity, poverty status, income, and housing data were obtained from the United States Census Bureau to determine whether a high concentration of minority or low-income populations lives in the surrounding area.

4.5.3.1 Minority Population

As defined in Executive Order 12898 a minority population occurs where one or both of the following conditions are met within a given geographic area: (1) The American Indian, Alaskan Native, Pacific Islander, Black, or Hispanic population of the affected area exceeds 50 percent, or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. A minority population also exists if more than one minority group is present, and the aggregate of minority percentage meets one of the above conditions.

4.5.3.2 Low-income Population

Executive Order 12898 does not provide criteria to determine if an affected area consists of a low-income population. For the purposes of this assessment, the Council for Environmental Equality (CEQ) criterion for defining a minority population has been adapted to identify whether the population in an affected area constitutes a low-income population. An affected geographic area is considered to consist of a low-income population (i.e., below the poverty level) where the percentage of low-income persons: (1) is at least 50 percent of the total population, or (2) is meaningfully greater than the low-income population percentage in the general population or other appropriate unit of geographic analysis.

Table 4-23 lists data from the 2019 Census for Imperial and Riverside counties and cities that are located along the shoreline (United States Census Bureau 2020a, 2020b).

Table 4-23 Data from the 2019 Census for Imperial and Riverside Counties and Cities

	Imperial County	Bombay Beach	Niland	Calipatria	Brawley	Westmorland	Salton City	Desert Shores	Riverside County	Oasis	Mecca	North Shore	Torres-Martinez Reservation	California	United States
Population	**181,215**	**297**	**631**	**7,395**	**26,076**	**2,432**	**6,250**	**574**	**2,470,546**	**2,857**	**6,635**	**2,756**	**2,188**	**39.5 Million**	**328 Million**
Race and Hispanic Origin															
White	90.2%	95%	38%	6%	12%	11%	26%	2%	79.6%	2%	0%	2%	3%	71.9%	76.3%
Black or African American	3.3%	2%	6%	15%	1%	3%	3%	12%	7.3%	0%	0%	0%	0%	6.5%	13.4%
Asian	2.1%	3%	0%	1%	0%	0%	1%	0%	7.2%	1%	0%	0%	1%	15.5%	5.9%
American Indian or Alaskan Native	2.5%	0%	0%	1%	0%	1%	0%	0%	1.9%	2%	0%	0%	3%	1.6%	1.3%
Native Hawaiian or Pacific Islander	0.2%	0%	0%	1%	0%	0%	0%	0%	0.4%	0%	0%	0%	0%	0.5%	0.2%
Two or more Races	3.6%	0%	5%	2%	2%	2%	1%	0%	1.7%	0%	0%	1%	1%	4.0%	2.8%
Hispanic or Latino[1]	85%	0%	52%	76%	84%	83%	68%	85%	50%	95%	100%	97%	93%	39.4%	18.5%
Income and Poverty															
Median household income	$45,834	$21,154	$21,330	$36,883	$42,326	$29,730	$34,087	$16,091	$63,948	$19,457	$23,600	$22,000	$14,902	$71,288	$60,293
Persons in poverty	22%	9.4%	60.1%	33%	33.8%	33.1%	26.3%	32.2	11%	51.8%	39.3%	29.6%	52%	12%	11%
Housing															
Housing Units	58,280	375	315	1,260	8,390	755	2,928	520	857,148	1,363	2,159	944	1,041	14,366,336	139,684,244
Owner-occupied housing	58%	91%	72%	51%	52%	39%	74%	64%	66%	76%	53%	90%	75%	55%	64%
Median value of owner-occupied housing	177,100	$43,700	$89,900	$145,700	$188,900	$119,300	$132,100	$48,700	330,600	Not Available	$159,500	$133,600	$9,999	475,900	204,900
Median gross rent	$818								$1,311					$1,429	$1,023

CalEnviroScreen 4.0

The California Environmental Protection Agency developed CalEnviroScreen which is a mapping tool that helps identify California communities that are most affected by many sources of pollution. It uses environment, health, and socioeconomic indicators to produce scores for every census tract in the state. The indicators help to present a broad picture of the vulnerabilities communities may face from pollution across the state. The scores are mapped so that different communities can be compared to other census tracts in the state. An area with a high score is one that experiences a much higher pollution burden than areas with low scores. Figure 4-3 below is an image from the CalEnviroScreen of the Salton Sea area. Numbers were given to each color-coded section to compare the different scores among indicators. Table 4-24 lists the percentiles for each indicator in a given area.

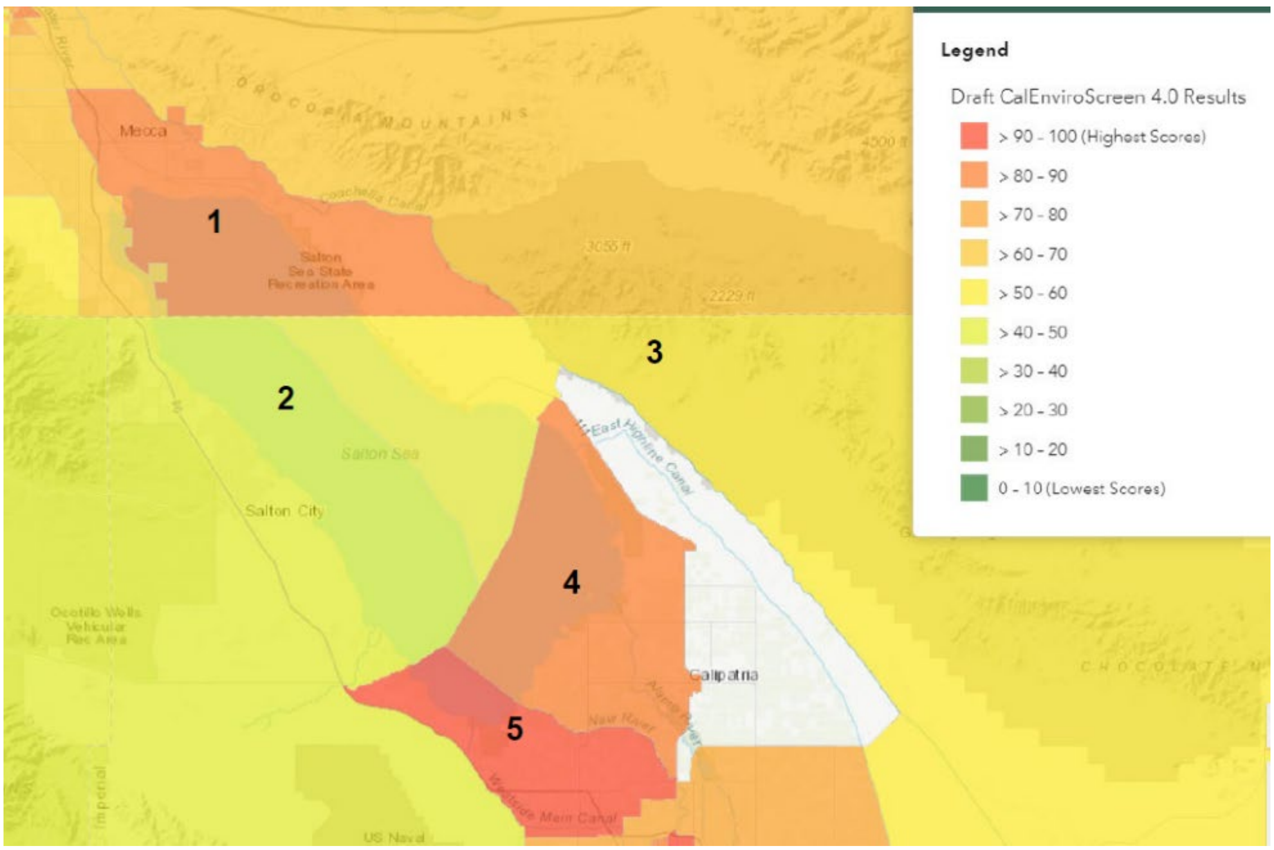


Figure 4-3 CalEnviroScreen Recorded Pollution levels in the Salton Sea Region

Table 4-24 CalEnviroScreen 4.0 Indicator Percentiles for Areas Surrounding the Salton Sea

Rank Across All Areas	Indicators	Area 1	Area 2	Area 3	Area 4	Area 5	Sum
NA	Overall Percentile	81	41	55	84	90	NA
1	Impaired Waters	96	78	98	100	100	472
2	Poverty	97	94	71	91	91	444
3	Pesticides	93	84	61	89	93	420
4	Education	100	89	49	89	87	414
5	Linguistic Isolation	100	98	10	88	88	384
6	Unemployment	92	96	No Value	99	92	379
7	Cardiovascular Disease	71	52	68	83	92	366
8	Solid Waste	99	0	71	87	75	332
9	Asthma	18	22	57	88	99	284
10	Cleanup Sites	73	40	88	82	0	283
11	Housing Burden	64	71	No Value	51	55	241
12	Groundwater Threats	54	10	34	79	56	233
13	Drinking Water	48	20	89	24	44	225
14	Hazardous Waste	41	0	0	89	86	216
15	Lead from housing	50	33	14	44	65	206
16	Ozone	66	51	26	21	36	200
17	Low Birth Weight	57	28	No Value	27	83	195
18	Particulate Matter	9	36	14	19	32	110
19	Toxic Releases	6	7	34	10	9	66
20	Diesel Particulate Matter	18	5	1	9	12	45
21	Traffic	4	21	3	3	13	44

Source: Environmental Justice Program | CalEPA

4.5.3.3 Environmental Justice

Environmental justice addresses the fair treatment regarding health and environment for minority and low-income people. In particular, minority and low-income populations should not be disproportionately affected by a project. Based on the 2019 census, minority populations make up the majority of the population in Imperial County and a large percentage of the Riverside County population. Persons of Hispanic or Latino origin represent the greatest majority of the minority population. In Imperial County the communities within the region of influence are similar in ethnic composition to the total county population with the exception of Niland and Bombay Beach. In Riverside County persons of Hispanic or Latino origin represent 50% of the population which differs from the shoreline communities that have percentages ranging 93-100%. Both counties and all of the communities, with the exception of Bombay Beach, have total minority populations equal to or greater than 50 percent.

The percentage of individuals considered to be below the poverty level in Imperial County was 22 percent; and with the exception of Bombay Beach, the surrounding cities experience higher poverty levels that range between 26-60 percent. Niland is considered a low-income population with 60 percent of individuals below the poverty level. The percentage of individuals considered to be below the poverty level in Riverside County was 11 percent; and the surrounding cities experience higher poverty levels that range between 29-52 percent. Oasis and the Torres-Martinez Reservation are considered a low-income population with 52 percent of individuals below the poverty level. The percentage of individuals considered to be below the poverty level in California is 12 percent, and in the United States 11 percent.

The CalEnviroScreen data shows the indicators with the highest-ranking percentiles for the region are 1) impaired waters, 2) poverty, 3) pesticides, 4) education, and 5) linguistic isolation. Unemployment likely would have been ranked fifth if a value was available in region 3. The areas on the north and south end of the Sea have higher overall indicator percentiles.

Agencies and interest groups in Imperial County have evaluated environmental justice issues related to water quality in the New River between the United States–Mexico border and the Sea; exposed hazardous materials as the Sea's water recedes, especially near the Torres Martinez Tribal lands; and health effects of dust and airborne diseases that occur from various activities near the Sea; and from Exposed Playa.

4.5.3.4 Socioeconomics

For the past 100 years, the traditional economic base of Imperial and Riverside Counties has been agriculture with communities of small to moderate size. However, urban development has been increasing over the past 40 years and employment in the agricultural sector has declined.

Table 4-25 provides the industry sectors and unemployment rate for Imperial County, Riverside County, and the state of California (EDD 2021). The total farm sector in Imperial County was reported at 17 percent, which is trending down from 32 percent reported in 1990. The total farm sector in Riverside County was reported at 2 percent, which is trending down from 5 percent in 1990. The top three nonfarm sectors in both Imperial and Riverside Counties were government services, trade, transport and utilities, and educational and health services. Recreational opportunities at the Sea also generate tourist-based income and employment for the surrounding communities. In 2020, the unemployment rate for Imperial and Riverside counties was 22.5 and 9.9 percent, respectively, whereas, the state unemployment rate was 10.1 percent.

Table 4-23 provides census data from 2019 and the median household income in Imperial County was $45,834, Riverside County was $61,948, both lower than the statewide average of $71,288. Persons living below the poverty level in Imperial County was 22 percent, Riverside County was 11%, compared to the statewide average of 12 percent (United States Census Bureau 2020a, 2020b).

Table 4-25 Industry Employment & Labor Force by 2020 Annual Average

Industry	Imperial County	Riverside County	California
Civilian Unemployment Rate	22.5%	9.9%	10.1%
Population All Industries	60,200	723,100	16,547,900
Total Farm	17%	2%	2%
Mining, Logging, Construction	3%	9%	5%
Manufacturing	3%	6%	8%
Trade, Transport & Utilities	18%	24%	17%
Information	0%	1%	3%
Financial Activities	2%	3%	5%
Professional & Business Services	4%	10%	16%
Educational & Health Services	14%	16%	17%
Leisure & Hospitality	5%	11%	9%
Other Services	1%	3%	3%
Government	30%	17%	15%

Source: EED 2021

Imperial County

County

4.5.3.5 Population and Housing

Imperial County is the thirty-first largest county by population in California (California Demographics by Cubit 2021). The 2019 census reported a population of 181,215, which is a 4 percent increase from the 2010 census population of 174,528. Greater than 72 percent of the population lives in El Centro, Calexico, Brawley, or Imperial (CED 2018). In addition, significant population clusters surround Salton City and Desert Shores (CED 2018). The population in unincorporated areas of the county tends to concentrate in agricultural areas and in recreation/retirement communities. Communities located on the shores of the Sea, including Salton City, Salton Sea Beach, and Bombay Beach, are primarily recreation-based communities, although their populations are becoming increasingly more diversified. These communities experience a notable increase in population during the winter months when visitors converge to avoid cold/wet winters in other parts of the country (County of Imperial 2008a). As of 2019, Imperial County reported 52,280 housing units, of which 58 percent are owner-occupied (United States Census Bureau 2020a). The median home value was reported at $177,100, and a median rent of $818.

Riverside is the fourth largest population by county in California (California Demographics by Cubit 2021). The 2019 census reported the population of Riverside County as 2,470,546 which is a 12 percent increase from the 2010 census population of 2,189,641. Riverside County Strategic Plan (2017) stated between 2000 and 2016 the county population grew by over 800,000 people, or approximately 52 percent compared to 16 percent for the state. The western portion of the county contains the greatest population with concentrations within incorporated cities. The eastern portion of Riverside County's population is within Coachella Valley, incorporated cities of Desert Hot Springs, Palm Springs, Cathedral City, Rancho Mirage, Indian Wells, Palm Desert, La Quinta, Indio, and Coachella (County of Riverside 2018). Many of these cities are noted for their focus on second homes, retirement living, and golf courses (County of Riverside 2018). As of 2019, Riverside County reported 857,148 housing units, of which 65.8 percent are owner-occupied. The median home value was reported at $330,600, and a median rent cost of $1,311 (United States Census Bureau 2020b).

4.6 BUILT ENVIRONMENT

This section describes navigable waters; existing public services, including fire protection, police, and emergency services; parks and recreation facilities; and utilities and service systems, including stormwater and flood management and solid waste, within the study area.

4.6.1 Study Area

The study areas for navigation, public services, parks and recreation, and utilities are discussed below.

4.6.1.1 Navigation

The study area includes navigable waterways within the proposed SSMP Project area.

4.6.1.2 Public Services

The study area for public services includes Imperial and Riverside counties and the communities near the Sea that provide emergency medical services.

4.6.1.3 Parks and Recreation

The study area includes the sites where the proposed SSMP Project would be implemented and nearby recreation areas around the Sea.

4.6.1.4 Utilities

The study area for utilities includes the communities near the Sea as well as solid waste disposal facilities that serve Imperial and Riverside counties.

4.6.2 Regulatory Requirements

Table 4-26 presents the regulatory requirements that are applicable to the navigation, public services, parks and recreation facilities, and utilities and service systems in the study area.

Table 4-26 Regulatory Requirements for Navigation, Public Services, Parks, Utilities, and Service Systems

Branch	Regulation	Agency	Regulation Summary
Navigation			
Federal	Rivers and Harbors Act Section 10 (33 CFR Part 329)	Corps	Navigable waters include navigable waters subject to the ebb and flow of the tide and non-tidal navigable waters (also called CWA (a)(1) Waters).
	CWA Section 404 (33 CFR Part 328)	Corps	The CWA provides descriptions of (a)(1) waters, which are territorial seas and traditional navigable waters; (a)(2) waters, which are tributaries; (a)(3) waters, which are lakes, ponds, and impoundments pf jurisdiction waters; and (a)(4) waters which are adjacent wetlands.
State	N/A	N/A	No state regulatory requirements regarding navigable waters are applicable to the proposed SSMP Project.
Local	N/A	N/A	No local regulatory requirements regarding navigable waters are applicable to the proposed SSMP Project.
Public Services			
Federal	N/A	N/A	No federal regulatory requirements regarding public services are applicable to the proposed SSMP Project.
State	N/A	N/A	No state regulatory requirements regarding public services are applicable to the proposed SSMP Project.
Local	General Plans	Imperial County, Riverside County	The land use elements for Imperial County (County of Imperial 2015b) and Riverside County (County of Riverside 2020a) include several goals, objectives, and policies that focus on providing adequate public services to county residents.
Parks and Recreation			
Federal, State, and Local	Various	Various	Recreation resources in the study area are subject to the regulations of Federal, state, or local agencies, depending on jurisdiction. For example, the State of California regulates State Recreation Areas, and the federal government regulates NWRs.
Federal	Resource Management Plans	Bureau of Land Management (BLM)	Land use decisions are governed by the California Desert Conservation Area (CDCA) Plan and the Desert Renewable Energy Conservation Plan (DRECP, a Land Use Plan Amendment to the CDCA Plan). Any proposed projects would be subject to the requirements of the CDCA, DRECP and applicable CMAs pertaining to recreation resources.
Utilities and Service Systems			
Federal	Resource Conservation and Recovery Act of	USEPA, California Department of Toxic	This federal law governs the disposal of solid waste and hazardous waste. Subtitle D establishes state responsibility for regulating nonhazardous wastes, and Subtitle C controls the generation,

Branch	Regulation	Agency	Regulation Summary
	1976 (Title 40 CFR Part 260)	Substances Control	transportation, storage, and disposal of hazardous waste through a comprehensive “cradle-to-grave” system of hazardous waste management techniques and requirements. The USEPA is responsible for implementing the law, a duty that is delegated to the California Department of Toxic Substances Control in California.
State	Porter-Cologne Water Quality Act of 1969 (California Water Code section 13000 et seq.)		This act provides for aesthetic values, fish and wildlife preservation, water reclamation, and comprehensive planning and regulation to attain the highest “reasonable” water quality in consideration of conflicting demands. It establishes the responsibilities and authorities of the nine Regional Water Quality Control Boards and the State Water Resources Control Board and directs each regional board to formulate and adopt a water quality control plan for all areas within the region.
State	California Integrated Waste Management Act of 1989 (Assembly Bill 939)		This law regulates nonhazardous solid waste and provides a solid waste management system to reduce, recycle, and reuse solid waste generated to the maximum extent feasible to conserve natural resources, protect the environment, and improve landfill safety.
State	Integrated Waste Management Plans	California Integrated Waste Management Board	State agencies and large state facilities are required to develop an integrated waste management plan. Solid waste disposal must comply with regulations established by the California Integrated Waste Management Board. The disposal of hazardous wastes is regulated by the California Department of Toxic Substances Control.
Local	General Plan	County of Imperial, County of Riverside	The land use elements for Imperial County (County of Imperial 2015b) and Riverside County (County of Riverside 2020a) include a number of goals and objectives that relate to providing adequate utilities and service systems within the county

4.6.3 Existing Conditions

4.6.3.1 Navigation

Navigable waters as defined in Section 36 of the CA Harbors and Navigation Code are waters that come under the jurisdiction of the Corps and any other publicly owned waters within the State. The Salton Sea is a navigable waterway and a public recreation water in Imperial County (County of Imperial 2008b).

The Salton Sea is a navigable water under the traditional navigable water determination per Section 404 CWA; however, it is not subject to Section 10 of the Rivers and Harbors Act (Corps 2022). Its tributaries Alamo, and New Rivers are not subject to Section 10 of the Rivers and Harbors Act and have not been evaluated for navigability under a Section 404 CWA through a traditional navigable water determination (Corps 2022).

At one time, the Sea also supported a robust marine sport fishery that included orangemouth corvina (*Cynoscion xanthulus*), Gulf croaker (*Bairdiella icistia*), and sargo (*Anisotremus davidsonii*); however, increasing salinity has eliminated the marine fishery, limiting sport fishing to only the euryhaline tilapia (*Oreochromis mossambicus*).

As the Sea has receded, navigation to and on the Sea has diminished. There are no recreational boat ramps that are connected to the Sea at the southern end of the Sea. The boat ramp at the North Shore Yacht Club, as well as at the Salton Sea State Park are no longer connected to the Sea. Therefore, currently there is limited recreational boating opportunities on the Sea.

The New and Alamo Rivers both support some boat use, as people launch boats in order to access to the Sea. The areas where people launch boats on these rivers are not public and access to the Sea is limited at many times during the year because the flows are too low to provide connectivity to the Sea. Limitations on navigation include obstructions such as road crossings over the rivers, agricultural diversions, variable flows, and isolation as the Sea recedes.

4.6.3.2 Public Services

Fire Protection Services

Imperial County Fire Department and Office of Emergency Services provide services to the unincorporated communities of the county, townships, and the city of Imperial. In addition to fire protection, other provided services include medical, aircraft rescue firefighting, technical rescue, and hazardous material and devices incident response. The department has nine stations and six contracting agencies. Stations are located in the following communities: Heber, Seeley, Ocotillo, Palo Verde, Niland, Winterhaven, Salton City and the city of Imperial. The department contracts with Brawley, Calipatria, Holtville, and Westmorland (Imperial County Fire Department and Office of Emergency Services 2019).

Riverside County Fire Department, in cooperation with CAL FIRE, provides fire and emergency services to residents of unincorporated areas of Riverside County, including areas around the northern Sea (Riverside County Fire Department 2020), and wildland fire protection on tribal trust lands.

Police Services

Imperial County Sheriff’s Department, headquartered in El Centro, is responsible for law enforcement in the county’s unincorporated portions, including the areas where the proposed SSMP Project sites would be located. The proposed SSMP Project area would be covered by the North County Patrol District, which covers Bombay Beach, Niland, Palo Verde, Salton City, and rural areas of Brawley, Calipatria and Westmorland (Imperial County Sheriff’s Office 2019).

The Riverside County Sheriff’s Department, headquartered in Riverside, has 10 stations spread across the region. The Thermal Station provides service to the eastern half of the Coachella Valley, including the unincorporated areas around the Sea where the proposed SSMP Project site would be located. The Riverside County Sheriff's Department also provides police services for the Torres Martinez Tribal Nation and the Twenty-nine Palms Tribal Nation (Riverside County Sheriff’s Department 2020).

Emergency Services

The nearest hospitals to the Sea are Pioneers Memorial Hospital in Brawley and El Centro Regional Medical Center in El Centro. Pioneers Memorial Healthcare is a 107-bed acute care facility that maintains a 16-bed emergency department staffed by a physician 24 hours a day. The emergency facility is a Level IV trauma center that maintains an average door-to-doctor time of 20 minutes (Pioneers Memorial Hospital 2020). El Centro Regional Medical Center is a 165-bed general acute care facility that has a rooftop heliport available 24 hours a day, facilitating transport to and from the facility in emergencies. El Centro Regional Medical Center Emergency Department is classified as a Level IV, basic emergency medical service and maintains 20 beds. The emergency department is open 24 hours a day and is staffed with multiple physicians (El Centro Regional Medical Center 2020).

4.6.3.3 Parks and Recreation

The primary recreation activities at the Sea include bird watching, wildlife viewing, camping, hiking, and hunting. Figure 4-4 shows the major recreation facilities around the Sea. The Salton Sea State Recreation Area is located along 15 miles of the northeastern shoreline of the Sea, and more than 200,000 visitors are expected to visit this recreation area annually (California State Parks 2020). The SBSSNWR, located in the southeastern part of the Sea, provides opportunities for bird watching, wildlife viewing, picnicking, hiking on nature trails, and waterfowl hunting, including two accessible hunting blinds. Hunters walk in and use waterways in certain locations to access hunting sites around the Sea. The Imperial Wildlife Area, which consists of three units (Wister, Finney-Ramer, and Hazard), is located on the south end of the Sea near the New and Alamo rivers. Recreation opportunities available at the Imperial Wildlife Area include wildlife viewing, fishing, and hunting. Additional Reclamation lands are leased to the California Department of Parks and Recreation, which provide recreational opportunities for the public.

BLM lands around the Sea are open to various recreation opportunities, including birding, hiking, and hunting. All access on these lands is non-motorized.

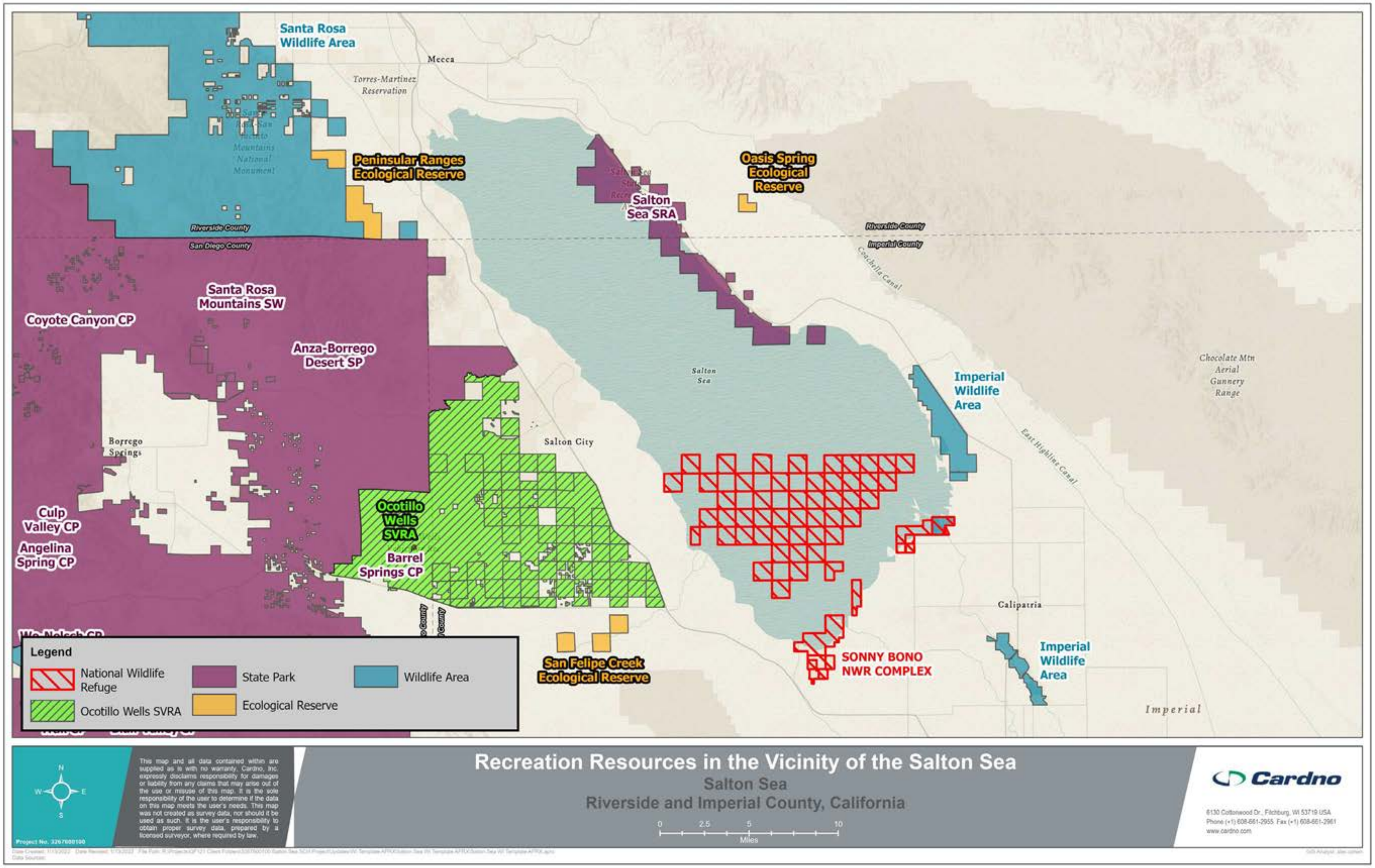


Figure 4-4 Recreation Resources near the Salton Sea

4.6.3.4 Utilities and Service Systems

Stormwater and Flood Management

Portions of both Imperial and Riverside counties within the study area are subject to flooding. The areas most susceptible to flooding in Imperial County are in the immediate vicinity of the Sea and the New and Alamo rivers. The community of Bombay Beach is also considered susceptible to significant flooding (County of Imperial n.d.).

Flooding susceptibility in Riverside County is primarily associated with several major stream drainages, including the Whitewater River (County of Riverside 2019b). In Riverside County, local agencies operate and maintain many flood control facilities.

Special flood hazard areas are located in the area northwest of the Sea, and State Highway 86 is surrounded by areas within the 100-year floodplain. Additionally, a much smaller portion around State Highway 111 near the community of North Shore is surrounded by an area within the 100-year floodplain. Areas immediately adjacent to the Sea are also susceptible to flooding (County of Riverside 2020b).

The Imperial County Department of Public Works regulates stormwater management throughout the county through its stormwater control ordinance and review of drainage plans for new development. Under NPDES general permit and waste discharge requirements for storm-water discharges from small municipal separate storm sewer systems

The Coachella Valley Water District (CVWD) provides stormwater protection in Coachella Valley and maintains flood control structures to protect 590 square miles from flooding. The CVWD maintains 16 stormwater protection channels along with dikes and levees. The Whitewater River/Coachella Valley Stormwater Channel, an important flood protection facility, is a 50-mile-long storm channel that runs from the Whitewater area north of Palm Springs to the Sea (CVWD 2020).

Solid Waste

Cities in the study area regulate solid waste disposal and provide waste collection services within their respective jurisdictions. Waste collection services are available in some of the unincorporated areas. Landfills are classified as Class I, Class II, and Class III. Class I landfills are designated specifically for hazardous wastes. Class II landfills are for designated special waste, including biosolids. Class III landfills are designated for nonhazardous wastes, such as municipal waste.

The County of Imperial Public Works Department and private entities operate the solid waste landfills in Imperial County. Solid waste landfills in Riverside County are operated by the County of Riverside Waste Management Department and private operators. Active solid waste landfills in Imperial and Riverside counties are provided in Table 4-27. Hazardous materials must be disposed of in landfills outside Imperial and Riverside counties. Hazardous materials are accepted at landfills located in Kings and Kern counties.

Table 4-27 Solid Waste Facilities in Imperial and Riverside Counties and Hazardous Waste Landfills

Site Name	Class	Waste Types	Max. Permitted Throughput[1]	Max. Permit Capacity[2]	Remaining Capacity[2]	Est. Closure
Imperial County						
Niland Solid Waste Site	III	Mixed municipal waste, construction/demolition material	55	318,673	211,439	08/1/2046
Salton City Solid Waste Site	III	Sludge (biosolids[3]), mixed municipal waste, inert material,[4] industrial waste, green material, dead animals, contaminated soil, construction/demolition material, ash, asbestos, agricultural waste	6,000	65,100,000	1,264,170	12/31/2038
Imperial Landfill	III	Wood waste, tires, sludge (biosolids[3]), mixed municipal waste, mattresses, inert material,[4] industrial waste, green material, dead animals, construction/demolition material, ash, asbestos, agricultural waste	1,700	19,514,700	12,384,000	12/31/2040
Calexico Solid Waste Site	III	Mixed municipal waste, dead animals, construction/demolition material, agricultural waste	150	3,437,800	1,561,235	02/01/2179
Monofill Facility	II	Industrial waste	750	1,729,800	789,644	01/31/2025
Mesquite Regional Landfill	III	Mixed municipal waste	20,000	1,100,000,000	1,100,000,00 0	01/31/2122
Riverside County						
Badlands Sanitary Landfill	III	Wood waste, tires, sludge (biosolids[3]), mixed municipal waste, metals, liquid waste, inert material,[4] industrial waste, green materials, dead animals, contaminated soil, construction/ demolition material, ash, asbestos, agricultural waste	4,800	34,400,000	15,748,799	01/01/2022
Lamb Canyon Sanitary Landfill	III	Tires, sludge (biosolids[3]), mixed municipal waste, metals, liquid waste, inert material,[4] industrial waste, green materials, dead animals, contaminated soil,	5,000	38,935,653	19,242,950	04/01/2029

Site Name	Class	Waste Types	Max. Permitted Throughput[1]	Max. Permit Capacity[2]	Remaining Capacity[2]	Est. Closure
		construction/demolition material, ash, asbestos, agricultural waste				
Oasis Sanitary Landfill	III	Wood waste, mixed municipal waste, metals, inert material,[4] green materials, construction/demolition material, agricultural waste	400	1,097,152	433,779	09/01/2055
Desert Center Sanitary Landfill	III	Wood waste, tires, mixed municipal waste, metals, inert material,[4] green materials, dead animals, contaminated soil, construction/demolition material, asbestos, agricultural waste	60	409,112	127,414	08/01/2107
Blythe Sanitary Landfill	III	Wood waste, tires, mixed municipal waste, metals, liquid waste, inert material,[4] industrial waste, green materials, dead animals, contaminated soil, construction/demolition material, agricultural waste	400	6,229,670	3,834,470	08/01/2047
El Sobrante Landfill	III	Tires, mixed municipal waste, contaminated soil, construction/demolition material	16,054	209,910,000	143,977,170	01/01/2051
Hazardous Waste Landfills						
Kettleman Hills (Kings County)	I, II	Hazardous waste, industrial, contaminated soil	9,000	10,700,000	15,600,000	Not provided
Clean Harbors Buttonwillow LLC (Kern County)	I	Other hazardous, other designated, industrial, contaminated soil	10,500	13,250,000	Not provided	01/01/2040

Source: CalRecycle 2019a,b; Waste Management 2021

Notes:

[1] Tons/day
[2] Measured in cubic yards
[3] Biosolids are solid organic matter recovered from a sewage treatment process and used as fertilizer.
[4] Inert material is waste that is neither chemically nor biologically reactive and will not decompose or only very slowly. Examples of this are sand and concrete.

4.7 CULTURAL RESOURCES

This section presents information on cultural resources within the study area (i.e., Area of Potential Effects) as defined by applicable federal laws and regulations. Cultural resources are archaeological sites, districts, and objects (both prehistoric and historic); standing historic structures, buildings, districts, and objects; locations of important historic events; or sites of traditional/cultural importance (those important to living Native Americans for religious, spiritual, ancestral, or traditional reasons).

4.7.1 Study Area

The study area for cultural resources is defined as the geographical area within which all Project-related construction and operational activities would occur, particularly ground-disturbing activities. The study area includes the habitat restoration and dust suppression opportunity areas located between the 2003 and projected 2028 shorelines (see Figure 3-1), and adjacent areas that could be used for expanded projects and/ or needed for project infrastructure. The opportunity areas would be subject to the most intensive ground-disturbing activities that could affect cultural resources, such as the construction of ponds and berms. Access roads to specific project locations within the opportunity areas would be extended from nearby public roads. Thus, the study area for cultural resources also includes land between public roads and the habitat restoration and dust suppression opportunity areas.

4.7.2 Regulatory Requirements

The regulatory framework for cultural resources includes the following federal, state, and local requirements (Table 4-28). Restoration projects at the Sea could be subject to some or all of these requirements.

Table 4-28 Regulatory Requirements for Cultural Resources

Branch	Regulation	Agency	Regulation Summary
Cultural and Paleontological Resources			
Federal	Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et seq.; 34 Stat. 225)		This act requires protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal lands.
	National Historic Preservation Act (NHPA) (54 U.S.C. §§ 300101-307108) 36CFR800		The NHPA is legislation intended to preserve historic and archaeological sites in the United States of America. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices. Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties, i.e. any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on, the National Register of Historic Places, including artifacts, records, and material remains relating to the district, site, building, structure, or object, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The procedures in this part define how Federal agencies meet

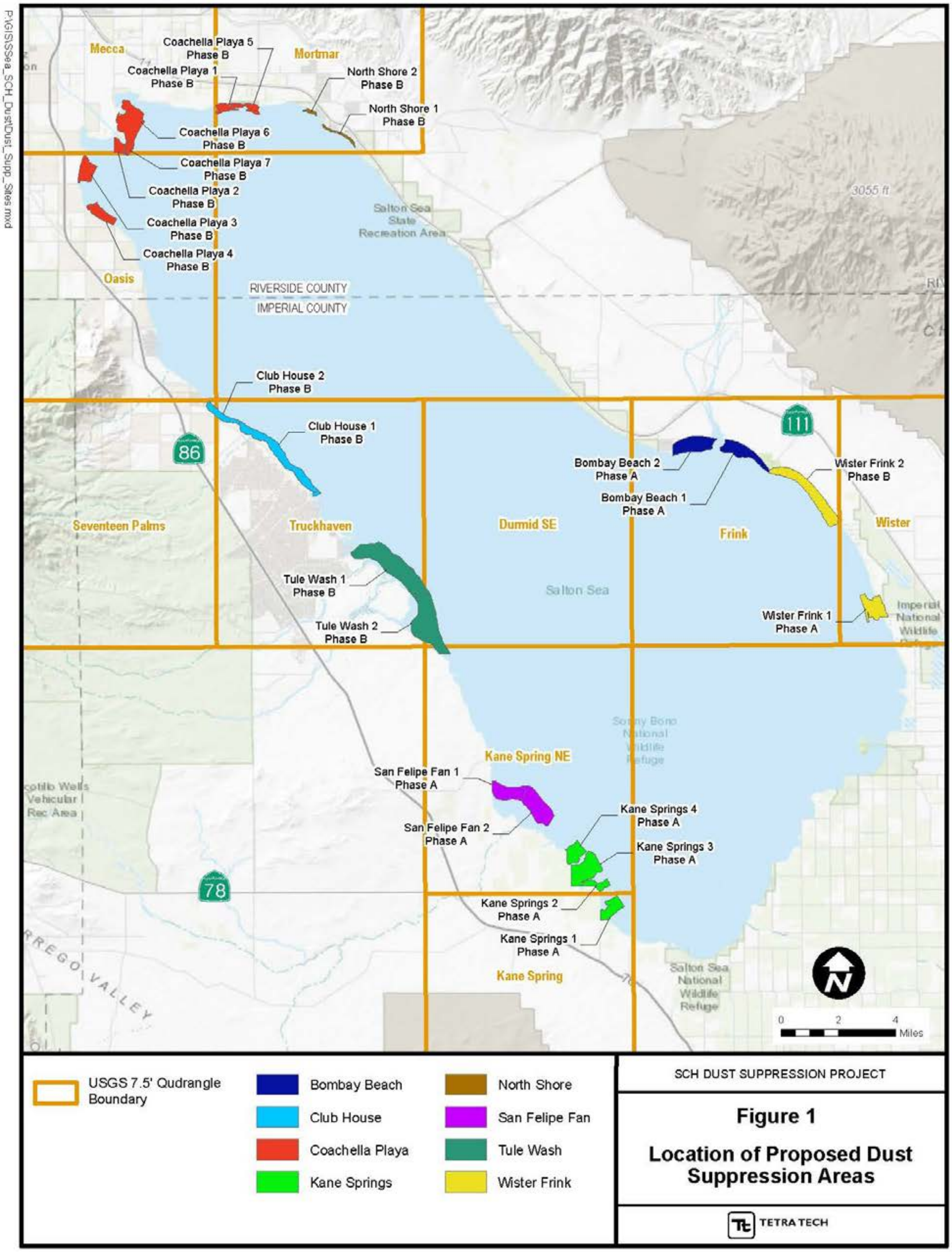
Branch	Regulation	Agency	Regulation Summary
			these statutory responsibilities. The section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.
	Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-470mm; Public Law 96-95)		Federal law passed in 1979 (amended in 1988) that governs the excavation of archaeological sites on Federal and Indian lands in the United States, and the removal and disposition of collections from archaeological sites.
	Native American Graves Protection and Repatriation Act (Public Law 101-601; 25 U.S.C. 3001-3013)		Federal law passed in 1990 that includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on Federal and tribal lands, and penalties for noncompliance and illegal trafficking.
State	Public Resources Code Section 21083.2	California	As part of the determination made pursuant to Section 21080.1, the lead agency shall determine whether the project may have a significant effect on archaeological resources.
	Public Resources Code Section 21084.1	California	California Public Resources Code Section 21084.1 CA Pub Res Code § 21084.1 (2017) A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.
	California Code of Regulations Title 14, Section 15064.5	California	Per this statute, a “historical resource” is: • Listed on, or determined to be eligible by the State Historical Resources Commission for listing on, the California Register of Historical Resources; • Listed in a local register of historic resources or as a significant resource in a historical resource survey; or • Considered to be “historically significant” by a lead agency as supported by substantial evidence in the record.
	Public Resources Code Section 5097.5	California	This statute defines as a misdemeanor any unauthorized disturbance or removal of a fossil site or remains on public land and specifies that State agencies may undertake surveys, excavations, or other operations as necessary on State lands to preserve or record paleontological resources. This statute applies if construction or other related impacts occur on State-owned or managed lands.

Branch	Regulation	Agency	Regulation Summary
Local	Imperial County General Plan	Imperial County	The Imperial County General Plan contains an objective in its Conservation and Open Space Element that is intended to ensure the preservation of cultural resources in the county: • Objective 3.1: Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.

4.7.3 Existing Conditions

Information regarding cultural resources within or potentially within the study area was developed primarily from recent site record and literature searches and intensive archaeological surveys of almost 2,000 acres of Reclamation land within five SSMP dust suppression opportunity areas in Imperial County, including Bombay Beach 2, Bombay Beach West, Tule Wash 1, Tule Wash 2, and Club House 1 (Tetra Tech 2021a). TetraTech also provided unpublished site record and literature search data for 18 other SSMP dust suppression opportunity areas not addressed in the 2021 survey report, including nine in Riverside County and nine in Imperial County (see Figure 4-5). The site record and literature reviews were conducted by staff at the South Coastal Information Center and the Eastern Information Center in September and December 2020 and in February 2021 and included the opportunity areas and a 1-mile buffer. To augment the spatial coverage of the TetraTech data, this section also incorporates results of the archaeological survey of the Salton Sea Species Conservation Habitat Project area in the southern portion of the SSMP Project area (Cardno 2012). Subsequent Salton Sea environmental planning documents were also reviewed, including the *Salton Sea Ecosystem Restoration Program Programmatic Environmental Impact Report* (PEIR; DWR and CDFG 2007), the *Salton Sea Species Conservation Habitat* (SCH) *Project Final Environmental Impact Statement/ Environmental Impact Report (EIS/EIR)* (Corps and CNRA 2013). Collectively the sources noted above represent a large sample of cultural resources data from the study area. All available reports and site records within or immediately adjacent to the dust suppression opportunity areas were carefully reviewed. Where possible, boundaries of reports that represented actual field surveys and other archaeological field studies were mapped to assess survey coverage within the opportunity areas (see Figure 4-6). Site locations within the opportunity zones were also mapped and inspected. (Note: The Eastern Information Center was unable to provide GIS data for cultural resources and reports located in Riverside County, but all reports and site records therefore were visually reviewed to identify those that occur in the SSMP study area).

This section also includes the results of a Sacred Lands File (SLF) records search conducted by the California Native American Heritage Commission (NAHC) for the SSMP Project. Cardno submitted the SLF records search request on May 28, 2021. Results of the records search were provided by the NAHC on July 7, 2021. The SLF record search was positive and the NAHC identified 26 Native Americans to contact for additional information.



Source: Tetra Tech 2021a

Figure 4-5 Opportunity Areas Included in Cultural Survey Report

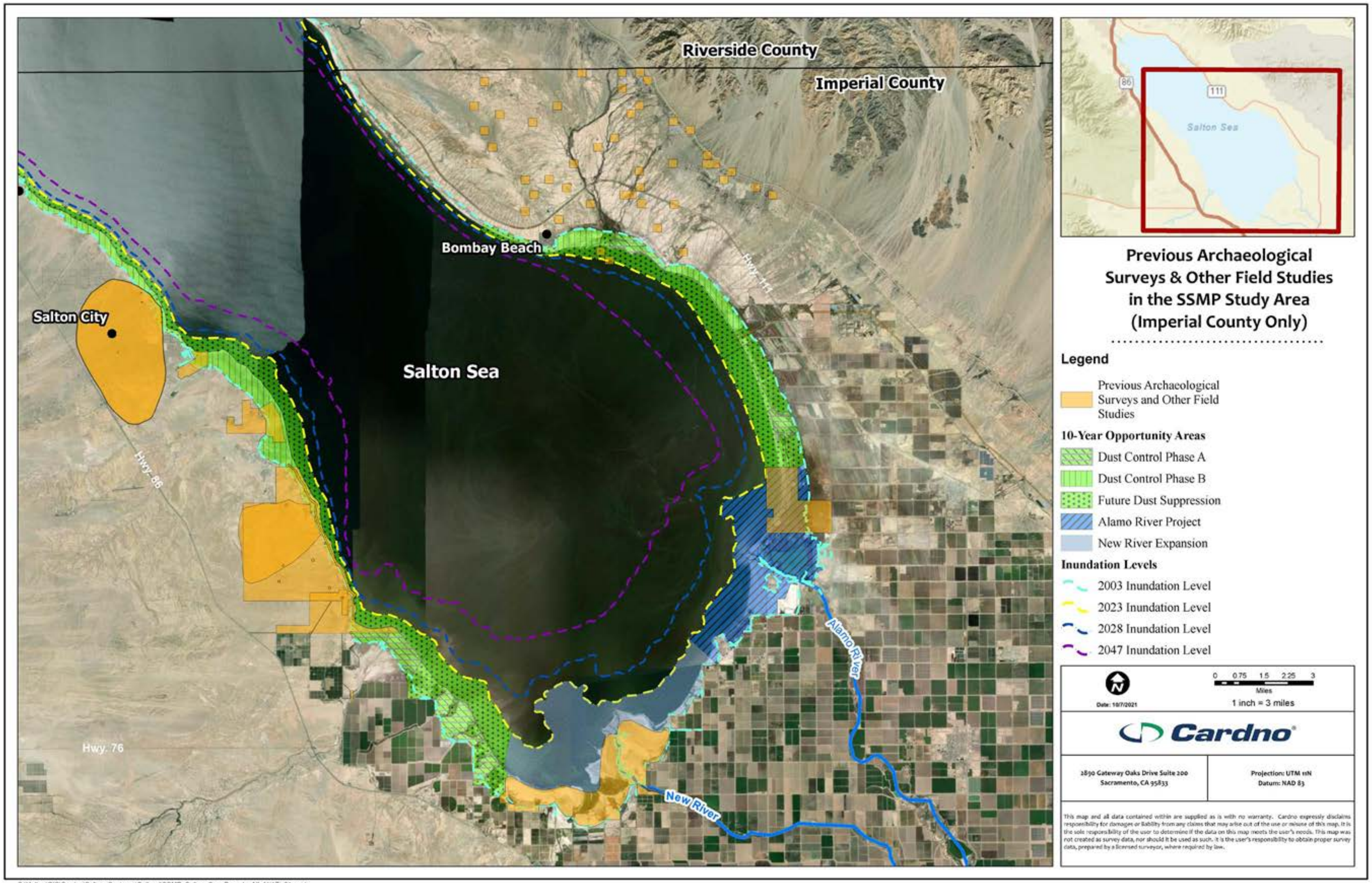


Figure 4-6 Previous Archaeological Surveys and Other Field Studies in the SSMP Study Area

4.7.3.1 Prehistoric and Historic Context

Prehistory

The Salton Trough is a 180-mile-long structural depression reaching approximately from Palm Springs to the Sea of Cortez. The present-day Salton Sea is contained within the Salton Trough. Formation of the Colorado River millions of years ago prevented waters from the Gulf of California from entering the Salton Trough, but the river periodically changed direction and flowed into the Salton Trough, creating an ephemeral freshwater lake known as Lake Cahuilla. When the Colorado River rerouted itself to once again flow into the Gulf of California, Lake Cahuilla evaporated. This cycle was repeated countless times throughout the Pleistocene and Holocene eras and encompassed the entirety of human prehistory in the California Desert, from the Paleoindian Period (8000–10,000 BC to 6000 BC) to the Late Prehistoric Period (A.D. 500 to historic times). However, details of the timing and duration of Lake Cahuilla in-filling are understood only for the last 2,000 years.

Archaeological and geological data suggest there were at least five episodes of in-filling during this period, most of which are estimated to have lasted several hundred years (Waters 1983; Wilke 1978). Recent data indicate the last in-filling of the lake occurred sometime during the Late Prehistoric Period in the 1600s, with a maximum level (high stand) at the 42-foot elevation around A.D. 1650–1680. At some point after this high stand, Ancient Lake Cahuilla evaporated and never refilled (Love and Dahdul 2002).

The presence of Lake Cahuilla in an otherwise arid environment would have provided important resources for the small, mobile groups of hunter-gatherers that lived in the area. Late Holocene archaeological deposits around the shorelines of Lake Cahuilla and the modern Salton Sea indicate the prehistoric presence of substantial fish populations and a large freshwater marsh that would have provided a number of important plant resources. The lake itself would have provided important habitats for aquatic birds, including year-round resident waterfowl, and migratory species such as ducks, geese and swans that would have been important sources of food and raw materials.

Prehistoric archaeological sites associated with ancient Lake Cahuilla shorelines around the Salton Sea include temporary habitations and other sites associated with the procurement and use of lacustrine resources, especially fish. Other local resources, particularly sources of lithic raw materials were exploited as needed to make chipped and ground stone tools used in hunting and gathering. Prehistoric use of the Lake Cahuilla/Salton Sea locale did not end when the freshwater lake receded and disappeared because other sources and locations of water and game were found. A recent analysis of Archaic and Late Prehistoric sites dating from 2,500 to 500 years ago indicates that if sites lacked fish bone, they often contained the remains of terrestrial game, especially cottontail and jackrabbits (Love and Dahdul 2002).

Ethnology

The traditional territories of two modern Native American groups—Cahuilla and Kumeyaay—encompass the Salton Sea, with possible ethnohistoric use by the Quechan and Halchidhoma. Cahuilla territory primarily encompasses the northern half of the Sea and includes the Torres Martinez Desert Cahuilla Indian Reservation. Portions of this reservation are located within and adjacent to the northwestern portion of the Sea and are within the SSMP study area. The traditional tribal lands of the Kumeyaay primarily encompass the southern half of the Sea, a portion of which is also within the study area. It has been speculated that the Quechan and Halchidhoma may have occupied the eastern shores of Lake Cahuilla, at least seasonally, in the past (BLM 2012).

Cahuilla. The Cahuilla lived in semi-permanent villages generally located within canyons or on alluvial fans near water sources such as creeks or springs. Cahuilla also established seasonal campsites across their territory to exploit seasonally available plant and animal resources, including acorns, honey mesquite, screw beans, piñon seeds, cactus fruit, berries, tubers, roots, deer, rabbit, antelope, bighorn sheep, reptiles, quails, and ducks (Bean 1978; Kroeber 1925). Animals were hunted with mesquite or willow bows and arrows, throwing sticks, and traps. Other items of material culture used by the Cahuilla include baskets, coiled pottery, manos and metates, mortars and pestles, charm stones; and bull-roarers (Bean 1978; Kroeber 1925). Some Cahuilla specialized as traders traveling as far as Santa Catalina in the west and the Gila River in the east (Bean 1978). Marine shell beads were used as a medium of exchange across Cahuilla territory and facilitated trade across a wide area.

Kumeyaay. Structures built by the Kumeyaay varied in form depending on the season. For example, summer residential structures often consisted only of a windbreak while winter residential structures were semi-subterranean pit houses with a with-tie pole framework and brush thatch. Kumeyaay relied heavily on seasonally available vegetal foods on valley floors and in the foothills and mountains (Ladastida and Caldeira 1995). In the spring, blossoms and buds were collected from blooming plants in the foothills. During the summer, cactus fruits, agave, and mesquite pods were collected in valleys. Small animals were hunted during both seasons. During the fall and winter, Kumeyaay moved into the mountains seeking shelter and food. Rock shelters and overhangs provided shelter from winter rain and snow, and acorns, pinyon nuts, and small game provided food. Kumeyaay material culture includes seed processing implements, such as the mortar and pestle and milling stones; baskets, which were used for seed winnowing and storage; plain and decorated reddish-brown ceramic vessels, which were used for both cooking and storing water; and the bow and arrow (Ladastida and Caldeira 1995). Kumeyaay primarily interacted and traded among themselves but did involve neighboring groups in certain trading activities. For example, coastal groups traded salt, dried seafood and abalone shells with interior valley groups for gourds, acorns, agave, and mesquite pods. Kumeyaay also traded for granite to manufacture mortar and pestles, and Quechans traded with the Kumeyaay for acorns and acorn flour (Luomala 1978; Shipek 1991).

Quechan and Halchidhoma. Although the Salton Sea is outside of the traditional territory of the Quechan and Halchidhoma, these groups may have occupied the eastern shore of Lake Cahuilla when it was present (BLM 2012:3-121). The Quechan settlement pattern focused on riverine subsistence resources and a mixed foraging way of life. Small scale agriculture was practiced as a supplement to the seasonal round strategy of hunting, fishing, and gathering.

4.7.3.2 History

The Euroamerican history of the Salton Sea vicinity dates to the 1500s with the arrival of Spanish explorers. The area around the Salton Sea; however, did not attract many settlers until its agricultural potential, particularly in Imperial County, was developed in the early 1900s. Beginning in the 1940s, the western side of the Salton Sea was developed with military facilities. After World War II, the recreational potential of the Salton Sea was recognized and activities proliferated, particularly in the 1950s and 1960s.

Military History

In 1942, the United States Navy commissioned the Naval Air Facility Salton Sea, located on the west side of the Salton Sea, as a seaplane base. In 1944 the base became a Naval Auxiliary Air Station connected to NAS San Diego. It has been reported that 25 World War II-era military aircraft crashed or made forced landings in or near the Salton Sea (AeroQuest 2014; Goolsby 2015). The Atomic Energy Commission acquired the base from the Navy in 1946. It was renamed the Salton Sea Test Base and used as a highly sophisticated test bombing range until operations ceased in 1961. Naval Air Facility El Centro subsequently used the site for parachute tests for the space program and for Marine and SEAL training exercises until 1979. It was placed on the base closure list in 1993, and in 1997 the Navy transferred the property to the BLM for conservation of natural and cultural resources (United States Navy 1997). The base was used for a variety of military training and research activities including seaplane and bombing operations, rocket development, and other uses. Features associated with the base can still be seen on the west side of the Salton Sea, including dikes, evaporation pits, the road to the old pier, and building foundations. This area has been designated by the BLM as the Salton Sea Hazardous Area of Critical Environmental Concern and is closed to the public due to various safety issues including unexploded ordnance.

Recreational Use

After several marine sport fish populations were introduced in the early 1950s, the Salton Sea became a popular destination for sport fishing, boating, water-skiing, and swimming. In recent years, however, recreational use at the Salton Sea has decreased, most likely due to a deteriorating water quality, odors, the decline of the sport fishery, and the declining surface water elevation. The North Shore Beach and Yacht Club, built in 1960, operated one of the largest marinas in Southern California and held boat races, parties, and other popular events. The facility was closed in the 1980s but was subsequently redeveloped as a community center and museum, which opened in 2010.

Of eight boat launching facilities that were active in the 1980s, only a single marina (Varner Harbor at the Salton Sea State Recreation Area) remains in operation, although it was closed for many years until dredging allowed it to reopen in 2016. The State Recreation Area was dedicated in 1955 and served as an important inland recreation area until the late 1970s, when visitation declined because of the deteriorating environmental quality of the Salton Sea (DWR and CDFG 2007). It still includes campgrounds, picnic tables, hiking trails, and shoreline access. Other local recreational resources used for wildlife viewing and photography, picnicking, and waterfowl hunting include the Sonny Bono Salton Sea National Wildlife Refuge, which was established in 1930 as a refuge and breeding habitat for wildlife, and the Imperial Wildlife Area, which was established in 1941 to provide habitat and forage for migratory waterfowl.

4.7.3.3 Cultural Resources in the Opportunity Areas

The Project's opportunity areas are located between the 2003 shoreline and the projected 2028 shoreline, and a few expanded areas as discussed in Chapter 3. Given that most archaeological surveys around the Salton Sea were conducted prior to 2003, the site record and literature search yielded only a few previous archaeological field surveys conducted within the opportunity areas and most are located on the west shore of the Salton Sea (AECOM 2015; Chambers Group, Inc. 2016, 2019). The AECOM study included a shoreline survey adjacent to the former Salton Sea Test Base (AECOM 2015). Only one prehistoric isolated ceramic sherd was found.

The 2016 Chambers survey inspected 67-acres along the shoreline and recorded two historic-era sites, including one abandoned boat ramp (P-13-014928) and the collapsed remains of a campground lavatory (P-13-013-014930). (See further descriptions below.) The 2019 Chambers' survey examined 355 acres of the exposed shoreline and recorded only three isolated milled wood beams lying on the dry lakebed. The Chambers report notes that over the last 150 years the area was alternately a dry lakebed, then submerged under water for most of the 20th century, and now has been exposed by the shrinking of the Salton Sea. As a result, the likelihood of finding intact archaeological deposits in this area was considered low.

In the southern part of the study area, Cardno's (2012) archaeological survey of the Species Conservation Habitat Project area found no cultural resources and noted that the southern shore of the Salton Sea is severely disturbed by erosion, agricultural activity, construction of roads on elevated roadbeds, construction of irrigation canals, and other activities such as recreation and trash dumping (Cardno 2012: 1–9). These results suggest that adjacent habitat restoration opportunity areas may also lack cultural resources on exposed surfaces.

In the far northern portion of the study area, record search results identified one cultural resource survey (TetraTech 2003) and no recorded sites in opportunity areas near the Whitewater River. The 2003 survey inspected four borehole locations for the Torres-Martinez Desert Cahuilla Indian Tribe Northshore Pilot Wetlands Project. The report noted the project area was inundated until the mid-1990s. No cultural resources were identified during the survey.

On the east side of the Project study area, record search results indicated no previous surveys or recorded sites within the opportunity areas.

2021 Survey of Select Dust Suppression Opportunity Areas. To augment the limited amount of previous work within opportunity areas, intensive archaeological surveys of SSMP dust suppression areas were recently conducted on Reclamation lands on the west and east sides of the Salton Sea (TetraTech 2021a), including Clubhouse 1, Tule Wash 1-2, Bombay West, and Bombay 2 areas (see Figure 4-5). Reclamation lands included all of Bombay West and large proportions of the other surveyed areas. Survey of almost 2,000 acres found no prehistoric resources, two newly discovered historic sites (P-13-018313 and -018314) and nine historic isolates (including four glass bottles, remnants of a hunting blind, and several wooden beams and glass bottle fragments). Three previously recorded historic sites (P-13-00776, -014928, -014930) were relocated and their site records updated. All resources were considered ineligible for listing in the NRHP. A review of existing data indicates the following:

> Portions of the opportunity areas have not been surveyed for cultural resources.

> Those portions that have been surveyed are characterized by the lack of prehistoric sites and a low density of historic-era sites and isolated artifacts, most of which relate to recreational development and use of the area during the mid-twentieth century. Some of the resources have been determined not eligible for listing in the NRHP.

> No subsurface cultural resource investigations have been conducted in the dry lakebed; therefore, there is an unknown potential for buried or submerged cultural resources to occur in the opportunity areas.

Cultural Resources Adjacent to the Opportunity Areas

This portion of the study area is included to characterize areas that could be used for vehicular access from public roads to future construction sites that will be developed within SSMP opportunity areas. Existing roads around the Salton Sea are fairly well developed in the north and south, although they generally do not extend directly into lower elevations where the opportunity areas are located. Road networks on the west and east sides of the Sea are not as well developed or extensive except within the immediate vicinity of local communities and recreation areas like Desert Shores and Salton City on the west and Bombay Beach, Mecca, North Shore, and the Salton Sea State Recreation Area on the east. Outside of these areas, roads are either nonexistent or primarily consist of unimproved dirt roads. Because specific SSMP access road locations are not yet known, the following provides a general discussion of cultural resources in this portion of the study area.

A review of previous archaeological surveys adjacent to the opportunity areas indicates that many areas have not been surveyed, although some extensive surveys have been conducted east of SR 86 on the west side of the Salton Sea. For example, a positive cultural resource inventory and evaluation efforts was conducted by the Navy as part of the base closure, ordnance cleanup, and land transfer for the former Salton Sea Test Base in the southwest portion of the study area.

Negative findings of other surveys north of the archaeological district (Brock 2009; Chambers Group, Inc. 2019; Gross 2005) indicate that areas on the west side of the Sea are not all archaeologically sensitive. Nonetheless, much of the west side has not been explored and unrecorded cultural resources likely exist in areas that could be used to access future construction sites in nearby opportunity areas.

Highway 111 is the primary public road along the east side of the Salton Sea. Only a few previous surveys have been conducted between Highway 111 and the shoreline adjacent to the Bombay West and Bombay 1-2 dust suppression areas. Sites recorded in this area include several historic dumps north of Bombay Beach. Again, most of the area has not been surveyed.

In sum, most parts of the study area that could be used for vehicular access to future construction sites within the opportunity zones have not been surveyed. Surveys that have been conducted in this part of the study area yielded widely dissimilar results.

4.8 ENERGY

This section focuses on the demand for electrical power that would be needed to operate the proposed SSMP Project.

4.8.1 Study Area

The study area comprises the service area of the IID, which would provide electrical power to the proposed SSMP Project. Issues associated with the compatibility of the proposed SSMP Project with geothermal development is also discussed in Section 4.2, *Land Use*.

4.8.2 Regulatory Requirements

Applicable federal, state, and local regulatory requirements for electrical power are provided in Table 4-29.

Table 4-29 Regulatory Requirements for Electrical Power

Branch	Regulation	Agency	Regulation Summary
Federal	Resource Management Plans	Bureau of Land Management (BLM)	The Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) identifies Development Focus Areas (DFAs) where solar, wind, and geothermal activities are allowed, streamlined, and incentivized. A description of renewable energy activities, policies, and allocations can be found in section 11.3, pages 55-69 of the DRECP LUPA.
State	Senate Bill 350, Clean Energy and Pollution Reduction Act of 2015	California Energy Commission	On October 7, 2015, California Governor Brown signed Senate Bill 350 into law to update and expand Senate Bill X1-2 renewable portfolio standards from 33 percent by 2020 to 50 percent by 2030 (IID 2018b).
State	California Global Warming Solutions Act of 2006 (Assembly Bill 32), and Executive Order S-14-08		This act directs all state entities, including irrigation districts, to achieve at least 33 percent renewable energy by 2020.
State	Executive Order B-30-15, Senate Bill 32		Executive Order B-30-15, issued on April 29, 2015, furthered GHG reductions in Assembly Bill 32 by establishing a California GHG reduction target of 40 percent below 1990 levels by 2030. In 2016, the Legislature passed Senate Bill 32, which formalized the 2030 GHG emissions reduction target of 40 percent below the 1990 levels set forth in Executive Order B-30-15 (IID 2018c).
State	Senate Bill 1368	California Energy Commission	This legislation limits any retail seller of electricity in California from entering into a long-term (over 5 years) financial commitment for baseload generation if the GHG emissions are higher than those from a combined-cycle natural gas power plant. This performance standard applies to local publicly owned electric utilities.
Local	2018 Integrated Resources Plan (IID 2018a)	IID	The plan attempts to merge IID's goals and objectives with regulatory requirements that mandate renewable energy portfolio standards to reduce GHG emission and acquire cost-effective resources. The plan includes a number of goals, including the following: • Implement energy efficiency programs necessary to reduce load by at least 5 percent by 2020. Adjust goals annually to comply with the targets of Senate Bill 350; • Meet or exceed all state and federal planning criteria for renewable resources with a goal of generating 29 percent of energy requirements from renewable sources/energy by 2018, 31 percent by 2019, at least 33 percent by 2020, 40 percent by

Branch	Regulation	Agency	Regulation Summary
			2024, 45 percent 2027, and 50 percent by 2030; and • Continue to reduce GHG emissions to meet or exceed Assembly Bill 32 and Senate Bill 350 defined goals.

4.8.3 Existing Conditions

The IID provides energy to more than 152,000 customers in the Imperial Valley and parts of Riverside and San Diego counties (IID 2018c, 2020b). The project area is within IID's energy service territory, which covers 6,471 square miles and includes all of Imperial County and parts of Riverside and San Diego counties (Figure 4-7). IID controls over 1,100 megawatts of energy, which comes from a variety of sources including its own generation, and short- and long-term power purchases. Renewable energy sources include geothermal, hydroelectric, solar, wind, biomass, and biowaste (IID 2020c).

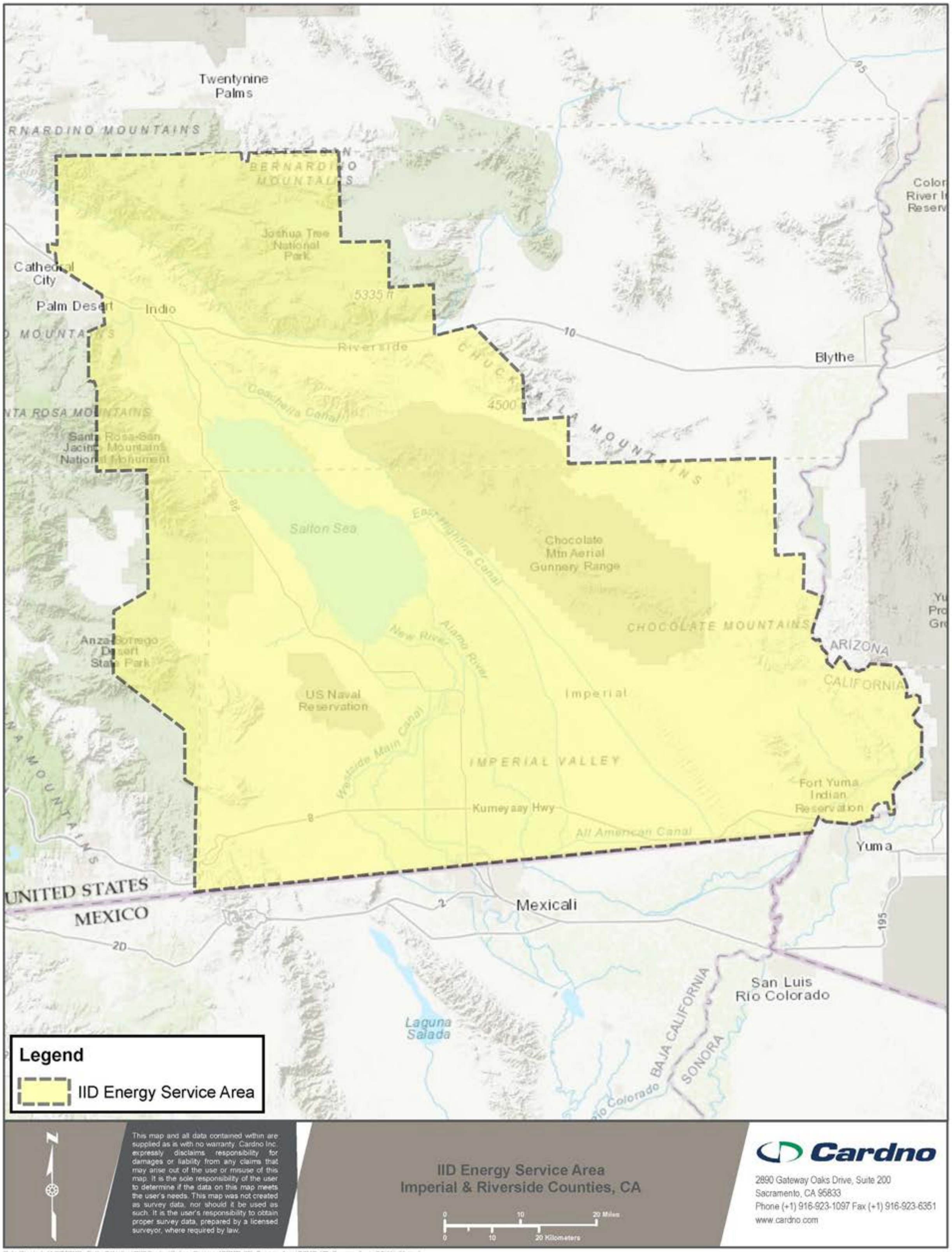
IID is required to have generation resources providing reserves totaling approximately 15 percent of the forecasted load. Therefore, IID is required to have generation resources plus purchases equal to approximately 1,218 megawatts for the peak summer month of 2016. IID's peak demand forecast in 2017 was 1,076 megawatts, which was the highest system peak demand. IID's 2018 forecast has a lower average annual growth rate of 1.2 percent for the first 10 years (2018–2027), and a higher average annual growth of 1.7 percent for the second 10 years (2028–2037) (IID 2018c).

IID employs a mix of IID-owned generation and purchase power contracts to meet its resource requirements. To meet the renewables portfolio standard and AB 32's cap-and-trade regulation, IID's resource fuel mix includes conventional forms of generation and imported purchases, as well as renewable resources (IID 2018c).

IID was required to meet renewable portfolio standards of 25 percent of retail load met by renewable resources by the end of 2016 and 33 percent by the end of 2020. IID outlined in the Integrated Resources Plan that meeting the third compliance period is a work in progress for 2029 and 2030 (IID 2018c). IID has added more geothermal resources to its renewable energy portfolio to meet renewable standards. In 2017, IID reported 28.6 percent renewable energy sources, and expects to meet and exceed compliance targets in the future (IID 2018b).

Ten geothermal power plants are located in the Salton Sea Known Geothermal Resource Area, which is located in the southeast area of the Sea, including areas around the Alamo River. These facilities are owned by CE Generation, LLC and operated by the CalEnergy Operating Corporation. The combined capacity of these geothermal facilities is approximately 345 net megawatts. IID purchases electricity produced at these facilities and IID also owns and operates the transmission lines that are used to connect geothermal power plants and deliver output to various customers (BHE Renewables 2021).

In addition, the BLM has identified priority parcels for renewable energy including geothermal development within the Project area as well as in the general vicinity of the Salton Sea. These priority parcels have been identified by BLM as Development Focus Areas and are shown in Figure 4-8.



Source: IID 2020

Figure 4-7 Imperial Irrigation District Service Area

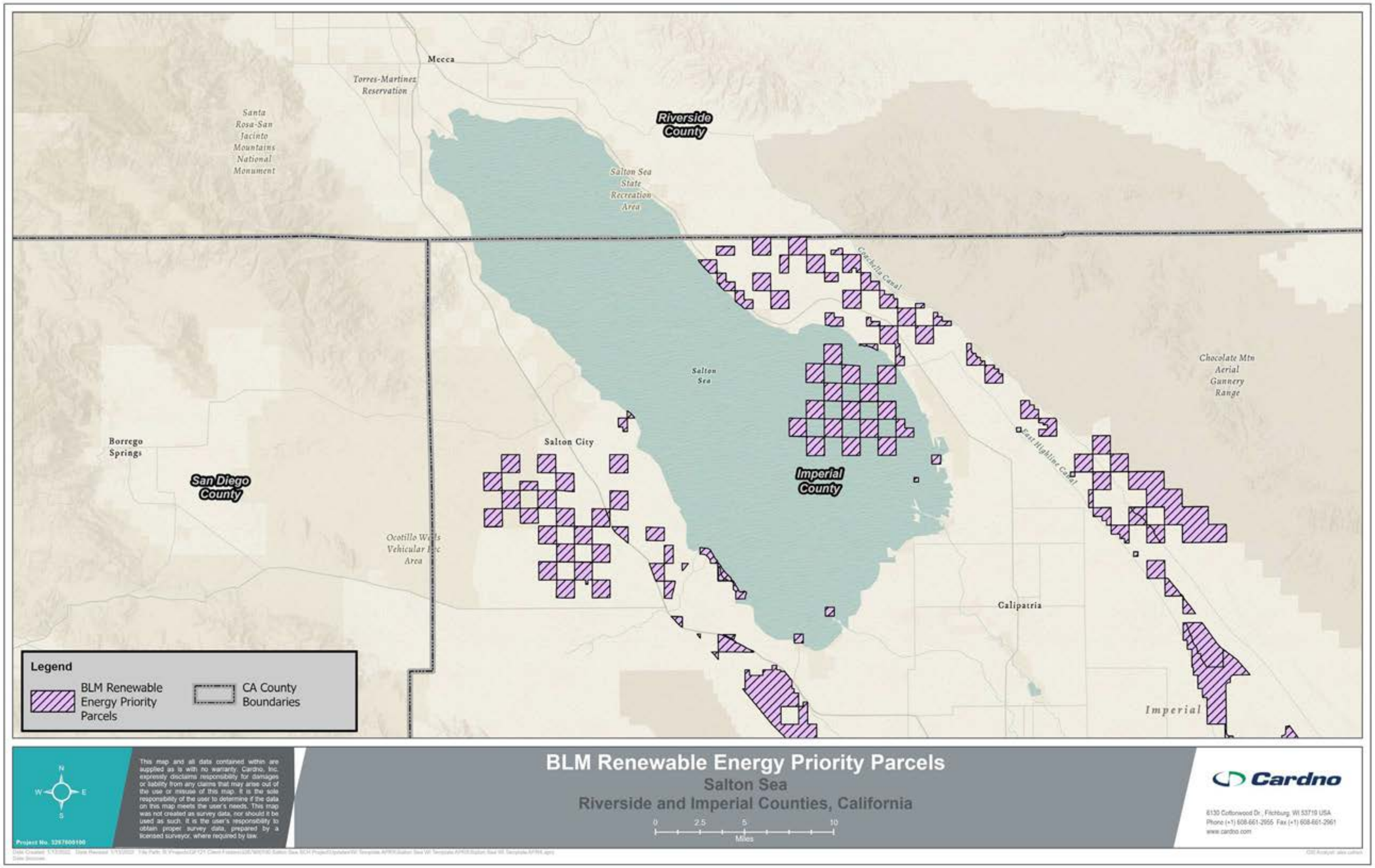


Figure 4-8 BLM Renewable Energy Priority Parcels

4.9 GEOLOGY, SOILS, SEISMIC AND MINERALS

The descriptions of the regional geologic environment, geologic history, faults, and historical earthquakes are taken from the PEIR (DWR and CDFG 2007) and additional details on the existing geology in the area can be found in that document.

This section addresses issues associated with geology, soils, faults and seismicity, and minerals. Construction of the SSMP Project would affect soils and minerals and the structures that would be built could be affected by local faults and seismic activity.

4.9.1 Study Area

The study area comprises the proposed alternative sites, and seismically active areas in the surrounding Salton Basin.

4.9.2 Regulatory Requirements

Regulatory requirements that are applicable to geology are provided in Table 4-30.

Table 4-30 Regulatory Requirements Applicable to Geology

Branch	Regulation	Agency	Regulation Summary
Geology, Soils, Seismic, Minerals			
Federal	Resource Management Plans	Bureau of Land Management (BLM)	The Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) outlines goals and objectives for resources located on BLM administered lands. Goals and objectives for mineral resources are located in section II.4.1.5 of page 78 of the DRECP LUPA. Any action on federal land is subject to Conservation and Management Actions (CMAs) that are required to meet the goals and objectives of a resource. Minerals and soils CMAs are described in detail in section II.4.2, pages 136-141 of the DRECP LUPA.
State	Alquist-Priolo Earthquake Fault Zone Act (Public Resources Code sections 2621 et seq.)		Passed in 1972 to prevent buildings from being constructed overactive faults. Designed to mitigate surface fault rupture by preventing construction of buildings for human occupancy across an active fault. It requires state zoning of active faults, and local review and regulation of development within the zones. A small area of the proposed Project near Bombay Beach is located within an Alquist-Priolo fault zone. No other proposed Project sites are located within an Alquist-Priolo fault zone (DOC 2021b).
State	California Code of Regulations, Title 24, Chapters 16 and 17		Include standards for structural and seismic design of structures. The Salton Sea is located in Seismic Zone 4; therefore, the seismic performance objectives include: -To sustain minimal or no damage under minor earthquake ground motion;

Branch	Regulation	Agency	Regulation Summary
			-To limit damage to nonstructural features under moderate level earthquake ground motion; and -To limit damage to structural and nonstructural features without collapse under major level earthquake ground motion.
State	California Water Code, Division 3	DSOD	Establishes standards for dams and reservoirs under jurisdiction of the California Department of Water Resources (DWR) to ensure the safeguard of life and property from dam failure. The Division of Safety of Dams (DSOD) must grant written approval before construction can proceed on any new dam within DSOD jurisdiction. Berms constructed for the project would be exempt from DSOD jurisdiction. Fish and Game Code 2931.5 states the following: (a) The construction of facilities to separate fresh water from highly saline water for the purposes of implementing restoration activities pursuant to this chapter shall not be subject to review, approval, inspection, or any fees associated with implementing Division 3 (commencing with Section 6000) of the Water Code. (b) No barrier in the Salton Sea within or below the minus 220 foot contour based on the North American Vertical Datum of 1988 shall be considered a dam.
Local	General Plans	Imperial County, Riverside County	The general plans of Imperial and Riverside counties contain goals and policies for protection of geologic features, soil resources, and avoidance of geologic hazards. Building codes and grading ordinances establish specific regulations for construction procedures, including erosion control measures.

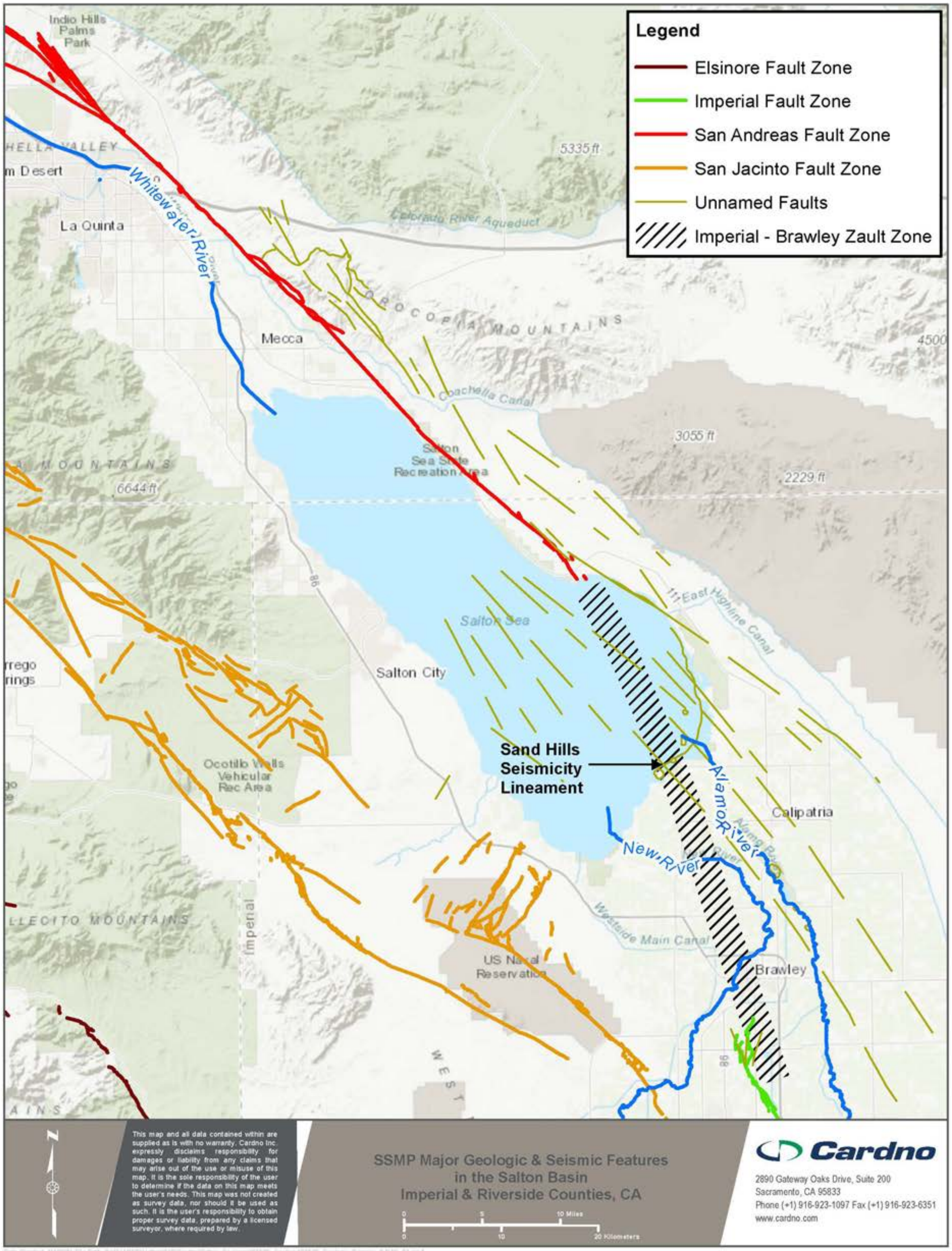
4.9.3 Existing Conditions

4.9.3.1 Geology

The Salton Sea is located within a portion of the interior-draining Salton Basin. No drainage occurs from the basin to the Gulf of California due to sediment deposition at the southern end of the basin. Several subbasins drain into the Salton Sea, including the Whitewater River, Salt Creek, and San Felipe Creek. The largest flow into the Sea is from the Imperial Valley to the south from the New and Alamo rivers, which primarily convey drainage flows from irrigated lands and some waterflow from Mexico.

