POINT OF CONTACT INFORMATION:

Due to changes in security policy, personal points of contact have been removed from this document. To obtain further information about this Environmental Assessment (EA), projects described herein, or a paper or CD copy of this or other NEPA documents related to Army actions at Military Ocean Terminal Concord, please contact the Environmental Coordinator at (925) 246-4024 or by email at usarmy.scott.sddc.mbx.hqsddc-environmental@mail.mil

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DEPARTMENT OF DEFENSE
UNITED STATES ARMY

FINDING OF NO SIGNIFICANT IMPACT FOR GENERAL REPAIR OF BRIDGES, ROADS, AND UTILITIES AT MILITARY OCEAN TERMINAL CONCORD, CA

1.0 Introduction

The Army has proposed an action for general repair of bridges, roads, and utilities at Military Ocean Terminal Concord (MOTCO), California. MOTCO is an Army Military Surface Deployment and Distribution Command munitions and general cargo transshipment facility located in north central Contra Costa County, California. The potential environmental impacts of this action have been analyzed pursuant to the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508) implementing procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code §§ 4321-4370h); Department of the Army procedures for implementing NEPA (32 CFR Part 651). The Army has prepared an Environmental Assessment (EA) that took a hard look at the potential environmental impacts and determined that, with the implementation of mitigation measures, the implementation of this action will not significantly affect the environment, and, therefore, that an Environmental Impact Statement (EIS) will not be prepared.

2.0 Purpose and Need

The purpose of the Proposed Action is to repair aged and damaged linear infrastructure systems, as identified in the MOTCO Real Property Master Plan and Utility Master Plan. In their present condition, the installation's linear infrastructure systems are deficient with some elements operating under restrictions or in a state that is out of compliance with Department of Transportation codes and standards. The Proposed Action is needed to eliminate safety concerns and allow the installation to conduct safe and efficient operations in support of its mission.

3.0 Description of the Proposed Action and Alternatives

The Proposed Action is to repair linear infrastructure including roads, vehicular bridges, rail bridges, and utilities, and to conduct geotechnical exploration to gather data in support of those repairs. Two action alternatives and a No Action Alternative were analyzed.

No Action Alternative. Under the No Action Alternative, the linear infrastructure throughout MOTCO would not be repaired. Roads and bridges at MOTCO would continue to degrade to a point at which they would be unsafe to be used during missions, and the utility system would deteriorate until it was dysfunctional.

Alternative 1. The Alternative 1 road repairs include 7.2 miles of near-term projects and 12.1 miles of long-term projects. Seven MOTCO bridges (three rail bridges and four road bridges) would undergo varying levels of repairs in the near-term. One intersection (Rinquist Road) would be realigned. Utility repairs include extending the functionality of existing electrical, telecommunication, water, and wastewater systems.

Geotechnical investigations include various types of soil borings as required to support linear infrastructure repair needs. These utility repairs and geotechnical investigations would occur within the footprint of the proposed road and bridge projects evaluated. The estimated temporary disturbance area in the near-term would total 97 acres and 142 acres in the long-term and the estimated permanent disturbance area would be 30 acres in the near-term and 36 acres in the long-term.

Alternative 2 (Preferred Alternative). Alternative 2 is the same as Alternative 1 with the exception of differences in the width and alignment of select road segments in support of mission safety and efficiency. Specifically, the White Road East and Anderson Road segments would be widened to accommodate a 24-foot roadway in support of safely facilitating 2-way traffic flow. The result is a greater area of permanent disturbance, but the area of temporary construction-related disturbance would be similar to Alternative 1. The estimated temporary disturbance area in the near-term would total 94 acres and 142 acres in the long-term, and the estimated permanent disturbance area would be 42 acres in the near-term and 36 acres in the long-term.

4.0 Anticipated Environmental Consequences

The EA evaluated potential environmental effects to earth resources; water resources; air quality; biological resources; land use, recreation, and coastal zone management; transportation and traffic; utilities; noise; socioeconomics and environmental justice; cultural resources; and hazardous materials, hazardous waste, toxic substances, and contaminated sites. The EA also analyzed the potential for impacts associated with the Proposed Action to become cumulatively significant when added to other projects in the area, especially with regard to water resources, air quality, biological resources, transportation and traffic, cultural resources, toxic substances, and environmental justice.

Through the analysis provided in the EA, it is anticipated that the Proposed Action will not result in significant environmental impacts to any resource analyzed. The potential impacts associated with Alternative 2 are slightly greater than Alternative 1 in terms of permanent disturbance and new impermeable surface but do not differ in terms of impacts to sensitive environmental resources including wetlands, habitat, and threatened and endangered species.

Specific mitigation measures identified to reduce potential impacts to earth, water, and biological resources are detailed in the EA. Concurrent with the EA, the Army conducted agency consultation pursuant to Section 106 of the National Historic Preservation Act, Section 7 of the Endangered Species Act (ESA), the Magnuson-Stevens Fishery Conservation and Management Act, and federal consistency determination under the Coastal Zone Management Act. The Army has determined that Alternative B is the Least Environmentally Damaging Practicable Alternative in accordance with Section 404(b)(1) of the Clean Water Act.

Elements of the proposed action are within the 100-year floodplain. Although this construction would result in a net fill of approximately 7,500 cubic yards of new fill within the 100-year floodplain, this loss in volume would result in a negligible increase in surface water elevation because Suisun Bay is an open system that can absorb storm surge over a very large area. The Army has found that there are no practicable

alternatives to the proposed implementation of the project elements sited in the 100-year floodplain and the Army has taken all practicable measures to minimize harm to the floodplain.

5.0 Public Availability

The EA and draft Finding of No Significant Impact were available for public review and comment from May 3, 2017 to June 2, 2017. A Notice of Availability of the documents was published in the East Bay Times on May 3, 2017. The documents were also available for review by contacting [redacted] Environmental Coordinator for MOTCO, at [redacted] or by accessing the official MOTCO homepage at https://www.sddc.army.mil/Pages/motco.aspx. Additionally, a copy of the EA, draft FNSI, and documents incorporated by reference were available for review at the Concord Public Library, 2900 Salvio Street, Concord, CA; and the Bay Point Library, 205 Pacifica Avenue, Bay Point, CA. No comments were received on the EA or draft FNSI during the public review and comment period but emails were exchanged with National Marine Fisheries Service confirming protective measures had been incorporated.

6.0 Conclusions

Based upon my review of the facts and the analysis presented in the EA, I have concluded that implementing the proposed action would have no significant direct, indirect, or cumulative impacts on the quality of the natural or human environment, and that consequently the analysis in the EA supports a Finding of No Significant Impact. Preparation of an EIS is not required. I have decided to implement the proposed repairs to the roads, bridges, and utility systems at MOTCO. Alternative 2 (Preferred Alternative) will be chosen for implementation due to the efficiency and flexibility it provides in support of the military mission and in consideration of its associated environmental impacts.

27 June 2017

Date

LTC James R. Wiley
Commanding Officer

Final

ENVIRONMENTAL ASSESSMENT FOR GENERAL REPAIR OF BRIDGES, ROADS, AND UTILITIES AT MILITARY OCEAN TERMINAL CONCORD, CA

JUNE 2017

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ENVIRONMENTAL ASSESSMENT

FOR

GENERAL REPAIR OF BRIDGES, ROADS, AND UTILITIES AT MILITARY OCEAN TERMINAL CONCORD, CA

Proponent: Military Ocean Terminal Concord

NEPA Lead Agency: Military Ocean Terminal Concord

APPROVAL

This Environmental Assessment meets the requirements of NEPA, 40 CFR 1500-1508 and 32 CFR 651.

27 June 2017

Date

LTC James R. Wiley
Commanding Officer

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ACRONYMS AND ABBREVIATIONS

µg/m3	micrograms per cubic meter
AC	asphalt concrete
ACM	asbestos-containing material
ACP	Access Control Point
ACZA	Ammoniacal Copper Zinc Arsenate
APE	area of potential effects
Army	United States Army
ARPA	Archaeological Resources Protection Action
ATSDR	Agency for Toxic Substances and Disease Registry
BA	Biological Assessment
BAAQMD	Bay Area Air Quality Management District
BCDC	Bay Conservation and Development Commission
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
CA EPA	California Environmental Protection Agency
CAA	Clean Air Act
CARB	California Air Resources Board
CBR	California Bearing Ratio
CX	Categorical Exclusion
CCWD	Contra Costa Water District
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm/s	centimeter per second
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
CY	cubic yard
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel
DDT	Dichlorodiphenyl Trichloroethane
DERP	Defense Environmental Restoration Program
DOD	Department of Defense
DOT	Department of Transportation
DPM	Diesel Particulate Matter
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ERDC	Engineer Research and Development Center
ESA	Endangered Species Act
ESS	Explosives Safety Submission
ESU	Evolutionarily Significant Unit
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FMP	Fisheries Management Plan
FNSI	Finding of No Significant Impact
FY	Fiscal Year
GHG	Greenhouse gas
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant

HAPC	Habitat Area of Particular Concern
HM	hazardous materials
HMMP	Hazardous Materials Management Plan
HW	hazardous waste
HWMP	Hazardous Waste Management Plan
ICRMP	Integrated Cultural Resources Management Plan
IEEE	Institute of Electrical and Electronics Engineers
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
LBP	lead-based paint
LID	Low Impact Development
LPS	Lightning Protection System
LUC	Land Use Control
LUCIP	Land Use Control and Implementation Plan
MARAD	U.S. Maritime Administration
MBTA	Migratory Bird Treaty Act
MEC	munitions and explosives of concern
MMRP	Military Munitions Response Program
MOTCO	Military Ocean Terminal Concord
MRS	Munitions Response Site
MSAT	Mobile Source Air Toxics
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standard
NAVFAC SW	Naval Facilities Engineering Command Southwest
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	New Source Review
NWI	National Wetland Inventory
NWSSBD	Naval Weapons Station Seal Beach Detachment
OHSSPRP	Oil and Hazardous Substance Spill Prevention and Response Plan
PAH	polycyclic aromatic hydrocarbon
PAVER	Pavement Engineered Management System
PCB	polychlorinated biphenyl
PCC	Portland cement concrete
PCI	Pavement Condition Index
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns aerodynamic diameter
PM_{10}	particulate matter less than or equal to 10 microns aerodynamic diameter
ppb	parts per billion
ppm	parts per million
POL	petroleum, oil, and lubricant
POV	privately owned vehicle
RAP	recycled asphalt product
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
RI/FS	Remedial Investigation/Feasibility Study
RPMP	Real Property Master Plan

SDDC	Surface Deployment and Distribution Command
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SPCC	Spill Prevention, Control, and Countermeasure
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
TEF	Temporary Exclusion Fence
TIA	Telecommunications Industry Association
TMDL	Total Maximum Daily Load
TSCA	Toxic Substances Control Act
TWW	Treated Wood Waste
U.S.	United States
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
UXO	unexploded ordnance
VOC	Volatile Organic Compound
VRP	visibility-reducing particles
WWII	World War II

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1.0 INTRODUCTION

To ensure safe, efficient, and continued mission capability, the United States Army (Army) proposes to repair existing linear infrastructure at Military Ocean Terminal Concord (MOTCO) to include geotechnical exploration in support of those general repairs. The action would take place during Fiscal Years (FY) 2017 through 2021 and beyond. Although there have been upgrades and repairs to the linear infrastructure system(s), many of the facilities and system components in need of repair are original, dating back to as early as the 1940s.

Linear infrastructure addressed in this EA *includes roads, bridges, electrical transmission lines, telecommunication lines, water lines, and wastewater lines.*

The Army has prepared this Environmental Assessment (EA) to address the potential environmental impacts of the proposed action in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [USC] Section 4321 *et seq.*); its implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508); and the Army's regulation implementing NEPA (32 CFR Part 651). The Army is the lead agency for the proposed action; there are no cooperating agencies (per 40 CFR Section 1501.6) for the EA.