The Salton Basin is located in the Salton Trough, which is a deep north-west trending structural depression extending from San Gorgonio Pass to the Gulf of California. The Salton Trough is bounded to the north by the Transverse Ranges geomorphic province, to the northeast by the Mojave Desert geomorphic province, and to the west by the Peninsular Ranges geomorphic province. The oldest exposed rocks in the region surrounding the Salton Trough are Precambrian gneisses, anorthosites, and schists. These rocks are intruded by younger Paleozoic to Cenozoic plutonic rocks. The sediments within the Salton Trough range in age from Miocene to Holocene. The oldest sediments are coarse clastic sediments derived from the surrounding crystalline rocks. These deposits are overlain by essentially continuous deposits of volcanics, lacustrine, evaporites, marine, fluvial and deltaic sediments. The Colorado River serves as the greatest source of sediment in the area.

Major geologic and seismic features in the Salton Basin are shown in Figure 4-9.



Source: Department of Conservation, California Geological Survey 2010

Figure 4-9 Location of Faults near the Salton Sea

4.9.3.2 Soils

Soils adjacent to the Salton Sea include soil units within the Salton Trough, which were formed on fine-grained sediments on the bed of Lake Cahuilla and alluvial fans bearing sediment from adjacent highlands. A wide range of desert and alluvial soil types are present in the areas adjacent to the Sea, with soil textures ranging from well-drained sands to silty clay loams (DWR and CDFG 2007). The percentage of the upper soil profile that is composed of sand is provided for locations around the Salton Sea in Figures 4-10a and 4-10b. The percentage of sand metric is used because particulate matter emissions is closely correlated with the presence of soils with higher sand content. Soils with a higher proportion of sand particles have a higher degree of saltation which is the primary process by which silt particles in the soil become airborne and cause particulate matter emissions. The emissivity of soils in the project area are shown in Figure 3-2. More detailed soil information is available through the IID data portal.[16]

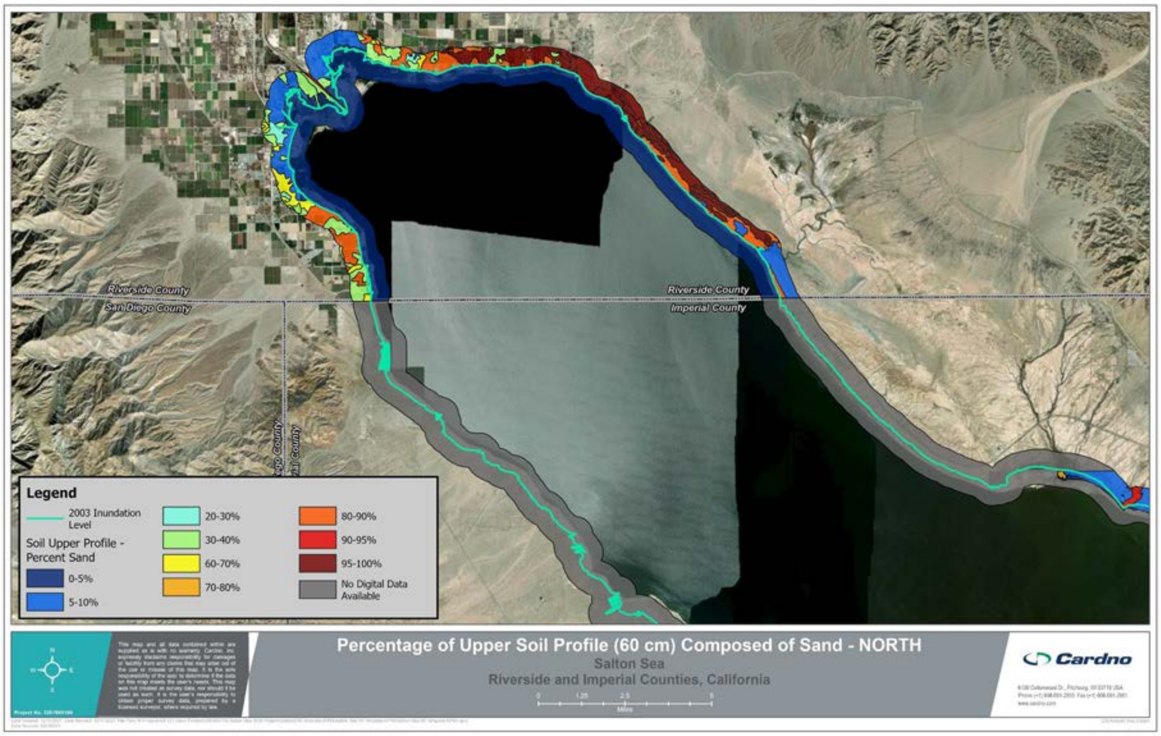
Soils within the Salton Sea are derived from lacustrine evaporites (lake deposits). Table 4-31 summarizes their characteristics.

Table 4-31 Characterization of In-Sea Soils at the Salton Sea

Soil Type	Description
Sea Floor Deposits	Composed of recently deposited, very soft to loose, highly plastic clays to silty fine sands. Thickness ranges from 0 to 21 feet with the greatest thickness occurring in the southern and mid-Sea areas.
Soft Lacustrine Deposits	Underlying the Sea Floor Deposits across much of the Salton Sea. Materials consist of highly plastic, soft to very soft clays ranging in thickness from 0 to 26 feet. Thickest deposits found in the Whitewater River delta and the mid-Sea's easterly area.
Upper Alluvial Deposits	Interspaced between the Soft and Stiff Lacustrine Deposits and predominant near the Sea's perimeter. Composed of loose to dense silty fine sands with interbedded silt and sand lenses and ranging in thickness from 0 to 26 feet. Thickest deposits found in northeast, southwest, and west-central margins of the Sea.
Upper Stiff Lacustrine Deposits	Underlying both the Soft Lacustrine and Upper Alluvial Deposits. Comprised of predominantly stiff to very stiff, highly plastic clays ranging in thickness from 4 to 31 feet. Thickest deposits found in the mid-Sea's eastern area and southeastern area near the Alamo River delta.
Lower Alluvial Deposits	Similar to the Upper Alluvial Deposits except that their density is greater, ranging in consistency from medium dense to dense. Predominant in the southern area of the Salton Sea, ranging from 0 to 22 feet in thickness
Lower Stiff Lacustrine Deposits	Thought to underlie the entire Salton Sea, with a thickness much greater than 100 feet. This layer is primarily hardened plastic clay.

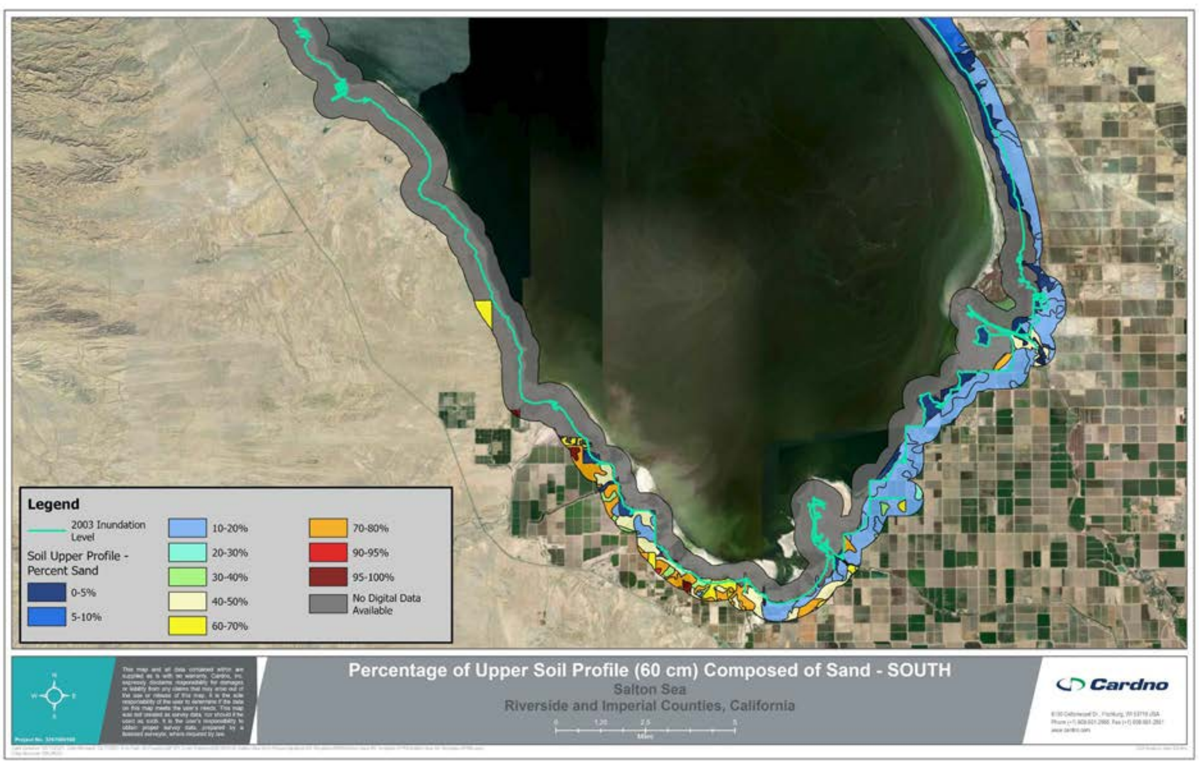
Source: DWR and CDFG 2007

[16] Available at: https://www.saltonseaprogram.com/aqm/data-portal/data-portal.php#.



Source: NRCS 2021

Figure 4-10a Sand Composition in Soils near the Salton Sea



Source: NRCS 2021

Figure 4-10b Sand Composition in Upper Soil Profile near the Salton Sea

4.9.3.3 Seismic

Northwest-trending faults and associated folding cross the Salton Basin, the Imperial Valley, and the mountains to the west. These faults are predominately right-lateral and can be divided into three main fault zones, the San Andreas, San Jacinto, and Elsinore. The Coachella Segment of the San Andreas Fault forms the northeastern boundary of the Salton Trough. The fault is evident on the ground surface from north of the Salton Sea to just north of Bombay Beach located on the east shore of the Sea. It is not evident on the ground surface to the southeast of the Salton Sea. The San Jacinto Fault Zone is located just to the west of the Salton Sea and consists of a complex system of faults. The Imperial Valley, located just south of the Salton Sea, is one of the most seismically active regions in Southern California. The Elsinore Fault Zone is located west of the San Jacinto Fault Zone and borders the southwest face of the Coyote Mountains. These fault zones are discussed in more detail below in Table 4-32. A small area of the northwest portion of the Bombay Beach Wetland Project footprint is located within an Alquist-Priolo fault zone (DOC 2021b). This fault zone also includes residences in the community of Bombay Beach. A collateral hazard of seismic events is the potential to cause fugitive dust emissions, which can result in public health issues.

Table 4-32 Fault Zones near the Salton Sea

Fault Name	Description
San Andreas Fault	Enters the Salton Trough at the northwest end of the Coachella Valley. Fault system constitutes the main structural boundary between the Pacific and North American plates. Traceable from the Gulf of California northward to Shelter Cove Coast in Humboldt County. Regionally, it is traceable from the town of Niland east of the Salton Sea northward through San Gorgonio Pass. Fault zone continues southward into Mexico as the Sand Hills and Algodones Fault. Right-lateral with an approximate offset of 200 miles. The offset in Southern California is estimated to have begun in the late Miocene and early Pliocene (5,000,000 to 10,000,000 years ago) (Van Gilder 2000 as cited in DWR and CDFG 2007).
San Jacinto Fault Zone	Major strand of the San Andreas Fault System. Extends southeastward from Cajon Pass as a series of splays into the Salton Trough. Extremely active system. Right lateral displacement on fault zone is about 19 miles. Vertical separations along the zone exceed 8,000 feet in the Santa Rosa Mountains. San Jacinto Fault is thought to be Plio-Pleistocene based on vertebrate and plant remains but may be younger than 1,000,000 years as indicated by lateral offset of the late Pleistocene Ocotillo Conglomerate (Van Gilder 2000 as cited in DWR and CDFG 2007).
Elsinore Fault Zone	Extends from the northern Peninsular Range southward to the Gulf of California. Fault zone is parallel and west of the San Jacinto Fault Zone. Right lateral displacement along the main fault trace is about 30 miles. Vertical displacement and relief features along this fault reach as much as 9,000 feet. Considered to be older than the San Jacinto Fault, between 1,800,000 and 2,700,000 years ago (Van Gilder 2000 as cited in DWR and CDFG 2007).
Brawley Seismic Zone	Comprised of the Imperial-Brawley fault system and is a zone of high seismicity extending from the northern reach of the Imperial Fault northwest into the Salton Sea. Marked by parallel or near-parallel, closely-spaced, step-like, right-lateral faults that trend northwest and are linked by conjugate left-lateral structures (Larson and Reilinger 1991 as cited in DWR and CDFG 2007). The Sand Hills Seismicity Lineament extends southeast from the southern tip of the San Andreas Fault within this seismic zone and may represent the southern extension of the San Andreas Fault.

Source: DWR and CDFG 2007

4.9.3.4 Geologic Hazards

Geologic hazards that may occur in the Salton Trough include the following: potential for earthquake rupture or shaking (discussed under Section 4.9.3.3 above), subsidence as a result of groundwater overdraft, liquefaction of loose saturated soils during earthquakes, landslides in areas of steep topography, lateral spreading, seiches, and volcanic hazards. These hazards are described below.

Subsidence

Subsidence can occur when pore pressure within a groundwater system is reduced (usually as a result of groundwater extraction) to the point that the aquifer framework compresses. This process is more common in systems where finer-grained sediments such as clay or silt dominate the aquifer framework. Subsidence can also occur as a result of tectonic activity or reservoir loading.

Subsidence investigations in the Coachella Valley have focused on its southern portion near the Salton Sea. Increased groundwater pumping to meet increasing water demands makes the area susceptible to subsidence. Subsidence of up to 0.5 foot occurred for the period 1928 to 1996. Additional subsidence of up to 0.13 foot may have occurred between 1996 and 1998. Investigations in the Imperial Valley evaluated potential subsidence due to geothermal energy generation activities along the southern Salton Sea shoreline. Studies determined that subsidence was not occurring as a result of geothermal development because the water was being reinjected following energy generation. Subsidence due to other factors is occurring in the southern Salton Sea at a rate of about 10 millimeters per year (Corps and CNRA 2013).

Both the state and IID have efforts underway to construct varying types and depths of groundwater wells to develop a better understanding of the depth to water, water quality, sustainable yield and potential intrusion of Salton Sea water. IID plans to install piezometers on their wells to collect additional information. The SSMP team intends to develop a model to determine the impact to groundwater as the sea subsides once access to additional information is available. The state plans to use monitoring well installation and groundwater testing to determine sustainable groundwater use for DSAP projects, which would not result in subsidence (E. Willhoff, personal communication, 2021).

Liquefaction

Liquefaction may occur when shallow (less than 50 feet below grade), saturated, unconsolidated material is subjected to shaking. The shaking causes porewater pressure to increase, and the material to lose its structural integrity and behave as a liquid. Liguefaction commonly occurs where shallow groundwater is present, near surface water bodies, or in filled areas. Shallow groundwater occurs in extensive areas of the Salton Trough, and liquefaction is considered to be a hazard in both the Imperial and Coachella valleys.

Landslides

Landslides most commonly occur in areas of and adjacent to steep slopes. Earthquakes may often trigger them. Within the Salton Trough region, landslide potential is greatest along the valley margins. It could also occur on a minor scale along embankments that often occur along canals. Because of the broad, low-lying character of the study area, landslide potential throughout the area is low.

Lateral Spreading

Lateral spreading is the separating or rupturing of the ground surface as a result of strong ground shaking. Lateral spreading commonly occurs along drainage banks, cliffs, or other areas with steep or nearly vertical slopes, where generally loose sediments collapse due to lack of lateral support. Lateral spreading does not necessarily take place along an active fault, but rather is generally associated with liquefaction caused by seismically induced ground shaking. Within the study area, lateral spreading is most likely to occur along river, creek, and drain banks. The potential for lateral spreading to occur along the steep channel slopes of the New and Alamo rivers in the more southern study area is moderate to high. However, the potential for lateral spreading to occur in areas near the Salton Sea is relatively low as the rivers, creeks, and drains tend to have generally gentle to moderately sloping banks near the Salton Sea.

Seiches

Seiches are large waves in lakes produced by either wind or seismic activity. No occurrences of seiches are documented at the Salton Sea. However, because of the Salton Sea's shallowness and the fact that the region is seismically active, the potential exists for a seiche to occur in the Sea.

Volcanic Hazards

Presences of volcanoes, rhyolite domes, geothermal fields, mud pots, and hot springs indicate that volcanism exists in the Salton Trough. These features are located primarily in the Mexicali and Imperial valleys.

The Cerro Prieto volcano is located southeast of Mexicali, near the Cerro Prieto Fault and the Cerro Prieto geothermal field. The volcano is a prominent feature in the area but is not related to the geothermal field. The volcano last erupted between 10,000 and 100,000 years ago. Mud pots, mud volcanoes, geysers, and fumaroles also occur near the Cerro Prieto volcano. An active geyser occurred in the area for several months as recently as 1991. Mud pots and mud volcanoes are located southeast of the Salton Sea near Niland. The mud volcanoes that occur in this area are 3 to 6 feet in height and up to 10 feet wide. The mud pots are smaller than the mud volcanoes (no more than a couple of feet high or wide). The mud in the mud volcanoes is generally hotter than in the mud pots. Mud pots are present adjacent to and within the Project area east of the Alamo River in Morton Bay. Several other sites are currently under water in the Sea near Mullet Island (DWR and CDFG 2007).

4.9.3.5 Minerals

Minerals found throughout Imperial County include gold, gypsum, sand, gravel, lime, clay, stone, kyanite, limestone, sericite, mica, tuff, salt, potash, and manganese. These resources are extracted through commercial enterprises (County of Imperial 2016). Mineral resource extraction is limited to a relatively small number of sites throughout Imperial County. Several mining/reclamation areas in Imperial County are in the vicinity of the project area, including sand and gravel areas east of Bombay Beach and west of Salton City and Desert Shores, and pumice, potassium, and salt areas in the vicinity of the southern shoreline of the Sea (County of Imperial 2016).

Mineral extraction is an important component of Riverside County's economy. Riverside County has extensive deposits of clay, limestone, iron, sand, and aggregates (County of Riverside

2015b). The mineral resource zones adjacent to the project areas in Riverside County are designated *MRZ-4: Presence and significance of mineral deposits undetermined* on the north/northeast area of the Sea and the north/northwest area has not been studied and does not have a designated MRZ (County of Riverside 2015c).

High concentrations of lithium are found in the brine produced by California's geothermal hotspots, including the Salton Sea KGRA, which is located within the Imperial Irrigation District (IID). The California Energy Commission awarded a grant to BHER Minerals, LLC for a lithium extraction demonstration project at an existing geothermal power facility in Calipatria, to process geothermal brine in order to produce battery-grade lithium carbonate. Recovery of lithium from geothermal brines is expected to help the economics of geothermal energy production in California by generating revenue from the production and sale of lithium carbonate. Lithium recovery is also expected to create thousands of new jobs in the United States. The high demand for lithium batteries used in portable devices, electric vehicles and electrical grid storage has increased production of lithium carbonate and lithium hydroxide over the past few years. Currently, the price of lithium is around $12,000 per ton, and the Salton Sea KGRA is capable of producing an estimated 600,000 tons of lithium carbonate per year with a total value of $7.2 billion (California Energy Commission 2020).

4.10 HAZARDOUS WASTE AND MATERIALS

Hazards and hazardous materials are generally characterized by chemical and physical properties that cause a substance to be considered hazardous, including toxicity, ignitability, corrosivity, and reactivity. Within typical construction sites, materials that could be considered hazardous include fuels, motor oil, grease and other lubricants, solvents, soldering and welding equipment, and glues. Also, excavation may expose buried hazardous materials resulting from prior use of the site or adjacent property.

4.10.1 Introduction

This section discusses hazards and hazardous materials as they relate to public health and worker safety. The public health hazards considered include explosive hazards associated with unexploded ordinance, risk of selenium exposure due to consumption of fish from SSMP ponds and waterfowl that have foraged at the ponds, risks from a potential increase in mosquitos at the SSMP ponds and sedimentation basins, and potential for air and dust-borne diseases. The potential for increased wildland fire risks is also considered, as are potential risks to civilian and military aircraft associated with bird airstrikes. Issues associated with hazardous materials include the potential for public and worker exposure to hazardous wastes or hazardous materials.

Issues associated with geological hazards such as earthquake and flooding potential are discussed in Sections 4.9 and 4.12 respectively. Potential effects on air quality that could affect public health are discussed in Section 4.3.

The study area encompasses the construction footprint and associated easements, as well as nearby airspace; surrounding communities also are included in the study area because of the potential for an increase in mosquito vectors.

4.10.2 Regulatory Requirements

Table 4-33 identifies the federal, state, and local agencies involved in enforcing public health and safety laws and regulations in the study area.

Table 4-33 Regulatory Requirements for Public Health and Safety Laws

Govt	Regulation	Agency	Regulation Summary
Hazards and Hazardous Materials			
Federal	*Resource Conservation and Recovery Act of 1976 (42 USC Section 6901-6987)*	USEPA	The goal of the Resource Conservation and Recovery Act (RCRA), a Federal statute passed in 1976, is the protection of human health and the environment, the reduction of waste, the conservation of energy and natural resources, and the elimination of the generation of hazardous waste as expeditiously as possible. The Hazardous and Solid Waste Amendments (HSWA) of 1984 significantly expanded the scope of RCRA by adding new corrective action requirements, land disposal restrictions, and technical requirements. The corresponding regulations in 40 CFR sections 260-299 provide the general framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and disposed of hazardous waste. In California, the USEPA has delegated most of the regulatory responsibilities to the State. In California, the RCRA program is codified through the Health and Safety Code sections 25100 et seq., and implemented through the CCR, Title 22, Division 4.5, Environmental Health Standards for the Management of Hazardous Wastes.
Federal	*Comprehensive Environmental Response, Compensation and Liability Act*	USEPA	The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known also as Superfund, was passed in 1980 in response to some alarming and decidedly unacceptable hazardous waste practices and management going on in the 1970s. Its purpose is to identify sites where hazardous materials threaten the environment and or public health as a result of leakage, spillage, or general mismanagement (particularly the lack of a good hazardous waste removal plan), and then to identify the responsible party. The next (and most important) job-at-hand is clean-up (and to try to ensure the party responsible for the mess is also held responsible for the clean-up). These sites are referred to as Superfund Sites. CERCLA authorizes Superfund cleanup responses in two ways: short-term removal and long-term environmental remediation. These actions can be conducted only at sites listed on USEPA's National Priorities List (NPL). The removal actions are meant to be undertaken promptly to abate, prevent, minimize, stabilize, mitigate or ideally eliminate the threat. These actions deal not only with listed hazardous materials and substances but also any contaminants or pollutants, with the exception of oil and gas.
Federal	*Toxic Substances Control Act*	USEPA	The Toxic Substances Control Act (TSCA) of 1976 provides USEPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to

Govt	Regulation	Agency	Regulation Summary
			chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides. TSCA addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon and lead-based paint.
Federal	*Emergency Planning and Community Right-to-Know Act of 1986*	USEPA	The USEPA regulates the management of hazardous materials and wastes. The Federal Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 imposes hazardous materials planning requirements to help protect local communities in the event of accidental chemical release. It also requires industry to report on the storage, use and releases of hazardous substances to federal, state, and local governments. EPCRA requires state and local governments, and Indian tribes to use this information to prepare for and protect their communities from potential risks.
State	*Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5)*	DTSC	This statute is the basic hazardous waste law for California. The Hazardous Waste Control implements the Federal RCRA cradle-to-grave waste management system in California. California hazardous waste regulations can be found in Title 22, Division 4.5, Environmental Health Standards for the Management of Hazardous Wastes. The program is administered by the Department of Toxic Substances Control (DTSC).
State	*Hazardous Material Release Response Plans and Inventory Law (California Health and Safety Code, Division 20, Chapter 6.95)*	CalEPA Imperial County Public Health Department	This state right-to-know law requires businesses to develop a Hazardous Material Management Plan or a "business plan" for hazardous materials emergencies if they handle more than 500 pounds, 55 gallons, or 200 cubic feet of hazardous materials. In addition, the business plan includes an inventory of all hazardous materials stored or handled at the facility above these thresholds. This law is designed to reduce the occurrence and severity of hazardous materials releases. The administering agency for the SCH Project would be the Certified Unified Program Agency, in this case, the Imperial County. Imperial County Public Health Department, Section of Environmental Health and Consumer Protection Services.
Public Health and Safety			
State	*Mosquito Abatement and Vector Control District Law (California Health and Safety Code, Sections 2002(j)(k); 2060(b))*		This law specifies that the person or agency claiming ownership, title, or right to property or who controls the diversion, delivery, conveyance, or flow of water shall be responsible for the abatement of a public nuisance that is caused by, or as a result of, that property or the diversion, delivery, conveyance, or control of that water. "Public nuisance" means any of the following: 1. Any property, excluding water, that has been artificially altered from its natural condition so that it now supports the development, attraction, or harborage of vectors. The presence of vectors in their developmental stages on a property is prima

Govt	Regulation	Agency	Regulation Summary
			facie evidence that the property is a public nuisance. 2. Any water that is a breeding place for vectors. The presence of vectors in their developmental stages in the water is prima facie evidence that the water is a public nuisance. 3. Any activity that supports the development, attraction, or harborage of vectors, or that facilitates the introduction or spread of vectors. "Vector" means any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitos, flies, mites, ticks, other arthropods, and rodents and other vertebrates.
State	California Public Resources Code		The California Public Resources Code includes fire safety regulations that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment that has an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided onsite for various types of work in fire-prone areas.
State	Various	CalEPA - Office of Environmental Health Hazard Assessment (OEHHA)	Responsible for evaluating the potential public health risks of chemical containments in sport fish and issuing state advisories, when appropriate, OEHHA is also consulted by other agencies interested in assessing the health risk of fish consumption during the process of developing water quality or cleanup “criteria.” There are key differences between fish consumption advisories and other environmental risk criteria; advisories consider the significant benefits of fish consumption, while criteria may be strictly risk-based and may not take into account other factors.
State	*Various*	California Department of Public Health	Provides resources and information for Public Health concerns in California, which include Hantavirus cardiopulmonary syndrome (HCPS), valley fever, and West Nile virus.
State	Various	California Occupational Safety and Health Administration (Cal/OSHA)	Has oversight of worker safety. Regulations dealing with worker safety are found in Title 8 California Code of Regulations. These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to worker safety during construction and operation, fire safety, and hazardous materials use, storage, and handling.
Local	Various	Imperial County Vector Control District (ICVCD)	Responsible for vector control in the study area, including detecting and reducing the spread of mosquito-borne disease through surveillance and abatement activities.

4.10.3 Existing Conditions

4.10.3.1 Hazardous Materials

Industries, military installations, and other entities use many types of hazardous materials, ranging from fuels and solvents to radioactive materials. Numerous fuels, chemicals, and other hazardous materials are also transported via roadways and railways. Additionally, substantial areas adjacent to the Salton Sea are used for agricultural purposes.

Within the study area, constituents associated with agricultural operations, Department of Defense activities, and selenium from Colorado River water supplies are considered when evaluating hazards, hazardous wastes, and public health. Historically, materials that cause hazards have been used or accumulated in the study area at times when these materials were not considered to be hazardous. In the past few decades, regulatory agencies have developed an understanding about the risks and adopted regulations to manage these materials. The regulations have reduced the extent and frequency of accumulation of additional material and the risk of exposure.

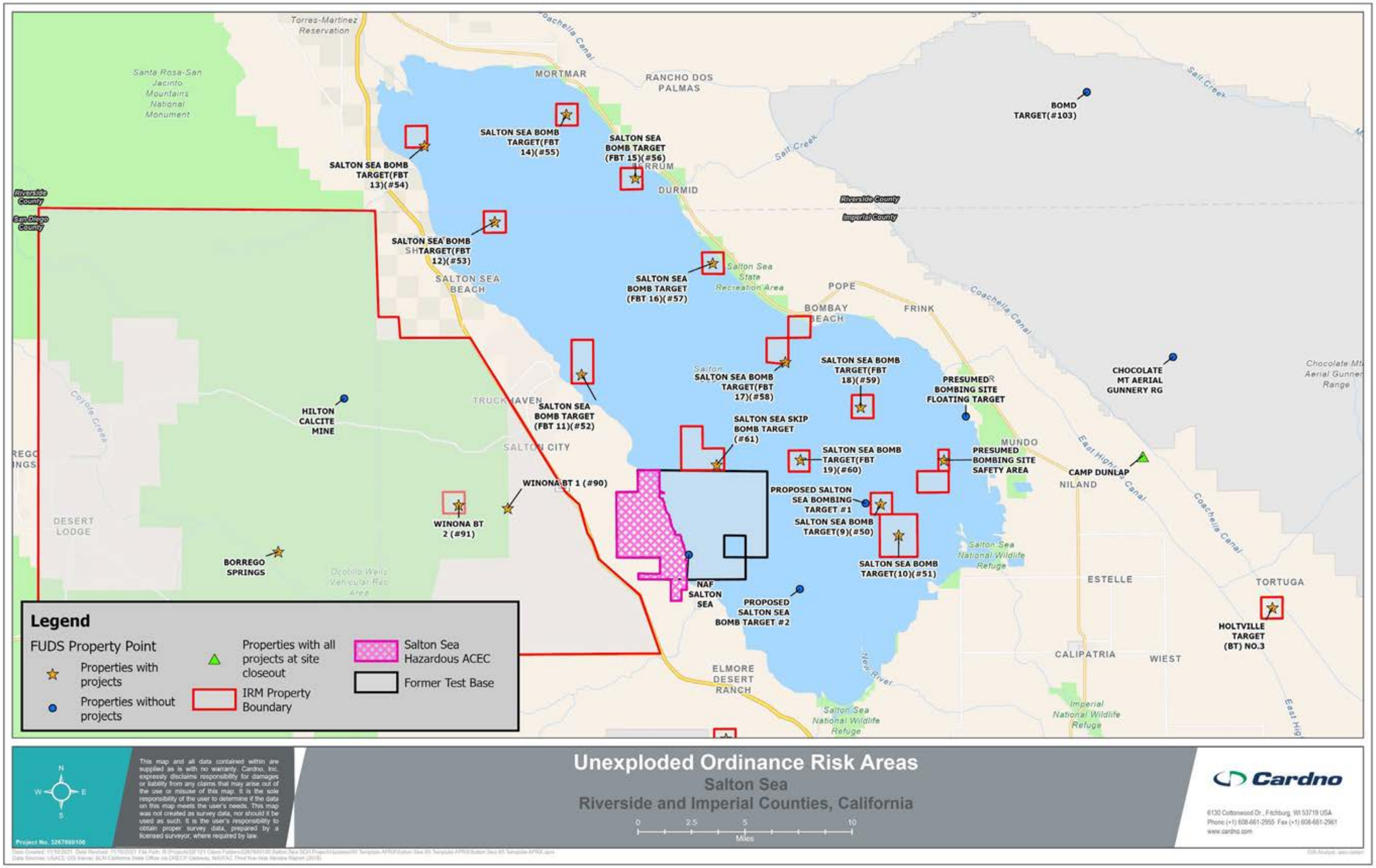
Unexploded Ordnance

The former Salton Sea Test Base (SSTB) was originally established by the Department of the Navy as the Salton Sea Naval Air facility in 1942 and currently encompasses approximately 20,731 acres. Operations at the facility included seaplane and bombing range operations, rocket development work, and testing of jet engine propellant mixtures. The SSTB was also used for tests of the Mercury space capsules parachute landing system, and as a joint Parachute Test Facility by the Navy and the Air Force. The facility was intermittently used in the early 1990s to support United States military training operations (NAVFAC 2021).

Full-time occupation of the facility was terminated in September 1987, with the removal of Navy security forces and closed under the Base Realignment and Closure program. The United States Navy, Southwest Division, transferred ownership of the SSTB to the BLM in September 2000. While the property is under BLM jurisdiction, the United States Navy is responsible for evaluation and cleanup of residual site contamination. The former SSTB was designated as the Salton Sea Hazardous ACEC by the BLM in 2016 as part of the planning activities of the DRECP by the BLM (BLM 2016). It is closed to the public due to the continued risk of unexploded ordinances (UXOs) and does not allow for any Right-of-Way projects.

Information about ordnance and explosive wastes or other hazardous materials concerns at the SSTB was originally sourced from the Southwest Division Naval Facilities Engineering Command (NAVFAC), Central Records storage and discussions with the NAVFAC SSTB Remedial Project Manager (Swartz 2005) for the PEIR (DWR and CDFG 2007) and remains applicable to the study area. Delimited lands along part of the west side of the Salton Sea include both BLM and Reclamation lands. The Salton Sea Hazardous ACEC is illustrated on Figure 4-11.

Up to 18 target sites across the Salton Sea were used for practice bombing by the United States Navy during World War II. UXOs and munitions may lie on or within the floor of the Salton Sea over the 12,200-acre area where the bombing targets previously existed. Figure 4-11 and Table 4-34 detail portions of the study area that present potential hazards from UXOs.



Source: DoD

Figure 4-11 Unexploded Ordinance Risk Areas

Table 4-34 Unexploded ordinance (UXO) risk areas

Location Designation	Area extents (mi^2)	Risk Level	Expected Cleanup Completion
SALTON SEA BOMB TARGET (FBT 16)(#57)	1.01	Medium	2038
SALTON SEA BOMB TARGET (FBT 17)(#58)	2.24	Medium	2070
SALTON SEA BOMB TARGET (FBT 11)(#52)	2.06	Low	2038
SALTON SEA BOMB TARGET (FBT 15)(#56)	1.01	Low	2038
SALTON SEA BOMB TARGET (9)(#50)	1.00	Low	2068
SALTON SEA BOMB TARGET (10)(#51)	3.52	Low	2067
PRESUMED BOMBING SITE SAFETY AREA	0.50	Low	2030
SALTON SEA SKIP BOMB TARGET (#61)	3.06	Low	2029
SALTON SEA BOMB TARGET (FBT 19)(#60)	2.44	Low	2048
SALTON SEA BOMB TARGET (FBT 18)(#59)	1.09	Low	2029
SALTON SEA BOMB TARGET (FBT 14)(#55)	1.01	Low	2038
SALTON SEA BOMB TARGET (FBT 13)(#54)	1.00	Low	2045
SALTON SEA BOMB TARGET (FBT 12)(#53)	1.03	Low	2045

Source: Corps 2021

Contamination

Above-ground petroleum storage tanks and pesticide storage facilities are present in many locations near the Salton Sea shoreline and may increase the risk of human exposure to potentially hazardous materials. Additionally, storage tanks may leak, and petroleum products could move into the soil or seep into the tributaries of the Salton Sea. Contamination can result from leaking underground storage tanks, solid waste disposal sites, and historic leaks from pipelines or other industrial sites that were improperly managed. Information concerning the presence and current disposition of hazardous wastes was obtained from the government databases listed in Appendix G, Table 1.

Pesticide use in the surrounding agricultural areas in the vicinity of the Salton Sea has resulted in the presence of pesticides, primarily dichlorodiphenyldichloroethylene (DDE), in Salton Sea sediments. The highest surface sediment DDE concentrations documented have been at the Alamo River sites (mean sediment concentrations of approximately 13 nanograms per gram [ng/g]). Surface sediment DDE concentrations were lower at the East New River site, and lowest at the Mid and Far West New River sites (mean 1 to 3 ng/g). The highest subsurface (5 to 30 cm deep) sediment DDE concentrations were found in East New River (mean approximately 9 ng/g) and immediately adjacent to the Alamo River mouth in Morton Bay (mean approximately 25 ng/g). Lower concentrations of DDE were found at the Middle New River and Alamo River North (Davis Road) sites. The lowest DDE concentrations were found at the Far West New River sites (mean approximately 1 ng/g; Wang et al. 2011). Refer to Section 4.12, Hydrology and Water Quality for additional detail regarding the presence of pesticides at the New and Alamo River sites.

The results of a search of the databases in Appendix G, Table 1 identified the sites listed in Appendix G, Table 2 within the study area. The most likely locations for hazardous wastes near the Salton Sea are the former SSTB and numerous Salton Sea bombing targets used by the DoD and other federal organizations, as presented in Figure 4-11 and Appendix G, Table 2. Other non-military sites with known or potential hazardous wastes were identified in Imperial and Riverside counties during the records search. However, these facilities are not located near the Salton Sea, have not been documented as areas with releases of hazardous wastes, or have been cleaned up and closed. The SSTB is now designated the Salton Sea Hazardous ACEC, does not allow for any Right-of-Way projects and does not allow access to the public.

Other Sites

The Salton City and Mecca landfills receive municipal solid waste and have no recorded violations or evidence of hazardous environmental contamination (SWIS, CIWMB; see Appendix G, Table 1 for website links). These sites are about ten and 4 miles, respectively, from the Salton Sea shoreline. Leaking underground storage tanks containing gasoline or diesel fuel have, in the past (1980s and 1990s), been detected in Niland, Salton City, Desert Shores, North Shore, and Oasis. However, according to the State Water Resources Control Board (SWRCB) database, these sites have been cleaned and closed.

The Chocolate Mountain Aerial Gunnery Range east of the Salton Sea is under remediation for contamination from solvents, paint sludge, and waste oil (DTSC 2021). However, this site is about 5 miles from the Salton Sea shoreline and is not considered in effects analyses.

Other sites noted during database searches either included sites that have been cleaned and closed or are not located near the Salton Sea.

4.10.3.2 Public Health

Noncancer Health Risks from Selenium Exposures through Fish and Waterfowl Consumption

Selenium is known to be present in the Salton Sea, and a State health advisory has been issued for human consumption of fish from the Salton Sea. In general, selenium concentrations in the Alamo River are higher than the selenium concentrations in the New River, and both have higher selenium concentrations than the Salton Sea (Amrhein and Smith 2011; C. Holdren, personal communication, Reclamation, unpublished data).

Selenium is a metalloid found naturally, but highly variably, throughout the environment. Although toxic at relatively low levels, selenium is also a required nutrient. The current Recommended Dietary Allowance (RDA) for selenium is 55 micrograms (μg) per day for the general adult population, 60 μg/day for pregnant women, and 70 μg/day during lactation. Selenium is found in a variety of inorganic and organic forms; however, in animal tissues, most selenium occurs as the amino acids selenomethionine or selenocysteine. Fish and other food samples are analyzed for total selenium content, as nutritional and toxicity values have not been developed for specific chemical forms of the element (Klasing and Brodberg 2008).

OEHHA has developed Fish Contaminant Goals (FCGs) and Advisory Tissue Levels (ATLs) for evaluating selenium non-cancer risk from fish consumption (Klasing and Brodberg 2008). FCGs are estimates of contaminant levels in fish that pose no significant health risk to individuals consuming sport fish at a standard consumption rate over a lifetime. FCGs are based solely on public health considerations without regard to economic considerations, technical feasibility, or the counterbalancing benefits of fish consumption. The FCG for selenium is 7.4 milligrams per kilogram (mg/kg) wet weight (which equates to 30 mg/kg dry weight), assuming an adult consumption rate of 32 grams per day or one 8-ounce (prior to cooking) fillet per week (Klasing and Brodberg 2008). ATLs, while still conferring no significant health risk to individuals consuming sport fish in the quantities shown over a lifetime, were developed with the recognition that there are unique health benefits associated with fish consumption. The ATL for selenium is 4.9–15 mg/kg wet weight (20–61 mg/kg dw) for one 8-ounce serving per week.

Selenium concentrations in fish have been measured and modeled at the Salton Sea. Tilapia collected in 2005 from the Salton Sea had selenium concentrations in muscle tissue of 1.5 to 3.0 mg/kg wet weight, with a mean of 2.0 mg/kg wet weight (DWR and CDFG 2007), while Moreau et al. (2007) reported a mean of 9.0 mg/kg wet weight. Fillet (muscle tissue) and whole-body selenium measurements were very similar for tilapia (Moreau et al. 2007), about 1.11 times greater for fillets than whole body (DWR and CDFG 2007, Appendix G).

Each of these measured selenium tilapia tissue concentrations can be used to estimate the total intake of selenium by eating tilapia for comparison to selenium acute and chronic toxicity thresholds. However, because the toxicity of selenium depends on many factors, including the several forms selenium can take (e.g., selinide, selinate, selinomethinanine) regulators and public health officials have resorted to providing more simplistic estimates of the acceptable risk to selenium in fish tissue by estimating the safe number of meals per month using accepted Human Health Risk Assessment risk parameters. As can be seen in Table 4-35, estimates of the number of meals per month, based on the selenium concentration in the tilapia muscle tissue can vary from only 17 to over 60 depending on the suite of risk factors used by the modeler. The designation by OEHHA of the number of tilapia meals (nine per month) is very conservative and is based on their assumption that the selenium concentrations in tilapia from the area may be within the reported ranges but may also be higher (using conservative uncertainty parameters). Clearly, the number of tilapia meals per month recommended by OEHHA would be well below the likely number of tilapia meals that would result in no significant risk to consumers.

Screening-level human health risk assessments of fish and duck tissue consumption (i.e., maximum safe consumption rates) are discussed in Appendix G of the PEIR (DWR and CDFG 2007). Recreational fishing occurs at the Salton Sea, although it has declined compared to the past when the fisheries were more productive (DWR and CDFG 2007, Appendix G). Consumption of waterfowl by recreational hunters is another possible selenium exposure pathway. Most waterfowl taken by hunters are from areas supplied by Colorado River water (e.g., at the Imperial Wildlife Area, Sonny Bono Salton Sea National Wildlife Refuge, and private duck clubs), which has a lower selenium concentration than water from the New and Alamo rivers. Current consumption rates and selenium concentrations for duck tissues are unknown. In the absence of site-specific fish and waterfowl consumption rates for the Salton Sea, maximum safe consumption rates that correspond to specific levels of noncancer adverse health effects were estimated for the assessment.

For the Salton Sea, OEHHA's public health advisory limits fish consumption to two servings per week for all consumers (OEHHA 2021). Several other health risk assessments related to selenium exposure from fish consumption have been developed for the Salton Sea, as summarized in Table 4-35 (DWR and CDFG 2007; Moreau et al. 2007). These safe consumption rates are comparable to the present advisory limit issued by OEHHA.

Table 4-35 Comparisons of Estimated Safe Fish and Duck Consumption Rates and Advisories for the Salton Sea Based on Selenium Concentrations in Tissues from Fish and Ducks in the Salton Sea

Description	Tissue Concentration Selenium[1] (mg/kg wet weight)	Maximum Safe (grams/week)	Consumption Rate[2](meals/ month)	Reference
Adult consumption of tilapia muscle tissue		910–1,330	17–25	Costa-Pierce et al. 2000
Adult consumption of tilapia muscle tissue	1.25–3.4[a]	720–1,960	13–34	DWR and CDFG 2007, Appendix G
Adult consumption of tilapia muscle tissue	9.0 mean	810–1,190	15–23	Moreau et al. 2007
Adult consumption of Salton Sea fish (tilapia, croaker, sargo, orangemouth corvina) muscle tissue	-	-	[b]	OEHHA 2009
Adult consumption of duck tissue	1.03–2.79	884–2,379	23–62	DWR and CDFG 2007, Appendix G

Notes:

[1] Tissue concentrations modeled for existing conditions Source: DWR and CDFG 2007.

[2] Fish advisory limits stated 2 meals per week which is equivalent to 9 meals per month.

Health Risks from Exposure to Dichlorodiphenyltrichloroethane (DDT) and its Metabolites through Fish Consumption

Dichlorodiphenyltrichloroethane (DDT) and its derivatives dichlorodiphenyldichloroethane (DDD) and dichlorodiphenyldichloroethylene (DDE can enter the food chain from sediments and can bioaccumulate to affect consumers. Poulsen and Peterson (2006) developed sediment bioaccumulation screening levels (SLV_{BH}) for evaluation of human health risks by determining acceptable fish tissue levels of DDE for carcinogens and noncarcinogens, and then using a relationship between fish tissue and sediment concentrations to calculate acceptable sediment concentrations. Two SLV_{BH} were defined, one for the general population (0.24 nanograms per gram [ng/g]) and another more protective standard (0.0038 ng/g) for population segments that consume fish more often (e.g., subsistence, recreational, or Native American users) or that consume whole fish. Existing DDE concentrations in surface and subsurface sediments at known proposed pond sites (Table 4-36) greatly exceed the SLVs for both the general population and for more frequent consumers.

Table 4-36 Sediment DDE Concentrations (ng/g dry weight) for Existing Conditions

Pond Units	Mean	Maximum
New East	6.5	23.7
New Middle	2.8	8.0
New Far West	1.1	2.9
Alamo Morton Bay	13.7	32.4
Alamo – North	13.4	34.4

Source: CNRA 2011

Notes:

1. DDE concentrations (mean and maximum values) in undisturbed surface sediments (0 to 5 centimeters deep) measured at each location (Amrhein and Smith 2011; Wang et al. 2011)
2. Expected (calculated) DDE concentrations for SCH, based on field measurements of surface sediments (0 to 5 centimeters) and subsurface sediments (5 to15 and 15 to 30 centimeters deep) (Wang et al. 2011), and weighted according to proportion of pond area that would remain undisturbed but inundated (surface 0- to 5-centimeter concentrations) and area disturbed by construction [borrow ditches for berms, excavated swales and channels, borrow for habitat islands) (subsurface 5- to 30-centimeter concentrations)]. “Mean” is the area weighted average calculated using mean values for surface and subsurface sediment. “Maximum” average concentrations were also calculated, using maximum observed values of surface and subsurface sediments. This approach was used as a hypothetical upper bound of potential risk, because DDE concentrations below 30 centimeters are unknown and construction could disturb deeper sediments.

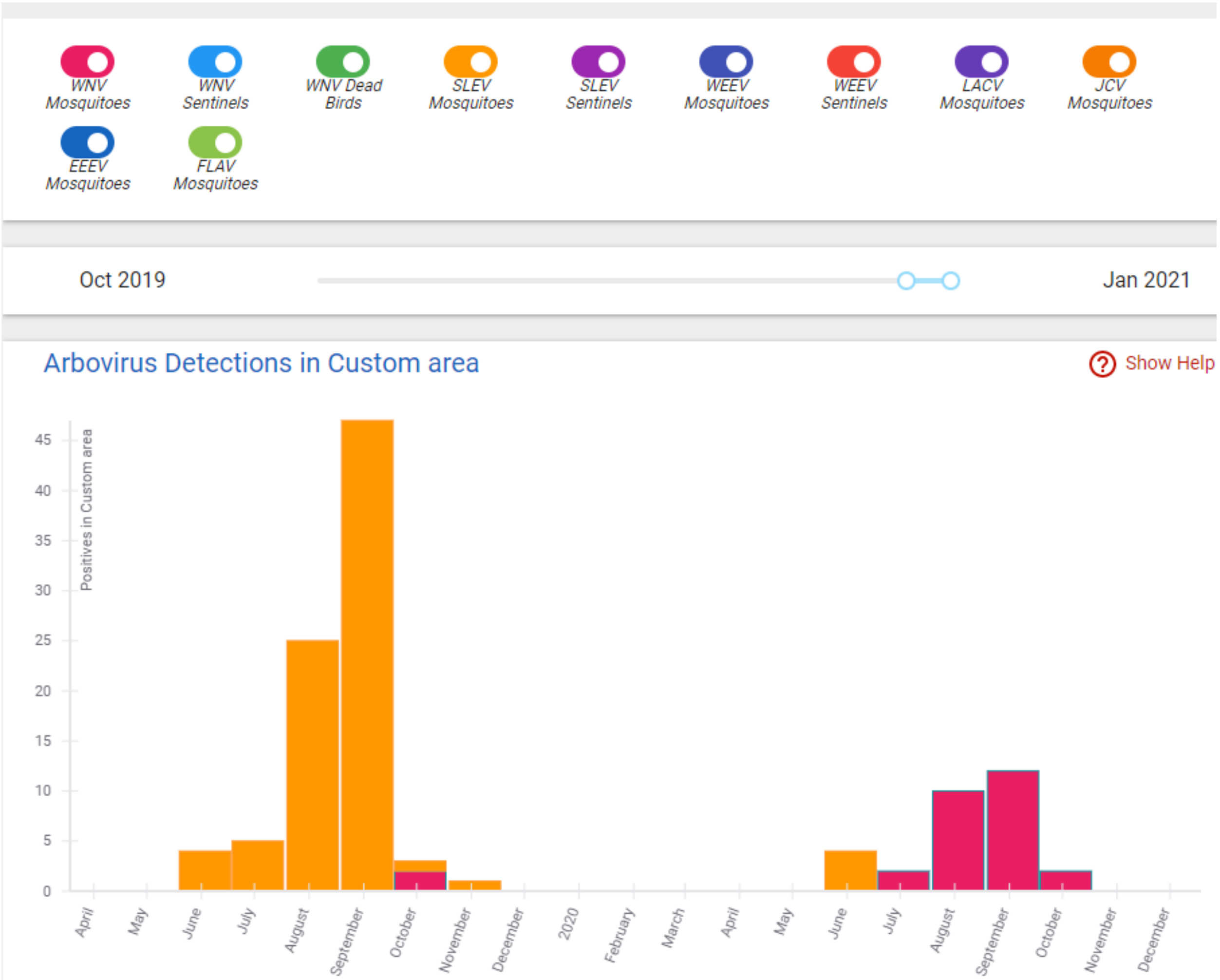
Total DDT tissue concentrations measured in fish collected from the New and Alamo rivers regularly exceed the National Academy of Sciences recommended maximum concentration (1,000 ng/g; CRBRWQCB 2002a, 2002b; 2005) and the United States Food and Drug Administration Action Level (5,000 ng/g; CRBRWQCB 2002a, 2002b, 2005). The National Academy of Sciences guidelines are meant to protect species that consume DDT at all food chain levels, while Food and Drug Administration Action Levels are intended to protect humans from the chronic effects of DDT consumption and are based on contaminated food consumption quantity and frequency (CRBRWQCB 2002a, 2002b). USEPA risk analyses indicate that a 70-kg person would be subject to an unacceptable risk from DDT contamination if the individual consumes more than 10 grams per day of tilapia collected near the mouths of the New and Alamo rivers (Costa-Pierce et al. 2000). Studies suggest that DDE concentrations measured in Salton Sea tilapia are unlikely to cause non-cancerous health effects in anglers, but consumption of more than four meals of tilapia per week may result in a 1×10^{-5} increase in cancer risk (Moreau et al. 2007). These values, however, are based on DDT and DDE concentrations reported from small sample sizes, and further research is required to refine estimates of risk from consumption of Salton Sea fish contaminated with DDT and its metabolites. Following OEHHA’s public health advisory limiting fish consumption to two servings per week for all consumers (Table 3.10-4; OEHHA 2009, 2021) would result in minimal risk to humans from DDE exposure under existing conditions.

Mosquito Vectors

Another potential public health hazard is the risk of disease transmitted by vectors. Mosquitos are the primary insect vector of concern in the study area because they are known carriers of human and animal diseases. The most important diseases in the study area associated with mosquitos are the West Nile virus and the Saint Louis encephalitis virus.

West Nile virus is spread by mosquitos that feed on the blood of infected birds and other animals and can transmit the virus to humans. While most people infected with West Nile virus exhibit mild or no symptoms, severe infections can lead to encephalitis and can be fatal. West Nile virus first appeared in California in 2002. West Nile virus activity can be detected among dead birds, mosquito pools, and sentinel chickens. In 2004, 58 counties detected West Nile virus activity, with 779 human cases reported and 28 West Nile virus associated fatalities (California Vectorborne Disease Surveillance System [VectorSurv] 2021). In 2010, 35 counties detected virus activity, with 105 human cases reported and 3 fatalities.

Wild birds are the maintenance and amplifying hosts of Saint Louis encephalitis virus, which is transmitted among birds and to humans by mosquitos. Human infection with Saint Louis encephalitis virus can result in mild to severe illness, with case-fatality rates ranging from 3 percent to 30 percent. Since 1945, 597 human cases of Saint Louis encephalitis virus have been reported in California. The most recent outbreaks occurred in 1984 in the Los Angeles Basin (26 cases) and in 1989 in the southern San Joaquin Valley (29 cases). The last human case reported was in 1997. Disease-carrying St. Louis Encephalitis and West Nile Virus mosquitos have been recently collected at the north end of the Sea, as shown in Figure 4-12.



Source: VectorServ 2021

Figure 4-12 Disease-carrying Mosquitos Collected May 2019–November 2020 from locations generally north of the Salton Sea State Recreation Area and Desert Shores.

Air and Dust-Borne Diseases

Specific to geothermal waters within the project area, the potential exists for carbon dioxide, volatile hydrocarbons, and methane stored in soils to be released as Salton Sea elevations recede and additional lakebed is exposed. The potential for gas discharge from "mud pots" is also associated with seismic activity (Onderdonk et al 2011; Rudolph and Manga 2010; Rudolph and Manga 2012; Svensen et al 2004). Disturbance of surface soils during Project construction may also release gases stored in geothermal areas. Seismic activity is assessed in 5.9, Geology, Soils, Seismic and Minerals section and air constituents of concern are addressed in 5.3, Air Resources.

Two airborne diseases and public health risks potentially exist within the study area: Valley fever (or coccidiomycosis) and HCPS (Hantavirus Pulmonary Syndrome). Valley fever is an infection caused by *Coccidioides* spp. fungi. It can cause fever, chest pain and coughing, among other signs and symptoms. *Coccidioides* spp. that cause valley fever are commonly found in the soil in certain areas. *Coccidioides* fungal spores can grow under environmental extremes of temperature, salinity and alkaline conditions. These fungi can be stirred into the air by anything that disrupts the soil, such as farming, construction, and wind. Airborne spores can be inhaled into the lungs, where they multiply and grow. Most people who breathe the spores (about 60 percent) develop no symptoms at all. The rest develop flu-like symptoms. Without treatment, valley fever can lead to severe pneumonia, meningitis, and even death. However, when properly treated at the first sign of symptoms, most people will recover without problems. Once infected, the body usually establishes lifetime immunity against future infections. The disease is not contagious; it cannot spread from one person to another.

HCPS is a rare, but often fatal, disease of the lungs. HCPS was first recognized in 1993 in the southwestern United States. HCPS infections are associated with domestic, occupational, or recreational activities that bring humans into contact with rodents (in California, specifically deer mice) and their excreta, usually in rural settings in poorly ventilated buildings. High risk areas and activities are vacant structures and rodent handling. Most outdoor locations are considered low risk (CDC 2010). From 1993 to 2020, 87 HCPS cases were reported for California residents (National Park Service 2021b).

4.10.3.3 Gas Release from Water Surface

Ammonia and hydrogen sulfide are periodically released from the water. There have been antidotal observations that methane also is released from the water surface, especially near the mudpots and geothermal areas near the southern Sea Bed. These releases of gas can be harmful to workers and recreationists on boats. Disturbance of the Sea Bed soils also could cause releases of these gases.

4.10.3.4 Bird Airstrike Hazards

Collisions between birds and aircraft are a concern, both for civilian and military aircraft. Bird airstrikes can result in the loss of aircraft and personnel or lead to costly repairs. The Federal Aviation Administration’s Wildlife Strike Database contains records of reported wildlife strikes since 1990 (Federal Aviation Administration 2011a). Strike reporting is voluntary; therefore, this database only represents the information the Federal Aviation Administration has received from airlines, airports, pilots, and other sources. No airstrikes with civilian aircraft were reported in Imperial County during this period. Naval Air Facility (NAF) El Centro reported the loss of an F-18 jet to a bird strike in October 1995 (Zakrajsek 2002).

Because birds are most frequently found at low altitudes, the risk of bird airstrike is greatest near airfields. Seventy-five to 90 percent of bird airstrikes involving civil aircraft occurred near airports, primarily during takeoff and landing. Large birds, such as geese and pelicans, have caused the greatest damage to aircraft. Military aircraft face additional risk of bird airstrike, as they often engage in low altitude, high speed, and training flights (Zakrajsek 2002).

Civilian airports closest to the Salton Sea are listed in Table 4-37. The table also includes types of air traffic experienced at each of the local airports, the approximate distance to the Salton Sea, and the average number of daily aircraft operations at each airport.

Table 4-37 Airports in proximity to the Salton Sea

Airport Name	Location	Distance to Salton Sea	Uses	Average Daily Aircraft Operations
Brawley Municipal Airport	Brawley, CA	12 miles (south end)	Transient general aviation – 45% Local general aviation – 45% Air taxi – 9%	9
Cliff Hatfield Memorial Airport	Calipatria, California	6 miles (south end)	Transient general aviation – 100%	4
Imperial County Airport	Imperial, CA	19 miles (south end)	Transient general aviation – 45% Local general aviation – 47% Air taxi – 2% Commercial – 2% Military – 4%	39
Jacqueline Cochran Regional Airport	Palm Springs, CA	12 miles (north end)	Transient general aviation – 62% Local general aviation – 36% Military – 1% Air taxi – 1%	303
Desert Air Sky Ranch	Northshore, CA	1 mile (Corvina Beach Campground)	None reported	None reported
Bermuda Dunes	Palm Springs, CA	20 miles (north end)	Transient general aviation – 64% Local general aviation – 36% Military < 1%	38

Source: CNRA 2011

The nearest military installation is NAF El Centro, located approximately 17 miles south of the Salton Sea. The base is an integral part of military air training missions in the United States, providing realistic training opportunities to active and reserve military units, and is the winter home of the Blue Angels. Seven to 12 squadrons, and up to 1,600 personnel train at NAF El Centro monthly. NAF El Centro also provides base support to Naval Aviation Squadrons and is associated with R-2510 and R-2512 Restricted Airspace Ranges that provide for critical military operations for weapons and air combat training (R. Thompson personal communication, 2010). R-2510 encompasses approximately 155,000 acres, several miles south and west of the Salton Sea. R-2512 is approximately 63,000 acres and located further east. The Kane West Military Operations Area (MOA) overlies a portion of the New River sites, and the Kane East MOA overlies the remaining portion of the New River sites, as well as the Alamo River sites. The MOA extends from 30,000 feet above ground level upward (Federal Aviation Administration 2011b). Two military training routes, flown at low altitudes by military aircraft, are present in the vicinity of the sites. Visual route (VR) 296 bisects the New River sites and VR 1211 runs adjacent to both the New and Alamo River sites. These two routes are used infrequently (three to four times per year on average).

4.10.3.5 Fire Risk

California Department Forestry and Fire Protection (CALFIRE) adopted Fire Hazard Severity Zone maps for State Responsibility Areas (SRAs) in November 2007. The maps and related regulations were approved by the Office of Administrative Law. County plans consider Fire Hazard Severity Zone (FHSZ) Maps for SRA lands and include separate draft Very-High Fire Hazard Severity Zone Maps for Local Responsibility Area (LRA) lands. There are no “Very-High Fire Hazard Severity Zone” or “Wildland Area that may Contain Substantial Forest Fire Risk and Hazard” designations within the study area (CALFIRE 2021). There are Very-High, High and Moderate FHSZ SRAs and one Very-High FHSZ LRA mapped to the west of the study area and west of SR 86. Lands to the east of the Salton Sea are mapped Moderate FHSZ and are primarily Federal Responsibility Areas (FRAs).

4.11 NOISE

This section focuses on noise effects on human noise-sensitive receptors from construction, operations, and maintenance.

4.11.1 Study Area

The study area includes the alternative site locations and immediate surrounding areas. The study area for noise includes the communities near the Salton Sea and the major roads in the vicinity that could be used by trucks to carry construction materials within Imperial and Riverside counties (State Routes [SR] 78, 86, and 111).

4.11.2 Regulatory Requirements

Noise is typically regulated at the local level, and no federal or state noise regulations are applicable to the project. The Noise Elements of the Imperial County General Plan (County of Imperial 2015e) and Riverside County General Plan (County of Riverside 2015a) are intended to ensure that land uses are compatible with ambient noise levels and outline acceptable noise levels for various land uses during construction and operations. Relevant standards from both plans are discussed below.

The Imperial County Noise Element limits sound levels from construction activities during specific hours of the day through a set of construction noise standards, provided in Table 4-38. No specific construction noise standards are provided in the Riverside County Noise Element but recommended stationary noise standards are provided in Table 4-39.

Sensitive receptors are defined as areas of habitation where the intrusion of noise has the potential to adversely affect the occupancy, use, or enjoyment of the environment (County of Imperial 2015e). Sensitive receptors can include residences, schools, hospitals, parks, office buildings, rest homes, long-term care facilities, mental care facilities, places of worship, libraries, and passive recreation areas. Activities conducted near these facilities must ensure that they don’t create unacceptable noise levels that affect the noise-sensitive uses (County of Imperial 2015e; County of Riverside 2015a). Neither Imperial nor Riverside counties have specific construction standards for vibration (County of Imperial 2015e; County of Riverside 2015a).

Table 4-38 Imperial County Construction Noise Standards

Duration of Construction	Noise Source	Sound Level (dB L_{eq})[a]	Period of Averaging (hrs)	Restricted Hours of Operation
Short-term (days or weeks)	Single piece of equipment	75	8	7 am to 7 pm Monday- Friday 9 am to 5 pm Saturday No commercial construction operation is permitted on Sunday or holidays.
Short-term (days or weeks)	Combination of equipment	75	8	7 am to 7 pm Monday- Friday 9 am to 5 pm Saturday No commercial construction operation is permitted on Sunday or holidays.
Extended[b]	Single piece of equipment	75	1	7 am to 7 pm Monday- Friday 9 am to 5 pm Saturday. No commercial construction operation is permitted on Sunday or holidays.
Extended[b]	Combination of equipment	75 dB L_{eq}	1	7 am to 7 pm Monday- Friday 9 am to 5 pm Saturday No commercial construction operation is permitted on Sunday or holidays

Source: County of Imperial 2015e

Notes:

[a] As measured at the nearest sensitive receptor.

[b] The standard assumes a construction period, relative to an individual sensitive receptor of days or weeks. The standard can be made more restrictive in cases of extended-length construction.

Table 4-39 County of Riverside Stationary Source Land Use Noise Standards

Land Use	Interior Standards	Exterior Standards
Residential		
10:00 p.m. to 7:00 a.m.	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 a.m. to 10:00 p.m.	55 L_{eq} (10 minute)	65 L_{eq} (10 minute)

Source: County of Riverside 2015a

Notes: These are preferred standards, final decision will be made by the Riverside County Planning Department and Office of Public Health

Imperial County's noise and land use compatibility guidelines identified in the Noise Element are shown in Table 4-40. These guidelines are used to evaluate noise effects of proposed actions.

Table 4-40 Noise Compatibility Criteria

Land Use Category	CNEL, dBA				
Residential	**50-55**	**55-60**	**60-65**	**65-70**	**70-75**
Single-family, nursing homes, mobile homes	+	o	-	--	--
Multi-family, apartments, condominiums	++	+	o	--	--
Public					
Schools, libraries, hospitals	+	o	-	--	--
Churches, auditoriums, concert halls	+	o	o	-	--
Transportation, parking, cemeteries	++	++	++	+	o
Commercial and Industrial					
Offices, retail trade	++	+	o	o	-
Service commercial, wholesale trade, warehousing, light industrial	++	++	+	o	o
General manufacturing, utilities, extractive industry	++	++	++	+	+
Agricultural and Recreational					
Cropland	++	++	++	++	+
Livestock breeding	++	+	o	o	-
Parks, playgrounds, zoos	++	+	+	o	-
Golf courses, riding stables, water recreation	++	++	+	o	o
Outdoor spectator sports	++	++	+	o	o
Amphitheaters	+	o	-	--	--

Source: County of Imperial 2015e

Notes:

++ Clearly Acceptable: activities associated with specified land use can be carried out with essentially no interference from the noise exposure.

+ Normally Acceptable: Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.

o Marginally Acceptable: Indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.

- Normally Unacceptable: Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.

-- Clearly Unacceptable: Unacceptable noise intrusion upon land use activities will occur. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

4.11.3 Existing Conditions

Imperial County's property line noise limits are shown in Table 4-41. Typical noise levels measured in the environment and human perceptions are provided in Table 4-42.

Table 4-41 Imperial County Property Line Noise Limits

Zone	Time	Applicable Limit 1-hour Average Sound Level (Decibels)
Residential Zones	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
Multi-residential Zones	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
Commercial	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
Light Industrial/Industrial Park Zones	Anytime	70
General Industrial Zones	Anytime	75

Source: County of Imperial 2015e

Notes:

When the noise-generating property and the receiving property have different uses, the more restrictive standard applies. When ambient noise level is equal to or exceeds the property line noise standard, the increase of the existing proposed noise shall not exceed 3dB L_{eq}.

Noise within the study area is generated by a variety of sources, including vehicular traffic, aircraft, and agricultural activities; wind also is a noise source. Noise from vehicular traffic is concentrated near the major roadways. Aircraft noise is intermittent and includes occasional military overflights and crop dusters. The Salton Sea is not located within the boundaries of any Airport Land Use Compatibility Plans or within 2 miles of an airport or air strip. The predominant land use in Imperial County is agriculture. Agricultural operations generate noise through field machinery, especially when it is diesel driven, and through the use of trucks to transport supplies and crops, and aircraft used for the spraying of crops. Noise in rural areas can be quiet (around 40 to 45 dBA), although agricultural operations can generate considerable noise.

Noise-sensitive receptors are limited in the vicinity of the Project area, which is mostly near agricultural and exposed lakebed areas. The noise-sensitive receptors closest to the construction sites are people using the Sonny Bono Salton Sea National Wildlife Refuge for activities where relative quiet is a part of the experience, such as wildlife observation and photography and use of nature trails; residences in North Shore near the Sea are near proposed North Lake Project and dust suppression sites; residences in Desert Shores on the west side of the Sea are close to the Desert Shores Channel Restoration project site; residences at Bombay Beach are near proposed dust suppression project sites; and residences in Salton City near the Sea shoreline are near proposed dust suppression project sites. The agricultural areas and open space do not contain sensitive receptors except for wildlife. Sensitive receptors considered in this analysis are located in the urban areas and rural residential communities.

Table 4-42 Typical Sounds Levels Measured in the Environment and Industry

Sound Level (dB)	Potential Source or Human Perception of Sound
130-140	Pain threshold
130	Jet takeoff (200 feet)
110	Chainsaw (2 feet) or amplified music concert
100	Pile driver (50 feet)
90	Power mower or heavy truck (50 feet) Hearing damage can occur at exposures of 8 hours
80	Concrete mixer (50 feet) or garbage disposal Loud/annoying
70	Freeway (100 feet) or noisy restaurant Shouting required at 3 feet
60	Air conditioner unit or department store Loud speech required at 3 feet
50	Light auto traffic (100 feet) or quiet office Normal speech at 3 feet, disturbs sleep
40	Bird calls or library Quiet, soft whisper (6 feet)
10	Threshold of hearing

Source: County of Imperial 2015e

4.12 WATER

This section addresses the hydrology and water quality of the Salton Sea, the New River, the Alamo River, the Whitewater River, intermittent water courses and agricultural drains to the Salton Sea, and groundwater underlying the Salton Sea Basin. Study Area

The study area for analysis of hydrology and water quality effects is the Salton Sea watershed, shown on Figure 4-13. The study area includes the surface waters and groundwater hydrologically connected to and within the Project area, specifically the Salton Sea, New, Alamo and Whitewater rivers, All American, East Highline and Coachella canals, Colorado River Aqueduct, and intermittent drainage water bodies, along with seven groundwater basins.

4.12.1 Regulatory Requirements

Federal, state and local regulatory requirements that are applicable to water resources of the study area are provided in Table 4-43.

Table 4-43 Regulatory Requirements for Water Resources

Branch	Regulation	Agency	Regulation Summary
Water			
Federal	Clean Water Act	USEPA	The Clean Water Act, also referred to as the Federal Water Pollution Control Act Amendments of 1972, established the institutional structure for the USEPA to regulate discharges of pollutants into Waters of the United States, establish water quality standards, conduct planning studies and provide funding for specific grant projects. In California, the SWRCB has been designated by 29 USEPA along with the nine Regional Water Quality Control Boards (RWQCB) to develop and enforce 30 water quality objectives and implementation plans. The Colorado River Basin RWQCB (CRBRWQCB) is the lead water quality management agency in the Project area. Clean Water Act section 401 requires that Federally authorized discharges into Waters of the United States not violate state water quality standards. Clean Water Act section 402 authorizes states to issue National Pollutant Discharge Elimination System (NPDES) permits for discharges to surface water both from point sources and many nonpoint sources in stormwater. Section 404 requires any entity obtain permits before discharging dredge or fill material into navigable waters, their tributaries, and associated wetlands.
State	Lake and Streambed Alteration Agreement, Section 1602	CDFW	Section 1602 requires an entity to consult with CDFW prior to diverting, obstructing or changing natural flow of a bed, channel or bank of a river, stream or lake; or using materials from the streambed, or disposing of materials in a river, stream or lake. If the action would adversely affect fish and wildlife resources, CDFW would require a Lake and Streambed Alteration Agreement.
State	Porter-Cologne Act	SWRCB	The Porter-Cologne Act modified the California Water Code to establish the responsibilities and authorities of the SWRCB and nine RWQCBs. The SWRCB formulates and adopts state policy for water quality control. The RWQCBs develop water quality objectives and Basin Plans that identify beneficial uses of water, establish water quality objectives (limits or levels of water constituents based on Federal and state laws)., and define implementation programs to meet water quality objectives.
State	Colorado River Basin Regional Water Quality Control Board Water Quality Control Plan	RWQCB	The CRBRWQCB Water Quality Control Plan establishes water quality criteria and guidelines that protect human and aquatic life uses of the Lower Colorado River geographic subregion. The Water Quality Control Plan designates beneficial uses for surface water and groundwater, establishes a narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses, conforms to California's anti-degradation policy, describes implementation programs to protect the beneficial uses, and defines required monitoring activities to evaluate the effectiveness of the Water Quality Control Plan.

Branch	Regulation	Agency	Regulation Summary
Local	Quantification Settlement Agreement	Imperial irrigation District, Coachella Valley Water District, Metropolitan Water District of Southern California, San Diego County Water Authority	The Quantification Settlement Agreement (QSA) and related agreements are a set of interrelated contracts that settle certain disputes among the United States, the State of California, IID, Metropolitan Water District of Southern California, CVWD and SDCWA that became effective in October 2003. The agreements resolve, for a period of 35-75 years, issues regarding the reasonable and beneficial use of Colorado River water; the ability to conserve, transfer and acquire conserved Colorado River water; the quantification and priorities within California for the sue of Colorado River water; and the obligation to implement and fund related environmental impact mitigation. The QSA has been considered towards the "Future No Action" scenario of predicted brine sink elevations of the Salton Sea.
Local	Various Water Rights	Coachella Valley Water District	Coachella Valley Water District (CVWD) was formed in 1918 to protect and conserve local water sources. Since then, the District has grown into a multifaceted agency that delivers irrigation and domestic (drinking) water, collects and recycles wastewater, provides regional storm-water protection, replenishes the groundwater basin and promotes water conservation. (CVWD) relies on four sources of water to provide service to its customers: groundwater, recycled water, imported water from the State Water Project and the Colorado River via the Coachella Canal, a branch of the All-American Canal. Their Long-term Water Management Planning documents guide CVWD to reliably meet current and future water demands in a cost-effective and sustainable manner.
Local	Various Water Rights	Imperial Irrigation District	The Imperial Valley depends solely on the Colorado River for surface water supply. IID imports raw water from the Colorado River and distributes it primarily for agricultural use. IID distributes water for non-agricultural uses to seven municipalities, two special districts, and one state and one federal institution for treatment to potable standards; to industrial (renewable energy) users; feedlot, dairy and fishery users, and environmental resources demand and recreational uses. Groundwater in the Imperial Valley is of poor quality and is generally unsuitable for domestic or irrigation purposes. In addition, to avoid agricultural root zone contamination, tile drains are used to dewater the root zone. The tile drain and other drainage waters ultimately discharge to the Salton Sea. Under federal legislation (PL 97-293 Reclamation Reform Act of 1982 Section 210 (a), (b) and (c) and Reclamation Manual Directives and Standards; and Regulations 43-CFR-427), IID is required to prepare a federal Water Conservation Plan every five years and to adopt economically feasible objectives to meet the requirement for reasonable and beneficial use. state legislation (CWC Division 6, Part 2.55) further provides that IID as a party to the Quantification Settlement Agreement is exempt from the agricultural water management plan requirement of the State of California under SBX7-7.

4.12.2 Existing Conditions

4.12.2.1 Hydrology

The Salton Sea receives runoff from agricultural drains, several small tributaries and ephemeral flows from washes, in addition to the Whitewater, New, and Alamo rivers. Flows from the three rivers are largely the result of agricultural return flows. The application of irrigation water on farms introduces salts to the land, which leach through the soil and collected in subsurface drains located 4 to 6 feet below the surface. This water is then conveyed to surface drains, some of which are connected directly to the Salton Sea; or to the Whitewater, New or Alamo rivers and then to the Sea; or drain onto the playa. In 1968 the California Legislature passed Assembly Bill 461 that reserves the Salton Sea for collection of agricultural drainage flows, seepage, and other flows.

Salton Sea Watershed

The Salton Sea watershed encompasses an area of 8,360 square miles from San Bernardino County in the north to the Mexicali Valley (Republic of Mexico) to the south. The Salton Sea lies at the lowest point in the watershed and collects runoff and agricultural drainage from most of Imperial County, a portion of Riverside County, smaller portions of San Bernardino and San Diego counties, as well as the northern portion of the Mexicali Valley. Mountains on the west and northeast rims of the basin reach elevations of 3,000 feet in the Coyote Mountains to over 11,000 feet in the San Jacinto and San Bernardino Mountains. To the south, the basin extends to the crest of the Colorado River Delta. About one-fifth of the basin is below or only slightly above mean sea level (Hely et al. 1966).

Salton Sea

The Salton Sea water body is located in the Salton Trough, a northern extension of the Colorado River Delta. The Sea's bottom elevation is about -278 feet below msl, and the water surface elevation during water year 2020, was averaged -237.6 feet msl (TetraTech 2021b). The Sea's total volume is approximately 7 million acre-feet (af), with a current maximum depth of 40 feet. With about 340 square miles of surface area, the Salton Sea is the largest waterbody in California. It measures about 35 miles along a northwest/southeast axis by about 15 miles at its widest point. The total historic shoreline measures about 120 miles (DWR and CDFG 2007).

The Salton Sea is a terminal water body that receives water from the New, Alamo, and Whitewater rivers, agricultural drains, numerous small streams, precipitation, and groundwater. The only outflow from the Sea is through evaporation and seepage. Formed in 1905–1907 from Colorado River flood flows, the Salton Sea is supported primarily by agricultural return flows. These return flows have decreased in recent time, largely because of water transfers away from the Imperial Valley and the resulting water conservation measures. Recent Salton Sea elevations show an elevation peak around May 1995 and a decreasing trend to the end of the 2020 water year (Figure 4-13). Inflow to the Sea from the Imperial Valley has continued to decline. The combined inflow from the Imperial Valley and Mexico to the Salton Sea represents about 86.3 percent of the total inflow to the Sea. The Coachella Valley (Whitewater River) accounts for 8.5 percent of the total inflow to the Sea. The total salt loading to the Sea from these sources is 92.6 and 5.8 percent, respectively (DWR and CDFG 2007). The relative magnitude of the annual flow to the Sea from the three major tributaries is shown on Figure 4-14.

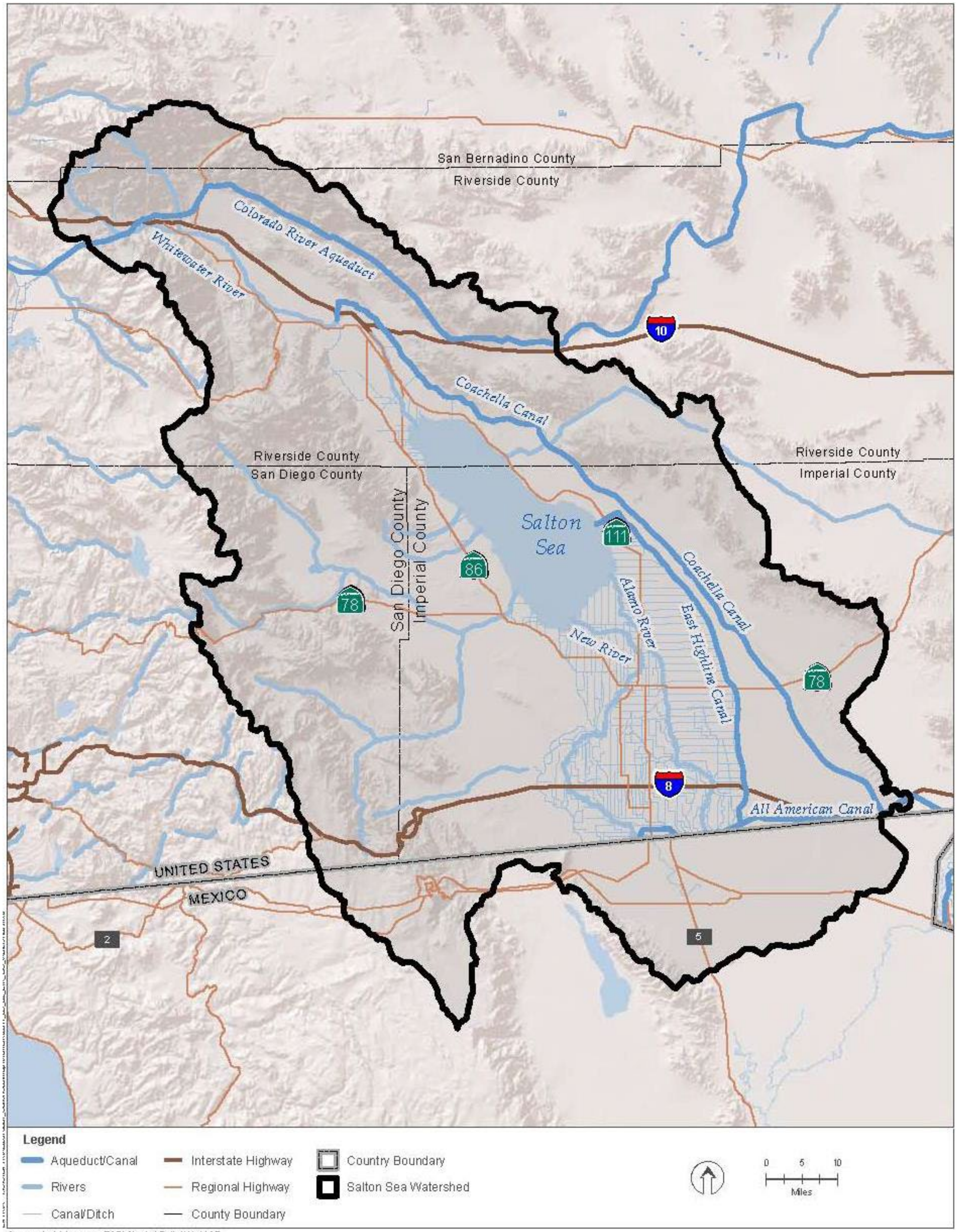
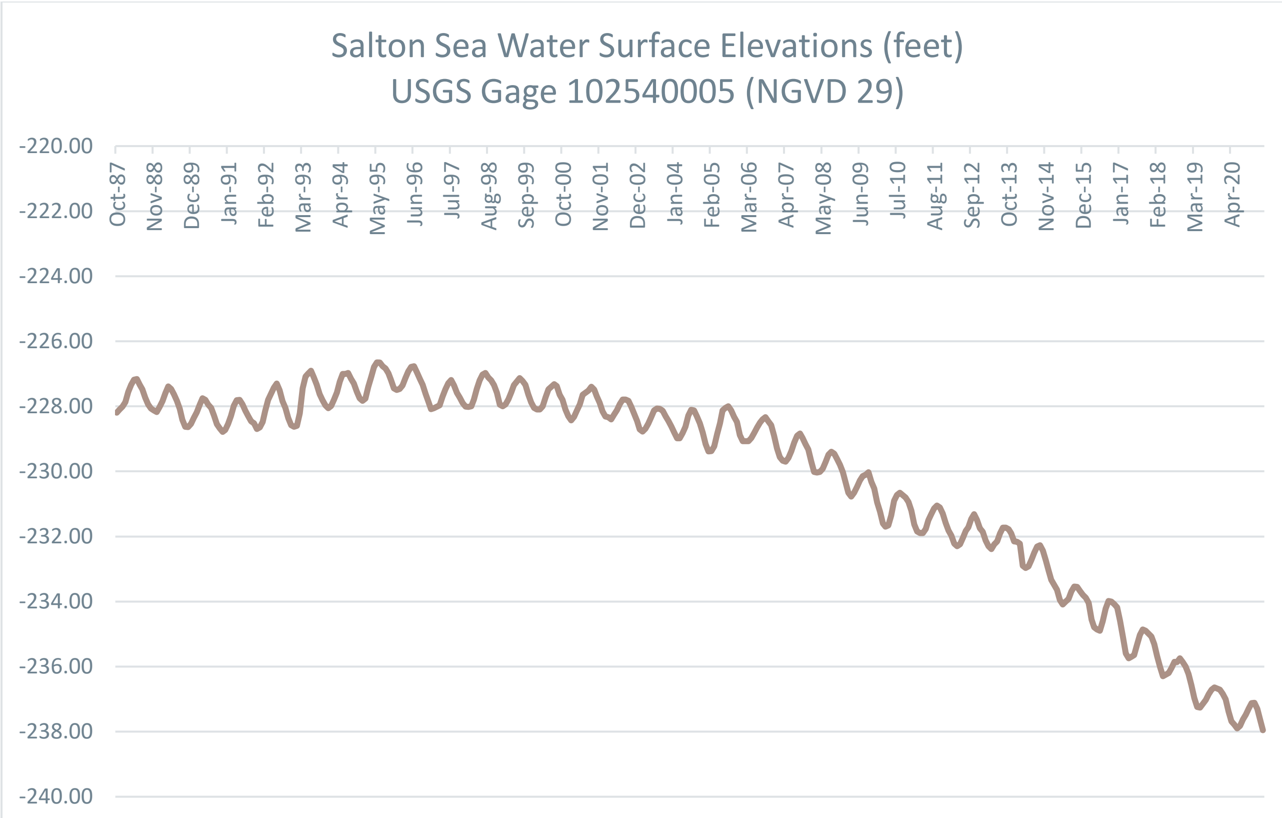


Figure 4-13 Salton Sea Contributing Watershed



Source: USGS gage #10254005 (Salton Sea near Westmorland)

Figure 4-14 Salton Sea Water Surface Elevations (October ’87 – October ’20)

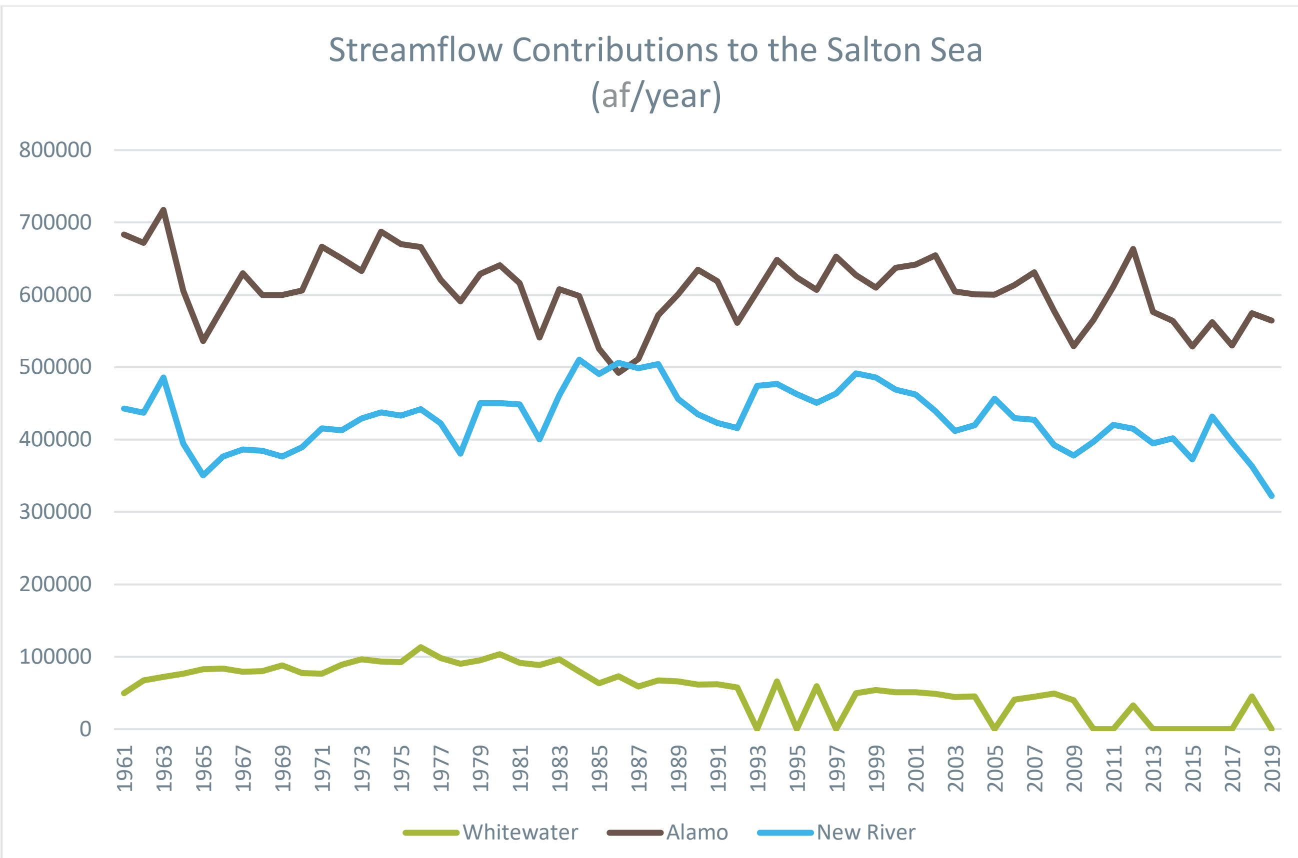
Wastewater discharges enter the Salton Sea from numerous municipal wastewater systems in the Imperial and Coachella valleys. The wastewater effluent is discharged to the New River, Alamo River, or Coachella Valley Stormwater Channel (Whitewater River), and eventually flows to the Sea. In the future, the wastewater effluent is expected to decline as more water is recycled and overall municipal wastewater flows decrease because of water conservation measures.

Wastewater discharges reach the Sea from the Mexicali Valley via the New and Alamo rivers as well. The amount discharge from the Municipalidad de Mexicali has been reduced since the establishment of Las Arenitas Wastewater Plant near Mexicali, Mexico in 2007, which is now diverting treated wastewater to the Rio Hardy and the Colorado River Delta instead of into the Salton Sea.

New River

The New River originates in the Mexicali Valley of northern Mexico and terminates where it flows into the Salton Sea. It receives runoff from several sources, primarily agricultural drainage conveyed to the river by subsurface drains, as well as wastewater treatment plant flows. The New River watershed is predominantly at or below sea level. Rainfall in the Imperial Valley is less than 2 inches annually, but the New River receives up to 10 inches each year in the southwestern portion of the watershed located in northern Mexico (Hely and Peck 1964).

The New River flow is measured at a gage near Westmorland (USGS gage #10255550) and at the international boundary with Mexico (USGS gage #10254970). The annual flow volume (based on water year) for water years 1961–2019 at the Westmorland gage has ranged from 322,165 af to 510,469 af, with an average of 429,785 (Figure 4-15). Both IID and USGS measured the New River flow independently prior to March 2005. Since that time, both agencies have cooperatively collected streamflow data for the river. Flow data at the USGS stream flow gage near Westmorland indicate that the flows show a median flow for each month that ranges from approximately 447 cfs (January) to 653 cfs (April), refer to Table 4-44. The USGS rates the measurement capability of stream gages on a system that ranges from “Poor” to “Good” that relates to the accuracy of the streamflow measurements. The Westmorland gage provides data rated “Good” for 74 percent of its history.



Source: USGS gage #10255550 (New River), USGS gage #10254730 (Alamo), USGS gage #10259540 (Whitewater)

Figure 4-15 Annual Flow for the Primary Watercourses Tributary to the Salton Sea

Table 4-44 2012-2020 Monthly Mean Flow of New, Alamo and Whitewater Rivers (cfs)

Month												Mean
1	2	3	4	5	6	7	8	9	10	11	12	
New River (USGS #10255550)												
447	511	603	653	584	522	472	460	487	591	523	460	526
Alamo River (USGS #10254730)												
597	702	863	965	947	847	759	733	734	865	754	611	781
Whitewater River (USGS #10259540)												
63	62	60	60	56	54	51	53	61	59	60	66	59

Note: Values are rounded.

Alamo River

The Alamo River also originates in the Mexicali Valley and flows north to the Salton Sea. Runoff from the Chocolate Mountains to the southeast contributes to the Alamo River through numerous watercourses that eventually are picked up in agricultural drains within the IID service area. Along its course, the river picks up stormwater, municipal wastewater, and agricultural return flows. During dry periods, the river flow is composed almost entirely of agricultural return flow (drainwater). The elevation of this basin is primarily at or below sea level, with a mean annual precipitation less than 2 inches near the Salton Sea.

The flow of the Alamo River into the Salton Sea is measured at the USGS stream flow gage near Niland (USGS gage #10254730) and at a gage upstream near Calipatria (USGS gage #10254670). Prior to October 1, 2004, IID and USGS independently collected Alamo River flow data. While the measurements were similar, differences often occurred in the measured values (DWR and CDFG 2007). Currently, flow data are cooperatively collected at Niland and only one dataset is used. The Niland gage provides measurements rated “Good” for 93 percent of its history, while the Calipatria gage provides measurements rated “Good” for 65 percent of its history.

The USGS data at Niland indicate that the annual flow for water years 1960–2019 ranged from 492,298 af to 717,379 af, with an average of 606,319 af (Figure 4-15). Median monthly flows ranged from 597 cfs in January to 965 cfs in April. January and February typically experience the lowest daily flow and April experiences the highest (Table 4-44). Variation of flow within a month occurs in response to irrigation practices as well as occasional storm events.

Whitewater River

The Whitewater River originates in the San Bernardino Mountains of Riverside County, California, becomes the Coachella Valley Stormwater Channel as it collects seepage from CVWD drains, and terminates where it flows into the Salton Sea near Mecca. It receives runoff from a 1,495 square mile watershed which includes both rugged mountainous terrain originating at the 11,499-foot summit of Mount San Gorgonio as well as low-lying Coachella Valley areas. Total precipitation in much of the upper watershed exceeds 20 inches annually but with the low-lying areas of the Coachella Valley receiving less than 2 inches of annual precipitation.

The annual water supply of the Whitewater River is variable. Flows are influenced by the water supply from the Colorado River conveyed in the Metropolitan Water District’s aqueduct and natural and augmented flows from the Colorado River are detained at a recharge facility managed by the CVWD at the east of San Gorgonio Pass that is northeast of Palm Springs, California. The Whitewater River flow is measured at several USGS gages with the most relevant being a gage near Mecca (USGS gage #10259540). The annual flow for water years 1961-2019 at the Mecca gage has ranged from 32,796 af to 113,228 af, with an average of 70,037 af (Figure 4-15). Daily flow data at the USGS stream flow gage near Westmorland indicate a median flow for each month that ranges from 51 cfs (July) to 66 cfs (December), refer to Table 4-44.

4.12.2.2 Agricultural Drains and Natural Watercourses

Numerous natural watercourses terminate at the Salton Sea, including in the Project areas. Several watercourses begin southwest of the New River, cross under State Route 86 and the Westside Canal before entering the Salton Sea. These watercourses typically convey runoff only during large rainfall events. These storms produce high peak flow and short duration floods. The runoff west of State Route 86 is collected with levees near the highway and directed under the highway and the canal. Runoff is then conveyed in natural and constructed channels to the Salton Sea. Salt Creek flows into the northeast shore of the Salton Sea. To the southeast, several watercourses cross the Coachella Canal and Highline Canal and enter the IID drainage system. Along the east side of the Sea, three large watercourses cross under Highway 111.

Flow records are either not available or exist as archived records for these natural watercourses; however, flows are known to be irregular and typically only result from large precipitation events. The specifics of these intermittent water courses are described below.

San Felipe Creek

San Felipe Creek, an intermittent natural drainage that discharges to the Salton Sea though San Sebastian Marsh during high peak flow events, has been recognized as a special area since the 1970’s and is an Outstanding Natural Areas and Research Natural Area. The San Sebastian Marsh/San Felipe Creek Management Area and BLM Area of Critical Environmental Concern is bounded on the north by SR 78, on the east by SR 86, on the southwest by Superstition Hills, and on the south and west by the Lower Borrego Valley (BLM and CDFG 1986). Although the majority of the channel length is outside of the Project area, the extent of this drainage is included within the hydrologic study area because of critical habitat for the desert pupfish (*Cyprinodon macularius*) mapped in a spring-fed, perennial stream reach between Tarantula Wash and Harper’s Well Wash and because of the potential for connectivity to the Salton Sea shoreline at San Sebastian Marsh during high peak flow events. San Felipe Creek is located within the Ocotillo-Clark Valley Basin. Flows in the lower reaches of the San Felipe Creek are supplied by several hot springs (Salton Sea Authority and BLM 1999).

Salt Creek

Salt Creek drains a watershed of about 269 square miles and is largely an ephemeral drainage that originates in Riverside County and flows 26 miles to discharge north of Salt Creek Beach along the eastern side of the Sea in the Salton Sea SRA (USGS 2021; Lawrence Livermore National Laboratory [LLNL] 2008). In the past, Salt Creek trended towards perennial flows upstream of the Salton Sea as seepage from the Coachella Canal, groundwater discharge downslope of the canal and occasional rainfall runoff supply base flows (DWR and CDFG 2007). Since more and more of the Coachella Canal has been lined with concrete starting in the early 2000's for purposes of conserving 30,850 acre-feet annually of seepage, flows in Salt Creek have decreased and become more variable (CH2M Hill 2018a) with little to no flow conveyed between May and October. Portions of the creek provide important habitat for the desert pupfish; the majority of fish inhabit an upstream portion of the creek, but a few individuals were found at the month during surveys conducted by CDFG/CDFW in 1995–1999 (USGS 2003; Coachella Valley Association of Governments 2009).

All American Canal

IID is the agricultural water purveyor in the Imperial Valley, providing water from the Colorado River through the All American Canal. IID receives and delivers about 90 percent of the 3.2 million af of irrigation water delivered from the Colorado River (LLNL 2008). IID (1994) also provides a network of drainage channels that receive water from on-farm subsurface drainage systems. This drainage water is then conveyed to the New River, Alamo River, or directly to the Salton Sea. Agricultural drainage from the Imperial Valley to the Sea comprises about 10 percent of total Imperial Valley contribution to the Sea's inflow, which is estimated at 93,848 acre-feet per year (afy) (DWR and CDFG 2007).

Coachella and Highline Canals

CVWD is the agricultural purveyor in the Coachella Valley (Figure 4-16). Water for agricultural irrigation primarily comes from the Colorado River. It is delivered to local farms via the 123-mile Coachella Canal. A quarter to a third of farm irrigation water is groundwater, pumped from privately owned wells and CVWD uses imported water from the Coachella Canal to supplement their groundwater use. CVWD also uses imported Colorado River water and State Water Project water exchanged for Colorado River water to artificially replenish the aquifer at 4 sites throughout the Coachella Valley. Replenishing with imported water supplements natural groundwater replenishment from rain and melted snow. The Highline Canal, also to the southeast, collects some flows during high flow events, and discharges to IID's drainage system.

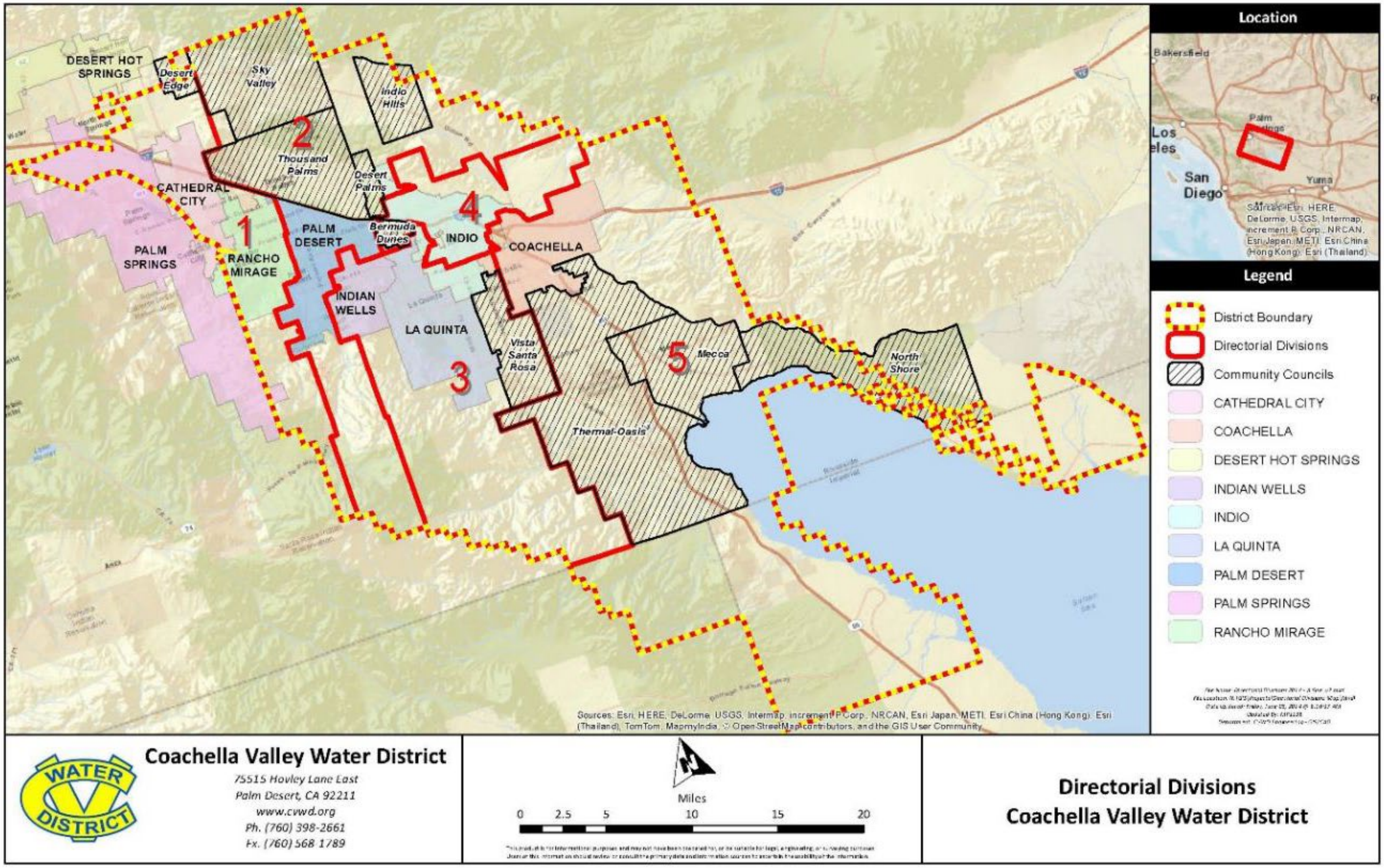


Figure 4-16 Coachella Valley Water District Service Area and Agricultural Drain Network

4.12.2.3 Water Quality and Natural Watercourses

This section describes important water quality regulations and natural watercourse preservation regulations. Water quality here is defined as a measure of chemical and biological characteristics of the water and bed sediments as well as suspended sediment concentrations in the water column. Natural water coarse preservation regulations deals with the preservation of the natural physical characteristics of watercourses and their obstructions.

Water Quality

In California, the Colorado River Basin Regional Water Quality Board (CRBRWQCB) is the lead water quality management agency that administers the water quality regulations in the study area, including issuance of National Pollution Discharge Elimination System (NPDES) permits for discharge of pollutants to surface waters. Total Maximum Daily Load (TMDL) Plans are devised to identify impaired waters affected by pollutants and limit the input of pollutants to impaired waters. Table 4-45 lists the impaired water bodies and pollutants to be regulated under TMDL plans in the study area.

The CRBRWQCB Water Quality Control Plan (2006) has designated beneficial uses for the surface waters of the region (Table 4-46) and provides narrative and numerical water quality objectives for surface waters of the Colorado River Basin Region. These water quality objectives are compared in Table 4-47, by constituent of concern, to seasonal water quality data collected by Reclamation in the Salton Sea and its tributaries for the 2004–2020 period of record (Reclamation 2021).

Concentration of a number of pesticides have been measured in the water column and bed sediments of Alamo River, New River, and adjacent species conservation habitat (SCH) project sites. Levels of chlorinated and pyrethroids concentrations in water column and bed sediments in the Alamo and New rivers, measured in 2010 and reported by Wang et al. 2011, are shown in Table 4-48. Dichlorodiphenyltrichloroethane (DDT) and its metabolites were detected in all sediment samples, and dichlorodiphenyldichloroethylene (DDE) was the predominant pesticide residue. Mean DDE concentrations in bed sediments in New River, Alamo River, and at potential SCH sites, are shown in Table 4-49.

Table 4-45 Impaired Water Bodies within the Salton Sea Watershed (Colorado River Basin Water Quality Board Websites), Updated February 2021

Water Body	Pollutant/Stressor
New River	Ammonia, Bifenthrin, Chlordane, Chloride, Chlorpyrifos, Cyhalothrin(Lambda), Cypermethrin, DDD, DDE, DDT, Diazinon, Dieldrin, Disulfoton, Imidacloprid, Hexachlorobenzene/HCB, Indicator Bacteria, Malathion, Mercury, Neprhtalene, Nutrients[1], Organic Enrichment/Low Dissolved Oxygen, PCBs, Pyrethroids, Sedimentation/Siltation[2], Selenium, Toxaphene, Toxicity, Trash
Alamo River	Chlordane, Chloride, Chlorpyrifos, Dichlorodiphenyltrichloroethane (DDT), Diazinon, Dieldrin, Enterococcus, Escherichia, Malathion, Polychlorinated biphenyls (PCBs), Sedimentation/Siltation[2], Selenium, Toxaphene, Toxicity
Imperial Valley Drains	Ammonia, Chlordane, Chlorpyrifos, DDE, DDT, Disulfoton, Dieldrin, Imidacloprid, PCBs, Sedimentation/Siltation[2], Selenium, Toxaphene, Toxicity
Whitewater River	Ammonia, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Disulfoton, Dissolved Oxygen, Indicator Bacteria, PCBs (Polychlorinated biphenyls), Selenium, Toxaphene, Toxicity

Water Body	Pollutant/Stressor
Salton Sea	Ammonia, Arsenic, Chloride, Chlorpyrifos, DDE, DDT, Enterococcus, Low Dissolved Oxygen, Nutrients, Salinity[3], Toxicity

Notes:

[1] CRBRWQCB (2010a) proposes to establish a TMDL in cooperation with USEPA and Mexico.

[2] Sedimentation/Siltation TMDL for Alamo River (CRBRQCB 2002a), New River (CRBRWQCB 2002b) and Imperial Valley Drains (CRBRWQCB 2005)

[3] TMDL development will not be effective in addressing this problem, which will require an engineering solution with Federal, local, and state cooperation (CRBRWQCB 2010)

Table 4-46 Designated Beneficial Uses for Surface Waters in the SSMP Project Area

Beneficial Use	Description	Surface Water					
		New River	Alamo River	White-water River	Salton Sea	Salt Creek	San Felipe Creek
Agriculture Supply (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.						X
Aquaculture (AQUA)	Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.				X		
Freshwater Replenishment (FRSH)	Uses of water for natural or artificial maintenance of surface water quantity or quality.	X	X	X		X	X
Industrial Service Supply (IND)	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.	P			P		
Ground Water Recharge (GWR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or					X	X

Beneficial Use	Description	Surface Water					
		New River	Alamo River	White-water River	Salton Sea	Salt Creek	San Felipe Creek
	support of vegetation for range grazing.						
Water Contact Recreation (REC-I)	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.	X[1]	X[2]	X	X	X	X
Noncontact Recreation (REC-II)	Uses of water for recreational activities involving proximity to water, but not normally involving contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.	X	X	X	X	X	X
Warm Freshwater Habitat (WARM)	Uses of water that support warmwater ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.	X	X	X	X	X	X
Wildlife Habitat (WILD)	Uses of water that support terrestrial ecosystems including, but not limited to, the preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.	X	X	X	X	X	X

Beneficial Use	Description	Surface Water					
		New River	Alamo River	White-water River	Salton Sea	Salt Creek	San Felipe Creek
Hydropower Generation (POW)	Uses of water for hydropower generation.		P				
Preservation of Rare, Threatened, or Endangered Species (RARE)	Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or Federal law as rare, threatened, or endangered.	X[3]	X[3]	X[3]	X[3]	X	X

Source: CRBRWQCB 2019

Notes:

X = existing use; P = potential use

[1] Although some fishing occurs in the downstream reaches, the presently contaminated water in the river makes it unfit for any recreational use. An advisory has been issued by Imperial County Health Department warning against the consumption of any fish caught from the river and the river has been posted with advisories against any body contact with the water.

[2] The only REC I usage that is known to occur is from infrequent fishing activity.

[3] Rare, endangered, or threatened wildlife exists in or utilizes some of these waterway(s). If the RARE beneficial use may be affected by a water quality control decision, responsibility for substantiation of the existence of rare, endangered, or threatened species on a case-by-case basis is upon CDFW on its own initiative and/or at the request of the CRBRWQCB; and such substantiation must be provided within a reasonable time frame as approved by the CRBRWQCB.

Table 4-47 Comparison of Water Quality Objectives with Current Conditions in Project area Surface Waters (2004-2020 Mean Annual)

		Current Conditions			
Constituent	Objective	Salton Sea[1]	New River	Alamo River	Whitewater River
Total suspended solids (mg/L)		51	214	227	98
Total dissolved solids (mg/L)	4,000	55,507	2,594	2,048	1,190
Total dissolved solids (Salinity) (ppt)	35 ppt (Sea) 4 ppt (Rivers)	55.4	2.6	2.1	1.2
Nitrate and nitrites (NO^3/NO^2) (µg/L)		318	4,823	6,045	12,291
Ammonia (NH^3) (µg/L)		845	1,192	882	1,289
Total phosphorus (µg/L)	35 (Sea)	123	965	601	1,608

		Current Conditions			
Constituent	**Objective**	**Salton Sea[1]**	**New River**	**Alamo River**	**Whitewater River**
Orthophosphate (µg/L)		56	413	265	1215
Total selenium (µg/L),	5 (Sea, 4 day average) 10 (Rivers)	1.36	3.13	5.18	1.99
Dissolved oxygen concentration (DOC) (mg/L)	5	55.6	7.8	7.7	5.6

Source: Reclamation, Lower Colorado Region, 2021.

Note: Objectives from CRBRWQCB Basin Plan 2006

Current Conditions https://www.usbr.gov/lc/region/programs/SaltonSea_data_2004-2020.xlsx

[1] Salton Sea concentration represents Whole Sea Average.

Table 4-48 Measured Pesticide Concentrations in New River and Alamo River as Reported in Wang et al. 2011

Pollutant	Body of Water	Medium	Date of Measurement	Concentration, ng/l or ng/g
Organochlorine[1]	New River and Alamo River	Water	2010	Mostly <1.5 ng/l or not detected[2]
Chlorpyrifos[3]	New River and Alamo River	Water	2010?	3 samples < DFG criteria (14ng/l)[4] 1 sample= 80 ng/l
Permethrin[1]	New River and Alamo River	Water	2010	(3.3-7.5 ng/L)
Fenpropathrin[1]	New River and Alamo River	Water	2010	1 sample at 11.6 ng/l Other samples at non-elevated levels
Chlordane[1]	New River	Sediments	2010	< 1.2 ng/g
Chlordane[1]	Alamo River	Sediments	2010	< 3 ng/g
Bifenthrin[1]	New River	Sediments	2010	< 0.5 ng/g
Bifenthrin[1]	Alamo River	Sediments	2010	< 1.9 ng/g

Notes:

Bed sediment samples were taken at 0-5 cm, 5-15 cm, and 15-30 cm depth intervals.

[1] Wang et al. 2011**;** see also Appendix J, Summary of Special Studies.

[2] Non-detect values were defined as 0.01 ng/g for purpose of calculating means. Samples were pooled for air-exposed and submerged sites within each location.

[3] Siepmann and Finlayson 2000, as cited in CRBRWQCB 2008.

[4] SFWS Hazardous Assessment Criteria is 14 ng/l.

Table 4-49 DDE Concentrations in Sediment at New and Alamo Rivers and Nearby Sites (ng/g)

Location	Surface Mean (# samples)	Surface Maximum	Percent > PEC Concentrations[3]	Subsurface Mean (# samples)	Subsurface Maximum	Percent > PEC Concentrations[3]
In New River and Alamo River Sites						
New River – East [1]	6.52 (11)	23.71	0	9.10 (21)	41.16	10
New River – Middle[1]	2.78 (15)	7.99	0	5.44 (29)	33.51	3
New River - Far West[1]	1.14 (6)	2.90	0	0.89 (13)	2.41	0
Alamo River - Morton Bay[1]	13.66 (11)	32.41	18	25.02 (19)	102.60	37
Alamo River - North (Davis Road)[1]	13.41 (7)	34.40	14	9.16 (14)	38.26	7

Notes:

Bed sediment samples were taken at 0-5 cm, 5-15 cm, and 15-30 cm depth intervals.

[1] Measured in 2010 (Wang et al. 2011).

[2] Measured in 2006-2008 (Miles et al. 2009).

[3] Probable Effects Concentration [PEC] = 31.3 ng/g (MacDonald et al. 2000, as cited in CRBRWQCB 2008).

4.12.2.2 Natural Water Course Preservation

Water course preservation regulations are regulations that affect the natural physical characteristics of the watercourses and their obstructions. Agencies that regulate activities that can affect watercourse in the study area include CDFW, which regulates the alteration of natural physical characteristics of surface water such as diverting, obstructing, or changing natural flow, and DWR division of Safety of Dams (SOD), which regulates the construction of new dams or for the enlargement, alteration, repair, or removal of existing dams, Specifically, the berm height and the distance between the impounded water surface and the toe of the berm are regulated. These factors determine if the construction will be under SOD jurisdiction.

4.12.2.4 Groundwater Hydrology and Quality

The Salton Sea is located within the Colorado River Hydrologic Region, as defined by the DWR (2003). Seven groundwater basins in this hydrologic region are located adjacent to the Salton Sea (Figure 4-17):

> Imperial Valley Basin;

> Indio Subbasin of the Coachella Valley Basin; and

> Basins that do not include irrigated areas served by Imperial Irrigation District (IID) or Coachella Valley Water District (CVWD), including East Salton Sea Basin, Chocolate Valley

Basin, Orocopia Valley Basin, West Salton Sea Basin, Ocotillo-Clark Valley Basin and Borrega Valley Basin.

Groundwater is present throughout the Salton Sea Basin and is extracted for consumptive use. The sources of groundwater include:

> Percolation of ancient seawater associated with the Gulf of California when the Gulf extended north into the Salton Trough;

> Direct infiltration from the Colorado, Whitewater, New, and Alamo rivers, both currently and previously when these rivers discharged to the Salton Trough;

> Deep percolation of applied agricultural irrigation water;

> Leakage from the numerous unlined irrigation canals;

> Percolation of precipitation over the basin proper, including the mountains that comprise part of the watershed; and

> Direct groundwater recharge and recovery projects such as projects currently operating in the Coachella Valley (LLNL 2008).

The Project area is hydrologically-connected to seven groundwater basins described in Table 4-50. Each basin presents similar hydrogeologic characteristics with typical alluvium-filled valleys underlain by nonwater-bearing crystalline bedrock (DWR 2003). These basins represent the shallower portions of the Salton Sea basin as a whole and do not correspond to deeper formations or water bearing deposits that extend to the bedrock. The horizontal boundaries separating the individual basins do not necessarily represent physical barriers to flow. Groundwater underflow occurs across the border from Mexico into the United States (LLNL 2008). Recharge occurs predominately through irrigation return as well as percolation of rainfall and surface runoff, underflow into the basin and seepage through unlined canals that traverse the valley. Precipitation ranges from 1 to 9 inches per year with a wide range of temperatures.

Figure 4-17 Salton Sea Groundwater Basins

Table 4-50 Project area groundwater basins.

Groundwater Basin	Basin Number	Surface Area	Groundwater Storage	Groundwater Availability and Uses	Groundwater Quality
Coachella Valley (Indio Subbasin)	7-021	336,000 acres (525 square miles)	29,800,000 acre-feet	> Seepage from the Indio subbasin historically provided substantial groundwater inflow into the Salton Sea until groundwater overdraft conditions occurred (Salton Sea Authority and Reclamation 2000). The overdraft conditions cause water from the Salton Sea to flow into the Indio subbasin aquifers. > Groundwater recharge occurs to a greater extent in the northern portion of the subbasin. Natural recharge is variable due to highly variable precipitation patterns and has been estimated to range from 10,000 acre-feet/year in dry years to 187,000 acre-feet/year in extremely wet years (DWR 2003). > The CVWD completed a water management plan that included groundwater improvements for the Indio subbasin, published in 2002. > The CVWD operates over 80 municipal wells that range in depth from 900 to 1,300 feet and wells for agricultural uses.	> Water quality has been impacted at several locations throughout the basin due to petroleum hydrocarbons, nitrates, and salts and has led to the abandonment of several drinking water wells in the Coachella Valley. > Near the Salton Sea, groundwater salinity has increased due to saltwater intrusion from the Salton Sea.
Imperial Valley	7-030	1,200,000 acres (1,870 square miles)	14,000,000 acre-feet	> The basin has two major aquifers separated by a semi-permeable aquitard (silt and clay lenses) that averages 60 feet thick and reaches a maximum thickness of 280 feet. > The IID estimate of 1,000 acre-feet/year has been adopted as a reasonable estimate of historical	> Groundwater quality varies extensively in the Imperial Valley Basin. Total dissolved solids, a measure of salinity, ranged from 498 to 7,280 mg/L (DWR 2003). High concentrations of fluoride have been reported.

Groundwater Basin	Basin Number	Surface Area	Groundwater Storage	Groundwater Availability and Uses	Groundwater Quality
				groundwater discharge to the Salton Sea. > Most of the wells in the Imperial Valley are domestic wells. Total production from these wells is estimated to be a few thousand acre-feet/year. > Extremely deep groundwater has been developed along the southern Salton Sea shoreline for geothermal resources. These wells access non-potable groundwater from several thousand feet below ground surface.	
East Salton Sea	7-033	196,000 acres (306 square miles)	360,000 acre-feet	> Recharge is primarily from infiltration of runoff at the base of the Chocolate Mountains. > Due to limited availability and high salinity, groundwater is not used for domestic, municipal, or agricultural purposes in this basin. > Groundwater flow from the East Salton Sea and Chocolate Valley basins represent about 16 percent of the groundwater inflow to the Salton Sea.	> High salinity
West Salton Sea	7-022	106,000 acres (166 square miles)	Unknown	> Recharge is primarily from runoff through coarse-grained alluvial deposits at the base of the Santa Rosa Mountains. > Limited available well data show that water levels declined about 64 feet between 1979 and 2000.	> Relatively high concentrations of fluoride, boron, and total dissolved solids limit use of the groundwater for domestic and irrigation uses.

Groundwater Basin	Basin Number	Surface Area	Groundwater Storage	Groundwater Availability and Uses	Groundwater Quality
Ocotillo-Clark Valley	7-025	223,000 acres (348 square miles)	6,250,000 acre-feet	> The basin is bounded by the Santa Rosa Mountains on the north and northeast, the Coyote Creek and Superstition Mountain faults on the west and south, and the Salton Sea and surface drainage divides on the east. Clark Valley drains internally toward Clark (dry) Lake and the remainder of the valley drains to the Salton Sea Use of groundwater is limited in the basin near the Salton Sea because of water quality.	> Near the Salton Sea, total dissolved solids are higher than 1,000 mg/L. The groundwater also contains high sulfate, chloride, and fluoride concentrations.
Orocopia Valley Basin	7-031	96,000 acres (150 square miles)	6,250,000 acre-feet	> Due to limited availability and poor quality, groundwater is not used for domestic, municipal, or agricultural purposes in the western portion of this basin near the Salton Sea. > Municipal/Irrigation wells yield up to 210 gpm and average 165 gpm.	> Fluoride, color, radon, and uranium concentrations exceed drinking water standards in some wells.
Chocolate Valley	7-032	130,000 acres (203 square miles)	1,000,000 acre-feet	> Groundwater generally moves southwest beneath Salton Creek and discharges to the Salton Sea (). Recharge to the basin is primarily from infiltration and runoff from adjacent mountains > Groundwater flow from the East Salton Sea and Chocolate Valley basins represent about 16 percent of the groundwater inflow to the Salton Sea.	> Groundwater quality is characterized by high concentrations of fluoride, boron, and total dissolved solids/salinity.
Borrego Valley (Borrego Springs Sub-basin)	7-024.01	62,749 acres	5,500,000 acre-feet	> This High priority basin is home to an estimated 3,463 people (2010 value). The sub-basin has approximately 243 wells, of which approximately 14 are water supply	> Historic water-quality data shows that in the upper aquifer, total dissolved solids (TDS) and nitrate as N exceeded their respective

Groundwater Basin	Basin Number	Surface Area	Groundwater Storage	Groundwater Availability and Uses	Groundwater Quality
				wells. Groundwater accounts for approximately 100 percent of the basin's water supply. This basin is subject to critical conditions of overdraft (DWR 2020), On July 20, 2020, the Court approved a Notice of Commencement of Groundwater Adjudication and Form Answer for use in the below-referenced case, a comprehensive adjudication of the Borrego Springs Groundwater Subbasin No. 7-024.01: Borrego Water District v. All Persons Who Claim a Right to Extract Groundwater in the Borrego Valley Groundwater Subbasin, etc., et al., San Diego Superior Court Case No. 37-2020-00005776-CU-TT-CTL Comprehensive Groundwater Adjudication. > Historical water level data shows little or no change in groundwater levels southeast of the San Felipe Wash with respect to pumping in the Borrego Springs area. The San Felipe/Yaqui Ridge anticline and San Felipe fault compartmentalize the deep alluvial sediments in Borrego Springs from the alluvial sediments to the southeast of the San Felipe Wash.	water-quality thresholds of 500 mg/L (secondary recommended CA-MCL) and 10 mg/L. Currently, the source of this nitrate is unknown. > TDS and sulfate are the only constituents that showed increasing concentrations with simultaneous declines in water levels. > TDS and nitrate concentrations are generally highest in the upper aquifer and in the northern portion of the Borrego Valley, where agricultural activities are primarily concentrated. > Some wells have been abandoned or destroyed due to high nitrates. Most demand for basin is concentrated in north in a small area.
Borrego Valley (Ocotillo Wells Sub-basin)	7-024.02	90,087	Included in Borrego Springs Sub-basin above	> Located in California's hydrologic region, the Borrego Valley – Ocotillo Wells is 90,087 acres in size. This Very Low priority basin is home to an estimated 386 people (2010 value). The sub-basin has	> In the groundwater near Clark Lake, in the northern part of the basin, the dominant cation is sodium or calcium and the dominant anions are sulfate and chloride. Groundwater in

Groundwater Basin	Basin Number	Surface Area	Groundwater Storage	Groundwater Availability and Uses	Groundwater Quality
				approximately 146 wells, of which approximately 10 are water supply wells. Groundwater accounts for approximately 100 percent of the basin’s water supply.	the southern part of the basin has sodium chloride-sulfate or sodium chloride character. TDS content often increases though time for wells with multiple measurements and increases from northwest to southeast in the basin

Source: DWR 2020, 2021

4.12.2.5 Water Supply and Conservation and Water Rights

Water right permits provide legal authorization to divert water for beneficial uses in accordance with the permits. Individuals and agencies in the Salton Sea Basin hold seven individual water rights permits for diversion from Salton Sea tributaries. IID has 7 water rights on the Colorado River for delivery of water through the All American Canal. The Coachella Valley Water District (CVWD) maintains 3 water rights permits with the State Water Board's Water Rights Registrations Program.

Whitewater River

CVWD currently maintains three water rights permits. Two of the CVWD's water rights are for diversions from the Whitewater River near Interstate 10; one of which is for diversion of 400 cubic feet/second (cfs) from the Whitewater River (#000536) and the other water right is for storage of 39,000 acre-feet/year for water from the Whitewater River or its tributaries (#003011).

Colorado River

CVWD also has a water rights permit (#007650) to divert water from the Colorado River via the Coachella Canal. IID has 7 water rights permits to divert water from the Colorado River, permit #s: 007643, 007649, 007646, 007647, 007644, 007648 and 007645. The Colorado River water right allows for diversion. The Metropolitan Water District of Southern California water right application for an appropriative water right permit for 100,000 acre-feet/year was cancelled February 19, 2004.

New and Alamo Creeks

The Metropolitan Water District of Southern California has submitted a water right application to divert agricultural return flows from the New and Alamo rivers; no water right permit has been issued to date according to the State Water Board's eWRIMS database. The return flows are a result of the application of Colorado River water to irrigated lands in IID's service area. The New River water right application seeks 700 cfs up to a maximum of 433,400 afy. The Alamo River water right application is for a diversion of 800 cfs up to 475,000 afy. To date, Metropolitan Water District of Southern California has not prepared the required environmental document for these water rights permits and so the SWRCB has not acted upon these permits.

San Felipe and Salt Creeks

No water rights were identified on the SWRCB web site for San Felipe Creek or Salt Creek. Several water rights records have been recorded on Coyote Creek in San Diego County, a tributary to San Felipe Creek. In addition, the Anza-Borrego Desert State Park Preliminary General Plan and FEIR (CSP 2004) indicated that there were 13 water rights applications and 26 statements of diversion and use on San Felipe Creek in 1998. These applications were in addition to recorded diversions of 4,423 acre-feet/year on Coyote Creek and 317 acre-feet/year on San Felipe Creek upstream of the Anza-Borrego Desert State Park.

Agricultural Drainage

Irrigated agriculture in the Salton Sea watershed has required drainage to remove groundwater and salts from the root zone of the irrigated lands. To protect the agricultural industry in the Salton Sea, President Coolidge declared specific sections of land under the Salton Sea to be withdrawn from settlement, location, sale, or entry, and reserved for the purposes of creating a drainage reservoir. These declarations were provided in Public Water Reserve No. 90-1 signed in March 1924 and Public Water Reserve No. 114 signed in February 1928. These orders designated the lands below -220 feet mean sea level (msl) at the Salton Sea to be used as a repository to receive and store agricultural, surface, and subsurface drainage waters from Imperial and Coachella valleys. In 1968, the California legislature adopted a statute declaring the primary use of the Salton Sea for the collection of agricultural drainage water, seepage, and other flows (Assembly Bill 461, 1968; Statutes 1968, Chapter 392).

4.12.2.6 Floodplain Management and Flood Risk Management

The Project area has been defined by the Federal Emergency Management Agency (FEMA) as a special flood hazard area (SFHA) on Flood Insurance Rate Maps (FIRMs) published in 2008. The Whitewater, New, and Alamo rivers, along with the land bordering the perimeter of the Salton Sea (and the Salton Sea itself), are identified as Zone A. The Zone A delineation refers to flood boundaries that are set using approximate methods (an estimation of the flood boundary) rather than a detailed hydraulic model. Therefore, the depth of flooding is not presented on the flood maps but is assumed to be less than 1 foot (typically how Zone A is represented). Project components that would be located within the Sea's inundation area would not be within the SFHA because the inundation area is within the Sea water body.

4.13 TRANSPORTATION AND TRAFFIC

This section addresses increased vehicular traffic during construction, operations, and maintenance from the transport of people, equipment, and materials to and from the Project sites.

4.13.1 Study Area

The transportation network in the Imperial and Coachella valleys consists of freeways, highways, local roads, and rural roads. The study area for transportation and traffic focuses on the roads that would be used to access the Project sites. Regional access to the Project area is provided by Interstates (I-) 8 and 10 and State Highways (State Routes [SR-]) 78, 86, and 111.

4.13.2 Regulatory Requirements

Regulatory requirements that are applicable to transportation and traffic are provided in Table 4-51.

Table 4-51 Regulatory Requirements for Transportation and Traffic

Govt	Regulation	Agency	Regulation Summary
Transportation and Traffic			
Federal	Various	Federal Highway Administration, Federal Railroad Administration, and Federal Aviation Administration	Establish standards and regulations for construction and operations and maintenance of federal highways, railroads, and aviation, respectively.
State	Various	California Department of Transportation (Caltrans)	Establish standards and regulations for construction and operations and maintenance of State highways.

Govt	Regulation	Agency	Regulation Summary
Local	Various	Southern California Association of Governments, Imperial Association of Governments, and the Coachella Valley Association of Governments	Regional transportation planning in the Imperial and Coachella Valleys is provided by the Southern California Association of Governments, Imperial Association of Governments, and the Coachella Valley Association of Governments. Imperial and Riverside counties and incorporated cities provide transportation planning services for their jurisdictions.
Local	General Plan-Circulation and Scenic Highways Element	Imperial County	Includes information needed to coordinate regional transportation and provide for a circulation system that enables the movement of goods and people within and through the county. Intends to guide future circulation plans such that all roads and streets will operate at Level of Service (LOS) C or better (County of Imperial 2008b). Level of service is a qualitative description of a facility's performance based on average delay per vehicle, vehicle density, or volume-to-capacity ratios. Level of service ranges from LOS A, which indicates free-flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays.
Local	General Plan-Circulation Element	Riverside County	Includes information needed to provide a regional and local linkage system between unique communities and enable the movement of goods and people within and through the county. Minimum target LOS C designated for Eastern Coachella Valley Area Plan, which the project area is local.

4.13.3 Existing Conditions

Roadways

Roadways in the Imperial and Coachella valleys consist of freeways, highways, local roads, and rural roads and are described in Table 4-52. Roadways in Imperial County are considered critical to the regional economy due to the movement of agricultural goods and services and recreational travel.

Table 4-52 Roadway Descriptions

Roadway	Description
Interstate 8	Highway located to the south of the Salton Sea, extends in a west to east direction and provides access from San Diego County. Two travel lanes in each direction. Interregional route for people and goods, provides access to desert recreational activities.
Interstate 10	Located north of the Salton Sea, extends in a west to east direction, and provides access from Los Angeles County. Trucks comprise at least 15% of the daily traffic volume on some of the primary goods movement corridors in Riverside County, such as Interstate 10 in the Coachella Valley.
State Route 78	Extends in a west to east direction from San Diego County to State Highway 86 near the southwestern Salton Sea shoreline. Two-lane conventional highway with portions upgraded to four-lane expressway.
State Route 86	Located to the west of the Salton Sea, extends in a north to south direction from I-10 near Indio to Interstate 8 near El Centro. Two-lane highway and ends at Riverside County line as a four-lane expressway. Major goods movement corridor.
State Route 111	Extends in a north to south direction from I-10 near Indio to United States-Mexico border at Calexico, and includes a crossing of Interstate 8 near El Centro. Two travel lanes in each direction. Considered critical route connecting 3 largest cities and serves as a major goods movement route.

Sources: County of Imperial 2008b, County of Riverside 2020c

Traffic volumes on roadways near the Sea are shown in Table 4-53. Peak-hour and month traffic and annual average daily traffic (AADT) are based on traffic volumes and peak-hour volumes published by Caltrans (2017).

Table 4-53 Traffic Volume on Roadways near the Salton Sea

County	Type	Location	Back Peak Hour	Back Peak Month	Back AADT[1]	Ahead Peak Hour	Ahead Peak Month	Ahead AADT[1]	LOS[2]
Interstate 8									
Imperial	EX	Junction Route 98	2,100	17,100	15,200	1,950	15,600	13,700	A
Imperial	EX	Junction Route 86	3,800	34,000	31,000	4,050	34,000	33,000	B
Imperial	EX	Junction Route 111	3,100	35,000	32,500	1,700	19,700	18,600	B
Imperial	EX	Junction Route 115 North	1,250	14,100	13,700	2,150	19,900	14,400	A
Imperial	EX	Junction Route 98 West	2,150	19,900	14,400	2,500	19,500	16,900	A
Imperial	EX	Junction Route 186 South	2,850	22,000	19,200	3,700	30,000	25,500	A

County	Type	Location	Back Peak Hour	Back Peak Month	Back AADT[1]	Ahead Peak Hour	Ahead Peak Month	Ahead AADT[1]	LOS[2]
Interstate 10									
Riverside	EX	Jefferson Street/Indio Boulevard	8,400	104,000	93,000	7,100	81,000	76,000	E
Riverside	EX	Indio, North Junction Route 111	6,000	68,000	64,000	5,400	62,000	58,000	D
Riverside	EX	Indio, Junction Route 86 South	5,400	62,000	58,000	4,050	33,500	29,000	C
Riverside	EX	Eagle Mountain Road	3,600	28,000	27,300	3,600	28,000	27,300	A
Riverside	EX	Junction Route 177 North	3,600	28,000	27,300	3,500	27,000	26,400	A
State Route 78									
Imperial	MA	North Junction Route 86	170	890	810	0	0	0	A
Imperial	MA	Junction Route 111 West	790	9,800	9,000	890	10,900	9,600	A
Imperial	MA	Junction Route 111 East	970	10,500	9,400	490	4,200	4,150	A
Imperial	C	West Junction Route 115	490	4,200	4,150	470	3,450	3,150	A
Imperial	C	East Junction Route 115	470	3,450	3,150	360	2,200	1,800	A
State Route 86									
Imperial	MA	Junction Route 8	2,250	24,100	23,000	2,900	32,500	31,000	D
Imperial	MA	Adams/Imperial Avenues	1,550	18,100	17,100	2,600	31,500	28,500	C
Imperial	MA	South Junction Route 78	1,100	12,900	12,200	1,550	17,900	17,200	B
Imperial	MA	North Junction Route 78	1,150	14,900	13,200	1,050	12,800	10,900	A
Imperial	MA	Salton City, South Marina Drive	2,150	19,000	17,500	2,050	18,900	17,300	B
Imperial	MA	Salton Sea Beach Road	2,050	18,900	17,300	1,400	17,000	14,400	B
Imperial	MA	Desert Shores Drive	1,400	17,000	14,400	1,400	16,900	14,700	A

County	Type	Location	Back Peak Hour	Back Peak Month	Back AADT[1]	Ahead Peak Hour	Ahead Peak Month	Ahead AADT[1]	LOS[2]
Riverside	MA	Junction Route 111	1,300	17,700	15,300	1,550	21,400	18,500	B
Riverside	MA	Junction Route 10	2,700	37,000	32,000	0	0	0	D
State Route 111									
Imperial	PA	Calexico, Second Street	2,300	32,000	29,500	2,300	32,000	29,500	B
Imperial	PA	Junction Route 86 West	3,150	41,500	38,500	3,000	36,500	35,500	C
Imperial	PA	Junction Route 8	2,750	37,000	35,000	2,800	31,500	29,500	B
Imperial	MA	Junction Route 78	1,450	17,900	15,400	890	8,100	7,600	B
Imperial	MA	Junction Route 115 East	750	7,200	5,700	710	6,700	5,400	A
Imperial	C	Niland Avenue	620	5,600	3,500	400	3,550	2,800	A
Riverside	C	Salton Sea State Park Road	170	1,750	1,650	340	3,450	3,300	A
Riverside	C	Mecca	580	5,700	5,000	890	8,800	7,700	A
Riverside	C	Junction Route 86	730	7,400	7,000	730	7,400	7,000	A

Source: Caltrans 2017

Notes: For roadways that run north to south, ahead is north of the location and back is south of the location. For roadways that run east to west, ahead is east of the location and back is west of the location.

AADT=Annual average daily traffic
EX = Expressway
PA = Prime arterial
MA = Minor arterial
C = Major collector
[1] The peak direction AADT is highlighted gray.

[2] LOS was calculated using Imperial County LOS guidelines for roadway type and peak direction AADT.

Table 4-54 describes the relationship between level of service and average daily vehicles trips on each type of roadway.

Table 4-54 Imperial County Standard Street Classification and Average Daily Trips

Road Type	Level of Service (LOS)				
Class	**A**	**B**	**C**	**D**	**E**
Expressway	30,000	42,000	60,000	70,000	80,000
Prime Arterial	22,200	37,000	44,600	50,000	57,000
Minor Arterial	14,800	24,700	29,600	33,400	37,000
Major Collector (Collector)	13,700	22,800	27,400	30,800	34,200
Minor Collector (Local Collector)	1,900	4,100	7,100	10,900	16,200

Source: County of Imperial 2008b

Notes:
Expressways = provide regional and intracounty travel services with six travel lanes.
Prime arterials = provide regional, subregional, and intracounty travel services with four to six travel lanes.
Minor arterials = provide intracounty and subregional services with four to six travel lanes.
Major collectors (collectors) = designed for intracounty travel as a link between the long-haul facilities and the collector/local facilities.
Minor local collectors (local collectors) = designed to connect local streets with the adjacent collectors or the arterial street system with two travel lanes.

Railroads

The Union Pacific Railroad provides freight service in and through Riverside and Imperial counties and connects the counties with major markets in California and areas north and east (County of Riverside 2020c, County of Imperial 2008b). This railroad along the Salton Sea is classified as a critical route and most trains do not stop in the Salton Sea area (DWR and CDFG 2007). A branch line is located at Niland that provides rail service to Calipatria, Brawley, Imperial, El Centro, Calexico, and Mexico. Another branch line, the Holton Interurban Railroad, provides service to east El Centro. These railroads provide freight service only and not passenger service (County of Imperial 2008b).

Airports

Local airports providing passenger service near the Salton Sea include the Imperial County Airport in Imperial and Palm Springs International Airport. Regional airports include San Diego International Airport and Ontario International Airport, which are well outside the project area. Smaller general aviation airports are located in the communities surrounding the Salton Sea (DWR and CDFG 2007). The project area is not located within any Airport Influence Areas for Riverside County (County of Riverside 2020c).

4.14 PALEONTOLOGICAL RESOURCES

This section presents information on paleontological resources (fossils) within the study area, as defined by applicable federal laws and regulations. Information regarding paleontological resources is taken from the *Salton Sea Species Conservation Habitat Project Final EIS/EIR*

(Corps and CNRA 2013) and the *Salton Sea Ecosystem Restoration Project Program Final Programmatic EIR* (PEIR) (DWR and CDFG 2007).

4.14.1 Study Area

The study area for paleontological resources is the area where ground disturbances may expose and affect buried and unknown paleontological resources. The study area generally includes the habitat restoration and dust suppression opportunity areas located between the 2003 and projected 2028 shorelines (see Chapter 3). The opportunity areas would be subject to the most intensive ground-disturbing activities, such as the construction of ponds and berms, which could affect paleontological resources. Access roads to specific project locations within the opportunity areas would be extended from nearby public roads. Thus, the study area for paleontological resources also includes land between public roads and the habitat restoration and dust suppression opportunity areas because this land would be subject to ground disturbance from road construction.

4.14.2 Regulatory Requirements

The regulatory framework for paleontological resources includes federal, state, and local requirements, as well as guidance provided by the Secretary of the Interior and Society of Vertebrate Paleontology (SVP) and are shown in Table 4-55. Restoration projects at the Sea could be subject to some or all of these requirements.

Table 4-55 Regulatory Requirements for Paleontological Resources

Branch	Regulation	Agency	Regulation Summary
Paleontological Resources			
Federal	Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et seq.; 34 Stat. 225)		This act requires protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal lands. The act does not refer to paleontological resources specially; however, the protection of “objects of antiquity” by various Federal agencies (understood to include paleontological resources) is included in the act.
	National Historic Preservation Act (NHPA) (54 U.S.C. §§ 300101-307108)		This act provides for the survey, recovery, and preservation of significant paleontological data when such data may be destroyed or lost due to a Federal, Federally licensed, or Federally funded project (Public Law 89 665; 80 Statute 915m 16 United States Code section 470 et seq.)
	Paleontological Resources Preservation Act of 2009	Department of the Interior	This act calls on the Secretary of the Interior to provide protection for vertebrate paleontological resources on Federal lands by limiting the collection of vertebrate fossils and scientifically important fossils to permitted and qualified researchers.
	CDCA Plan and DRECP Land Use Plan Amendment	BLM	The Potential Classification Yield Classification (PFYC) system provides baseline guidance for assessing paleontological resources. PFYC assignments should be considered as only a first approximation of the potential presence of paleontological resources, subject to change based on ground verification.

Branch	Regulation	Agency	Regulation Summary
State	California Environmental Quality Act (CEQA)	California	CEQA is encoded in Sections 21000 et seq of the Public Resources Code (PRC) with Guidelines for implementation codified in the California Code of Regulations (CCR), Title 14, Chapter 3, Sections 15000 et seq., requires state and local public agencies to identify the environmental impacts of proposed discretionary activities or projects, determine if the impacts will be significant, and identify alternatives and mitigation measures that will substantially reduce or eliminate significant impacts to the environment. State-owned properties are subject to the provisions of Public Resources Code Section 5024 and 5024.5. Paleontological resources are considered part of the environment, and a project that may directly or indirectly destroy a unique paleontological resource or site is a project that may have a significant effect on the environment.
	Public Resources Code Section 5097.5	California	This statute defines as a misdemeanor any unauthorized disturbance or removal of a fossil site or remains on public land and specifies that State agencies may undertake surveys, excavations, or other operations as necessary on State lands to preserve or record paleontological resources. This statute applies if construction or other related impacts occur on State-owned or managed lands.
Local	Imperial County General Plan	Imperial County	The Imperial County General Plan does not specifically address paleontological resources, but it emphasizes the conservation of historical and prehistoric resources and contains an objective in its Conservation and Open Space Element that is intended to ensure the preservation of such resources in the county: • Objective 3.1: Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.
	Riverside County General Plan	Riverside County	In its Multipurpose Open Space Element, the 2015 Riverside County General Plan contains policies that are intended to ensure the preservation of paleontological resources in the county: • **Policy OS 19.6:** Whenever existing information indicates that a site proposed for development has high paleontological sensitivity as shown on Figure OS-8, prior to site grading, file with the county geologist a paleontological resource impact mitigation program that specifies the steps to be taken to mitigate impacts on paleontological resources. • **Policy OS 19.7:** Whenever existing information indicates that a site proposed for development has low paleontological sensitivity as shown in Figure OS-8, no direct mitigation is required unless a fossil is encountered during site development. If a fossil is encountered, notify the county geologist and retain a

Branch	Regulation	Agency	Regulation Summary
			paleontologist. The paleontologist shall document the extent and potential significance of the paleontological resources on the site and establish appropriate mitigation measures for further site development. • **Policy OS 19.8:** Whenever existing information indicates that a site proposed for development has undetermined paleontological sensitivity as shown on Figure OS-8, file a report the county geologist documenting the extent and potential significance of the paleontological resources on site and identifying mitigation measures for the fossil and for impacts to significant paleontological resources prior to approval of that department. • **Policy OS 19.9:** Whenever paleontological resources are found, the county geologist shall direct them to a facility within Riverside County for their curation, including the Western Science Center in the City of Hemet.

Although not a regulation per se, the report entitled *Assessment of Fossil Management on Federal and Indian Lands Fossils on Federal and Indian Lands* to Congress (United States Department of the Interior [DOI] 2000) provides guidance to Federal agencies regarding the management of fossil resources. This report was prepared by the DOI with the assistance of other Federal agencies, including the BIA, BLM, Reclamation, USFWS, United States Forest Service, United States Park Service, and USGS, as well as the Smithsonian Institution. The report concluded that administrative and congressional actions with respect to fossils should be governed by seven basic principles:

- Fossils on Federal land are a part of America’s heritage;
- Most vertebrate fossils are rare;
- Some invertebrate and plant fossils are rare;
- Penalties for fossil theft should be strengthened;
- Effective stewardship requires accurate information;
- Federal fossil collections should be preserved and available for research and public education; and
- Federal fossil management should emphasize opportunities for public involvement.

The SVP (1995) established three categories to be used for the purpose of assigning sensitivity, or the potential for a rock unit to yield significant paleontological resources: high, low, and undetermined. Each of these categories affects the degree to which paleontological mitigation is required.

High Potential. Rock units from which vertebrate or significant invertebrate fossils or suites of plant fossils have been recovered are considered to have a high potential for containing significant nonrenewable fossiliferous resources.

Low Potential. Reports in paleontological literature or field surveys by a qualified vertebrate paleontologist may allow for a determination that some areas or units have low potential for yielding significant fossils. Such units will be poorly represented by specimens in institutional collections.

Undetermined Potential. Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potential.

In general terms, for geologic units with high potential, full-time monitoring for paleontological resources is typically recommended during any Project-related ground disturbance. For geologic units with low potential, protection or salvage efforts typically are not required. For geologic units with undetermined potential, field surveys by a qualified paleontologist are usually recommended to specifically determine the paleontologic potential of the rock unit or units present within the assessment area.

4.14.3 Existing Conditions

4.14.3.1 Fossil-Bearing Strata in the Study Area

The study area is underlain by Quaternary lake deposits (Lake Cahuilla beds) that are probably less than 100 feet thick, although because of faulting and deformation of the basin, the Lake Cahuilla beds could be thinner or thicker. Beach and nearshore deposits mantle the margin of the Salton Sea (Waters 1983, as cited in Corps and CNRA 2013; DWR and CDFG 2007). Although modern in age at the surface, these lake/playa sediments increase in age with depth, and at lower reaches may be late Pleistocene in age (40,000 years or less) (Maloney 1986, as cited in Corps and CNRA 2013). The sediments of the Lake Cahuilla beds tend to be highly fossiliferous and often preserve late Pleistocene and Holocene invertebrates (diatoms, pollen, foraminifera, ostracods, freshwater clams, and snails); small vertebrates (fish, amphibians, reptiles, birds, and small to medium-sized mammals); and larger mammal fossils, some of which are large extinct mammals (Corps and CNRA 2013).

The Quaternary Brawley Formation that underlies the Lake Cahuilla beds deposits is at least 2,000 feet thick. Recent work on the Brawley Formation indicates that these sediments are from the Pleistocene and range in age, from about 1.1 to 1.2 million years to about 40,000 years before present. The sediments of the Brawley Formation tend to be highly fossiliferous and often preserve late Pleistocene invertebrates (diatoms, pollen, foraminifera, ostracods, freshwater clams, and snails); small vertebrates (fish, amphibians, reptiles, birds, and small- to medium-sized mammals); and larger extinct mammal fossils (Corps and CNRA 2013).

4.14.3.2 Paleontological Sensitivity

Paleontological sensitivity of the study area was assessed at a provisional level in the PEIR (DWR and CDFG 2007) based on generalized geologic mapping. At times a range was provided due to the non-specific nature of the maps available. The dune sands at the northern end of the Salton Sea are likely from the last 6,000 years and were assigned a low paleontological sensitivity rating. On the east and west margins of the Salton Sea, deposits, which may be at a depth equal to that of the Pleistocene Brawley Formation, were designated as moderate sensitivity. Ratings of the undifferentiated alluvium and lacustrine sediments in the Salton Trough along the west, northwest, and northeast portions of the study area ranged from low to high (low in the axial portions of the Salton Trough, but potentially high in other strata). Pleistocene non-marine sediments located along the southwest edge of the Salton Sea were rated as moderate to high because Pleistocene fanglomerates and sediments have yielded fossils in this area.

4.14.3.3 Expected Fossil Types in the Study Area

The PEIR (DWR and CDFG 2007) noted that 52 recorded paleontological sites have been found in the general study area, along with two others found within 3 miles. Sixty-five percent of these fossil records are of mollusks and fish bones attributed to either late Holocene sediments of Lake Cahuilla or to paleospring deposits located along the San Andreas Fault east and northeast of the Salton Sea. The Brawley Formation is the main formation at the paleospring sites. Paleontologically sensitive sediments of this formation or its equivalent are likely buried at depths of more than many tens of feet due to subsidence.

Geotechnical testing at the SCH Project site, which is immediately adjacent to a portion of the study area (Figure 3-1) showed up to 10 feet of sediments that were thought to have accumulated in the last 60 years. Red-brown clay and silt were found in some augerings and vibracores below those recent sediments. A similar red-brown fossil soil was found in Lake Cahuilla sediments at the Imperial Solar Energy Center site 26 miles south of the SCH Project and was radiocarbon dated at 18,286 radiocarbon years before present. The repeated phases of prehistoric Lake Cahuilla sediments covered both the SCH Project and the solar project site, and the latter site yielded fossil specimens of bivalves, snails, fish, snake, tortoise, and rodent fossils. Thus, it was concluded that excavations into the red-brown clay could affect fossil-bearing sediments that could provide information on its age and depositional environment (ESA 2019).

4.15 INDIAN TRUST ASSETS

Indian trust assets (ITAs) refer to land or other property held in trust by the United States or otherwise reserved for Native American tribes and individual Native Americans; ITAs are managed by the Bureau of Indian Affairs (BIA) for the benefit of these tribes and individuals. Examples of trust assets are lands (including tribal trust and allotee land), minerals, hunting and fishing rights, and water rights. While most ITAs are on reservations, they may also be found off-reservations. The United States has a trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or Indian individuals by treaties, statutes, and executive orders. Indian trust assets are sometimes further interpreted through court decisions and regulations.

4.15.1 Study Area

The study area includes the area surrounding the Salton Sea where Project components would be located, which is described in Section 3.2.

4.15.2 Regulatory Requirements

The BIA is the primary federal agency charged with carrying out the United States’ trust responsibility to American Indian and Alaska Native people, maintaining the federal government-to-government relationship with the federally recognized Indian tribes, and promoting and supporting tribal self-determination. The BIA implements federal laws and policies and administers programs established for American Indians and Alaska Natives under the trust responsibility and the government-to-government relationship. The Corps also has responsibility for preserving and protecting trust resources, as shown in Table 4-56.

Table 4-56 Regulatory Requirements for Indian Trust Resources

Branch	Regulation	Agency	Regulation Summary
Indian Trust Assets			
Federal	Tribal Trust Policy Principles for Natural and Cultural Resources	Corps	The Corps will act to fulfill its obligations to preserve and protect trust resources and to consider the potential effects of Corps programs on natural and cultural resources.
	Trust Responsibility and Consultation Matrix	Department of Defense (DoD)	The DoD Office of General Counsel has prepared a matrix stating that the DoD has the duty to protect “to the highest degree of fiduciary standards” trust lands and water and land habitats that support meaningful exercise of off reservation hunting, fishing, and gathering rights and that where trust responsibility applies, Indian interests cannot be subordinated to interests of the DoD absent overriding legal authority to do so. This applies to instances where the proposed action may affect trust lands and off reservation treaty rights, as well as actions on DoD or other non-Indian-owned lands that may affect trust land or off-reservation treaty rights and be conditional by the trust responsibility.
	25 CFR Part 169 Rights-of-Way over Indian Land	BIA	This law is intended to streamline procedures and conditions under which BIA will consider a request to approve (*i.e.,* grant) rights-of-way over and across tribal lands, individually owned Indian lands, and BIA lands. Title 25, Chapter I, Subchapter H, Part 169, Subpart A Definitions: ***Tribal land*** means any tract in which the surface estate, or an undivided interest in the surface estate, is owned by one or more tribes in trust or restricted status. The term also includes the surface estate of lands held in trust for a tribe but reserved for BIA administrative purposes and includes the surface estate of lands held in trust for an Indian corporation chartered under section 17 of the Indian Reorganization Act of 1934 (25 U.S.C. 477). ***Trust or restricted status*** means: (1) That the United States holds title to the tract or interest in trust for the benefit of one or more tribes and/or individual Indians; or (2) That one or more tribes and/or individual Indians holds title to the tract or interest, but can alienate or encumber it only with the approval of the United States because of limitations in the conveyance instrument under Federal law or limitations in Federal law. ***Indian land*** means individually owned Indian land and/or tribal land. ***BIA land*** means any tract, or interest therein, in which the surface estate is owned and administered by the BIA, not including Indian land.

4.15.3 Existing Conditions

The BIA has indicated that the only ITAs identified in the area around the Salton Sea are on the Torres Martinez Desert Cahuilla Indians (Torres Martinez) Reservation, located at the northwestern end of the Salton Sea (see Figure 3-9) and allotted lands. The tribe may have additional assets off the reservation. The reservation comprises 24,024 acres, including the tribally owned and operated Red Earth Casino in Salton City, with approximately 12,000 acres currently inundated by the Sea.

There are three categories of tribal land ownership: trust, owner (fee), and allotment. Trust lands are under BIA jurisdiction and held for a tribe, while allotted lands may be held by individuals outside of a reservation, but still held in trust. Owner, also known as fee lands, are lands that are owned by the tribe and under state jurisdiction. Within the study area trust lands comprise 2,961.5 acres, allotted lands comprise 265.3 acres; fee land comprises 77.6 acres, and additional 35.7 acres of which have tribal mineral rights.

For owner lands, the tribes have authority. For allotment lands (defined above in Table 4-56 as Indian land), the BIA needs consensus from allotment owners to approve transactions. For lands held in trust (defined above in Table 4-56 as Tribal land), the BIA acts on behalf of the tribe and for the benefit of the tribes as directed by the tribes. The BIA would act as trustee for the Torres Martinez tribal trust resources and would grant the right-of-way easements for projects, subject to the terms of the Salton Sea Torres Martinez Settlement. Any tribal lands located below the -220 elevation level at the Sea is considered by the BIA to be tribal land held in trust asset (it was previously under water). Tribes also hold the groundwater rights under their lands.

When specific projects are proposed, the procedures outlined in *25 CFR Part 169 Rights-of-Way over Indian Land* will be followed to obtain right-of way agreements and approval from the BIA and Torres Martinez Tribe. Right-of-way is an easement or a legal right to go over or across tribal land, individually owned Indian land, or BIA land for a specific purpose, including but not limited to building and operating a line or road. The title to the land remains vested in the landowner when rights-of-way agreements are granted.

4.16 AQUATIC RESOURCES

4.16.1 Study Area

The study area generally includes the entire area of the exposed lakebed between the 2003 and projected 2028 shoreline as well as a buffer of 0.5 mile upward from the 2003 shoreline as shown in Figure 3-1. Additional areas downslope of the 2028 shoreline were also considered where activities may take place (e.g., pumps).

4.16.2 Regulatory Requirements

The regulatory framework for aquatic resources includes the following federal, state, and local requirements (Table 4-57). Restoration projects at the Sea could be subject to some or all of these requirements.

Table 4-57 Regulatory Requirements Biological Resources

Branch	Regulation	Agency	Regulation Summary
Aquatic Resources			
Federal	Clean Water Act of 1972 (33 USC section 1251 et seq.)	USEPA	Section 404 of the CWA prohibits discharges of dredged or fill materials into waters of the United States, except as permitted under separate regulations by the Corps and the USEPA. This section also provides protection to "special aquatic sites" that include sanctuaries and refuges, wetlands, and mudflats.
State	Porter-Cologne Water Quality Control Act (California Water Code Title 23)	SWRCB	Protects California waters, gives the SWRCB, through the Regional Water Quality Control Boards, the authority to regulate discharges of waste, including dredged or fill material, to any waters of the state. The Colorado River Basin Regional Water Quality Control Board has prepared (and amended) a basin-wide Water Quality Control Plan that serves as a guide to optimize the beneficial uses of the water within the Colorado River Basin region by preserving and protecting the quality of these waters.
State	California Lake and Streambed Alteration Program (Fish and Game Code section 1600 et seq.)	CDFW	Requires any person, state, or local government agency, or public utility proposing a project that could divert, obstruct, or change the natural flow of any bed, channel, or bank of a river, stream, or lake to notify the CDFW before beginning the project. If CDFW determines that the project could adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required.
Local	Imperial County General Plan	Imperial County	The Imperial County General Plan (2015c) contains the following objective intended to protect aquatic resources, including those of the Sea: • Objective 9.1 – Preserve as open space those lands containing watersheds, aquifer recharge areas, floodplains, important natural resources, sensitive vegetation, wildlife habitats, historic and prehistoric sites, or lands which are subject to seismic hazards and establish compatible minimum lot sizes.
Local	Riverside County General Plan	Riverside County	LU 2.1. g. – Prevent inappropriate development in areas that are environmentally sensitive or subject to severe natural hazards.

Sources:
CDFW – California Department of Fish and Wildlife
EPA – United States Environmental Protection Agency
SWRCB – State Water Resources Control Board
USFWS – United States Fish and Wildlife Service

4.16.3 Existing Conditions

Aquatic resources in the vicinity of the Sea were estimated as part of a desktop wetland evaluation for the Salton Sea Management Program (Figure 4-18, Cardno 2021, Appendix E). Aerial imagery from 2018 was used to map various vegetation and wetland types based on aerial signatures. The study area for this evaluation included the bathtub ring around the Sea down to a presumed ordinary high-water mark (OHWM) of -233.6 feet, based on the OHWM determined as part of the aquatic resources delineation completed for Bruchard Road (Cardno 2019; Corps 1987, 2008a).

The OHWM, delineated at -233.6 feet from the Bruchard Road project, was determined based on various evidence including debris drift lines, break-in slope, decaying biological material, and other factors. The Bruchard Road delineation included a review of hydrologic indicators and data, which supported the OHWM determination (Cardno 2019; Corps 2008a). The Bruchard Road delineation also reviewed hydric soils indicators and the presence of relict indicators as the Sea has receded (Cardno 2019).

The study area is the same as described above for vegetation and was evaluated for the potential presence of wetlands and waters of the United States. Evaluation of potential wetlands and waters of the United States was determined by interpretation of aerial imagery, vegetation mapping, the Bruchard Road Dust Suppression Project, and jurisdictional resources in the National Wetlands Inventory (Cardno 2019; USFWS 2020c). As part of this delineation, wetlands were categorized as tamarisk scrub, tamarisk woodland, chenopod scrub (if wetland was noted), and herbaceous wetland. Managed wetlands, which are generally sites with created wetlands that are managed for wildlife habitat, were identified as a unique category, but further division of these areas was not conducted. Open water was identified based on the OHWM determined for the Bruchard Road project as well as areas containing a visual signature of open water such as rivers. All other types were mapped as non-wetland types. Mapped categories from this delineation are described in Table 4-58.

Table 4-58 Wetlands

Habitat Type	Description	Acres in the Study Area
Wetlands		
Chenopod scrub	Chenopod scrub is typically dominated by iodine bush (FACW*) in areas that are low lying, while better drained, often mounded sites are vegetated with different saltbush species, such as big saltbush (FAC*), four-wing saltbush (upland species [UPL*]), and/ or allscale saltbush (facultative upland species [FACU*]).	891.5
Tamarisk scrub	Tamarisk is classified as a facultative (FAC*) wetland plant and often occurs in homogeneous stands. Tamarisk scrub wetlands sampled during the Bruchard Road Dust Suppression Project exhibited soils meeting the conditions for the Depleted Matrix, Redox Depressions, or both indicators, and either or both soft Salt Crust and barnacle shells (aquatic invertebrates) were present as wetland hydrology indicators (Cardno 2019).	836.1
Tamarisk Woodland	Tamarisk woodland is similar to tamarisk scrub, except the vegetation is more robust and taller in profile.	1,429.3
Herbaceous wetland	Herbaceous wetlands within the study area typically occur along the margins of rivers, agricultural canals, and small drainages. Periodic inundation of these areas allows hydrophytic species to establish, such as the common reed (facultative wetland species [FACW*]) cattails (obligate species [OBL*]) and salt grass (FAC*). Common reed stands are typically found in more saline environments than cattails, while salt grass is more common in saline areas less consistently inundated.	869.1

Habitat Type	Description	Acres in the Study Area
Managed wetlands	Managed wetlands in the study area typically involve marshlands that have been created or protected for the purpose of providing wildlife habitat. They contain a variety of the wetland types described above and can include state or federally-owned lands as well as privately-owned areas that are developed with ponds and other features that benefit wildlife.	645.8
Other		
Lacustrine Open Water	Open water includes shallow water areas along the Sea's shoreline and areas where the New River, Alamo River, and Whitewater River meet the Sea. These areas have little to sparse vegetation and are regularly inundated.	52,618.8

*Wetland Plant indicator status descriptions can be found in the Desktop Wetland Delineation Report for the SSMP (Appendix E)

Special Aquatic Sites

Special aquatic sites within the proposed SSMP Project area include wetlands, sanctuaries and refuges. Special aquatic sites may possess special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values.

The Arid West Supplement to the Corps' 1987 *Wetland Delineation Manual* provides guidance for the delineation of playas, clay pans, and saline wetlands that are often influenced by seasonal ponding of water or discharge of groundwater along their edges (Corps 2008b). These areas often have indicators of hydric soils and wetland hydrology, as was observed during the delineation conducted in support of the Bruchard Road Dust Suppression Project. Vegetation is not continuous; however, and may be sparse or patchy, which is problematic for delineating hydrophytic vegetation (Cardno 2019).

Lacustrine Open Water

The area of lake within the study area that was determined to be below the OHWM was mapped as Lacustrine Open Water. The water level of the Sea is influenced primarily by regulated water inputs that have decreased significantly following approval of the QSA. Reduced inflows combined with high temperatures (average mean temperature for Imperial, CA: 73.4 degrees), little rainfall (average precipitation for Imperial, CA 1901-2018: 2.8 inches), and shallow depth in the southern portion of the lake have led to continued lowering of the OHWM. The OHWM for the Sea was previously established at -231 feet mean sea level in the *Jurisdictional Delineation Report for the Salton Sea Species Conservation Habitat Project*, which was prepared jointly by Dudek and Chambers Group, Inc. (2012) and subsequently verified by the Corps on October 4, 2013. Altered conditions stemming from the QSA represent current "normal circumstances" and show changes of the OHWM within the study area.

Figure 4-18 Potential Wetlands and Waters of the United States

5.0 EFFECTS ANALYSIS

5.1 AESTHETIC AND VISUAL RESOURCES (SCENIC BEAUTY)

This section addresses potential effects to aesthetics resulting from the Proposed Project and alternatives.

5.1.1 Effects Analysis Methodology

Effects on visual resources are created when physical alterations to the natural environment associated with a project contrast with natural and existing characteristics. Factors that affect the degree to which a project affects visual resources include (1) scenic beauty, (2) visibility, and (3) sensitivity of the viewers. Natural landscapes are traditionally considered to be more aesthetically pleasing and of greater scenic quality than man-made landscapes and are measured based on landforms, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modification. Table 5-1 summarizes the effects of the Proposed Project and seven alternatives on aesthetics, compared to the No Action Alternative. Resources that are located closer to the viewer, or where there is no interruption of the view, are generally considered more valuable. Resources that are viewed by those who use an area frequently, are subject to high levels of public interest, are adjacent to complementary land uses, or are considered special areas are also viewed as more important aesthetically.

Table 5-1 Summary of Effects for Aesthetic and Visual Resources

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
AES-1: Project construction could temporarily degrade the scenic quality, character, or scenic vistas of the sites and surrounding areas	MST	MST	MST	MST	MST	MST	MST	N/A*	None required
AES-2: The Project would enhance the scenic quality and character of the site and surrounding areas	B	B	B	B	B	B	B	N/A*	None required
AES-3: The Project would be compatible with the existing character of the surrounding area	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required

Notes:

PP=Proposed Project
N/A = Not Applicable

Adverse Effects:

MST = Minor Effect (Short-Term)

MLT = Minor Effect (Long-Term)

B = Beneficial Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.1.2 Proposed Project

The Proposed Project would be implemented at various locations around the perimeter of the Sea in Riverside and Imperial counties. The amounts, types, and locations of aquatic habitat and dust suppression projects would be based on location and availability of a water supply, suitable soils, landscape/habitat compatibility, and the amount of dust emissions from the exposed lakebed. Between 10,790 and 19,062 acres of aquatic habitat restoration projects will be analyzed as part of the Proposed Project, and up to 14,900 acres of dust suppression projects.

Effect AES-1: Project construction could temporarily degrade the scenic quality, character, or scenic vistas of the sites and surrounding areas. Construction would involve excavation, the formation of berms and islands, trenching, surface roughening, and possible installment of pipelines for water supply. Trucks would traverse roads to transport workers and haul material, but this would not cause a substantial visual change since trucks and heavy equipment are typically used in agricultural settings. Some of the Proposed Projects will involve heavy machinery that would be visible during construction and this effect would be temporary.

Construction would likely disrupt wildlife patterns in the immediate vicinity, but this change would be temporary and wildlife viewing opportunities would be available in other areas around the Sea. Creation of aquatic habitat would provide long-term improvements to wildlife viewing and overall be beneficial. Therefore, effects would be minor and short-term when compared to the No Action Alternative.

Effect AES-2: The Project would enhance the scenic quality and character of the site and surrounding areas. Once the components of the Proposed Project are constructed, they would be visible around the Sea shore. Aquatic habitat projects cover greater expanses of land in places with a source of water, particularly near the New River, Alamo River, and Whitewater River. Dust suppression projects cover greater expanses of land on the east and west shores of the Sea where water is less available. Projects would be constructed in areas that are currently or were previously submerged. The aquatic habitat including ponds, nesting islands, and vegetation are considered a more aesthetically pleasing setting than exposed playa that would be present when construction began. The construction of the Proposed Project would enhance the scenic quality and character of the site and surrounding areas by converting exposed lakebed into water features that provide viable wildlife and bird habitat, contributing to the area’s scenic qualities. Implementing dust suppression activities would improve the air quality and visibility and therefore contribute to the scenic quality. Overall, the scenic beauty and character of the Sea would be improved compared to the No Action Alternative.

Effect AES-3: The Project would be compatible with the existing character of the surrounding area. The Salton Sea is surrounded by agricultural communities, scenic vistas, and recreational opportunities. Bird-viewing in particular is considered an aspect of the visual character due to the extensive avian resources at the Salton Sea. The Proposed Project would be compatible with the existing character of the surrounding area by constructing habitat and recreational trails that create sustainable attractions and birding opportunities similar to those found in the surrounding area. There may be pipelines, berms, or surface roughening techniques that would be visually compatible with the surrounding agricultural uses. Therefore, effects would be minor and long-term when compared to the No Action Alternative.

5.1.3 Alternative 1: Maximum Lake Edge

Alternative 1 would create lake edge from the Salton Sea State Recreation Area in a counter-clockwise direction around to just north of Bombay Beach. This alternative would provide open water adjacent to the most inhabited communities. Under this alternative 25,690 acres of open water (large ponds or lakes) would be constructed. No dust suppression projects are included in this alternative, nor is the Desert Shores Channel Restoration Project.

Effects AES-1, AES-2, and **AES-3** are the same as the Proposed Project. Refer to Section 5.1.2 and Table 5-1.

5.1.4 Alternative 2: Enhance and Expand Existing Wetlands

Alternate 2 would include the North Lake Project and additional projects using natural inflow sources around the Sea to create the required 25,690 acres. Activities would include removing tamarisk, planting native plants on exposed lakebed, berm creation to promote wetland vegetation, habitat islands, permanent vegetated wetlands, and creation of shallow-water habitat. No dust suppression projects are included in this alternative, nor is the Desert Shores Channel Restoration Project.

Effect AES-1, AES-2, and **AES-3** are the same as the Proposed Project. Refer to Section 5.1.2 and Table 5-1.

5.1.5 Alternative 3: North End/South End Aquatic Habitat

Alternative 3 would include the North Lake Project and additional ponds near the New and Alamo rivers to create the required 25,690 acres. No dust suppression projects are included in this alternative, nor is the Desert Shores Channel Restoration Project or the Audubon California Bombay Beach Wetland Project.

Effect AES-1, AES-2, and **AES-3** are the same as the Proposed Project. Refer to Section 5.1.2 and Table 5-1.

5.1.6 Alternative 4: Water Conservation

Alternative 4 consists of enhancing and expanding wetlands by 10,790 acres as described for Alternative 2. It also includes 14,900 acres of Desert Shores Channel Restoration Project and the Audubon California Bombay Beach Wetland Project. The total project area for this alternative is 25,690 acres.

Effect AES-1, AES-2, and **AES-3** are the same as the Proposed Project. Refer to Section 5.1.2 and Table 5-1.