1.1 INSTALLATION DESCRIPTION AND CURRENT SITUATION

MOTCO is an Army Military Surface Deployment and Distribution Command (SDDC) munitions and general cargo transshipment facility located in north central Contra Costa County, California (**Figure 1.1-1**). This installation is a West Coast common-user ammunition terminal and is home to the SDDC's 834th Transportation Battalion. MOTCO is in the East San Francisco Bay region, approximately 10 nautical miles inland past the Carquinez Strait that connects Suisun Bay to San Pablo Bay. San Francisco is 30 miles to the southwest, Oakland is 20 miles to the southwest, Sacramento is 65 miles to the northeast, and the City of Concord is located approximately 5 miles south.

The installation is composed of an approximately 115-acre Inland Area administrative complex referred to as the Inland Area and an approximately 6,526-acre Tidal Area. The Inland Area and the Tidal Area are connected by a road running parallel to and west of Port Chicago Highway. The Tidal Area includes piers, staging and transfer facilities, as well as 2,045 acres in offshore islands (**Figure 1.1-2**).

Figure 1.1-1. Regional Location

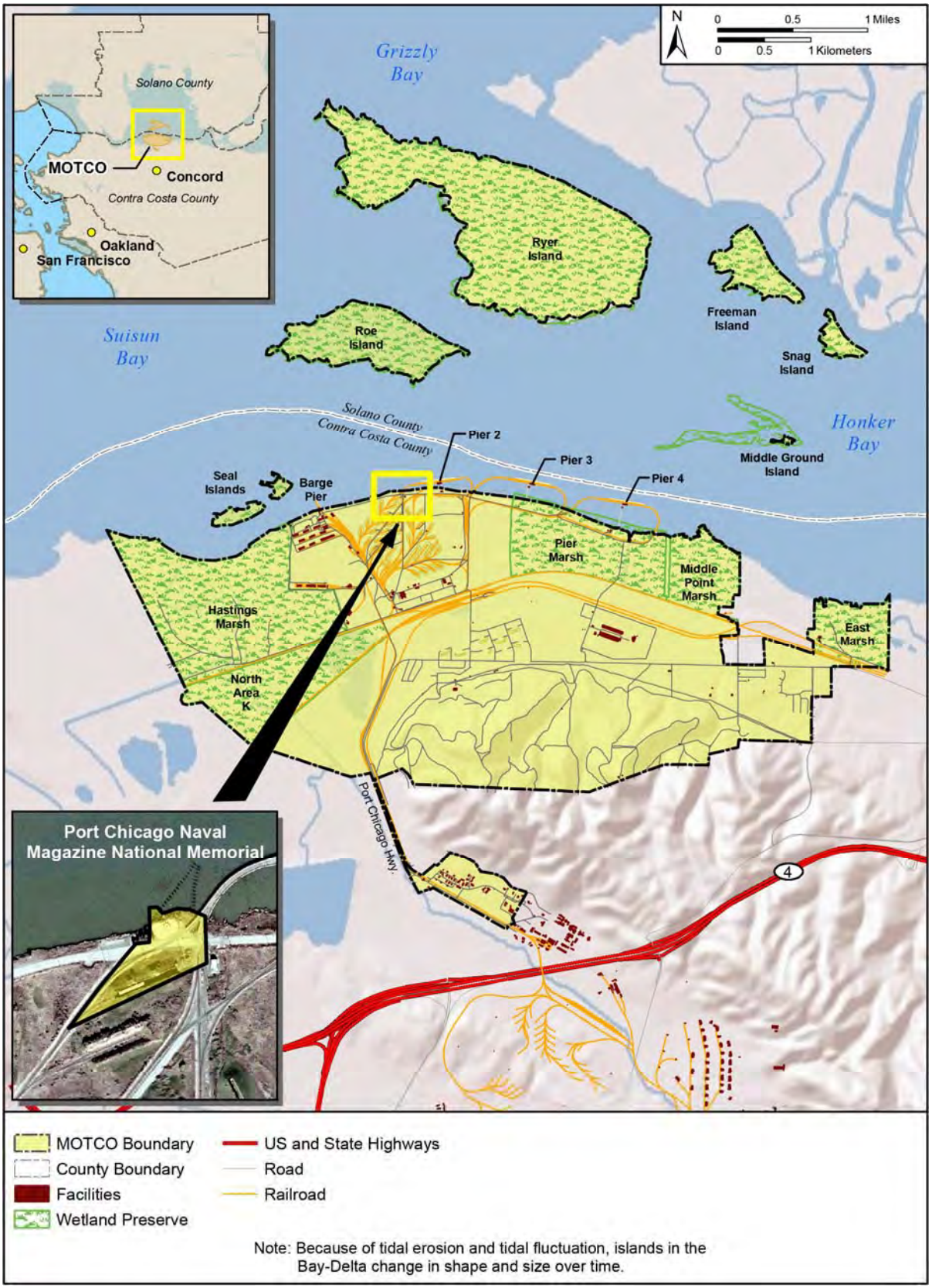

Figure 1.1-2. MOTCO Property

On October 28, 1992, Congress passed the Port Chicago National Memorial Act of 1992 (Public Law 102-562) which designated the Port Chicago Naval Magazine site as a National Memorial to recognize the critical role Port Chicago played during World War II (1939–1945; World War II [WWII]) and the historic importance of the explosion which occurred at the Port Chicago Naval Magazine on July 17, 1944 (Figure 1.1-2). The National Memorial is located on a partially developed 5-acre area of the installation that is owned by MOTCO and managed by the National Park Service (NPS). Two public rail lines, Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe (BNSF), traverse the Tidal Area and interconnect with Army-owned MOTCO rail lines.

1.2 Purpose and Need for the Proposed Action

In their present condition, the installation's linear infrastructure systems are deficient with some elements operating under restrictions. Furthermore, other installation linear infrastructure systems do not comply with current Army or Department of Transportation (DOT) codes and standards. MOTCO's Real Property Master Plan (RPMP) and Utility Master Plan identify current and future needs at MOTCO. The purpose of the proposed action is to repair linear infrastructure systems as identified in the RPMP and Utility Master Plan. The proposed action is needed to eliminate safety concerns and allow the installation to conduct safe and efficient operations in support of its mission.

1.3 Scope of Environmental Analysis

This EA assesses the potential environmental and socioeconomic impacts and cumulative effects associated with the general repair of linear infrastructure, including geotechnical exploration needed to support those repairs. The environmental resource areas analyzed in this EA include in-air and in-water noise; air quality; geology, topography, and soils; water resources; biological resources; land use and coastal zone management; transportation; infrastructure; visual resources; recreational resources; socioeconomics; environmental justice and protection of children; cultural resources; and hazardous materials, hazardous waste, toxic substances, and contaminated sites.

1.4 Decision To Be Made

The decision to be made by the Commanding Officer of MOTCO is to approve or disapprove the proposed action in consideration of potential environmental consequences, and actions that protect, restore, and enhance the environment. This EA is intended to assist in that decision-making by providing sufficient evidence and analysis for determining whether a Finding of No Significant Impact or Environmental Impact Statement (EIS) should be prepared.

1.5 INTERGOVERNMENTAL COORDINATION AND PERMITTING AND PUBLIC INVOLVEMENT

In accordance with 32 CFR Part 651.14(2), the following permits and agency coordination are required to support the proposed action and are occurring in parallel with this EA:

- Endangered Species Act (ESA) Section 7: consultation with the National Marine Fisheries Service (NMFS) and United States (U.S.) Fish and Wildlife Service (USFWS) regarding potential impacts to threatened and endangered species and designated critical habitat.
- Magnuson-Stevens Fishery Conservation and Management Act: consultation with NMFS regarding potential impacts to Essential Fish Habitat (EFH).
- National Historic Preservation Act (NHPA) Section 106: consultation with the State Historic Preservation Office (SHPO), NPS, and federally recognized Tribes regarding potential impacts to historic properties.
- Coastal Zone Management Act (CZMA): Coastal Consistency Determination concurrence from the San Francisco Bay Conservation and Development Commission (BCDC).
- Clean Water Act (CWA) Section 404 and 401: U.S. Army Corps of Engineers (USACE) San Francisco District regarding the Section 404 permit and with the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) Section 401 Water Quality Certification for road and bridge projects involving discharge of fill materials into wetland areas (waters of the U.S).
- Demonstration that project-related construction emissions are below any applicable General Conformity Rule *de minimus* levels in accordance with the Clean Air Act (CAA) and California CAA. A Record of Non-Applicability has been prepared.
- Contra Costa County Environmental Health Division soil boring permit: for wells being drilled for geotechnical purposes, in accordance with Contra Costa County Code Section 414-4.801 *et seq.* (Contra Costa County 2015).

In accordance with 32 CFR Part 651.35, the draft Finding of No Significant Impact (FNSI) for this EA was available to the public for review and comment for 30 days starting May 2, 2017. A notification of the draft FNSI was published in the *East Bay Times*. The draft FNSI was distributed to agencies and tribes listed in the above paragraph and any other agencies, organizations, and individuals that expressed interest in the project. The draft FNSI articulated the deadline for receipt of comments, availability of the SEA for review, and steps required to obtain the SEA. The draft FNSI, SEA, and documents incorporated by reference were available at the Concord Public Library and Bay Point Library and at: https://www.sddc.army.mil/Pages/motco.aspx. No public comments were received, and the USFWS, NMFS, and BCDC have officially concurred with the analysis presented in the EA and

the Army's decisions as outlined in the draft FNSI and FNPA pursuant to the agency consultation requirements noted above. Thus, no substantive changes have been made to this document or the FNSI or FNPA between the draft and final versions.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Army proposes to repair aged and damaged linear infrastructure including roads, vehicular bridges, rail bridges, and utilities. Geotechnical exploration is needed to gather data in support of those repairs. The repairs correct deficiencies in accordance with inspection reports and RPMP and Utility Master Plan recommendations. The road and bridge repairs would 1) address safety requirements, 2) ensure long-term mission sustainment, and 3) improve mission efficacy. The utility repairs would ensure long-term adequate and reliable utility infrastructure.

2.1 CONSIDERATION OF ALTERNATIVES

NEPA's implementing regulations provide guidance on the consideration of alternatives to a federally proposed action and require a rigorous exploration and an objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable require detailed analysis.

The following criteria were used to screen alternatives for full consideration:

- Logistics and safety: The range of reasonable alternatives to meet the purpose and need for repair of existing linear infrastructure is fundamentally limited because the installation's infrastructure layout is primarily to support mission purposes and has a fully developed pattern of functional relationships already in place. A review of the long-term operational needs of road and bridge infrastructure was evaluated and it was determined that, with one exception (Rinquist Road), the existing alignment of linear infrastructure would meet these needs. Therefore, alternatives for realignment of linear infrastructure other than Rinquist Road were eliminated from consideration.
- The alternatives for realignment of Rinquist Road must support the future Pier 2 operations concept. This concept envisions two-way traffic by ammunition-laden vehicles on a circuitous route between the holding pads and Pier 2. This plan requires use of Taylor Bridge and is most efficiently, routed north/northeast from Rinquist Road, to Anderson Road, to Preuitt Road. The current configuration of the Rinquist Road includes sharp curves and reflects a design that is not supported by current safety standards. A number of near misses and minor vehicle mishaps have occurred in this area. Additionally, the current railroad crossing is at an approximately 30-degree angle and there is an increased safety margin the closer such intersections are to a 90-degree angle.
- Consistency with the Army's planning and design process: The proposed action is for repairs to extend the service life of existing infrastructure. The Army has planned, budgeted, and designed repairs to meet these planning parameters. All alternatives must be consistent with the Army's RPMP and Utility Master Plan for MOTCO. It

should be noted that although the proposed action includes long-term road and bridge repair projects, there are also long-term plans for a new bridge construction project to route ammunition laden vehicles over commercial rail lines in the Tidal Area and very long-term sea level rise adaption strategies that are included in the installation's planning documents but are not addressed in this EA. The design process is aimed at identifying the most effective and cost efficient repair strategy for the identified requirements of the repair projects. Therefore, it was determined that all alternatives must meet the basic design parameters for the repairs. Consistent with NEPA guidelines, viable alternatives that meet design parameters identified in the design process were considered as potential reasonable alternatives in this EA.

- Potential for greater adverse environmental effects: Alternatives that would meet the purpose and need, but would result in adverse environmental effects that could otherwise be avoided or minimized, were not carried forward for detailed analysis. These include maintenance and repair of installation roads that provide network connectivity for non-mission essential support that are located adjacent to areas that are environmentally sensitive (e.g., wetlands and habitats for threatened and endangered species) and subject to tidal flooding. It also includes widening and raising of roads that would impact wetlands and/or sensitive habitat where such widening and raising is not required in order to meet operational needs. In addition to the Army's environmental stewardship commitments, adverse impacts to adjacent habitats and the species that use these habitats would result in unnecessary exorbitant expenses to mitigate those adverse impacts.

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

The following alternatives were considered, but were not carried forward for detailed analysis in this EA based on the screening criteria outlined in Section 2.1.

- Alternatives that would relocate existing road and rail infrastructure and result in a new construction footprint (with the exception of the Rinquist Road realignment) would not meet any of the screening criteria and, therefore, were not carried forward for detailed analysis.
- Alternatives for construction materials and/or methodology were considered but were not carried forward based on the criteria to be consistent with the Army's planning and design process.
- An alternative for a more extensive list of road repairs to include installation roads that provide network connectivity for non-mission essential support was considered but eliminated due to the potential for greater adverse environmental impacts.

2.3 NO ACTION ALTERNATIVE

Council on Environmental Quality (CEQ) regulations require analysis of a No Action Alternative in an EA to provide a benchmark, enabling decision makers to compare the magnitude of the potential environmental effects caused by the proposed action and other alternative actions. The No Action Alternative is not required to be reasonable, nor does it need to meet the purpose and need described in Section 1.2. An analysis of the No Action Alternative is required even if the agency is under a court order or legislative mandate to act.

Under the No Action Alternative, the linear infrastructure throughout MOTCO would not be repaired. Roads and bridges at MOTCO would continue to degrade to a point at which they would be unsafe to be used during missions, and the utility system would deteriorate until it was dysfunctional. In the near-term, the lack of bridge and roadway improvements at MOTCO would begin to require the issuance of additional operational restrictions in speed, weight, and vehicle travel patterns. As facilities decline, safety factors could be compromised forcing the Army to accept significant risk to personnel safety and property. Over time, road and bridge restrictions could affect mission capabilities to such an extent that MOTCO could be unable to meet documented Department of Defense (DOD) mission requirements in support of normal and contingency operations.

2.4 ALTERNATIVE 1

2.4.1 Overview, Project Area Definition and Timeline

Alternative 1 includes the implementation of required repairs to MOTCO's linear infrastructure as further specified in the subsections that follow. The proposed repairs are separated into near-term (FY 2017–2021) and long-term (after FY 2021) planned projects. For the near-term projects, the FY identified for each individual repair project is the anticipated execution year. The execution year is the planned timeline for the Army to have a contract in place for each project. The construction timeline follows, but lags behind the execution timeline (due to pre-planning and associated work that precedes construction actions). The long-term planned projects are reasonably expected to be implemented sometime after FY 2021. The type of repair to be implemented is based on recommendations made in the RPMP and Utility Master Plan, and subsequent individual road and bridge inspections conducted 2013–2015 by the USACE Engineer Research and Development Center (ERDC). Details on proposed repairs for the near-term projects are based on design work conducted by the USACE Sacramento District.

The project area (i.e., where physical effects of proposed activities would occur) is defined based on the following assumptions:

- With the exception of the Rinquist Road realignment, all repair activities (i.e., those having direct effects) would occur within the existing roadway, previously disturbed shoulder, or existing bridge footprint. This includes necessary geotechnical borings

to support road and bridge design and repair efforts. The previously disturbed road shoulder varies by road segment, but is generally approximately 10-15 feet from the edge of the existing roadway.

- For the Rinquist Road realignment, the direct effects would include direct disturbance of the proposed realignment of road segments as well as removal of pavement and restoration of closed road segments to natural conditions. The area of indirect effect includes the areas adjacent to existing and new road segments.
- Indirect effects (i.e., those which are caused by the repair activities but occur later in time or further removed in distance) would occur within an area defined as 50 feet from the edge of pavement on either side of the respective road and/or bridge. Indirect effects may also extend up- or downstream to varying distances.
- Construction staging areas (i.e., laydown areas for temporary storage of equipment and supplies including short-term placement of asphalt millings and base materials) would include currently paved surfaces, concrete pads, and previously disturbed vegetated areas. The potential staging areas that may be used for any aspects of the proposed action are identified on **Figure 2.4-1**. The total combined area of these staging areas is approximately 33.2 acres. The use of staging areas for implementation of projects would be determined on a case-by-case basis for each project depending on needs and efficiency of project execution and deconfliction of other concurrent activities or use of staging areas.
- Clean materials removed from roadbeds may be deemed unsuitable for reuse in the road repair projects due to soil properties, but may be reused at MOTCO as fill at a different location per MOTCO's Land Use Control and Implementation Plan (LUCIP). Such material would be transported to one or both of two sites identified at MOTCO that are appropriate for receiving clean excavated materials, also identified on **Figure 2.4-1.** Where appropriate, these sites may also be used as borrow sites for small amounts of native soil as needed for the road repair projects. Per the LUCIP, materials that are identified as potentially contaminated will be subject to site-specific or stockpile-specific evaluation to identify the appropriate handling and disposal or relocation of the materials. Disposal of these materials would be off-installation at an approved site in accordance with all applicable federal, state, and local regulations.
- Construction-related traffic would use Gate 5 (located in the eastern portion of the Tidal Area at the intersection of Port Chicago Highway and Nichols Road, which is being upgraded) or Gate 2, located at the southern end of Taylor Boulevard depending on the project site, vehicle size, timing, and operational status of the

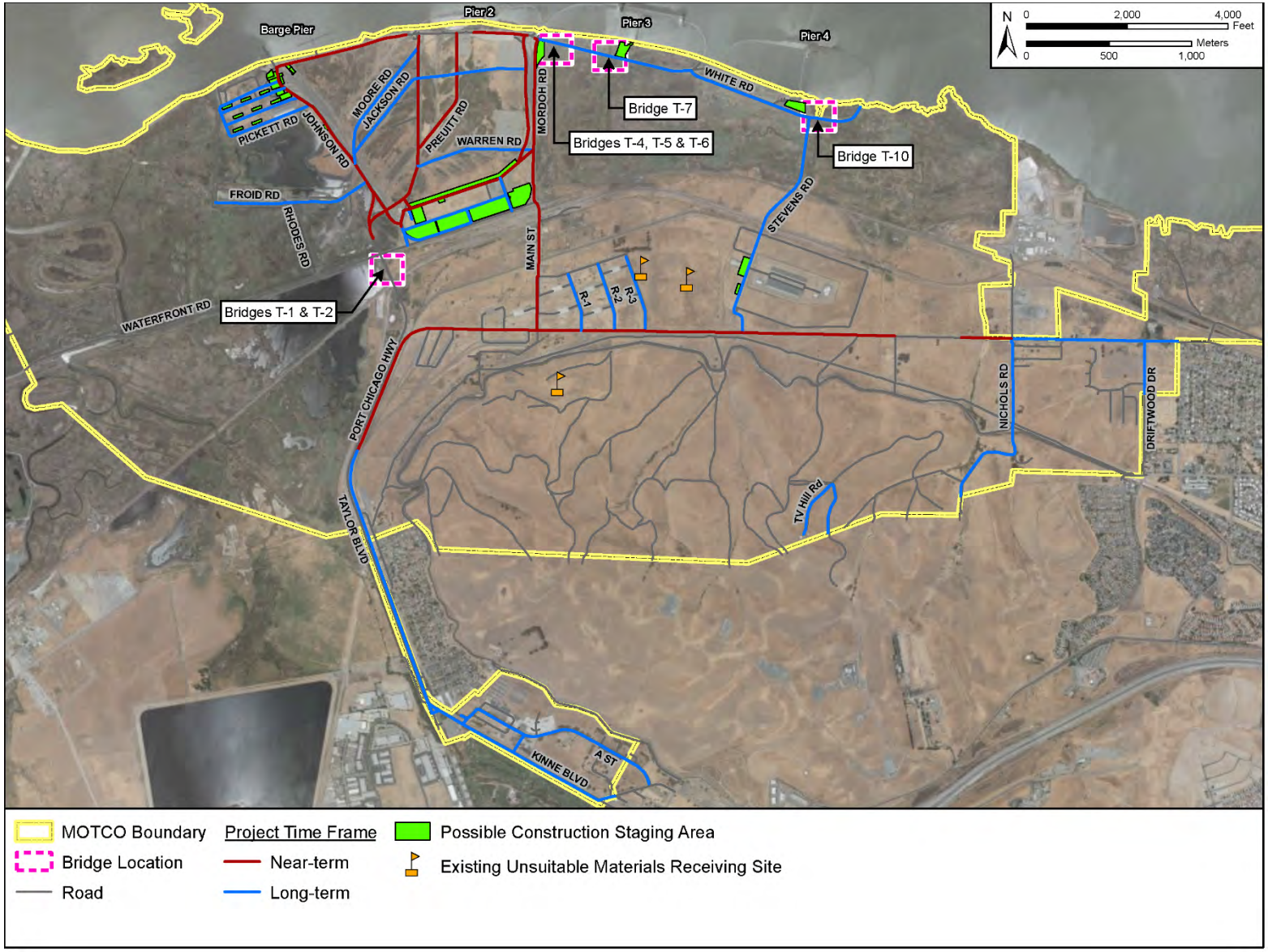

Figure 2.4-1. Possible Construction Staging Areas and Unsuitable Materials Receiving Sites

gates. Based on the current project timeline for the Gate 5 project, the upgraded gate should be available for use in 2019. Workers would be directed to park at a consolidated location and be transported to and from the work site in larger transport vans or busses at the start and end of the workday and for off-site lunch breaks, as needed.

The following assumptions are made for this analysis:

- No more than 6 miles (31,680 linear feet) of roadway would be under repair in any calendar year.
- The majority of daily construction activities would occur between 7 a.m. and 8 p.m. Certain construction activities, such as concrete placement, may have to extend beyond these hours in order to accomplish activities that must be performed without interruption until completion. This is expected to occur rarely and would only be undertaken with appropriate notification and minimization measures employed. Most work will occur during daylight, no artificial temporary lighting would be used within work zones.
- Because the proposed long-term projects are similar in nature to the near-term projects and part of the reasonably foreseeable components of the linear infrastructure repair program for MOTCO, they are included as part of Alternative 1 at a programmatic level consistent with 32 CFR Part 651.14(c).
- All work would be conducted in accordance with the MOTCO installation-wide Land Use Control Environmental Sampling and Results Screening for Excavation Projects (MOTCO 2014). This policy is part of the LUCIP, which is an appendix to the installation's RPMP that addresses avoidance of unexploded ordnance (UXO) and munitions and explosives of concern (MEC) at MOTCO. Additionally, all mitigation measures detailed in Chapter 6 would be implemented.