5.1.7 Alternative 5: Maximum Build Out

Alternative 5 would include all feasible areas. All the regional areas would be built out to maximize both habitat and dust suppression projects. Total acreage for this alternative is 48,596 acres.

Effect AES-1, AES-2, and **AES-3** are the same as the Proposed Project. Refer to Section 5.1.2 and Table 5-1.

5.1.8 Alternative 6: No Federal Action

Under Alternative 6 no projects would be built that require federal action. The State would proceed with dust suppression and restoration projects that are not on federal lands, tribal lands, in waters of the United States, that would not have effects on federally listed species, would not have federal funding, and do not require a diversion from waters of the United States.

Effect AES-1 is the same as the Proposed Project. Refer to Section 5.1.2 and Table 5-1.

Effect AES-2: The Project would enhance the scenic quality and character of the site and surrounding areas. Dust suppression projects cover greater expanses of land on the east and west shores of the Sea where water is less available. Projects would be constructed in areas that are currently or were previously submerged. Implementing dust suppression activities would improve the air quality and visibility and contribute to the scenic beauty.

Effect AES-3: The Project would be compatible with the existing character of the surrounding area. The Salton Sea is surrounded by agricultural communities and also attracts many visitors throughout the year that both benefit from the outdoor recreation opportunities and scenic vistas. There may be pipelines, berms, or surface roughening incorporated to some components of the Proposed Project. These would be visually compatible with the surrounding agricultural uses. Therefore, the effects would be minor and long-term.

5.1.9 Alternative 7: No Action

Under Alternative 7, no components of the Project would be constructed. This Alternative is intended to reflect existing conditions plus changes that are reasonably expected to occur in the foreseeable future if none of the alternatives are implemented.

Effect AES-1: Project construction could temporarily degrade the scenic quality, character, or scenic vistas of the sites and surrounding areas. No construction would occur and therefore there would be no effects from construction.

Effect AES-2: The Project would enhance the scenic quality and character of the site and surrounding areas. Under the No Action Alternative, a number of physical changes would occur. The islands and snags will disappear, the shoreline will decline, and water depth in the Salton Sea will decrease. Both the physical and chemical changes will alter the biological resources present and therefore the aesthetics. Under this alternative the aesthetic scenic beauty and character would continue to degrade more substantively under this alternative than others.

Effect AES-3: The Project would be compatible with the existing character of the surrounding area. Effect AES-3 is the same as Effect AES-2 above.

5.2 LAND

This section addresses potential conflicts of the Proposed Project and alternatives with existing and future planned land uses and relevant land use plans and policies as well as effects associated with the potential for conversion of agricultural land to nonagricultural use and conflicts with agricultural zoning from construction, operations, and maintenance.

5.2.1 Effects Analysis Methodology

Table 5-2 summarizes the effects of the Proposed Project and seven alternatives on agricultural resources and land use, compared to the No Action Alternative.

Table 5-2 Summary of Effects for Agricultural Resources and Land Use

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
Agricultural Resources									
AG-1: Convert farmland to nonagricultural use	MLT	MLT	MLT	No	MLT	MLT	MLT	N/A*	None required
Land Use									
LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use plans or policies	MST	MST	MST	MST	MST	MST	MST	N/A*	None required
LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required

Notes:

PP=Proposed Project
N/A = Not Applicable

No = No Effect

Adverse Effects:

MST = Minor Effect (Short-Term)

MLT = Minor Effect (Long-Term)

Maj = Major Effect (Short-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.2.2 Agricultural Resources

Imperial County no longer participates in the Williamson Act program, and therefore no effects to lands under Williamson Act contracts would occur for Project areas within Imperial County. No agricultural areas under existing Williamson Act contract in Riverside County are located below the 2003 shoreline and therefore, there is no overlap with the Project alternatives. No effects would occur for Project areas within Riverside County, and this effect is not discussed further.

5.2.2.1 Proposed Project

Effect AG-1: Convert farmland to nonagricultural use. Depending on where specific features are located within the Proposed Project area, there is potential for 6.4 acres of prime farmland and 71 acres of farmland of local importance to be converted to nonagricultural use (Table 5-3). This amount of prime farmland and farmland of local importance would be negligible when compared to the total acres of farmland in Imperial County (522,353 acres) and Riverside County (413,834 acres). Potential conversion of this minimal amount of prime farmland is considered a minor long-term effect. The edge of the dust suppression and restoration project footprint located at the southwest edge of the Sea is where this small overlap with prime farmland occurs.

Table 5-3 Farmland Effects of the Proposed Project

Farmland Type	Acreage Imperial County	Acreage Riverside County	Total Acreage
Prime Farmland	6.4	0	6.4
Farmland of Statewide Importance	0	0	0
Unique Farmland	0.1	0	0
Farmland of Local Importance	34.8	36.2	71

5.2.2.2 Alternative 1: Maximum Lake Edge

Effect AG-1: Convert farmland to nonagricultural use. Depending on where specific features are located within the Alternative 1 project footprint, there is potential for 4.8 acres of farmland of local importance to be converted to nonagricultural use in Imperial County (Table 5-4). This amount of farmland of local importance would be negligible when compared to the total acres of farmland in Imperial County (522,353 acres). Effects on this farmland would be minor and long-term. No prime farmland is located within the footprint of Alternative 1 and therefore no effects on prime farmland would occur.

Table 5-4 Farmland Effects of Alternative 1

Farmland Type	Acreage Imperial County	Acreage Riverside County	Total Acreage
Prime Farmland	0	0	0
Farmland of Statewide Importance	0	0	0
Unique Farmland	0	0	0
Farmland of Local Importance	4.8	0	4.8

5.2.2.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect AG-1: Convert farmland to nonagricultural use. Depending on where specific features are located within the Alternative 2 project footprint, there is potential for 27.3 acres of prime farmland to be converted to nonagricultural use in Imperial County (Table 5-5). In addition, there is potential for 183.1 acres of farmland of local importance to be converted to nonagricultural use in Imperial County. In addition, there is potential for 23.6 acres of farmland of local importance to be converted to nonagricultural use in Riverside County. This amount of farmland of local importance would be negligible when compared to the total acres of farmland in Imperial County (522,353 acres) and Riverside County (413,834 acres). Therefore, potential effects on prime farmland and farmland of local importance would be minor and long-term.

Table 5-5 Farmland Effects of Alternative 2

Farmland Type	Acreage Imperial County	Acreage Riverside County	Total Acreage
Prime Farmland	27.3	0	27.3
Farmland of Statewide Importance	38.5	0	38.5
Unique Farmland	0.3	0	0.3
Farmland of Local Importance	183.1	23.6	206.7

Effect AG-2: Convert Williamson Act land to nonagricultural use. No agricultural areas under existing Williamson Act contracts are located within the Alternative 2 footprint. This alternative includes the North Lake Project and North Lake Demonstration Project, which are the primary footprints within Riverside County, but these projects do not have the potential to conflict with existing agricultural uses under Williamson Act contracts. Therefore, this alternative would not result in effects on any lands under Williamson Act contracts.

5.2.2.4 Alternative 3: North End/South End Aquatic Habitat

Effect AG-1: Convert farmland to nonagricultural use. No farmland is located within the Alternative 3 project footprint, and therefore there is no potential for farmland to be converted to nonagricultural use.

5.2.2.5 Alternative 4: Water Conservation

Effect AG-1: Convert farmland to nonagricultural use. Depending on where specific features are located within the Alternative 4 project footprint, there is potential for 42.2 acres of farmland of local importance to be converted to nonagricultural use (Table 5-6). This alternative would not result in effects on prime farmland.

This amount of farmland of local importance would be negligible when compared to the total acres of farmland in Imperial County (522,353 acres) and Riverside County (413,834). No prime farmland is located within the footprint of Alternative 4 and therefore no effects on prime farmland would occur.

Table 5-6 Farmland Effects of Alternative 4

Farmland Type	Acreage Imperial County	Acreage Riverside County	Total Acreage
Prime Farmland	0	0	0
Farmland of Statewide Importance	0	0	0
Unique Farmland	0	0	0
Farmland of Local Importance	4.6	37.6	42.2

5.2.2.6 Alternative 5: Maximum Build Out

Effect AG-1: Convert farmland to nonagricultural use. Depending on where specific features are located within the Alternative 5 project footprint, there is potential for 6.4 acres of prime farmland and 71 acres of farmland of local importance to be converted to nonagricultural use (Table 5-7). This amount of prime farmland and farmland of local importance would be negligible when compared to the total acres of farmland in Imperial County (522,353 acres) and Riverside County (413,834). Potential conversion of this minimal amount of prime farmland is considered a minor long-term effect. The edge of the dust suppression and restoration project footprint located at the southwest edge of the Sea is where this small overlap with prime farmland occurs.

Table 5-7 Farmland Effects of Alternative 5

Farmland Type	Acreage Imperial County	Acreage Riverside County	Total Acreage
Prime Farmland	6.4	0	6.4
Farmland of Statewide Importance	0	0	0
Unique Farmland	0.1	0	0
Farmland of Local Importance	34.8	36.2	71

5.2.2.7 Alternative 6: No Federal Action

Effect AG-1: Convert farmland to nonagricultural use. Under Alternative 6, no projects would be built that require federal action. Under this alternative, dust suppression and restoration projects could be implemented that meet certain parameters. The potential locations where projects could be located are not well known at this time. However, potential conversion of farmland would be minor and long-term, due to the negligible amount of farmland within the overall project footprint.

5.2.2.8 Alternative 7: No Action

Effect AG-1: Convert farmland to nonagricultural use. No farmland would be converted to nonagricultural uses under the No Action Alternative. As the water surface elevation of the Salton Sea recedes, there may be potential for the reclamation of currently inundated lands for agricultural use.

5.2.3 Land Use

5.2.3.1 Proposed Project

Effect LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use plans or policies. The Project would be compatible with the federal, state, and regional plans described under Section 4.2.2, *Regulatory Requirements*, because it would restore habitat for fish and wildlife dependent on the Sea and would reduce air and particulate matter emissions from what would otherwise become exposed lakebed. The Project would be located in an area that historically has been used by large numbers of birds and would restore a portion of the habitat that is being lost as the salinity of the Salton Sea increases and as the Sea recedes. The Proposed Project would restore between 10,790 and 19,062 acres of aquatic habitat and would restore habitat with implementation of 14,900 acres of dust suppression projects. The Proposed Project footprint includes approximately 1,934 acres of Tribal lands (Table 5-8). If projects are located on Tribal lands, they would be compatible with the Torres Martinez Desert Cahuilla Indians' LZDP. Any projects located on BLM land would be consistent with the land use allocations included in the Desert Renewable Energy Conservation Plan and coordinated with the BLM to ensure compatibility with BLM plans. The portions of the Proposed Project located within the boundaries of SBSSNWR would not conflict with Refuge purposes or the mission of the NWRS.

The general plans for Imperial and Riverside counties contain a number of goals and objectives that are applicable to the Project on non-federal lands. The Proposed Project would be consistent with the General Plan goals/objectives that promote water recreation activities; sustain wildlife and a broad range of ecological communities; protect significant fish, wildlife, plant species, and their habitats; support the viability of agricultural lands; preserve riparian and ruderal habitats; and improve water quality. Aquatic habitat and dust suppression restoration projects would support these goals by restoring habitat and improving air quality and would not be incompatible with surrounding land uses. The intensity of effects would vary depending on how close they occurred to populated areas due to the number of people affected. Because the context of the project is local and construction would be short-term, primarily distant from local communities and the intensity would be considered low due to compliance with local policies, this is considered a minor short-term effect.

Effect LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses. Land uses adjacent to or within the Proposed Project footprint include open space and exposed lakebed; agricultural fields; portions of the NWR and Imperial Wildlife Areas; the Salton Sea Recreation Area; and residential areas in North Shore near the Sea, at Desert Shores on the west side of the Sea, in Salton City near the shoreline of the Sea, and Bombay Beach on the east side of the Sea. The Project would be consistent with the goals and objectives of the USFWS's SBSSNWR Comprehensive Conservation Plan (USFWS 2014a), which include protecting, enhancing, and restoring habitats, including remnant areas of native desert scrub and riparian habitat, to support listed species and resident and migratory bird species, as well as CDFW's objectives. CDFW and USFWS would continue to coordinate throughout operations to avoid any potential conflicts. Any projects located on BLM land would be consistent with the land use allocations included in the Desert Renewable Energy Conservation Plan and coordinated with the BLM to ensure compatibility with BLM plans.

Table 5-8 Proposed Project Acreage by Land Ownership Type

		Proposed Project Acreage[17]
Tribal Lands	Tribal Lands	1,934
Federal Lands	United States Bureau of Land Management	1,876
	United States Bureau of Reclamation	5,923
	United States Fish and Wildlife Service (SBSSNWR)[1]	1,567
State Lands	State Lands	44
	State Lands—Undefined, Riverside Parcels	22
	State Park	13
Local / Regional	Imperial Irrigation District	25,082
	Coachella Valley Water District	939
County / Private	Imperial County—Individual, Commercial	2,195
	Riverside County—Individual, Commercial	367
Unmapped	Unmapped (Open Water)	41

Notes:

[1] Portions of the SBSSNWR are located on land owned by USFWS and others are leased/administered by USFWS from other agencies/entities. The Proposed Project overlaps a total of approximately 2,457 acres of the refuge.

This alternative includes project areas east of the New River and around the Alamo River, which are located within the Salton Sea Known Geothermal Resource Area (KGRA). This area has the potential to be developed with geothermal uses, and future geothermal power plants may be located in areas that are currently submerged by the Sea. This alternative would be designed to be compatible with existing lands uses, any current obligations under existing permits, and existing land use designations.

Anticipated aquatic habitat and dust suppression projects would be adapted, as needed, to accommodate future geothermal facilities such as well pads and access roads. The Project would be designed to minimize conflicts with existing and future planned land uses through the land access process and therefore effects would be minor and long-term.

5.2.3.2 Alternative 1: Maximum Lake Edge

Effect LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use and management plans or policies. As discussed under the Proposed Project, this alternative would restore habitat, which is consistent with local general plans. Effects under this alternative are the same as the Proposed Project, except this alternative would restore approximately 25,690 acres of aquatic habitat. The Alternative 1 footprint also includes approximately 1,519 acres of Tribal lands. If projects are located on Tribal lands, they would be compatible with the Torres Martinez Desert Cahuilla Indians' LZDP. The proposals

[17] The Proposed Project footprint includes a larger footprint where the 14,900 acres of dust suppression projects could be located. Therefore, the total acres included in Table 5-8 adds up to approximately 40,000 acres.

under Alternative 1 that could occur within the SBSSNWR would not conflict with Refuge purposes. Context is local and construction would be short-term, primarily distant from local communities and intensity would be considered low due to compliance with local policies which protect the environment. Effects associated with this alternative would be considered minor and short-term.

Effect LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses. Land uses adjacent to or within the Alternative 1 footprint include open space and exposed lakebed, agricultural fields, portions of the SBSSNWR and Imperial Wildlife Areas, the Salton Sea Recreation Area, and residential areas in North Shore, Desert Shores, in Salton City near the shoreline of the Sea, and Bombay Beach. Land ownership within the Alternative 1 footprint is included in Table 5-9.

Table 5-9 Alternative 1 Acreage by Land Ownership Type

		Alternative 1 Acreage
Tribal Lands	Tribal Lands	1,519
Federal Lands	United States Bureau of Land Management	1,320
	United States Bureau of Reclamation	3,698
	United States Fish and Wildlife Service (SBSSNWR)[1]	523
State Lands	State Lands	42
	State Lands—Undefined, Riverside Parcels	22
	State Park	149
Local / Regional	Imperial Irrigation District	16,423
	Coachella Valley Water District	633
County / Private	Imperial County—Individual, Commercial	1,174
	Riverside County—Individual, Commercial	142
Unmapped	Unmapped (Open Water)	45

Notes:

[1] Portions of the SBSSNWR are located on land owned by USFWS and others are leased/administered by USFWS from other agencies/entities. Alternative 1 overlaps a total of approximately 955 acres of the refuge.

This alternative includes project areas east of the New River and around the Alamo River, which are located within the KGRA. This area has the potential to be developed with geothermal uses, and future geothermal power plants may be located in areas that are currently submerged by the Sea. This alternative would be designed to be compatible with existing lands uses, any current obligations under existing permits, and existing land use designations. Anticipated aquatic habitat projects would be adapted, as needed, to accommodate future geothermal facilities such as well pads and access roads. The Project would be designed to minimize conflicts with existing and future planned land uses through the land access process and therefore effects would be minor and long-term.

5.2.3.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use plans or policies. As discussed under the Proposed Project, this alternative would restore habitat, which is consistent with local general plans. Effects under this alternative are the same as the Proposed Project, except this alternative would restore approximately 25,690 acres of aquatic habitat. The Alternative 2 footprint also includes approximately 1,863 acres of Tribal lands. If projects are located on Tribal lands, they would be compatible with the Torres Martinez Desert Cahuilla Indians' LZDP. The wetland enhancement proposals included in Alternative 2 would not conflict with the habitat management proposals in the SBSSNWR CCP. Context is local and construction would be short-term, primarily distant from local communities and intensity would be considered low due to compliance with local policies which protect the environment. Effects associated with this alternative would be minor and short-term.

Effect LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses. Land uses adjacent to or within the Alternative 2 footprint include open space and exposed lakebed, agricultural fields, portions of the SBSSNWR and Imperial Wildlife Areas, the Salton Sea Recreation Area, and residential areas in North Shore, Desert Shores, and Bombay Beach. Land ownership within the Alternative 2 footprint is included in Table 5-10.

Table 5-10 Alternative 2 Acreage by Land Ownership Type

		Alternative 2 Acreage
Tribal Lands	Tribal Lands	1,863
Federal Lands	United States Bureau of Land Management	1,656
	United States Bureau of Reclamation	1,432
	United States Fish and Wildlife Service (SBSSNWR)[1]	653
State Lands	State Lands	169
	State Lands - Undefined - Riverside Parcels	22
	State Park	13
Local / Regional	Imperial Irrigation District	17,491
	Coachella Valley Water District	889
County / Private	Imperial County - Individual, Commercial	1,171
	Riverside County - Individual, Commercial	289
Unmapped	Unmapped (Open Water)	43

Notes:

[1] Portions of the SBSSNWR are located on land owned by USFWS and others are leased/administered by USFWS from other agencies/entities. Alternative 2 overlaps a total of approximately 1,476.9 acres of the refuge.

This alternative includes project areas east of the New River and around the Alamo River, which are located within the KGRA. This area has the potential to be developed with geothermal uses, and future geothermal power plants may be located in areas that are currently submerged by the Sea. This alternative would be designed to be compatible with existing lands uses, any current obligations under existing permits, and existing land use designations. Anticipated aquatic habitat projects would be adapted, as needed, to accommodate future geothermal facilities such as well pads and access roads. The Project would be designed to minimize conflicts with existing and future planned land uses through the land access process and therefore effects would be minor and long-term.

5.2.3.4 Alternative 3: North End/South End Aquatic Habitat

Effect LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use plans or policies. As discussed under the Proposed Project, this alternative would restore habitat, which is consistent with local general plans. Effects under this alternative are the same as the Proposed Project, except this alternative would restore approximately 25,690 acres of aquatic habitat. The Alternative 3 footprint also includes approximately 1,361 acres of Tribal lands. If projects are located on Tribal lands, they would be compatible with the Torres Martinez Desert Cahuilla Indians’ LZDP. The aquatic habitat proposals included in Alternative 3 would not conflict with the habitat management proposals in the SBSSNWR CCP. Context is local and construction would be short-term, primarily distant from local communities and intensity would be considered low due to compliance with local policies which protect the environment. Effects associated with this alternative would be minor and short-term.

Effect LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses. Land uses adjacent to or within the Alternative 3 footprint include open space and exposed lakebed, agricultural fields, portions of the SBSSNWR and Imperial Wildlife Areas, the Salton Sea Recreation Area, and residential areas in North Shore and at Desert Shores. No projects are proposed near the residential areas at Bombay Beach or Salton City under this alternative. Land ownership within the Alternative 3 footprint is included in Table 5-11.

Table 5-11 Alternative 3 Acreage by Land Ownership Type

		Alternative 3 Acreage
Tribal Lands	Tribal Lands	1,361
Federal Lands	United States Bureau of Land Management	1,197
	United States Bureau of Reclamation	658
	United States Fish and Wildlife Service	3,104
State Lands	State Lands	129
	State Lands - Undefined - Riverside Parcels	22
	State Park	13
Local / Regional	Imperial Irrigation District	17,262
	Coachella Valley Water District	633
County / Private	Imperial County - Individual, Commercial	1,071
	Riverside County - Individual, Commercial	67
Unmapped	Unmapped (Open Water)	174

Notes:

[1] Portions of the SBSSNWR are located on land owned by USFWS and others are leased/administered by USFWS from other agencies/entities. Alternative 3 overlaps a total of approximately 3,609 acres of the refuge.

This alternative includes project areas east of the New River and around the Alamo River, which are located within the KGRA. This area has the potential to be developed with geothermal uses, and future geothermal power plants may be located in areas that are currently submerged by the Sea. This alternative would be designed to be compatible with existing lands uses, any current obligations under existing permits, and existing land use designations. Anticipated aquatic habitat projects would be adapted, as needed, to accommodate future geothermal facilities such as well pads and access roads. The Project would be designed to minimize conflicts with existing and future planned land uses through the land access process and therefore effects would be minor and long-term.

5.2.3.5 Alternative 4: Water Conservation

Effect LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use plans or policies. The effects would be the same as those under the Proposed Project, except this alternative would restore approximately 10,790 acres of wetland habitat. The Alternative 4 footprint also includes approximately 1,046 acres of Tribal lands. If projects are located on Tribal lands, they would be compatible with the Torres Martinez Desert Cahuilla Indians' LZDP. The habitat restoration proposals included in Alternative 4 would not conflict with the habitat management proposals in the SBSSNWR CCP. As discussed under the Proposed Project, this alternative would restore habitat, which is consistent with local general plans. Context is local and construction would be short-term, primarily distant from local communities and intensity would be considered low due to compliance with local policies which protect the environment. Effects associated with this alternative would be minor and short-term.

Effect LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses. Land uses adjacent to or within the Alternative 4 footprint include open space and exposed lakebed; agricultural fields; portions of the SBSSNWR and Imperial Wildlife Areas; and residential areas in North Shore and in Salton City near the shoreline of the Sea. No projects are proposed near the residential areas at Desert Shores under this alternative. Land ownership within the Alternative 4 footprint is included in Table 5-12.

Table 5-12 Alternative 4 Acreage by Land Ownership Type

		Alternative 4 Acreage
Tribal Lands	Tribal Lands	1,046
Federal Lands	United States Bureau of Land Management	1,747
	United States Bureau of Reclamation	4,266
	United States Fish and Wildlife Service (SBSSNWR)[1]	715
State Lands	State Lands	76
Local / Regional	Imperial Irrigation District	15,185
	Coachella Valley Water District	436
County / Private	Imperial County - Individual, Commercial	1,819
	Riverside County - Individual, Commercial	396
	Unmapped (No Parcel Data)	3

Notes:

[1] Portions of the SBSSNWR are located on land owned by USFWS and others are leased/administered by USFWS from other agencies/entities. Alternative 4 overlaps a total of approximately 1,431 acres of the refuge.

This alternative includes project areas east of the New River and around the Alamo River, which are located within the KGRA. This area has the potential to be developed with geothermal uses, and future geothermal power plants may be located in areas that are currently submerged by the Sea. This alternative would be designed to be compatible with existing lands uses, any current obligations under existing permits, and existing land use designations. Anticipated aquatic habitat and dust suppression projects would be adapted, as needed, to accommodate future geothermal facilities such as well pads and access roads. The Project would be designed to minimize conflicts with existing and future planned land uses through the land access process and therefore effects would be minor and long-term.

5.2.3.6 Alternative 5: Maximum Build Out

Effect LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use plans or policies. The effects would be the same as those under the Proposed Project, except this alternative would restore approximately 24,734 acres of aquatic habitat and create 23,973 acres of dust suppression projects, resulting in a total project footprint of 48,707 acres. The Alternative 5 footprint includes approximately 1,934 acres of Tribal lands. If projects are located on Tribal lands, they would be compatible with the Torres Martinez Desert Cahuilla Indians' LZDP. The aquatic habitat and dust suppression proposals included in Alternative 5 would not conflict with the habitat management proposals in the SBSSNWR CCP. Because the context of the project is local and construction would be short-term, primarily distant from local communities and the intensity would be considered low due to compliance with local policies, this is considered a minor short-term effect.

Effect LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses. Land uses adjacent to or within the Alternative 5 footprint include open space and exposed lakebed, agricultural fields, portions of the SBSSNWR and Imperial Wildlife Areas, the Salton Sea Recreation Area, and residential areas in North Shore, Desert Shores, in Salton City near the shoreline of the Sea, and Bombay Beach. Land ownership within the Alternative 5 footprint is included in Table 5-13.

Table 5-13 Alternative 5 Acreage by Land Ownership Type

		Alternative 5 Acreage
Tribal Lands	Tribal Lands	1,934
Federal Lands	United States Bureau of Land Management	2,129
	United States Bureau of Reclamation	6,479
	United States Fish and Wildlife Service (SBSSNWR)[1]	3,653
State Lands	State Lands	66
	State Lands - Undefined - Riverside Parcels	22
	State Park	134
Local / Regional	Imperial Irrigation District	30.630
	Coachella Valley Water District	939
County / Private	Imperial County - Individual, Commercial	2,309
	Riverside County - Individual, Commercial	367
Unmapped	Unmapped (Open Water)	41

Notes:

[1] Portions of the SBSSNWR are located on land owned by USFWS and others are leased/administered by USFWS from other agencies/entities. Alternative 5 overlaps a total of approximately 4,549 acres of the refuge.

This alternative includes project areas east of the New River and around the Alamo River, which are located within the KGRA. This area has the potential to be developed with geothermal uses, and future geothermal power plants may be located in areas that are currently submerged by the Sea. This alternative would be designed to be compatible with existing lands uses, any current obligations under existing permits, and existing land use designations. Anticipated aquatic habitat and dust suppression projects would be adapted, as needed, to accommodate future geothermal facilities such as well pads and access roads. The Project would be designed to minimize conflicts with existing and future planned land uses through the land access process and therefore effects would be minor and long-term.

5.2.3.7 Alternative 6: No Federal Action

Effect LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use plans or policies. No aquatic ponds would be created under this alternative as no work in waters of the United States would be permitted. However, this alternative would implement dust suppression and restoration projects which would create habitat that would not exist under the No Action Alternative. The footprint of this alternative is not well defined at this time. However, any projects implemented would be compatible with local policies and land use plans, and therefore this would have a minor short-term effect.

Effect LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses. The potential locations where projects could be located under this alternative are not well known at this time. However, there is potential for dust suppression projects to be located within the KGRA. Similar to all other alternatives, anticipated projects would be adapted, as needed, to accommodate future geothermal facilities. This alternative would be designed to be compatible with existing lands uses, any current obligations under existing permits, and existing land use designations. The Project would be designed to minimize conflicts with existing and future planned land uses through the land access process and therefore effects would be minor and long-term.

5.2.3.8 Alternative 7: No Action

Effect LU-1: With implementation of BMPs and mitigation measures identified in other resource sections, the Project would be compatible with general plans and other applicable land use plans or policies. As of 2020, salinity in the Salton Sea exceeded 70 ppt and would continue to increase under the No Action Alternative. If no action is taken, declining inflows in future years from various factors will result in collapse of the Salton Sea ecosystem due to increasing salinity and other water quality issues, such as temperature, eutrophication and related anoxia, and algal productivity.

Effect LU-2: The Project would be designed to minimize conflicts with existing and future planned land uses. Declining water levels will expose Salton Sea shoreline areas, and this exposed land area will become available for potential future development. Extensive geothermal resources exist in the vicinity of the New and Alamo rivers. These areas are planned for geothermal production and are expected to be developed with pads to locate drilling and well facilities. There would be no conflict with existing or future land uses under this alternative, because no project features would be implemented. The No Action Alternative would not restore habitat along the existing shoreline or convert exposed playa to open water. Therefore, this alternative would not have the potential to conflict with future planned land uses for the exposed lakebed areas.

5.3 AIR RESOURCES

This section addresses potential effects to air quality resulting from construction activities of the Proposed Project and alternatives.

Class 1 federal lands include areas such as national parks, national wilderness areas, and national monuments. These areas are granted special air quality protections under Section 162(a) of the federal Clean Air Act. The project area is not within a Class 1 area.

All expected effects analyzed will be the result of construction activities rather than operations, as operations and maintenance emissions cannot be specifically quantified at this time. One of the stated goals of the SSMP is to decrease existing levels of PM_{10} and $PM_{2.5}$ throughout the project areas. In the short-term, construction activities involving the movement of earth in order to implement habitat restoration and dust suppression projects will cause amounts of criteria pollutants to exceed local thresholds temporarily but will subside once construction is complete. Mitigations and best management practices will be in place in order to minimize these short-term and temporary exceedances.

However, given the scope of the Proposed Project, and the stated objectives to reduce the amount of emissive exposed lakebed and to reduce the total emissivity of exposed lakebed, operational effects of the Proposed Project and Alternatives 1-6 are expected to result in a net beneficial effect to the project area.

5.3.1 Effects Analysis Methodology

While all alternatives are expected to generate emissions of PM_{10} and $PM_{2.5}$ in exceedance of Salton Sea Air Basin, including Imperial County Air Pollution Control District and South Coast Air Quality Management District thresholds of significance for construction activities, it is understood that the goal of all projects in the SSMP is to control and lessen the overall emissions of dust in the Salton Sea Study area.

For the purposes of this analysis, all alternatives were assumed to require mechanical disturbance of soils to varying degrees (i.e., soil roughening, pond, berm, wetlands construction, etc.). Timelines being non-specified, data were analyzed as a number of acres per day of soil disturbance, divided evenly over the total course of the specific project alternative. For the purpose of the analysis, it was assumed that all acreage included in the project alternative would be disturbed.

It is further assumed that standard dust mitigation measures and best management practices for construction activities will be employed during implementation of all Alternatives. These mitigation measures are listed below.

The equipment list used for the analysis is based on typical equipment used for earth moving activities similar to those expected in the various Alternatives and was provided by DWR. Specific makes and models were taken from the list of typical equipment included in Salton Sea Management Plan DSAP, Section 2.3.3, Table 2.

General hours of daily operation and acres per day of disturbed area were provided by DWR. Hours of daily operation for specific equipment were estimated with guidance from California Emissions Estimator Model (CalEEMod) Version 2020.4.0 Appendix D, Default Data Tables, May 2021.

Estimates of criteria pollutants and fugitive dust generation were calculated using emissions factors from USEPA AP-42.

Estimates of Greenhouse Gases were calculated using emissions factors found in USEPA Center for Corporate Climate Leadership GHG Inventory Guidance document.

Emissions calculations are provided in Appendix C.

Greenhouse Gas

Construction activities can generate greenhouse gases (GHG) in a number of ways. Construction equipment typically burns fossil fuels, resulting in the generation of GHGs such as carbon dioxide, methane, and nitrous oxide. Methane may also be emitted during fueling. While construction is a temporary source of greenhouse gas emissions, they are accounted for, as the effect of GHGs is cumulative. The Proposed Project will likely result in a negligible release of GHG when compared to global GHG. GHG emissions have been shown to contribute to contribute to climate change. Aquatic resources, as described in this project, can be sources and or sinks of GHGs. For instance, some aquatic resources sequester carbon dioxide. Because of the short-term and temporary nature of these construction related emissions, the effects are considered de minimus.

Effects Analysis

Neither NEPA, ICAPCD nor the CEQA Guidelines provide thresholds for greenhouse gas emissions. Although there is currently no federal overarching law specifically related to climate change or the reduction of GHGs, the Council on Environmental Quality (CEQ) has issued a DRAFT guidance document recommending that an agency may reference local, regional, national, or sector-wide emission estimates to provide context for understanding the relative magnitude of a proposed action's GHG emissions, along with a qualitative summary discussion of the effects of GHG emissions. Such a discussion satisfies NEPA's requirement that agencies analyze the cumulative effects of a proposed action because the potential effects of GHG emissions are inherently a global cumulative effect. Therefore, a separate cumulative effects analysis is not required.

Table 5-14 summarizes the effects of the Proposed Project and seven alternatives on GHG, compared to the No Action Alternative.

Table 5-14 Summary of Effects for Greenhouse Gas

	Project Alternative								
Effects	**PP**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Mitigation Measures**
AQ-1: Emissions of criteria pollutants would exceed thresholds set forth by Imperial County APCD	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A *	MM AQ-1 Implement Diesel Control Measures to Reduce PM_{10} and NO_X Emissions from Diesel Engines
AQ-2: Emissions of PM_{10} and $PM_{2.5}$ would exceed thresholds set forth by Imperial County APCD	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A *	MM AQ-1 Implement Diesel Control Measures to Reduce PM_{10} and NO_X Emissions from Diesel Engines MM AQ-2 Implement Standard dust suppression activities during ground disturbance and at the end of each workday
AQ-3: The Project would reduce the amount of emissive exposed lakebed and the total emissions of particulate matter in the project area. This should	B	B	B	B	B	B	B	N/A *	None required

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
benefit regional visibility as well as air quality.									

Notes:

PP= Proposed Project
N/A = Not Applicable

No = No Effect

Adverse Effects:

Maj = Major Effect (Short-Term)

B = Beneficial Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.3.2 Proposed Project

The Proposed Project would be implemented at various locations around the perimeter of the Sea in Riverside and Imperial counties. Between 10,790 and 19,800 acres of **aquatic habitat restoration projects** will be analyzed for coverage as part of the Proposed Project. In addition, up to 14,900 acres of **dust suppression and restoration opportunity areas** may be built within the mapped dust suppression and restoration opportunity areas. Some of the dust suppression projects are water dependent and may be constructed where water sources are available; others are not water dependent and could be built anywhere on the exposed lakebed. For the purposes of this analysis, the acreage of mechanical disturbance is assumed to be 19,800 acres.

Effect AQ-1: Emissions of criteria pollutants would exceed thresholds set forth by Imperial County APCD. The Project would contribute incrementally to violations of Federal and State O_3 standards and exceed ICAPCD's NO_X thresholds during construction which would be major and short-term. No ambient air quality violations would occur solely due to Project emissions for any pollutant, although the Project would incrementally contribute to existing violations of state and Federal air quality standards for O_3 during construction. These contributions would occur primarily through diesel engine exhaust during construction activities. Peak daily NO_X emissions from on-site sources during construction would exceed ICAPCD's thresholds, however, the combustion emissions that would occur during construction would be largely limited to the immediate vicinity of the project area. Mitigations and best management practices will be in place in order to minimize these short-term and temporary exceedances. These emissions would represent a small portion of the region's yearly emissions inventories and would subside once construction has been completed. Therefore, the construction-related effect on local air quality during construction of the Proposed Project and alternatives would minor and short-term.

Mitigation Measures

MM AQ-1: Diesel Control Measures to Reduce PM_{10} and NO_X Emissions from Diesel Engines

> Low-sulfur (15 ppmw S) fuel will be used in all stationary and mobile equipment.

> Regular tune-ups will be scheduled and performed on all equipment, including hauling and delivery trucks.

- Curtail construction activities during periods of high ambient pollutant concentrations, as directed by the ICAPCD.

Residual Effect

AQ-1 is a short-term and construction related effect, which would cease at the completion of the construction phase. The residual effect would be a reduction of dust emissions from the project areas.

Effect AQ-2: Emissions of PM_{10} and $PM_{2.5}$ would exceed thresholds set forth by Imperial County APCD. The Project would contribute incrementally to violations of Federal and State PM_{10}, and $PM_{2.5}$ standards and exceed ICAPCD's PM_{10} thresholds during construction which would be major and short-term. No ambient air quality violations would occur solely due to Project emissions for any pollutant, although the Project would incrementally contribute to existing violations of state and Federal air quality standards for PM_{10}, and $PM_{2.5}$ during construction. These contributions would occur primarily through fugitive dust emissions during construction activities. Peak daily fugitive PM_{10} emissions from on-site sources during construction would exceed ICAPCD's thresholds, however, the fugitive dust emissions that would occur during construction would be largely limited to the immediate vicinity of the project area. Mitigations and best management practices will be in place in order to minimize these short-term and temporary exceedances. These emissions would represent a small portion of the region's yearly emissions inventories and would subside once construction has been completed. Therefore, the construction-related effect on local air quality during construction of the Proposed Project and alternatives would minor and short-term.

Mitigation Measures

- **MM AQ-2:** All portions of the project located within the jurisdiction of Imperial County are subject to dust mitigation requirements under Imperial County APCD Rule 801. In addition, all portions of the project located within the Coachella Valley are subject to the South Coast Air Quality Management District (SCAQMD) supplemental Rule 403.1 (Supplemental Fugitive Dust Control Requirements for Coachella Valley Sources) which requires that the following implementation of the following mitigation o reduce construction related PM_{10} impacts to a level below significance during construction:
- Apply water during grading/grubbing activities to all active disturbed areas as needed to comply with the project's Dust Control Plan and comply with the ICAPCD's opacity limits of 20%.
- All on-site and off-site unpaved roads shall be effectively stabilized. Visible emissions shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
- All deposits of bulk material shall be stabilized within 24 hours of making such bulk material deposits by use of chemical stabilizers, dust suppressants and/or watering.
- The transport of bulk materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of bulk material. In addition, the cargo compartment of all haul trucks is to be cleaned and/or washed at delivery site after removal of bulk material.

- All track-out or carry-out shall be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved Imperial County Planning and Development Services. During construction.
- Limit vehicle speeds on construction site to 15mph.
- Apply water to disturbed soils at the end of each workday.
- Cease and prohibit construction activities when wind speeds exceed 25mph.

Residual Effect

AQ-2 is a short-term and construction related effect, which would cease at the completion of the construction phase. With implementation of MM AQ-1 the residual effect would be minor but short-term. Implementation of MM AQ-2 would reduce construction related PM_{10} impacts to a level below significance during construction.

Effect AQ-3: The Project would reduce the amount of emissive exposed lakebed and the total emissions of particulate matter in the project area. The Proposed Project would have a beneficial effect.

5.3.3 Alternative 1 – Maximum Lake Edge

Alternative 1 would create lake edge from the Salton Sea State Recreation Area near the community of North Shore in a counter-clockwise direction around to just north of Bombay Beach. Under this alternative, a total of 25,690 acres of open water would be constructed.

25,690 acres of mechanical disturbance is assumed.

Effects AQ-1, **AQ-2**, and **AQ-3** are the same as the Proposed Project. Refer to Section 5.3.2 and Table 5-14.

5.3.4 Alternative 2 – Enhance and Expand Existing Wetlands

Alternative 2 would include the North Lake Project that is currently under design. Additional projects would be built using natural inflow sources at drains and washes around the perimeter of the Sea. None of the dust suppression activities discussed for the Proposed Project would be conducted including the DSAP Phase A and DSAP Phase B, except to the extent that they can proceed without NEPA permitting.

25,690 acres of mechanical disturbance is assumed.

Effects AQ-1, **AQ-2**, and **AQ-3** are the same as the Proposed Project. Refer to Section 5.3.2 and Table 5-14.

5.3.5 Alternative 3 – North End/South End Aquatic Habitat

Alternative 3 would include the North Lake Project that is currently under design as well as construction of additional ponds near the New and Alamo rivers, totaling 25,690 acres.

25,690 acres of mechanical disturbance is assumed.

Effects AQ-1, **AQ-2**, and **AQ-3** are the same as the Proposed Project. Refer to Section 5.3.2 and Table 5-14.

5.3.6 Alternative 4 – Water Conservation

Under Alternative 4, the aquatic habitat project area would consist of enhancing and expanding wetlands as described for Alternative 2. This alternative would also include 25,690 acres of dust suppression projects, including those in DSAP Phase A and B, except in areas identified for aquatic habitat projects, and additional areas to bring the total to 25,690acres.

25,690 acres of mechanical disturbance is assumed.

Effects AQ-1, **AQ-2**, and **AQ-3** are the same as the Proposed Project. Refer to Section 5.3.2 and Table 5-14.

5.3.7 Alternative 5 – Maximum Build-out

Alternative 5 would include all feasible areas. All the regional opportunity areas would be built out to maximize both habitat and dust suppression projects. Total acreage for this alternative is 48,704 acres.

48,704 acres of mechanical disturbance is assumed.

Effects AQ-1, **AQ-2**, and **AQ-3** are the same as the Proposed Project. Refer to Section 5.3.2 and Table 5-14.

5.3.8 Alternative 6 – No Federal Action

Under Alternative 6, no projects would be built that require federal action. Under this alternative, the State would proceed with dust suppression and restoration projects that meet the following parameters for projects, access, and infrastructure:

Are not on federal or tribal lands, are not in wetlands or waters of the United States at the time of construction, would not have an effect on federally listed species, would not have any federal funding, and do not require a diversion from waters of the United States.

Effects AQ-1, **AQ-2**, and **AQ-3** are the same as the Proposed Project. Refer to Section 5.3.2 and Table 5-14.

5.3.9 Alternative 7 – No Action

Under Alternative 7, the Corps would not implement the SSMP 10-Year Plan Project, and no components of the Project would be constructed.

Effect AQ-1: Emissions of criteria pollutants would exceed thresholds set forth by Imperial County APCD*.* The project area would continue to be in non-attainment for ozone.

Effect AQ-2: Emissions of PM_{10} and $PM_{2.5}$ would exceed thresholds set forth by Imperial County APCD. The project area would continue to be in non-attainment for PM_{10} and $PM_{2.5}$.

Effect AQ-3: The Project would reduce the amount of emissive exposed lakebed and the total emissions of particulate matter in the project area. There would be no reduction in amount of emissive lakebed. As the Sea continues to change due to changes in human water use practices and natural water availability, the No Action Alternative will result in an increase in dust emissions and total particulate matter.

5.4 BIOLOGICAL RESOURCES

5.4.1 Effects Analysis Methodology

Effects on biological resources were assessed in several ways. For vegetation, effects were determined by comparing the potential future condition of the vegetation under each alternative to the current condition of the vegetation as well as a potential future condition if none of the projects were built. The current condition reflects the vegetation that was mapped using recent aerial photographs. The potential future condition is based on modeling information that reflects the anticipated decline in elevation of the Sea over time but is described in very general terms due to uncertainty about the location and amount of wetlands establishing on the exposed lakebed and the degree to which rivers and drains will continue to erode channels and/or spread out over the exposed lakebed. Areas of exposed lakebed as the Sea recedes will include barren areas as well as herbaceous wetland, tamarisk woodland, tamarisk scrub, and chenopod scrub. The proportions of these vegetation categories cannot be determined at this time, and it would be speculative to provide acreage values for these types.

Direct effects on special-status species, riparian areas, wetlands, and nesting and migrating birds were evaluated by estimating the amount of habitat that could be affected by Project construction activities and comparing it to the amount of that habitat present in the area. The seasonal abundance of special-status species and their use of the affected habitat were also considered in the analysis. In addition, the effects of noise, human presence, lighting, turbidity, and other construction-related disturbances were assessed through scientific judgment of the preparers, unless specific tolerances of individual species were known. Effects of Project construction on wildlife movement or migratory corridors was qualitatively evaluated based on known or expected movement pathways and Project information. Project effects from the time that construction is complete through operation, maintenance, and monitoring were assessed by evaluating how planned activities could interact with anticipated development of biological resources in the restored habitat, as well as how activities could change exposure of wildlife species to contaminants such as selenium and pesticides.

Table 5-15 summarizes the effects of the Proposed Project and seven alternatives on biological resources, compared to the No Action Alternative.

Table 5-15 Summary of Effects for Biological Resources

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
Vegetation									
BIO-1: Project construction and operation would cause a temporary disturbance or permanent loss of riparian habitat and/or sensitive habitat in limited areas to support Project infrastructure or other elements	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A*	**MM BIO-1**: Prepare and implement a Habitat Protection, Mitigation, and Restoration Program
BIO-2: Use of drain water to expand existing herbaceous wetlands could result in adverse effects due to selenium bio-accumulation	No	No	Maj	No	Maj	No	No	N/A*	**MM BIO-2**: Targeted selenium monitoring of herbaceous wetlands where source water is from agricultural drains
Special-Status Species									
BIO-3: Project construction could result in the removal or destruction of special-status plant species occurrences	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A*	**MM BIO-3**: Conduct Special-status Plant Species Surveys and Prepare an Avoidance and Mitigation Plan
BIO-4: Project construction and operation/maintenance and monitoring would affect habitat and individuals of desert pupfish and several special-status wildlife species	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A*	**MM BIO-1**: Prepare and implement a Habitat Protection, Mitigation, and Restoration Program **MM BIO-4**: Prepare and implement a desert pupfish protection and relocation plan **MM BIO-5**: Prepare and Implement a Program-level Nesting Bird Management Plan **MM BIO-6**: Prepare and Implement a Program-level Special-status Wildlife Species Management and Survey Plan. **MM BIO-7**: Conduct noise measurements and implement noise attenuation measures, if needed **MM BIO-8**: Design interception canals to minimize alteration of water levels in adjacent marshes

Effects	Project Alternative								Mitigation Measures
	PP	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species	B	B	B	B	B	B	No	N/A*	None required
Common Wildlife									
BIO-6: Project construction and operation/maintenance would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds	MST	MST	MST	MST	MST	MST	MST	N/A*	**MM BIO-1**: Prepare and implement a Habitat Protection, Mitigation, and Restoration Program
BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A*	**MM BIO-5**: Prepare and Implement a Program-level Nesting Bird Management Plan and Special-status Wildlife Species Survey Plan **MM BIO-**7: Conduct noise measurements and implement noise attenuation measures, if needed **MM BIO-9**: Clean equipment prior to site delivery
BIO-8: Project construction and operation/maintenance would have minor effects on common fish (native and non-native) and wildlife species	MST	MST	MST	MST	MST	MST	MST	N/A*	MM BIO-10: Monitor water quality in ponds to maintain suitable habitat for benthic invertebrates and fish species
BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species	B	B	B	B	B	B	B	N/A*	None required

Notes:

PP=Proposed Project

N/A = Not Applicable

No = No Effect

Adverse Effects:

MST = Minor Effect (Short-Term)

Maj = Major Effect (Short-Term)

B = Beneficial Effect (Long-Term)

When multiple effect levels occur under one effect, only the highest level is used in the summary.

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.4.2 Proposed Project

5.4.2.1 Vegetation

The Proposed Project would result in the removal of vegetation, where necessary, to install project infrastructure (e.g., pipelines, ponds, access roads, etc.). In addition, the Proposed Project would result in the removal of non-native invasive species to increase water availability for projects, such as for the Bombay Beach wetlands project.

Vegetation effects are presented in Table 5-16. These represent the maximum effects within the project area because the range of potential projects would result in variable effects within the 40,000-acre opportunity area. In addition to the vegetation effects presented below, the Proposed Project would result in the creation of between 10,790 and 19,062 acres of aquatic habitat restoration projects that could include open water, desert wash woodland, herbaceous wetland, and chenopod scrub. While the effect calculations presented in Table 5-16 provide an estimate based on current conditions, future conditions that will exist at the time of construction will be different. The majority of the open water area presented in Table 5-16 is currently under the Sea but will be exposed at the time of project construction. This area is rapidly changing with the recession of the Sea and colonization of wetland and riparian species in areas where water spreads out over the exposed lakebed. In addition, rivers may erode new channels through the exposed lakebed and/or spread out over the exposed surface.

Table 5-16 Vegetation Effects of the Proposed Project

Vegetation Type	Total Acreage based on Current Condition within the Proposed Project Footprint
Agriculture	0.2
Barren Non-Lake Bottom	146.9
Barren Lake Bottom	4,116.2
Chenopod Scrub	938.6
Creosote Bush Scrub	45.9
Desert Wash Woodland[2]	0.1
Disturbed/Developed	68.6
Dust Suppression Projects	413.6
Herbaceous Wetland	764.0
Managed Wetlands	307.3
Open Water	31,772.3
Tamarisk Woodland[2]	899.7
Tamarisk Scrub[2]	669.2

Notes:

1. Values presented represent maximum effect for each category because the projects would consist of a portion of the area analyzed
2. Riparian vegetation
3. MM-BIO-1 requires avoidance of managed wetlands

Effect BIO-1: Project construction and operation would cause a temporary disturbance or permanent loss of riparian habitat and/or sensitive habitat in limited areas to support Project infrastructure or other elements. Project construction activities could result in removal of riparian habitat, classified as either tamarisk woodland, tamarisk scrub, or desert wash woodland, that occurs adjacent to the rivers and drains, and/or sensitive habitat, classified as open water, herbaceous wetland, or managed wetlands, depending on the amount of excavation for material to construct the projects. For areas to be inundated by the ponds or where structures would be placed (e.g., access roadways along the river berms, river water intake), the loss would be permanent. Riparian habitat would be disturbed or temporarily removed for construction of the water delivery pipelines and berms separating the river from the ponds. A small amount of native vegetation, e.g., desert wash woodland, could be affected by construction. However, Project structures would be placed to minimize or avoid effects to the maximum extent feasible. In addition, habitat removed by the Project would be restored to its original condition, or more desirable habitat, following construction of the conveyance pipelines. For example, it would be acceptable to replace tamarisk scrub that was removed with screwbean mesquite bosque.

If permanent removal of riparian habitat were substantial (greater than 2 acres) or if native riparian habitat were removed, this would be a major effect. Native riparian habitat includes areas that are dominated by native species and occur along creeks, rivers, or the lakeshore. In the project area, it primarily consists of desert wash woodland. Vegetation effects to native riparian vegetation, based on the existing onsite vegetation would not exceed 2 acres, however, the composition of the vegetation may change between now and when the sites get built. Up to approximately 1,089.8 acres of tamarisk woodland and scrub would be removed for construction of the Project. Removal of up to 1089.8 acres of tamarisk for pond construction represents the worst case and actual numbers would probably be lower depending on exact limits of excavation for material to construct the berms.

Removal of riparian and/or sensitive habitat would be a major effect when compared to the existing environmental setting and the No Action Alternative.

Mitigation Measures

MM BIO-1: Prepare and implement a Habitat Protection, Mitigation, and Restoration Plan for each Project.

Plan preparation will be complete prior to commencement of construction of each project under the SSMP 10-Year Plan. The restoration project plan will address the following considerations and will be submitted for review to applicable agencies and landowners:

4. Avoidance of sensitive and riparian habitats to the greatest extent feasible, including avoidance of disturbances in or near these habitats during the bird breeding season.
5. Avoidance of managed wetland areas that support native plant species and/or open water habitat.
6. Quantifying maximum area of naturally occurring plant communities that could be temporarily and permanently removed for construction of Project facilities, by plant community.

7. Restoration at a minimum rate of 1:1 for non-native plant communities (i.e., tamarisk woodland or scrub) and 3:1 for native plant communities temporarily removed during Project construction, or as required in Project permits. Habitats restored at 1:1 will be preferentially restored where they were removed, unless it is infeasible, or a more desirable off-site location is identified. Species to be used in restoration may include either native species that were removed or that occur or occurred naturally in the Project area and are suitable to the site. If native species are used to replace non-native species, mitigation ratios can be reduced, but not below 1:1. For restoration of tamarisk temporarily removed, natural colonization of the disturbed area is likely to occur, and no planting may be needed. The area would still be monitored to document restoration. Permanently removed riparian habitat within the pond area would be replaced by aquatic habitat of equal surface area with a similar or greater ecological value, as determined by agency permits and project-specific goals.
8. Identification of locations for on- and off-site restoration, including funding for land purchases and/or easements and agreements with property owners to complete the restoration.
9. Use of only local native seed (or propagule) sources for native species used in restoration.
10. Details on propagation, planting/seeding, irrigation, maintenance (including weed control for species that could interfere with restoration), site access, remedial measures, monitoring, reporting, and photo-documentation. These details will be specific to each site if more than one planting area or type is addressed in the plan.
11. Performance criteria to be met for each habitat type being restored.
12. Monitoring, with a funding source, until performance criteria are met, which may be for a minimum of 5 years.
13. Remedial measures if performance criteria are not met within specified timeframes and an adaptive management plan for the program.
14. If surfactants are applied prepare a surfactant application plan that identifies application measures and locations that reduce and avoid effects.

Residual Effect

The residual effect would be minor and short-term following implementation of **MM BIO-1** because habitat that would be removed would be restored in at least the amount that was removed.

Effect BIO-2: **The use of drain water to expand upon existing herbaceous wetlands could result in adverse effects to wildlife using these wetlands due to selenium bio-accumulation.** Under the Proposed Project, there is a total of 903 acres of wetland enhancement/expansion which could occur as part of the Bombay Beach wetlands project. Potential water sources that would be used to implement wetland enhancement/expansion at Bombay Beach are water sources not high in selenium. The Proposed Project would have no effect due to selenium bio-accumulation in expanded wetland areas.

5.4.2.2 Special-Status Species

Effect BIO-3: Project construction could result in the removal or destruction of special-status plant species occurrences. Only one special-status plant species has the potential to be affected by the Proposed Project, the gravel milk-vetch. Another eight special-status plant species may occur adjacent to project activities and could be inadvertently affected by project activities, if activities are not carefully planned for avoidance. If removal of an occurrence of a special-status plant species occurs, it would be a major effect.

Mitigation Measures

MM BIO-3: Conduct Special-status Plant Species Surveys and Prepare an Avoidance and Mitigation Plan.

To avoid effects on special-status plant species, appropriately-timed botanical surveys will be conducted consistent with CDFW guidelines and prior to project implementation. Surveys will be conducted in all areas that may be disturbed for project construction and operation. If special-status plant species are found during these surveys, the applicant will provide one of the following for CDFW approval[18]:

- An avoidance plan to provide information on how changes to the project will avoid effects to the species.
- A mitigation plan, to provide information on how the applicant will mitigate effects to the species.
- A change to the project design to eliminate elements in locations that support the species.

Residual Effect

With implementation of **MM BIO-3**, the effects would be avoided because special-status plant species would be avoided and/or effects to them would be mitigated.

Effect BIO-4: Project construction and operation would affect habitat and individuals of desert pupfish and several special-status terrestrial wildlife species.

Desert Pupfish

Desert pupfish are or could be present in agricultural drains; vegetated furrows; shallow water along the Sea's shoreline; herbaceous wetlands; fresher water inflows along the Sea's shoreline; and Salt Creek, San Felipe Creek, Whitewater River, and Hot Mineral Springs Wash. Therefore, construction activities for the ponds and diversion of the drain outflows around the Proposed Project area would result in habitat loss, alteration of adjacent habitat through turbidity, and mortality of some individuals. If construction activities occurred during the desert pupfish breeding season (approximately April through October), reproductive success for those mature pupfish in the Project footprint could be greatly reduced. Since the species generally does not live more than 2 years, loss of reproduction for 1 year could have substantial effects on the population size at a specific location. Construction of pump stations and pipeline for bringing saline water from the Salton Sea to mix with brackish river water for salinity control in the ponds would temporarily affect a small area of the Sea, primarily through underwater sound and turbidity. Few, if any, desert pupfish would be affected by this construction activity because

[18] BLM approval would also be required for projects on BLM lands.

salinity in the Sea generally exceeds the tolerance of desert pupfish. Therefore, construction of saline pump intakes would not be likely to affect them if no fresher water inflows are present in the vicinity of the pump location. However, potential for pupfish to be present at a specific location would be determined prior to construction and appropriate measures outlined in **MM BIO-4** would be implemented as necessary on a project-specific basis. As the Sea recedes, any outer pump stations would need to be moved, or another one built, and pipeline extensions placed on or within the exposed Seabed.

The Proposed Project includes aquatic habitat creation under the following projects: New River Expansion, Alamo River, North Lake and North Lake Demonstration, and Desert Shores Channel Restoration projects; wetland enhancement/expansion under Bombay Beach Wetland project; and dust suppression restoration (14,900 acres). The Proposed Project could result in a permanent isolation of existing shallow shoreline habitat (between 10,790 and 19,062 acres) depending on where ponds are constructed compared to current conditions. Salinity in the Sea generally exceeds desert pupfish tolerance, except in areas that are under the influence of inflows of fresher water into the Sea. Depending on site characteristics, projects would be designed to provide connectivity between currently occupied pupfish habitat. Desert pupfish habitat would be designed into projects where connectivity and habitat benefits could be achieved, likely in shallow habitat and dependent on substrate and vegetation. The shallow water within ponds may be suitable habitat, and some pupfish are likely to be trapped in the ponds during construction if the downslope (offshore) berms are installed “in the wet” rather than on the exposed playa. These pupfish would likely persist due to the proposed water quality for the ponds but would be isolated (physically and genetically) from those in the Salton Sea and its connected waters. Isolation of populations in the drains and tributaries also would occur eventually under the No Action Alternative, making the Project isolation temporary. However, separately from the SSMP, IID is required to restore pupfish connectivity as part of mitigation for the QSA. Additional pupfish may be introduced into the ponds once they are completed if they do not naturally repopulate the ponds where suitable habitat for this species is present 1 year after ponds are filled with water. (**MM BIO-4** includes a measure to develop a desert pupfish inoculation plan, if needed.)

Water from existing agricultural drains that discharge to the Sea where the aquatic habitat ponds could be built would be diverted around the ponds by constructed interception canals. Habitat used by pupfish in those drains would remain, but the individual drain connections to the Sea would be combined, thereby resulting in a greater distance for desert pupfish to traverse between the new (combined) drain outlets. Construction of the new drain interception canals would disturb existing pupfish habitat at the mouth of the drains and could disrupt spawning, depending on time of year, or result in injury or mortality of individuals. The new drain interception canals, once completed, would provide habitat for desert pupfish, but maintenance of these channels (including periodic vegetation removal) would cause periodic disturbance within that habitat and could result in disturbance to spawning or mortality of some individuals. The Project would result in a temporary loss of shallow shoreline habitat, however salinity in the Sea generally exceeds pupfish tolerance, except in areas that are under the influence of inflows of fresher water, so any areas without freshwater input would not be suitable habitat for pupfish.

Desert pupfish are known to occur within the San Felipe Creek, Salt Creek, and Hot Mineral Springs Wash drainages, Whitewater River, and many agricultural drains. Habitat project areas within the Bombay Wetlands project (Hot Mineral Springs Wash), North Lake Project, and North

Lake Demonstration project, are located near drainages or agricultural drains where desert pupfish have been recorded. If present, effects on desert pupfish could occur as a result of project activities including construction of aquatic habitat ponds and enhancement of existing wetlands at these locations. Dust suppression opportunity areas that use agricultural drain water for water-reliant methods have the potential to affect desert pupfish, if present at specific project locations. Additionally, stormwater spreading has the potential to negatively affect desert pupfish if present in work areas, specifically in areas near San Felipe Creek, where desert pupfish could get washed downstream during high flow events. However, this effect would be considered negligible, because under the No Action Alternative, any pupfish washed downstream would either be washed into the Sea, which exceeds their salinity tolerance or become stranded as the water dries on the exposed lakebed. Any groundwater wells that could be used to pump water for the project would be located within the Proposed Project area and would not result in effects on the critical habitat area for desert pupfish upstream in San Felipe Creek, a groundwater dependent ecosystem which is located approximately 7 miles upstream. Groundwater wells within the Proposed Project area will withdraw water from a deeper, separate aquifer than the aquifer that supports the San Felipe Creek groundwater dependent ecosystem. There could potentially be local groundwater recharge benefits of the restoration projects implemented, but no effects to the groundwater dependent ecosystem upstream where critical habitat is located would occur.

Operation of pump stations to bring saline water to ponds has the potential to entrain desert pupfish if pumps are located within areas with salinity levels that are low enough to support desert pupfish survival. The intake would be screened if there were the potential for pupfish to be present, and maintenance activities to clean or to replace the screen could affect pupfish in the intake's immediate vicinity. Maintenance of the pump stations could result in release of lubricants or other chemicals potentially toxic to pupfish. Few desert pupfish are likely to be affected by maintenance activities.

Maintenance activities for the ponds could affect desert pupfish that are present in the ponds. Turbidity effects, disturbance of feeding and spawning areas, and direct mortality could occur. Dropping the water level of one or more ponds for maintenance could strand desert pupfish resulting in mortality from desiccation or predation by birds. Under an emergency situation, draining one or more of the ponds for maintenance could occur and would strand desert pupfish resulting in mortality from desiccation or predation by birds.

Flat-Tailed Horned Lizard and Other Terrestrial Species

Construction and maintenance activities could result in temporary disturbances to terrestrial wildlife habitats through ground disturbance and noise. Construction and maintenance of berms and the drain interception canals would occur in terrestrial habitats, but a small amount of habitat would be affected. Individuals of many species, including flat-tailed horned lizard, would not be expected to move out of the disturbance area on their own. Maintenance activities would cause temporary disturbances at specific locations for short periods of time. Once construction or maintenance was completed, these species could reestablish use of the area disturbed. No permanent loss of habitat would occur.

Bird Species

Construction and maintenance activities could affect the following special-status bird species that may be present within the Project footprint through direct habitat disturbance and human presence. Individuals immediately adjacent to Project activities could also be affected by noise. Noise has been documented to adversely affect avian reproduction, and thus, construction noise and activity, if adjacent to areas occupied by nesting birds, could result in nesting failure if such activities occur during the breeding season.

Burrowing Owl

Because the burrowing owl is or could be present along the drains, berms, playas, or other bare or sparsely vegetation areas, construction and maintenance of the drain interception canals, and dust suppression projects could result in disturbance or burrow loss and mortality of some individuals. If construction activities occurred during the burrowing owl breeding season (February through August), burrowing owl adults, eggs, or young could be trapped or killed by grading or excavation activities. Construction noise and activity, if adjacent to areas occupied by nesting burrowing owls, could result in nesting failure. If construction or maintenance activities occurred during the burrowing owl wintering season and burrowing owls occupied a burrow within the area, the adults may be trapped, injured, or killed. Once construction or maintenance was completed, burrowing owls could reestablish use of the area disturbed. No permanent loss of habitat would occur.

Bald Eagle

The bald eagle is only an occasional winter visitor to the Sea which provides suitable open water foraging habitat.

Due to their infrequent presence within the Project Area, flexibility for foraging, and ability to avoid disturbances, the bald eagle is unlikely to be affected by the Proposed Project. Therefore, effects would be negligible.

The bald eagle occurs within the Project area as wintering species but may also occur as a visitor at any time of year. The species forages over open water as well as over agricultural fields and could occur within the Project area. The species is nomadic in its behavior and forages opportunistically wherever suitable food is available. Occurrence within the region and within the Project area is unpredictable. Due to the nomadic nature of their occurrence and flexibility for foraging, and the large area that is available to them for foraging, it is unlikely that the species would be affected by Project construction or maintenance, and effects would be negligible.

Greater Sandhill Crane, California Black Rail, Yuma Ridgway's Rail, and Other Nesting Marsh Bird Species

Because greater sandhill crane, California black rail, Yuma Ridgway's rail, and other nesting marsh bird species could be present within herbaceous wetlands along the drains or immediately adjacent to the Project footprint, construction and maintenance activities for the aquatic habitat areas could result in habitat loss, injury, or mortality of individuals, or disruption of breeding. The Project could result in a loss or disturbance of suitable freshwater marsh habitat if it is present within the drain mouths that would be diverted around the Project area. Freshwater marsh includes some areas mapped as herbaceous wetland and managed wetland, including in SBSSNWR. Construction noise and activity, if adjacent to areas occupied by nesting marsh species, could result in nesting failure if such activities occur during the breeding season (March/April through August). Due to the low population size of some of these species, any loss of individuals or their annual reproduction could adversely affect the population size.

Construction and maintenance activities for the aquatic habitat, including the operation of the interception canals, could reduce the amount of water in adjacent marshes through interception of subsurface flow. Loss or alteration of marsh habitat could affect breeding. Maintenance of drain interception canals would have the potential to affect breeding of these species if marsh vegetation develops in the channels, is colonized by these species, and is cleared during the breeding season. Adverse effects due to selenium bio-accumulation could result in nesting failure of nesting marsh species.

Western Yellow-Billed Cuckoo, Southwestern Willow Flycatcher, Least Bell's Vireo, and Other Nesting Riparian Bird Species

Because western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and other nesting riparian bird species could be present in riparian habitat within the Project area, construction and maintenance activities for the aquatic habitat could result in loss of riparian stopover and shelter habitat or disturbance that could cause possible mortality of some individuals or nest failure, though nesting of these listed species has not been confirmed within the Project area. While loss of habitat is anticipated to be minimal, noise and human activity immediately adjacent to the riparian areas could adversely affect breeding for any riparian bird species present in that area if construction activities occur during the riparian bird breeding season (March/April through September).

Mitigation Measures

MM BIO-4: Prepare and implement a desert pupfish protection and relocation plan. This plan will be submitted to CDFW and the USFWS for review and approval prior to any ground disturbing activities[19].

This plan would meet state and federal requirements. This plan applies primarily to construction and maintenance of the drain interception canals but will also apply to pond construction and maintenance activities as noted and will provide:

15. Protocols for preconstruction or premaintenance surveys to assess species presence and spawning within or immediately adjacent to work areas (e.g., in the drains/drain channels, along the shoreline if construction is in the "wet," and around the pond margins for maintenance);
16. Capture (e.g., trapping in the drains for construction and maintenance; or trapping, dip netting, and seining in the ponds if drained or if the water level is dropped) and transport methods to minimize handling and stress as well as exposure to heat, low DO, and crowding;
17. Identification of locations for release of captured desert pupfish;
18. Timing windows when construction or maintenance in shallow shoreline areas and in the drain mouths/channels may be conducted with minimal effects on desert pupfish spawning;
19. Protocols for maintenance activities during construction in the drain interception canals, such as a rotating schedule to ensure only a portion of the channel is maintained at one

[19] BLM approval would also be required for projects on BLM lands

time, clearing only part of the vegetation at one time, and timing of maintenance to avoid peak spawning;

20. The location of saline water intakes will be provided to a CDFW specialist to determine if there is the potential for desert pupfish to occur at that location based on salinity threshold for the species. If there is potential for pupfish to occur, the intake will be screened and a maintenance protocol for the 1/8-inch mesh screen on the saline water intake will be developed and implemented until that location no longer supports the species;
21. Prepare and implement a desert pupfish inoculation plan if pupfish do not naturally repopulate the ponds where suitable habitat for this species is present 1 year after ponds are filled with water; and
22. Adaptive management procedures that include assessment of mitigation measure effectiveness, development of revised measures to improve effectiveness, and similar assessment of revised measures to verify effectiveness.

All desert pupfish mitigation measures will be consistent with the Programmatic Biological Opinion from USFWS for the Project.

MM BIO-5: Prepare and Implement a Program-level Nesting Bird Management Plan.

A Program-level nesting bird management plan and special-status wildlife species survey plan that will include general survey protocols, timing, and avoidance and minimization measures and biologist qualifications will be prepared. This plan will be submitted to CDFW and the USFWS for review and approval prior to any ground-disturbing activities[20].

The plan will include preparation of suitable habitat maps that are updated periodically to focus survey locations as well as survey methods consistent with current science and regulations. Adaptive management measures will also be included in the plan. The following describes the surveys and their timing for various wildlife species.

The Nesting Bird Management Plan will include, at a minimum:

(1) definitions of standard nest buffers for each species or group of species, depending on characteristics and conservation status for each species; (2) a standardized protocol for temporary buffer reductions for each species or group of species, specifying buffer reduction distances depending on bird species, local conditions, and type of proposed activity; (3) a notification procedure for further buffer distance reductions should they become necessary under special circumstances; and (4) a rigorous monitoring protocol to ensure that any project related effects to nesting birds will be documented and reported.

MM BIO-6 Prepare and Implement a Program-level Special-status Wildlife Species Management and Survey Plan.

[20] BLM approval would also be required for projects on BLM lands

This plan will be submitted to CDFW and the USFWS for review and approval prior to any ground disturbing activities and will cover the species discussed below[21]. All activities would be conducted in accordance with CDFW and USFWS permits and regulatory guidance.

Yuma Ridgway's Rail. Yuma Ridgway's rail surveys and breeding avoidance. Preconstruction (or pre-maintenance) focused surveys for Yuma Ridgway's rail will be conducted where Project features are within or immediately adjacent to marsh habitat. Surveys will be conducted using current USFWS protocols and/or methods approved by the CDFW in coordination with the USFWS. If Yuma Ridgway's rails are detected within 500 feet of planned construction or maintenance activity locations, work within that 500-foot buffer will be rescheduled for after the breeding season. All habitat found to be occupied will be avoided from February 16 to September 30 to ensure birds have the ability to fledge and find adjacent habitat. Any activity with potential to alter water levels of marsh habitat within Project footprints will only occur between October 1 and February 15 to ensure birds of all life stages can successfully relocate to nearby marsh habitat.

Flat-Tailed Horned Lizard. Conduct preconstruction (or pre-maintenance) surveys within suitable flat-tailed horned lizard habitat that could be affected by Project activities. If flat-tailed horned lizards are detected, they will be captured by hand and relocated. Surveys will be conducted according to the guidelines included in the Flat-Tailed Horned Lizard Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003) or more updated survey methods if published in the future.

Burrowing Owl. Conduct preconstruction (or pre-maintenance) surveys within suitable burrowing owl habitat that could be affected by Project activities. Surveys will be conducted according to the guidelines included in the Staff Report on Burrowing Owl Mitigation (CDFG 2012) or more updated survey methods published by CDFW in the future. If burrowing owls are detected nesting or wintering within the Project area, a buffer will be established around the active burrow so that direct effects on the burrow will be avoided. For construction during the breeding season (February through August), a buffer of 250 feet around the active nesting burrow will be maintained until breeding is complete and the young have fledged (can fly). For nonbreeding birds, the buffer will be 160 feet. If burrowing owls are detected occupying a burrow within the Project area at any time of year, the owls will be removed using passive methods during the nonbreeding season. Passive removal involves excluding owls from their occupied burrows and creating alternate natural or artificial burrows for them that are at least 160 feet from the area and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair (CDFW 2012). Passive relocation may be implemented during the breeding season if a qualified biologist can verify through noninvasive methods, such as scoping, that breeding has not begun or juveniles are foraging independently and able to fly. The unoccupied burrows would be collapsed in accordance with the current CDFW-approved guidelines (CDFG 2012).

Greater Sandhill Crane, California Black Rail, Western Yellow-Billed Cuckoo, Southwestern Willow Flycatcher, and Least Bell's Vireo. Conduct preconstruction (or premaintenance) focused surveys for greater sandhill crane, California black rail, western

[21] BLM approval would also be required for projects on BLM lands

yellow-billed cuckoo, southwestern willow flycatchers, and least Bell's vireo where Project features are within or immediately adjacent to suitable habitat. Surveys will be conducted by CDFW-approved avian biologists with experience using current USFWS standard protocols or methods and/or methods approved by CDFW. If any of these species or any other special-status bird species are detected within 500 feet of planned construction/maintenance activity locations, work within that distance of the birds will be rescheduled for after the birds complete nesting.

Nesting Birds. Conduct preconstruction (or premaintenance) surveys for all Project features within suitable habitat if construction or maintenance activities will take place during the breeding season. Breeding birds are protected under the Migratory Treaty Bird Act. Surveys will be conducted using methods approved by the CDFW and as described in the Nesting Bird Management Plan.

MM BIO-7: Conduct noise calculations/measurements and implement noise attenuation measures, if needed.

Based on equipment specifications, calculate or measure the distance from equipment where noise would be greater than or equal to 60 A-weighted decibels (dBA) equivalent sound level (L_{eq}). This would also include multiple noise sources, if applicable. Then, use that distance to determine where noise could exceed 60 dBA L_{eq} within known or potential nesting habitat adjacent to the Project footprint. If any such overlaps occur, schedule work to avoid the breeding season in those areas. If construction must occur during the breeding season at those sites, monitor nesting activity to determine if any effects are occurring. If effects are observed, implement noise attenuation measures such as noise walls and hay bales. Monitor the noise and bird behavior to verify that attenuation measures are successful. Develop and implement additional protection measures if monitoring shows that effects are still occurring. If noise would be less than 60 dBA L_{eq}, no additional measures are required. (Note: The threshold of 60 dBA L_{eq} used here to protect bird nesting is a conservative estimate of the level above which adverse effects could occur. The actual threshold varies by species and type of noise.)

MM BIO-8: Design interception canals to minimize alteration of water levels in adjacent marshes.

Design of the interception canals will balance local surface and subsurface water movement so that the amount of water in adjacent marshes is not affected, to the extent feasible.

Residual Effects

Implementation of **MM BIO-4** and **MM BIO-8** would reduce major effects on desert pupfish to minor and short-term because many individuals in the drains would be moved to safe areas and disruption of spawning would be minimized, and interception canals would be designed to maintain water levels.

Implementation of **MM BIO-5**, **MM BIO-6** and **MM BIO-7** would reduce major effects on burrowing owls and nesting marsh and riparian birds, to no effect because effects on nesting and wintering individuals would be avoided.

Implementation of **MM BIO-8** would minimize effects on adjacent marsh habitat for nesting birds.

Effect BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species. The aquatic habitat ponds would provide habitat for desert pupfish, since salinity in the Sea generally exceeds their tolerance, except in areas that are under the influence of fresher water inflows. Isolated populations would remain where the drains and tributaries (rivers and several streams) enter the Sea, but the Proposed Project ponds would provide between 10,790 and 19,062 acres of pond habitat with suitable water quality. Within ponds, desert pupfish could become established in areas that support suitable habitat including extensive shallow areas 2 to 3 feet deep with food, cover, and structure for desert pupfish and invertebrates they prey upon, and a range of salinities. In addition, the interception canals would provide connectivity between the desert pupfish populations within individual agricultural drains. Connectivity between these populations has been lost as the Salton Sea shoreline habitat has become too saline to support desert pupfish and the drains no longer reach the Sea. Habitat connectivity between agricultural drains and habitat creation at the end of drain connections would provide habitat for desert pupfish.

Fish species that are generally not predators of desert pupfish and are either currently present or have been present recently at the Sea are being considered for introduction to constructed ponds to provide prey for piscivorous birds (tilapia, sailfin molly, and threadfin shad). Some fish species that are not generally predators on pupfish such as tilapia, will prey on them when resources are limited.

The aquatic habitat ponds are specifically designed to attract common and special-status aquatic bird species, and the habitat provided would include the shallow water they require for foraging, a food source, and constructed islands that would provide predator protection for nesting upon completion of construction, which would increase the amount of habitat for these species. The addition of islands protected from predators and a food source for piscivorous birds is a beneficial effect of the Project.

Increasing salinity in the Sea may result in changes to the invertebrate food base for bird species during the Project. If, under the No Action Alternative conditions, the increased salinity changes the prey base and the food source is unsuitable, the Project would have a beneficial effect on some bird species by providing foraging opportunities that may not exist under the No Action Alternative.

5.4.2.3 Common Wildlife (including Aquatic Wildlife)

Effect BIO-6: Project construction and operation would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds. Effects of Proposed Project on desert pupfish movement have been addressed in Effect BIO-4. Movement of other aquatic species would not be affected by Project construction and operation. No migratory fish are present, and construction of aquatic habitat ponds and any diversion structures would not interfere with movement of the non-native aquatic species in the Salton Sea or New, Alamo, and Whitewater rivers. No effect would occur.

Construction activities could result in the direct removal of snags that are used by nesting and roosting birds. However, most snags could be avoided and left in place for use by birds until they deteriorate and collapse due to natural processes. Structures would be placed to minimize or avoid effects to the maximum extent feasible. Any snags that could not be avoided would be removed outside of the breeding season.

Mitigation Measures

Implementation of **MM BIO-1** would further reduce effects on nesting and roosting birds.

Effect BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species. The Salton Sea and surrounding region provide nesting, wintering, and migration stopover habitat for hundreds of bird species and thousands of individuals. The Project area provides habitat for a subset of the species and individuals that occur within the greater Salton Sea area. A number of common bird species could be affected by the Project.

Because common species are or could be present nesting and/or foraging for breeding, within or immediately adjacent to the Project footprint, construction and maintenance activities for the ponds, drain interception canals around the Project area, and diversion facilities, if they were to occur during the bird breeding season (March through September), could result in destruction of nests and nest abandonment by adults due to direct disturbance or noise and human activity. During operations, pump stations would provide an isolated structure that could be used by some species of birds for resting, roosting, or even nesting. These structures may include deterrents to bird use. If such deterrents are not used or are not effective, maintenance of the pump stations would intermittently disturb any birds using the structures. Nesting birds are protected under the Migratory Bird Treaty Act and Fish and Game Code Section 3503, and effects on nesting are considered a major effect.

Operation of pump stations would not disrupt breeding of common birds that nest within the Project area because the pump stations would be located adjacent to the seaward side of the outer berm and in the Sea away from any nesting habitat, including the islands within the ponds. Maintenance activities have the potential to disturb bird foraging throughout the Project. Effects on foraging, however, would be minor and short-term because maintenance would occur in only a small portion of the ponds at a time leaving other foraging areas available nearby within the Project area.

Invasive plants and animals could be brought into the project sites on construction and operations/maintenance equipment, including hand tools, as well as vehicles and boots of workers. Invasive terrestrial plants not already present are less likely to be introduced than invasive aquatic plant species. Invasive aquatic animal species are also a concern, particularly in fresh to brackish areas, where they can alter ecological functions by competing for space and food as well as harboring parasites that can affect fish productivity. Several invasive species of snails are known to be present in the Salton Basin and could be transported to the Project site via equipment operated by local contractors as well as local workers. Invasive species from outside the region could also be brought in on equipment from other areas.

Mitigation Measures

For disturbance effects on nesting birds, **MM BIO-5**, **MM BIO-6** and **MM-BIO-7** would apply.

MM BIO-9: Clean equipment prior to site delivery.

Specifications for ensuring that all equipment, personal gear, and materials brought to the site are clean and free of invasive plants (including seeds) and animals will be included in all construction and maintenance contracts. Equipment, gear, and other materials will be inspected to verify that it is clean.

Residual Effects

With implementation of **MM BIO-5**, **MM BIO-6** and **MM-BIO-7**, disturbance of nesting birds would be avoided and therefore no effect would occur.

Implementation of **MM BIO-9** would reduce residual effects of invasive species to minor and short-term by minimizing the potential for introduction of such species.

Effect BIO-8: Project construction and operation would have minor effects on common fish (native and non-native) and wildlife species. Some aquatic organisms could be entrained with water diverted from river diversions and end up in sedimentation basins and aquatic habitat ponds. Since these are freshwater species, many would survive in sedimentation basins, but none are expected to survive in the aquatic habitat ponds, which would be managed at target salinities from 20 to 40 ppt. River flow downstream of any diversions would be reduced which would also reduce the amount (volume) of aquatic habitat. Loss of some individuals or habitat for non-native species would not adversely affect their populations in New, Alamo, or Whitewater rivers, and effects would be minor and short-term. The Proposed Project would generally benefit aquatic species, but some water quality instabilities could occur in some of the ponds, which could affect aquatic organisms. Nutrient loads in river water would sustain high primary productivity (primarily phytoplankton) to support invertebrates and fish. As a result, DO in aquatic habitat ponds could become low at times, such as near dawn, due to respiration of all organisms present. Water temperatures are also expected to fluctuate in shallow ponds on a daily and seasonal basis with thermal stratification occurring at times. The lower thermal and DO tolerances for fish may be exceeded under certain environmental conditions, but not necessarily at the same time, resulting in fish kills that reduce the population size in the ponds where this phenomenon occurs. The lower DO tolerance for some benthic invertebrate species that provide food for fish may also be exceeded at times in some locations, primarily in the deeper portions of some ponds. The duration of such events is expected to be short with rapid recovery of the fish and invertebrate populations. Effects on aquatic species would be minor and short-term, but loss of adequate fish for forage could affect piscivorous birds that rely on the ponds for forage. The level of effect would depend on how extensive the fish die-off was (i.e., what proportion of fish present were killed in a pond and how many ponds were affected). Effects would be further reduced with implementation of **MM BIO-10**.

The Project would result in a temporary disturbance or loss of shallow shoreline habitat where the ponds would be constructed. Individuals of shoreline and shallow water foraging species would still be able to move around (outside) the ponds and forage along the Sea’s other shoreline areas. Although the ponds are not specifically designed for species that forage on invertebrates, the shallow water within them would provide the same amount or more suitable foraging habitat. The part of the existing shoreline not altered by the Project would again be available for nesting and foraging upon completion of construction, and shorelines along the pond berms could provide additional habitat, although it may be rocky rather than sedimentary due to slope protection. For common piscivorous birds, construction would temporarily preclude foraging within the work area, a minor and short-term effect.

Project construction could result in temporary disturbances to terrestrial wildlife habitats through ground disturbance and noise. Construction and maintenance of berms and the drain interception canals would occur in terrestrial habitats, but a small amount of habitat would be affected. Individuals of most species would move out of the disturbance area so that few individuals would be directly affected. Maintenance activities would cause temporary disturbances at specific locations for short periods of time. Once construction or maintenance was completed, wildlife could reestablish use of the area disturbed. No permanent loss of habitat would occur.

Mitigation Measures

MM BIO-10: Water Quality Monitoring. As part of the adaptive management process, water quality will be monitored in the aquatic habitat ponds to ensure temperatures and DO concentrations are maintained which support benthic invertebrates and fish species. The frequency of monitoring will be determined as part of the adaptive management process, as each project is designed, developed and implemented.

Effect BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species. The Proposed Project would benefit fish and aquatic invertebrates by restoring habitat that is more managed than the Sea's and with salinity near that of seawater. Aquatic habitat ponds would be specifically designed for piscivorous birds, and habitat within the ponds would include the shallow water they require for foraging, a food source, and constructed islands that provide predator protection for resting and nesting. The amount of fish available for these birds would increase as the fish populations in the ponds develop and stabilize, and fish density should be higher than prior to Proposed Project construction. Providing forage fish as conditions in the Sea exceed the tolerance of fish currently present and the addition of islands protected from predators are beneficial effects of the Project. Enhancement of existing wetlands would occur as part of the Bombay Beach wetland project, which would improve habitat for species as well.