Reach stacker

2.4.2 Road Repairs

The proposed repairs to roads under Alternative 1 address deficiencies and include several different pavement treatments including full depth reconstruction, mill and overlay, crack sealing, and subbase replacement. Description of these paving treatments and design criteria are included in **Appendix A**. The proposed road repairs are designed for the intended uses, which include frequent use of specialized units called reach stackers and other vehicles that weigh up to 192,000 pounds. Near-term (FY 2017–2021) road repairs are depicted in **Figure 2.4-2** and listed in **Table 2.4-1** by execution year. Long-term projects (after FY 2021) are depicted in **Figure 2.4-3**. Additional details regarding these proposed projects are provided in **Appendix B**.

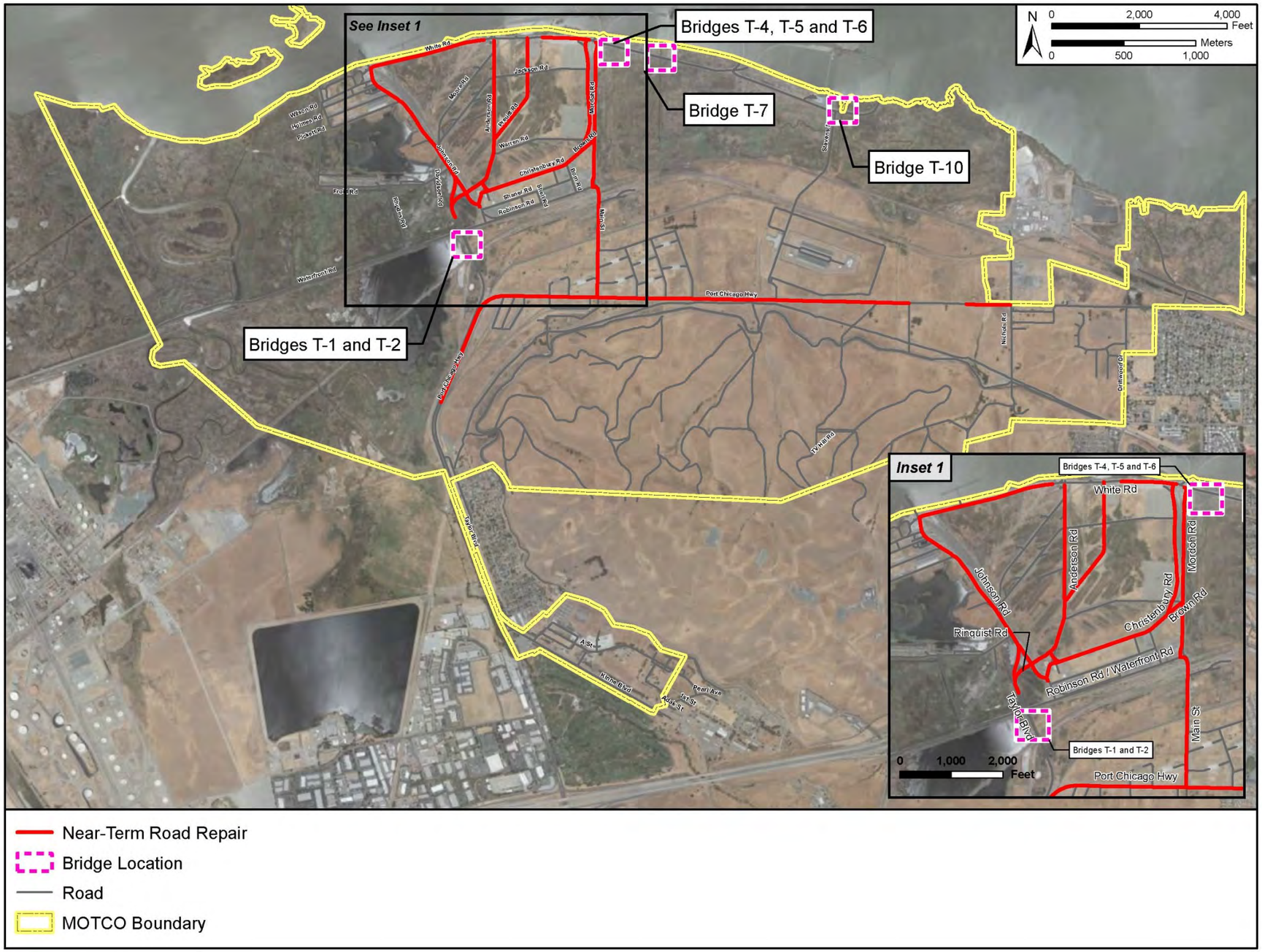

Figure 2.4-2. Proposed Near-Term (Execution Year 2017-2021) Road and Bridge Repairs

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Figure 2.4-3. Proposed Long-Term (after Execution Year 2021) Road and Bridge Repairs

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Table 2.4-1. Summary of Near-Term (Execution Year 2017-2021) Road Repairs

Execution Year	Road Segment	Repair Type	Distance (Linear Feet)	Total Mileage by Execution Year[1]
2017	Anderson Road	Full Depth	2,200	2.7
	Port Chicago Highway East[2]	Full Depth or Mill/Overlay	9,375	
	Rinquist Road Intersection	Realignment	2,700	
	North Taylor Boulevard	Removal	712	Not applicable
2018	Port Chicago Highway (West)	Full Depth or Mill/Overlay	5,100	2.8
	Christenbury Road (includes Brown Road)	Full Depth	5,400	
	Johnson Road	Full Depth	4,115	
2019	White Road (West)[3]	Full Depth	2,661	0.5
2020	Main Street	Full Depth	2,615	1.1
	Mordoh Road	Full Depth	3,270	
2021	White Road (Center)[3]	Full Depth	1,124	0.2

Notes:

1. Construction timeline will lag behind the execution year; no more than 6 miles of roadway would be under repair in any given calendar year.
2. A segment of the eastern portion of Port Chicago Highway would not be repaired as the Gate 5 upgrade project reroutes traffic on a new road and abandons this segment of road. Based on the current project schedule, the upgraded Gate 5 is anticipated to be available for use in 2019.
3. An approximately 1,400-linear-foot (LF) segment of White Road extending between the former and proposed new Pier 2 West Trestle approach and the Pier 2 East Trestle approach be would be repaired as part of a project for the modernization and repair of Pier 2 (see Chapter 5.0 for more discussion). The Center segment of White Road is the gap between the two segments being repaired as part of the Pier 2 project. The West Segment is to the west of the segment extending along between the former and proposed new Pier 2 West Trestle approach.

The total mileage of the proposed near-term road repair projects is 7.2 miles. With the exception of the Port Chicago Highway and Rinquist Road realignment segments, the short-term projects are all full depth reconstruction. The proposed repairs to the 2.7-mile Port Chicago Highway road segment may either be mill and overlay or full depth replacement. For the purposes of this EA, mill and overlay was assumed for repairs to Port Chicago Highway road segment. The total estimated mileage of the long-term road repair projects is 12.1 miles.

Since water infiltration is a primary cause of pavement distress, repair of the stormwater drainage systems, in areas where unintentional ponding is occurring, is also included in the road repairs. In areas where the subgrade has been compacted, road segments would be raised to original design height. In most areas, the roadway would be raised by approximately 1.5 feet to restore grade. However, areas of White Road would be raised approximately 3 feet to restore grade height consistent with existing railroad crossings. In addition, dips in White Road would be corrected to an even grade in order to improve safety and rideability. The existing grade of White Road is approximately 8-10 feet and the finished height would be approximately 10-12 feet. Appropriate fill material may include soils classified as sand-clay, sand-silt, clay/low

plasticity, and sand/poorly graded to sand/well-graded. If determined to be appropriate fill material, recycled asphalt product (RAP) would be used and thereby minimize waste generation and the need for new fill material for the roadway full depth repair projects. It is conservatively estimated that up to approximately 12,500 cubic yards (CY) of new fill material would be required primarily in support of the Rinquist Road realignments and the evening out of the grade of White Road. Additionally, it is expected that the characteristics of approximately 10,500 CY of soils that would be removed from existing roadbeds would not be suitable for reuse. These materials would be transported to one or both of two sites (see Figure 2.4-1) on MOTCO that are appropriate for receiving these materials.

The proposed Rinquist Road realignment would eliminate the sharp curves in the road between the Taylor Boulevard Bridge and Johnson Road and Anderson Road. Construction would include a new approximately 500-linear-foot segment of road perpendicular to Johnson Road (and adjacent rail) and straight-line connection between the current northeastward curve of Rinquist Road to Anderson Road (**Figure 2.4-4**). In addition, the intersections of the realigned Rinquist Road with Anderson Road and Christenbury Road would be improved to meet applicable standards. The resultant configuration would provide for a safer and more efficient circuitous route between the Taylor Boulevard and Anderson Road segments of the proposed Pier 2 future mission operations route (Holding Pads-Taylor Boulevard-Anderson Road-Preuitt Road-Pier 2).

Road segments and surfaces that would no longer be needed would be removed and revegetated as appropriate. This includes approximately 712 linear feet of North Taylor Boulevard northeast of the realigned Rinquist Road (0.8 acre) and areas southeast of the new Rinquist Road/Johnson Road intersection (0.2 acres). It is estimated that the net change in impervious surface associated with the proposed realignment would be relatively unchanged. This segment of North Taylor Boulevard would be removed to the natural subgrade, which is estimated to be 1 foot below the mean high water mark. It is estimated that 3,500 CY of material would be removed with a depth of excavation up to 5 feet below the current elevation. Based on geotechnical evaluations, this material would not be suitable for reuse and, therefore, would be transported to one or both of the two sites at MOTCO appropriate to receive native soil materials (see Figure 2.4-1). After removal of materials, the appropriate grade would be established to allow for appropriate flow of stormwater to maintain the functioning of existing wetlands on either side of the road. The former roadbed would be revegetated with native plantings appropriate to result in a contiguous wetland of improved value and functionality to the current wetland areas bisected by this segment of North Taylor Boulevard. Revegetation methods could include use of “seed bank” top soil from the nearby area or cut plugs from nearby vegetation. The revegetation plan would include considerations on the effects that seasonal conditions may have on the success of the effort and the contractor would be held to measures of success of the effort to the targeted condition.

Figure 2.4-4. Rinquist Road Realignment

Additionally, ensuing geotechnical investigations will indicate whether the soil properties in the new footprint of the Rinquist Road realignment would require surcharge loading in order to provide adequate stability for the design load of the roadway. Surcharge loading consists of using excess fill material to compact, strengthen, and dewater the soil over a period of time. This surcharge fill material is comprised of granular engineered fill. Based on current design, it is expected that surcharge loading would be necessary and it is estimated that a surcharge of up to 12 months would be required for the area. During this time, a temporary cofferdam would be installed approximately 12 feet from the surcharged area on the northern side of the new roadway to allow the settling to occur without the influence of water and allow continued equipment access to the surcharged area. The total estimated period of construction for the Rinquist Road realignment is 18-24 months. The new intersection would need to be completed prior to the removal of North Taylor Boulevard.

The design height of the realignment would be at-grade with the rail crossings east of Johnson Road. The average minimum depth of estimated roadway fill would be 4 feet with a general range of 4 feet to 11 feet at the lowest points (within the wetland area). A 3:1 side slope is proposed, which is the minimal practicable to meet safety standards. The use of RAP (including that removed from the abandoned segment of North Taylor Boulevard) would reduce the need for new fill material. However, only materials determined to be satisfactory for fill purposes would be utilized as such. The new fill material needed for the Rinquist Road realignment is included within the estimate of 12,500 CY of fill needed for all road repair projects. The potential to use a pile supported structure was evaluated in lieu of fill, but such an option would be magnitudes higher in cost and would introduce additional safety risks that can be addressed but require further augmentation and costs. Therefore, the proposed realignment was found to be a practicable option and was designed with the minimal fill necessary to meet safety and design and engineering requirements. A CWA Section 404 permit and associated Section 401 water quality certification would be obtained and adhered to for this project and would be combined with the permitting process for the White Road bridge repair projects (see Section 2.4.3).