The Proposed Project would result in a temporary loss of shallow shoreline habitat (approximately same amount as current conditions) but may result in changes to the invertebrate food base for species that rely on invertebrate food. If that occurs, the Project would result in a beneficial effect for the species by providing foraging opportunities that may not exist under future conditions. The Project would replace that temporary loss with equal or greater shoreline and provide a food source that may not exist under the No Action Alternative. For piscivorous birds, the Project would provide a food source as the source in the Salton Sea declines to a very low level with essentially no tilapia except in small areas at the drain and river outflows.

Overall, the Proposed Project could have beneficial effects for piscivorous bird foraging and bird nesting on islands as the Sea recedes and salinity tolerances for resident fish are exceeded.

5.4.3 Alternative 1: Maximum Lake Edge

5.4.3.1 Vegetation

For Alternative 1, vegetation removals would occur over the exposed lakebed and areas on the exposed lakebed that support wetlands where water, mostly from agricultural drains, spreads out over the exposed lakebed as the Sea recedes. As a consequence, this alternative would result in a decrease of herbaceous wetlands and an increase of open water habitat. A complete tabulation of vegetation effects compared to the current condition is provided in Table 5-18. As described above for the Proposed Project, the effect calculations presented in Table 5-17 provide an estimate based on current conditions, but future conditions that will exist at the time of construction will be different. In addition to the vegetation effects presented below, Alternative

1 would result in the creation of 25,690 acres of aquatic habitat to support resources provided by the Open Water habitat type.

Table 5-17 Vegetation Effects of Alternative 1

Vegetation Type	Total Acreage based on Current Condition within the Proposed Project Footprint
Barren Lake Bottom	1,025.2
Chenopod Scrub	66.3
Disturbed/Developed	0.1
Herbaceous Wetland	10.3
Managed Wetlands[1]	0.3
Open Water	24,484.0
Tamarisk Woodland[2]	57.2
Tamarisk Scrub[1]	45.5

[1] MM-BIO-1 requires avoidance of managed wetlands

[2] Riparian vegetation

Effect BIO-1: Project construction and operation would cause a temporary disturbance or loss of riparian habitat and/or sensitive habitat in limited areas to support Project infrastructure or other elements. Similar to the Proposed Project, project construction activities could result in temporary removal of riparian habitat and project areas for which vegetation conflicts with the project (e.g., riparian habitat where ponds are planned) permanent removal would occur. For Alternative 1, this amounts to a total of 102.7 acres of riparian habitat, consisting entirely of non-native tamarisk, which would be a major effect.

Mitigation Measures

MM BIO-1 would apply to Alternative 1.

Residual Effect

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect BIO-2: **The use of drain water to expand upon existing herbaceous wetlands could result in adverse effects to wildlife using these wetlands due to selenium bio-accumulation.** Under this alternative, there is a total of 903 acres of wetland enhancement/expansion which could fall under the Bombay Beach wetlands project. However, agricultural drain water, which could be high in selenium, is not a potential water source that would be used to implement wetland enhancement/expansion at Bombay Beach. This alternative would have no effect due to selenium bio-accumulation in expanded wetland areas.

5.4.3.2 Special-Status Species

Effect BIO-3: Project construction could result in the removal or destruction of special-status plant species occurrences. Similar to the Proposed Project, special-status plant species may occur adjacent to project activities and could be inadvertently impacted by project activities. If removal of an occurrence of a special-status plant species occurs, it would be a major effect.

Mitigation Measures

MM BIO-3 would apply to Alternative 1.

Residual Effects

Implementation of **MM BIO-3** would avoid effects on special-status plant species.

Effect BIO-4: Project construction and operation would affect habitat and individuals of desert pupfish and several special-status terrestrial wildlife species.

Desert pupfish

Similar to the Proposed Project, effects on desert pupfish would occur under this alternative as a result of aquatic habitat pond construction. Alternative 1 includes aquatic habitat pond creation under the following projects: New River Expansion, Alamo River, and North Lake and North Lake Demonstration projects and wetland enhancement/expansion under Bombay Beach Wetland project. No dust suppression projects are proposed under this alternative, so no effects related to water use from agricultural drains for dust suppression projects would occur. Effects on desert pupfish related to pond construction would be the same as described for the Proposed Project, but the amount of shallow shoreline isolated due to construction of ponds under this alternative could result in permanent isolation of 25,690 acres of existing shallow shoreline habitat depending on where ponds are constructed compared to current conditions.

Flat-Tailed Horned Lizard and Other Terrestrial Species

Similar to the Proposed Project, effects on flat-tailed horned lizard and other terrestrial species would occur under this alternative as a result of construction and maintenance of berms and the drain interception canals. Once construction or maintenance was completed, these species could reestablish use of the area disturbed. No permanent loss of habitat would occur. Effects on flat-tailed horned lizard and other terrestrial species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Bird Species

Similar to the Proposed Project, effects on special-status bird species would occur under this alternative as a result of direct habitat disturbance, human presence, and noise. Construction and maintenance of the drain interception canals could result in burrowing owl burrow loss and mortality of some individuals. If construction activities occurred during the burrowing owl breeding season (February through August), burrowing owl adults, eggs, or young could be trapped or killed by grading or excavation activities. Construction and maintenance activities for the aquatic habitat could result in marsh and riparian habitat loss, injury, or mortality of individuals of greater sandhill crane, California black rail, Yuma Ridgway's rail, western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and other nesting marsh and riparian bird species. In addition, construction and maintenance activities for the aquatic habitat, including the operation of the interception canals, could reduce the amount of water in adjacent marshes through interception of subsurface flow, altering marsh habitat. Construction noise and activity, if adjacent to areas occupied by nesting marsh and riparian species, could result in nesting failure if such activities occur during the breeding season (March/April through

August/September). Adverse effects due to selenium bio-accumulation could result in the nesting failure of nesting marsh species. Effects on special-status bird species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

MM BIO-4, **MM BIO-5**, **MM BIO-6**, **MM BIO-7**, and **MM BIO-8** would apply to Alternative 1.

Residual Effects

Implementation of **MM BIO-4** and **MM BIO-8** would reduce major effects on desert pupfish to minor and short-term because many individuals in the drains would be moved to safe areas and disruption of spawning would be minimized, and interception canals would be designed to maintain water levels.

Implementation of **MM BIO-5**, **MM BIO-6**, and **MM-BIO-7** would avoid effects on burrowing owls and nesting marsh and riparian birds, because nesting and wintering individuals would be avoided.

Implementation of **MM BIO-8** would minimize effects on adjacent marsh habitat for nesting birds.

Effect BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species. The aquatic habitat ponds created under this alternative would provide the same beneficial habitat effects for desert pupfish and several special-status bird species as described for the Proposed Project, but the area of aquatic habitat ponds created under this alternative would be greater, at approximately 25,690 acres.

5.4.3.3 Common Wildlife (including Aquatic Wildlife)

Effect BIO-6: Project construction and operation would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds. Effects on movement of fish and wildlife species of the Proposed Project would be the same under this alternative, and no effect would occur.

Similar to the Proposed Project, construction activities could result in the direct removal of snags that are used by nesting and roosting birds. However, most snags could be avoided and left in place for use by birds until they deteriorate and collapse due to natural processes. Structures would be placed to minimize or avoid effects to the maximum extent feasible. Any snags that could not be avoided would be removed outside of the breeding season. Effects on snags for nesting and roosting birds related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

Implementation of **MM BIO-1** would further reduce effects on nesting and roosting birds.

Effect BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species. Similar to the Proposed Project, construction and maintenance activities for the ponds, drain interception canals around the Alternative 1 project area, and diversion facilities, if they were to occur during the bird breeding season (March through September), could result in destruction of nests and nest abandonment. In addition, invasive plants and animals could be brought into the project sites on construction and operations/maintenance equipment, including hand tools, as well as vehicles and boots of workers. Effects on nesting by some common bird species and introduction of invasive species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

For disturbance effects on nesting birds and introduction of invasive species, **MM BIO-5**, **MM BIO-6**, **MM BIO-7,** and **MM BIO-9** would apply.

Residual Effects

With implementation of **MM BIO-5**, **MM BIO-6** and **MM-BIO-7**, disturbance of nesting birds would be avoided and therefore no effect would occur.

Implementation of **MM BIO-9** would reduce residual effects of invasive species to minor and short-term by minimizing the potential for introduction of such species.

Effect BIO-8: Project construction and operation would have minor effects on common fish (native and non-native) and wildlife species. Effects of diversion entrainment, reduced river flows downstream of the diversion, and water quality fluctuations in the aquatic habitat ponds on aquatic biota and temporary construction disturbances of shallow shoreline and terrestrial habitat on birds and terrestrial wildlife would be the same as described under the Proposed Project, and effects would be minor and short-term.

Similar to the Proposed Project, there would be a temporary disturbance or loss of shallow shoreline habitat which would temporarily preclude the foraging of common piscivorous birds within the work area. In addition, Alternative 1 construction could result in temporary disturbances to terrestrial wildlife habitats through ground disturbance and noise. However, no permanent loss of habitat would occur. Effects on wildlife species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project. Effects would be further reduced with implementation of **MM BIO-10**.

Effect BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species. The beneficial effects of aquatic habitat ponds for common fish (native and non-native) and wildlife species would be the same as those described for the Proposed Project, except that a total of 24,787 acres of aquatic habitat ponds would be constructed under this alternative. This alternative also includes the Bombay Beach wetland project (903 acres).

5.4.4 Alternative 2: Enhance and Expand Existing Wetlands

5.4.4.1 Vegetation

For Alternative 2, vegetation clearing would be minimized in much of the project area and existing herbaceous wetlands would be expanded over areas of exposed lakebed by opportunistically enhancing berms and other features to increase the water residency time. This activity would have the effect of increasing vegetation coverage, particularly of riparian and marsh habitat on the exposed lakebed. As a consequence, this alternative would result in an increase of herbaceous wetlands. A complete tabulation of vegetation effects compared to the current condition and to the No Action Alternative is provided in Table 5-18. As described above for the Proposed Project, the effect calculations presented in Table 5-18 provide an estimate based on current conditions, but future conditions that will exist at the time of construction will be different.

Other portions of the project area would experience reductions in riparian habitat and increases in open water habitat, as described similarly for the Proposed Project. This would occur at the New River Expansion, Alamo River Project, and North Lake Project. In addition to the impacted acreage presented below, Alternative 2 would result in the creation or enhancement of 25,690 acres of wetland projects that may support open water, desert wash woodland, herbaceous wetland, and chenopod scrub.

Table 5-18 Vegetation Effects of Alternative 2

Vegetation Type	Total Acreage based on Current Condition within the Proposed Project Footprint
Agriculture	168.6
Barren Non-Lake Bottom	103.9
Barren Lake Bottom	1,390.3
Chenopod Scrub	110.5
Disturbed/Developed	48.9
Dust Suppression Projects	183.6
Herbaceous Wetland	199.5
Managed Wetlands[1]	39.3
Non-native Trees	1.2
Open Water	22,473.8
Tamarisk Woodland[2]	591.6
Tamarisk Scrub[2]	378.7

[1] MM-BIO-1 requires avoidance of managed wetlands

[2] Riparian vegetation

Effect BIO-1: Project construction and operation would cause a temporary disturbance or loss of riparian habitat and/or sensitive habitat in limited areas to support Project infrastructure or other elements. Similar to the Proposed Project, project construction activities could result in temporary removal of riparian habitat and project areas for which vegetation conflicts with the project (e.g., riparian habitat where ponds are planned) permanent removal would occur. For Alternative 2, this amounts to a total of 970.3 acres of riparian habitat, which would be a major effect.

Mitigation Measures

MM BIO-1 would apply to Alternative 2.

Residual Effects

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect BIO-2: **The use of drain water to expand upon existing herbaceous wetlands could result in adverse effects to wildlife using these wetlands due to selenium bio-accumulation.** Under this alternative there is a total of 9,272 acres of wetland enhancement/expansion. Agricultural drain water is a potential water source that could be used to implement wetland enhancement/expansion. Selenium bio-accumulation in these wetlands as a result of agricultural drain water use could result in adverse effects on wildlife using existing wetlands, which would be a major effect.

Mitigation Measures

MM BIO-2: Selenium monitoring. Targeted monitoring of herbaceous wetland habitats where drain water has been used to enhance or expand the existing wetlands will be conducted to ensure selenium levels are not having adverse effects on wildlife. If monitoring shows selenium levels are high, adaptive management measures would be considered, such as different water sources, to maintain selenium levels which are not adverse to wildlife.

Residual Effects

Implementation of **MM BIO-2** would reduce adverse effects to minor and long-term.

5.4.4.2 Special-Status Species

Effect BIO-3: Project construction could result in the removal or destruction of special-status plant species occurrences. Similar to the Proposed Project, special-status plant species may occur adjacent to project activities and could be inadvertently affected by project activities. If removal of an occurrence of a special-status plant species occurs, it would be a major effect.

Mitigation Measures

MM BIO-3 would apply to Alternative 2.

Residual Effects

Implementation of **MM BIO-3** would avoid effects on special-status plant species.

Effect BIO-4: Project construction and operation would affect habitat and individuals of desert pupfish and several special-status terrestrial wildlife species.

Desert pupfish

Similar to the Proposed Project, effects on desert pupfish would occur under this alternative as a result of aquatic habitat pond construction. Alternative 2 includes aquatic habitat pond creation under the following projects: New River Expansion, Alamo River, and North Lake and North Lake Demonstration projects; and wetland enhancement/expansion under Bombay Beach Wetland project. This alternative also includes 9,272 acres of additional wetland enhancement projects. No dust suppression projects are proposed under this alternative, so no effects related to water use from agricultural drains for dust suppression projects would occur. Effects on desert pupfish related to pond construction would be the same as described for the Proposed Project, but the amount of shallow shoreline isolated due to construction of ponds under this alternative could result in permanent isolation of 14,571 acres of existing shallow shoreline habitat depending on where ponds are constructed compared to current conditions.

Flat-Tailed Horned Lizard and Other Terrestrial Species

Similar to the Proposed Project, effects on flat-tailed horned lizard and other terrestrial species would occur under this alternative as a result of construction and maintenance of berms and the drain interception canals. Once construction or maintenance was completed, these species could reestablish use of the area disturbed. No permanent loss of habitat would occur. Effects on flat-tailed horned lizard and other terrestrial species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Bird Species

Similar to the Proposed Project, effects on special-status bird species would occur under this alternative as a result of direct habitat disturbance, human presence, and noise. Construction and maintenance of the drain interception canals could result in burrowing owl burrow loss and mortality of some individuals. If construction activities occurred during the burrowing owl breeding season (February through August), burrowing owl adults, eggs, or young could be trapped or killed by grading or excavation activities. Construction and maintenance activities for the aquatic habitat could result in marsh and riparian habitat loss, injury, or mortality of individuals of greater sandhill crane, California black rail, Yuma Ridgway's rail, western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and other nesting marsh and riparian bird species. In addition, construction and maintenance activities for the aquatic habitat, including the operation of the interception canals, could reduce the amount of water in adjacent marshes through interception of subsurface flow, altering marsh habitat. Construction noise and activity, if adjacent to areas occupied by nesting marsh and riparian species, could result in nesting failure if such activities occur during the breeding season (March/April through August/September). Adverse effects due to selenium bio-accumulation could result in the nesting failure of nesting marsh species. Effects on special-status bird species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

MM BIO-4, **MM BIO-5**, **MM BIO-6** and **MM-BIO-7**, and **MM BIO-8** would apply to Alternative 2.

Residual Effects

Implementation of **MM BIO-4** and **MM BIO-8** would reduce major effects on desert pupfish to minor and short-term because many individuals in the drains would be moved to safe areas and disruption of spawning would be minimized, and interception canals would be designed to maintain water levels.

Implementation of **MM BIO-5**, **MM BIO-6**, and **MM-BIO-7** would avoid effects on burrowing owls and nesting marsh and riparian birds, because nesting and wintering individuals would be avoided.

Implementation of **MM BIO-8** would minimize effects on adjacent marsh habitat for nesting birds.

Effect BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species. The aquatic habitat ponds created under this alternative would provide the same beneficial habitat effects for desert pupfish as described for the Proposed

Project, but the area of aquatic habitat ponds created under this alternative would be greater, at approximately 25,690 acres.

5.4.4.3 Common Wildlife (including Aquatic Wildlife)

Effect BIO-6: Project construction and operation would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds. Effects on movement of fish and wildlife species of the Proposed Project would be the same under this alternative, and no effect would occur.

Similar to the Proposed Project, construction activities could result in the direct removal of snags that are used by nesting and roosting birds. However, most snags could be avoided and left in place for use by birds until they deteriorate and collapse due to natural processes. Structures would be placed to minimize or avoid effects to the maximum extent feasible. Any snags that could not be avoided would be removed outside of the breeding season. Effects on snags for nesting and roosting birds related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

Implementation of **MM BIO-1** would further reduce effects on nesting and roosting birds.

Effect BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species. Similar to the Proposed Project, construction and maintenance activities for the ponds, drain interception canals around the Alternative 2 project area, and diversion facilities, if they were to occur during the bird breeding season (March through September), could result in destruction of nests and nest abandonment. In addition, invasive plants and animals could be brought into the project sites on construction and operations/maintenance equipment, including hand tools, as well as vehicles and boots of workers. Effects on nesting by some common bird species and introduction of invasive species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

For disturbance effects on nesting birds and introduction of invasive species, **MM BIO-5**, **MM BIO-6,** and **MM-BIO-7**, and **MM BIO-9** would apply.

Residual Effects

With implementation of **MM BIO-5**, **MM BIO-6,** and **MM-BIO-7**, disturbance of nesting birds would be avoided and therefore no effect would occur.

Implementation of **MM BIO-9** would reduce residual effects of invasive species to minor and short-term by minimizing the potential for introduction of such species.

Effect BIO-8: Project construction and operation would have minor effects on common fish (native and non-native) and wildlife species. Effects of diversion entrainment, reduced river flows downstream of the diversion, and water quality fluctuations in the aquatic habitat ponds on aquatic biota and temporary construction disturbances of shallow shoreline and terrestrial habitat on birds and terrestrial wildlife would be the same as described under the Proposed Project, and effects would be minor and short-term.

Similar to the Proposed Project, there would be a temporary disturbance or loss of shallow shoreline habitat which would temporarily preclude the foraging of common piscivorous birds within the work area. In addition, Alternative 2 construction could result in temporary disturbances to terrestrial wildlife habitats through ground disturbance and noise. However, no permanent loss of habitat would occur. Effects on wildlife species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project. Effects would be further reduced with implementation of **MM BIO-10**.

Effect BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species. The beneficial effects of aquatic habitat ponds for common fish (native and non-native) and wildlife species would be the same as those described for the Proposed Project, except that a total of 14,571 acres of aquatic habitat ponds would be constructed under this alternative. In addition to aquatic habitat ponds, there would be 10,265 acres of wetland habitat enhancement (including the Bombay Beach wetland project) under this alternative which would also benefit fish species.

5.4.5 Alternative 3: North End/South End Aquatic Habitat

5.4.5.1 Vegetation

Under Alternative 3, the changes in vegetation would be similar to Alternative 1 except that these projects would be concentrated only at the north and south end of the Sea. As described for Alternative 1, riparian habitat would decrease and aquatic habitat would increase. A complete tabulation of vegetation effects compared to the current condition is provided in Table 5-19. As described above for the Proposed Project, the effect calculations presented in Table 5-19 provide an estimate based on current conditions, but future conditions that will exist at the time of construction will be different. In addition to the impacted acreage presented below, Alternative 3 would result in the creation of 26,690 acres to support Open Water habitat resources.

Table 5-19 Vegetation Effects of Alternative 3

Vegetation Type	Total Acreage based on Current Condition within the Proposed Project Footprint
Barren Non-Lake Bottom	3.2
Barren Lake Bottom	326.4
Chenopod Scrub	3.2
Desert Wash Woodland[1]	2.3
Herbaceous Wetland	77.9
Open Water	25,121.5
Tamarisk Woodland[1]	137.8
Tamarisk Scrub[1]	16.2

[1] Riparian vegetation

Effect BIO-1: Project construction and operation would cause a temporary disturbance or loss of riparian habitat and/or sensitive habitat in limited areas to support Project infrastructure or other elements. Similar to the Proposed Project, project construction activities could result in temporary removal of riparian habitat and project areas for which vegetation conflicts with the project (e.g., riparian habitat where ponds are planned) permanent removal would occur. For Alternative 3, this amounts to a total of 156.3 acres of riparian habitat, which would be a major effect.

Mitigation Measures

MM BIO-1 would apply to Alternative 3.

Residual Effects

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect BIO-2: **The use of drain water to expand upon existing herbaceous wetlands could result in adverse effects to wildlife using these wetlands due to selenium bio-accumulation.** This alternative does not include any projects which would expand upon existing herbaceous wetlands which would require use of agricultural drain water. Therefore, there would be no effect.

5.4.5.2 Special-Status Species

Effect BIO-3: Project construction could result in the removal or destruction of special-status plant species occurrences. Similar to the Proposed Project, special-status plant species may occur adjacent to project activities and could be inadvertently impacted by project activities. If removal of an occurrence of a special-status plant species occurs, it would be a major effect.

Mitigation Measures

MM BIO-3 would apply to Alternative 3.

Residual Effects

Implementation of **MM BIO-3** would avoid effects on special-status plant species.

Effect BIO-4: Project construction and operation would affect habitat and individuals of desert pupfish and several special-status terrestrial wildlife species.

Desert pupfish

Similar to the Proposed Project, effects on desert pupfish would occur under this alternative as a result of aquatic habitat construction. Alternative 3 includes aquatic habitat pond creation under the following projects: New River Expansion, Alamo River, and North Lake and North Lake Demonstration projects. No dust suppression projects are proposed under this alternative, so no effects related to water use from agricultural drains for dust suppression projects would occur. Effects on desert pupfish related to pond construction would be the same as described for the Proposed Project, but the amount of shallow shoreline isolated due to construction of ponds under this alternative could result in permanent isolation of 25,690 acres of existing shallow shoreline habitat depending on where ponds are constructed compared to current conditions.

Flat-Tailed Horned Lizard and Other Terrestrial Species

Similar to the Proposed Project, effects on flat-tailed horned lizard and other terrestrial species would occur under this alternative as a result of construction and maintenance of berms and the drain interception canals. Once construction or maintenance was completed, these species could reestablish use of the area disturbed. No permanent loss of habitat would occur. Effects on flat-tailed horned lizard and other terrestrial species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Bird Species

Similar to the Proposed Project, effects on special-status bird species would occur under this alternative as a result of direct habitat disturbance, human presence, and noise. Construction and maintenance of the drain interception canals could result in burrowing owl burrow loss and mortality of some individuals. If construction activities occurred during the burrowing owl breeding season (February through August), burrowing owl adults, eggs, or young could be trapped or killed by grading or excavation activities. Construction and maintenance activities for the aquatic habitat could result in marsh and riparian habitat loss, injury, or mortality of individuals of greater sandhill crane, California black rail, Yuma Ridgway's rail, western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and other nesting marsh and riparian bird species. In addition, construction and maintenance activities for the aquatic habitat, including the operation of the interception canals, could reduce the amount of water in adjacent marshes through interception of subsurface flow, altering marsh habitat. Construction noise and activity, if adjacent to areas occupied by nesting marsh and riparian species, could result in nesting failure if such activities occur during the breeding season (March/April through August/September). Adverse effects due to selenium bio-accumulation could result in the nesting failure of nesting marsh species. Effects on special-status bird species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

Mitigation Measures **MM BIO-4**, **MM BIO-5**, **MM BIO-6**, **MM BIO-7**, and **MM BIO-8** would apply to Alternative 3.

Residual Effects

Implementation of **MM BIO-4** and **MM BIO-8** would reduce major effects on desert pupfish to minor and short-term because many individuals in the drains would be moved to safe areas and disruption of spawning would be minimized, and interception canals would be designed to maintain water levels in existing wetlands.

Implementation of **MM BIO-5**, **MM BIO-6**, **MM BIO-7** would avoid effects on burrowing owls and nesting marsh and riparian birds, because nesting and wintering individuals would be avoided.

Implementation of **MM BIO-8** would minimize effects on adjacent marsh habitat for nesting birds.

Effect BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species. The aquatic habitat ponds created under this alternative would provide the same beneficial habitat effects for desert pupfish and several special-status bird species as described for the Proposed Project, but the area of aquatic habitat ponds created under this alternative would be greater, at approximately 25,690 acres.

5.4.5.3 Common Wildlife (including Aquatic Wildlife)

Effect BIO-6: Project construction and operation would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds. Effects on movement of fish and wildlife species of the Proposed Project would be the same under this alternative, and no effect would occur.

Similar to the Proposed Project, construction activities could result in the direct removal of snags that are used by nesting and roosting birds. However, most snags could be avoided and left in place for use by birds until they deteriorate and collapse due to natural processes. Structures would be placed to minimize or avoid effects to the maximum extent feasible. Any snags that could not be avoided would be removed outside of the breeding season. Effects on snags for nesting and roosting birds related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

Implementation of **MM BIO-1** would further reduce effects on nesting and roosting birds.

Effect BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species. Similar to the Proposed Project, construction and maintenance activities for the ponds, drain interception canals around the Alternative 4 project area, and diversion facilities, if they were to occur during the bird breeding season (March through September), could result in destruction of nests and nest abandonment. In addition, invasive plants and animals could be brought into the project sites on construction and operations/maintenance equipment, including hand tools, as well as vehicles and boots of workers. Effects on nesting by some common bird species and introduction of invasive species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

For disturbance effects on nesting birds and introduction of invasive species, **MM BIO-5**, **MM BIO-6**, **MM BIO-7**, and **MM BIO-9** would apply.

Residual Effects

With implementation of **MM BIO-5**, **MM BIO-6,** and **MM-BIO-7**, disturbance of nesting birds would be avoided and therefore no effect would occur.

Implementation of **MM BIO-9** would reduce residual effects of invasive species to minor and short-term by minimizing the potential for introduction of such species.

Effect BIO-8: Project construction and operation would have minor effects on common fish (native and non-native) and wildlife species. Effects of diversion entrainment, reduced river flows downstream of the diversion, and water quality fluctuations in the aquatic habitat ponds on aquatic biota and temporary construction disturbances of shallow shoreline and terrestrial habitat on birds and terrestrial wildlife would be the same as described under the Proposed Project, and effects would be minor and short-term.

Similar to the Proposed Project, there would be a temporary disturbance or loss of shallow shoreline habitat which would temporarily preclude the foraging of common piscivorous birds within the work area. In addition, Alternative 3 construction could result in temporary disturbances to terrestrial wildlife habitats through ground disturbance and noise. However, no permanent loss of habitat would occur. Effects on wildlife species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project. Effects would be further reduced with implementation of **MM BIO-10**.

Effect BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species. The beneficial effects of aquatic habitat ponds for common fish (native and non-native) and wildlife species would be the same as those described for the Proposed Project, except that a total of 25,690 acres of aquatic habitat ponds would be constructed under this alternative.

5.4.6 Alternative 4: Water Conservation

5.4.6.1 Vegetation

Under Alternative 4, riparian vegetation would expand over the exposed lakebed, similarly as described for Alternative 2. In addition, dust suppression activities would occur on areas of the exposed lakebed that are unvegetated. A complete tabulation of vegetation effects compared to the current condition and to the No Action Alternative is provided in Table 5-20. As described above for the Proposed Project, the effect calculations presented in Table 5-17 provide an estimate based on current conditions, but future conditions that will exist at the time of construction will be different. In addition to the impacted acreage presented below, Alternative 4 would result in the creation or enhancement of 10,790 acres of wetlands that could include open water, desert wash woodland, herbaceous wetland, and chenopod scrub. An additional 14,900 acres of dust suppression projects may support habitat that would have ecological benefits such as chenopod scrub.

Table 5-20 Vegetation Effects of Alternative 4

Vegetation Type	Total Acreage based on Current Condition within the Proposed Project Footprint
Barren Non-Lake Bottom	89.2
Barren Lake Bottom	3,297.4
Chenopod Scrub	597.4
Creosote Bush Scrub	45.9
Desert Wash Woodland[1]	0.1
Disturbed/Developed	118.5
Dust Suppression Projects	285.0
Herbaceous Wetland	249.3
Managed Wetlands[2]	293.3
Open Water	19,682.6
Tamarisk Woodland[1]	536.6

Vegetation Type	Total Acreage based on Current Condition within the Proposed Project Footprint
Tamarisk Scrub[1]	494.6

[1] Riparian vegetation

[2] MM-BIO-1 requires avoidance of managed wetlands

Effect BIO-1: Project construction and operation would cause a temporary disturbance or loss of riparian habitat and/or sensitive habitat in limited areas to support Project infrastructure or other elements. Similar to the Proposed Project, construction activities could result in temporary removal of riparian habitat and project areas for which vegetation conflicts with the project permanent removal would occur. For Alternative 4, this amounts to a total of 1,031.2 acres of riparian habitat, which would be a major effect.

Mitigation Measures

MM BIO-1 would apply to Alternative 4.

Residual Effects

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect BIO-2: **The use of drain water to expand upon existing herbaceous wetlands could result in adverse effects to wildlife using these wetlands due to selenium bio-accumulation.** Under this alternative there is a total of 10,790 acres of enhancing and expanding existing wetlands. Agricultural drain water is a potential water source that could be used to implement wetland enhancement/expansion. Selenium bio-accumulation in these wetlands as a result of agricultural drain water use could result in adverse effects on wildlife using existing wetlands, which would be a major effect.

Mitigation Measures

MM BIO-2 is applicable to this alternative.

Residual Effects

Implementation of **MM BIO-2** would reduce adverse effects resulting in a minor and long-term effect.

5.4.6.2 Special-Status Species

Effect BIO-3: Project construction could result in the removal or destruction of special-status plant species occurrences. Similar to the Proposed Project, special-status plant species may occur adjacent to project activities and could be inadvertently impacted by construction activities. If removal of an occurrence of a special-status plant species occurs, it would be a major effect.

Mitigation Measures

MM BIO-3 would apply to Alternative 4.

Residual Effects

Implementation of **MM BIO-3** would avoid effects on special-status plant species.

Effect BIO-4: Project construction and operation would affect habitat and individuals of desert pupfish and several special-status terrestrial wildlife species.

Desert pupfish

This alternative includes 10,790 acres of enhancing and expanding existing wetland areas. Desert pupfish are known to occur within the San Felipe Creek and Hot Mineral Springs Wash drainages and many agricultural drains. Habitat projects under this alternative could be located in areas where desert pupfish have been recorded in drainages or agricultural drains, including Hot Mineral Springs Wash near the Bombay Wetlands project and areas at the north end of the Sea. Dust suppression projects could be located near San Felipe Creek. Effects discussed for stormwater spreading under the Proposed Project would be the same for this alternative. Dust suppression and habitat project areas could be located on the south end of the Sea and could affect desert pupfish if present in agricultural drains. If present, effects on desert pupfish could occur as a result of project activities including enhancement of existing wetlands. Dust suppression opportunity areas that use agricultural drain water for water-reliant methods have the potential to affect desert pupfish, if present at specific project locations.

Flat-Tailed Horned Lizard and Other Terrestrial Species

Similar to the Proposed Project, effects on flat-tailed horned lizard and other terrestrial species would occur under this alternative as a result of wetland enhancement and dust suppression activities. Once construction or maintenance was completed, these species could reestablish use of the area disturbed. No permanent loss of habitat would occur. Effects on flat-tailed horned lizard and other terrestrial species related to wetland enhancement and dust suppression activities would be the same as described for the Proposed Project.

Bird Species

Similar to the Proposed Project, effects on special-status bird species would occur under this alternative as a result of direct habitat disturbance, human presence, and noise. Construction and maintenance of the drain interception canals and dust suppression projects could result in burrowing owl burrow loss and mortality of some individuals. If construction activities occurred during the burrowing owl breeding season (February through August), burrowing owl adults, eggs, or young could be trapped or killed by grading or excavation activities. Construction and maintenance activities for the existing wetlands could result in marsh and riparian habitat loss, injury, or mortality of individuals of greater sandhill crane, California black rail, Yuma Ridgway's rail, western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and other nesting marsh and riparian bird species. In addition, construction and maintenance activities for the aquatic habitat, including the operation of the interception canals, could reduce the amount of water in adjacent marshes through interception of subsurface flow, altering marsh habitat. Construction noise and activity, if adjacent to areas occupied by nesting marsh and riparian species, could result in nesting failure if such activities occur during the breeding season (March/April through August/September). Adverse effects due to selenium bio-accumulation could result in the nesting failure of nesting marsh species. Effects on special-status bird species related to wetland enhancement activities would be the same as described for the Proposed Project.

Mitigation Measures

MM BIO-4, **MM BIO-5**, **MM BIO-6**, **MM BIO-7**, **and MM BIO-8** would apply to Alternative 4.

Residual Effects

Implementation of **MM BIO-4** and **MM BIO-8** would reduce major effects on desert pupfish to minor and short-term because many individuals in the drains would be moved to safe areas and disruption of spawning would be minimized, and interception canals would be designed to maintain water levels.

Implementation of **MM BIO-5**, **MM BIO-6**, and **MM BIO-7** would avoid effects on burrowing owls and nesting marsh and riparian birds, because nesting and wintering individuals would be avoided.

Implementation of **MM BIO-8** would minimize effects on adjacent marsh habitat for nesting birds.

Effect BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species. The wetland enhancement could provide similar beneficial habitat effects for desert pupfish and several special status bird species as described for the Proposed Project, but the area of wetland enhancement under this alternative would only be approximately 10,790 acres.

5.4.6.3 Common Wildlife (including Aquatic Wildlife)

Effect BIO-6: Project construction and operation would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds. Effects of Alternative 4 on desert pupfish movement have been addressed in Effect BIO-4. Movement of other aquatic species would not be affected by construction and operation. No migratory fish are present, and wetland enhancement would not interfere with movement of the non-native aquatic species in the Salton Sea or New, Alamo, and Whitewater rivers. No effects on aquatic species movement would occur.

Similar to the Proposed Project, wetland enhancement activities could result in the direct removal of snags that are used by nesting and roosting birds. However, most snags could be avoided and left in place for use by birds until they deteriorate and collapse due to natural processes. Structures would be placed to minimize or avoid effects to the maximum extent feasible. Any snags that could not be avoided would be removed outside of the breeding season. Effects on snags for nesting and roosting birds related to wetland enhancement activities would be the same as described for the Proposed Project.

Mitigation Measures

Implementation of **MM BIO-1** would further reduce effects on nesting and roosting birds.

Effect BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species. Similar to the Proposed Project, wetland enhancement activities around the Alternative 4 project area, if they were to occur during the bird breeding season (March through September), could result in destruction of nests and nest abandonment. In addition, invasive plants and animals could be brought into the project sites on construction and operations/maintenance equipment, including hand tools, as well as vehicles and boots of workers. Effects on nesting by some common bird species and introduction of invasive species related to wetland enhancement activities would be the same as described for the Proposed Project.

Mitigation Measures

For disturbance effects on nesting birds and introduction of invasive species, **MM BIO-5**, **MM BIO-6,** and **MM-BIO-7**, and **MM BIO-9** would apply.

Residual Effects

With implementation of **MM BIO-5**, **MM BIO-6,** and **MM-BIO-7**, disturbance of nesting birds would be avoided and therefore no effect would occur.

Implementation of **MM BIO-9** would reduce residual effects of invasive species to minor and short-term by minimizing the potential for introduction of such species.

Effect BIO-8: Project construction and operation would have minor effects on common fish (native and non-native) and wildlife species. During construction to enhance existing wetlands under this alternative, there could be potential for temporary disruption of aquatic species and their habitat within the project areas. However, any effects would be temporary and this would improve long-term habitat conditions.

Similar to the Proposed Project, there would be a temporary disturbance or loss of shallow shoreline habitat which would temporarily preclude the foraging of common piscivorous birds within the work area. In addition, Alternative 4 wetland enhancement activities could result in temporary disturbances to terrestrial wildlife habitats through ground disturbance and noise. However, no permanent loss of habitat would occur. Effects on wildlife species related to wetland enhancement activities would be the same as described for the Proposed Project.

Effect BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species. This alternative does not include creation of aquatic habitat ponds. There would be 10,790 acres of wetland habitat enhancement under Alternative 4, which would benefit any common fish (native and non-native) and wildlife species present in the existing wetlands. Expansion of existing wetlands would also provide additional habitat under this alternative and potentially habitat connectivity. This would be a beneficial effect.

5.4.7 Alternative 5: Maximum Build Out

5.4.7.1 Vegetation

Under Alternative 5, effects would be similar as for the Proposed Project, except that while the Proposed Project effects tabulated in Table 5-15 represent maximum for any habitat, under Alternative 5, this information represents the complete build out for the project (i.e., all areas would be built). A complete tabulation of vegetation effects compared to the current condition and to the No Action Alternative is provided in Table 5-21. As described above for the Proposed Project, the effect calculations presented in Table 5-17 provide an estimate based on current conditions, but future conditions that will exist at the time of construction will be different. In addition to the impacted acreage presented below, Alternative 5 would result in the creation of between 10,790 and 48,707 acres of aquatic habitat and dust suppression restoration projects that could include open water, desert wash woodland, herbaceous wetland, and chenopod scrub. Areas not developed for aquatic habitat projects may be developed for dust suppression projects which may have habitat benefits, such as the creation of additional chenopod scrub.

Table 5-21 Vegetation Effects of Alternative 5

Vegetation Type	Total Acreage based on Current Condition within the Proposed Project Footprint
Agriculture	0.2
Barren Non-Lake Bottom	146.9
Barren Lake Bottom	4,441.9
Chenopod Scrub	946.9
Creosote Bush Scrub	45.9
Desert Wash Woodland[1]	0.1
Disturbed/Developed	68.8
Dust Suppression Projects	414.2
Herbaceous Wetland	765.9
Managed Wetlands	307.3
Open Water	39,984.6
Tamarisk Woodland[1]	900.2
Tamarisk Scrub[1]	685.5

[1] Riparian vegetation

Effect BIO-1: Project construction and operation would cause a temporary disturbance or loss of riparian habitat and/or sensitive habitat in limited areas to support Project infrastructure or other elements. Similar to the Proposed Project, project construction activities could result in temporary removal of riparian habitat and project areas for which vegetation conflicts with the project (e.g., riparian habitat where ponds are planned) permanent removal would occur. For Alternative 5, this amounts to a total of 1,585.7 acres of riparian habitat, which would be a major effect.

Mitigation Measures

MM BIO-1 would apply to Alternative 5.

Residual Effects

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect BIO-2: **The use of drain water to expand upon existing herbaceous wetlands could result in adverse effects to wildlife using these wetlands due to selenium bio-accumulation.**

Under this alternative, there is a total of 903 acres of wetland enhancement/expansion which could fall under the Bombay Beach wetlands project. However, agricultural drain water, which could be high in selenium, is not a potential water source that would be used to implement wetland enhancement/expansion at Bombay Beach. This alternative would have no effect due to selenium bio-accumulation in expanded wetland areas.

5.4.7.2 Special-Status Species

Effect BIO-3: Project construction could result in the removal or destruction of special-status plant species occurrences. Similar to the Proposed Project, special-status plant species may occur adjacent to project activities and could be inadvertently impacted by project activities. If removal of an occurrence of a special-status plant species occurs, it would be a major effect.

Mitigation Measures

MM BIO-3 would apply to Alternative 5.

Residual Effects

Implementation of **MM BIO-3** would avoid effects on special-status plant species.

Effect BIO-4: Project construction and operation would affect habitat and individuals of desert pupfish and several special-status terrestrial wildlife species.

Desert pupfish

Similar to the Proposed Project, effects on desert pupfish would occur under this alternative, which is the maximum possible build out and includes the largest project area. This alternative includes all the opportunity areas in the Proposed Project along with additional areas near New River and Alamo River and additional future dust suppression project areas. The total area that could be developed as aquatic habitat around the Sea is approximately 23,831 acres. If present, effects on desert pupfish could occur as a result of project activities including construction of habitat ponds and enhancement of existing wetlands at these locations similar to those described under the Proposed Project. Opportunity areas identified as suitable for dust suppression projects that use agricultural drain water for water-reliant methods have the potential to affect desert pupfish, if present at specific project locations. Effects discussed for stormwater spreading under the Proposed Project would be the same for this alternative.

Flat-Tailed Horned Lizard and Other Terrestrial Species

Similar to the Proposed Project, effects on flat-tailed horned lizard and other terrestrial species would occur under this alternative as a result of construction and maintenance of berms and the drain interception canals. Once construction or maintenance was completed, these species could reestablish use of the area disturbed. No permanent loss of habitat would occur. Effects on flat-tailed horned lizard and other terrestrial species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Bird Species

Similar to the Proposed Project, effects on special-status bird species would occur under this alternative as a result of direct habitat disturbance, human presence, and noise. Construction and maintenance of the drain interception canals, and dust suppression projects could result in burrowing owl burrow loss and mortality of some individuals. If construction activities occurred during the burrowing owl breeding season (February through August), burrowing owl adults, eggs, or young could be trapped or killed by grading or excavation activities. Construction and maintenance activities for the aquatic habitat could result in marsh and riparian habitat loss, injury, or mortality of individuals of greater sandhill crane, California black rail, Yuma Ridgway's rail, western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and other nesting marsh and riparian bird species. In addition, construction and maintenance activities for the aquatic habitat, including the operation of the interception canals, could reduce the amount of water in adjacent marshes through interception of subsurface flow, altering marsh habitat. Construction noise and activity, if adjacent to areas occupied by nesting marsh and riparian species, could result in nesting failure if such activities occur during the breeding season (March/April through August/September). Adverse effects due to selenium bio-accumulation could result in nesting failure of nesting marsh species. Effects on special-status bird species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

Mitigation Measures **MM BIO-4**, **MM BIO-5**, **MM BIO-6**, **MM-BIO-7**, and **MM BIO-8** would apply to Alternative 5.

Residual Effects

Implementation of **MM BIO-4** and **MM BIO-8** would reduce major effects on desert pupfish to minor and short-term because many individuals in the drains would be moved to safe areas and disruption of spawning would be minimized, and interception canals would be designed to maintain water levels.

Implementation of **MM BIO-5**, **MM BIO-6**, **MM BIO-7** would avoid effects on burrowing owls and nesting marsh and riparian birds because nesting and wintering individuals would be avoided.

Implementation of **MM BIO-8** would minimize effects on adjacent marsh habitat for nesting birds.

Effect BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species. The aquatic habitat ponds created under this alternative would provide the same beneficial habitat effects for desert pupfish and several special-status bird species as described for the Proposed Project, but the area of aquatic habitat ponds created under this alternative would be greater, at approximately 24,704 acres.

5.4.7.3 Common Wildlife (including Aquatic Wildlife)

Effect BIO-6: Project construction and operation would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds. Effects on movement of fish and wildlife species of the Proposed Project would be the same under this alternative, and no effect would occur.

Similar to the Proposed Project, construction activities could result in the direct removal of snags that are used by nesting and roosting birds. However, most snags could be avoided and left in place for use by birds until they deteriorate and collapse due to natural processes. Structures would be placed to minimize or avoid effects to the maximum extent feasible. Any snags that could not be avoided would be removed outside of the breeding season. Effects on snags for nesting and roosting birds related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

Implementation of **MM BIO-1** would further reduce effects on nesting and roosting birds.

Effect BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species. Similar to the Proposed Project, construction and maintenance activities for the ponds, drain interception canals around the Alternative 5 project area, and diversion facilities, if they were to occur during the bird breeding season (March through September), could result in destruction of nests and nest abandonment. In addition, invasive plants and animals could be brought into the project sites on construction and operations/maintenance equipment, including hand tools, as well as vehicles and boots of workers. Effects on nesting by some common bird species and introduction of invasive species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

For disturbance effects on nesting birds and introduction of invasive species, **MM BIO-5**, **MM BIO-6**, **MM BIO-7**, and **MM BIO-9** would apply.

Residual Effects

With implementation of **MM BIO-5**, **MM BIO-6,** and **MM-BIO-7**, disturbance of nesting birds would be avoided and therefore no effect would occur.

Implementation of **MM BIO-9** would reduce residual effects of invasive species to minor and short-term by minimizing the potential for introduction of such species.

Effect BIO-8: Project construction and operation would have minor effects on common fish (native and non-native) and wildlife species. Effects of diversion entrainment, reduced river flows downstream of the diversion, and water quality fluctuations in the aquatic habitat ponds on aquatic biota and temporary construction disturbances of shallow shoreline and terrestrial habitat on birds and terrestrial wildlife would be the same as described under the Proposed Project, and effects would be minor and short-term.

Similar to the Proposed Project, there would be a temporary disturbance or loss of shallow shoreline habitat which would temporarily preclude the foraging of common piscivorous birds within the work area. In addition, Alternative 5 construction could result in temporary disturbances to terrestrial wildlife habitats through ground disturbance and noise. However, no permanent loss of habitat would occur. Effects on wildlife species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project. Effects would be further reduced with implementation of **MM BIO-10**.

Effect BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species. The beneficial effects of aquatic habitat ponds for common fish (native and non-native) and wildlife species would be the same as those described for the Proposed Project, except that a total of 23,831 acres of aquatic habitat ponds would be constructed under this alternative, which is the maximum build-out alternative.

5.4.8 Alternative 6: No Federal Action

5.4.8.1 Vegetation

Under Alternative 6, vegetation removals would be limited by property ownership and vegetation within Corps regulatory authority. As a consequence, vegetation removals would be limited to upland vegetation and would likely be limited in extent.

Effect BIO-2: **The use of drain water to expand upon existing herbaceous wetlands could result in adverse effects to wildlife using these wetlands due to selenium bio-accumulation.** Under this alternative, no wetland enhancement/expansion would occur and therefore there would be no effect.

5.4.8.2 Special-Status Species

Effect BIO-3: Project construction could result in the removal or destruction of special-status plant species occurrences. Similar to the Proposed Project, special-status plant species may occur adjacent to project activities and could be inadvertently impacted by project activities. If removal of an occurrence of a special-status plant species occurs, it would be a major effect.

Mitigation Measures

MM BIO-3 would apply to Alternative 6.

Residual Effects

Implementation of **MM BIO-3** would avoid effects on special-status plant species.

Effect BIO-4: Project construction and operation would affect habitat and individuals of desert pupfish and several special-status terrestrial wildlife species.

Desert pupfish

Under Alternative 6, effects to aquatic resources would be avoided. Therefore, no effects would occur on desert pupfish and no mitigation measures are required.

Flat-Tailed Horned Lizard and Other Terrestrial Species

Effects on flat-tailed horned lizard and other terrestrial species could occur under this alternative as a result of construction and maintenance activities within upland areas. Once construction or maintenance was completed, these species could reestablish use of the area disturbed. No permanent loss of habitat would occur.

Bird Species

Under Alternative 6, no projects within wetlands or that would have an effect on federally listed species would occur. Therefore, no effects would occur on greater sandhill crane, California black rail, Yuma Ridgway's rail, western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and other nesting marsh and riparian bird species.

Because the burrowing owl is or could be present within upland areas, construction and maintenance activities could result in burrow loss and mortality of some individuals. If construction activities occurred during the burrowing owl breeding season (February through August), burrowing owl adults, eggs, or young could be trapped or killed by grading or excavation activities. Construction noise and activity, if adjacent to areas occupied by nesting burrowing owls, could result in nesting failure. If construction or maintenance activities occurred during the burrowing owl wintering season and burrowing owls occupied a burrow within the area, the adults may be trapped, injured, or killed. Once construction or maintenance was completed, burrowing owls could reestablish use of the area disturbed. No permanent loss of habitat would occur.

Mitigation Measures

Mitigation Measures **MM BIO-5**, **MM BIO-6**, and **MM BIO-7** would apply to Alternative 6.

Residual Effects

Implementation of **MM BIO-5**, **MM BIO-6,** and **MM-BIO-7** would avoid effects on burrowing owls and nesting marsh and riparian birds, because nesting and wintering individuals would be avoided.

Effect BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species. Under Alternative 6, effects to aquatic resources would be avoided and thus no additional habitat for desert pupfish or any special-status bird species would be provided. Therefore, no effect would occur on desert pupfish or any special-status bird species and no mitigation measures are required.

5.4.8.3 Common Wildlife (including Aquatic Wildlife)

Effect BIO-6: Project construction and operation would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds. Aquatic resources would be avoided under this alternative. No construction would occur within aquatic habitat, and therefore no effect on movement of fish species would occur.

Construction and maintenance activities in upland areas could result in the direct removal of snags that are used by nesting and roosting birds. However, most snags could be avoided and left in place for use by birds until they deteriorate and collapse due to natural processes. Structures would be placed to minimize or avoid effects to the maximum extent feasible. Any snags that could not be avoided would be removed outside of the breeding season. Effects on snags for nesting and roosting birds related to upland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

Implementation of **MM BIO-1** would further reduce effects on nesting and roosting birds.

Effect BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species. Construction and maintenance activities in upland areas around the Alternative 6 project area, if they were to occur during the bird breeding season (March through September), could result in destruction of nests and nest abandonment. In addition, invasive plants and animals could be brought into the project sites on construction and operations/maintenance equipment, including hand tools, as well as vehicles and boots of workers. Effects on nesting by some common bird species and introduction of invasive species related to upland construction and maintenance would be the same as described for the Proposed Project.

Mitigation Measures

For disturbance effects on nesting birds and introduction of invasive species, **MM BIO-5**, **MM BIO-6**, **MM-BIO-7**, and **MM BIO-9** would apply.

Residual Effects

With implementation of **MM BIO-5**, **MM BIO-6,** and **MM-BIO-7**, disturbance of nesting birds would be avoided and therefore no effect would occur.

Implementation of **MM BIO-9** would reduce residual effects of invasive species to minor and short-term by minimizing the potential for introduction of such species.

Effect BIO-8: Project construction and operation would have minor effects on common fish (native and non-native) and wildlife species. Aquatic resources would be avoided under this alternative. No construction would occur within aquatic habitat, and therefore no effects on fish species would occur.

Alternative 6 construction could result in temporary disturbances to terrestrial wildlife habitats through ground disturbance and noise. However, no permanent loss of habitat would occur. Effects on wildlife species related to pond and wetland construction and maintenance would be the same as described for the Proposed Project.

Effect BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species. Under Alternative 6, no aquatic or terrestrial habitat would be created or enhanced which would support common fish (native and non-native) or wildlife species. No benefit to common fish (native and non-native) or wildlife species would occur under this alternative.

5.4.9 Alternative 7: No Action

Under the No Action Alternative, a number of physical changes would occur. Islands and snags will disappear, the shoreline will decline, and water depth in the Salton Sea will decrease. The primary chemical change will be the continued increase in the Sea's salinity. Both the physical and chemical changes will alter the biological resources present.

5.4.9.1 Vegetation

Under Alternative 7, vegetation is likely to continue establishing on the exposed lakebed areas downslope of drains and other areas where water is present. As the Sea recedes, plants such as tamarisk, salt bush, iodine bush, and other salt-tolerant species would likely colonize the exposed lakebed. The presence of increasing areas dominated by tamarisk will result in a decrease in available water for other plant species, due to the high transpiration rate of tamarisk. In addition, the increase in area dominated by tamarisk, will result in increased risk of wildfires, which could spread upstream impacting important wildlife habitat and also contribute to air quality concerns. Air quality management activities, however, would likely establish vegetation to stabilize the exposed sediments. Outflows from drains and rivers would create channels that extend across the exposed bed to the Salton Sea, and vegetation would establish along these channels. The types of plant communities that establish along these channels would depend on species tolerance to salinity and are expected to consist of tamarisk and common reed along the rivers and tamarisk or cattails along the drains.

Effect BIO-2: **The use of drain water to expand upon existing herbaceous wetlands could result in adverse effects to wildlife using these wetlands due to selenium bio-accumulation.** Under the No Action Alternative, no wetland enhancement/expansion would occur.

5.4.9.2 Special-Status Species

Effect BIO-4: Project construction and operation would affect habitat and individuals of desert pupfish and several special-status terrestrial wildlife species. Under the No Action

Alternative, no projects would be implemented which could have effects on desert pupfish individuals or habitat or any other special-status terrestrial wildlife species.

Effect BIO-5: Project operation would provide habitat for desert pupfish and several special-status bird species. Under the No Action Alternative, no projects would be implemented and therefore no additional habitat for desert pupfish would be provided. This alternative would not result in beneficial effects related to desert pupfish habitat.

5.4.9.3 Common Wildlife (including Aquatic Wildlife)

Effect BIO-6: Project construction and operation would not interfere with movement of fish and wildlife species, but construction could remove snags for nesting and roosting birds. Under the No Action Alternative, no projects would be implemented which would interfere with movement of fish and wildlife species or remove snags for nesting and roosting birds.

Effect BIO-7: Project construction and operation could affect nesting by some common bird species and introduction of invasive species. Under the No Action Alternative, no projects would be implemented which would affect nesting by some common bird species or cause the introduction of invasive species.

Effect BIO-8: Project construction and operation would have minor effects on common fish (native and non-native) and wildlife species. Under the No Action Alternative, no projects would be implemented which would affect common fish (native and non-native) or wildlife species.

Effect BIO-9: Project construction and operation would benefit common fish (native and non-native) and wildlife species. Under the No Action Alternative, the Sea would continue to recede and salinity levels would increase. No aquatic habitat would be created or enhanced which would support fish or wildlife species. No benefit to common fish (native and non-native) or wildlife species would occur under this alternative.

5.5 COMMUNITY

This section addresses the potential for each Project alternative to result in disproportionate effects on minority and/or low-income populations.

5.5.1 Effects Analysis Methodology

NEPA does not specify significance thresholds that may be used to evaluate the effects of the proposed action related to environmental justice. However, the Corps must comply with Executive Order 12898 that requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Corps has determined that the Proposed Action or an alternative would adversely affect an environmental justice community, population, and housing through its effects on:

> Environmental conditions such as air quality and degradation of aesthetics

> Effects on local communities from air emissions during construction

> Public welfare in terms of economic conditions such as changes in employment, income, and cost of housing

> Unanticipated population growth in an area

> Displacement of existing population or housing

The projects under all alternatives would be located in the Sea bed or along the shoreline, and do not include residential facilities or other facilities that would result in direct population growth. Therefore, this analysis does not evaluate direct population increases related to use of facilities. The analysis does consider the potential for direct population growth related to the need for construction and operations and maintenance workers. Indirect population growth could occur due to recreational opportunities

Table 5-22 summarizes the effects of the Proposed Project and seven alternatives on community, compared to the No Action Alternative.

Table 5-22 Summary of Effects for Community

	Project Alternative								
Effects	**PP**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Mitigation Measures**
Environmental Justice									
EJ-1: Disproportionate Adverse Environmental Effects on Minority or Low-Income Populations	B	B	B	B	B	B	B	N/A*	None Required
EJ-2: Construction air emissions would have a disproportionate effect on minority and low-income populations	MST	MST	MST	MST	MST	MST	MST	N/A*	MM AQ-1: Implement Diesel Control Measures to Reduce PM_{10} and NO_X Emissions from Diesel Engines MM AQ-2: Implement Standard dust suppression activities during ground disturbance and at the end of each workday
Socioeconomics									
SOC-1: Disproportionate Adverse Effect on changes in employment and income	No	No	No	No	No	No	No	N/A*	None Required
Population and Housing									
POP-1: Out-of-town construction workers would cause a temporary, slight increase in Imperial and Riverside Counties population	MST	MST	MST	MST	MST	MST	MST	N/A*	None required
POP-2: Project operation would increase opportunities for passive recreational activity and research which could result in increased visitor days	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None Required

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
POP-3: Disproportionate Adverse Effect on cost of housing	No	No	No	No	No	No	No	N/A*	None Required
POP-4: Displace existing population or housing	No	No	No	No	No	No	No	N/A*	None Required

Notes:

PP=Proposed Project

N/A = Not Applicable

No = No Effect

Adverse Effects:

MST = Minor Effect (Short-Term)

MLT = Minor Effect (Long-Term)

B = Beneficial Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.5.2 Environmental Justice

5.5.2.1 Proposed Project

Effect EJ-1: Disproportionate Adverse Environmental Effects on Minority or Low-Income Populations. All communities would experience some level of benefit due to the location of projects around the perimeter of the Sea, and benefits would also be experienced in the generalized region around the Sea. The location of the Proposed Project and alternatives were dictated by the physical characteristics of the Salton Sea and tributaries and availability of water in the future. Any effects from the Project are strictly related to where components could be placed to meet the restoration and dust suppression objectives. A majority of the Aquatic Habitat Restoration Projects are located at the north and south end of the Sea where there is a water source and larger population centers. Dust suppression projects are located mostly along the western and southeastern perimeter of the Sea. The Proposed Project and alternatives would restore a portion of the habitat that would be lost as the Salton Sea's water surface elevation decreases. Projects also would cover exposed playa, reducing fugitive dust emissions throughout the Project's lifetime. As such, it would have long-term benefits to biological resources, aesthetics, recreational resources, air quality, and public health. Benefits would be experienced on a regional scale as well as directly by communities on the shore of the Sea. Overall, effects would be beneficial to all communities in the region and align with Riverside County General Plan Healthy Communities Element.

Effect EJ-2: Construction air emissions would have a disproportionate effect on minority and low-income populations. As discussed in Section 5.1, Air Quality, the Proposed Project would contribute incrementally to violations of Federal and state ozone (O_3) and particulate matter (PM_{10} and $PM_{2.5}$) standards and exceed Imperial and Riversides Counties Air Pollution District's nitrogen oxides (NO_x) and PM_{10} thresholds during construction. These pollutants can have adverse human health effects like chronic respiratory disease, effects on pulmonary function, increased infant mortality, cardiovascular, and respiratory disease levels.

The residential communities in proximity to the Proposed Project contains predominantly minority populations. Therefore, the potential exists for construction-related emissions to travel into nearby communities. Due to the known human health effects of NO_X and PM_{10}, this effect would constitute disproportionately high adverse effect on minority populations. The surrounding communities also have a higher percentage of persons living below the poverty level than the counties as a whole, and the air emissions would have a disproportionately high effect on low-income populations. This effect would be a minor short-term effect when compared to the No Action Alternative.

Mitigation Measures

MM AQ-1: Implement diesel control measures to reduce PM_{10} and NO_X emissions from diesel engines.

MM AQ-2: Implement fugitive dust mitigation measures for construction activities and control efficiencies.

Residual Effects

EJ-2 is a short-term and construction related effects, which would cease at the completion of the construction phase. The residual effect would be a reduction of dust emissions from the project areas.

5.5.2.2 Alternative 1: Maximum Lake Edge

EJ-1 and EJ-2 are the same as the Proposed Project. Refer to Section 5.5.2.1.

5.5.2.3 Alternative 2: Enhance and Expand Existing Wetlands

EJ-1 and EJ-2 are the same as the Proposed Project. Refer to Section 5.5.2.1.

5.5.2.4 Alternative 3: North End/South End Aquatic Habitat

EJ-1 and EJ-2 are the same as the Proposed Project. Refer to Section 5.5.2.1.

5.5.2.5 Alternative 4: Water Conservation

EJ-1 and EJ-2 are the same as the Proposed Project. Refer to Section 5.5.2.1.

5.5.2.6 Alternative 5: Maximum Build Out

EJ-1 and EJ-2 are the same as the Proposed Project. Refer to Section 5.5.2.1.

5.5.2.7 Alternative 6: No Federal Action

Effect EJ-1: **Disproportionate Adverse Environmental Effects on Minority or Low-Income Populations.** Dust suppression projects cover greater expanses of land on the east and west shores of the Sea where water is less available. Projects would be constructed in areas that are currently or were previously submerged. Implementing dust suppression activities would improve the air quality and visibility for all communities around the Sea and in the region.

Effect EJ-2: **Construction air emissions would have a disproportionate effect on minority and low-income populations.** Under the No Federal Action alternative limited construction would occur but may still have disproportionately high effect on low-income populations. This effect would be minor short-term when compared to the No Action Alternative.

5.5.2.8 Alternative 7: No Action

Effect EJ-1. **Disproportionate Adverse Environmental Effects on Minority or Low-Income Populations.** Under Alternative 7, the Corps would not implement the SSMP 10-Year Plan Project, and no components of the Project would be constructed.

The Project area would continue to be in non-attainment for PM_{10}, $PM_{2.5}$, and Ozone. As the Sea continues to change relative to existing conditions due to changes in human water use practices and natural water availability, the No Action Alternative will result in an increase in dust emissions and total PM.

Effect EJ-2: **Construction air emissions would have a disproportionate effect on minority and low-income populations.** Under the No Action Alternative construction would not occur and therefore air emissions from construction would not occur. There would be no effects.

5.5.3 Socioeconomics

5.5.3.1 Proposed Project

Effect SOC-1: Disproportionate Adverse Effect on changes in employment and income. The Proposed Project and alternatives would create jobs, primarily during construction, and would not result in the loss of jobs or adversely affect the local economy. The Proposed Project and alternatives would increase birding habitat and recreation opportunities which would potentially expand the job market and increase tourism which would bring money into the local economy. Improvement in air quality will improve living conditions which would potentially attract more people to living in the area, or prevent emigration, which would stabilize or grow the local economy. Poverty and unemployment rank high among the CalEnviroScreen indicators in Table 4-24 and the Proposed Project and alternatives have potential to reduce those percentiles. Thus, Effect SOC-1 would be beneficial.

5.5.3.2 Alternative 1: Maximum Lake Edge

Effect SOC-1 is the same as the Proposed Project. Refer to Section 5.5.3.1 and Table 5-22.

5.5.3.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect SOC-1 is the same as the Proposed Project. Refer to Section 5.5.3.1 and Table 5-22.

5.5.3.4 Alternative 3: North End/South End Aquatic Habitat

Effect SOC-1 is the same as the Proposed Project. Refer to Section 5.5.3.1 and Table 5-22.

5.5.3.5 Alternative 4: Water Conservation

Effect SOC-1 is the same as the Proposed Project. Refer to Section 5.5.3.1 and Table 5-22.

5.5.3.6 Alternative 5: Maximum Build Out

Effect SOC-1 is the same as the Proposed Project. Refer to Section 5.5.3.1 and Table 5-22.

5.5.3.7 Alternative 6: No Federal Action

Effect SOC-1 is the same as the Proposed Project. Refer to Section 5.5.3.1 and Table 5-22.

5.5.3.8 Alternative 7: No Action

Effect SOC-1: Disproportionate Adverse Effect on changes in employment and income. Declining inflows in future years from various factors would result in collapse of the Salton Sea ecosystem due to increasing salinity and other water quality issues, such as temperature, eutrophication and related anoxia, and algal productivity. This collapse is unlikely to have a substantive effect on population and housing in Imperial and Riverside Counties as a whole, most of which are not present in the immediate vicinity of the Salton Sea. The declining water elevation and loss of the fish and birds at the Sea would likely make living near the Sea less desirable and could result in a population decline in communities that are located on the existing shores of the Salton Sea. Recreational opportunities at the Salton Sea would be reduced and air quality would continue to decline.

5.5.4 Population and Housing

5.5.4.1 Proposed Project

Effect POP-1: **Out-of-town construction workers would cause a temporary, slight increase in Imperial and Riverside Counties population**. Construction of the Proposed Project would last approximately 10 years, during which time construction workers would be required. It is assumed that these construction workers would be drawn from the local population and would not affect population levels. In addition to the local workforce, it is assumed that heavy equipment and the operators of that equipment may be brought in from other major metropolitan areas (e.g., San Diego, Sacramento, San Francisco). These temporary operators could temporarily relocate their families. This temporary and minor increase in local population would be a minor short-term effect when compared to the No Action Alternative.

Effect POP-2: Project operation would increase opportunities for passive recreational activity and research which could result in increased visitor days. Implementation of the Proposed Project would enhance recreational opportunities such as birding, fishing, hiking and photography. The majority of the Aquatic Habitat Restoration Projects are located at the north and south end of the Sea where there is a water source and where recreation activities are concentrated. The area has historically attracted visitors for recreation and the Proposed Project will create aquatic habitat on the exposed lakebed that once supported recreation activities. The Proposed Project would not result in any long-term changes in population in the surrounding area. When compared to the No Action Alternative the effects are minor long-term effect.

Effect POP-3 and POP-4. All alternatives would be located in the Sea Bed or along the shoreline in areas where there are no housing units. Therefore, this analysis does not evaluate displacement of population or housing units. This analysis does not evaluate the cost of housing as no effects are expected.

5.5.4.2 Alternative 1: Maximum Lake Edge

Effects for POP-1, POP-2, POP-3 and POP-4 are the same as the Proposed Project. Refer to Section 5.5.4.1.

5.5.4.3 Alternative 2: Enhance and Expand Existing Wetlands

Effects for POP-1, POP-2, POP-3 and POP-4 are the same as the Proposed Project. Refer to Section 5.5.4.1.

5.5.4.4 Alternative 3: North End/South End Aquatic Habitat

Effects for POP-1, POP-2, POP-3 and POP-4 are the same as the Proposed Project. Refer to Section 5.5.4.1.

5.5.4.5 Alternative 4: Water Conservation

Effects for POP-1, POP-2, POP-3 and POP-4 are the same as the Proposed Project. Refer to Section 5.5.4.1.

5.5.4.6 Alternative 5: Maximum Build Out

Effects for POP-1, POP-2, POP-3 and POP-4 are the same as the Proposed Project. Refer to Section 5.5.4.1.

5.5.4.7 Alternative 6: No Federal Action

Effects for POP-1, POP-2, POP-3 and POP-4 are the same as the Proposed Project. Refer to Section 5.5.4.1.

5.5.4.8 Alternative 7: No Action

Effect POP-1: **Out-of-town construction workers would cause a temporary, slight increase in Imperial and Riverside Counties population**. Under this alternative no construction would occur, and therefore no out-of-town construction workers would immigrate to the area and there would be no effects to the population.

Effect POP-2: **Project operation would increase opportunities for passive recreational activity and research which could result in increased visitor days.** Declining inflows in future years from various factors would result in collapse of the Salton Sea ecosystem due to increasing salinity and other water quality issues, such as temperature, eutrophication and related anoxia, and algal productivity. This collapse is unlikely to have a substantive effect on population and housing in Imperial and Riverside Counties as a whole, most of which are not present in the immediate vicinity of the Salton Sea. The declining water elevation and loss of the fish and birds at the Sea would likely make living near the Sea less desirable and could result in a population decline in communities that are located on the existing shores of the Salton Sea. Recreational opportunities at the Salton Sea would be reduced, and therefore not increase the visitor days to the area.

Effects for POP-3 and POP-4 are the same as the Proposed Project. Refer to Section 5.5.4.1.

5.6 BUILT ENVIRONMENT

5.6.1 Effects Analysis Methodology

Table 5-23 summarizes the effects of the Proposed Project and seven alternatives on navigation, public services, parks and recreation, and utilities compared to the No Action Alternative.

Table 5-23 Summary of Effects for Navigation, Public Services, Parks, and Utilities

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
Navigation									
NAV-1: Water use for the Project could result in effects on a navigable water	MLT	MLT	MLT	MLT	MLT	MLT	No	N/A*	None required
Public Services									

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
PS-1: Construction and maintenance activities could result in increased demand for emergency services (police, fire, and trauma centers), as could increase use of the project site by recreational visitors	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required
Parks and Recreation									
REC-1: The Project would create recreational opportunities at aquatic habitat pond sites	B	B	B	B	B	B	No	N/A*	None required
Utilities									
UT-1: Construction and operations would generate solid waste requiring disposal in landfills	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required
UT-2: Dust suppression water would be required during construction, but would not exceed supplies	MST	MST	MST	MST	MST	MST	MST	N/A*	None required

Notes:

PP = Proposed Project

N/A = Not Applicable

No = No Effect

Adverse Effects:

MST = Minor Effect (Short-Term)

MLT = Minor Effect (Long-Term)

B = Beneficial Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.6.2 Navigation

The Sea is a navigable water under the traditional navigable water determination per CWA Section 404 (3 CFR 328.3 (a)(1)); however, it is not considered navigable based on the Rivers and Harbors Act.

5.6.2.1 Proposed Project

Effect NAV-1: Water use for the Project could result in effects on a navigable water. The Proposed Project would include construction of aquatic habitat ponds which would require water diversion from the Sea, which is a navigable waterway. The Proposed Project includes a range of aquatic habitat restoration projects, which could cover between 10,790 and 19,062 acres. Water use associated with the Proposed Project would result in a brine sink elevation of -253.4 feet in 2047. This would be considered a minor and long-term effect on navigation. While the overall size of the Sea would be slightly impacted, existing boating access would not be impacted by this reduction in size.

5.6.2.2 Alternative 1: Maximum Lake Edge

Effect NAV-1: Water use for the Project could result in effects on a navigable water. Alternative 1 would include construction of aquatic habitat ponds which would require water diversion from the Sea, which is a navigable waterway. This alternative includes habitat restoration projects, which would cover 25,690 acres. All the acreage included under this alternative is for aquatic habitat ponds, except 903 acres, which would be for the enhancement/expansion of an existing wetland. Water use associated with this alternative would result in a brine sink elevation of -254.4 feet in 2047. This would be considered a minor long-term effect on navigation. While the overall size of the Sea would be slightly impacted, existing boating access would not be impacted by this reduction in size.

5.6.2.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect NAV-1: Water use for the Project could result in effects on a navigable water. Alternative 2 would include construction of aquatic habitat ponds which would require water diversion from the Sea, which is a navigable waterway. This alternative includes aquatic habitat restoration projects, which would cover 25,690 acres. Of this total acreage, aquatic habitat ponds would cover 14,571 acres and 10,265 acres would be for the enhancement/expansion of existing wetlands. Water use associated with this alternative would result in a brine sink elevation of -254.0 feet in 2047. This would be considered a minor long-term effect on navigation. While the overall size of the Sea would be slightly impacted, existing boating access would not be impacted by this reduction in size.

5.6.2.4 Alternative 3: North End/South End Aquatic Habitat

Effect NAV-1: Water use for the Project could result in effects on a navigable water. Alternative 3 would include construction of aquatic habitat ponds which would require water diversion from the Sea, which is a navigable waterway. This alternative includes aquatic habitat restoration projects, which would cover 25,690 acres entirely of aquatic habitat ponds. Water use associated with this alternative would result in a brine sink elevation of -253.4 feet in 2047. This would be considered a minor long-term effect on navigation. While the overall size of the Sea would be slightly impacted, existing boating access would not be impacted by this reduction in size.

5.6.2.5 Alternative 4: Water Conservation

Effect NAV-1: Water use for the Project could result in effects on a navigable water. Alternative 4 would not include construction of aquatic habitat ponds. However, this alternative could include use of water diversion from the Sea, which is a navigable waterway. This alternative includes aquatic habitat restoration projects, which would cover 10,790 acres of wetland enhancement/expansion projects and 14,900 acres of dust suppression projects. Water use associated with this alternative would result in a brine sink elevation of -250.9 feet in 2047. This would be considered a minor long-term effect on navigation. While the overall size of the Sea would be slightly impacted, existing boating access would not be impacted by this reduction in size.

5.6.2.6 Alternative 5: Maximum Build Out

Effect NAV-1: Water use for the Project could result in effects on a navigable water. Alternative 5 would include construction of aquatic habitat ponds which would require water diversion from the Sea, which is a navigable waterway. This alternative includes aquatic habitat restoration projects, which would cover 24,734 acres. All the acreage included under this alternative is for aquatic habitat ponds, except 903 acres, which would be for the enhancement/expansion of an existing wetland. Water use associated with this alternative would result in a brine sink elevation of -255.0 feet in 2047. This would be considered a minor long-term effect on navigation. While the overall size of the Sea would be slightly impacted, existing boating access would not be impacted by this reduction in size.

5.6.2.7 Alternative 6: No Federal Action

Effect NAV-1: Water use for the Project could result in effects on a navigable water. Under the No Federal Action Alternative, minimal water use from groundwater pumps could occur to water vegetation, which would have a negligible effect on the elevation of the Sea. The Sea would continue to recede, and the resulting brine sink elevation cannot be determined because the area of projects cannot be determined. This alternative avoids projects that would require any federal permitting, which means no water would be diverted from the Sea. There would be no effects on navigation under this alternative.

5.6.2.8 Alternative 7: No Action

Effect NAV-1: Water use for the Project could result in effects on a navigable water. Under the No Action Alternative, the Sea would continue to recede, resulting in a brine sink elevation of -247.9 feet in 2047. No projects would be implemented which would divert water from the Sea. No effects on navigation would occur under this alternative.

5.6.3 Public Services

This section discusses the potential for the SSMP Project alternatives to result in temporary and long-term demands on public services such as police and fire protection and trauma centers.

The primary risks to public services would be associated with accidents that could occur at construction sites, on roadways due to construction, or due to maintenance activities. It is estimated that fewer than 55 out-of-town construction workers and their families could temporarily reside in the areas surrounding the Salton Sea during the 10-year construction period. Only a small number of employees would be required during operations. These minor increases in population would not increase demands on schools, libraries, parks, or other public facilities such that substantial adverse physical effects would occur or new or physically altered government facilities would be required. Therefore, this analysis focuses on potential effects to fire and police protection and emergency services that may be required. All the alternatives discussed below do not include any unusually dangerous activities.

5.6.3.1 Proposed Project

Effect PS-1: Construction and maintenance activities could result in increased demand for emergency services (police, fire, and trauma centers), as could increased use of the project site by recreational visitors. The Proposed Project could include up to 33,962 acres of aquatic habitat restoration and dust suppression and restoration projects. This effect would affect the local community and would be both short- and long-term in context, as it would increase the potential demand for public services during construction and operations. Construction and maintenance activities could result in an increased potential for traffic accidents, construction accidents, and fire hazards at the construction site and on the roads due to construction/maintenance activity. The amount of construction/maintenance activity could also increase the need for police services due to trespassing and/or theft of construction materials or equipment. The increased demand associated with construction/maintenance activities would not be expected to affect the ability of local emergency providers to maintain their current level of service or require new or altered facilities. This increase would primarily be short-term during construction.

There is potential for long-term increases in demand related to operations and recreational use of the site following completion of the project. The Proposed Project may include public access for recreational activities (such as hiking, bird-watching, and non-motorized watercraft use) that are compatible with the Project's goals and objectives. The demand for emergency services may increase as a result of the increased activities but would not be expected to affect the ability of providers to maintain their current level of service.

The intensity of the Proposed Project would be considered low, because it would be consistent with policies included in the land use elements for Imperial and Riverside counties, which state that adequate public services be provided to county residents and would not result in adverse impacts to public safety. Effects would be minor and long-term when compared to the No Action Alternative.

5.6.3.2 Alternative 1: Maximum Lake Edge

Effect PS-1 is the same as described under the Proposed Project, except this alternative includes a total of 25,690 acres of aquatic habitat restoration projects. Refer to Section 5.6.3.1 and Table 5-23.

5.6.3.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect PS-1 is the same as described under the Proposed Project, except this alternative includes a total of 25,690 acres of aquatic habitat restoration projects. Refer to Section 5.6.3.1 and Table 5-23.

5.6.3.4 Alternative 3: North End/South End Aquatic Habitat

Effect PS-1 is the same as described under the Proposed Project, except this alternative includes a total of 25,690 acres of aquatic habitat restoration projects. Refer to Section 5.6.3.1 and Table 5-23.

5.6.3.5 Alternative 4: Water Conservation

Effect PS-1 is the same as described under the Proposed Project, except this alternative includes a total of 10,790 acres of enhancing and expanding existing wetlands and 14,900 acres of dust suppression and restoration projects. Refer to Section 5.6.3.1 and Table 5-23.

5.6.3.6 Alternative 5: Maximum Build Out

Effect PS-1 is the same as described under the Proposed Project, except this alternative includes 48,707 acres, which would require the most construction to complete. It would include all project areas included in the Proposed Project, with up to an additional 14,745 acres of projects. However, the projects would not be constructed at the same time, so increases to demand for emergency services would not be expected to increase substantially over other alternatives, there would just be a longer period of construction associated with this alternative. Refer to Section 5.6.3.1 and Table 5-23.

5.6.3.7 Alternative 6: No Federal Action

Effect PS-1: Construction and maintenance activities could result in increased demand for emergency services (police, fire, and trauma centers), as could increased use of the project site by recreational visitors. Under this alternative the project areas would be limited by federal permitting. This would result in limited dust suppression and restoration projects. This would result in minimal increases to the demand for public services and would not have long-term increased demand associated with recreation, as no aquatic habitat ponds would be constructed under this alternative.

This alternative would be consistent with local policies for Imperial and Riverside counties and would not result in adverse effects to public safety. Effects would be minor and long-term when compared to the No Action Alternative.

5.6.3.8 Alternative 7: No Action

Effect PS-1: Construction and maintenance activities could result in increased demand for emergency services (police, fire, and trauma centers), as could increased use of the project site by recreational visitors. The No Action Alternative is intended to reflect existing conditions (those present at the time the Notice of Preparation was issued) plus changes that are reasonably expected to occur in the foreseeable future if none of the alternatives are implemented. Under the No Action Alternative there would be no increase to the level of demand for public services, because no construction or operations would occur and no increase in recreation opportunities would be expected to occur.

5.6.4 Parks and Recreation

This section focuses on potential changes to recreation uses at the Sea. Public access and recreational activities would be periodically reviewed for compatibility with goals and objectives. Compatible land uses, including public access, would be determined through individual agency review. However, individual projects may require that certain areas be closed to public access to avoid effects to wildlife, habitat, or aquatic resources either seasonally or year-round, consistent with landowner and agency requirements. Fish would not be intentionally stocked for the purpose of providing angling opportunities. Nevertheless, such opportunities may be provided at the aquatic habitat ponds, in particular for tilapia. Fish populations would be monitored as a metric of the Project’s success. If populations become well established and appear to provide fish in excess of what birds are consuming, angling could potentially be allowed. Waterfowl hunting may be allowed, consistent with the protection of other avian resources and public use activities.

5.6.4.1 Proposed Project

Effect REC-1: The Project would create recreational opportunities at aquatic habitat pond sites. The Proposed Project would create recreational opportunities at the aquatic habitat pond sites which is a beneficial effect. Under the Proposed Project, up to 19,062 acres of aquatic habitat restoration projects could be implemented, as well as 14,900 dust suppression and restoration projects, which could provide various recreation opportunities. The Project is not specifically designed to accommodate recreation because the provision of recreational opportunities is not a Project goal. However, some recreational activities would be available to the extent that they are compatible with management of the restoration areas. Public access could be allowed to facilitate day use such as (or) including, hiking, bird-watching, and non-motorized watercraft use, where permitted in land use agreements.

The Proposed Project footprint includes approximately 1,876 acres of lands owned by the BLM, which are open to various recreation opportunities. Temporary effects on recreation could occur if those opportunities are available where project construction would occur. This could result in temporary closures of areas in order to construct projects. However, in the long-term recreation opportunities would change around the Sea, due to hydrologic changes and projects.

Effects on recreational resources would be beneficial compared to the No Action Alternative.

5.6.4.2 Alternative 1: Maximum Lake Edge

Effect REC-1: The Project would create recreational opportunities at aquatic habitat pond sites. Alternative 1 would create recreational opportunities at the aquatic habitat restoration sites (beneficial effect). Under this alternative, 25,690 acres of aquatic habitat restoration projects would be implemented, which could provide various recreation opportunities, outlined above in 5.6.4.1. The footprint of this alternative includes approximately 1,320 acres of lands owned by the BLM, which are open to various recreation opportunities. Temporary effects would be the same as those discussed under the Proposed Project and the overall effect would be beneficial.

5.6.4.3 Alternative 2: Enhance and Expand Existing Wetlands

Impact REC-1: The Project would create recreational opportunities at aquatic habitat pond sites. Alternative 2 would create recreational opportunities at the aquatic habitat restoration sites (beneficial impact). Under this alternative, 25,690 acres of aquatic habitat restoration projects would be implemented, which could provide various recreation opportunities outlined above in 5.6.4.1. The footprint of this alternative includes approximately 1,569 acres of lands owned by the BLM, which are open to various recreation opportunities. Temporary effects would be the same as those discussed under the Proposed Project and the overall effect would be beneficial.

5.6.4.4 Alternative 3: North End/South End Aquatic Habitat

Effect REC-1: The Project would create recreational opportunities at aquatic habitat pond sites. Alternative 3 would create recreational opportunities at the aquatic habitat pond sites (beneficial effect). Under this alternative, 25,690 acres of aquatic habitat ponds would be implemented, which could provide various recreation opportunities outlined above in 5.6.4.1. The footprint of this alternative includes approximately 1,197 acres of lands owned by the BLM, which are open to various recreation opportunities. Temporary effects would be the same as those discussed under the Proposed Project and the overall effect would be beneficial.

5.6.4.5 Alternative 4: Water Conservation

Effect REC-1: The Project would create recreational opportunities at aquatic habitat pond sites. Alternative 4 would create recreational opportunities at the aquatic habitat restoration and dust suppression and restoration sites (beneficial effect). Under this alternative, 10,790 acres of aquatic habitat restoration projects would be implemented as well as 14,900 dust suppression and restoration projects, which could provide various recreation opportunities outlined above in 5.6.4.1. The footprint of this alternative includes approximately 1,747 acres of lands owned by the BLM, which are open to various recreation opportunities. Temporary effect would be the same as those discussed under the Proposed Project and the overall effect would be beneficial.

5.6.4.6 Alternative 5: Maximum Build Out

Effect REC-1: The Project would create recreational opportunities at aquatic habitat pond sites. Alternative 5 would create recreational opportunities at the aquatic habitat restoration and dust suppression and restoration sites (beneficial effect). Under this alternative, a total of 48,707 acres of projects would be implemented. Of these, 24,734 acres of aquatic habitat restoration projects and 23,973 acres of dust suppression and restoration projects would be implemented, which could provide various recreation opportunities outlined above in 5.6.4.1. The footprint of this alternative includes approximately 2,129 acres of lands owned by the BLM, which are open to various recreation opportunities. Temporary effects would be the same as those discussed under the Proposed Project and the overall effect would be beneficial.

5.6.4.7 Alternative 6: No Federal Action

Effect REC-1: The Project would create recreational opportunities at aquatic habitat pond sites. This alternative would be limited by federal permitting and would only include dust suppression and restoration projects. No aquatic habitat ponds would be constructed and therefore no additional recreational opportunities are anticipated to be available. Any projects implemented under this alternative would be done in areas where they would not affect any existing recreational opportunities.