Typical equipment used for road repairs includes milling machines, excavators, bulldozers, graders, asphalt pavers, material transfer vehicles, compactors/rollers, water trucks, dump trucks, forklifts, scrapers, trenchers, line-up trucks, and pickup trucks. If the Port Chicago Highway project is implemented via mill/overlay project, it would include use of a rubblization machine (i.e., a hydraulic ram breaker on a tractor) to break up the existing concrete into small, interconnected pieces, which serve as a base course for a new asphalt pavement. The equipment likely to be used during the full depth road repair, which is analyzed fully in this EA, is listed in **Appendix C**. For the purposes of this EA, mill/overlay was assumed for the Port Chicago Highway project; there would be minimal differences in environmental impacts if full-depth repair occurs in lieu of mill/overlay.

2.4.3 Bridge Repairs

Under Alternative 1, there would be varying levels of repairs to seven MOTCO bridges implemented in the near-term (FY 2017–2021). **Table 2.4-2** provides a summary listing of the bridge repairs and associated generalized project footprint. Figures 2.4-2 and 2.4-3 depict the locations of the bridges proposed for repair. The bridges proposed for repair include three rail bridges and four road bridges. In general, the rail bridges are adjacent and parallel to road bridges. The bridges were last repaired between 1995 and 1997. The repairs that would be implemented are further described in the subsections that follow. **Appendix B** provides additional details on the proposed repairs.

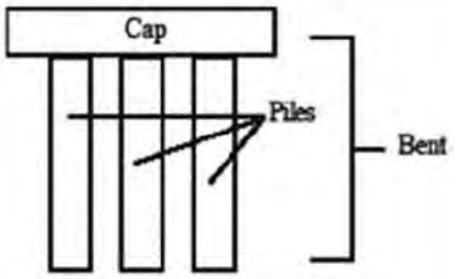
Table 2.4-2. Summary of Bridge Repairs

Bridge Name	Type	Length (LF)	Material	General Project Footprint	Execution Year (FY)	Construction Timeline (FY)
T-1	Rail	2,142	Concrete	Existing bridge surfaces; all construction debris and runoff would be fully contained	2018	2018–2020
T-2	Vehicle	1,385	Steel & Concrete	Existing bridge surfaces and area surrounding the southern abutment; all construction debris and runoff would be fully contained	2017	2017–2019
T-4	Vehicle	129	Timber	Existing bridge surfaces, replacement of sections of 10 piles	2018	2018–2020
T-5	Rail	129	Timber	Existing walkway planking	2018	2018–2020
T-6	Rail	333	Timber	Existing walkway planking	2018	2018–2020
T-7	Vehicle	128.5	Timber	Existing bridge surfaces, replacement of sections of 8 piles, and roadway draining away from abutment	2018	2018–2020
T-10	Vehicle	131	Timber	Existing bridge surfaces, replacement of sections of 15 piles	2018	2018–2020

Typical equipment used for bridge repairs include an articulating boom lift (person lift) and a truck- or trailer-mounted engine driven welder. A full list of anticipated equipment is provided in **Appendix C**.

2.4.3.1 Specific Protective Measures

In addition to the assumptions for Alternative 1 noted in Section 2.4.1, the following additional assumptions have been incorporated in the bridge projects. These environmental protective measures apply to one or more of the bridge projects.



A bent is the substructure unit consisting of the piles and cap that supports the spans of the bridge.

Access to Bridge T-4, T-7, and T-10 Pilings

Repairs to Bridges T-4, T-7, and T-10 would require the temporary dewatering of the localized area

around bridge pilings that would be repaired in order to gain access to the pilings. The dewatering would likely be accomplished using a temporary inflatable water cofferdam or similar device. A minimum area required for work would be dewatered at any one time. Water would flow around the temporary dam and natural flows down- or upstream would not be impeded. It is estimated that the work that is required could be accomplished by dewatering one bent at a time. As work on one work area is completed, the cofferdam would be moved to the next adjacent work area. It is estimated that up to 10 areas would be sequentially dewatered for the length of each of these three bridges. The total square footage temporarily affected by proposed cofferdam and dewatering is estimated at 6,400 square feet total. Of this, the total square footage temporarily dewatered at affected bridges is estimated as follows: 2,400 square feet at Bridges T-4 and T-7 and 1,600 square feet at Bridge T-10. The period of dewatering required at each bent is approximately 8 working days on average not to exceed the approximately 16-week in-water work window. It is expected that the initial dewatering would require more time than subsequent efforts as efficiencies would be expected as the process is repeated.

To minimize the effects of the initial dewatering of the area on fish species, with each installation of the cofferdam, the slough channel would be allowed to naturally dewater from the ebb flow at low tide prior to the installation of the cofferdam. Once the cofferdam is in place, the area would be dewatered until the water level allows for visibility of the substrate. All in-water work associated with these efforts would be scheduled to occur during the delta smelt in-water work window (August 1st through November 30th).

Clean Water Act Permitting Requirements

The proposed repair activities for Bridges T-4, T-5, T-6, T-7, T-10, and the Rinquist Road realignment are expected to require a Section 404 permit and associated Section 401 water quality certification. The Army would obtain and adhere to all associated permit requirements. The Army currently intends to combine the road and bridges CWA Section 404/401 permitting (see Section 2.4.2). The Bridge T-1 and T-2 repairs would meet the permit requirements as set forth in an anticipated USACE Nationwide Permit 3 (Maintenance). The Army would obtain a Nationwide Permit for the Bridge T-1 and T-2 repairs including the associated Section 401 water quality certification.

Hazardous and Toxic Substances and Waste

The demolition debris has the potential to contain lead-based paint (LBP) and other toxic substances. The construction contractor would be responsible for ensuring that hazardous waste and contamination is managed in compliance with all applicable laws and regulatory requirements. The existing paint on Bridge T-2, which is proposed for repainting, is known to be LBP. At this location and other sites where LBP is present, the contractor will be required to develop and adhere to a debris containment and collection plan and lead compliance plan for

protection of the environment and worker safety. A containment system would be provided around the work area where LBP is being disturbed, which must contain all water, resulting debris, and visible dust produced when the existing paint system is disturbed.

Wetlands, Habitat, and Public Rail Crossings (Bridges T-1 and T-2)

Wetlands and habitat for salt marsh harvest mice (*Reithrodontomys raviventris*) and California black rails (*Laterallus jamaicensis coturniculus*) exist under Bridges T-1 and T-2; therefore, work would be conducted using under bridge scaffolding, hanging platforms, and ladders. A pre-determined flagged travel route would be established for personnel and equipment to access the area to avoid adverse impacts to habitat, as well as to avoid munitions and explosives of concern (MEC). All repair work would occur above the limits of ordinary high water and adjacent wetlands and would avoid salt marsh harvest mouse habitat. As both the BNSF and UPRR lines cross under Bridges T-1 and T-2, the Army would ensure appropriate notification is provided to the rail lines prior to initiating construction activities. If necessary, the Army would work with either BNSF or UPRR to establish a temporary rail crossing for vehicular access to the area underneath the bridges.

Use of Waterborne Preservatives on Timber Pile Repairs (Bridges T-4, T-7, and T-10)

As part of the proposed repairs to deteriorated pile sections at Bridges T-4, T-7, and T-10, sections of affected timber piles would be cut, removed, and replaced with new sections of timber piling that have been treated with a waterborne preservative. The waterborne preservative would be either ammoniacal copper arsenate, ammoniacal copper zinc arsenate (ACZA), or chromated copper arsenate in accordance with the American Wood Protection Association Standard A2, *Standard Methods for Analysis of Waterborne Preservatives and Fire-Retardant Formulations* and P5, *Standard for Waterborne Preservatives* to minimize leaching of preservative products into the water column and bay sediments. Between the timber piles and the pile splice, a waterproof epoxy with a consistency of putty would be used.

Delamination/spall on bent cap (T-1)

Deteriorated bridge railing (T-2)

***Spalling/delamination** are the separation and breaking away of layers or small pieces of concrete.*

2.4.3.2 Bridge Repairs by Location

Bridge T-1 (Facility #107)

Bridge T-1 is a multi-steel beam railway trestle bridge carrying one set of railroad tracks. The bridge is comprised of 55 spans and is approximately 2,142 feet long. The proposed repairs are to stabilize cracks with epoxy injection if possible and to remove and replace deteriorated (spalled/delaminated) concrete where needed.

Special wetland and habitat considerations for this project are noted in Section 2.4.3.1.

Bridge T-2 (Facility #108)

Bridge T-2 is a steel girder vehicle bridge used for two-lane traffic. The bridge is comprised of 11 spans and is 1,385 feet long with a curb-to-curb width of 26 feet. The proposed repairs include:

- removal of existing LBP and repainting,
- cleaning/repairing concrete spalls,
- replacement of joint filler material,
- replacing existing approaches, railings/end treatments, and
- removal of loose soil from under the southern abutment and replacement with controlled low-strength material.

Controlled low strength material *is a self-compacting, cementitious material used primarily as a backfill in lieu of compacted fill.*

Special hazardous and toxic material and wetland and habitat considerations for this project are noted in Section 2.4.3.1.

Bridge T-4 (Facility #445)

Bridge T-4 is a timber girder vehicle bridge carrying two lanes of traffic. The bridge is comprised of 11 spans and is 129 feet long with a curb-to-curb width of 22.5 feet. The proposed repairs include:

- sealing cracks in the roadway and deck,
- replacing the approach railings/end treatments, and
- removing 10 deteriorated pile sections and replacing them with new sections of timber piling treated with wood preservative and reinforced with external steel sleeves.

From Bridge T-4 looking south towards Bridges T-5 and T-6

Bridge T-5 (Facility #446)

Bridge T-5 is a timber girder railroad bridge supporting one set of tracks. The bridge is comprised of 11 spans and is 129 feet long with a curved alignment. The proposed repairs consist of replacement of deteriorated timber walkway planks.

Bridge T-6 (Facility #447)

Bridge T-6 is a timber girder railroad bridge supporting one set of tracks. The bridge is comprised of 29 spans and is 333 feet long with a curved alignment. The proposed repairs primarily consist of replacing warped walkway planking.

Bridge T-7 (Facility #448)

Bridge T-7 is a timber girder vehicle bridge carrying two lanes of traffic. The bridge is comprised of 11 spans and is 128.5 feet long with a curb-to-curb width of 22 feet. The proposed repairs include:

- filling the void under the concrete abutment,
- re-directing roadway drainage,
- sealing pavement cracks,
- installing or repairing railings/end treatments,
- removing decayed wood and applying wood preservative, and
- removing 8 deteriorated pile sections and replacing them with new sections of timber piling treated with wood preservative and reinforced with external steel sleeves.

An estimated 0.5 CY of controlled low strength material fill (flowable fill) would be placed over an estimated 100-square foot area to improve an undermined void under the Bridge T-7 east abutment. This work is anticipated to occur above the mean higher high water level.

Bridge T-10 (Facility #451)

Bridge T-10 is a timber girder vehicle bridge carrying two lanes of traffic. The bridge is comprised of 10 spans and is 131 feet long with a curb-to-curb width of 28 feet. Proposed repairs include sealing of cracks in the roadway and deck, extending railings and new end treatments, removing 15 deteriorated pile sections and replacing them with new sections of timber piling treated with wood preservative and reinforced with external steel sleeves, replacing a retaining wall, and filling gaps around railing posts.