5.6.4.8 Alternative 7: No Action

Effect REC-1: The Project would create recreational opportunities at aquatic habitat pond sites. Under the No Action Alternative, no additional recreational opportunities would be created and there would be no projects implemented which would affect any existing recreational areas. Therefore, this alternative would have no effect.

5.6.5 Utilities

This section addresses the effects of the SSMP Project on stormwater and flood management and solid waste disposal. Using local facilities would minimize the distance solid waste would have to be transported, thus reducing effects on other resources, such as air quality and transportation and traffic.

A trailer or other temporary structure may be located near each project area and would provide office space for project personnel. Bottled water would be brought in for potable uses during construction and operations, therefore no effects to local potable water treatment facilities would occur. A self-contained waste system would be used during construction and operations; no septic tanks or sewerage would be required.

No expansion or construction of wastewater treatment facilities would be required. Effects from out-of-town construction workers and their families temporarily residing in the area and from the permanent employees would be negligible and would not require the construction of new water or wastewater treatment plants; thus, such effects are not addressed further. Projects would be designed to avoid conflicts with stormwater drainage. The Project alternatives would not require construction of new storm-water drainage facilities or expansion of existing facilities because pond construction would provide all necessary onsite water retention. The North Lake Project includes pond construction on both sides of the mouth of the Whitewater River/Coachella Valley Storm Water Channel (CVSWC) Delta at the north end of the Sea. For the North Lake Project, which is included in the Proposed Project and Alternatives 1, 2, 3, and 5, an allowance would be made to pass flood flows from the CVSWC into the Sea. Several methods are being investigated to provide this flood protection. The Project would be designed to avoid conflicts with existing stormwater drainage facilities. The Project would not increase onsite or offsite runoff that would necessitate additional drainage infrastructure. Therefore, there would not be any effects to existing stormwater facilities; thus, such effects are not addressed further.

5.6.5.1 Proposed Project

Effect UT-1: Construction and operations would generate solid waste requiring disposal in landfills. Incidental amounts of debris would be generated during construction and operations and maintenance activities and would require disposal in a landfill.

Solid waste would be generated primarily during construction. Primary sources of solid waste requiring disposal would include trash generated by work crews and equipment maintenance, as well as construction waste from building pump stations, concrete formwork, and other facilities. Approximately 25 tons per 1,000 acres of projects implemented would be generated. For the total acreage of the Proposed Project, this would generate approximately 850 tons. Materials generated by on-site brush clearing, as well as materials such as rock, concrete, and wood would be left on site for pond bottom substrate and would not require disposal. Sediment dredged and stockpiled during construction and during maintenance of sedimentation basins would be incorporated back into the surrounding berms and also would not require disposal. Should testing show the presence of contaminated soil, or if such soil was observed during construction activities, such material would be hauled off site and transported to an appropriate waste facility. The local landfills and those accepting hazardous waste in Kern and Kings counties have adequate capacity to accept the types of materials that would be generated during construction; therefore, effects would be minor and long-term. Operations would result in minor amounts of solid waste generated by the permanent employees, equipment maintenance, and general maintenance activities. Adequate landfill capacity is available, and effects would be minor and long-term.

Effect UT-2: Dust suppression water would be required during construction but would not exceed supplies. Water would be trucked in from a local source for dust suppression during construction; this temporary increased demand (estimated at 4,000 to 12,000 gallons per day, depending on the size of the project) would be minor in comparison to the overall demand in the area (IID alone supplies approximately 2,625,400 acre-feet of water per year [IID 2021], or 855,489,066,127 gallons). Adequate supplies are available for this temporary increase; therefore, this effect would be minor and short-term.

5.6.5.2 Alternative 1: Maximum Lake Edge

Effect UT-1: Construction and operations would generate solid waste requiring disposal in landfills. Effects under this alternative would be the same as the Proposed Project, except the total waste generated would be less. Approximately 25 tons per 1,000 acres of projects implemented would be generated. Therefore, this alternative would generate approximately 645 tons of solid waste requiring disposal at a landfill. Adequate landfill capacity is available, and effects would be minor and long-term.

Effect UT-2: Dust suppression water would be required during construction but would not exceed supplies. Water would be trucked in for dust suppression during construction; this temporary increased demand (estimated at 4,000 to 12,000 gallons per day, depending on the size of the project) would be minor in comparison to the overall demand in the area. Adequate supplies are available for this temporary increase; therefore, this effect would be minor and short-term.

5.6.5.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect UT-1: Construction and operations would generate solid waste requiring disposal in landfills. Effects under this alternative would be the same as the Proposed Project except the total waste generated would be less. Approximately 25 tons per 1,000 acres of projects implemented would be generated. Therefore, this alternative would generate approximately 645 tons of solid waste requiring disposal at a landfill. Adequate landfill capacity is available, and effects would be minor and long-term.

Effect UT-2: **Dust suppression water would be required during construction but would not exceed supplies.** Water would be trucked in for dust suppression during construction; this temporary increased demand (estimated at 4,000 to 12,000 gallons per day, depending on the size of the project) would be minor in comparison to the overall demand in the area. Adequate supplies are available for this temporary increase; therefore, this effect would be minor and short-term.

5.6.5.4 Alternative 3: North End/South End Aquatic Habitat

Effect UT-1: Construction and operations would generate solid waste requiring disposal in landfills. Effects under this alternative would be the same as the Proposed Project except the total waste generated would be less. Approximately 25 tons per 1,000 acres of projects implemented would be generated. Therefore, this alternative would generate approximately 645 tons of solid waste requiring disposal at a landfill. Adequate landfill capacity is available, and effects would be minor and long-term.

Effect UT-2: Dust suppression water would be required during construction but would not exceed supplies. Water would be trucked in for dust suppression during construction; this temporary increased demand (estimated at 4,000 to 12,000 gallons per day, depending on the size of the project) would be minor in comparison to the overall demand in the area. Adequate supplies are available for this temporary increase; therefore, this effect would be minor and short-term.

5.6.5.5 Alternative 4: Water Conservation

Effect UT-1: **Construction and operations would generate solid waste requiring disposal in landfills.** Effects under this alternative would be the same as under the Proposed Project, except less waste would be generated during construction. No aquatic habitat ponds would be constructed and therefore the waste generated from construction of ponds and associated infrastructure would not occur under this alternative. Approximately 25 tons per 1,000 acres of projects implemented would be generated. Therefore, this alternative would generate approximately 645 tons of solid waste requiring disposal at a landfill. Adequate landfill capacity is available, and effects would be minor and long-term.

Effect UT-2: Dust suppression water would be required during construction but would not exceed supplies. Water would be trucked in for dust suppression during construction; this temporary increased demand (estimated at 4,000 to 12,000 gallons per day, depending on the size of the project) would be minor in comparison to the overall demand in the area. Adequate supplies are available for this temporary increase; therefore, this effect would be minor and short-term.

5.6.5.6 Alternative 5: Maximum Build Out

Effect UT-1: **Construction and operations would generate solid waste requiring disposal in landfills.** Effects under this alternative would be the same as the Proposed Project except the total waste generated would be more. Approximately 25 tons per 1,000 acres of projects implemented would be generated. Therefore, this alternative would generate approximately 1,220 tons of solid waste requiring disposal at a landfill. Adequate landfill capacity is available, and effects would be minor and long-term.

Effect UT-2: Dust suppression water would be required during construction but would not exceed supplies. Water would be trucked in for dust suppression during construction; this temporary increased demand (estimated at 4,000 to 12,000 gallons per day, depending on the size of the project) would be minor in comparison to the overall demand in the area. Adequate supplies are available for this temporary increase; therefore, this effect would be minor and short-term.

5.6.5.7 Alternative 6: No Federal Action

Effect UT-1: **Construction and operations would generate solid waste requiring disposal in landfills.** Under this alternative, the State would proceed with dust suppression and restoration projects that do not require a diversion from waters of the United States (all water would be from wells). This would limit the amount of waste generated during construction as there would be less infrastructure required. The project footprint is limited to outside aquatic resources and no aquatic habitat ponds would be included under this alternative which would reduce the potential to generate solid wastes which would require disposal at a landfill. The total acreage of this alternative is not known at this time, but it would be less than other alternatives, resulting in less total waste generated. The same estimate would apply to this alternative, that approximately 25 tons of waste per 1,000 acres of projects would be generated. Local landfills and those accepting hazardous waste in Kern and Kings counties have adequate capacity to accept the types of materials that would be generated during construction; therefore, effects would be minor and long-term. Operations would result in minor amounts of solid waste generated by the permanent employees, equipment maintenance, and general maintenance activities. Adequate landfill capacity is available, and effects would be minor and long-term.

Effect UT-2: Dust suppression water would be required during construction but would not exceed supplies. Water would be trucked in for dust suppression during construction; this temporary increased demand (estimated at 4,000 to 12,000 gallons per day, depending on the size of the project) would be minor in comparison to the overall demand in the area. Adequate supplies are available for this temporary increase; therefore, this effect would be minor and short-term.

5.6.5.8 Alternative 7: No Action

Effect UT-1: **Construction and operations would generate solid waste requiring disposal in landfills.** Under the No Action Alternative, no projects would be constructed, and no solid waste would be generated related to construction or operations. There would be no change to the amount of materials requiring disposal at landfills in the area.

Effect UT-2: Dust suppression water would be required during construction but would not exceed supplies. No construction would occur under this alternative and therefore no dust suppression water would be required. This alternative would have no effect on water supplies.

5.7 CULTURAL RESOURCES

5.7.1 Effects Analysis Methodology

Project effects on cultural resources were initially analyzed through consideration of two variables: 1) the proximity of Project activities to recorded cultural resources; and 2) the potential for effects to currently unidentified resources that may be present in the Project area based on previous archaeological studies and consultation with tribal groups, which is being initiated. However, few cultural resources are known to occur in the study area but may be updated based on tribal consultation (see Section 8). Therefore, this assessment compares the Proposed Project and its alternatives in terms of the extent to which they would be affected by construction of ponds, wetlands and dust suppression activities. These project elements were selected because they differ in terms of: 1) the extent to which they could disturb the ground surface, and 2) the potential depths of ground disturbance. The underlying assumption is that these variables reflect the potential for affecting undiscovered cultural resources in the study area. For example, construction of ponds and their associated elements have a relatively high potential to affect surface and subsurface cultural resources because they would cause the most extensive ground disturbance and involve the deepest excavations. Dust suppression activities, in contrast, would tend to affect the ground surface less intensively, and to a much shallower depth, and are thus considered to have a relatively low potential to affect cultural resources. Wetland construction and enhancement generally would involve ground disturbance less than pond construction but more than dust suppression activities and are thus considered to have a moderate potential to affect cultural resources. In addition, Project areas would be subject to ground disturbance from road construction, as well as vehicular movement and staging, which could affect surface and near-surface cultural resources. Increased access could also result in unauthorized collection of artifacts from visible archaeological resources.

To aid effects discussions, Table 5-24 tabulates proposed acreages associated with pond construction, wetland construction/enhancement, and dust suppression for the Project and its action alternatives.

Table 5-24 Acreage of Ground-Disturbing Activities for the Project and Alternatives

Alternative	Pond Construction (Greatest Effect Potential)	Wetland Construction/ Enhancement (Moderate Effect Potential)	Dust Suppression (Lowest Effect Potential)	Total Acreage
Proposed Project	19,062	903	14,900	34,865
Alternative 1	24,787	903	0	25,690
Alternative 2	14,571	10,265	0	25,690
Alternative 3	25,690	0	0	25,690
Alternative 4	0	10,790	14,900	25,690
Alternative 5	23,931	903	23,973	48,807
Alternative 6	Unknown	Unknown	Unknown	Less than the above

Table 5-25 summarizes the effects of the Proposed Project and action alternatives on cultural resources, compared to the No Action Alternative.

Table 5-25 Summary of Effects for Cultural Resources

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
CUL-1: Ground-disturbing activities and unauthorized collection of artifacts could adversely affect historic properties (cultural resources eligible for listing in the NRHP)	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A *	MM CUL-1: Determine the potential for buried resources in opportunity areas MM CUL-2: Prepare and implement a Programmatic Cultural Resources Management Plan/Historic Properties Treatment Plan to inventory, evaluate and treat cultural resources within future project-specific Areas of Potential Effect prior to ground-disturbing activities

Notes:

PP = Proposed Project

N/A = Not Applicable

Adverse Effects:

MLT = Minor Effect (Long-Term)

When multiple effect levels occur under one effect, only the highest level is used in the summary.

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.7.2 Proposed Project

Effect CUL-1: Disturbance or Loss of Cultural Resources. Recent and previous surveys have examined a sample of the Project's opportunity areas. These surveys found no prehistoric sites and identified only a few historic-era resources (see Section 4). These resources have not yet been formally evaluated for listing in the National Register of Historic Places (see Section 4.7); therefore, effects to these resources cannot be fully assessed at this time. Should any of these unevaluated resources qualify as historic properties, it is anticipated that implementation of the recommended mitigation measures would reduce adverse effects to a less than significant level.

Ground-disturbing activities in opportunity areas not yet surveyed for cultural resources could result in disturbance or destruction of undiscovered cultural resources, including sites that may lie exposed on the dry lakebed as well as those that may lie buried beneath the exposed ground surface. The potential for effects is considered greatest in the habitat restoration opportunity areas as these involve extensive mechanical removal of vegetation, grading, and relatively deep subsurface mechanical excavations to create ponds, berms, retention basins, and other features. An estimated 19,062 acres of ponds and 903 acres of wetlands would be constructed. These excavations and movement of heavy equipment and vehicles across the ground surface potentially could disturb or destroy surface, near-surface and buried archaeological resources. (Note: the potential for buried resources to occur in the opportunity areas is currently hypothetical as no subsurface archaeological investigations have been conducted in these areas).

Ground-disturbing construction activities in dust suppression opportunity areas also could disturb or destroy undiscovered cultural resources. An estimated 14,900 acres would be subject to dust suppression activities, including both waterless and water-reliant techniques. Waterless techniques could include, for example, mechanical surface roughening, application of dust suppressants to the ground surface, installation of sand fencing, and use of gravel or similar materials to cover the ground surface. Water-reliant dust suppression techniques could include planting of native vegetation, creating or enhancing shallow-water habitat and freshwater wetlands, and installation of groundwater production wells, among others. These activities have the potential to affect surface and near-surface cultural resources. For example, a recent study of select SSMP dust suppression activities (TetraTech 2021a) indicates that planting new vegetation would include augering holes no deeper than 1.5 feet and no wider than 0.5 feet in diameter while surface roughening could involve using a tractor to excavate two-foot deep furrows at approximately 12-foot intervals. Shallow water habitats are less than six inches deep and creating or enhancing such habitats would involve shallow ground disturbance that could affect shallow archaeological resources. Construction of groundwater production wells could affect surface, near surface and buried cultural resources. Movement of construction equipment and other vehicles associated with dust suppression activities could also disturb or destroy archaeological resources.

Ground disturbance associated with the construction and use of access roads and staging areas located between public roads and specific construction sites located within the opportunity areas have the potential to disturb or destroy known and undiscovered cultural resources, particularly in the southwest portion of the study area. This area includes a National Register-eligible archaeological district characterized by prehistoric sites that represent 12,000 years of occupation and use of ancient Lake Cahuilla and its natural resources. Although no similar site concentrations have been reported in other parts of the study area, their presence is not precluded. Much of the area has not been previously surveyed for cultural resources, so the actual distribution of such resources is not known. Areas that have been surveyed exhibit either a lack of cultural resources, or a low density of historic-era resources (such as trash scatters, dump sites, and isolated artifacts). Given the paucity of survey coverage, areas that may be used for roads and staging areas have the potential to contain unrecorded resources. However, it is anticipated that access roads and staging areas can be easily located to avoid visible cultural resources. Therefore, few if any resources are expected to be affected, and any effects are expected to be of low intensity. In addition, new access roads and staging areas located near visible archaeological resources create the potential for unauthorized collection of artifacts from construction personnel. With thoughtful placement of access roads and staging areas, such effects are easily preventable and are expected to be of low intensity. Existing road systems in the north and south end of the Sea extend close to opportunity areas, and use of these roads have a relatively low potential to affect cultural resources.

In sum, Project activities have the potential to affect historic properties, defined as cultural resources determined eligible for listing in the National Register of Historic Places. Such effects are expected to be either avoidable or of low intensity and minor with implementation of the following mitigation measures.

Mitigation Measures

MM CUL-1: Determine the Potential for Buried Resources in Opportunity Areas

No subsurface archaeological investigations have been conducted below the 2003 shoreline of the Sea, and the potential for buried archaeological resources to occur within the SSMP opportunity areas is thus hypothetical rather than verified. Designing specific construction projects within the opportunity areas without understanding where buried sites are located, or may be encountered, creates an unnecessary risk to project schedules and funding. Encountering buried sites once construction has begun can delay construction while sites are studied and documented, often at considerable cost both in time and money. Under some circumstances, projects even may need to be redesigned to avoid unanticipated adverse effects that cannot be minimized effectively. Pre-construction geoarchaeological studies and/or subsurface archaeological surveys should be conducted using a combination of existing data review and subsurface excavation to define and characterize areas of sensitivity that should be avoided during project design. These investigations would avoid or minimize unanticipated discoveries of buried archaeological sites, thereby reducing project risks and mitigating effects to cultural resources.

Geoarchaeological investigations may be conducted as either a single large study or a phased series of studies. In either case, all studies should be conducted by a qualified and experienced geoarchaeologist as early in project design phases as feasible. The nature and timing of geoarchaeological studies will be described in the SSMP Programmatic Historic Properties Treatment Plan outlined below.

MM CUL-2: Prepare and Implement a Programmatic Historic Properties Treatment Plan

The Programmatic Historic Properties Treatment Plan (PHPTP) will be developed in consultation with the California State Office of Historic Preservation and interested Native

American tribal representatives in compliance with Section 106 of the National Historic Preservation Act. The PHPTP shall be completed prior to initiating Project activities that involve ground disturbance. The PHPTP shall identify detailed procedures regarding identification and evaluation of historic properties, finding of effect, and resolution of adverse effects, including treatment options such as preservation in place and data recovery. Effects to cultural resources would be avoided to the extent feasible.

Key elements of the PHPTP include but are not limited to the following:

1. Required qualifications of personnel implementing the PHPTP and roles and responsibilities of implementing and reviewing parties.
2. Procedures for identifying surface and subsurface cultural resources in areas subject to ground disturbance.
3. Procedures to evaluate whether resources meet criteria for listing in the NRHP and thus represent historic properties.
4. Protective measures to be used during construction, such as exclusion zones, Environmentally Sensitive Areas (ESAs), and monitoring.
5. Procedures and protocols for archaeological monitoring by qualified personnel during all ground disturbing activities.
6. Procedures for consulting with Native American tribes and other interested Native Americans, including procedures for collaborating with Native Americans in activities involving archaeological resources of Native American origin.
7. Standards and procedures for documenting all monitoring activities.
8. Development of a Workforce Cultural Resources Awareness Training Program.
9. Procedures and protocols that would be implemented when unanticipated historic properties are identified, including the treatment of Native American human remains.
10. Standards and procedures for data collection, analysis and reporting (consistent with the State Historic Preservation Office and Secretary of the Interior guidelines) for NRHP-eligible archaeological sites, including appropriate curation of cultural materials and associated records.
11. Reporting requirements.

Residual Effects

The residual effect would be minor following implementation of MM CUL-1 and MM-CUL-2: (documentation, monitoring, avoidance, or data recovery).

5.7.3 Alternative 1: Maximum Lake Edge

As in the Proposed Project, this alternative would not affect any known historic properties or cultural resources considered eligible for listing in the NRHP. Effect types under Alternative 1 would be generally similar to the Proposed Project but would involve no dust suppression activities and 5,725 more acres of pond construction. Compared to the Proposed Project, Alternative 1 would involve far greater surface and subsurface disturbance associated with pond construction, the most damaging form of construction activity (see Table 5-24). As in the

Proposed Project, 903 acres of wetlands would be created. As a result, Alternative 1 has a greater potential to affect undiscovered surface and subsurface archaeological sites than the Proposed Project. Alternative 1 has a greater potential to affect cultural resources than does the No Action alternative, which involves no excavation that can disturb or destroy surface and subsurface archaeological resources.

Mitigation Measures

MM CUL-1 and CUL-2 would apply to Alternative 1.

Residual Effects

Implementation of MM CUL-1 and MM CUL-2 would reduce effects to minor.

5.7.4 Alternative 2: Enhance and Expand Existing Wetlands

As in the Proposed Project, this alternative would not affect any known historic properties or cultural resources considered eligible for listing in the NRHP. Effect types under Alternative 2 would be generally similar to the Proposed Project but Alternative 2 would involve no dust suppression activities, 4,491 fewer acres of pond construction and 9,362 more acres of wetland enhancement and creation. Compared to the Proposed Project, Alternative 2 would involve far less surface and subsurface disturbance associated with pond construction, potentially the most damaging form of construction activity to cultural resources (see Table 5-24). As a result, Alternative 2 has a lower potential to affect undiscovered surface and subsurface archaeological sites than the Proposed Project. Alternative 2 has a greater potential to affect cultural resources than does the No Action alternative, which involves no excavation that can disturb or destroy surface and subsurface archaeological resources.

Mitigation Measures

MM CUL-1 and MM CUL-2 would apply to Alternative 2.

Residual Effects

Implementation of MM CUL-1 and MM CUL-2 would reduce effects to minor.

5.7.5 Alternative 3: North End/South End Aquatic Habitat

As in the Proposed Project, this alternative would not affect any known historic properties or cultural resources considered eligible for listing in the NRHP. Effect types under Alternative 3 would be generally similar to the Proposed Project but would involve 6,628 more acres of pond construction and no wetland creation or enhancement and no dust suppression activities. Compared to the Proposed Project, Alternative 3 would involve far greater surface and subsurface disturbance associated with pond construction, the most damaging form of construction activity (see Table 5-24). As a result, Alternative 3 has a greater potential to affect undiscovered surface and subsurface archaeological sites than the Proposed Project. Alternative 3 has a greater potential to affect cultural resources than does the No Action alternative, which involves no excavation that can disturb or destroy surface and subsurface archaeological resources.

Mitigation Measures

MM CUL-1 and MM CUL-2 would apply to Alternative 3.

Residual Effects

Implementation of MM CUL-1 and MM CUL-2 would reduce effects to minor.

5.7.6 Alternative 4: Water Conservation

As in the Proposed Project, this alternative would not affect any known historic properties or cultural resources considered eligible for listing in the NRHP. Effect types under Alternative 4 would be generally similar to the Proposed Project but would involve no pond construction, 9,887 more acres of wetland creation and enhancement, and the same amount (14,900 acres) of dust suppression activities as the Proposed Project. Compared to the Proposed Project, Alternative 4 would eliminate all potential effects from pond construction and result in moderate potential effects from wetland construction and enhancement. Moreover, Alternative 4 would affect 9,175 fewer acres than would the Proposed Project (see Table 5-24). As a result, Alternative 4 has less potential to affect cultural resource effects compared to the Proposed Project. Alternative 4 has a greater potential to affect cultural resources than does the No Action alternative, which involves no excavation that can disturb or destroy surface and subsurface archaeological resources.

Mitigation Measures

MM CUL-1 and MM CUL-2 would apply to Alternative 4.

Residual Effects

Implementation of MM CUL-1 and MM CUL-2 would reduce effects to minor.

5.7.7 Alternative 5: Maximum Build Out

As in the Proposed Project, this alternative would not affect any known historic properties or cultural resources considered eligible for listing in the NRHP. Alternative 5 has the potential to cause the greatest disturbance in the study area because it would affect the greatest amount of land (48,807 acres), including 23,931 acres that would be affected by pond construction and 23,973 acres that would be affected by dust suppression activities. Compared to the Proposed Project and all other alternatives, Alternative 5 thus has the greatest potential to affect undiscovered cultural resources.

Mitigation Measures

MM CUL-1 and MM CUL-2 would apply to Alternative 5.

Residual Effects

Implementation of MM CUL-1 and MM CUL-2 would reduce effects to minor.

5.7.8 Alternative 6: No Federal Action

Under Alternative 6, vegetation removals would be limited by property ownership and vegetation within Corps regulatory authority. As a consequence, vegetation removals would be limited to upland vegetation and would likely be limited in extent. However, ground disturbance of any kind may lead to the inadvertent discovery of cultural resource deposits.

For Alternative 6, project construction and operation would cause a disturbance to surficial deposits which may lead to an inadvertent discovery of cultural resources. As a consequence, this alternative would result in the potential for unanticipated identification of cultural resources.

Mitigation Measures

MM CUL-1 and a measure similar to MM CUL-2 (using State language in place of federal language) would apply to Alternative 6.

Residual Effects

Implementation of MM CUL-1 and a measure similar to MM CUL-2 would reduce effects to minor.

5.7.9 Alternative 7: No Action

Under the No Action Alternative, a number of physical changes would occur. Islands and snags will disappear, the shoreline will decline, and water depth in the Salton Sea will decrease. The primary chemical change will be the continued increase in the Sea's salinity. Submerged cultural resources could be exposed if present on the Sea floor. This could lead to unauthorized artifact collection and/or degradation of cultural materials. Cultural resources may remain intact or be disturbed through bioturbation and erosion.

5.8 ENERGY

5.8.1 Effects Analysis Methodology

This section focuses on the demand for electrical power that would be generated by operation of the Project. Diesel fuel, gasoline, and power used during construction and maintenance activities would be the only other source of substantive energy consumption; the permanent employees would use minor amounts of fuel. The equipment and vehicles used during construction and maintenance would be the minimum needed to perform the required work, and fuel would not be used in a wasteful manner. Therefore, fuel consumption and electrical demand during construction is not addressed in this section.

Incidental energy use would be associated with the trailer, or other temporary structure, used by the permanent employees as office space (e.g., for lighting). This minimal electrical demand would not be wasteful and is not considered further.

Project effects were assessed by considering whether the energy consumption resulting from the operation of Project alternatives would be inefficient or whether opportunities exist to minimize power demand. Access to existing known geothermal resource areas was also considered in this analysis.

Table 5-26 summarizes the effects of the Proposed Project and seven alternatives on energy, compared to the No Action Alternative.

Table 5-26 Summary of Effects for Energy

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
EN-1: Pumping would require power for the duration of the Project	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required
EN-2: Loss of access to a known geothermal resource area	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	MM EN-1: BLM review of Development Focus Areas

Notes:
PP = Proposed Project
N/A = Not Applicable
Adverse Effects:
MLT = Minor Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

Power consumption for the SCH Project was used to estimate power consumption for each Project alternative based on total acreage. Power consumption for the SCH Project is estimated to be approximately 3,235,000 kilowatt hours (kWh) per year and the size of the SCH project is approximately 4,110 acres of ponds. This results in approximately 787 kWh/year per acre of aquatic habitat pond constructed. Acreage for wetlands enhancement was also included with the same power estimate as the ponds to be conservative. Power consumption for dust suppression restoration projects is estimated at approximately 285 kWh/year per acre of projects constructed. This power estimate assumes a groundwater pumping condition of 10 acre feet per month for 6 months (or 60 acre feet per year) which can support 240 acres per year. The estimated power consumption for the operation of the proposed project and alternatives is provided in Table 5-27.

Table 5-27 Power Consumption for Operation of Alternatives

Alternative	Estimated Power Consumption (kilowatt hours/year)
Proposed Project	19,247,184
Alternative 1	20,220,718
Alternative 2	20,220,718
Alternative 3	20,220,718
Alternative 4	12,736,255
Alternative 5	26,295,556
Alternative 6	Unknown, less than other alternatives

5.8.2 Proposed Project

Effect EN-1: Pumping would require power for the duration of the Project. The project would be designed for the efficient use of power to implement projects. Projects would be designed to avoid any unnecessary energy uses. Associated power supply and infrastructure would be designed and installed to support habitat and water-reliant dust suppression projects. The Proposed Project includes a range of aquatic habitat restoration projects, which could cover between 10,790 and 19,062 acres, and dust suppression projects up to 14,900 acres. Pumping plants associated with saline pumping facilities for the Sea or pumping from New, Alamo, and Whitewater rivers would require power to operate long-term. Groundwater pumping for dust suppression restoration projects would also require power to operate long-term. The demand for electrical power that would be generated by operation of the Proposed Project is estimated at 19,247,184 kWh/year. This use of energy is not considered inherently unnecessary or wasteful. It is assumed that IID would provide electrical services to any facilities and construction sites around the shoreline and on the exposed seabed. The context of this effect is long-term and local as power would be required for project operations. Intensity is considered low, because energy use for restoration projects would not be inefficient or unnecessary and would benefit the environment. This effect would be minor and long-term.

Effect EN-2: Loss of access to a known geothermal resource area. The Proposed Project includes habitat and dust suppression projects which are within the KGRA by Alamo River, and lands designated by the BLM for renewable energy development. A total of 1,668 acres within the Proposed Project footprint overlap with priority parcels for geothermal or other renewable development identified by BLM. Construction and operation of the Proposed Project could result in effects to these priority areas. Approximately 123 acres are located within the Alamo River Project footprint and 1,545 acres are located within the dust suppression opportunity areas. Some project types, like pond construction could be more impactful than other types, like vegetation establishment, in terms of potentially limited access.

As described in the land use section, the project would be designed so as not to block geothermal development/access to known geothermal resources when feasible. This effect would be minor and long-term.

Mitigation Measures

MM EN-1: BLM review of Development Focus Areas. Any projects that would be constructed on BLM priority parcels for renewable energy development would have a thorough review conducted by BLM prior to approval and/or implementation.

Residual Effect

With implementation of MM EN-1, effects would be further reduced.

5.8.3 Alternative 1: Maximum Lake Edge

Effect EN-1: Pumping would require power for the duration of the Project. Effects under this alternative are the same as those described for the Proposed Project, except this alternative includes 25,690 acres of habitat restoration projects. All the acreage included under this alternative is for aquatic habitat ponds, except 903 acres, which would be for the enhancement/expansion of an existing wetland. Associated power supply and infrastructure would be designed and installed to support habitat projects under this alternative. The demand for electrical power that would be generated by operation of this alternative is estimated at 20,220,718 kWh per year. As described for the Proposed Project, energy use for restoration projects would not be inefficient or unnecessary and would benefit the environment. This effect would be minor and long-term.

Effect EN-2: Loss of access to a known geothermal resource area. Effects are the same as described for the Proposed Project, except this alternative includes a total of 518 acres which overlap lands designated by BLM as priority parcels for renewable energy development. Of this total, 40 acres are located within the Alamo River Project footprint and 478 acres are located within the Alternative 1 footprint for aquatic habitat pond construction.

Mitigation Measures

MM EN-1 is applicable to this alternative.

Residual Effect

With implementation of MM EN-1, effects would be further reduced.

5.8.4 Alternative 2: Enhance and Expand Existing Wetlands

Effect EN-1: Pumping would require power for the duration of the Project. Effects under this alternative are the same as those described for the Proposed Project, except this alternative includes 25,690 acres of habitat restoration projects. Of this total acreage, aquatic habitat ponds would cover 14,571 acres and 10,265 acres would be for the enhancement/expansion of existing wetlands. Associated power supply and infrastructure would be designed and installed to support the water conveyance and supply system for habitat projects under this alternative. The demand for electrical power that would be generated by operation of this alternative is estimated at 20,220,718 kWh per year. As described for the Proposed Project, energy use for restoration projects would not be inefficient or unnecessary and would benefit the environment. This effect would be minor and long-term.

Effect EN-2: Loss of access to a known geothermal resource area. Effects are the same as described for the Proposed Project, except this alternative includes a total of 1,553 acres which overlap lands designated by BLM as priority parcels for renewable energy development. Of this total, 40 acres are located within the Alamo River Project footprint and 1,673 acres are located within the Alternative 2 footprint for enhancement of existing wetlands.

Mitigation Measures

MM EN-1 is applicable to this alternative.

Residual Effect

With implementation of MM EN-1, effects would be further reduced.

5.8.5 Alternative 3: North End/South End Aquatic Habitat

Effect EN-1: Pumping would require power for the duration of the Project. Effects under this alternative are the same as those described for the Proposed Project, except this alternative includes 25,690 acres of habitat restoration projects composed entirely of aquatic habitat ponds. Associated power supply and infrastructure would be designed and installed to support the water conveyance and supply system for habitat projects under this alternative. The demand for electrical power that would be generated by operation of this alternative is estimated at

20,220,718 kWh per year. As described for the Proposed Project, energy use for restoration projects would not be inefficient or unnecessary and would benefit the environment. This effect would be minor and long-term.

Effect EN-2: Loss of access to a known geothermal resource area. Effects are the same as described for the Proposed Project, except this alternative includes a total of 674 acres which overlap lands designated by BLM as priority parcels for renewable energy development. Of this total, 40 acres are located within the Alamo River Project footprint and 633 acres are located within the Alternative 3 footprint for aquatic habitat pond construction.

Mitigation Measures

MM EN-1 is applicable to this alternative.

Residual Effect

With implementation of MM EN-1, effects would be further reduced.

5.8.6 Alternative 4: Water Conservation

Effect EN-1: Pumping would require power for the duration of the Project. Effects under this alternative are the same as those described for the Proposed Project, except this alternative includes 10,790 acres of habitat restoration projects which consist of wetland enhancement/expansion projects. This alternative also includes 14,900 acres of dust suppression projects. Associated power supply and infrastructure would be designed and installed to support habitat projects and water-reliant dust suppression projects under this alternative. The demand for electrical power that would be generated by operation of this alternative is estimated at 12,736,255. As described for the Proposed Project, energy use for restoration projects would not be inefficient or unnecessary and would benefit the environment. This effect would be minor and long-term.

Effect EN-2: Loss of access to a known geothermal resource area. Effects are the same as described for the Proposed Project, except this alternative includes a total of 1,646 acres which overlap lands designated by BLM as priority parcels for renewable energy development. Of this total, 428 acres are located within dust suppression opportunity areas and 1,218 acres are located within the Alternative 4 footprint for enhancing wetlands.

Mitigation Measures

MM EN-1 is applicable to this alternative.

Residual Effect

With implementation of MM EN-1, effects would be further reduced.

5.8.7 Alternative 5: Maximum Build Out

Effect EN-1: Pumping would require power for the duration of the Project. Effects under this alternative are the same as those described for the Proposed Project, except this alternative includes 24,734 acres of habitat restoration projects and 23,973 acres of dust suppression projects. Associated power supply and infrastructure would be designed and installed to support habitat projects and water-reliant dust suppression restoration projects under this alternative. The demand for electrical power that would be generated by operation of this alternative is estimated at 26,295,556 kWh per year. As described for the Proposed Project, energy use for restoration projects would not be inefficient or unnecessary and would benefit the environment. This effect would be minor and long-term.

Effect EN-2: Loss of access to a known geothermal resource area. Effects are the same as described for the Proposed Project, except this alternative includes a total of 1,957 acres which overlap lands designated by BLM as priority parcels for renewable energy development. Of this total, 123 acres are located within the Alamo River Project footprint and 1,834 acres are located within dust suppression opportunity areas.

Mitigation Measures

MM EN-1 is applicable to this alternative.

Residual Effect

With implementation of MM EN-1, effects would be further reduced.

5.8.8 Alternative 6: No Federal Action

Effect EN-1: Pumping would require power for the duration of the Project. Implementation of the dust suppression restoration projects could require pumping from groundwater wells. The demand for electrical power that would be generated by operation of this alternative would be approximately 285 kWh per acre per year, as described for dust suppression and restoration projects under the Proposed Project. As described for the Proposed Project, energy use for restoration projects would not be inefficient or unnecessary and would benefit the environment. This effect would be minor and long-term.

Effect EN-2: Loss of access to a known geothermal resource area. Potential project locations for this alternative are not known at this time. If any project areas were located within the KGRA, similar to other alternatives, any project developed would be designed so as not to preclude geothermal development/access to known geothermal resources when feasible. This alternative includes dust suppression restoration projects, which would likely be less impactful than aquatic habitat pond construction in terms of potentially limited access. This effect would be minor and long-term.

5.8.9 Alternative 7: No Action

Effect EN-1: Pumping would require power for the duration of the Project. Under the No Action Alternative, there would be no additional power usage associated with restoration projects. It is assumed that IID would continue to provide electrical services to the areas near the project area. Overall, electrical consumption is projected to increase steadily in the future. It is anticipated that IID will continue to implement its *Integrated Resources Plan* and energy efficiency planning to meet future demands and requirements for incorporating alternative energy sources into its network.

Effect EN-2: Loss of access to a known geothermal resource area. No projects would be implemented under this alternative and therefore no effects would occur within the KGRA that could limit access or preclude geothermal development.

5.9 GEOLOGY, SOILS, SEISMIC AND MINERALS

5.9.1 Effects Analysis Methodology

Table 5-28 summarizes the effects of the Proposed Project and seven alternatives on geology, compared to the No Action Alternative.

Best management practices would be implemented during construction to minimize the potential for erosion and sedimentation. They would be part of the Stormwater Management Pollution Prevention Plan and would include such measures as preservation of existing vegetation to the extent feasible, installation of silt fences, use of wind erosion control (e.g., geotextile or plastic covers on stockpiled soil), and stabilization of site ingress/egress locations to minimize erosion.

During the project-level analysis, data collection such as soils analysis and detailed geotechnical field investigations would be conducted as appropriate to determine specific geologic and soil characteristics by specialists including a soil scientist and geotechnical engineer. Registered engineers and/or geologists would use this information to develop design criteria consistent with the California Building Code.

Table 5-28 Summary of Effects for Geology, Soils, Seismic and Minerals

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
GEO-1: Seismic event could cause berms to fail and damage water diversion/conveyance structures	MST	MST	MST	MST	MST	MST	MST	N/A*	None required
GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required
GEO-3: Reduce availability of a known mineral resource	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required
GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust	MST	MST	MST	MST	MST	MST	MST	N/A*	None required

Notes:

PP = Proposed Project

N/A = Not Applicable

Adverse Effects:

MST = Minor Effect (Short-Term)

MLT = Minor Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.9.2 Proposed Project

Effect GEO-1: Seismic event could cause berms to fail and damage water diversion/ conveyance structures. Between 10,790 and 19,062 acres of aquatic habitat restoration projects would be constructed as part of the Proposed Project. No seismically induced safety effects would result from berm or pipeline failure during construction of aquatic habitat ponds and associated infrastructure. Once the ponds and pipelines were filled with water, a berm failure could release water directly to the Salton Sea or onto exposed playa where it would then flow to the Sea. Risks could occur to workers and others located at elevations below aquatic habitat ponds/associated infrastructure if failures occurred during an extreme seismic event. These risks would have a low probability over the life of the project because project features would be constructed in accordance with state and local design criteria to withstand severe seismic events. The topography in the vicinity of where aquatic habitat ponds could be located under this alternative would slope toward the Salton Sea, and water released from the ponds would be temporary and would flow Sea-ward rather than inundate the surrounding area. Thus, water released from the ponds as a result of seismic events would not affect public health or safety, and effects would be minor and short-term. A small area of the Bombay Beach Wetlands project footprint is located within an Alquist-Priolo fault zone. However, no structures would be constructed as part of the aquatic habitat restoration project and therefore the Proposed Project would comply with the Alquist-Priolo Earthquake Fault Zoning Act's main purpose, which is to prevent the construction of buildings used for human occupancy on the surface trace of active faults.

Effect GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms. The lacustrine soils on the Sea bed may be subject to erosion, piping, settling, and spreading during the life of the Project. These factors would be considered during the geotechnical design and accommodated by allowing for settling in the design and placement of soil, adding features such as a cutoff wall to avoid seepage, and using flatter side slopes on the berms to reduce seepage and add stability. Data collection such as soils analysis and geotechnical analysis would be performed prior to construction, as appropriate, and berms would be constructed following appropriate site-specific soil construction techniques, including the use of specialized equipment and flat to moderate slopes. The Project would not cause instability in the surrounding area, and berm failure during the life of the Project would be addressed by repairing the failed section, relocating a section of berm, or changing the berm cross section. As discussed in Effect GEO-1, berm failure would not affect public health or safety, and effects would be minor and long-term.

There could be risk to workers during construction in areas with unstable or emissive soils or volcanic activity. The risk would be reduced due to data collection such as soils analysis and geotechnical analysis, which would be conducted prior to or during facility design, as appropriate.

Effect GEO-3: Reduce availability of a known mineral resource. The Project would use rock or gravel from local sources as substrate or riprap for aquatic habitat ponds. These materials are in ready supply, and their use would not result in loss of availability of a mineral resource that is of local or statewide importance. Therefore, effects would be minor. The Proposed Project would not preclude geothermal development and the underground extraction of minerals such as lithium from geothermal brines in the vicinity of the Proposed Project.

Effect GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust. Construction of project features could destabilize emissive soils temporarily, which could generate additional fugitive dust. Water would be required to suppress dust generated during construction, which is detailed in Section 5.6.5. This temporary increase in fugitive dust would be a minor and short-term effect. All projects constructed would have a beneficial long-term effect of reducing fugitive dust.

5.9.3 Alternative 1: Maximum Lake Edge

Effect GEO-1: Seismic event could cause berms to fail and damage water diversion/ conveyance structures. This alternative includes construction of 25,690 acres of open water habitat around the Sea. The footprint for aquatic habitat projects under this alternative is larger than the Proposed Project alternative, but effects would be the same as those discussed under the Proposed Project. This alternative includes the same Bombay Beach Wetlands project footprint as discussed under the Proposed Project and would comply with the Alquist-Priolo Earthquake Fault Zoning Act. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-3: Reduce availability of a known mineral resource. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

5.9.4 Alternative 2: Enhance and Expand Existing Wetlands

Effect GEO-1: Seismic event could cause berms to fail and damage water diversion/ conveyance structures. This alternative would include 25,690 acres of habitat projects to construct aquatic habitat ponds (15,571 acres) and enhance and expand existing wetlands (10,265 acres). This could include strategically constructing new berms and reinforcing existing berms to increase the residence time of surface water and development of wetland vegetation. The footprint for aquatic habitat projects under this alternative is larger than the Proposed Project alternative, but effects would be the same as those discussed under the Proposed Project. Under this alternative there would be the potential risk of berm failure during a seismic event. However, if existing berms are reinforced, there is potential for these to be more stable than they would have been without implementation of this alternative. This alternative includes the same Bombay Beach Wetlands project footprint as discussed under the Proposed Project and would comply with the Alquist-Priolo Earthquake Fault Zoning Act. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-3: Reduce availability of a known mineral resource. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

5.9.5 Alternative 3: North End/South End Aquatic Habitat

Effect GEO-1: Seismic event could cause berms to fail and damage water diversion/ conveyance structures. This alternative includes construction of aquatic habitat ponds at the North Lake and near the New and Alamo rivers, totaling 25,690 acres. Ponds would be created by constructing berms for this alternative. The footprint for aquatic habitat projects under this alternative is larger than the Proposed Project alternative, but effects would be the same as those discussed under the Proposed Project. This alternative does not include any sites that are within an Alquist-Priolo Earthquake Fault Zone. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-3: Reduce availability of a known mineral resource. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

5.9.6 Alternative 4: Water Conservation

Effect GEO-1: Seismic event could cause berms to fail and damage water diversion/ conveyance structures. The aquatic habitat project area for this alternative (10,790 acres) would consist of enhancing and expanding wetlands. While berms could be constructed at existing wetlands, the amount of berms would likely be less than alternatives which include construction of new aquatic habitat ponds and a larger footprint for aquatic habitat projects. The remaining acres of projects under this alternative are for dust suppression projects, which would not require construction of berms. There would still be the potential risk of berm failure during a seismic event under this alternative. These risks would have a low probability over the life of the project, because project features would be constructed in accordance with state and local design criteria to withstand severe seismic events. The topography in the vicinity of existing wetland habitat around the Sea slope toward the Salton Sea, and berm failure as the result of seismic events would result in water released that would be temporary and would flow downslope toward the Sea rather than inundate the surrounding area. Thus, water released as a result of seismic events would not affect public health or safety, and effects would be minor and short-term. This alternative does not include any sites that are within an Alquist-Priolo Earthquake Fault Zone.

Effect GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms. Effects are the same as described for the Proposed Project. Under this alternative, there would likely be fewer berms constructed, since new aquatic habitat ponds would not be constructed, only existing wetlands would be enhanced and expanded. As discussed in Effect GEO-1, berm failure would not affect public health or safety, and effects would be minor and long-term.

Effect GEO-3: Reduce availability of a known mineral resource. Effects are the same as described for the Proposed Project, except this alternative would require rock or gravel from local sources to be used as substrate or riprap to support wetland enhancement. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

5.9.7 Alternative 5: Maximum Build Out

Effect GEO-1: Seismic event could cause berms to fail and damage water diversion/ conveyance structures. Under this alternative, all the regional opportunity areas would be built out to maximize both habitat and dust suppression projects, with a total acreage of 48,707 acres. Of that total, 24,734 acres would be aquatic habitat ponds, which would require berm construction. The footprint for aquatic habitat projects under this alternative is larger than the Proposed Project alternative, but effects would be the same as those discussed under the Proposed Project. This alternative includes the same Bombay Beach Wetlands project footprint as discussed under the Proposed Project and would comply with the Alquist-Priolo Earthquake Fault Zoning Act. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-3: Reduce availability of a known mineral resource. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

5.9.8 Alternative 6: No Federal Action

Effect GEO-1: Seismic event could cause berms to fail and damage water diversion/ conveyance structures. Under this alternative, the State would proceed with dust suppression and restoration projects that meet specific parameters for projects, access, and infrastructure and do not require federal permitting. This alternative does not include construction of aquatic habitat ponds, so no berms associated with that feature would be constructed. However, berms could be constructed as part of infrastructure to support dust suppression and restoration projects under this alternative. No seismically induced safety effects would result from berm failure during construction. If any berms eventually held back water, a berm failure could temporarily release water to the surrounding area. These risks would have a low probability over the life of the project, because project features would be constructed in accordance with state and local design criteria to withstand severe seismic events. Any water released would flow toward the brine sink rather than inundate the surrounding area. Thus, any water released as a result of seismic events would not affect public health or safety, and the effects would be minor and short-term.

Effect GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms. Dust suppression and restoration projects under this alternative could be located on unstable soils. Effects are the same as described for the Proposed Project. As discussed in Effect GEO-1, berm failure would not affect public health or safety, and effects would be minor and long-term.

Effect GEO-3: Reduce availability of a known mineral resource. Effects are the same as described for the Proposed Project, except that this alternative may require rock or gravel from local sources to be used as substrate or riprap for infrastructure supporting dust suppression and restoration projects. Refer to Section 5.9.2 and Table 5-28.

Effect GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust. Effects are the same as described for the Proposed Project. Refer to Section 5.9.2 and Table 5-28.

5.9.9 Alternative 7: No Action

Effect GEO-1: Seismic event could cause berms to fail and damage water diversion/ conveyance structures. No berms would be constructed as part of the No Action Alternative, and therefore no potential for berm failure during a seismic event would occur.

Effect GEO-2: Project features would be located on unstable soils, potentially affecting the stability of berms. Under this alternative, no projects would be constructed and therefore there would be no potential risks to project features from unstable soils present at the Sea, which may be subject to erosion, piping, settling, and spreading during the life of the Project.

Effect GEO-3: Reduce availability of a known mineral resource. No projects would be constructed which would require the use of minerals and no geothermal development would be precluded under this alternative. No effect would occur.

Effect GEO-4: Construction of project features would destabilize emissive soils, potentially generating additional fugitive dust. No project features would be constructed under this alternative. This alternative would not generate any short-term construction-related fugitive dust. However, the No Action Alternative would not have the long-term benefits of reducing fugitive dust emissions like the other alternatives.

5.10 HAZARDOUS WASTE AND MATERIALS

5.10.1 Effects Analysis Methodology

Potential for exposure to hazardous materials is assessed by verifying the presence of historical contamination in the study area that could be encountered and released during excavations or ground disturbance activates and evaluating the relative risk form hazardous materials that would be used, stored and transported by the Project based on toxicity, volumes and potential for release. Generally, risk of exposure is associated with the construction phase, as operations under the Proposed Project and seven alternatives would decrease risk of exposure through implementation of various subsets of Phase 1 components, which would develop aquatic habitat and/or dust suppression projects and in turn reduce emissivity and thus risk of exposure during operations.

The study area encompasses the construction footprint and associated easements, as well as nearby airspace; surrounding communities also are included in the study area because of the potential for an increase in mosquito vectors. Table 5-29 summarizes the effects of the

Proposed Project and alternatives on risk of upset and release of hazardous materials, compared to the No Action Alternative (Alternative 7).

Table 5-29 Summary of Effects for Hazardous Waste and Materials

Effect	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
HAZ-1: Hazardous materials used during construction and operations could be released into the environment	Maj	MST	MST	MST	Maj	Maj	Maj	N/A*	MM HAZ-1: Prepare and Implement a Surfactant Application Plan MM HAZ-2: Provide Worker Training - UXOs
HAZ-2: Project construction could encounter contaminated soils during soil excavation	MST	MST	MST	MST	MST	MST	MST	N/A*	MM HAZ-3: Provide Worker Training – Air-borne Exposure and Disease Imperial County Air Pollution Control District's Regulation VIII addresses fugitive dust control
HAZ-3: The Project would attract birds in proximity to low-level military training routes	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required
HAZ-4: Increased traffic and construction near roadways would impair the implementation of an adopted emergency response or evacuation plan	MST	MST	MST	MST	MST	MST	MST	N/A*	None required
HAZ-5: Project construction could increase the risk of wildland fire	MST	MST	MST	MST	MST	MST	MST	N/A*	None required
HAZ-6: Project construction could release air and dust-borne disease-causing viruses	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A*	MM HAZ-3: Provide Worker Training – Air-borne Exposure and Disease
HAZ-7: Project operation could increase breeding habitat for mosquito vectors	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A*	MM HAZ-4: Develop and implement a Mosquito Control Plan
HAZ-8: Selenium and dichlorodiphenyldichloroethylene (DDE) levels in ponds could cause increased selenium and DDE levels in	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required

Effect	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
sport fish and waterfowl using the ponds									

Notes:

PP=Proposed Project

N/A = Not Applicable

Adverse Effects:

MST = Minor Effect (Short-Term)

MLT = Minor Effect (Long-Term)

Maj = Major Effect (Short-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

The following list presents the criteria used to determine the intensity and duration associated with effects of hazards and hazardous materials and public health and the methodology used in applying the criteria to the Project alternatives. Effects associated with hazards and hazardous materials and public health would be major if the Project would:

- **Create a significant hazard through transport, storage, use, exposure, or disposal of hazardous materials or be located on designated hazardous materials site** – The analysis considers whether the Project would expose either the public or workers to risks from exposure to hazardous materials during construction, operations, and maintenance and whether Project construction would occur on a site known to contain hazardous materials. The primary risks associated with the alternatives would be related to materials used in the construction or operations and maintenance. The risks could be related to chemicals, fuel, oil and grease, or exposure of buried or inundated hazardous materials including UXOs.
- **Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of a school** – No schools are located within or immediately adjacent to the study area. Therefore, this criterion was not considered in the evaluation.
- **Be located within an airport land use plan or within 2 miles of a public use or private use airport or airstrip and result in a safety hazard** – There are no public or private use airports within 2 miles of the Salton Sea shoreline, but military training routes and other military aircraft operations occur in the vicinity of the study area.
- **Project construction could encounter contaminated soils during soil excavation** – The risk of encountering contaminated soils during excavation of the Sea Bed and shoreline soils is related to the extent of the excavation. Soil disturbance in geothermal areas could also cause the release of ammonia, hydrogen sulfide, and methane. The extent of the disturbance area is considered for each Project alternative in comparison to the Proposed Project, which would create the most soil disturbance, and the No Action Alternative, for which only operations and maintenance activities would continue to be conducted.
- **The potential to increase or attract bird populations that could cause an increase in bird strikes by aircraft** - The potential to impact the Naval Air Facility El Centro training

ranges was evaluated by comparison of birds expected to be present as a result of the Project to those expected under current and future conditions of the No Project Alternative.

- **Exposure to wildfires** – The Project components considered in the alternatives would be located in the Sea Bed or along the shoreline and in general would not result in use of explosives or construction methods that would cause wildfires. The analysis considers existing wildfire risk and whether the Project would contribute an ignition source or a significant source of fuel for a wildland fire.
- **Impair the implementation of an adopted emergency response or evacuation plan** – The Project components and features would be located in the Sea Bed or along the shoreline. These locations would not interfere with emergency response or evacuation plans. Methods to reduce traffic effects due to transport of construction materials are described in Section 4.13, Transportation and Traffic, and consider Project coordination with implementers of emergency evacuation plans.
- **Increased human health risk due to exposure to air and dust-borne disease-causing viruses** – Two public health risks, valley fever (or coccidiomycosis) and hantavirus pulmonary syndrome, are airborne diseases. The potential for increasing the risk associated with vectors or disease is considered for each Project alternative; With habitat restoration and dust suppression measures implemented under the Project, risk of release of air and dust-borne disease- causing viruses would be reduced.
- **Create sufficient vector habitat to pose a threat to public health** – The analysis considers whether a Project alternative would create new breeding habitat for mosquitos (*Culex tarsalis*) that pose a threat to public health.
- **Increase concentrations of potentially harmful substances in sport fish and waterfowl** – The potential human health risk associated with ingestion of fish and waterfowl from the study area was analyzed for selenium and DDE, the most prevalent pesticide documented in sediment. Each of the Project alternatives was compared to levels of selenium in fish and waterfowl under existing conditions to determine whether the selenium concentrations would be expected to increase or decrease and whether those increases would be expected to exceed estimated safe fish consumption rates and advisories for the Salton Sea. For DDE, the potential human health risk for fish consumption was analyzed based on existing sediment DDE concentrations (Wang et al. 2011). The area weighted DDE concentration (SCH Project column) of inundated pond sediment (undisturbed playa surface, borrow ditches, habitat swales, and submerged edges of berms and islands) was compared to existing conditions (i.e., DDE concentration of undisturbed surface sediment) to determine whether exposure to DDE would change due pond construction and inundation. The analysis considers whether a Project alternative would expose the public to rates of selenium or other contaminants beyond maximum exposures considered protective of human health from the consumption of fish or waterfowl when compared to the No Action Alternative. The potential for increasing the risks associated with consumption of selenium in fish and waterfowl tissue is considered for each Project alternative.

5.10.2 Proposed Project

Between 10,790 and 19,062 acres of aquatic habitat restoration projects would be designed as part of the Proposed Project, and up to 14,900 acres of dust suppression and restoration opportunity areas may be built within the mapped dust suppression and restoration opportunity areas.

Effect HAZ-1: Hazardous materials used during construction and operations could be released into the environment. During the construction and operations of the Proposed Project, hazardous materials proposed for use could include surfactants, solvents, gasoline, diesel fuel, motor oil, lubricants, and welding gases. No acutely hazardous materials would be used during construction, and none of the materials pose a substantial potential for off-site effects as a result of the quantities on site their relative toxicity, physical state, or environmental mobility. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel are all very low volatility and represent limited off-site hazards. Any effect of spills or other releases of these materials would be limited to the site because of the small quantities involved and storage, handling and spill cleanup procedures. Best management practices (BMPs), such as spill cleanup, secondary containment and proper storage, and handling of hazardous materials during construction would be included as components of the Storm Water Pollution Prevention Plan (SWPPP), a requirement for coverage under the State Construction General Permit, and the Hazardous Materials Management Plan.

Hazardous materials used during Proposed Project operations and maintenance would include surfactants applied for dust suppression and habitat restoration, lube oils for pumps, and possibly small quantities of paints or solvents. These materials are of a very low toxicity and would be of such small volumes they are unlikely to trigger the Business Plan requirements for reporting and developing a Hazardous Material Management Plan. Therefore, handling, storage, usage and transportation of hazardous materials during construction and operation would be temporary and minor in comparison to the No Action Alternative. However, long-term use of surfactants applied during habitat restoration and dust suppression activities would present a potential risk to public health if not applied and managed properly. Long-term surfactant use shall require the development and implementation of a Surfactant Management Plan to dictate proper handling, application and monitoring of surfactants to reduce potential health risk to workers.

The Corps operates the 3R Awareness Program to educate local government agencies to “recognize, retreat and report” UXOs and munitions debris in acres currently or formerly used for military training purposes. Additionally, the Corps maintains the Formerly Used Defense Sites (FUDS) GIS interactive map to access data included in the Defense Environmental Restoration Program Annual Report to Congress; the data in the report are updated annually to reflect current property activity. Potential locations of UXOs within the Salton Sea are illustrated in Figure 4.11. Habitat restoration would be constructed along the Sea shoreline as it recedes and not in close proximity to submerged UXO sites that are mapped in FUDS. Dust suppression would be conducted as illustrated in Figure 3-1. Specifically, Salton Sea Bomb Target # 52, portions of the Salton Sea Hazardous ACEC and Presumed Bomb Target Site Floating Target, as shown on Figures 4-10a and 10b, would comprise proposed dust suppression areas. Application of dust suppression methods, as described in subsection 3.3.2.3, Dust Suppression Techniques, could trigger UXOs if present in these areas, which would be a major effect to public health and safety and could release hazardous materials into the environment. To reduce this risk to minor, pre-construction site remediation and worker training shall be required.

Therefore, a potential risk to public health and safety effect related to UXO and munitions would remain during construction of the Proposed Project and the risk of explosion would be major in comparison to the No Action Alternative.

Mitigation Measures

MM HAZ-1: Prepare and Implement a Surfactant Management Plan

A management plan for the identification of appropriate surfactant(s), material storage, and surfactant application shall be prepared and implemented. The plan shall include a worker training program that shall be provided to workers who may be exposed to surfactants during habitat restoration and dust suppression activities. Training shall include recognizing symptoms and proper use of personal protective equipment.

MM HAZ-2: Conduct Pre-construction Site Remediation and Provide Worker Training - UXOs

Prior to any construction in an area that potentially contains UXOs or munitions, an UXO-qualified DWR contractor shall coordinate with the Corps, to verify the current state of the bomb targets and determine what remediation, if any, needs to occur prior to construction. If any UXOs or munitions are located during pre-construction surveys, the local bomb squad shall be contacted to identify the munition and deactivate and remove the UXO, if necessary.

No construction shall begin before providing worker training on how to “recognize, retreat and report” UXOs and munitions and implementing the remediation steps needed to project the health of construction workers and members of the public, as well as ecological receptors.

Residual Effects

Implementation of MM HAZ-1 would reduce Effect HAZ-1 to minor because workers would be trained on potential health effects of surfactant exposure, proper storage, handling and use, in addition to how to recognize exposure symptoms, as well as how to use appropriate personal protective equipment (PPE) to prevent exposure. Implementation of MM-HAZ-2 would reduce Effect-1 to minor because prior to construction personnel mobilizing, restoration sites would be surveyed and remediated when necessary, and workers would be trained on Corps 3R Awareness Program components.

Effect HAZ-2: Project construction could encounter contaminated soils during soil excavation. The potential for risk to encounter contaminated soils is associated with the amount of soil disturbance. The risk of potential exposure would be greatest for construction workers and any members of the public within the immediate vicinity that are exposed to dust during the disturbance Seabed materials. Disturbance also could cause the release of ammonia, carbon dioxide, hydrogen sulfide, volatile hydrocarbons and methane. Unstable soils could also incur a risk of injury to workers and recreationists as the water recedes and the presence of extremely hot water near geothermal areas. Unstable soils and seismic activity are further assessed in 5.9, Geology, Soils, Seismic and Minerals.

Pesticides are known to be present in the sediments at the proposed sites (Wang et al. 2011), and worker exposure to these pesticides during construction is possible. Ammonia and hydrogen sulfide are periodically released from the land surface when unstable areas are exposed as Sea elevation recedes, but these releases would be minor and short-term. There have been antidotal observations that carbon dioxide, volatile hydrocarbons and methane also is released from the water surface, especially near the mudpots and geothermal areas near the southern Sea Bed; observations are supported by published studies (Rudolph and Manga 2010; Rudolph and Manga 2012; Svensen et al 2004; Onderdonk et al 2011). These releases of gas can be harmful to workers and recreationists on boats. Disturbance of the Sea Bed soils also could cause releases of these gases. Carbon dioxide release is addressed in 5.3, Air Quality.

Compliance with the mandatory Imperial County Air Pollution Control District's Regulation VIII would adequately reduce the potential for fugitive dust emissions at the construction site. This would also reduce the potential for worker exposure. Additionally, the period of exposure would be limited to the time that ground-disturbing activities were occurring. This effect would be minor when compared to the No Action Alternative.

With the potential exception of pesticides, no significant areas of documented contamination were found in the study area, and no buildings, other structures, asphalt or concrete-paved surfaces areas would be demolished during Project construction. Soils would be tested for contaminants prior to excavation. Should testing show the presence of contaminated soil, or if such soil was observed either visually or through smell during construction activities, such material would be handled in accordance with DTSC found in Title 22, Division 4.5, Environmental Health Standards for the Management of Hazardous Wastes method and the Imperial CUPA Hazardous Waste Generator and Tiered Permitting Program and the Riverside County Department of Environmental Health Hazardous Materials Branch (i.e., the CUPA for the county) . Any excavated areas that had an odor due to contaminated soil would be covered while one or more samples were being tested to determine the level of contamination. The presence of known or suspected contaminated soil or groundwater would require the supervision of testing and investigation by a licensed professional geologist or engineer, as appropriate to meet state and Federal regulations. The effect on workers would be potentially major.

Mitigation Measures

MM HAZ-3: Provide Worker Training – Air-Borne Exposures and Disease

Worker training shall be provided to workers who may be exposed to releases of gases from soils or air-borne diseases during excavation activities. Training shall include recognizing symptoms and proper identification and use of personal protective equipment (PPE).

Residual Effects

Site remediation will be addressed Implementation of MM HAZ-3 would reduce Effect HAZ-2 to minor because workers would be trained on how to minimize risk of exposure, recognize symptoms (and thus get treatment), as well as how to use appropriate personal protective equipment (PPE) to prevent exposure and disease.

Effect HAZ-3: The Project would attract birds in proximity to low-level military training routes. As discussed in Section 4.4, Biological Resources, the Salton Sea ecosystem has become one of the most important habitats for birds in North America and supports some of the highest levels of avian biodiversity in the southwestern United States. The Proposed Project would restore a portion of the habitat that is expected to be lost as the Salton Sea recedes over time and as salinity levels increase. Aquatic habitat restoration would be implemented as the Sea recedes and would replace habitat that was recently available and used extensively by birds. Birds presently tend to be concentrated near the shoreline. The Proposed Project would therefore not be expected to attract significantly greater concentrations of birds than currently use the area, and as the Sea recedes over time, restored areas would constitute one of the few remaining areas that provide habitat for fish eating birds. Bird populations are expected to decline at the Salton Sea regardless of whether the Proposed Project is implemented.

The Project would not increase the risk of bird airstrikes at civilian airports (the closest of which is approximately 8 miles from the proposed New River pond sites and, therefore, are too far to be affected by the Proposed Project), nor would it increase risks for crop dusters flying over nearby fields because the number of birds in the Project area would not increase over current levels. The Proposed Project would not increase risks for military aircraft using the MOAs because their floors begin at 30,000 feet and birds using aquatic habitats would not be present at that altitude. The Proposed Project also would not be expected to increase risks for those pilots using the military training routes several times a year because these routes are located near the shoreline and the Sonny Bono Salton Sea National Wildlife Refuge, which already are heavily used by birds. Geese may roost or loaf in the study area, but this would not differ substantially from existing conditions. Based on the expected high salinity of the ponds and the lack of emergent vegetation, these species are not expected to forage in the proposed aquatic habitat areas, nor would the aquatic habitat restoration areas provide adequate nesting habitat for these species, which otherwise could result in a larger population. Gulls and pelicans would continue to use the study area, but they are already present at the Sea, and over time, the number of birds in general at the Salton Sea is expected to decline. Effects would be minor when compared to the No Action Alternative.

Effect HAZ-4: Increased traffic and construction near roadways would impair the implementation of an adopted emergency response or evacuation plan. The Proposed Project would be located in a sparsely populated rural area. As discussed in Section 5.13, Transportation and Traffic, neither construction nor operations would result in an unacceptable level of service on any roadways, and the amount of traffic that would be generated on the generally lightly traveled local roadways would not delay emergency access. There is a potential for pipeline installation to occur along existing roadways, but typical roadway safety precautions would be taken (e.g., flaggers, signs warning motorists of roadway work), and at least one travel lane would remain open at all times, thereby ensuring that emergency vehicles and those of the general public could pass. Because emergency vehicles are equipped with sirens, which give advance warning of their approach, construction crews would have the ability to make emergency provisions for safe vehicle passage through construction zones. Effects therefore would be minor when compared to the No Action Alternative.

Effect HAZ-5: Project construction could increase the risk of wildland fire. Potential sources of ignition include equipment with internal combustion engines, gasoline powered tools, and equipment or tools that produce a spark, fire, or flame. Such sources include sparks from blades or other metal parts scraping against rock, overheated brakes on wheeled equipment, friction from worn or unaligned belts and drive chains, and burned-out bearings or bushings. Smoking by onsite construction personnel is also a source of ignition during construction. There are no “Very-High Fire Hazard Severity Zone” or “Wildland Area that may Contain Substantial Forest Fire Risk and Hazard” designations within the study area (https://egis.fire.ca.gov/FHSZ/; Accessed August 31, 2021). Although construction could pose a wildland fire risk, the risk is minor when compared to the No Action Alternative due to lack of a source of fuel for wildland fires in the study area and because regulations requiring fire suppression equipment would be followed. The effect would occur during construction, and therefore would be temporary and short-term.

Effect HAZ-6: Project construction could release air and dust-borne disease-causing viruses). Construction for the Proposed Project would require excavation for restoration of aquatic habitats and installation of pipelines, weirs and other structures to divert water, and sediment/mixing basins. Soil disturbance would occur at staging, storage and parking areas. Construction would take place out of doors, and rodent handling would not occur; therefore, exposure to the Hantavirus is unlikely. Earth-moving activities during construction could release air and dust-borne diseases such as valley fever into the air exposing workers; given required dust control measures (refer to Section 5.3, *Air Quality and Imperial County Air Pollution Control District, Regulation VIII, Fugitive Dust Control Measures*), effects would be localized and would not be expected to affect the general public. The effect on workers would be potentially major.

Mitigation Measures

MM HAZ-3: Provide Worker Training – Air-Borne Exposures and Disease

Worker training shall be provided to workers who may be exposed to releases of gases from soils or air-borne diseases during excavation activities. Training shall include recognizing symptoms and proper identification and use of personal protective equipment (PPE).

Residual Effects

Site remediation will be addressed Implementation of MM HAZ-3 would reduce Effect HAZ-6 to minor because workers would be trained on how to minimize risk of exposure, recognize symptoms (and thus get treatment), as well as how to use appropriate personal protective equipment (PPE) to prevent exposure and disease.

Effect HAZ-7: Project operation could increase breeding habitat for mosquito vectors. Aquatic habitat restoration areas are not expected to be conducive to mosquito production because the configuration of the ponds includes a large proportion of the surface area with open water at a depth less than 2 feet. Open water should reduce the survival of immature mosquitos because of disturbance and drowning caused by wind-driven waves and high susceptibility to predators. Aquatic habitats, primarily ponds, at the high end of the range of operational salinities are predicted to be too salty for significant mosquito production and colonization by wetland plants (Corps and CNRA 2013). If mosquito production occurs in ponds, populations are likely to be limited to the shallow zones of the upslope periphery of the pond and possibly the berms if aquatic vegetation and/or inundated grasses (i.e., salt grass) colonize the shallow water and berms. The width of these colonized areas tends to range from 3 to 6 feet (1 to 2 meters), which represents only 0.6 to 1.1% of the surface area of a 100-acre pond. If vegetation is found along the periphery of sedimentation/mixing basins, then monitoring for larval mosquito populations would occur at natural openings in vegetation in compliance with the Mosquito Control Plan. The ponds would be managed at a salinity ranging from 20 parts per thousand (ppt) to 40 ppt, which would reduce the potential for vegetation to grow in the ponds because the higher salinities exceed the tolerances of most freshwater macrophytes. Salinities at the lower end of the management range, however, may not limit macrophyte colonization (Corps and CNRA 2013). Vegetation management in the low salinity ponds would be necessary to reduce or eliminate conditions conducive to mosquito production. Potential effects would be major when compared to the No Action Alternative.

Mitigation Measures

MM HAZ-4: Develop and Implement a Mosquito Control Plan

Mosquito Control Plan shall be developed and implemented. The plan shall be designed to minimize the potential for public safety risks from the presence of mosquitos, and would include monitoring of mosquito populations, the continued surveillance of mosquito-borne pathogens and a treatment program to control mosquitos at the aquatic habitat restoration and dust suppression sites, when needed. Monitoring activities shall be used to locate mosquito life stages (egg, larvae, pupa, and adults), estimate their abundance, and determine species composition for the purpose of making treatment decisions. Disease surveillance shall be used to detect the presence of mosquito-borne disease as part of a state-wide program. Mosquito treatments shall be used to reduce the abundance of mosquito populations and associated mosquito-borne disease risk, as needed.

Residual Effects

Implementation of MM HAZ-4 would reduce Effect HAZ-7 to a minor level. Monitoring activities would be used to locate mosquito life stages (egg, larvae, pupa, and adults), estimate their abundance, and determine species composition for the purpose of making treatment decisions. Disease surveillance would be used to detect the presence of mosquito-borne disease as part of a state-wide program. Mosquito treatments would be used to reduce the abundance of mosquito populations and associated mosquito-borne disease risk, as needed.

Effect HAZ-8: Selenium and DDE levels in ponds could cause increased selenium and DDE levels in sport fish and waterfowl using the ponds. Selenium and dichlorodiphenyldichloroethylene (DDE) are present in the pond source water and could cause increased selenium and DDE levels in sport fish and waterfowl using the ponds. For the Salton Sea, OEHHA's public health advisory limits fish consumption to two servings per week for all consumers (OEHHA 2021). Several other health risk assessments related to selenium exposure from fish consumption have been developed for the Salton Sea, as summarized in Table 4-35. These safe consumption rates are comparable to the present advisory limit issued by OEHHA. Estimates of fish and duck tissue selenium concentrations are presented in Table 4-35; concentrations are below the OEHHA thresholds and within the range determined to be safe for expected human consumption.

DDT and its derivatives dichlorodiphenyldichloroethane (DDD) and DDE can enter the food chain from sediments and can bioaccumulate to affect consumers. Existing DDE concentrations in surface and subsurface sediments at known proposed pond sites (Table 4-36) greatly exceed the SLVs sediment bioaccumulation screening levels; Poulsen and Peterson 2006) for both the general population and for more frequent consumers. Total DDT tissue concentrations measured in fish collected from the New and Alamo rivers regularly exceed the National Academy of Sciences recommended maximum concentration (1,000 ng/g; CRBRWQCB 2002a, 2002b, 2005) and the United States Food and Drug Administration Action Level (5,000 ng/g; CRBRWQCB 2002a, 2002b, 2005). Studies suggest that DDE concentrations measured in Salton Sea tilapia are unlikely to cause non-cancerous health effects in anglers, but consumption of more than four meals of tilapia per week may result in a 1 × 10-5 increase in cancer risk (Moreau et al. 2007). These values, however, are based on DDT and DDE concentrations reported from small sample sizes, and further research is required to refine estimates of risk from consumption of Salton Sea fish contaminated with DDT and its metabolites. Following OEHHA's public health advisory limiting fish consumption to two servings per week for all consumers (Table 4-35; OEHHA 2021) would result in minimal risk to humans from DDE exposure under existing conditions. The Proposed Project would not increase the levels of these constituents, and therefore, would not increase human health risk exposure related to consuming fish or wildlife from the ponds. This would be a minor effect in comparison to the No Action Alternative.

5.10.3 Alternative 1: Maximum Lake Edge

Alternative 1 would create lake edge from the Salton Sea State Recreation Area near the community of North Shore in a counter-clockwise direction around to just north of Bombay Beach, with a total of 25,690 acres of open water habitat.

Effect HAZ-1: Hazardous materials used during construction and operations could be released into the environment. Potential release of hazardous materials during construction would be similar to the Proposed Project. As this alternative would not implement dust suppression, MM HAZ-1 and MM HAZ-2 would not apply.

Effects, **HAZ-2**, **HAZ-3**, **HAZ-4**, and **HAZ-5** are the same as those discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

Effect HAZ-6: Project construction could release air and dust-borne disease-causing viruses. The discussion for the Proposed Project is applicable to Alternative 1.

Mitigation Measures

MM HAZ-3 would apply to Alternative 1.

Residual Effect

Implementation of MM HAZ-3 would reduce Effect HAZ-6 to a minor level.

Effect HAZ-7: Project operation could increase breeding habitat for mosquito vectors but implementation of the Mosquito Control Plan would present threats to public health. The discussion for the Proposed Project is applicable to Alternative 1.

Mitigation Measure

MM HAZ-4 would apply to Alternative 1.

Residual Effect

Implementation of MM HAZ-4 would reduce Effect HAZ-7 to a minor level.

Effect HAZ-8 is the same as discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

5.10.4 Alternative 2: Enhance and Expand Existing Wetlands

Alternative 2 would include projects to create the required 25,690 acres of wetlands and open water habitat.

Effect HAZ-1: Hazardous materials used during construction and operations could be released into the environment. Potential release of hazardous materials during construction would as described for the Proposed Project. As this alternative would not implement dust suppression, MM HAZ-1 and MM HAZ-2 would not apply.

Effects, **HAZ-2**, **HAZ-3**, **HAZ-4**, and **HAZ-5** are the same as those discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

Effect HAZ-6: Project construction could release air and dust-borne disease-causing viruses. The discussion for the Proposed Project is applicable to Alternative 2.

Mitigation Measures

MM HAZ-3 would apply to Alternative 2.

Residual Effects

Implementation of MM HAZ-3 would reduce Effect HAZ-6 to a minor level.

Effect HAZ-7: Project operation could increase breeding habitat for mosquito vectors but implementation of the Mosquito Control Plan would present threats to public health. The discussion for the Proposed Project is applicable to Alternative 2.

Mitigation Measure

MM HAZ-4 would apply to Alternative 2.

Residual Effects

Implementation of MM HAZ-4 would reduce Effect HAZ-7 to a minor level.

Effect HAZ-8 is the same as discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

5.10.5 Alternative 3: North End/South End Aquatic Habitat

Alternative 3 would include the North Lake Project that is currently under design as well as additional ponds near the New and Alamo rivers, totaling 25,690 acres.

Effect HAZ-1: Hazardous materials used during construction and operations could be released into the environment. Potential release of hazardous materials during construction would be as described for the Proposed Project. As this alternative would not implement dust suppression MM HAZ-1 and MM HAZ-2 would not apply.

Effects, **HAZ-2**, **HAZ-3**, **HAZ-4**, and **HAZ-5** are the same as those discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

Effect HAZ-6: Project construction could release air and dust-borne disease-causing viruses. The discussion for the Proposed Project is applicable to Alternative 3.

Mitigation Measures

MM HAZ-3 would apply to Alternative 3.

Residual Effects

Implementation of MM HAZ-3 would reduce Effect HAZ-6 to a minor level.

Effect HAZ-7: Project operation could increase breeding habitat for mosquito vectors, but implementation of the Mosquito Control Plan would present threats to public health. The discussion for the Proposed Project is applicable to Alternative 3.

Mitigation Measure

MM HAZ-4 would apply to Alternative 3.

Residual Effects

Implementation of MM HAZ-4 would reduce Effect HAZ-7 to a minor level.

Effect HAZ-8 is the same as discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

5.10.6 Alternative 4: Water Conservation

Under Alternative 4, the aquatic habitat project area (10,790 acres) would consist of enhancing and expanding wetlands and include 14,900 acres of dust suppression projects. The total project area for this alternative is 25,690 acres.

Effect HAZ-1: Hazardous materials used during construction and operations could be released into the environment. The discussion for the Proposed Project is applicable to Alternative 4.

Mitigation Measures

MM HAZ-1 and MM HAZ-2 would apply to Alternative 4.

Residual Effect

Implementation of MM HAZ-1 and MM HAZ-2 would reduce Effect HAZ-1 to a minor level.

Effects HAZ-2, **HAZ-3**, **HAZ-4**, and **HAZ-5** are the same as those discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

Effect HAZ-6: Project construction could release air and dust-borne disease-causing viruses. The discussion for the Proposed Project is applicable to Alternative 4.

Mitigation Measures

MM HAZ-2 would apply to Alternative 4.

Residual Effects

Implementation of MM HAZ-2 would reduce Effect HAZ-6 to a minor level.

Effect HAZ-7: Project operation could increase breeding habitat for mosquito vectors but implementation of the Mosquito Control Plan would present threats to public health. The discussion for the Proposed Project is applicable to Alternative 4.

Mitigation Measure

MM HAZ-3 would apply to Alternative 4.

Residual Effects

Implementation of MM HAZ-3 would reduce Effect HAZ-7 to a minor level.

Effect HAZ-8 is the same as discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

5.10.7 Alternative 5: Maximum Build Out

Alternative 5 would include all feasible habitat restoration and dust suppression areas for a total project area of 48,596 acres.

Effect HAZ-1: Hazardous materials used during construction and operations could be released into the environment. The discussion for the Proposed Project is applicable to Alternative 5.

Mitigation Measures

MM HAZ-1 and MM HAZ-2 would apply to Alternative 5.

Residual Effect

Implementation of MM HAZ-1 and MM HAZ-2 would reduce Effect HAZ-1 to a minor level.

Effects, **HAZ-2**, **HAZ-3**, **HAZ-4**, and **HAZ-5** are the same as those discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

Effect HAZ-6: Project construction could release air and dust-borne disease-causing viruses. The discussion for the Proposed Project is applicable to Alternative 5.

Mitigation Measures

MM HAZ-3 would apply to Alternative 5.

Residual Effects

Implementation of MM HAZ-3 would reduce Effect HAZ-6 to a minor level.

Effect HAZ-7: Project operation could increase breeding habitat for mosquito vectors but implementation of the Mosquito Control Plan would present threats to public health. The discussion for the Proposed Project is applicable to Alternative 5.

Mitigation Measure

MM HAZ-4 would apply to Alternative 5.

Residual Effects

Implementation of MM HAZ-4 would reduce Effect HAZ-7 to a minor level.

Effect HAZ-8 is the same as discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

5.10.8 Alternative 6: No Federal Action

Under Alternative 6, no projects would be built that would require federal action. The area and location of the projects is uncertain, but the area that would be affected would be less than for other alternatives.

Effect HAZ-1: Hazardous materials used during construction and operations could be released into the environment. The discussion for the Proposed Project is applicable to Alternative 6.

Mitigation Measures

MM HAZ-1 and MM HAZ-2 would apply to Alternative 6.

Residual Effect

Implementation of MM HAZ-1 and MM HAZ-2 would reduce Effect HAZ-1 to a minor level.

Effects HAZ-2, **HAZ-3**, **HAZ-4**, and **HAZ-5** are the same as those discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

Effect HAZ-6: Project construction could release air and dust-borne disease-causing viruses. The discussion for the Proposed Project is applicable to Alternative 6.

Mitigation Measures

MM HAZ-3 would apply to Alternative 6.

Residual Effects

Implementation of MM HAZ-3 would reduce Effect HAZ-6 to a minor level.

Effect HAZ-7: Project operation could increase breeding habitat for mosquito vectors but implementation of the Mosquito Control Plan would present threats to public health. The discussion for the Proposed Project is applicable to Alternative 6.

Mitigation Measure

MM HAZ-4 would apply to Alternative 6.

Residual Effects

Implementation of MM HAZ-4 would reduce Effect HAZ-7 to a minor level.

Effect HAZ-8 is the same as discussed for the Proposed Project. Refer to Section 5.10.2 and Table 5-29.

5.10.9 Alternative 7: No Action

Under Alternative 7, the Corps would not issue a permit for the SSMP 10-Year Plan Project, and no components of the Project would be constructed.

Effect HAZ-1: Hazardous materials used during construction could be released into the environment. Under the No Action Alternative, no projects would be implemented and no hazardous materials would be released.

Effect HAZ-2: Project construction could encounter contaminated soils during soil excavation. Under the No Action Alternative, no projects would be implemented and no contaminated soils would be encountered.

Effect HAZ-3: The ponds would attract birds in proximity to low-level military training routes. Under the No Action Alternative, no projects would be implemented and no ponds that would attract birds in proximity to low-level military training routes would be built.

Effect HAZ-4: Increased traffic and construction near roadways would not impair the implementation of an adopted emergency response or evacuation plan. Under the No Action Alternative, no projects would be implemented and increased traffic or construction near roadways would not impair implementation of an adopted emergency response or evacuation plan.

Effect HAZ-5: Project construction could increase the risk of wildland fire. Under the No Action Alternative, no projects would be implemented and no change in risk of wildfire would occur.

Effect HAZ-6: Project construction could release air and dust-borne disease-causing viruses. Under the No Action Alternative, no projects would be implemented and no construction would release air and dust-borne disease-causing viruses.

Effect HAZ-7: Project operation could increase breeding habitat for mosquito vectors and present threats to public health. Under the No Action Alternative, no projects would be implemented and there would not be an increase in breeding habitat for mosquito vectors.

Effect HAZ-8: Selenium and DDE levels in ponds could cause increased selenium and DDE levels in sport fish and waterfowl using the ponds. Under the No Action Alternative, no projects would be implemented and increased selenium and DDE levels in sport fish would not occur.

5.11 NOISE

This section addresses the effects of the Proposed Project on sensitive noise receptors in the Project vicinity.

5.11.1 Effects Analysis Methodology

Table 5-30 summarizes the effects of the Proposed Project and seven alternatives on noise compared to the No Action Alternative.

Noise would be generated by trucks and equipment used during construction and maintenance activities. The level of noise from construction and maintenance activities would depend on several factors, including the following: phase of construction; type of equipment used and its location on the construction site; amount of time that a given piece of equipment would operate at its loudest mode; and proximity of noise-sensitive receptors to construction activities.