Bridge T-10 I

2.4.4 Utility Repairs

Alternative 1 includes proposed repairs to the utility systems that are under, above, or adjacent to the road network. This includes repairs to electrical, communication, water, and wastewater systems identified in the Utility Master Plan that would keep the systems functional for the foreseeable future. To the maximum extent feasible, these repairs would be undertaken in advance of or concurrent with paving to avoid having to cut or otherwise damage the new pavement once it is in place.

Typical equipment used for utility repairs are detailed in **Appendix C**.

2.4.4.1 Electrical Lines

Improvements to the electrical distribution system that would be implemented under Alternative 1 include the following actions:

- Removal of existing overhead, non-operational distribution system components.
- Replacement of existing overhead electrical distribution system in the Tidal Area with an underground system composed of conduit, manholes, concrete encased duct banks, conductors, pad-mounted switchgear and sectionalizing cabinets, pad-mounted transformers, and new service laterals to each facility.
- Repairs and/or movement of overhead electrical systems that would not be relocated underground as needed. For example, some of the road projects would call for the relocation of some overhead powerline components.

Installation of new underground power lines on Christenbury, Johnson, and White Roads would occur within the FY 2017–2021 timeframe. The construction timeline for these repairs would be coordinated with the scheduled repairs to these roadways (see Section 2.4.2). In the event the existing overhead utilities cannot be relocated underground due to funding limitations, utility crossings, conduits, or ductbanks would be installed to accommodate the future burying of utility lines. The utility crossings would be installed where the utilities cross the respective roadway.

Electrical system installations would be completed in accordance with the National Electrical Code, National Electrical Safety Code, and applicable local codes and standards. Good design practice would conform to the recognized industry standards, including the Institute of Electrical and Electronics Engineers (IEEE), and the Telecommunications Industry Association (TIA).

2.4.4.2 Telecommunication Lines

Under Alternative 1, the telecommunication lines would be moved underground into a conduit or duct bank to bring telecommunications up to current standards and protect the installation from outages due to severe weather. Similar to the electrical line upgrades, in the event the utilities cannot be moved underground due to funding limitations, utility crossings (i.e., conduit or duct bank) would be installed to accommodate the future burying of utility lines. The utility crossings would be installed where the utilities cross the respective roadway.

2.4.4.3 Water and Wastewater Lines

Under Alternative 1, minor repairs to water lines would be implemented. General types of repairs would include the following:

- Replace fire hydrants, isolation valves, and backflow preventers;
- Increase fire flow capacity at fire hydrants; and
- Fix leaks in water lines.

In addition, the following specific improvements are included in Alternative 1:

Water Lines

- Replace cast iron pipe (between Piers 2 and 3), and
- Install cathodic protection on in-ground piping as needed.

Wastewater Lines

- Correct insufficient pipe slopes at Christenbury Road, Kinne Boulevard, and Mordoh Road.

2.4.4.4 Stormwater

As part of Alternative 1, repairs to existing roads includes repairs to grading, drop inlets, and culverts as incorporated into roadway and bridge design to divert any standing water away from roadways and shoulders. Design requirements would be coordinated with updates to the MOTCO Storm Water Pollution Prevention Plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permit, which occur at least annually.

In addition, a specific stormwater drainage improvement project is included to address erosion rills at the right abutment of Bridge T-2. Improper grading near an adjacent drop-inlet allows runoff to spill over and erode the surrounding soil causing the drop-inlet to fail. The proposed repair provides a new asphalt concrete dike, which would run for 50 feet at the edge of pavement parallel to the new metal beam guardrail end treatment. The runoff would be directed away from the abutment and toward a gravel depression between Taylor Road and the nearby railroad tracks. The existing drop-inlet would be abandoned in place.

2.4.5 Geotechnical Investigation

Geotechnical investigation is routinely required in support of planning for linear infrastructure repairs. The information obtained from the geotechnical borings provides necessary soils and sub-surface information to ensure appropriate design of linear infrastructure. Geotechnical investigation has been completed for the near-term projects with NEPA and consultations conducted on a case-by-case basis. Alternative 1 provides a programmatic analysis of geotechnical investigations that would be required for the long-term projects and other investigative needs that may occur within the footprint of the proposed road and bridge projects evaluated in this EA. Types of geotechnical investigation may include mud rotary wash borings,

hollow stem auger borings, hand excavation, hydrovac, and cone penetration or cone penetrometer tests. Details regarding each of these types of geotechnical investigation are provided in **Appendix D**.

The specific boring locations and number of borings would depend on the project nature and size. The estimated total number of borings needed in an average year would be up to 200, primarily mud rotary wash borings or hollow stem auger borings would be used as further detailed in **Appendix D**.

Investigation sites would be marked and evaluated by USACE Geotechnical professionals prior to commencement of any exploration and coordination with MOTCO would occur in accordance with the installation's dig permit standard operating procedure (SOP). Typical equipment used for geotechnical investigations include a truck-mounted drill rig (Mobil B-53 or similar). Additional listing of equipment is provided in **Appendix C**.

2.5 ALTERNATIVE 2

Alternative 2 is the same as Alternative 1 with the exception of differences in the width and alignment of select road segments. Specifically, the White Road East and Anderson Road segments would be widened to accommodate a roadway that is 24 feet (it includes 11-foot lanes, with one additional foot between the lane line and edge of road pavement, and two additional feet of aggregate shoulder). This would provide the flexibility to accommodate 2-way traffic on these road segments, which is optimal due to increased efficiency and flexibility for meeting MOTCO's military mission requirements. The result is a greater area of permanent disturbance, but the area of temporary construction-related disturbance would be similar to Alternative 1. **Table 2.5-1** summarizes the acreage associated with each of these by execution year and **Appendix B** provides detailed mapping of the estimated areas of temporary and permanent disturbance associated with Alternatives 1 and 2. As noted in Section 2.4.1, the execution year is the planned timeline for the Army to have contracts in place for the proposed project. The construction timeline follows, but lags behind the execution timeline and continues for the duration required to complete each project.

Table 2.5-1. Summary of Estimated Temporary and Permanent Disturbance Areas from Road and Bridge Projects Under Alternatives 1 and 2 by Execution Year

Execution Year	Project Element	Permanent Disturbance Area (Acres)		Temporary Disturbance Area (Acres)	
		Alternative 1	Alternative 2	Alternative 1	Alternative 2
2017	Road Repairs	9.4	13.7	32.5	32.5
	Rinquist Road Realignment	1.1	1.1	1.0	1.0
	Bridge Repairs	0	0	2.3	2.3
2018	Road Repairs	11.8	16.3	30.8	28.5
	Bridge Repairs	0	0	2.1	2.1
2019	Road Repairs	1.7	2.5	6.0	6.0
2020	Road Repairs	3.4	4.6	13.0	13.0
2021	Road Repairs	2.1	3.5	8.9	8.8
Total Near-term		**29.6**	**41.8**	**96.6**	**94.3**
Long-term	Road Repairs	36.0	36.0	142.0	142.0

2.6 PREFERRED ALTERNATIVE

The Army has identified Alternative 2 as the preferred alternative based on the efficiency and flexibility it provides in support of the military mission and in consideration of the environmental impacts, which are slightly greater in terms of permanent disturbance and new impermeable surface but do not differ in terms of impacts to sensitive environmental resources including wetlands, habitat, and threatened and endangered species.

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3.0 AFFECTED ENVIRONMENT

NEPA and associated regulations, promulgated in 40 CFR Parts 1500–1508 and 32 CFR Part 651, require that an EA address the general conditions and nature of the affected environment and establish the environmental setting against which environmental effects are evaluated in Chapter 4. This chapter presents relevant general baseline conditions, focusing on specific aspects of the environment that may be impacted by the alternatives. The evaluation is limited to resource areas that are potentially affected by the proposed action and alternatives.

3.1 EARTH RESOURCES

3.1.1 Soils

The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) has mapped 20 soil types at MOTCO. The Tidal Area is largely composed of silty clay and saline muck soils that are very deep and poorly drained. These are old tidal marsh soils that in many locations are still tidally inundated and saturated at shallow depths. Because these soils have poor drainage, they are also subject to freshwater flooding and ponding following heavy rainfall and surface runoff from the adjacent inlands. The proposed project area is not located in an area subject to the Farmland Protection Policy Act. Soils in much of the developed areas of MOTCO are categorized by NRCS as Urban Land, including the existing linear infrastructure. The Urban Land soil category indicates that they are heavily developed (i.e., covered by at least 75 percent asphalt or buildings), and natural soil series do not occur in these areas (i.e., that portion that is not covered by asphalt or buildings is normally composed of fill material) (USACE 2011).

The roadway surfaces and bridge abutments have been previously disturbed throughout the width of the roadbed as well as the adjacent shoulder, which is typically 10 to 15 feet wide. The soils were evaluated for potential contamination from past practices as further discussed in Section 3.11. Based on geotechnical recommendations pertaining to the Rinquist Road intersection design, it is recommended that the soils at this site are likely to have limitations associated with the potential for subsidence, shrink-swell potential, and flooding (Personal communication, R. Conn, 2016).

3.1.2 Seismic Conditions

As with the rest of the San Francisco Bay area, MOTCO lies within one of the most seismically active regions of the U.S. There are four Seismic Zones; MOTCO is in Zone 4, which has the highest potential for earthquake damage. Based on estimates from geologists, the fault systems in Contra Costa County have a probable earthquake magnitude of between 5.0 and 8.5 on the Richter scale (Contra Costa County 2005). The Concord-Green Valley Fault is located just east of MOTCO (California Geological Survey 2002). In addition to bodily injury and

property damage, seismic activity associated with faults can cause geologic hazards such as liquefaction and landslides. At MOTCO, there is a high liquefaction probability for the portions of the Tidal Area with artificial fill Quaternary deposits; a moderate liquefaction probability for areas of the Tidal Area and Inland Area with Quaternary deposits of Bay mud and alluvial deposits; and a low to very low liquefaction potential for the Los Medanos Hills and associated alluvial fan area (U.S. Geological Survey [USGS] 2006). Inundation due to related tsunamis is also a hazard at MOTCO.

3.1.3 Mineral Resources

Approximately 65 percent of the Tidal Area (including all seven offshore islands) is under split estate rather than fee simple ownership. For these split estate lands, the surface estate is federally owned and the subsurface mineral estate is privately owned. Only one mineral estate, an active natural gas field on Ryer Island, is currently under development. Future requests for lease agreements for mineral exploration, development, and production and surface access for such purposes to privately owned mineral estate underlying MOTCO lands would be subject to a number of requirements, including DOD/Army safety and security requirements, California regulatory requirements, and NEPA. None of the proposed improvements to linear infrastructure are within these areas of split estate (MOTCO 2011).

3.2 WATER RESOURCES

3.2.1 Surface Water

Surface water resources are important for economic, ecological, recreational, and human health reasons. Nearshore waters provide a unique habitat for a variety of plants and animals. These areas close to the shoreline are subject to surface water runoff from urban and industrial areas. Nutrients from sources such as sewage, fertilizers, detergents, and atmospheric deposition along with sediment and other suspended solids can affect nearshore water quality.

MOTCO is located on the Suisun Bay, which is part of the 1,600-square mile San Francisco Bay Estuary. The San Joaquin and Sacramento Rivers drain into Suisun Bay from the east. These two rivers contribute the majority of the freshwater flow into the bay (SFBRWQCB 2013). Suisun Bay, Carquinez Strait, and San Pablo Bay are geographically and hydrologically distinct from the Central and South Bays. San Pablo Bay is connected to Suisun Bay by the narrow Carquinez Strait. Suisun Bay is a shallow basin between Chipps Island at the western boundary of the Delta and the Benicia-Martinez Bridge at the eastern end of Carquinez Strait (BCDC 1998).

Suisun Bay is listed by the CWA Section 303(d) as an impaired waterbody with a Category 5A status. A waterbody is considered impaired when one or more designated uses are not attained. According to the U.S. Environmental Protection Agency (USEPA), in 2012 the surface water quality in Suisun Bay was considered impaired for its designated use of commercial and

sports fishing and for estuarine habitat. The cause of the impairment is the presence of contaminants such as chlordane, dichlorodiphenyl trichloroethane (DDT), dieldrin, dioxin-like polychlorinated biphenyls (PCBs), furan compounds, mercury, selenium, and PCBs. Total Maximum Daily Loads (TMDLs), the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards, have been established for San Francisco Bay for mercury and PCBs. TMDLs are in development for the Suisun Marsh (California State Water Resources Control Board 2016). While there are a number of chemical manufacturing facilities proximal to MOTCO, these chemicals are not compounds that are normally associated with activities at MOTCO or expected with the proposed action.

Surface freshwater features in the Tidal Area all ultimately flow northward, emptying into Suisun Bay via natural creeks, artificial ditches, canals, and sloughs. The origin of the freshwater is varied; some comes from groundwater springs in the Los Medanos Hills, or arrives as channel flow within the Mount Diablo/Seal Creek drainage, or is simply precipitation trapped in impermeable depressional areas (USACE 2011).

The vast majority of surface water in the Tidal Area occurs within the sloughs and ditches within the salt marshes of the Tidal Area. These surface waters are largely brackish, as they are both flushed by tides while also intercepting upland freshwater flows. Brackish waters from Suisun Bay inundate the tidal marsh during high tides via a network of natural and artificial channels. Extensive ditching and berms located along ditches have resulted in muted tidal inundation/circulation in most of MOTCO's marshlands. In addition to the prior diking and filling, much of the natural drainage pattern and tidal influence has been altered by the roadways, rail lines, and Contra Costa Canal that traverse the Tidal Area (USACE 2011).

MOTCO holds a General Permit for Discharges of Storm Water Associated with Industrial Activities (General Permit No. CAS000001, effective 1 July 2015) and has prepared an installation-wide SWPPP (July 2015) for MOTCO to address compliance with the General Permit. The objectives of the SWPPP are to:

- identify and evaluate pollutant sources associated with industrial activities that may affect the quality of storm water discharges and authorized non-storm-water discharge from the facility;
- identify and describe the minimum Best Management Practices (BMPs) and any advanced BMPs implemented to reduce or prevent pollutants in industrial stormwater discharges and authorized non-stormwater discharge; and
- identify and describe conditions or circumstances which may require future revisions to be made to the SWPPP (MOTCO 2015).

There are four culverts that underlie the segments of White Road to be repaired under the proposed action. Of these, two underlie White Road West, one underlies White Road Center, and one underlies White Road East. In addition, two culverts underlie the segment of White

Road that would be repaired in conjunction with the Pier 2 repairs. These culverts are discharge locations that drain three different drainage areas on MOTCO. Tidal action causes intermixing in this entire area. Flapper valves prevent tidal inflow through these culverts in some portions of the Tidal Area (MOTCO 2015).

MOTCO is working with a USACE Sacramento SWPPP practitioner to complete required annual reviews of the installation's SWPPP. The analysis to date indicates that the installation is approaching the point where implementing additional industrial stormwater management measures such as swales, channelization, etc. may be necessary (Personal communication, G. Romine, 2016).

3.2.2 Groundwater

Groundwater may be used for potable water, agricultural irrigation, and industrial applications. Groundwater is classified as any source of water beneath the ground surface and is the primary source of potable water used for human consumption. Groundwater is an important part of the hydrologic system in the Suisun Bay area. A variety of historical uses of groundwater and groundwater management have occurred in the vicinity of MOTCO. Groundwater use in the vicinity of MOTCO includes potable use, irrigation, and industrial processing. MOTCO's water is supplied by private utilities in the area that pump these supplies into storage reservoirs at MOTCO. The installation does not operate or maintain groundwater wells for potable or industrial use.

3.2.3 Wetlands

Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR Part 328[b]). Under the CWA, wetlands that have a direct connection, are adjacent to, or otherwise have a significant nexus to navigable waters are considered waters of the United States, and excavation or fill in such areas is subject to the permit requirements of Section 404 of the CWA, as administered by the USACE and USEPA. Section 401 of the CWA requires Water Quality Certification from the State's Regional Water Quality Control Board in conjunction with the issuance of Section 404 permits.

Wetlands and other waters are broadly classified according to geomorphology and hydrology as lacustrine (lakes and ponds), riverine (within a channel), palustrine (other freshwater wetlands), and estuarine (ocean-influenced) (Cowardin et al. 1979). Wetlands at MOTCO are predominantly estuarine by virtue of connections to Suisun Bay. There are small areas of palustrine wetlands, which, by definition, receive only freshwater inflows, but because of saline soils and poor drainage they often support brackish vegetation similar to that of estuarine habitats.

National Wetland Inventory (NWI) data identify approximately 3,175 acres of potential wetlands on MOTCO, including 404 acres of Estuarine Subtidal wetlands, 2,687 acres of Estuarine Intertidal wetlands, and 84 acres of Palustrine wetlands. NWI data are not ground-truthed but are based on soils, topography, and aerial photograph interpretation of vegetation and hydrology. In support of the analysis in this EA, a field jurisdictional wetland delineation was completed in March 2015 to assess the extent of wetlands within the affected environment. Specifically, a jurisdictional wetland delineation was conducted 50 feet on either side of the bridges and roads in areas where NWI data or direct observations indicated the potential for wetland impacts. The location of wetland-upland boundaries were mapped in the field by walking the boundary with a Global Positioning System with sub-meter accuracy. In areas where access was restricted due to fences, observation points and notes were taken in the field and the boundary between wetlands and uplands was later delineated electronically in the office using high-resolution digital aerial imagery. The results identified a total of approximately 18 acres of total wetland habitat within the project area. Of this, 15.50 acres was found to be estuarine, 2.43 acres palustrine, and 0.10-acre riverine wetland habitat. The NWI wetlands and delineated wetlands at MOTCO are depicted in **Figure 3.2-1**. The delineation is subject to approval by the USACE. All tidally influenced estuarine wetlands and unimpaired drainages are assumed to be hydrologically connected to Suisun Bay and are, therefore, jurisdictional. Isolated palustrine wetlands may or may not be jurisdictional (USEPA and USACE 2008). However, using guidance from the new Clean Water Rule (published June 29, 2015, effective August 28, 2015, but stayed by court decision September 9, 2015), ditches that are not excavated in tributaries and are not relocated tributaries, and which only flow ephemerally after precipitation and do not drain wetlands, are not jurisdictional. It is unknown when, or if, the new Clean Water Rule will become effective again.

The offshore islands and the majority of the marshlands at MOTCO are part of a Wetland Preserve Area. The Wetland Preserve Area was first established through a memorandum of understanding between the Navy and USFWS (February 1, 1984) and is now a component of MOTCO's Integrated Natural Resources Management Plan (INRMP) (USACE 2011). MOTCO's linear infrastructure generally occurs outside the Wetland Preserve Area; however, some roads in the eastern Tidal Area traverse the area.

Under Section 404 of the CWA, the USACE and USEPA have established a policy of no net loss of wetland functions and values, and require impacts to be fully mitigated – by avoidance, minimization, and/or compensation - in conjunction with the issuance of Section 404 permits. The State of California also has a policy of no net loss of wetlands, and similar mitigation is required as a condition for the state's issuance of the CWA Section 401 Water Quality Certifications for Section 404 permits. However, since the state may assert jurisdiction over some water bodies not subject to Section 404 / USACE permit jurisdiction, the 401 certification can apply in circumstances when a Section 404 permit is not required.