Not all equipment would be used for all phases of construction and maintenance, and not all would operate at peak capacity concurrently. Table 5-31 shows the types of trucks and equipment that would be used during construction and maintenance as well as the estimated quantity, days of use, and hours of use. The USEPA (1971) estimated that construction of public works projects, which includes features similar to those of the Proposed Project, typically generates an average of 78 to 88 dBA depending on the construction phase and the amount of equipment being used. Assuming a construction noise level of 78 to 88 dBA, noise attenuation from construction activities is anticipated to occur as shown in Table 5-32.

Table 5-30 Summary of Effects for Noise

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
NOI-1: Construction and maintenance would cause a temporary increase in noise levels near project sites	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A*	MM NOI-1: Control construction noise from sensitive receptors located within approximately 200 feet of work limits

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
									MM NOI-2: Avoid nighttime construction
NOI-2: Construction truck traffic at some locations would cause a temporary increase in noise near residents	MST	MST	MST	MST	MST	MST	MST	N/A*	None required

Notes:

PP= Proposed Project
N/A = Not Applicable

Adverse Effects:

MST = Minor Effect (Short-Term)

Maj = Major Effect (Short-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

Table 5-31 Estimated Equipment Use during Construction

Equipment Type	Hours/Day
Challenger tractor, wheeled	8
Backhoe, tracked	8
Water truck, wheeled	8
Sno-Cat, tracked	8
Light duty pickup truck	8

Table 5-32 Attenuation of a Noise Source of 78 to 88 dBA

Distance (feet)	Noise Level (dBA)
50	78-88
100	72-82
200	66-76
400	60-70
800	54-64
1,600	48-58
3,200	42-52
6,400	36-46
12,800	30-40

Notes: Attenuation is applicable to point sources, like construction equipment, not mobile sources.
Source: Corps and CNRA 2013, USEPA 1971

Table 5-33 Noise Levels and Abatement Potential of Construction Equipment Noise

Equipment Type	Noise Level at 50 Feet (dBA)		Noise Level at 100 Feet (dBA)	
	Without Controls	With Controls*	Without Controls	With Controls*
Earthmoving				
Front loaders	79	75	73	69
Backhoes	85	75	79	69
Dozers	80	75	74	69
Tractors	80	75	74	69
Graders	85	75	79	69
Pavers	89	80	83	74
Trucks	82	75	76	69
Material Handling				
Concrete mixers	85	75	79	69
Concrete pump	82	75	76	69
Crane	83	75	77	69
Concrete crushers	85	75	79	69
Stationary				
Pumps	76	75	70	69
Generator	78	75	72	69
Compressors	81	75	75	69
Impact				
Jack hammers	88	75	82	69
Pneumatic tools	86	80	80	74
Other				
Saws	78	75	72	69
Vibrators	76	75	70	69

Notes: Source: USEPA 1971 as cited in DWR and CDFG 2007

* Noise levels that can be achieved with implementation of feasible noise controls. Feasible noise controls include selecting quieter procedures or machines and implementing noise-control features requiring no major redesign or extreme cost (e.g., improved mufflers, equipment redesign, use of silencers, shields, shrouds, ducts, and engine enclosures).

During the peak construction period, an additional 180 round trips for tractor trailers and 55 truck trips for workers are estimated for aquatic habitat restoration projects, for a total of 235 round trips per day. It is estimated that 2 personnel would be required for long-term operation of the Project. It is anticipated that these 2 workers would commute from nearby urban centers to the Project site or nearby facility, generating approximately 2 round-trips a day, 5 days a week. A tractor-trailer would be required approximately 20 days a year for maintenance activities, and heavy equipment would periodically be brought in as well. See Section 5.13 Transportation and Traffic for additional details on these estimated truck trips.

5.11.2 Proposed Project

Effect NOI-1: Construction and maintenance would cause a temporary increase in noise levels near project sites. Noise-sensitive receptors are limited in the vicinity of the Proposed Project, which is mostly near agricultural and exposed lakebed areas. Sensitive receptors in the vicinity of the opportunity areas for the Proposed Project include people using the Sonny Bono Salton Sea National Wildlife Refuge and Salton Sea State Recreation Area; residences in North Shore near the Sea; residences in Desert Shores and Salton Sea Beach on the west side of the Sea; residences at Bombay Beach; and residences in Salton City near the Sea shoreline. Since specific project details are not known at this time, the distance from sensitive receptors to possible construction locations is not known at this time. In general, noise effects from construction would be temporary and distant from most local communities and sensitive receptors. Annual maintenance would require less equipment and for fewer days than construction and, therefore, would generate less noise. During operations, the primary noise sources would be from pumps required to deliver water from the Salton Sea to the ponds and the tailwater return pump. Pumps would be electric and would generate between 30 and 60 dBA. Projects would be designed so that no noise-sensitive receptors are within hearing distance of the pump sites.

Depending on the construction techniques utilized, the potential exists for exceedance of Imperial County's construction noise thresholds at locations that are approximately 200 feet from construction activities. Assuming the average level between 78 and 88 dBA, the resulting noise at a distance of 200 feet would be 66 to 76 dBA (Table 5-33). Thus, construction could slightly exceed Imperial County's 75 dBA construction threshold at sites that are located approximately 200 feet away from construction sites, which would be a major effect when compared to the No Action Alternative. Several residences in Bombay Beach are located within 200 feet of the western edge of the Bombay Beach Wetlands project area. Additionally, several residences are located within a 200-foot proximity to dust suppression projects in Salton City close to the shoreline and to the Proposed Project footprint in Desert Shores and Salton Sea Beach. Conversely, residences in North Shore are located over 200 feet from the project area; however, part of the visitor parking area for the Salton Sea State Recreation Area lies within 200 feet of the project area for the North Lake Project. Any noise-generating construction conducted within 200 feet of the visitor parking area would require implementation of mitigation measures to ensure construction noise thresholds are not exceeded.

To comply with Imperial County policies, construction would be limited to 7 am to 7 pm on Monday-Friday and 9 am to 5 pm on Saturday. If nighttime construction were determined to be required, MM NOI-2 would address compliance with Imperial County. Riverside County does not have specific construction noise standards provided in the Riverside County Noise Element.

With implementation of mitigation measures NOI-1 and NOI-2, the Proposed Project would be consistent with local policies regarding noise exposure and construction timing. The context of increases in noise levels due to construction is short-term and distant from most local communities. The intensity is considered low because project activities would be compliant with local, state, and federal regulations as well as policies to protect the environment. Therefore, this effect would be minor and short-term.

Mitigation Measures

MM NOI-1: Control construction noise from sensitive receptors located within approximately 200 feet of work. The following measures will be implemented:

- Install manufacturer's standard noise control devices, such as mufflers, on construction equipment; Locate stationary equipment as far as possible from noise-sensitive receptors;
- Prior to construction, notify residents and post signs at the campground describing the types of construction activities that would occur and the expected duration;
- Keep idling of construction equipment to a minimum when not in use;
- Install temporary or portable acoustic barriers around stationary construction noise sources; and
- Noise levels will be monitored in areas within 200 feet of sensitive receptors to ensure local standards are not exceeded.

MM NOI-2: Avoid nighttime construction. Construction would be limited to 7 am to 7 pm on Monday-Friday and 9 am to 5 pm on Saturday to comply with Imperial County policies. If the construction contractor determines that dredging would best be accomplished by dredging 24 hours a day in order to complete the work in a timelier manner, a variance would be requested from Imperial County.

Residual Effects

Implementation of MM NOI-1 and MM NOI-2 would reduce construction and operations effects to a minor level because noise levels would be consistent with local standards.

Effect NOI-2: Vehicular construction traffic at some locations would cause a temporary increase in noise near residents. There is potential for increases in noise in the vicinity of residential areas to occur due to construction traffic depending on where specific projects are located. Residential areas in the vicinity of the Proposed Project area are described under Effect NOI-1. Any increases in noise due to construction traffic would be temporary during construction and dispersed based on various project locations around the Sea.

Noise from trucks and tractor trailers is typically between 82 and 75 dBA at a distance of 50 feet from roadways and between 76 and 69 dBA at a distance of 100 feet, depending on if and what types of noise controls are used (Table 5-33). Average noise levels would be less, however, because trucks and tractor trailers would not pass constantly. As described in Section 5.13, Transportation and Traffic, it is assumed that peak construction would result in a maximum of 180 tractor trailer round-trips during peak construction periods for various projects located around the Sea. It takes a doubling of vehicular traffic to increase noise levels by 3 dBA; therefore, the addition of truck trips from the project is not likely to cause a perceptible increase in noise near roadways in the vicinity of the Project. The Proposed Project footprint includes areas around the perimeter of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites.

Truck trips would take place within the hours allowed by Imperial County, and effects from truck traffic would not exceed 75 dBA L_{eq} and, thus, would not conflict with Imperial County's construction noise standards. Moreover, to the extent practicable, truck traffic would follow routes that would avoid residences. This effect would be minor and short-term when compared to the No Action Alternative. Only minor amounts of traffic would be generated by maintenance activities, and any effects would be minor and short-term.

5.11.3 Alternative 1: Maximum Lake Edge

Effect NOI-1: **Construction and maintenance would cause a temporary increase in noise levels near project sites.** Noise-sensitive receptors are limited in the vicinity of the Proposed Project, which is mostly near agricultural and exposed lakebed areas. Sensitive receptors in the vicinity of the opportunity areas for this alternative include people using the Sonny Bono Salton Sea National Wildlife Refuge; people using the Salton Sea State Recreation Area on the northeast edge of the Sea; residences in North Shore near the Sea; residences in Desert Shores on the west side of the Sea; and residences at Bombay Beach.

Noise effects would be the same as those described under the Proposed Project, with variations in project areas and project types. Construction could slightly exceed Imperial County's 75 dBA construction threshold at sites that are located approximately 200 feet away from construction sites, which would be a major effect when compared to the No Action Alternative. Several residences in Bombay Beach are located within 200 feet of the western edge of the Bombay Beach Wetlands project area. Additionally, several residences are located within a 200-foot proximity to dust suppression projects in Desert Shores near the shoreline. Conversely, residences in North Shore are located over 200 feet from the project area; however, part of the visitor parking area for the Salton Sea State Recreation Area lies within 200 feet of the project area for the North Lake Project. Any noise-generating construction conducted within 200 feet of the visitor parking area would require implementation of mitigation measures to ensure construction noise thresholds are not exceeded.

With implementation of mitigation measures NOI-1 and NOI-2, this alternative would be consistent with local policies regarding noise exposure and construction timing. The context of increases in noise levels due to construction is short-term and distant from most local communities. The intensity is considered low because project activities would be compliant with local, state, and federal regulations as well as policies to protect the environment. Therefore, this effect would be mitigable to minor and short-term.

Mitigation Measures

MM NOI-1 and MM NOI-2 are applicable to this alternative.

Residual Effects

Implementation of MM NOI-1 and MM NOI-2 would reduce construction and operations effects to minor and short-term because noise levels would be consistent with local standards.

Effect NOI-2: Construction truck traffic at some locations would cause a temporary increase in noise near residents. Effects would be the same as described under the Proposed Project. There is potential for increases in noise in the vicinity of residential areas due to construction truck trips depending on where specific projects are located. Residential areas in the vicinity of the Proposed Project area described under Effect NOI-1. Any increases in noise due to truck traffic would be temporary during construction. Effects would be the same as described under the Proposed Project, except this alternative includes all habitat projects and no dust suppression projects and a total of 25,690 acres of project area. However, peak construction estimates for noise-generating activities under this alternative would be expected to be the same as the Proposed Project.

5.11.4 Alternative 2: Enhance and Expand Existing Wetlands

Effect NOI-1: **Construction and maintenance would cause a temporary increase in noise levels near project sites.** Noise-sensitive receptors are limited in the vicinity of the Proposed Project, which is mostly near agricultural and exposed lakebed areas. Sensitive receptors in the vicinity of the opportunity areas for the Proposed Project include people using the Sonny Bono Salton Sea National Wildlife Refuge and Salton Sea State Recreation Area; residences in North Shore near the Sea; residences in Desert Shores on the west side of the Sea; and residences at Bombay Beach.

Noise effects would be the same as those described under the Proposed Project, with variations in project areas and project types. Construction could slightly exceed Imperial County’s 75 dBA construction threshold at sites that are located approximately 200 feet away from construction sites, which would be a major effect when compared to the No Action Alternative. Several residences in Bombay Beach are located within 200 feet of the western edge of the Bombay Beach Wetlands project area. Additionally, several residences are located within a 200-foot proximity to dust suppression projects in Desert Shores near the shoreline. Conversely, residences in North Shore are located over 200 feet from the project area; however, part of the visitor parking area for the Salton Sea State Recreation Area lies within 200 feet of the project area for the North Lake Project. Any noise-generating construction conducted within 200 feet of the visitor parking area would require implementation of mitigation measures to ensure construction noise thresholds are not exceeded.

With implementation of mitigation measures NOI-1 and NOI-2, this alternative would be consistent with local policies regarding noise exposure and construction timing. The context of increases in noise levels due to construction is short-term, and distant from most local communities. The intensity is considered low because project activities would be compliant with local, state, and federal regulations as well as policies to protect the environment. Therefore, this effect would be mitigable to minor and short-term.

Mitigation Measures

MM NOI-1 and MM NOI-2 are applicable to this alternative.

Residual Effects

Implementation of MM NOI-1 and MM NOI-2 would reduce construction and operations effects to minor and short-term because noise levels would be consistent with local standards.

Effect NOI-2: **Construction truck traffic at some locations would cause a temporary increase in noise near residents.** Effects would be the same as described under the Proposed Project. There is potential for increases in noise in the vicinity of residential areas due to construction truck trips depending on where specific projects are located. Residential areas in the vicinity of the Proposed Project area described under Effect NOI-1. Any increases in noise due to truck traffic would be temporary during construction. Effects would be the same as described under the Proposed Project, except this alternative includes all habitat projects and no dust suppression projects. However, peak construction estimates for noise-generating activities under this alternative would be expected to be the same as the Proposed Project.

5.11.5 Alternative 3: North End/South End Aquatic Habitat

Effect NOI-1: **Construction and maintenance would cause a temporary increase in noise levels near project sites.** Noise-sensitive receptors are limited in the vicinity of the Project, which is mostly near agricultural and exposed lakebed areas. Sensitive receptors in the vicinity of the opportunity areas for this alternative include people using the Sonny Bono Salton Sea National Wildlife Refuge and Salton Sea State Recreation Area; residences in North Shore near the Sea; and residences in Desert Shores on the west side of the Sea. No projects are proposed near the residential areas at Bombay Beach or Salton City under this alternative.

Noise effects would be the same as those described under the Proposed Project, with variations in project areas and project types. Construction could slightly exceed Imperial County's 75 dBA construction threshold at sites that are located approximately 200 feet away from construction sites, which would be a major short-term effect when compared to the No Action Alternative. Several residences in Desert Shores are located within 200 feet of the western edge of the Desert Shores project area. Conversely, residences in North Shore are located over 200 feet from the project area; however, part of the visitor parking area for the Salton Sea State Recreation Area lies within 200 feet of the project area for the North Lake Project. Any noise-generating construction conducted within 200 feet of the visitor parking area would require implementation of mitigation measures to ensure construction noise thresholds are not exceeded. This alternative does not include any project areas near Bombay Beach, and therefore there would be no effects to sensitive receptors in that area as a result of the construction.

With implementation of MM NOI-1 and MM NOI-2, this alternative would be consistent with local policies regarding noise exposure and construction timing. The context of increases in noise levels due to construction is short-term, and distant from most local communities. The intensity is considered low because project activities would be compliant with local, state, and federal regulations as well as policies to protect the environment. Therefore, this effect would be mitigable to minor and short-term.

Mitigation Measures

MM NOI-1 and MM NOI-2 are applicable to this alternative.

Residual Effects

Implementation of MM NOI-1 and MM NOI-2 would reduce construction and operations effects to minor and short-term because noise levels would be consistent with local standards.

Effect NOI-2: **Construction truck traffic at some locations would cause a temporary increase in noise near residents.** Effects would be the same as described under the Proposed Project. There is potential for increases in noise in the vicinity of residential areas due to construction truck trips depending on where specific projects are located. Residential areas in the vicinity of the Proposed Project area described under Effect NOI-1. Any increases in noise due to truck traffic would be temporary during construction. Effects would be the same as described under the Proposed Project, except this alternative includes all habitat projects and no dust suppression projects. However, peak construction estimates for noise-generating activities under this alternative would be expected to be the same as the Proposed Project.

5.11.6 Alternative 4: Water Conservation

Effect NOI-1: **Construction and maintenance would cause a temporary increase in noise levels near project sites.** Noise-sensitive receptors are limited in the vicinity of the Proposed Project, which is mostly near agricultural and exposed lakebed areas. Sensitive receptors in the vicinity of the opportunity areas for the Proposed Project include people using the Sonny Bono Salton Sea National Wildlife Refuge and Salton Sea State Recreation Area; residences in North Shore near the Sea; and residences in Salton City near the Sea shoreline. No projects are proposed near the residential areas at Desert Shores or Bombay Beach under this alternative.

Noise effects would be the same as those described under the Proposed Project, with variations in project areas and project types. Construction could slightly exceed Imperial County's 75 dBA construction threshold at sites that are located approximately 200 feet away from construction sites, which would be a major effect when compared to the No Action Alternative. Under this alternative, the closest project area is over 1,000 feet from residences at Bombay Beach and therefore no effect to sensitive receptors would occur in that area as a result of the construction. There are several residences in Salton City close to the shoreline that are within 200 feet of the project area for dust suppression projects. There is one residence in Desert Shores and a few in Salton Sea Beach located within 200 feet of a dust suppression project area. Residences in North Shore are located over 200 feet from the project area; however, part of the visitor parking area for the Salton Sea State Recreation Area is within 200 feet of the project area for the North Lake Project. Any noise-generating construction done within 200 feet would require implementation of mitigation measures to ensure construction noise thresholds are not exceeded.

With implementation of mitigation measures NOI-1 and NOI-2, this alternative would be consistent with local policies regarding noise exposure and construction timing. The context of increases in noise levels due to construction is short-term, and distant from most local communities. The intensity is considered low because project activities would be compliant with local, state, and federal regulations as well as policies to protect the environment. Therefore, this effect would be mitigable to minor and short-term.

Mitigation Measures

MM NOI-1 and MM NOI-2 are applicable to this alternative.

Residual Effects

Implementation of MM NOI-1 and MM NOI-2 would reduce construction and operations effects to minor and short-term because noise levels would be consistent with local standards.

Effect NOI-2: Construction truck traffic at some locations would cause a temporary increase in noise near residents. There is potential for increases in noise in the vicinity of residential areas due to construction truck trips depending on where specific projects are located. Residential areas in the vicinity of the Proposed Project area described under Effect NOI-1. Any increases in noise due to truck traffic would be temporary during construction. Effects would be the same as described under the Proposed Project, except this alternative does not include construction of aquatic habitat ponds and therefore the peak construction estimates are for dust suppression and restoration projects. Under this alternative, existing wetlands would be enhanced and dust suppression and restoration projects would be implemented in opportunity areas around the Sea. Dust suppression projects would require approximately 6 workers onsite workers during construction which would generate up to 6 round trips in personal vehicle trips per day over the 10-year Project construction period. It is assumed that delivery of equipment and materials would produce a maximum of 20 tractor trailer round-trips per day for an approximately 3-week period. The Alternative 4 footprint includes areas around the perimeter of the Sea, and therefore, increases in traffic noise would be spread out over time and based on various project locations and routes to sites. An additional 26 round trips per day during the peak construction period for dust suppression and restoration projects is estimated for this alternative would result in a minor and short-term.

5.11.7 Alternative 5: Maximum Build Out

Effect NOI-1: **Construction and maintenance would cause a temporary increase in noise levels near project sites.** Noise-sensitive receptors are limited in the vicinity of the Proposed Project, which is mostly near agricultural and exposed lakebed areas. Sensitive receptors in the vicinity of the opportunity areas for the Proposed Project include people using the Sonny Bono Salton Sea National Wildlife Refuge and Salton Sea State Recreation Area; residences in North Shore near the Sea; residences in Desert Shores on the west side of the Sea; residences at Bombay Beach; and residences in Salton City near the Sea shoreline.

Noise effects would be the same as those described under the Proposed Project, with a larger overall project area for this maximum build out alternative. Construction could slightly exceed Imperial County’s 75 dBA construction threshold at sites that are located approximately 200 feet away from construction sites, which would be a major short-term effect when compared to the No Action Alternative. Several residences in Bombay Beach are located within 200 feet of the western edge of the project area for Bombay Beach Wetlands project. Several residences in Salton City close to the shoreline are within 200 feet of the project area for dust suppression projects. There are also several residences in Desert Shores and Salton Sea Beach that are located within 200 feet of the project area for this alternative. Residences in North Shore are located over 200 feet from the project area, however part of the visitor parking area for the Salton Sea State Recreation Area is within 200 feet of the project area for the North Lake Project. Any noise-generating construction done within 200 feet would require implementation of mitigation measures to ensure construction noise thresholds are not exceeded.

With implementation of mitigation measures NOI-1 and NOI-2, this alternative would be consistent with local policies regarding noise exposure and construction timing. The context of increases in noise levels due to construction is short-term, and distant from most local communities. The intensity is considered low because project activities would be compliant with local, state, and federal regulations as well as policies to protect the environment. Therefore, this effect would be mitigable to minor and short-term.

Mitigation Measures

MM NOI-1 and MM NOI-2 are applicable to this alternative.

Residual Effects

Implementation of MM NOI-1 and MM NOI-2 would reduce construction and operations effects to minor and short-term because noise levels would be consistent with local standards.

Effect NOI-2: Construction truck traffic at some locations would cause a temporary increase in noise near residents. There is potential for increases in noise in the vicinity of residential areas due to construction truck trips depending on where specific projects are located. Residential areas in the vicinity of the Proposed Project area described under Effect NOI-1. Any increases in noise due to truck traffic would be temporary during construction. Effects would be the same as described under the Proposed Project, except the total acreage of projects would be larger. Therefore, the total length of construction required would be longer. However, peak construction estimates for noise-generating activities under this alternative would be expected to be the same as the Proposed Project.

5.11.8 Alternative 6: No Federal Action

Effect NOI-1: Construction and maintenance would cause a temporary increase in noise levels near project sites. Under Alternative 6, no projects would be constructed that require federal action. Under this alternative, dust suppression and restoration projects could be implemented that meet certain parameters. Projects under this alternative could not be located on federal or tribal lands and could not include water diversion from waters of the United States; therefore, no pumping would occur.

The potential locations where projects could be sited are not well known at this time. However, if any noise generating projects were located within 200 feet of a sensitive receptor, applicable mitigation measures would be implemented to ensure consistency with local policies, resulting in a minor and short-term effect.

Effect NOI-2: Construction truck traffic at some locations would cause a temporary increase in noise near residents. Under this alternative it is assumed that truck trips would be the same as those described for the dust suppression and restoration projects included in the Proposed Project and Alternative 4. Effects would be minor and short-term.

5.11.9 Alternative 7: No Action

Effect NOI-1: Construction and maintenance would cause a temporary increase in noise levels near project sites. No construction would occur under the No Action Alternative, and as such, no increase in ambient noise levels would occur. The ambient noise levels in the future would be dependent upon factors such as population growth, land use changes, and changes to the amount of vehicular, air, and rail traffic. In general, noise is expected to increase as the population and traffic increases.

Effect NOI-2: Construction truck traffic at some locations would cause a temporary increase in noise near residents. Under the No Action Alternative, traffic would increase at normal rates. No increases in traffic related to construction or operations would occur. Also, no effects on noise levels due to truck trips would occur under this alternative.

5.12 WATER

This section addresses the effects on hydrology and water quality of the Salton Sea, the New River, the Alamo River, the Whitewater River, and the groundwater underlying the Salton Sea Basin. This section also addresses the effects to water supply, conservation, water rights, floodplain management and flood risk management in the surrounding area. Refer to Section 4.12, Affected Environment, for a description of the study area, regulatory requirements and existing conditions related to water resources. The study area for hydrology and water quality is the Salton Sea watershed, shown on Figure 4.14.

Effects on fugitive dust emissions resulting from decreases in the water surface elevation of the Sea are discussed in Section 5.3, Air Resources. Water quality effects on biological resources, specifically special-status species, are discussed in Section 5.4, Biological Resources as well as in Section 5.16, Aquatic Resources. Water quality effects specific to selenium and pesticides are discussed in Section 5.10, Hazardous Waste and Materials.

5.12.1 Effects Analysis Methodology

Table 5-34 summarizes the effect of the Proposed Project and seven Project Alternatives on hydrology and water quality compared to the No Action Alternative.

Table 5-34 Summary of Effects for Water Resources

	Project Alternative								
Effects	**PP**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Mitigation Measures**
Hydrology and Water Quality									
HYD-1: Project implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities	B	B	No	B	B	B	B	N/A*	None required
HYD-2: Project implementation would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat	B	B	N	B	B	B	B	N/A*	None required
HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards	B	B	B	B	B	B	B	N/A*	None required
Groundwater Hydrology and Quality									
GW-1: Project implementation would have little effect on groundwater availability or quality	No	No	No	No	No	No	No	N/A*	None required
Water Supply and Conservation and Water Rights									
WS-1: Project implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights	No	No	No	No	No	No	No	N/A*	None required
Floodplain Management and Flood Risk Management									
FM-1: Project implementation would not affect floodplain resilience nor increase flood risk	No	No	No	No	No	No	No	N/A*	None required

Notes:

PP=Proposed Project

N/A = Not Applicable

No = No Effect

Adverse Effects:

N= Negligible Effect

B = Beneficial Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

The analysis of potential effects on hydrology and water quality posed by the Proposed Project and Project Alternatives tiers from the hydrologic and water quality analyses conducted in 2007 (DWR and CDFG 2007) and 2013 (Corps and CNRA 2013) and then updated in 2017 (CNRA 2017) for CEQA clearance of the SCH project.

Direct and indirect effects on hydrology and water quality of the study area would be considered adverse if the Proposed Project or one of the project alternatives would:

> Change the Salton Sea's water surface elevation and salinity to an extent that the change would in itself adversely affect or preclude the uses of the Salton Sea identified in the Basin Plan;

> Violate any water quality standards or waste discharge requirements short-term during construction or long-term during operations.

The Proposed Project would not include changes in streambeds or water flows in streams in the Salton Sea watershed that would cause erosion, siltation, flooding, or flows that would impact drainage facilities on the shoreline. Therefore, the potential for effects due to changes in drainage patterns would be related to future brine sink elevation and the exposed Sea bed. This effect is not discussed further.

Potential effects on groundwater hydrology and quality would be considered adverse if the project would measurably deplete groundwater supplies or interfere with groundwater recharge that would cause a deficit in the aquifer volume, lower the local groundwater level, or degrade groundwater quality.

Potential effects on water supply and conservation and water rights would be considered adverse if the project would reduce the flow in a river to the detriment of downstream water users.

Increased risk of inundation by seiche, tsunami or mudflow would be considered an adverse effect. The Proposed Project would not contribute to a seiche, tsunami, or mudflow. It is not located near the ocean and, therefore, would not be affected by tsunamis. It also is located in a generally level area, so mudflows are not a concern. Seiches could occur in the Salton Sea, most likely as a result of earthquakes, but they would not be caused by the Proposed Project; therefore, this effect is not discussed further.

Potential effects on floodplain management and flood risk management would be considered adverse if the project would:

> Place structures within a 100-year flood hazard area (as mapped on a Federal Flood Hazard Boundary, Flood Insurance Rate Map [FIRM], or other flood hazard delineation map) that would impede or redirect flood flows or expose people or structures to significant risk of loss, injury, or death involving flooding, or cause inundation by sieche, tsunami or mudflow, or

> Conflict with NRCS's National Watershed Program authorized under the Watershed Protection and Flood Prevention Act (Public Law 83-566).

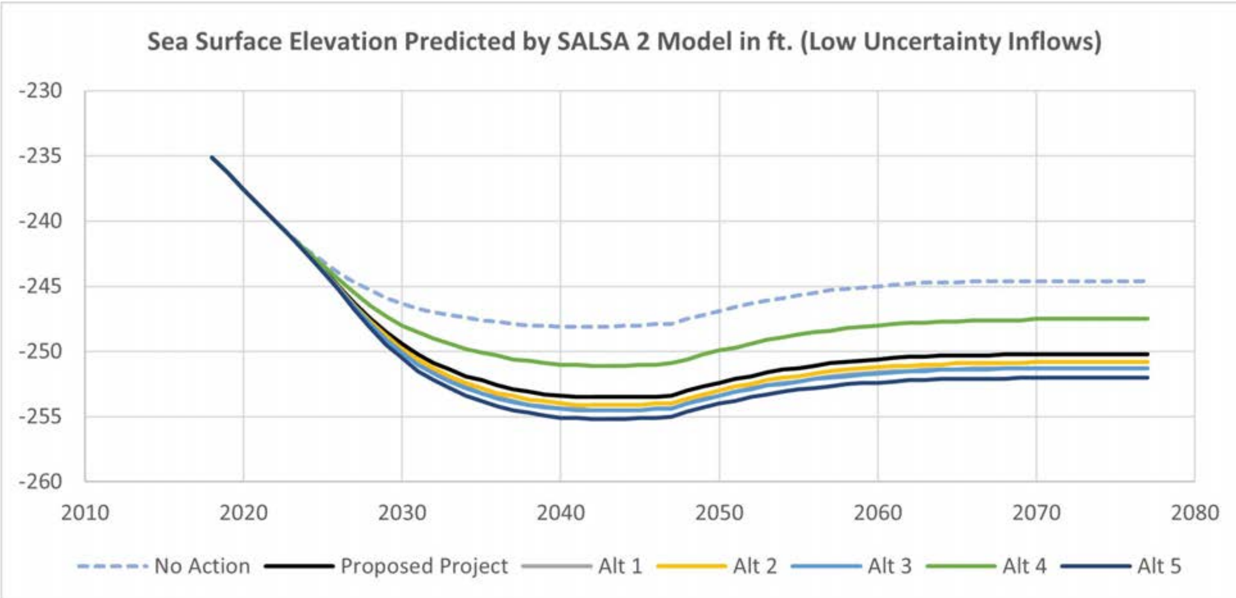
The Proposed Project features would be located on areas that are recently exposed (dry) playa or are currently submerged and are predicted to be exposed in the future. Rainfall on the dry playa would drain to the Sea or aquatic habitat restoration sites before being evaporated. Rainfall in the Project area would be temporarily retained within the aquatic restoration sites and would not cause an increase in erosion. Therefore, changing drainage patterns on the playa is not considered further. Alteration of drainage patterns of the IID drains by the SCH project was analyzed in the SCH Final EIR/EIS and CEQA Addendum, which concluded that the SCH project would alter the drainage pattern of the IID drains, but not substantially or in a manner that could result in substantial erosion, siltation, or flooding; therefore, this effect is not addressed further.

5.12.2 Hydrology and Water Quality

5.12.2.1 Proposed Project

The Proposed Project features would be implemented at various locations around the perimeter of the Salton Sea. The amounts, types, and locations of aquatic habitat and dust suppression projects would be based on location and availability of a water supply, suitable soils, landscape/habitat compatibility, and the amount of emissions from the exposed lakebed. Between 10,790 and 19,062 acres of aquatic habitat restoration projects would be implemented under the Proposed Project. Up to 14,900 acres of dust suppression and restoration would be built within the mapped dust suppression and restoration opportunity areas on Figure 3-1. Up to 19,062 acres of mechanical disturbance is assumed to occur during construction.

Effect HYD-1: Project implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities. The SALSA2 "low uncertainty" scenario that was modeled serves as the basis for the analysis of long-term Sea elevations. In 2028, the brine sink elevation (i.e., the residual sea) under the Proposed Project would be -247.5 feet msl, approximately 2.2 feet lower elevation compared to the "Future No Action" modeled for the No Project Alternative (Appendix F, Tetra Tech 2022). The brine sink elevation will decrease under the Proposed Project and the No Action Alternative (Alternative 7) scenarios because of declining inflows and effects of climate change. Figure 5-1 illustrates the modeled change in shoreline elevation that would occur under the Proposed Project (and Project Alternatives 1-5; Project Alternative 6 acreages are unknown), compared to the No Action Alternative. The No Action Alternative (Alternative 7) reflects the model's inherent "Future No Action" scenario based on recent conditions and trends plus changes that are reasonably expected to occur considering current water management plans, reasonable estimates of future water uses, and uncertainty in Salton Sea evaporation rates due to climate change (CH2M Hill 2018a, 2018b). Appendix F, Table 2, presents the acreages by project type and equivalent water use (i.e., aquatic habitat restoration, dust suppression and restoration) that would be implemented under the Proposed Project and would require water supply. Modeling results reflect the assumption that the previously approved SCH project would be completed by 2023 under the Proposed Project.



Source: Tetra Tech 2022

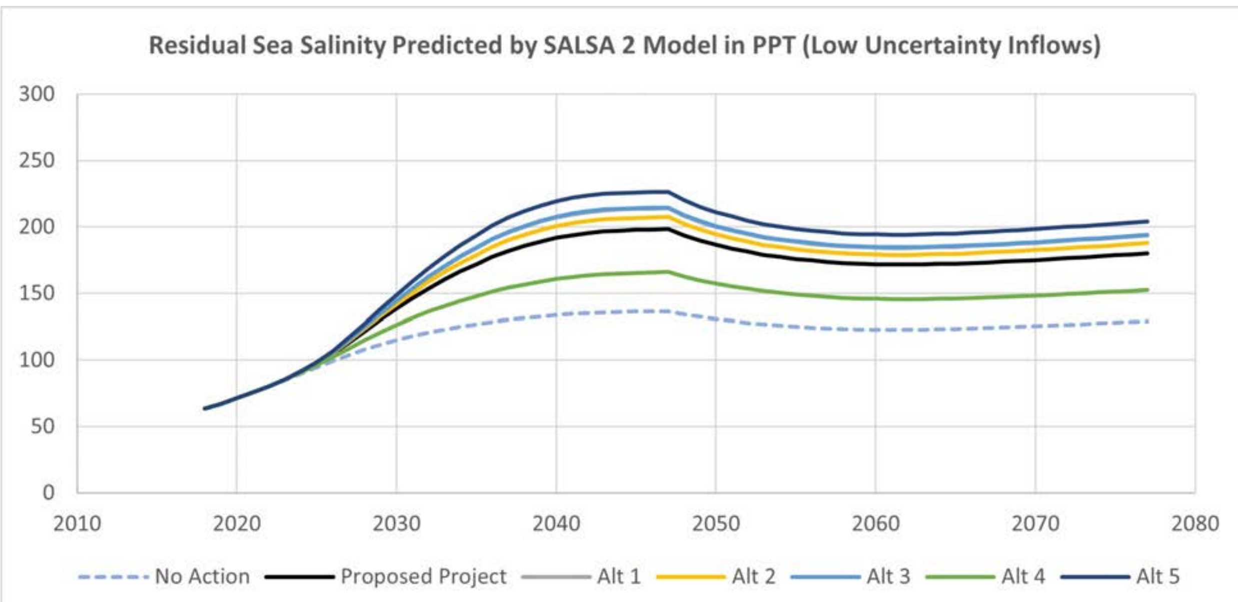
Figure 5-1 SALSA2 Modeled Sea Elevations under SSMP Project Alternatives

The difference between evaporation from the aquatic habitat restoration areas versus evaporation from the Sea relates to the changes in the Sea's surface area resulting from Proposed Project implementation. In the absence of the Proposed Project, this volume of water would otherwise flow to the Sea where it would be subjected to a similar evaporation rate. As the Sea recedes, the surface area exposed to evaporation would decline, while the wetted surface area of aquatic habitat (i.e., ponds and wetlands) would off-set this lost acreage in areas of higher elevation in proximity to the historic shoreline. Thus, the Proposed Project would not result in substantial elevation changes that would have an adverse effect on or preclude the beneficial uses of the Salton Sea, as compared to future Sea elevations predicted for the No Project Alternative. Although the brine sink elevation would decrease, the Proposed Project would construct aquatic habitat restoration in areas of higher elevation (up 19,062 acres) in closer proximity to the historic shoreline to offset the reduction in surface area acreage, which would be a beneficial effect to biological resources and recreation uses of the shoreline communities.

Effect HYD-2: Project implementation would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat. Degradation of Salton Sea water quality is related to the reduction in the ability to support aquatic species and recreation. The CRRWQCB's (2006) water quality objective for total dissolved solids (salinity) at the Salton Sea is to stabilize salinity at 35,000 mg/L or 35 parts per thousand [ppt]. The primary constituents associated with salinity in the Salton Sea are sodium, calcium, chloride, and sulfate (DWR and CDFG 2007). Lower salinity frequently occurs near the tributaries and near the shoreline of the Salton Sea due to dilution by inflows. Higher salinity generally occurs in the center of the Salton Sea. The primary source of salts in the Salton Sea watershed is from imported Colorado River water. These salts are applied to fields with irrigation water and are carried off by tailwater or tilewater into surface drains.

SALSA2 modeling results (Figure 5-2) indicate that average salinity is currently 76 ppt and that under the Proposed Project, Sea salinity concentrations would continue to increase to approximately 198 ppt around 2045. Inflows are expected to increase around 2040 by approximately 50,000 afy (Quantification Settlement Agreement; IID 2006), which would have a dilution effect, and Sea salinity concentrations would begin to decrease and eventually stabilize around between 172 and 180 ppt.

Surface waters with salinity concentrations around 70 ppt or higher are adverse to most fish and bird species. The Salton Sea will get smaller, shallower, and saltier regardless of whether or not up to 19,062 acres of aquatic habitat restoration and up to 14,600 acres of dust suppression and restoration would be implemented. Water supply used for the aquatic habitat restoration and the water dependent dust suppression/restoration opportunities areas would return both water and salt to the Sea over time. Restored aquatic habitat areas would temporarily store a volume of salt, a portion of which would be released back to the Sea, a portion of which would be temporarily stored in ponds, and a portion of which would be sequestered in sediments. Ultimately, the amount of storage is related to salinity concentrations of inflows and the surface area and volume of the restored aquatic habitat. The rate that is returned to the Sea depends on the residence time, typically 2 to 32 weeks (DWR and CDFG 2007).



Source: Tetra Tech 2022

Figure 5-2 SALSA2 Modeled Sea Salinity under SSMP Project Alternatives

Implementation of the Proposed Project would not have a direct effect on salinity concentrations that would increase an adverse effect on or preclude the beneficial uses of the Salton Sea identified in the Basin Plan. The Proposed Project would instead have a direct beneficial effect to surface water quality from dust suppression, and an indirect beneficial effect over the long-term by restoring a portion of the lost Sea surface area with aquatic habitat with lower salinity concentration that is usable by birds, fish, and other organisms at higher elevations that are closer to the historic shoreline and inflow deltas. Target salinity concentrations of aquatic habitat restoration sites would generally be approximately 20 to 40 ppt. Refer to 5.4, Biological Resources, for a discussion of changes in salinity on special-status species.

Effect HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards. Proposed Project construction would last approximately 10 years, during which time ground-disturbing activities would have the potential to temporarily increase suspended sediment and nutrient cycling in surface waters near active construction sites. Disturbing up to 19,062 acres of playa would have the potential to release previously deposited water-soluble contaminants and nutrients, including phosphorous and pesticides, that likely remain bound to disturbed sediments. In addition, potential inadvertent releases of hazardous materials into nearby surface waters during construction could temporarily degrade water quality at the Salton Sea. Generally, these potential effects would be short-term, intermittent, and limited to the duration of construction. The aquatic habitat restoration and dust suppression features of the Project would implement erosion and sediment control measures and other design criteria that would be maintained throughout operations. For example, accelerated erosion from exposed soils on new roads, berms, staging, parking, storage areas, and other high-travel/use areas would be minimized using gravel, rock-slope protection, soil stabilizer and vegetation such as salt grass (*Distichilis spicata*) and native rushes (*Juncus cooperi*), when appropriate, or some other means as described in Chapter 3. Compliance with Imperial County Air Pollution Control District's Regulation VIII (addresses fugitive dust control; IID 2018a) and the project-specific Stormwater Pollution and Prevention Plan (SWPPP), a requirement for State Construction General Permit coverage, would minimize the potential for erosion and sedimentation, both water- and wind-borne, during active construction and between construction phases.

As discussed in Section 4.12, established surface water quality objectives, including TMDLs exist for surface waters in the Colorado River Basin region. Degradation of Salton Sea water quality is related to the reduction in the ability to support aquatic species and recreation. For the Salton Sea, this category is used to describe general water quality conditions related to lake eutrophication. Water quality constituents of concern for the Salton Sea are listed in Table 4-47 and include: TSS, TDS, TDS/salinity, nitrogen and phosphorus, total selenium and DOC. Implementation of Proposed Project facilities, including habitat rehabilitations, ponds, wetlands and dust suppression facilities, will have long-term benefits for removal of the pollutants listed. With the exception of DOC and TDS/salinity, each constituent has varying degrees of adsorption capacity to sediment particles, especially fine particles. Dissolved and adsorbed constituents would be removed by aquatic habitats, the extent of which would be dependent on the concentrations of inflows and the residence time of inflow waters and sediment particles in ponds and wetlands. The residence time is defined as the rate of fluid and sediment input divided by the volume of the pond or wetland. Therefore, benefits to water quality are anticipated as a result of water quality of inflows and the residence time of the fluid and sediment particles stored in up to 19,062 acres of restored aquatic habitat. The higher concentration of dissolved and adsorbed pollutants in the inflow, the higher residence time of fluid and sediment particles, and the higher adsorption of the pollutants to the sediment particles removed, would over time result in higher removal of pollutants from the Salton Sea. Additionally, dust suppression and restoration actions conducted over up to 14,900 acres would reduce the potential for windborne contaminants to deposit on and be assimilated into the Sea's water column. As a result, effects to Salton Sea water quality would be beneficial. Refer to Section 5.4, Biological Resources, for discussion of potential water quality effects on special-status species. Refer to Section 5.10, Hazards and Hazardous Materials, for discussion of potential effects to selenium concentrations.

5.12.2.2 Alternative 1: Maximum Lake Edge

Alternative 1 would create lake edge from the Salton Sea State Recreation Area near the community of North Shore in a counter-clockwise direction around to just north of Bombay Beach (Figure 3-3). Under this alternative, a total of 25,690 acres of aquatic habitat restoration would be implemented. Water sources would include the Whitewater River, Alamo River, New River, a variety of agricultural drains around the Sea and potentially groundwater. None of the dust suppression activities discussed for the Proposed Project would be conducted. Up to 25,690 acres of mechanical disturbance is assumed to occur during construction.

Effect HYD-1: Project implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities. The discussion for the Proposed Project is applicable to this alternative. In 2028, the brine sink elevation under Alternative 1 would be -247.9 feet msl, approximately 2.6 feet lower elevation compared to the No Action Alternative (Appendix F, Tetra Tech 2022. Alternative 1 would not result in substantial elevation changes that would have an adverse effect on or preclude the beneficial uses of the Salton Sea, as compared to future Sea elevations predicted for the No Project Alternative. Although the brine sink elevation would decrease, Alternative 1 would construct aquatic habitat restoration in areas of higher elevation (up 25,690 acres) in closer proximity to the historic shoreline to offset the reduction in surface area acreage, which would be a beneficial effect to biological resources and recreation uses of the shoreline communities.

Effect HYD-2: Project implementation would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat. Figure 5-2 presents the SALSA2 modeled salinity concentrations (ppt) of the Salton Sea, projected to occur under Alternative 1. The discussion for the Proposed Project is applicable to Alternative 1.

Effect HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards. The discussion for the Proposed Project is applicable to Alternative 1.

5.12.2.3 Alternative 2: Enhance and Expand Existing Wetlands

Alternative 2 would include the North Lake Project that is currently under design. Additional aquatic habitat restoration would be implemented to create the required 25,690 acres (29,800 less the SCH project acreage). Natural inflow sources at drains and washes around the perimeter of the Sea (Figure 3-4) would be used to enhance and expand wetlands. None of the dust suppression activities discussed for the Proposed Project would be conducted. Up to 25,690 acres of mechanical disturbance is assumed to occur during construction.

Effect HYD-1: Project implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities. The discussion for the Proposed Project is applicable to Alternative 2. In 2028, the brine sink elevation under Alternative 2 would be -245.3 feet msl, which would reflect the brine sink elevation under the No Project Alternative (Appendix F, Tetra Tech 2022). Alternative 2 would not result in substantial elevation changes that would have an adverse effect on or preclude the beneficial uses of the Salton Sea, as compared to future Sea elevations predicted for the No Project Alternative. Although the brine sink elevation would decrease, Alternative 2 would construct aquatic habitat restoration in areas of higher elevation (up 25,690 acres) in closer proximity to the historic shoreline to offset the reduction in surface area acreage, which would be a beneficial effect to biological resources and recreation uses of the shoreline communities.

Effect HYD-2: Project implementation would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat. Figure 5-2 presents the SALSA2 modeled salinity concentrations (ppt) of the Salton Sea, projected to occur under Alternative 2. The discussion for the Proposed Project is applicable to Alternative 2.

Effect HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards. The discussion for the Proposed Project is applicable to Alternative 2.

5.12.2.4 Alternative 3: North End/South End Aquatic Habitat

Alternative 3 would implement the North Lake Project that is currently under design and construct additional ponds near the New and Alamo rivers. A total of 25,690 acres (Figure 3-5) of aquatic habitat restoration would be implemented. None of the dust suppression activities discussed for the Proposed Project would be conducted, up to 25,690 acres of mechanical disturbance is assumed to occur during construction.

Effect HYD-1: Project implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities. The discussion for the Proposed Project is applicable to Alternative 3. In 2028, the brine sink elevation under Alternative 3 would be -247.9 feet msl, approximately 2.9 feet lower elevation compared to the No Project Alternative (Appendix F, Tetra Tech 2022). Alternative 3 would not result in substantial elevation changes that would have an adverse effect on or preclude the beneficial uses of the Salton Sea, as compared to future Sea elevations predicted for the No Project Alternative. Although the brine sink elevation would decrease, Alternative 3 would construct aquatic habitat restoration in areas of higher elevation (up 25,690 acres) in closer proximity to the historic shoreline to offset the reduction in surface area acreage, which would be a beneficial effect to biological resources and recreation uses of the shoreline communities.

Effect HYD-2: Project implementation would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat. Figure 5-2 presents the SALSA2 modeled salinity concentrations (ppt) of the Salton Sea, projected to occur under Alternative 3. The discussion for the Proposed Project is applicable to Alternative 3.

Effect HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards. The discussion for the Proposed Project is applicable to Alternative 3.

5.12.2.5 Alternative 4: Water Conservation

Under Alternative 4, 10,790 acres of aquatic habitat restoration would be implemented to enhance and expand wetlands, as described for Alternative 2 (Figure 3-6). Alternative 4 would also include 14,900 acres of dust suppression and restoration to total 25,690 acres. Up to 14,900 acres of mechanical disturbance is assumed to occur during construction.

Effect HYD-1: Project implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities. The discussion for the Proposed Project is applicable to Alternative 4. In 2028, the brine sink elevation under Alternative 4 would be -246.5 feet msl, approximately 1.2 feet lower elevation compared to the No Project Alternative (Appendix F, Tetra Tech 2022). Alternative 4 would not result in substantial elevation changes that would have an adverse effect on or preclude the beneficial uses of the Salton Sea, as compared to future Sea elevations predicted for the No Project Alternative. Although the brine sink elevation would decrease, Alternative 4 would construct aquatic habitat restoration in areas of higher elevation (up to 10,790 acres) in closer proximity to the historic shoreline to offset the reduction in surface area acreage, which would be a beneficial effect to biological resources and recreation uses of the shoreline communities.

Effect HYD-2: Project implementation would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat. Figure 5-2 presents the SALSA2 modeled salinity concentrations (ppt) of the Salton Sea, projected to occur under Alternative 4. The discussion for the Proposed Project is applicable to Alternative 4.

Effect HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards. The discussion for the Proposed Project is applicable to Alternative 4.

5.12.2.6 Alternative 5: Maximum Build Out

Alternative 5 would consider all feasible areas of aquatic habitat restoration and dust suppression and restoration; all regional opportunity areas would be built out to maximize restoration acreages (Figure 3-7). Total restoration acreage under Alternative 5 would be 48,707 acres, of which up to 23,973 acres would be dust suppression and restoration and up to 24,734 acres would be aquatic habitat restoration. Up to 24,734 acres of mechanical disturbance is assumed to occur during construction.

Effect HYD-1: Project implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities. The discussion for the Proposed Project is applicable to Alternative 5. In 2028, the brine sink elevation under Alternative 5 would be -248.2 feet msl, approximately 2.9 feet lower elevation compared to the No Project Alternative (Appendix F, Tetra Tech 2022). Alternative 5 would not result in substantial elevation changes that would have an adverse effect on or preclude the beneficial uses of the Salton Sea, as compared to future Sea elevations predicted for the No Project Alternative. Although the brine sink elevation would decrease, Alternative 5 would construct aquatic habitat restoration in areas of higher elevation (up 24,734 acres) in closer proximity to the historic shoreline to offset the reduction in surface area acreage, which would be a beneficial effect to biological resources and recreation uses of the shoreline communities.

Effect HYD-2: Project implementation would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat. Figure 5-2 presents the SALSA2 modeled salinity concentrations (ppt) of the Salton Sea, projected to occur under Alternative 5. The discussion for the Proposed Project is applicable to Alternative 5.

Effect HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards. The discussion for the Proposed Project is applicable to Alternative 5.

5.12.2.7 Alternative 6: No Federal Action

Under Alternative 6, no aquatic habitat restoration or dust suppression and restoration features that require federal action would be implemented, other than the SCH project, which has already been approved for construction (Figure 3-8). Under Alternative 6, the State would proceed with dust suppression and restoration projects that meet the following parameters project location, access, and infrastructure:

- Are not on federal or tribal lands,
- Are not in wetlands or waters of the United States at the time of construction,
- Would not impact federally listed species,
- Would not have any federal funding, and
- Do not require a diversion from waters of the United States (all water would be from wells).

The total acreage that would fall under those parameters is unknown, but for the purposes of this analysis up to 19,062-acres (mimicking Proposed Project disturbance) of mechanical disturbance is assumed to occur during construction.

Effect HYD-1: Project implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities. The discussion for the Proposed Project is applicable to Alternative 6. Alternative 6 would not result in substantial elevation changes that would have an adverse effect on or preclude the beneficial uses of the Salton Sea, as compared to future Sea elevations predicted for the No Project Alternative. Although the brine sink elevation would decrease, Alternative 6 would construct aquatic habitat restoration in areas of higher elevation (exact acreage is unknown) in closer proximity to the historic shoreline to offset the reduction in surface area acreage, which would be a beneficial effect to biological resources and recreation uses of the shoreline communities.

Effect HYD-2: Project implementation would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat. The discussion for the Proposed Project is applicable to Alternative 6. Because Alternative 6 would implement the SCH project but no additional aquatic habitat restoration or dust suppression and restoration features that would require federal action, the degree of beneficial effect is assumed to be less than the Proposed Project but improved compared to the No Action Alternative.

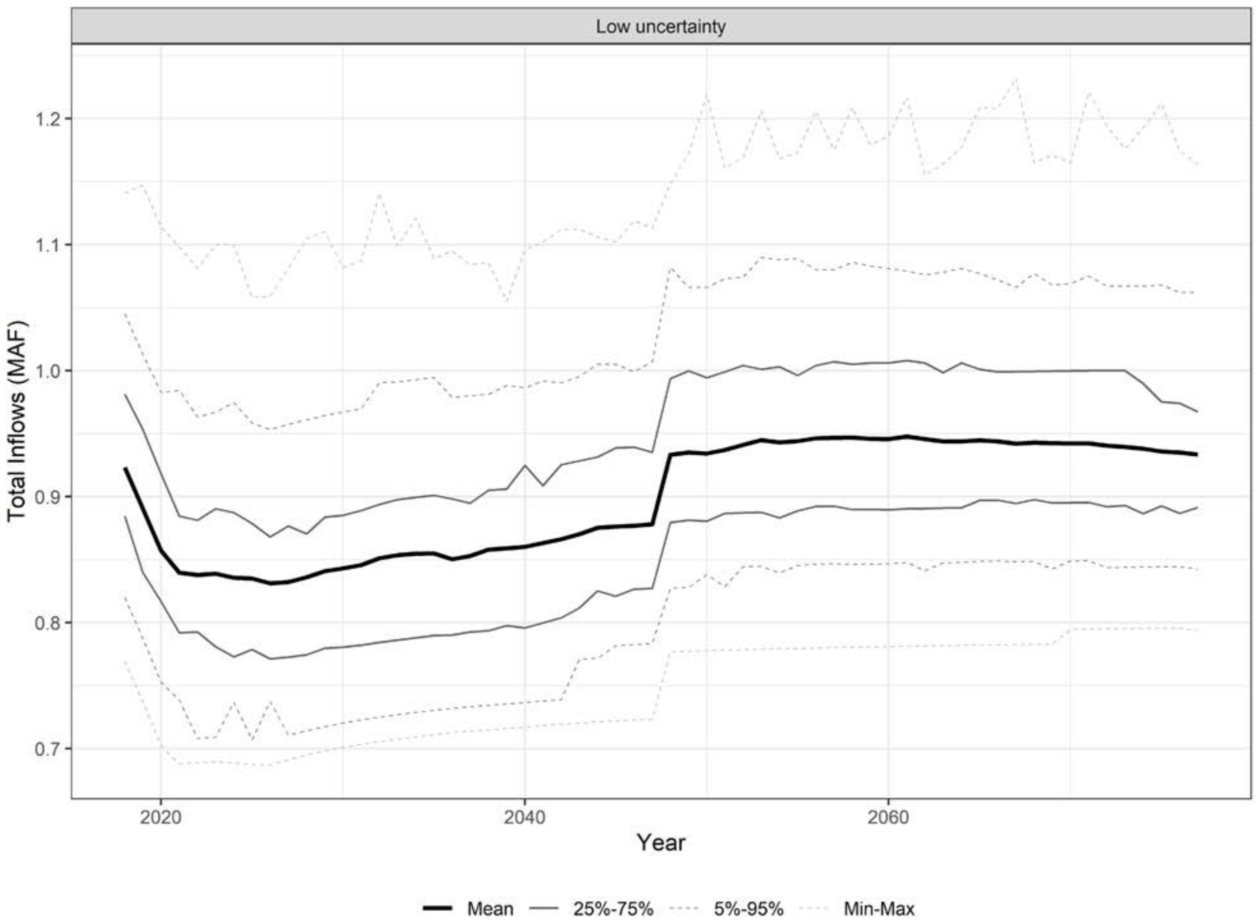
Effect HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards. The discussion for the Proposed Project is applicable to Alternative 6.

5.12.2.8 Alternative 7: No Action

Under Alternative 7, the SCH project features would be implemented; however, the Corps would not issue a permit for the SSMP 10-Year Plan Project, and no aquatic habitat restoration or dust suppression and restoration, as described for the Proposed Project and project alternatives, would be constructed. The No Action Alternative (Figure 3-8) is intended to reflect existing conditions (those present at the time the Notice of Preparation was issued) plus hydrologic changes that are reasonably expected to occur in the foreseeable future if none of the alternatives are implemented and in consideration of current water management plans and reasonable estimates of future water uses. Existing Sea salinity concentrations would continue to increase over time as surface elevations decrease and offset of lost surface water area by aquatic habitat restoration areas with a target salinity of 20 to 40 ppt would not be achieved.

Effect HYD-1: Project (i.e., SCH ponds only) implementation would cause a reduction in the Salton Sea's water surface elevation to be offset by areas of higher elevation close to shoreline communities.

Under this "Future No Action" scenario, in 2028, the brine sink elevation of the No Action Alternative would be -245.3 feet msl, approximately 6.5 feet lower elevation when compared to existing Sea levels (Appendix F, Tetra Tech 2022). Under the No Action alternative, the flow and salt loading to the Salton Sea would change relative to existing conditions due to predicted changes in human water use practices (e.g., agricultural irrigation, diversions) and natural water availability (e.g., year-to-year variability in precipitation and climate change). The programs and assumptions used to inform the SALSA2 model's Future No Action hydrology and projected changes to inflows are detailed in Appendix F. Figure 5-3 presents projected changes in inflows over time and considers the changes in inflows defined by the Quantification Settlement Agreement signed in 2003 and addressing conserved water volumes and transfers between IID and SDCWA, IID and CVWD and IID and Metropolitan Water District of Southern California for a period of 35 to 75 years (IID 2006).



Source: Tetra Tech 2021b

Figure 5-3 Total Sea SALSA2 Inflows Under the Low Uncertainty Variants of the "Future No Action" Hydrology

Under Alternative 7, some water would evaporate from the 3,770-acres of SCH ponds; however, this volume of water would otherwise flow to the Sea where it would be subjected to a similar evaporation rate. Although Alternative 7 would result in a smaller remnant Sea, the net effect would be offset of this lost surface area through pond creation near the New and Alamo River deltas. Although Alternative 7 would not have an adverse effect on Saline Sea elevation, a conclusion supported by the analysis presented in the SCH EIR/EIS (Corps and CNRA 2013) and CEQA Addendum/Findings Analysis for the SCH Project EIS/EIR (CNRA 2017), Alternative 7 would not provide for beneficial effects comparable to the Proposed Project and project alternatives.

Effect HYD-2: Project implementation (i.e., SCH ponds only) would beneficially affect salinity in the Salton Sea's ecosystem by providing reduced salinity areas suitable for fish habitat. Declining inflows to the Sea have caused increased salinity levels that exceed tolerance limits of most fish species and has resulted in a loss of the majority of the fishery, declines in bird populations from the loss of food, and exposure of soils to wind erosion. Further loss of water in future years will result in the continued degradation of the Sea ecosystem due to increasing salinity and other water quality issues, including temperature extremes, eutrophication (increased nutrient loads), related anoxia (oxygen deficiency), and algal productivity. Reduction of river inflows to the Sea from other factors, such as water recycling in Mexico, is also contributing to increases in salinity and a declining sea elevation.

Existing Sea salinity concentrations would continue to increase over time as surface elevations decrease and offset of lost surface water area by aquatic habitat restoration areas with a target salinity of 20 to 40 ppt would not be achieved. Under Alternative 7, only the SCH project would be constructed (i.e., 4,110-acres of new ponds). Although Alternative 7 would not have an adverse effect on Saline Sea salinity concentrations, a conclusion supported by the analysis presented in the SCH EIR/EIS (Corps and CNRA 2013) and CEQA Addendum/Findings Analysis for the SCH Project EIS/EIR (CNRA 2017), Alternative 7 would not provide for beneficial effects comparable to the Proposed Project and project alternatives.

Effect HYD-3: Project construction and implementation would cause changes in Salton Sea water quality but would not violate established standards. Under the No Action Alternative, no projects would be implemented and no direct effects to water quality would occur.

5.12.3 Groundwater Hydrology and Quality

5.12.3.1 Proposed Project

Effect GW-1: Project implementation would have little effect on groundwater availability or quality. The local groundwater conditions reflect a saline, shallow perched water table that receives inflows from the irrigation drains and applied water that is not captured in on-farm drains. The Proposed Project would store a portion of inflows on otherwise future areas of dry playa and would provide for the potential for seepage (i.e., additional water) to the shallow groundwater system. Portions of inflows would be spread across up to 19,062 acres of restored aquatic habitat areas sited at higher elevations that are closer to the historic shoreline. This would increase the area of potential recharge to the shallow water table, and the remainder of inflows would continue to flow toward the Salton Sea. The goal of spreading would be to mimic the natural process of groundwater recharge and optimize the use of ephemeral surface water runoff. Spreading can result in deep infiltration of water (more than 1 foot of water) that exceeds a heavy rain event (typically no greater than 0.2 foot of water) (Corps and CNRA 2013). Given that large runoff events generally occur during the cooler months of mid-November through March, loss to evaporation is low.

Sources of groundwater supply are described in Section 4.12. Any groundwater applied for dust suppression and restoration features would typically be extracted from existing wells that draw from the deep aquifer and would not have a direct adverse effect to the shallow water table. In the future, if shallow groundwater is considered towards potential water supply for the Proposed Project, additional environmental review would be needed before the groundwater supply can be used. The volume of groundwater applied would be offset by seepage from up to 19,062-acres of restored aquatic habitat areas back into the underlying water table, reduced by loss to evapotranspiration. The Proposed Project would not directly change the volume and capacity, producibility, quality, renewability or recharge of underlying groundwater basins, and, therefore, would not create a substantial effect on groundwater availability. Additionally, the Proposed Project would create no measurable change to inflow water quality and would therefore have negligible effect to groundwater quality of the shallow aquifer underlying the Sea.

5.12.3.2 Alternative 1: Maximum Lake Edge

Effect GW-1: Project implementation would have little effect on groundwater availability or quality. The discussion for the Proposed Project is applicable to this alternative noting the following differences. Alternative 1 would establish up to 25,690-acres of additional water storage in aquatic habitat restoration areas (approximately 6,628-acres more than the Proposed Project, primarily through a new pond in the vicinity of the Bombay Beach wetland) but would not implement dust suppression or restoration that would potentially utilize groundwater sources.

5.12.3.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect GW-1: Project implementation would have little effect on groundwater availability or quality. The discussion for the Proposed Project is applicable to this alternative noting the following differences. Alternative 2 would establish up to 25,690-acres of additional water storage in aquatic habitat restoration areas (approximately 6,628-acres more than the Proposed Project, primarily through increased wetland area and function at the Bombay Beach wetland) but would not implement dust suppression or restoration that would potentially utilize groundwater sources.

5.12.3.4 Alternative 3: North End/South End Aquatic Habitat

Effect GW-1: Project implementation would have little effect on groundwater availability or quality. The discussion for the Proposed Project is applicable to this alternative noting the following differences. Alternative 3 would establish up to 25,690-acres of additional water storage in aquatic habitat restoration areas (approximately 6,628-acres more than the Proposed Project, primarily through new ponds in the vicinity of the New River expansion and the Bombay Beach wetland) but would not implement dust suppression or restoration that would potentially utilize groundwater sources.

5.12.3.5 Alternative 4: Water Conservation

Effect GW-1: Project implementation would have little effect on groundwater availability or quality. The discussion for the Proposed Project is applicable to this alternative noting the following differences. Alternative 4 would establish up to 10,790-acres of additional water storage in aquatic habitat restoration areas, increasing wetland function at the Bombay Beach wetland. Alternative 4 would construct approximately 8,272-acres less aquatic habitat than the Proposed Project, but would implement dust suppression or restoration that could utilize groundwater sources. Sources of groundwater supply are described in Section 4.12. Any groundwater applied for dust suppression and restoration features would typically be extracted from existing wells that draw from the deep aquifer and would not have a direct adverse effect to the shallow water table. If shallow groundwater is considered towards potential water supply for Alternative 4, additional environmental review would be needed before the groundwater supply can be used. The volume of shallow groundwater applied would be offset by seepage from new aquatic habitat restoration areas back into the underling water table, reduced by loss to evapotranspiration.

5.12.3.6 Alternative 5: Maximum Build Out

Effect GW-1: Project implementation would have little effect on groundwater availability or quality. The discussion for the Proposed Project is applicable to this alternative noting the following differences. Alternative 5 would establish up to 24,734-acres of additional water storage in aquatic habitat restoration areas (5,672-acres more than the Proposed Project) and would implement up to 23,973-acres of dust suppression or restoration (9,073-acres more than the Proposed Project) that would utilize groundwater sources. Sources of groundwater supply are described in Section 4.12. Any groundwater applied for dust suppression and restoration features would typically be extracted from existing wells that draw from the deep aquifer and would not have a direct adverse effect to the shallow water table. If shallow groundwater is considered towards potential water supply for Alternative 5, additional environmental review would be needed before the groundwater supply can be used. The volume of shallow groundwater applied would be offset by seepage from new aquatic habitat restoration areas back into the underling water table, reduced by loss to evapotranspiration.

5.12.3.7 Alternative 6: No Federal Action

Effect GW-1: Project implementation would have little effect on groundwater availability or quality. The discussion for the Proposed Project is applicable to Alternative 6, as a sub-set of aquatic habitat restoration and dust suppression and restoration features detailed in Chapter 3 and not requiring federal authorizations, would be implemented.

5.12.3.8 Alternative 7: No Action

Effect GW-1: Project (i.e., SCH ponds only) implementation would have little effect on groundwater availability or quality. Under Alternative 7, the previously approved SCH project will be implemented to construct up to 4,110-acres of new ponds, but no dust suppression or restoration features or additional aquatic habitat restoration would be implemented. The local groundwater conditions at the SCH pond sites reflect a shallow perched water table that receives inflows from the IID drains and applied water that is not captured in on-farm drains. Analysis presented in the SCH EIR/EIS (Corps and CNRA 2013) and CEQA Addendum/Findings Analysis for the SCH Project EIS/EIR (CNRA 2017) concluded that the ponds would store water on otherwise dry playa and, therefore, would provide seepage (additional water) to the shallow groundwater system. A canal would intercept a portion of this seepage, and the remainder would flow toward the Salton Sea. The SCH project (Alternative 7) would not interfere with or cause a deficit in groundwater resources and, therefore, would not result in an adverse effect on groundwater.

5.12.4 Water Supply and Conservation and Water Rights

5.12.4.1 Proposed Project

Effect WS-1: Project implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights. Between 10,790 and 19,062 acres of aquatic habitat restoration projects would be implemented under the Proposed Project. Up to 14,900 acres of dust suppression and restoration would be built within the mapped dust suppression and restoration opportunity areas on Figure 3-1. This acreage maximum represents half of the minimum total project area. Some of the dust suppression projects are water dependent and would be constructed where water sources are available; others are not water dependent and could be implemented anywhere on the exposed lakebed. Water sources would include inflows from the Whitewater River, Alamo River, New River, a variety of agricultural drains around the Sea and potentially groundwater and recycled water sources. Proposed Project facilities would be constructed near water sources to start, and additional projects would be constructed moving downslope as the Sea recedes. The water conveyance and supply systems would be built as the SSMP team develops additional projects and would be constructed concurrently with habitat and dust suppression project features. As future water-reliant projects are developed, available water supply would determine final project areas and design and existing water conveyance infrastructure would be extended incrementally to serve those projects. Some aquatic habitat restoration features that are too far from rivers and drains to effectively use water from those sources may be supplied by other surface water sources, including recycled water, or by drilling new groundwater wells. Some of the dust suppression projects would be water dependent and would be constructed where water sources are available; others are not water dependent and could be built anywhere on the exposed lakebed. Where water access is a limit in the near term, waterless approaches will be considered as a temporary measure (CNRA 2021).

The Salton Sea and all of the principal inflow sources are listed as impaired water bodies (DWR and CDFG 2007). The primary water supply for the aquatic habitat restoration areas would be a combination of brackish river water and hypersaline water from the Sea. The Salton Sea, as a terminal lake, is the ultimate recipient of surface waters. The Proposed Project would not use drinking water supplies and would only consumptively use inflow water lost to evaporation (pond and dust suppression features) and evapotranspiration (wetland features), As result, the Proposed Project would not substantially reduce the flow in a river to the detriment of downstream water users. The Proposed Project would not divert water supply from other beneficial uses and would have no effect to existing water rights. Refer to the discussion for Alternative 7 for analysis specific to the SCH pond features.

5.12.4.2 Alternative 1: Maximum Lake Edge

Effect WS-1: Project implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights. The discussion for the Proposed Project is applicable to Alternative 1.

5.12.4.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect WS-1: Project implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights. The discussion for the Proposed Project is applicable to Alternative 2.

5.12.4.4 Alternative 3: North End/South End Aquatic Habitat

Effect WS-1: Project implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights. The discussion for the Proposed Project is applicable to Alternative 3.

5.12.4.5 Alternative 4: Water Conservation

Effect WS-1: Project implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights. The discussion for the Proposed Project is applicable to Alternative 4.

5.12.4.6 Alternative 5: Maximum Build Out

Effect WS-1: Project implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights. The discussion for the Proposed Project is applicable to Alternative 5.

5.12.4.7 Alternative 6: No Federal Action

Effect WS-1: Project implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights. The discussion for the Proposed Project is applicable to Alternative 6, which would implement restoration features on a subset of acreage ranging between the Proposed Project and No Action Alternative.

5.12.4.8 Alternative 7: No Action

Effect WS-1: Project (i.e., SCH ponds only) implementation would not result in any diversion of water supply from other beneficial uses and would not affect water rights. Under the No Action Alternative, no projects would be implemented and no effect to water supply or water rights would result.

5.12.5 Floodplain Management and Flood Risk Management

5.12.5.1 Proposed Project

Effect FM-1: Project implementation would not affect floodplain resilience nor increase flood risk. The State intends for the Proposed Project to compose its Watershed Plan pursuant to the NRCS's National Watershed Program authorized under the Watershed Protection and Flood Prevention Act (Public Law 83-566), and therefore, the Proposed Project would not conflict with the NRCS program’s floodplain.

Aquatic habitat restoration sites would be located in areas identified on FEMA flood maps as occurring within the Sea’s inundation area, which would not be within a flood hazard area because it is part of the Sea. Implementation of Proposed Project features would not occur within the floodplain and thus would have no effect. Ponds constructed under the Proposed Project would include berms, which are not habitable structures as defined by FEMA. Moreover, if the berms failed, the impounded water would be released directly to the Salton Sea or onto exposed playa where it would then flow to the Sea, and failure would not degrade floodplain functions or expose people to risk of injury or death from flooding.

5.12.5.2 Alternative 1: Maximum Lake Edge

Effect FM-1: Project implementation would not affect floodplain resilience nor increase flood risk. The discussion for the Proposed Project is applicable to Alternative 1.

5.12.5.3 Alternative 2: Enhance and Expand Existing Wetlands

Effect FM-1: Project implementation would not affect floodplain resilience nor increase flood risk. The discussion for the Proposed Project is applicable to Alternative 2.

5.12.5.4 Alternative 3: North End/South End Aquatic Habitat

Effect FM-1: Project implementation would not affect floodplain resilience nor increase flood risk. The discussion for the Proposed Project is applicable to Alternative 3.

5.12.5.5 Alternative 4: Water Conservation

Effect FM-1: Project implementation would not affect floodplain resilience nor increase flood risk. The discussion for the Proposed Project is applicable to Alternative 4.

5.12.5.6 Alternative 5: Maximum Build Out

Effect FM-1: Project implementation would not affect floodplain resilience nor increase flood risk. The discussion for the Proposed Project is applicable to Alternative 5.

5.12.5.7 Alternative 6: No Federal Action

Effect FM-1: Project implementation would not affect floodplain resilience nor increase flood risk. The discussion for the Proposed Project is applicable to Alternative 5.

5.12.5.8 Alternative 7: No Action

Effect FM-1: Project (i.e., SCH ponds only) Project implementation would not affect floodplain resilience nor increase flood risk. Under the No Action Alternative, no projects would be implemented and no effects to floodplain resilience or flood risk would result.

5.13 TRANSPORTATION AND TRAFFIC

5.13.1 Effects Analysis Methodology

Table 5-35 summarizes the effects of the Proposed Project and seven alternatives on traffic, compared to the No Action Alternative. Peak construction periods for aquatic habitat pond construction and dust suppression projects were used to assess the maximum increase in traffic as a result of project construction.

Table 5-35 Summary of Effects for Transportation and Traffic

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
TRAN-1: Increase traffic in the Project vicinity during construction and operations	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required
TRAN-2: Emergency vehicles would retain their ability to access Project area during construction and operations despite increased traffic and construction	MLT	MLT	MLT	MLT	MLT	MLT	MLT	N/A*	None required

Notes:

PP= Proposed Project

N/A = Not Applicable

Adverse Effects:

MLT = Minor Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.13.2 Proposed Project

Effect TRAN-1: Increase traffic in the Project vicinity during construction and operations. The Proposed Project would require approximately 105 workers during the peak construction period for aquatic habitat pond creation. Of these workers, 55 would be on-site workers and would generate up to 55 round trips in personal vehicle trips per day over the 10-year Project construction period. The remaining 50 workers would operate tractor trailers to deliver materials and equipment to the site on a daily basis. It is assumed that delivery of equipment and materials like rock and gravel would produce a maximum of 180 tractor trailer round-trips per day for an estimated peak construction period of 2 to 3 months. It is estimated that delivery of equipment and materials from more distant locations could require approximately one long-distance trip every 3 days over the 10-year Project construction period. The overall project construction period would be 10 years, with various projects implemented in various areas over time, which would each have a peak construction period within that overall timeframe. The Proposed Project footprint includes areas around the perimeter of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites. For dust suppression projects, the Proposed Project would require approximately 6 workers onsite workers during construction which would generate up to 6 round trips in personal vehicle trips per day over the 10-year Project construction period. It is assumed that delivery of equipment and materials like rock and gravel would produce a maximum of 20 tractor trailer round-trips per day for an approximately 3-week period. The Proposed Project footprint includes areas around the perimeter of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites.

Most roadways in the Project vicinity currently operate at LOS A or B. However, there are some that are LOS C and D. An additional 235 round trips per day during peak aquatic habitat pond construction periods would not cause the level of service to fall below LOS C, which is the standard for roads in Imperial and Riverside counties, for roadways currently operating at LOS C or better. For roadways that are already below LOS C, the increase in additional round trips during peak construction would not cause the level of service to fall below the existing level. The Project would not substantially conflict with any applicable transportation plans, and effects would be minor and short-term.

The Proposed Project would require approximately 17 personnel for long-term operation of the Project. It is anticipated that these workers would commute from nearby urban centers to the Project site or nearby facility, generating approximately 17 round-trips a day, 5 days a week. A tractor-trailer would be required approximately 300 days a year for maintenance activities, and heavy equipment would periodically be brought in as well. These trips would have a negligible effect on area roadways, and any effects would be minor and long-term.

Effect TRAN-2: Emergency vehicles would retain their ability to access Project area during construction and operations despite increased traffic and construction. Neither construction nor operations would result in an increase in traffic that would cause existing levels of service (which are not currently unacceptable, LOS C or better) to become unacceptable on any roadways in the Project vicinity, and the amount of traffic that would be generated on the generally lightly traveled local roadways would not delay emergency access. If any project work was required along existing roadways, typical roadway safety precautions would be taken (e.g., flaggers, signs warning motorists of roadway work), and at least one travel lane would remain open at all times, thereby ensuring that emergency vehicles could pass. Emergency vehicles are equipped with sirens, which give advance warning of their approach, and construction crews would have the ability to make emergency provisions for safe vehicle passage through construction zones. Therefore, effects would be minor and long-term.

5.13.3 Alternative 1: Maximum Lake Edge

Effect TRAN-1: Increase traffic in the Project vicinity during construction and operations. Alternative 1 would have the same effects as discussed for the Proposed Project, except this alternative consists entirely of aquatic habitat ponds and does not include any dust suppression projects. The Alternative 1 footprint includes areas around the perimeter of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites. The Project would not substantially conflict with any applicable transportation plans, and effects would be minor and short-term. Personnel required for long-term operation of this alternative would be less than those discussed for the Proposed Project This alternative would require approximately 13 personnel for long-term operation. A tractor-trailer would be required approximately 230 days a year for maintenance activities, and heavy equipment would periodically be brought in as well. These trips would have a negligible effect on area roadways, and any effects would be minor and long-term.

Effect TRAN-2: Effects would be the same as those described for the Proposed Project. Emergency vehicles would retain their ability to access the Project area during construction and operations despite increased traffic. Effects to public safety would be minimal and therefore this is considered a minor and long-term.

5.13.4 Alternative 2: Enhance and Expand Existing Wetlands

Effect TRAN-1: Increase traffic in the Project vicinity during construction and operations. Alternative 2 would have the same effects as discussed for the Proposed Project, except this alternative consists entirely of aquatic habitat ponds and wetland enhancement projects. It does not include any dust suppression projects. The Alternative 4 footprint includes areas at the north and south ends of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites. The Project would not substantially conflict with any applicable transportation plans, and effects would be minor and short-term. Personnel required for long-term operation of this alternative would be less than those discussed for the Proposed Project. This alternative would require approximately 13 personnel for long-term operation. A tractor-trailer would be required approximately 230 days a year for maintenance activities, and heavy equipment would periodically be brought in as well. These trips would have a negligible effect on area roadways, and any effects would be minor and long-term.

Effect TRAN-2: Effects would be the same as those described for the Proposed Project. Emergency vehicles would retain their ability to access the Project area during construction and operations despite increased traffic. Effects to public safety would be minimal and therefore this is considered a minor and long-term.

5.13.5 Alternative 3: North End/South End Aquatic Habitat

Effect TRAN-1: Increase traffic in the Project vicinity during construction and operations. Alternative 3 would have the same effects as discussed for the Proposed Project, except this alternative consists entirely of aquatic habitat ponds and does not include any dust suppression projects. The Alternative 3 footprint includes areas at the north and south ends of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites. The Project would not substantially conflict with any applicable transportation plans, and effects would be minor and short-term. Personnel required for long-term operation of this alternative would be less than those discussed for the Proposed Project This alternative would require approximately 13 personnel for long-term operation. A tractor-trailer would be required approximately 230 days a year for maintenance activities, and heavy equipment would periodically be brought in as well. These trips would have a negligible effect on area roadways, and any effects would be minor and long-term.

Effect TRAN-2: Effects would be the same as those described for the Proposed Project. Emergency vehicles would retain their ability to access the Project area during construction and operations despite increased traffic. Effects to public safety would be minimal and therefore this is considered a minor and long-term.

5.13.6 Alternative 4: Water Conservation

Effect TRAN-1: Increase traffic in the Project vicinity during construction and operations. Alternative 4 would include dust suppression projects and wetland enhancement projects. No aquatic habitat ponds would be constructed under this alternative. Dust suppression projects would require approximately 6 workers onsite workers during construction which would generate up to 6 round trips in personal vehicle trips per day over the 10-year Project construction period. It is assumed that delivery of equipment and materials like rock and gravel would produce a maximum of 20 tractor trailer round-trips per day for an approximately 3-week period. The Alternative 4 footprint includes areas around the perimeter of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites.

An additional 26 round trips per day during the peak construction period for dust suppression projects would not cause the level of service to fall below LOS C, which is the standard for roads in Imperial and Riverside counties. For roadways that are already below LOS C, the increase in additional round trips during peak construction would not cause the level of service to fall below the existing level. The Project would not substantially conflict with any applicable transportation plans, and effect would be minor and short-term.

Personnel required for long-term operation of this alternative would be less than those discussed for the Proposed Project This alternative would require approximately 13 personnel for long-term operation. A tractor-trailer would be required approximately 230 days a year for maintenance activities, and heavy equipment would periodically be brought in as well. These trips would have a negligible effect on area roadways, and any effects would be minor and long-term.

Effect TRAN-2: Effects would be the same as those described for the Proposed Project. Emergency vehicles would retain their ability to access the Project area during construction and operations despite increased traffic. Effects to public safety would be minimal and therefore this is considered a minor and long-term.

5.13.7 Alternative 5: Maximum Build Out

Effect TRAN-1: Increase traffic in the Project vicinity during construction and operations. Alternative 5 would have the same effects as discussed for the Proposed Project, except this alternative consists of the largest project footprint, which could result in a higher total number of days of peak construction. However, the estimate for truck trips during peak construction for aquatic habitat ponds and dust suppression projects are expected to be the same as those discussed for the Proposed Project. The Alternative 5 footprint includes areas around the perimeter of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites. The Project would not substantially conflict with any applicable transportation plans, and effects would be minor and short-term. Personnel required for long-term operation of this alternative would be more than those discussed for the Proposed Project This alternative would require approximately 24 personnel for long-term operation. A tractor-trailer would be required approximately 440 times a year for maintenance activities, and heavy equipment would periodically be brought in as well. These trips would have a negligible effect on area roadways, and any effects would be minor and long-term.

Effect TRAN-2: Effects would be the same as those described for the Proposed Project. Emergency vehicles would retain their ability to access the Project area during construction and operations despite increased traffic. Effects to public safety would be minimal and therefore this is considered minor and long-term.

5.13.8 Alternative 6: No Federal Project

Effect TRAN-1: Increase traffic in the Project vicinity during construction and operations. The potential locations where dust suppression projects could be located under this alternative are not well known at this time. Dust suppression projects would require approximately 6 workers onsite workers during construction which would generate up to 6 round trips in personal vehicle trips per day over the 10-year Project construction period. It is assumed that delivery of equipment and materials like rock and gravel would produce a maximum of 20 tractor trailer round-trips per day for an approximately 3-week period. The Alternative 6 footprint is not well defined and could include areas around the perimeter of the Sea, and therefore, increases in traffic would be spread out over time and based on various project locations and routes to sites.

An additional 26 round trips per day during the peak construction period for dust suppression projects would not cause the level of service to fall below LOS C, which is the standard for roads in Imperial and Riverside counties. For roadways that are already below LOS C, the increase in additional round trips during peak construction would not cause the level of service to fall below the existing level. The Project would not substantially conflict with any applicable transportation plans, and effects would be minor and short-term.

Personnel required for long-term operation of this alternative would be less than those discussed for other alternatives, which would have a negligible effect on area roadways, and any effects would be minor and short-term.

Effect TRAN-2: Effects would be the same as those described for the Proposed Project. Emergency vehicles would retain their ability to access the Project area during construction and operations despite increased traffic. Effects to public safety would be minimal and therefore this is considered minor and long-term.

5.13.9 Alternative 7: No Action

Effect TRAN-1: Increase traffic in the Project vicinity during construction and operations. Under the No Action Alternative, roadways would continue to operate as they do currently. Traffic would increase at normal rates, and the segments of state highways and county roads within the Project vicinity would continue to operate at existing levels of service during the period when Project construction traffic would occur. There are several roadways that are currently operating at LOS D, including Junction Route 8 (Imperial County) and Junction Route 10 (Riverside County) along State Route 86; and Indio, North Junction Route 111 along Interstate 10 in Riverside County. There is one roadway in Riverside County that is currently operating at LOS E which is Jefferson Street/Indio Boulevard along Interstate 10. The remaining roadways in the vicinity of the Project would continue operating at LOS C or better during the period when Project construction traffic would occur.

Effect TRAN-2: Emergency vehicles would retain their ability to access Project area during construction and operations despite increased traffic and construction. Under the No Action Alternative, roadways would continue to operate as they do currently and traffic would increase at normal rates. No increases in traffic related to construction or operations would occur and therefore no effects would occur that would affect the ability of emergency vehicles to retain their ability to access areas in the vicinity of the Project area.

5.14 PALEONTOLOGICAL RESOURCES

The primary risks to fossils would result from damage during construction, although erosion of paleontologically sensitive sediment could unearth and disperse fossils. A major effect would occur if a scientifically useful fossil were destroyed or physically damaged, resulting in the reduction of the data potential of that fossil; and/or if fossils were unearthed and removed from their stratigraphic context without appropriate scientific recordation.

5.14.1 Effects Analysis Methodology

The effects analysis methodology for paleontological resources follows guidelines provided by the SVP (1991, 1995). The assessment is based upon the potential for damage or disturbance as a result of ground-disturbing activities. Effects would vary depending on the depth of construction required. Shallow excavation (e.g., 2 to 3 feet in depth) would have a low potential for causing effects, while construction below 5 feet, such as required for the deeper pools and channels within the ponds would have a greater potential for effects. Groundwater wells also could adversely affect paleontological resources, and it is assumed that they could be present in all alternatives. Much of the Salton Sea basin, where the Proposed Project sites are located, is underlain by sediments that are paleontologically sensitive (designated as having moderate to high paleontological sensitivity). Therefore, avoidance as a means to reduce or eliminate effects on paleontological resources is not practical. Table 5-36 summarizes the effects of the Proposed Project and seven alternatives on paleontological resources, compared to the No Action Alternative.

Table 5-36 Summary of Effects for Paleontological Resources

Effects	Project Alternative								Mitigation Measures
	PP	1	2	3	4	5	6	7	
PAL-1: Ground-disturbing activities could expose and damage undiscovered paleontological resources.	Maj LT	Maj LT	Maj LT	Maj LT	Maj LT	Maj LT	Maj LT	N/A *	MM PAL-1: Prepare and implement a survey plan and a paleontological monitoring plan. MM PAL-2: Conduct worker training. MM PAL-3: Prepare and implement a paleontological resource data recovery plan.
PAL-2: Conflict with agency requirements for handling paleontological resources.	Maj LT	Maj LT	Maj LT	Maj LT	Maj LT	Maj LT	Maj LT	N/A *	MM PAL-4: Submit individual project plans to federal land owning agencies.

Notes:

PP=Proposed Project
N/A = Not Applicable

Adverse Effects:

Maj = Major Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.14.2 Proposed Project

Effect PAL-1: Ground-disturbing activities could expose and damage undiscovered paleontological resources. Underlying geological formations that have a potential to exist in the study area are known to have a high sensitivity (DWR and CDFG 2007; Jefferson 2010a, 2010b, as cited in Corps and CNRA 2013). The Proposed Project would result in 19,062 acres of aquatic habitat restoration projects and up to 14,900 acres of dust suppression projects. Dust suppression projects, mudflats and shallow-water habitat, and permanent vegetated wetlands would not require excavation more than 3 feet deep and thus would have a low potential to affect paleontological resources. Project features such as the North Lake Demonstration Project, North Lake Project, New River Expansion Project, and Alamo River Project would involve some mid-depth and deep-water habitat, which would involve construction at depths potentially greater than 4.5 feet. Additionally, swales and channels would be excavated approximately 2 to 4 feet below the pond bottom surfaces. Thus, these features would have a high potential to expose and damage or remove from their stratigraphic context buried and unknown paleontological resources in the Lake Cahuilla beds and, to a lesser extent, in the underlying Brawley Formation. They could include scientifically useful fossils, and effects would be major and long-term.

Mitigation Measures

MM PAL-1: Prepare and implement a paleontological monitoring plan that includes a survey plan. A plan for the survey of Project areas will be prepared by the project applicant to facilitate identification of paleontological resources prior to initiation of ground-disturbing activities. Additionally, prior to construction, a certified paleontologist retained by the project applicant will supervise monitoring of construction excavations and will submit for approval to lead agencies a Paleontological Monitoring Pan which will include inspection of exposed rock units and microscopic examination of matrix to determine if fossils are present. The monitor will have authority to temporarily divert grading away from exposed fossils to recover the fossil specimens. Monitoring will take place on a full-time basis when construction occurs at depths greater than 5 feet, part-time (4 hours a day) when excavations exceed 2 feet, and on a spot-check basis on excavations less than 2 feet. The paleontologist will document interim results of the construction monitoring program with monthly progress reports. Additionally, at each fossil locality, field data forms will record that locality, stratigraphic columns will be measured, and appropriate scientific samples will be submitted for analysis.

MM PAL-2: Conduct worker training. Construction supervisors and crew will receive training by a certified paleontologist in the procedures for identifying and protecting paleontological resources, as well as procedures to be implemented in the event fossil remains are encountered during ground-disturbing activities.

MM PAL-3: Prepare and implement a paleontological resource data recovery plan. If fossils are encountered during construction, construction activities will be temporarily diverted from the discovery, and the monitor will notify all concerned parties and collect matrix for testing and processing as directed by the Project paleontologist. A Paleontological Resource Data Recovery Plan will be prepared to address the specific site conditions, the discovery and actions to take. To expedite removal of fossil-bearing matrix, the monitor will be empowered to request heavy machinery to assist in moving large quantities of matrix out of the path of construction to designated stockpile areas. Construction will resume at the discovery location once all the necessary matrix is stockpiled, as determined by the paleontological monitor. Testing of stockpiles will consist of screen washing small samples to determine if important fossils are present. If such fossils are present, the additional matrix from the stockpiles will be water screened to ensure recovery of a scientifically significant sample. Samples collected will be limited to a maximum of 6,000 pounds per locality.

The Project paleontologist will direct identification, laboratory processing, cataloguing, analysis, and documentation of the fossil collections. When appropriate, splits of rock or sediment samples will be submitted to commercial laboratories for microfossil, pollen, or radiometric dating analysis. Prior to construction, the approved paleontologist will seek the required permits from the lead or landowner agencies. Permits will specify the location of the repository for any collections and will curate the fossil collections, appropriate field and laboratory documentation, and the final Paleontological Resource Recovery Report in a timely manner following construction. A final technical report will be prepared to summarize construction monitoring and present the results of the fossil recovery program. The report will be prepared in accordance with SVP guidelines and lead agency requirements. The final report will be submitted to the lead agency and the curation repository.

Residual Effects

Implementation of MM PAL-1 through 3 would reduce effects on paleontological resources to a minor level because appropriate measures would be taken to prevent physical damage to a scientifically useful fossil, recover data from uncovered fossils, and prevent looting through worker education.

Effect PAL-2: Conflict with agency requirements for handling paleontological resources. Ground disturbing activities could result in the need for handling paleontological resources. Reclamation and the BLM have very specific requirements that must be followed for collection of paleontological resources. Any handling of such resources without following protocols would be considered a conflict and result in a major long-term effect.

Mitigation Measures

MM PAL-4: Submit individual project plans to federal land owning agencies. Individual project plans for paleontological resources will be submitted to the federal land owning agencies for their concurrence/approval prior to any activities being conducted on any project sites.

Residual Effect

Implementation of MM PAL-4 would reduce the effect to a minor level.

5.14.3 Alternative 1: Maximum Lake Edge

Under this alternative, 25,690 acres of open water (large ponds or lakes) would be constructed, including a variety of habitat types, including deep water and mid-depth water habitat.

Effect PAL-1: Ground-disturbing activities could expose and damage undiscovered paleontological resources. The discussion for the Proposed Project applies to Alternative 1, although more aquatic habitat would be constructed than under the Proposed Project; thus, the potential for encountering paleontological resources is somewhat greater.

Mitigation Measures

MM PAL-1, PAL-2, and PAL-3 are applicable to this Alternative 1.

Residual Effect

Implementation of MM PAL-1, PAL-2, and PAL-3 would reduce the effect to a minor level.

Effect PAL-2: Conflict with agency requirements for handling paleontological resources. The discussion for the Proposed Project is applicable to this alternative.

Mitigation Measures

MM PAL-4 is applicable to this Alternative 1.

Residual Effect

Implementation of MM PAL-4 would reduce the effect to a minor level.

5.14.4 Alternative 2: Enhance and Expand Existing Wetlands

Alternative 2 would include the North Lake Project and actions to expand and enhance wetlands. Mid-water or deep-water habitat would be associated with the North Lake Project, Expanded North Lake Project, Alamo River Project, New River Expansion Project, which total approximately 14,571 acres. Additionally, some grading and excavation of the exposed lakebed could occur, and small drainage channels could be excavated and this could extend 5 feet or more below the ground surface.

Effect PAL-1: Ground-disturbing activities could expose and damage undiscovered paleontological resources. The discussion for the Proposed Project applies to Alternative 2, although less aquatic habitat may be constructed than under the Proposed Project; thus, the potential for encountering paleontological resources may be somewhat less.

Mitigation Measures

MM PAL-1, PAL-2, and PAL-3 are applicable to this Alternative 2.

Residual Effect

Implementation of MM PAL-1, PAL-2, and PAL-3 would reduce the effect to a minor level.

Effect PAL-2: Conflict with agency requirements for handling paleontological resources. The discussion for the Proposed Project is applicable to this alternative.

Mitigation Measures

MM PAL-4 is applicable to this Alternative 2.

Residual Effect

Implementation of MM PAL-4 would reduce the effect to a minor level.

5.14.5 Alternative 3: North End/South End Aquatic Habitat

Alternative 3 would include the North Lake Project and additional ponds near the New and Alamo rivers to create the required 25,690 acres.

Effect PAL-1: Ground-disturbing activities could expose and damage undiscovered paleontological resources. The discussion for the Proposed Project applies to Alternative 3, although more aquatic habitat would be constructed; thus, the potential for encountering paleontological resources is somewhat greater than under the Proposed Project.

Mitigation Measures

MM PAL-1, PAL-2, and PAL-3 are applicable to Alternative 3.

Residual Effect

Implementation of MM PAL-1, PAL-2, and PAL-3 would reduce the effect to a minor level.

Effect PAL-2: Conflict with agency requirements for handling paleontological resources. The discussion for the Proposed Project is applicable to this alternative.

Mitigation Measures

MM PAL-4 is applicable to Alternative 3.

Residual Effect

Implementation of MM PAL-4 would reduce the effect to a minor level.

5.14.6 Alternative 4: Water Conservation

Alternative 4 consists of enhancing and expanding wetlands by 10,790 acres, which would include some grading and excavation of the exposed lakebed and creation of small drainage channels that could extend 5 feet or more below the ground surface. It also includes 14,900 acres of dust suppression projects.

Effect PAL-1: Ground-disturbing activities could expose and damage undiscovered paleontological resources. The discussion for the Proposed Project applies to Alternative 4, although the potential for effects would be lower because less deep excavation would be required than under the Proposed Project.

Mitigation Measures

MM PAL-1, PAL-2, and PAL-3 are applicable to Alternative 4.

Residual Effect

Implementation of MM PAL-1, PAL-2, and PAL-3 would reduce the effect to a minor level.

Effect PAL-2: Conflict with agency requirements for handling paleontological resources. The discussion for the Proposed Project is applicable to this alternative.

Mitigation Measures

MM PAL-4 is applicable to Alternative 4.

Residual Effect

Implementation of MM PAL-4 would reduce the effect to a minor level.

5.14.7 Alternative 5: Maximum Build Out

Alternative 5 would include both habitat and dust suppression projects. Total acreage for this alternative would be 48,596 acres, of which 23,973 acres would be dust suppression projects and 23,801 acres would be ponds or lakes.

Effect PAL-1: Ground-disturbing activities could expose and damage undiscovered paleontological resources. The discussion for the Proposed Project applies to Alternative 5, although the potential for effects may be lower because less excavation below 5 feet may be required than under the Proposed Project.

Mitigation Measures

MM PAL-1, PAL-2, and PAL-3 are applicable to Alternative 5.

Residual Effect

Implementation of MM PAL-1, PAL-2, and PAL-3 would reduce the effect to a minor level.

Effect PAL-2: Conflict with agency requirements for handling paleontological resources. The discussion for the Proposed Project is applicable to this alternative.

Mitigation Measures

MM PAL-4 is applicable to Alternative 5.

Residual Effect

Implementation of MM PAL-4 would reduce the effect to a minor level.

5.14.8 Alternative 6: No Federal Action

Effect PAL-1: Ground-disturbing activities could expose and damage undiscovered paleontological resources. Under Alternative 6 no projects would be built that require Federal action. Some dust suppression and restoration projects would be built and would have the potential to disturb paleontological resources. It is anticipated that the acreage constructed would be far less than for the Proposed Project and other alternatives; thus, the potential for effects on paleontological resources would be less.

Mitigation Measures

MM PAL-1, PAL-2, and PAL-3 are applicable to Alternative 6.

Residual Effect

Implementation of MM PAL-1, PAL-2, and PAL-3 would reduce the effect to a minor level.

5.14.9 Alternative 7: No Action

Under this alternative, no construction would occur, and the surface water elevation of the Salton Sea would continue to decline. Effects could result from the exposure and subsequent erosion of paleontologically sensitive sediment as the water recedes.

5.15 INDIAN TRUST ASSETS

5.15.1 Effects Analysis Methodology

The effects analysis considers the types of ITAs identified on the Torres Martinez Reservation and considers whether the Proposed Project and alternatives would affect those ITAs based on the effects analysis conducted for other resources in Chapter 5. Because portions of the Torres Martinez Reservation are part of and adjacent to the study area, the Torres Martinez and BIA are involved in the coordination and approval efforts for the Proposed Project; thus, the effects analysis also considers input from the BIA and Torres Martinez regarding the development of the SSMP.

The Proposed Project has the potential to affect land assets or rights associated with land assets. This effects analysis focuses on land assets or rights that could be affected by restoration activities. Table 5-37 summarizes the effects of the Proposed Project and seven alternatives on Indian Trust Assets, compared to the No Action Alternative.

Table 5-37 Summary of Effects for Indian Trust Assets

	Project Alternative								
Effects	**PP**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Mitigation Measures**
ITA-1: Ground-disturbing activities could result in effects on ITAs.	Maj	Maj	Maj	Maj	Maj	Maj	Maj	N/A*	MM ITA-1: Submit individual project plans to federal land-owning agencies

Notes:

PP=Proposed Project
N/A = Not Applicable

Adverse Effects:

Maj = Major Effect (Long-Term)

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.15.2 Proposed Project

Effect ITA-1: **Ground-disturbing activities could result in effects on ITAs.** Portions of the Torres Martinez Reservation are part of, and adjacent to the Proposed Project area. Within the proposed project area, trust lands comprise 1,817.9 acres, allotted lands comprise 99.4 acres, and fee land comprises 16.9 acres, 4.3 acres of which have tribal mineral rights. Project construction could result in major effects on ITAs for projects located on tribal lands that are held in trust by the BIA for the Torres Martinez Tribe. Major long-term effects may occur if construction activities disturb minerals or other resources considered ITAs. Effects can be mitigated by locating construction areas away from known resources and monitoring ground-disturbing activities to ensure that buried resources are not inadvertently affected.

Mitigation Measures

MM ITA-1: Submit individual project plans to federal land owning agencies. Individual project plans will be submitted to the BIA and Torres Martinez Tribe for their concurrence/approval prior to any activities being conducted on tribal lands. Because portions of the Torres Martinez Reservation are part of and adjacent to the project area, the Torres Martinez and BIA will be involved in the coordination and approval efforts for the Proposed Project. Any projects located on land held in trust by the BIA for the Torres Martinez Tribe would be subject to review and approval from the BIA and Torres Martinez Tribe through right-of way agreements.

Residual Effects

With implementation of MM ITA-1 effects would be reduced to a minor level.

5.15.3 Alternative 1: Maximum Lake Edge

Effect ITA-1: **Ground-disturbing activities could result in effects on ITAs**. Effects under this alternative are the same as those described for the Proposed Project, except that under this alternative trust lands comprise 1,402.6 acres, allotted lands comprise 99.4 acres, and fee land comprises 12.6 acres, 4.3 acres of which have tribal mineral rights.

Mitigation Measures

MM ITA-1 is applicable to Alternative 1.

Residual Effects

Implementation of MM ITA-1 would reduce the effect to a minor level.

5.15.4 Alternative 2: Enhance and Expand Existing Wetlands

Effect ITA-1: **Ground-disturbing activities could result in effects on ITAs**. Effects under this alternative are the same as those described for the Proposed Project, except that under this alternative trust lands comprise 1,746.4 acres, allotted lands comprise 99.4 acres, and fee land comprises 16.9 acres, 4.3 acres of which have tribal mineral rights.

Mitigation Measures

MM ITA-1 is applicable to Alternative 2.

Residual Effects

Implementation of MM ITA-1 would reduce the effect to a minor level.

5.15.5 Alternative 3: North End/South End Aquatic Habitat

Effect ITA-1: **Ground-disturbing activities could result in effects on ITAs**. Effects under this alternative are the same as those described for the Proposed Project, except that under this alternative trust lands comprise 1,244.2 acres, allotted lands comprise 99.4 acres, and fee land comprises 16.9 acres, 4.3 acres of which have tribal mineral rights.

Mitigation Measures

MM ITA-1 is applicable to Alternative 3.

Residual Effects

Implementation of MM ITA-1 would reduce the effect to a minor level.

5.15.6 Alternative 4: Water Conservation

Effect ITA-1: **Ground-disturbing activities could result in effects on ITAs**. Effects under this alternative are the same as those described for the Proposed Project, except that under this alternative trust lands comprise 920.8 acres, allotted lands comprise 71.4 acres, and fee land comprises 54.1acres, 28.0 acres of which have tribal mineral rights.

Mitigation Measures

MM ITA-1 is applicable to Alternative 4.

Residual Effects

Implementation of MM ITA-1 would reduce the effect to a minor level.

5.15.7 Alternative 5: Maximum Build Out

Effect ITA-1: **Ground-disturbing activities could result in effects on ITAs**. Effects under this alternative are the same as those described for the Proposed Project, except that under this alternative trust lands comprise 1,817.9 acres, allotted lands comprise 99.4 acres, and fee land comprises 16.9 acres, 4.3 acres of which have tribal mineral rights.

Mitigation Measures

MM ITA-1 is applicable to Alternative 5.

Residual Effects

Implementation of MM ITA-1 would reduce the effect to a minor level.

5.15.8 Alternative 6: No Federal Action

Effect ITA-1: **Ground-disturbing activities could result in effects on ITAs**. Effects under this alternative are the same as those described for the Proposed Project, except the total acreage for this alternative is not known at this time. Therefore, the total potential acres of projects which could occur on tribal lands under this alternative is not known.

Mitigation Measures

MM ITA-1 is applicable to Alternative 6.

Residual Effects

Implementation of MM ITA-1 would reduce the effect to a minor level.

5.15.9 Alternative 7: No Action

Under the No Action Alternative, no restoration projects would be implemented on tribal lands and therefore no effects on ITAs would occur. As the Sea continues to recede, additional tribal lands may be exposed which could be developed. Additional exposed areas could also result in additional dust emissions on and near tribal land.

5.16 AQUATIC RESOURCES

5.16.1 Effects Analysis Methodology

Effects were determined by comparing the potential future condition of the aquatic resources under each alternative to the current condition as well as a potential future condition if none of the projects were built. The current condition reflects the aquatic resources that were estimated using recent aerial photographs. The potential future condition is based on modeling information that reflects the anticipated decline in elevation of the Sea over time but is described in very general terms due to uncertainty about the location and amount of wetlands establishing on the exposed lakebed and the degree to which rivers and drains will continue to erode channels and/or spread out over the exposed lakebed. Areas of exposed lakebed as the Sea recedes will include barren areas as well as herbaceous wetland, tamarisk woodland, tamarisk scrub, and chenopod scrub.

Table 5-38 summarizes the effects of the Proposed Project and seven alternatives on aquatic resources, compared to the No Action Alternative.

Table 5-38 Summary of Effects for Aquatic Resources

Effects	Project Alternative								Mitigation Measures
	PP	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
AR-1: Project construction would result in temporary disturbance of Federal Waters of the United States and removal of wetlands	Maj	Maj	Maj	Maj	Maj	Maj	No	N/A*	**MM BIO-1**: Prepare and implement a Habitat Protection, Mitigation, and Restoration Program
AR-2: Project construction would result in a net increase in the amount of Federal Waters of the United States	B	B	B	B	B	B	No	N/A*	None required

Notes:

PP=Proposed Project

N/A = Not Applicable

No = No Effect

Adverse Effects:

Maj = Major Effect (Short-Term)

B = Beneficial Effect (Long-Term)

When multiple effect levels occur under one effect, only the highest level is used in the summary.

*N/A does not indicate the lack of impacts, but that the no action alternative cannot be compared to itself

5.16.2 Proposed Project

Effect AR-1: Project construction would result in temporary disturbance of Federal Waters of the United States and removal of wetlands. When compared to existing conditions, construction of the ponds and diversion would result in a temporary disturbance of up to 2,337.6 acres of wetland Waters of the United States and 851.4 non-wetland Waters of the United States, based on the future baseline condition following recession of the Sea. Although placement of permanent Project facilities in Waters of the United States, including the berms and pump stations for the ponds, would result in a permanent loss of up to 3,189.0 acres of Waters of the United States, the Project would have a net increase of at least 10,790 acres.

Compared to the No Action Alternative, construction activities would result in temporary disturbance to a smaller amount of Waters of the United States than mapped under current conditions because the Sea would have receded some by the time construction begins and will continue to recede even more before construction is completed. While some of the area currently covered by water from the Sea may develop as wetlands as water from drains spreads out on the exposed lakebed, this area of newly-formed wetlands is not anticipated to cover the entire area that is currently covered by the Sea. The berms and pump stations for the ponds would be permanent facilities, but the effects of this infrastructure would be temporary as the Sea recedes. Operation and maintenance of the projects and associated facilities would cause temporary disturbances to Waters of the United States at intervals during the Project life. It is possible that pumps will result in reduction of water in adjacent wetlands and consequent reductions in size, vigor, or quality if the water that supports them is removed. Overall, effects would be major and short-term when compared to the existing environmental setting and the No Action Alternative.

Construction activities could result in the removal of up to 2,337.6 acres of wetlands, based on the current condition. Various facilities, including ponds, ditches, and sedimentation basins may grow a narrow band of emergent wetland vegetation that would likely be removed at least annually during maintenance activities. Removal of wetlands for the projects would be a major effect. Implementation of MM-BIO-1 would mitigate this effect.

Operation of the water diversions would have the potential to affect adjacent wetlands by reducing the amount of water in them as described in Effect BIO-4. No net loss of wetlands is likely to occur, but a major long-term alteration of some wetlands could occur. Implementation of **MM BIO-1** would avoid this effect.

Mitigation Measures

MM BIO-1 would apply to the Proposed Project.

Residual Effects

The residual effect would be minor and short-term following implementation of **MM BIO-1**. because wetlands would be restored if removed by construction.

Effect AR-2: Project operation would increase the amount of Federal Waters of the United States. Compared to existing conditions, the Proposed Project would result in a net increase in the extent of Waters of the United States by over 8,000 acres because the ponds would restore Waters of the United States previously lost by the receding Sea. With the Sea's anticipated receding shoreline under the No Action Alternative, the amount of Waters of the United States restored would be increased (up to the entire pond area minus berms and islands). The Project is anticipated to also improve the quality of Waters of the United States within the area occupied by the Project's aquatic habitat restoration areas compared to the existing environmental setting and the No Action Alternative, and overall effects would be beneficial.

5.16.3 Alternative 1: Maximum Lake Edge

Effect AR-1: Project construction would result in temporary disturbance of Federal Waters of the United States and removal of wetlands. Similarly, as for the Proposed Project and when compared to existing conditions, Alternative 1 would result in a temporary disturbance of up to 80.6 acres of wetland Waters of the United States and 135.7 non-wetland Waters of the United States, based on the future baseline condition following recession of the Sea. Although placement of permanent Project facilities in Waters of the United States, including the berms and pump stations for the ponds, would result in a permanent loss of up to 216.3 acres of Waters of the United States, the Project would have a net increase of 25,690 acres.

Mitigation Measures

MM BIO-1 would apply to the Alternative 1.

Residual Effects

Implementation of MM BIO-1 would reduce effects to minor and short-term.

Effect AR-2: Project operation would increase the amount of Federal Waters of the United States. Similarly, as for the Proposed Project and compared to No Project Alternative, the Proposed Project would result in a net increase in the extent of Waters of the United States of over 25,000 acres because the ponds would restore Waters of the United States previously lost by the receding Sea.

5.16.4 Alternative 2: Enhance and Expand Existing Wetlands

Effect AR-1: Project construction would result in temporary disturbance of Federal Waters of the United States and removal of wetlands. Similar to the Proposed Project and when compared to existing conditions, Alternative 2 would result in a temporary disturbance to approximately of up to 707.9 acres of wetland Waters of the United States and 191.0 acres of non-wetland Waters of the United States, based on the future baseline condition following recession of the Sea. In addition, 707.9 acres of wetlands could be impacted or removed through project activities. Although placement of permanent Project facilities in Waters of the United States, including the berms and pump stations for the ponds, would result in a permanent loss of approximately 898.9 acres of Waters of the United States, the Project would have a net increase and/or enhancement of 24,791 acres.

Mitigation Measures

MM BIO-1 would apply to Alternative 2.

Residual Effects

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect AR-2: Project operation would increase the amount of Federal Waters of the United States Similar to the Proposed Project and compared to existing conditions, Alternative 2 would result in a net increase in the extent of Waters of the United States by about 25,690 acres because the ponds would restore Waters of the United States previously lost by the receding Sea.

5.16.5 Alternative 3: North End/South End Aquatic Habitat

Effect AR-1: Project construction would result in temporary disturbance of Federal Waters of the United States and removal of wetlands. As similarly for the Proposed Project and when compared to existing conditions, Alternative 3 would result in a temporary disturbance to of 218.9 acres of wetland Waters of the United States and 330.9 non-wetland Waters of the United States, based on the future baseline condition following recession of the Sea. Although placement of permanent Project facilities in Waters of the United States, including the berms and pump stations for the ponds, would result in a permanent loss of approximately 549.8 acres of Waters of the United States, the Project would have a net increase of approximately 25,000 acres.

Mitigation Measures

MM BIO-1 would apply to Alternative 3.

Residual Effects

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect AR-2: Project operation would increase the amount of Federal Waters of the United States (beneficial effect). Similarly, as for the Proposed Project and compared to existing conditions, the Proposed Project would result in a net increase in the extent of Waters of the United States by about 25,690 acres because the ponds would restore Waters of the United States previously lost by the receding Sea.

5.16.6 Alternative 4: Water Conservation

Effect AR-1: Project construction would result in temporary disturbance of Federal Waters of the United States and removal of wetlands. Similarly as for the Proposed Project and when compared to existing conditions, Alternative 4 would result in a temporary disturbance to approximately 1,328.7 acres of wetland Waters of the United States and 155.0 non-wetland Waters of the United States, based on the future baseline condition following recession of the Sea. Although placement of permanent Project facilities in Waters of the United States, including the berms and pump stations for the ponds, would result in a permanent loss of approximately 1,483.7 acres of Waters of the United States, the Project would have a net increase and/or enhancement of approximately 9,000 acres.

Mitigation Measures

MM BIO-1 would apply to the Alternative 4.

Residual Effects

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect AR-2: Project operation would increase the amount of Federal Waters of the United States Similarly as for the Proposed Project and compared to existing conditions, the Proposed Project would result in a net increase in the extent of Waters of the United States by approximately 9,000 acres because the habitat would restore Waters of the United States previously lost by the receding Sea.

5.16.7 Alternative 5: Maximum Build Out

Effect AR-1: Project construction would result in temporary disturbance of Federal Waters of the United States and removal of wetlands. Similarly as for the Proposed Project and when compared to existing conditions, Alternative 5 would result in a temporary disturbance to approximately 2,347.8 acres of wetland Waters of the United States and 892.4 non-wetland Waters of the United States, based on the future baseline condition following recession of the Sea. Although placement of permanent Project facilities in Waters of the United States, including the berms and pump stations for the ponds, would result in a permanent loss of approximately 2,347.8 acres of wetland Waters of the United States, the Project would have a net increase of approximately 7,500 acres to 45,500 acres, depending how many projects are built.

Mitigation Measures

MM BIO-1 would apply to the Alternative 5.

Residual Effects

Implementation of **MM BIO-1** would reduce effects to minor and short-term.

Effect AR-2: Project operation would increase the amount of Federal Waters of the United States Similarly, as for the Proposed Project and compared to existing conditions, the Proposed Project would result in a net increase in the extent of Waters of the United States by approximately 7,500 acres to 45,500 acres because the ponds would restore Waters of the United States previously lost by the receding Sea.

5.16.8 Alternative 6: No Federal Action

Under Alternative 6, effects to aquatic resources would be avoided. Therefore, no effects would occur, and mitigation measures are not required.

5.16.9 Alternative 7: No Action

Under the No Action Alternative, no effects to aquatic resources would occur. The Sea would continue to decrease in size, reducing the area of Federal jurisdictional waters. Wetlands are likely to establish on the exposed lakebed over time where water is present.

6.0 CUMULATIVE EFFECTS SUMMARY

The effects of the Proposed Project in combination with the effects of other relevant past, present, and reasonably foreseeable future projects have been evaluated in this section. A list of relevant past, present, and reasonably foreseeable projects that have been/would be constructed within proximity to the Salton Sea is provided in Table 6-1. For the purpose of this analysis, proximity to the Salton Sea and specific SSMP projects is considered the region of influence (ROI), described below. This cumulative analysis is based on the same baseline setting, project description, regulatory framework, resource thresholds, and mitigation measures and effect conclusions as discussed in Sections 4 and 5.

6.1 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS IN THE REGION OF INFLUENCE (ROI)

A ROI is defined as the area over which effects of the Proposed Project could contribute to cumulative effects on the environment. For this analysis, the ROI is the area surrounding the Salton Sea where implementation of other large projects located in Imperial and Riverside counties could overlap during the same timeframe as the implementation of SSMP projects. The large projects listed in Table 6-1 are currently projected for implementation and operation over the next several years and have been determined to have the greatest potential to result in cumulative effects. The projects listed in Table 6-1 are discretionary and subject to CEQA or NEPA environmental review, depending on the underlying land use authority. Each of these projects was evaluated in an Initial Study followed by a Negative Declaration or EIR, depending on the extent of the effects. Some projects were evaluated under NEPA. Environmental protection measures (mitigation measures) and best management practices (BMPs) are required to ensure that any potential effects are mitigated to reduce adverse environmental effects and ensure that each project complies with applicable regulatory requirements. The implementation of these measures provides cumulative protection to reduce overall adverse effects to the regional environmental and human and biological ecosystems surrounding the Salton Sea. Table 6-1 lists the past, present, and reasonably foreseeable future projects that may contribute to cumulative effects of the Proposed Project that may be constructed during the same timeframe as SSMP projects. This table shows more projects in Imperial County than Riverside County. While there are many large projects proposed and being implemented in Riverside County, these projects are outside of the ROI identified for the cumulative effects analysis.

Table 6-1 Cumulative Project List

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
EXISTING PROJECTS – Imperial County					
1	Alhambra Solar Farm (Solar Gen II)	Southern Power Capital Dynamics	50 MW solar PV facility and supporting structures on ~482 acres.	Operational	12 miles southeast
2	Arkansas Solar Farm (Solar Gen II)	Southern Power Capital Dynamics	50 MW solar PV facility and supporting structures on ~481 acres.	Operational	12 miles southeast
3	ATLiS Plant	Energy-Source Minerals,LLC	Using brine from the Salton Sea geothermal field (Hudson Ranch Power I Geothermal Plant), to produce lithium hydroxide, zinc and manganese products.	Pending Entitlement	7 miles south of southern end, near Calipatria
4	A.W. Hoch Geothermal Plan	CalEnergy	45.5 MW geothermal dry steam electric generating facility.	Operational	9 miles southeast
5	Calipatria Solar Farm I (Lindsey Solar)	Solar Frontier	20 MW solar PV facility and supporting structures on ~148 acres.	Operational	10 miles southeast
6	Calipatria Solar Farm (Wilkinson Solar)	Solar Frontier	30 MW solar PV facility and supporting structures on ~302 acres.	Approved, not built	9 miles southeast
7	Calapatria Solar Farm I	Southern Power	20 MW solar PV facility and supporting structures on ~159 acres.	Operational	10 miles southeast
8	Calexico I-A and I-B	8 Minute Energy	Two 100 MW solar PV facilities and supporting structures on ~666-acres.	Under Construction	33 miles southeast
9	Campo Verde Solar Project and Battery Storage System (BESS)	Southern Power Company	140 MW solar PV solar facility and supporting structures on 1,990-acres and utility-scale battery storage for 105 MWh of energy within the footprint of the existing solar PV project.	Operational	27 miles southeast
10	Centinela Solar	Centinela Solar Energy,LLC	275 MW solar PV facility and supporting structures on ~2,067 acres.	Operational	34 miles southeast

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
11	CE Turbo	CalEnergy	11.5 MW geothermal dry steam electric generating facility.	Operational	1.5 miles due east, near Calipatria
12	Citizens Imperial SolarProject	Citizens Imperial Solar, LLC	30 MW solar PV facility and supporting structures on ~159 acres.	Operational	20 miles northeast of southeastern side
13	SEPV Dixieland West	AES Distributed Energy	3 MW solar PV facility and supporting structures on ~ 32 acres	Operational	18 miles due south
14	SEPV Dixieland East	AES Distributed Energy	2 MW solar PV facility and supporting structures on ~ 31 acres		18 miles due south
15	Heber Geothermal	Ormat	40 MW Binary Cycle electrical power generation facility	Operational	27 miles due south
16	Hell's Kitchen Geothermal Plant	Controlled Thermal Resources	40 MW Dry Steam Geothermal electric generating station	Planned, operational in 2023	22 miles south
17	Imperial Solar Energy Center South	Tenaska CSOLAR IV South, LLC	130 MW solar PV facility and supporting structures on ~ 1,000 acres.	Operational	18 miles due south of southeastern side
18	Imperial Solar West	Tenaska	150 MW solar PV facility and supporting structures on ~ 1,145 acres.	Operational	17 miles due south of southeastern side
19	Imperial Valley Solar II	Tenaska	20 MW solar PV facility and supporting structures on ~ 146 acres.	Operational	13 miles due west of the southwest side, south of Highway 78
20	Imperial Valley Geothermal Plant	CalEnergy	432.3 MW geothermal dry steam electric generating facility	Operational	.6 mile east, north of Sonny Bono National Wildlife Refuge (NWR)
21	Iris Cluster Solar Farm (Ferrel, Rockwood, Iris and Lyons)	8 Minute Energy	Four (4) separate solar farms and supporting structures on 1,400 acres.	Operational	32 miles southeast of southeastern side

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
22	J.J. Elmore Geothermal Plant	CalEnergy	45.5 MW geothermal dry steam electric generating facility	Operational	1.5 miles east, due south of Sonny Bono NWR
23	J.L. Featherstone Geothermal Plant	CalEnergy	55 MW geothermal dry steam electric generating facility	Operational	2.5 miles east adjacent to the north side of the Sonny Bono NWR
24	J.M. Leathers Geothermal Plant	CalEnergy	45.5 MW geothermal dry steam electric generating facility	Operational	3.4 miles east, south of Sonny Bono NWR
25	Laurel 1, 2, 3 Cluster Solar Farm	8 Minute Solar Energy	1,396 combined acres for Laurel 1, 2, and 3 325 MW combined for Laurel 1, 2 and 3 solar PV	Approved, not built	24 miles due south
26	Midway Solar Farm I	8 Minute Energy	50 MW solar PV facility and supporting structures on ~ 480 acres.	Operational	13 miles northeast of southeastern side
27	Midway Solar Farm II	8 Minute Energy	155 MW solar PV facility and supporting structures on ~ 803 acres.	Operational	13 miles northeast of southeastern side
28	Midway Solar Farm III	8 Minute Energy	20 MW solar PV facility and supporting structures on ~160 acres.	Operational	13 miles northeast of southeastern side
29	Midway Solar Farm IV	8 Minute Energy	15 MW solar PV facility and supporting structures on ~160 acres.	Approved, not built	13 miles northeast southeastern side
30	Mount Signal Solar	TerraForm Power	460 MW solar PV facility and supporting structures on ~1000 acres.	Operational	29 miles due south
31	New River Improvement Project	City of Calexico	Water quality treatments, including installation of a trash screen, river encasement, and pump-back system for wastewater from Calexico Wastewater Treatment Plant.	Under Construction, expected operational by June 2023	30 miles due south in City of Calexico
32	North Brawley Geothermal Plant	Ormat	64 MW geothermal binary cycle electric generating facility.	Operational	11 miles southeast

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
33	Ormat Wister Solar	Ormat	20 MW solar PV facility and supporting structures on ~160 acres.	Approved, not built	5.5 miles east and 3 miles north of Niland
34	Ormesa Geothermal Plant	Ormat	101.6 MW geothermal binary cycle electric generating facility.	Operational	38 miles southeast
35	Salton Sea 1 Geothermal Plant	CalEnergy	10 MW geothermal dry steam electric generating facility.	Operational	.5 mile east
36	Salton Sea 2 Geothermal Plant	CalEnergy	20 MW geothermal dry steam electric generating facility	Operational	1.5 miles east
37	Salton Sea 3 Geothermal Plant	CalEnergy	54 MW geothermal dry steam electric generating facility.	Operational	.8 mile east
38	Salton Sea 4 Geothermal Plant	CalEnergy	47.5 MW geothermal dry steam electric generating facility.	Operational	.4 mile east
39	Salton Sea 5 Geothermal Plant	CalEnergy	58.3 MW geothermal dry steam electric generating facility.	Operational	.5 mile east
40	Seville Solar Farm Complex (I, II, III, 4 and 5)	Imperial Solar Holding, LLC	Five solar PV projects generating 135 MW on ~1,238 acres.	Portions in operation and under construction	6 miles west of southeastern side
41	Solar Gen 2 Facility	Southern Power Capital Dynamics	150 MW solar PV facility and supporting structures on ~1000 acres.	Operational	22 miles south
42	Sonora Solar Farm (Solar Gen II)	Southern Power Capital Dynamics	50 MW solar PV facility and supporting structures on ~488 acres.	Operational	12 miles southeast
43	Valencia Solar Project 1	IGS, LLC	3 MW solar PV facility and associated structures on a portion of a 17-acre property.	Operational	25 miles southeast of southeastern side
44	Valencia Solar Project 2	IGS, LLC	3 MW solar PV facility and associated structures on a portion of a 17-acre property.	Operational	25 miles southeast of southeastern side

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
45	Valencia Solar Project 3	IGS, LLC	3 MW solar PV facility addition on a 40-acre portion of existing facility.	Operational	26 miles southeast of southeastern side
46	VEGA SES 2, 3, and 5	VEGA SES LLC	350 MW combined for VEGA 2, 3, and 5 on 1,963 acres combined.	Pending Entitlement	24 miles southwest
47	Vikings Solar		150 MW solar PV or CPV facility and supporting structures on ~604 acres.	Pending Entitlement	34 miles southeast
48	Vulcan Geothermal Plant	CalEnergy	39.6 MW geothermal dry steam electric generating facility.	Operational	1.8 miles east
49	Wistaria Ranch Solar Project	Wistaria Ranch Solar,LLC	250 MW solar PV or CPV facility and supporting structures on ~2,793 acres.	Various stages of construction and operation	30 miles due south of the southwestern side
PROBABLE FUTURE PROJECTS					
50	Salton Sea Management Plan (SSMP) 10-Year Plan Implementation (Proposed Project)	Department of Water Resources (DWR)	Implementation of aquatic habitat restoration and dust control projects.	Environmental review in progress; anticipated construction window 2023 - 2033	Various locations on Salton Sea and exposed shoreline
51	SSMP Dust Suppression Action Plan Projects Implementation (Proposed Project)	DWR	Implementation of aquatic habitat restoration and dust control projects.	In Progress – construction window 2021 - 2024	Various locations on exposed Salton Sea shoreline
52	Desert Valley Company Monofill - Cell 3 Closure	CalEnergy	Installation of Cell 3 Final Cover and continued monitoring, sampling and data collection of leachate, groundwater, radon gas and inspection of final cover, dikes, drainage and leachate system, leak detection, access road, landfill structures and site security; and implementation of corrective actions, as necessary.	Anticipated to Commence 2025	4 miles west of southeastern side

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
53	Chocolate Mountain Solar Farm	8 Minute Energy	50 MW solar PV facility and supporting structures on ~320 acres.	Pending Construction	16 miles northeast of southeastern side
54	Drew Solar, LLC	Drew Solar, LLC	100 MW solar PV facility and supporting structures on ~808-acres.	Under Construction	32 miles southeast of southeastern side
55	Laurel Cluster (Formerly Big Rock Cluster)	8 Minute Energy	325 MW solar PV facility and supporting structures on ~1,380 acres.	Pending Construction	25 miles southeast of southeastern side
56	Le Conte Energy BESS	Centinela Solar Energy,LLC	Battery storage with up to 125 MW of electric storage capacity.	Pending Construction	34 miles southeast of southeastern side
57	Nider Solar Project	8 Minute Energy	100 MW solar PV facility and supporting structures on ~320 acres.	Pending Entitlement (on hold)	17 miles northeast of southeastern side
58	Vega SES Solar Project and BESS	Vega SES, LLC	100 MW solar PV facility, supporting structures, and 100 MW battery storage system on ~574 acres.	Pending Construction	28 miles southeast of southeastern side
59	Titan Solar II/ Seville 4	Titan Solar II, LLC	20 MW solar PV facility on ~175 acres.	Under Construction	13 miles west of southeastern side
60	Ormat Wister Solar	Orni 22 LLC/Ormat	20 MW solar PV facility on 100 acres.	Under Construction	18.5 miles northeast of southeastern side
61	CED Westside Canal BESS	CED Westside Canal,LLC	Battery energy storage system with up to 2,025 MW of capacity.	Pending Entitlement	26 miles southeast of southeastern side
62	Coyne Ranch Specific Plan	Marty Coyne	Residential project with up to 546 residential units.	In process	26 miles southeast of southeastern side
63	Glamis Specific Plan	Polaris Inc.	General Plan Amendment and Specific Plan for the Glamis Specific Plan Area.	EIR in Progress	34 miles southeast
64	Desert Highway Farms	Solana Energy Farms 1,LLC	Cannabis cultivation on ~320 acres.	Approved, EIR in Progress	6 miles northwest of southeastern side

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
65	Hell's Kitchen Geothermal Exploration Project	Controlled Thermal Resources	Construction, operations and testing of geothermal exploration wells.	In process	12 miles northeast of southeastern side
IMPERIAL IRRIGATION DISTRICT (IID) – Imperial County					
66	El Centro BESS	IID	30 MW of battery storage (20 MWh).	Operational	23 miles south
67	IID Dust Control Projects	IID	Implementation of aquatic habitat restoration and dust control projects in Imperial County.	In progress – construction window 2021 - 2024	Various locations on exposed Salton Sea shoreline
68	Strategic Transmission Expansion Plan	IID	New double circuit 230 kV collector system and six connecting substations; Two new substations; new 500-kV AC line to connect Arizona Public Service's North Gila substation to IID's Highline substation; and, new 500 kV DC transmission line from the Salton Sea area to the San Onofre Nuclear Generating Station substation.	Plan Approved	Nearest segment of transmission alignment 8-10 miles southeast of southeastern side
69	Red Hill Bay Wetland Restoration Project	IID and USFWS Sonny Bono NWR	621-acres of shallow saline ponds for bird habitat.	Plan Approved	10.5 miles northeast of southeastern side
BUREAU OF LAND MANAGEMENT – Imperial County					
70	Truckhaven Exploratory Well Drilling	Orni 5, LLC	Drilling of four geothermal exploratory wells within Truckhaven Geothermal Leasing Area.	Approved	7.5 miles northwest of southeastern side
71	Truckhaven Seismic Exploration	Orni 5, LLC	Proposed to conduct a three dimensional seismic survey to evaluate geology.	Approved and completed	13 miles northeast of southeastern side
72	United States Gypsum (USG) Company Expansion/ Modernization Project	USG	Expansion of existing gypsum quarry, replacement of existing water supply pipeline and reduction of groundwater effects.	Approved	23 miles southwest of southeastern side of

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
RIVERSIDE COUNTY					
81	SSMP 10-Year Plan Implementation (Proposed Project)	DWR	Implementation of aquatic habitat restoration and dust suppression projects.	In progress, construction window 2023 - 2033	Various locations on Salton Sea and exposed shoreline
82	SSMP Dust Suppression Action Plan Projects Implementation (Part of Proposed Project)	DWR	Implementation of aquatic habitat restoration and dust control projects.	In progress, construction window 2021 - 2024	Various locations on exposed Salton Sea shoreline
83	Rados Distribution Center	Duke Realty, LP	Development of approximately 1,191,080 square feet industrial warehouse, parking, and associated on- and off-site infrastructure on ~61.63 gross acres.	Under construction	East of Interstate 215 near the City of Perris, ~70 miles northwest of northern end
84	Majestic Freeway Business Center Specific Plan	Private	48,930 square foot warehouse and 1,195,740 square foot High-Cube warehouse.	Under construction	Within City of Perris sphere of influence, 70 miles northwest of northern end
85	Harvill and Rider Warehouse	Private	423,665 square foot High-Cube warehouse.	Operational	Within City of Perris sphere of influence, 70 miles northwest of northern end
86	Desert View Power	Greenleaf Power	55.5 MW biomass electric energy generating facility.	Operational	4 miles northeast
87	Mesa Wind Repower Project	Brookfield	Remove 460 existing legacy wind turbine generators (WTGs) and construct and operate 8 new WTGs.	In BLM and CDFW authorization process	25 miles northwest of northern end

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
88	Painted Hills Wind Energy Repower Project	Painted Hills Wind, LLC	~600-acre wind energy repower project to decommission and remove ~300 existing WTGs and install up to 14 new WTGs, up to 499 feet tall. New ancillary equipment includes 3 temporary meteorological towers, 2 permanent meteorological towers and site upgrades.	Approved	40 miles north of northern end
89	Coachella Wind Holdings Repower (previously San Jacinto Wind II)	Coachella Wind Holdings	Decommission and remove ~146 existing WTGs and install 3 new WTGs on 225-acres of BLM land with ancillary equipment. 45 existing operating WTGs will remain.	BLM pre-construction compliance phase	South of Interstate 10 and State Route 62 Junction, 40 miles north
90	Multi-Tenant Wireless Communications Site	InterConnect Towers LLC	One - three-legged, 196-foot tall freestanding, self-supporting lattice communication tower on 2.2 acres	BLM permitting in progress	Morongo Canyon at Highway 62, 40 miles north
91	Interstate10 Bypass Banning to Cabazon	Riverside County Transportation Department	New road between City of Banning and unincorporated community of Cabazon.	Environmental review/ entitlements in progress	Between City of Banning and community of Cabazon, 50 miles north
92	Whitewater River Groundwater Replenishment Facility ROW	CVWD	Request to BLM to operate and maintain the existing facility on 690 acres of public lands managed by the BLM. No new construction required.	Environmental review in progress	South of Highway 62 and north of Highway 111, 40 miles north
93	West of Devers Upgrade Project	Southern California Edison	Upgrade 48 miles of existing 220 kV transmission lines between North Palm Springs and San Bernardino, in Riverside and San Bernardino Counties within an existing transmission line corridor.	Under construction	45 to 90 miles northwest of the northern end
94	Whitewater Canyon Project		Roadwork including a flood berm to repair 2019 flood damage. Total project disturbance is 38 acres for roadwork and berm.	Under construction	North of Bonnie Bell, 45 miles northwest of the northern end

No.	Project Name	Applicant	Summary Project Description	Status	Approximate Distance to Salton Sea
95	Private residential and commercial development in Palm Springs, Banning and at the Morongo Casino	Private	Private residential and commercial development projects proposed or under construction within 10-mile radius of the Morongo Casino, including 3,385 residential unit Rancho San Gorgonio in Banning, Morongo Casino Expansion, and numerous residential projects in the City of Palm Springs.	Planning and permitting/ environmental review/under construction	50 miles northwest of the northern end
96	Athos I & II Renewable Energy Project	IP Athos LLC	Construction, operation, maintenance, and decommissioning of a solar PV facility of up to 500 MW panels on ~3,400 acres.	Under construction	40 miles northeast of the northern end
97	Mountain View Wind Repower Project (MVPP)	Mountain View Power Partners LLC	Repower of existing 66.6 MW MVPP I & II through removal of 93 existing WTGs, leaving 7 existing WTGs and installing 16 new larger WTGs.	Approved	North of Palm Springs, 40 miles northwest of northern end

6.2 AESTHETICS

The construction of the Proposed Project would enhance the scenic quality and character of the site and surrounding areas by converting exposed lakebed into water features that provide viable wildlife and bird habitat, contributing to the area's scenic qualities. Implementing dust suppression activities would improve the air quality and visibility and therefore enhance the scenic beauty and character of the Sea and areas within the ROI where the Sea is visible. Implementation of the Project is also going to improve recreational trails that create sustainable attractions and birding opportunities similar to those found in the surrounding area. Construction activities associated with the Project and cumulative projects within the ROI may cause a minor inconvenience to nearby residents, recreational users, and travelers that can see the Sea. However, nearby recreational resources will continue to be available during the short-term, and the long-term effects from more habitat and recreational opportunities and improved air quality will result in enhanced visual character.

6.3 LAND

6.3.1 Agricultural Resources

Depending on where specific features are located within the Proposed Project area, there is potential for 6.4 acres of prime farmland and 71 acres of farmland of local importance to be converted to nonagricultural use (Table 5-3). This amount of farmland of local importance would be negligible when compared to the total acres of farmland in Imperial County (522,353 acres) and Riverside County (413,834 acres). Thus, there are no Williamson Act contracts in the area of the SSMP. Conversion of prime farmland is considered a major long-term effect. The edge of the dust suppression and restoration project footprint located at the southwest edge of the Sea is where this small overlap with prime farmland occurs. In addition to the conversion of agriculture lands to accommodate the expansion of residential development and new infrastructure to support these uses throughout Imperial and Riverside counties, the potential conversion of land designated for agricultural to accommodate renewable energy development in both counties needs to be addressed.

At this time, of the 522,353 acres of farmland in Imperial County, less than 3% of this land is being used or proposed to be used to accommodate renewable energy generation, predominantly solar photovoltaic (PV) and concentrating solar thermal power (CSP) projects, with some geothermal projects. In Imperial County, many of these projects are within the ROI for this cumulative effects analysis. While these projects could impact more than 10,000 acres of farmland, each of these projects is required to comply with best management practices and mitigation and avoidance measures intended to minimize effects to adjacent land uses. In Riverside County, for the most part, existing and proposed renewable energy development is located outside of the ROI and in areas not designated as farmland. Therefore, consideration of the minimal amount of potential effects to farmland in the ROI, including farmland conversion, from the Project and cumulative projects is expected to result in short- and long-term minor effects.

6.3.2 Land Use

The Project would be compatible with the federal, state, and regional plans described under Section 4.2.2, Regulatory Requirements, because it would restore habitat for fish and wildlife dependent on the Salton Sea and would reduce air and particulate matter emissions from what would otherwise become exposed lakebed. Landownership, including Tribal lands are presented in Table 5-8.

The general plans for Imperial and Riverside counties contain a number of goals and objectives that are applicable to non-federal lands. The Project would be consistent with the General Plan goals/objectives that promote water recreation activities; sustain wildlife and a broad range of ecological communities; protect significant fish, wildlife, plant species, and their habitats; support the viability of agricultural lands; preserve riparian and ruderal habitats; and improve water quality. Aquatic habitat and dust suppression restoration projects would support these goals by restoring habitat and improving air quality and would not be incompatible with surrounding land uses. The intensity of effects would vary depending on how close they occurred to populated areas due to the number of people affected. Because the context of the project is local and construction would be short-term, primarily distant from local communities and the intensity would be considered low due to compliance with local policies, this is considered a minor short-term effect. Any projects located on BLM land would be consistent with the land use allocations included in the Desert Renewable Energy Conservation Plan and coordinated with the BLM to ensure compatibility with BLM plans. Thus, when considering the Project and cumulative projects within the ROI, all which will require compliance with best management practices and mitigation and avoidance measures to minimize effects to adjacent land uses, minor short-term cumulative effects may result, but long-term cumulative effects are expected to be beneficial.

6.4 AIR RESOURCES

The primary objective of the Project is to reduce the amount of emissive exposed lakebed and to reduce the total emissivity of exposed lakebed. As explained in Section 5.3, potential effects to air resources, including criteria pollutants (NO_X and PM_{10}) and greenhouse gas emissions (GHGs), are expected to result from construction activities while operational effects are expected to result in a net beneficial effect to the project area. The Imperial County Air Pollution Control District (ICAPCD) and the South Coast Air Quality Management District (SCAQMD) require projects to comply with measures to minimize construction effects from dust and the combustion of fossil fuels used by construction equipment. These measures apply to the Project as well as cumulative projects within the ROI.

While GHGs are known to promote climate change, there are no current regulations that can be used to determine potential effects. The Council on Environmental Quality (CEQ) has issued a DRAFT guidance document recommending that an agency may reference local, regional, national, or sector-wide emission estimates to provide context for understanding the relative magnitude of a proposed action’s GHG emissions, along with a qualitative summary discussion of the effects of GHG emissions. This qualitative summary is included in Section 5.3 and satisfies NEPA’s requirement for addressing cumulative effects of a proposed action because the potential effects of GHG emissions are inherently a global cumulative effect. Therefore, a separate cumulative effects analysis is not required for GHGs.

However, the cumulative projects within the ROI will contribute to short-term increases in construction-related NO_X and PM_{10} emissions. These emissions would represent a small portion of the region’s yearly emissions inventories and would subside once construction has been completed. Implementation of required minimization measures would also limit these effects.

Therefore, the contribution of the proposed action to ongoing cumulative effects on local air quality during Project construction would be minor and short-term.

6.5 BIOLOGICAL RESOURCES

As analyzed in Section 5.4, effects to biological resources including special-status species, riparian areas, wetlands, and nesting and migrating birds were evaluated by estimating the amount of habitat that could be affected by Project construction activities and comparing it to the amount of that habitat present in the area. The seasonal abundance of special-status species and their use of the affected habitat were also considered in the analysis. In addition, the effects of noise, human presence, lighting, turbidity, and other construction-related disturbances were assessed. Effects of the Project from construction through operation, maintenance, and monitoring were assessed by evaluating how planned activities could interact with anticipated improvement of biological resources in the restored habitat, as well as how activities could change exposure of wildlife species to contaminants such as selenium and pesticides.

Project structures (i.e., pipelines, diversion structure, pump stations, and access roadways) would be located in areas to minimize or avoid effects to the maximum extent feasible and habitat impacted would be restored to its original condition, or more desirable habitat, following construction. In order to ensure compliance with regulatory requirements and minimize potential effects, as noted in Section 4.4, the Project will prepare and implement the following plans and actions: Habitat Protection, Mitigation and Restoration Program, special-status plant species surveys and an Avoidance and Mitigation Plan, Desert Pupfish Protection and Relocation Plan, Program-level Nesting Bird Management and Special-Status Wildlife Species Survey Plan, noise measurements, design measures to maintain surface water balances, construction site cleaning protocols, and water quality monitoring. As described in Section 5.4, the implementation of these items will mitigate Project short-term effects to minor levels and in some cases, where effects can be avoided, will result in no effects.

Considering the Project together with the cumulative projects within the ROI, which will also be subject to compliance with regulatory resource protection measures, due to the expected temporal distribution of all projects that are not expected to occur within the same construction timeframe, cumulative effects are expected to be similar to the Project. Short-term cumulative effects will be minor and where avoidance can be accomplished, this will result in no effects. Long-term cumulative effects are expected to be minor as a result of successful compliance with regulatory requirements and implementation of project specific mitigation and minimization measures.

6.6 COMMUNITY

As described in Section 5.5, the Corps has determined that the Project could adversely affect an environmental justice community, population, and housing through its effects on:

- Environmental conditions such as air quality and degradation of aesthetics
- Effects on local communities from air emissions during construction
- Public welfare in terms of economic conditions such as changes in employment, income, and cost of housing
- Unanticipated population growth in an area
- Displacement of existing population or housing

The Project would be located in the Seabed or along the shoreline and does not include residential facilities or other facilities that would result in direct population growth. Section 5.5 identified minor short-term effects from construction-related air emissions and minor short- and long-term effects from the potential increase in population growth associated with the influx of construction, operations, and maintenance workers. There could also be a long-term minor effect associated with the need for temporary construction worker housing, however, effects to available housing and housing costs are not expected to occur. While there are potential minor long-term effects from the creation of new recreational opportunities that could bring more visitors to the Sea, implementation of the Project would result in long-term beneficial effects by providing more recreational opportunities. These beneficial effects are also expected to enhance the quality of life around the Sea and may also be economically beneficial from the creation of more jobs and improved public services to serve the new recreational resources. In addition, the implementation of short-term construction air quality, noise, and traffic mitigation measures and actions to comply with regulatory requirements are intended to ensure that only minor effects will occur. Evaluating these effects together with the cumulative projects within the ROI, that are not expected to occur within the same construction timeframe, cumulative effects are expected to be similar to the Project. Minor short-term construction-related effects may occur; however, they will not have a disproportionate effect on minority or low-income populations and similar to the Project, will be required to comply with regulatory requirements and project specific mitigation and minimization measures to limit effects to minor short- and long-term levels.

6.7 BUILT ENVIRONMENT

Several areas are covered under this section, including navigable waters, public services, parks and recreation, and utilities and service systems. The Project would include construction of aquatic habitat ponds which would require water diversion from the Sea, considered a navigable waterway. While the overall size of the Sea would be slightly impacted, existing boating access would not be impacted by this reduction in size. Therefore, this will not result in a cumulative effect.

Potential effects to public services would result from increased potential for traffic accidents, construction accidents, and fire hazards at the construction site and on the roads due to construction/maintenance activity. Compliance with regulatory requirements protecting worker health and safety and measures to limit emergencies will help to minimize potential accidents and the need for emergency services. This increase could require the need for increased police services due to trespassing and/or theft of construction materials or equipment. This increased demand would not be expected to affect the ability of local emergency providers to maintain their current level of service or require new or altered facilities and therefore would primarily be short-term during construction. Some parts of the Project may increase public access for recreational activities (such as hiking, bird-watching, and non-motorized watercraft use) that are compatible with the Project’s goals and objectives. Thus, the demand for emergency services may increase as a result of the increased activities but would not be expected to affect the ability of providers to maintain their current level of service. Evaluating these effects together with the cumulative projects within the ROI, that are not expected to occur within the same construction timeframe, cumulative effects are expected to be similar to the Project and result in minor short- and long-term effects.

The influx of out-of-town construction workers and their families during Project implementation would not increase demands on schools, libraries, parks, or other public facilities or require new facilities. For these areas, the intensity caused by the limited pressure on these services would be considered low and would be consistent with policies included in the land use elements for Imperial and Riverside counties, which state that adequate public services be provided to county residents and would not result in adverse effects to public safety. Evaluating these effects together with the cumulative projects within the ROI, that are not expected to occur within the same construction timeframe, cumulative effects to public services are expected to be similar to the Project and result in minor short- and long-term effects.

The Project would enhance recreational opportunities as described in Section 5.6.4. Providing recreational opportunities is not a Project goal, however, some recreational activities would be available to the extent that they are compatible with management of the restoration areas. Public access may facilitate recreational activities such as, hiking, bird-watching, and non-motorized watercraft use, where permitted in land use agreements and in compliance with regulatory requirements. The cumulative projects within the ROI, do not include the Project’s scale of enhanced recreational activities, therefore there are no cumulative effects to evaluate.

With respect to public services, solid waste would be generated primarily during construction and will be disposed of in local and regional landfills, depending on the types of waste. As noted in Section 5.6.3, local landfills and those accepting hazardous waste in Kern and Kings counties have adequate capacity to accept the types of solid waste materials that would be generated during construction and operation; therefore, effects would be minor and long-term. Water would be trucked in from a local source for dust suppression during construction; this temporary increased demand would be minor in comparison to the overall demand in the area. Adequate supplies are available for this temporary increase; therefore, this effect would be minor and long-term. Evaluating these effects together with the cumulative projects within the ROI, that are not expected to occur within the same construction timeframe, cumulative effects are expected to be similar to the Project and result in minor short- and long-term effects.

6.8 CULTURAL RESOURCES

Project effects on cultural resources were initially analyzed through consideration of two variables: 1) the proximity of ground-disturbing Project activities to recorded cultural resources; and 2) the potential for effects to currently unidentified resources that may be present in the Project area based on previous archaeological studies and consultation with tribal groups. However, few cultural resources are known to occur in the study area, and more information may be attained through the tribal consultation process. As noted in Section 5.7, the focus of the cultural resources evaluation was to assess the extent to which undiscovered resources would be affected by construction of ponds, wetlands, and implementation of dust suppression activities. The potential for effects is considered greatest for habitat restoration areas as these projects involve extensive mechanical removal of vegetation, grading, and relatively deep subsurface mechanical excavations to create ponds, berms, retention basins, and other features. These excavations and movement of heavy equipment and vehicles across the ground surface potentially could disturb or destroy surface, near-surface and buried archaeological resources. Ground disturbance associated with implementation of dust suppression projects is considered to occur at more surficial and limited surficial excavations (not expected to exceed a depth 1.5 feet), The installation of ground water wells could also impact cultural resources, however, after the initial well installation, drilling deep distances to reach usable groundwater is not expected to result in effects. The installation of access roads and staging areas are expected to be easily located so as to avoid visible cultural resources and therefore few if any resources are expected to be affected.

In order to minimize effects, pre-construction geoarchaeological studies and/or subsurface archaeological surveys in compliance with California State Office of Historic Preservation and Section 106 of the National Historic Preservation Act should be conducted using a combination of existing data review and subsurface excavations to define and investigate areas of sensitivity that either could be avoided during project design or could be subject to subsurface archaeological and historic resource investigations prior to construction-related disturbance. These investigations would avoid or minimize unanticipated discovery of buried archaeological sites, thereby reducing project risks. With the implementation of these measures cultural resources would be protected either through documentation, avoidance, or data recovery and Project effects were determined to have a long-term minor effect.

Considering the Project together with the cumulative projects within the ROI, also subject to compliance with regulatory resource protection measures, cumulative effects are expected to be similar to the Project. Cumulative effects will be minor as a result of successful compliance with regulatory requirements and implementation of project specific mitigation and minimization measures and where avoidance of known resources can be accomplished, this will result in no effects.

6.9 ENERGY

The Project analysis in Section 5.6 focused on available electrical power sources needed to implement the Project, including power provided in this area from IID and diesel fuel, gasoline, and power used during construction and maintenance activities. The Project would be designed for the efficient use of power to implement projects. Associated power supply and infrastructure would be designed and installed to support habitat and water-reliant dust suppression projects. Pumping plants associated with saline pumping facilities for the Sea or from the New, Alamo, and Whitewater Rivers and new groundwater wells would require power to operate long-term. Groundwater pumping for dust suppression restoration projects would also require power. As noted in Section 5.6, the power to support construction and operation of the Project can be provided from IID and is not considered a large power use because energy requirements for restoration projects are minimal and would result in long-term environmental benefits. Therefore, this effect would be minor and long-term. Due to the limited power requirements, Project demands are not expected to result in any cumulative effects.

6.10 GEOLOGY, SOILS, SEISMIC AND MINERALS

6.10.1 Geology and Soils

Best management practices would be implemented during construction to minimize the potential for erosion and sedimentation. They would be part of the Stormwater Management Pollution Prevention Plan and would include such measures as preservation of existing vegetation to the extent feasible, installation of silt fences, use of wind erosion control and stabilization of site ingress/egress locations to minimize erosion. During Project design, data collection such as soils analysis and detailed geotechnical field investigations would be conducted to determine specific geologic and soil characteristics. Registered engineers and/or geologists would use this information to develop design criteria in compliance with the California Building Code.

6.10.2 Seismic

No seismically induced safety effects would result from berm or pipeline failure during construction of aquatic habitat ponds and associated infrastructure because project features would be constructed in accordance with state and local design criteria to withstand severe seismic events as listed in Section 4.9. Due to the downward sloping topography from aquatic habitat ponds towards the Sea, water released as a result of seismic events would not affect public health or safety, and effects would be minor and long-term. As described in Section 5.9, documented soils on the Seabed are weak and may be subject to erosion, piping, settling, and spreading during the life of the Project. These factors would be considered during geotechnical and soils investigations to support Project design and berms would be constructed following site-specific soil construction techniques and in compliance with regulatory requirements. The Project would not cause instability in the surrounding area and should berm failure occur during the life of the Project, this would be corrected and would not affect public health or safety. These effects are considered minor and long-term. There could be risk to workers during construction in areas with unstable soils, however, potential risk would be reduced due to data collection and soils analysis and geotechnical analysis conducted prior to or during facility design. The Project would require rock or gravel from local sources to be used as substrate or riprap for aquatic habitat ponds, but these materials are in ready supply, and their use would not result in the loss of availability of a mineral resource that is of local or statewide importance. Therefore, effects would be minor and long-term. The Proposed Project would not preclude geothermal development or the extraction of minerals from brine should new or expanded geothermal development be implemented in the vicinity of the Project.

6.10.3 Minerals

For the most part, geologic effects associated with the Project summarized in this section are site-specific and therefore would not contribute to cumulative effects. The Project would require rock or gravel from local sources to be used as substrate or riprap for aquatic habitat ponds, but these materials are in ready supply, and their use would not result in the loss of availability of a mineral resource that is of local or statewide importance. Therefore, effects would be minor and long-term. The Proposed Project would not preclude geothermal development or the extraction of minerals from brine should new or expanded geothermal development be implemented in the vicinity of the Project. While exploration and research related to lithium extraction is ongoing and may require water, no specific projects are proposed at this time, and therefore cannot be analyzed. However, potential cumulative effects in the ROI associated with demand for rock and gravel from local sources in and effects to new or expanded geothermal development could result and would be minor in the long-term.

6.11 HAZARDOUS WASTE AND MATERIALS

Potential for exposure to hazardous materials is assessed by verifying the presence of historical contamination in the Project area that could be encountered and released during ground disturbance and evaluating the relative risk form hazardous materials that would be used, stored and transported based on toxicity, volumes and potential for release. As described in Section 5.10, risk of exposure is associated with the construction phase, as operations would decrease risks by implementing aquatic habitat and/or dust suppression projects and in turn reduce emissivity and subsequent risk of exposure during operations. Section 5.10 describes potential effects to humans and wildlife from construction activities including the release of hazardous materials, encountering contaminated soils during excavation, increased traffic impairing implementation of an adopted emergency response or evacuation plan, increased wildfire risk, and exposure to air-borne disease. It was concluded that with the implementation of worker training mitigation and compliance with regulatory requirements listed in Table 4-33 that effects would be minor and short-term. Operational effects resulting from the creation of wetlands and ponds could result in increased breeding habitat for mosquito vectors and exposure to toxic levels of selenium and dichlorodiphenyldichloroethylene (DDE) in sport fish and waterfowl using the ponds, but with the implementation of mitigation measures and compliance with regulatory requirements that these effects would be minor and long-term. These hazardous materials-related Project effects summarized in this section are site-specific and therefore would not contribute to cumulative effects in the ROI.

6.12 NOISE

Project noise would be generated by trucks and equipment used during construction and maintenance activities. The level of noise from these activities would depend on the phase of construction; type of equipment used and its location on the construction site; amount of time that a given piece of equipment would operate at its loudest mode; and proximity to noise-sensitive receptors. Not all equipment would be used for all phases of construction and maintenance, and not all would operate at peak capacity concurrently. Noise-sensitive receptors are limited in the Project vicinity, which is mostly near agricultural and exposed lakebed areas. Sensitive receptors include people using the Sonny Bono Salton Sea National Wildlife Refuge and Salton Sea State Recreation Area; and residences in the communities of North Shore near the Sea, Desert Shores, Salton Sea Beach, Bombay Beach; and Salton City near the Sea shoreline. In general, noise effects from construction would be temporary and distant from local communities and sensitive receptors. Annual maintenance would require less equipment and for fewer days than construction and, therefore, would generate less noise. During operations, the primary noise sources would be from electric pumps required to deliver water from the Salton Sea to the ponds and wetlands. With implementation of mitigation measures to limit construction hours and compliance with regulatory requirements and local policies related to noise exposure and construction timing, this effect would be minor and short-term. The noise effects summarized in this section are site-specific and therefore would not contribute to cumulative effects in the ROI.

6.13 WATER

6.13.1 Hydrology/Water Quality

Direct and indirect effects on hydrology and water quality were evaluated to determine if the Project would: change the Salton Sea's water surface elevation and salinity; violate any water quality standards or waste discharge requirements; change streambeds or waterflows in the Salton Sea watershed that cause erosion, siltation, flooding, or flows that would affect drainage facilities on the shoreline; affect groundwater hydrology and quality; affect water supply and conservation and water rights to the detriment of downstream water users; increase risk of inundation by seiche, tsunami or mudflow. The analysis concluded that changes to the Sea level are not expected to occur because of the limited amount of annual rainfall and runoff and that the Project would create beneficial effects from the creation of wetland habitats that would offset further shoreline exposure. While the Salton Sea will get smaller, shallower, and saltier during Project implementation and the water supply used for aquatic habitat restoration and the water dependent dust suppression / restoration opportunities areas would return both water and salt to the Sea over time, direct effects of the Project would result in beneficial uses of the Sea and beneficial effects associated with improved water quality and long-term restoration of the Sea. The Project would not contribute to a seiche, tsunami, or mudflow. It is not located near the ocean and, therefore, would not be affected by tsunamis. It also is located in a generally level area, so mudflows are not a concern. Seiches could occur in the Salton Sea, most likely as a result of earthquakes, but they would not be caused by the Project, and this effect is not discussed further. As evaluated in Section 5.12, the Project is expected to result in no water resource effects or beneficial effects. The effects summarized in this section are site-specific and therefore would not contribute to cumulative effects in the ROI.

6.13.2 Water Supply and Conservation and Water Rights

Project construction would last approximately 10 years, during which time ground-disturbing activities would have the potential to temporarily increase suspended sediment and nutrient cycling in surface waters near active construction sites. In addition, potential inadvertent releases of hazardous materials into nearby surface waters during construction could temporarily degrade water quality. Implementation of the Erosion and Sediment Control Plan (ESCP) and compliance with regulatory requirements as discussed in section 5.12.2 would assure that erosion and sediment control measures and other design criteria would limit potential effects. As discussed in Section 4.12, established surface water quality objectives for the Colorado River Basin region address degradation of Salton Sea water quality. Implementation of Project facilities, including habitat enhancements, ponds, wetlands and dust suppression facilities, will result in long-term benefits for removal of the pollutants and improvements for reducing sedimentation.

Project features would be located on areas that are recently exposed (dry) playa or are currently submerged and predicted to be exposed in the future. Rainfall on the dry playa would drain to the Sea or aquatic habitat restoration sites before being evaporated. Rainfall in the Project area temporarily would be retained in the aquatic restoration sites and would not cause an increase in erosion. Therefore, these changing drainage patterns on the playa were not considered further. Alteration of drainage patterns of the IID drains were determined to cause minimal effects, but not substantially or in a manner that could result in substantial erosion, siltation, or flooding; therefore, this effect was not addressed further. The limited effects summarized in this section are site-specific and therefore would not contribute to cumulative effects in the ROI.

6.13.3 Floodplain Management and Flood Risk Management

While aquatic habitat restoration sites would be located in areas shown on FEMA flood maps as within the Sea's inundation area, this would not be considered to be within a flood hazard area because it is part of the Sea. Implementation of Project features would not occur within a floodplain and thus would have no effect. Ponds constructed under the Project would include berms, which are not habitable structures as defined by FEMA. Moreover, if the berms failed, the impounded water would be released directly to the Salton Sea or onto exposed playa where it would then flow to the Sea, and failure would not degrade floodplain functions or expose people to risk of injury or death from flooding. Since there are no effects as summarized in this section, therefore there is no contribution to cumulative effects in the ROI.

6.14 TRANSPORTATION AND TRAFFIC

Cumulative construction and operation of projects within the ROI would contribute to increased traffic volumes in the region. The Project and all cumulative projects will be subject to compliance with local, state, and federal regulations as listed in Table 4.13-1 intended to manage regional traffic and protect degradation of roadway conditions and capacities. Given the low volumes of Project traffic and the acceptable capacity of roadways in Imperial and Riverside counties as described in Section 5.13, no cumulative traffic effects are expected to occur.

6.15 PALEONTOLOGICAL RESOURCES

The primary risks to fossils would result from damage during construction, although erosion of paleontologically sensitive sediment could unearth and disperse fossils. A major effect would occur if a scientifically useful fossil were destroyed or physically damaged, resulting in the reduction of the data potential of that fossil; and/or if fossils were unearthed and removed from their stratigraphic context without appropriate scientific recordation.

Paleontological resource effects would result from construction activities. Depending on the depth of construction required, shallow excavation (e.g., 2 to 3 feet in depth) would have a low potential for causing effects, while construction below 5 feet, such as required for the deeper pools and channels within the ponds would have a greater potential for effects. Groundwater wells also could adversely affect paleontological resources. Much of the Salton Sea basin, where Project sites are located, is underlain by sediments that are designated as paleontologically sensitive, therefore, avoidance as a means to reduce or eliminate effects on paleontological resources is not practical.

Project mitigation includes measures to prepare and implement a paleontological survey and monitoring plan using guidance provided by the Secretary of the Interior and SVP, as detailed in Section 4.14.2, to facilitate identification of paleontological resources prior to initiation of ground-disturbing activities; monitoring, conduct worker training; and prepare and implement a paleontological resource data recovery plan. Implementing these measures would reduce effects on paleontological resources to a minor level because appropriate measures would be taken to prevent physical damage to a scientifically useful fossil, recover data from uncovered fossils, and prevent looting or damage through worker education. Considering the Project together with the cumulative projects within the ROI, also subject to compliance with regulatory resource protection measures, cumulative effects are expected to be similar to the Project. Cumulative effects will be minor as a result of successful compliance with regulatory requirements and implementation of project specific mitigation and minimization measures.

6.16 INDIAN TRUST ASSETS

Indian trust assets (ITAs) refer to land or other property held in trust by the United States or otherwise reserved for Native American tribes and individual Native Americans; ITAs are managed by the Bureau of Indian Affairs (BIA) for the benefit of these tribes and individuals. While most ITAs are on reservations, they may also be found off-reservations. The BIA is the primary federal agency charged with carrying out the United States' trust responsibility to American Indian and Alaska Native people, maintaining the federal government-to-government relationship with the federally recognized Indian tribes, and promoting and supporting tribal self-determination. The Corps also has responsibility for preserving and protecting trust resources as noted in Table 4-56.

6.17 AQUATIC RESOURCES

As analyzed in Section 5.16, effects on aquatic resources were evaluated by estimating the amount of resources that could be affected by Project construction activities and comparing it to the amount of aquatic resources present in the area. Effects of the Project from construction through operation, maintenance, and monitoring were assessed by evaluating how planned activities could interact with anticipated increases in aquatic resources in the restored habitat.

Project structures (i.e., pipelines, diversion structure, pump stations, and access roadways) would be located in areas to minimize or avoid effects to the maximum extent feasible and aquatic resources impacted would be restored to their original condition, or more desirable condition, following construction. In order to ensure compliance with regulatory requirements and minimize potential effects, as noted in Section 5.4, the Project will prepare and implement a Habitat Protection, Mitigation and Restoration Program. As described in Section 5.4, the implementation of these items will mitigate Project short-term effects to minor levels and in some cases, where effects can be avoided, will result in no effects.

Considering the Project together with the cumulative projects within the ROI, which will also be subject to compliance with regulatory resource protection measures, due to the expected temporal distribution of all projects that are not expected to occur within the same construction timeframe, cumulative effects are expected to be similar to the Project. Short-term cumulative effects will be minor and where avoidance can be accomplished, this will result in no effects. Long-term cumulative effects are expected to be minor as a result of successful compliance with regulatory requirements and implementation of project specific mitigation and minimization measures.

7.0 OTHER CONSIDERATIONS

7.1 CLEAN WATER ACT OF 1972

The Clean Water Act of 1972, as amended (33 USC section 1251 et seq.) (CWA) provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters, as described in Chapters 5 and 6. Section 401 of the CWA requires an applicant for a Federal license or permit to obtain a certification from the State that the discharge will comply with applicable effluent limitations and water quality standards for construction and operation of the facility. Section 404 of this act prohibits discharges of dredged or fill materials into waters of the United States except as permitted under separate regulations by the Corps and the United States Environmental Protection Agency. This section also provides protection to "special aquatic sites" that include sanctuaries and refuges, wetlands, and mudflats.

7.2 MIGRATORY BIRD TREATY ACT OF 1918

The Migratory Bird Treaty Act of 1918, as amended (16 USC section 703-712) provides for the protection of migratory birds by making it illegal to possess, hunt, pursue, or kill any migratory bird, or any transaction pertaining to any wild migratory bird, part, nest, egg or product, manufactured or not, unless specifically authorized by a regulation implemented by the Secretary of the Interior, such as designated seasonal hunting. Executive Order 13186 (2001) directs Federal agencies with actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a Memorandum of Understanding with USFWS within 2 years to promote conservation of migratory bird populations relative to the proposed action.

7.3 ENDANGERED SPECIES ACT OF 1973, AS AMENDED

The Federal Endangered Species Act of 1973, as amended, (16 USC section 1531 et seq.) protects listed threatened or endangered species (and any designated critical habitat) from unauthorized take. It also directs Federal agencies to ensure that their actions do not jeopardize the continued existence of listed species. Section 7 of the act defines Federal agency responsibilities for consultation with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) (the Services), including the preparation of the Federal agency's Biological Assessments and the Services' Biological Opinions. Section 10 of the act describes how the USFWS may authorize take of a listed species by non-Federal agencies, including preparation of Habitat Conservation Plans.

7.4 E.O. 13045, PROTECTION OF CHILDREN

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, was issued in 1997. This EO requires that "consistent with the agency's mission, each Federal agency: (1) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (2) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks." This EO defines 'environmental health risks and safety risks' to mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to).

7.5 E.O. 12898, ENVIRONMENTAL JUSTICE

Executive Order 12898 is *Federal Actions to Address Environmental Justice and Minority Populations and Low-Income Populations.* This executive order was issued in 1994 and requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations.

7.6 OTHER LAWS, POLICIES, AND REQUIREMENTS WHICH ARE NOT APPLICABLE

The following laws, policies, or requirements are not applicable to the SSMP 10-Year Plan and are not discussed further: Magnuson-Stevens Fishery Conservation and Management Act; Essential Fish Habitat; National Marine Fisheries Service consultation; Coastal Zone Management Act; Wild and Scenic Rivers Act; and Section 10 of the Rivers and Harbors Act.

8.0 COORDINATION

Coordination with non-regulatory federal cooperating agencies is covered in Chapter 1.

8.1 USFWS

The Corps has been identified as the lead agency for complying with Section 7 of the ESA. Formal consultation with USFWS has not been initiated at this time, although USFWS has participated in preparation of this EA. A Biological Assessment that covers SSMP activities within the opportunity areas will be developed in coordination with USFWS. Any project-related activities proposed within the SBSSNWR will require coordination with the Refuge Manager and issuance of a Refuge special use permit.

8.2 NHPA

The Corps has been identified as the lead federal agency for complying with Section 106 of the National Historic Preservation Act. The Corps has initiated consultation with the State Historic Preservation Officer.

8.3 TRIBAL

The Corps has been identified as the lead federal agency for complying with Tribal consultation. The Cooperating Agencies will be a party to tribal consultation for these projects. For any projects that BIA holds ITA, tribal approval will be required before projects can proceed. This consultation has been initiated.

8.4 401 (RWQCB)

A Section 401 Clean Water Act Water Quality Certification is required. Coordination between the Corps and the CRBRWQCB has been initiated. Projects will be able to apply for an individual Water Quality Certification prior to a project being constructed.

8.5 EFFECTS ON CORPS CIVIL WORKS PROJECTS (33 USC 408)

Section 14 of the Rivers and Harbors Act of 1899 (33 USC 408) provides that the Secretary of the Army, on the recommendation of the Chief of Engineers, may grant permission for the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier or other work built by the United States. The SSMP team will seek permission by an appropriate real estate instrument in accordance with existing real estate regulations.

8.6 NRCS

The NRCS has been identified as a cooperating agency and would provide funding through the Watershed Plan. Additional ongoing coordination with NRCS to develop the Draft Watershed Plan that meets the program criteria in the National Watershed Program Manual is a component of the EA and can be found in Appendix B.

8.7 PUBLIC OUTREACH/INVOLVEMENT

Prior to initiating the NEPA process, and as part of the public participation process, the SSMP team circulated the *Draft Salton Sea Management Program Phase 1: 10-Year Plan Project Description (Proposed Project)* and held three virtual workshops on September 22, 23, and 24, 2020, to gather public comment. The SSMP team considered and addressed public comments and developed the revised draft Project Description to be analyzed in this Draft EA in accordance with NEPA. The Corps, as federal lead agency, initiated the NEPA process with the release on March 17, 2021, of the public notice and project description and received comments from the public during the public comment period March 22 – April 21, 2021. A total of 13 comment letters were provided on the public notice, two of which were petitions which consolidated comments from individuals. The consolidated comment letters included 34 and 331 comments from individuals, for a total of 378 public comments as well as additional signatories who did not provide additional comments Commenters on the public notice included NGOs, utilities, corporations, and individuals. The Corps has provided responses to each comment received. Comments and responses are provided in Appendix A.

The State conducted a public series of public meeting in December of 2019 to discuss the status of the SSMP as well as to provide information on the DSAP. The Draft DSAP was released for public comments. In addition, a range of alternatives has been developed and analyzed in this Draft EA that was informed by public comment. Additional public comments are anticipated following the release of this Draft. As a result of the public comment period, feedback will be incorporated into a final Proposed Project, which will be presented in the Final EA.

9.0 LIST OF PREPARERS

The list of preparers for this EA is provided in the table below.

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