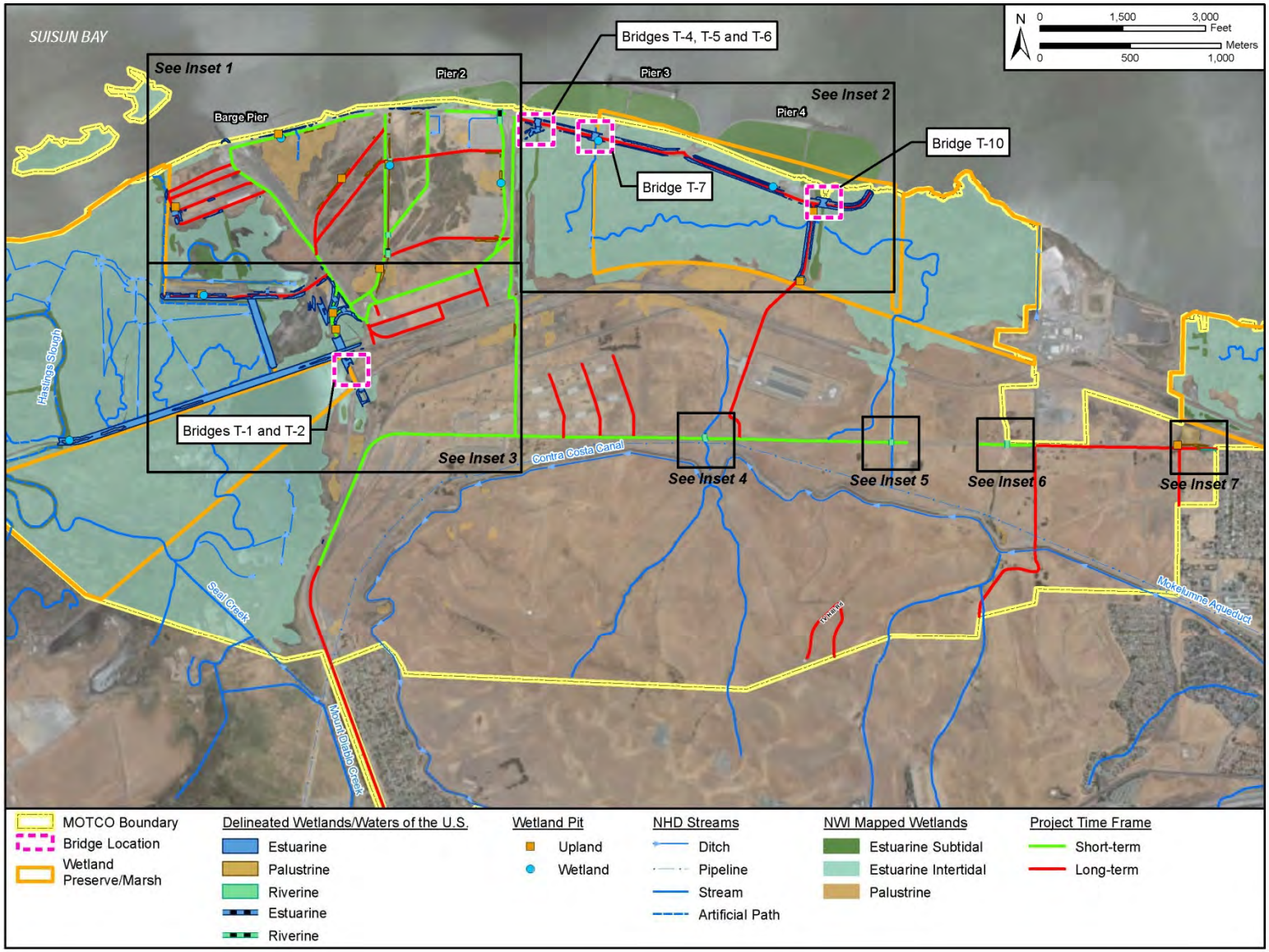

Figure 3.2-1. Potential and Delineated Wetlands

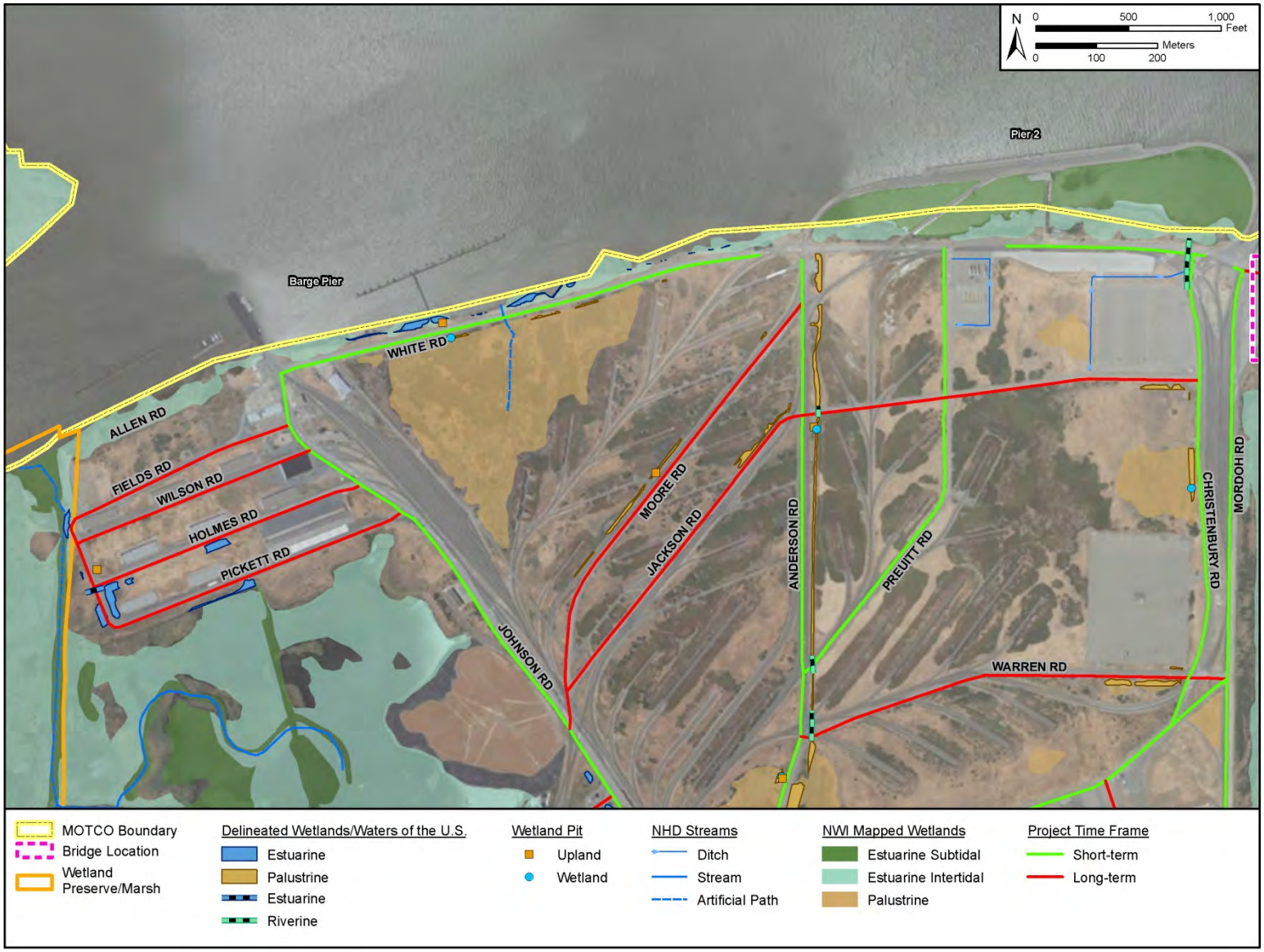

Figure 3.2-1. Potential and Delineated Wetlands (Insert 1)

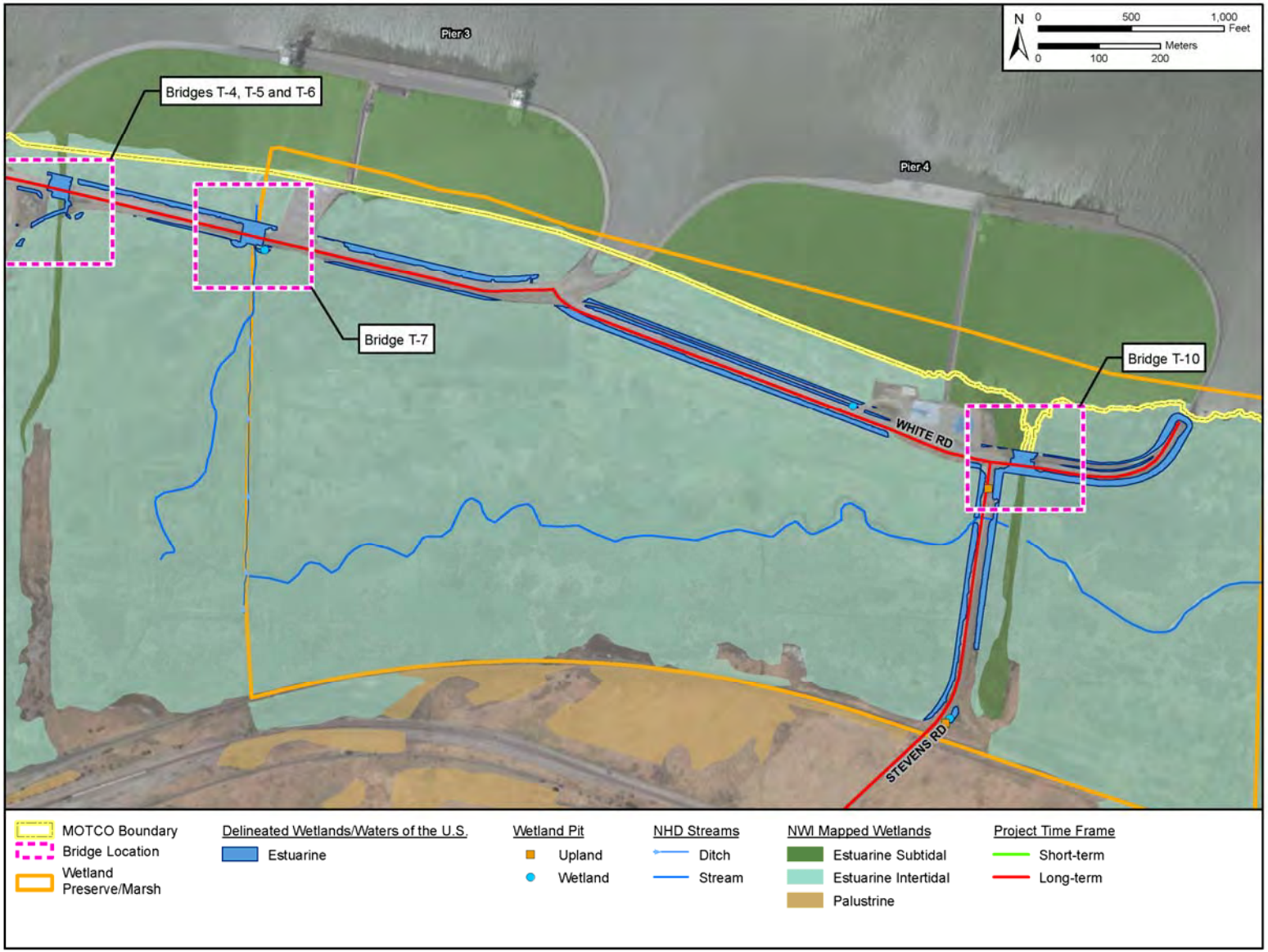

Figure 3.2-1. Potential and Delineated Wetlands (Insert 2)

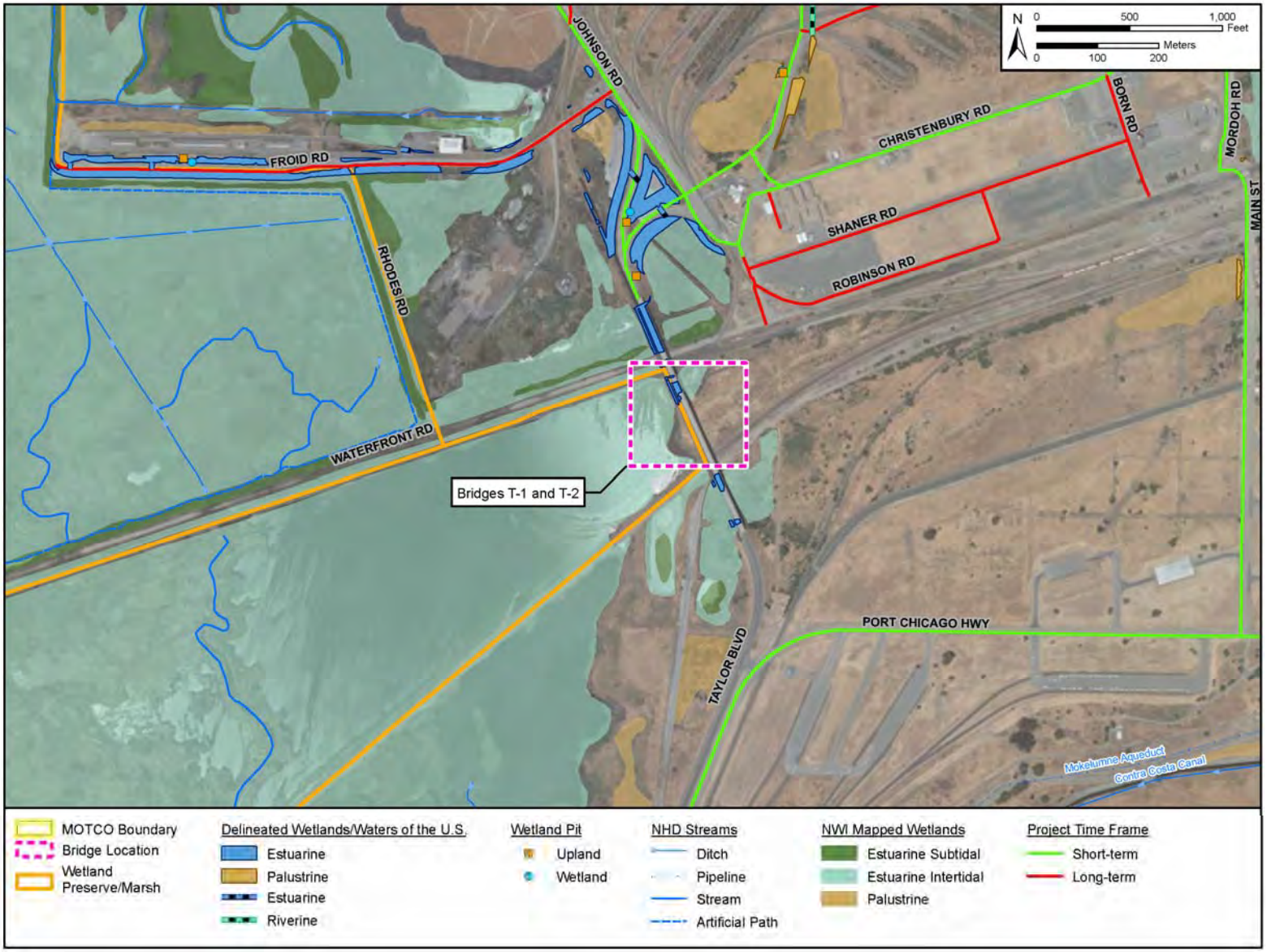

Figure 3.2-1. Potential and Delineated Wetlands (Insert 3)

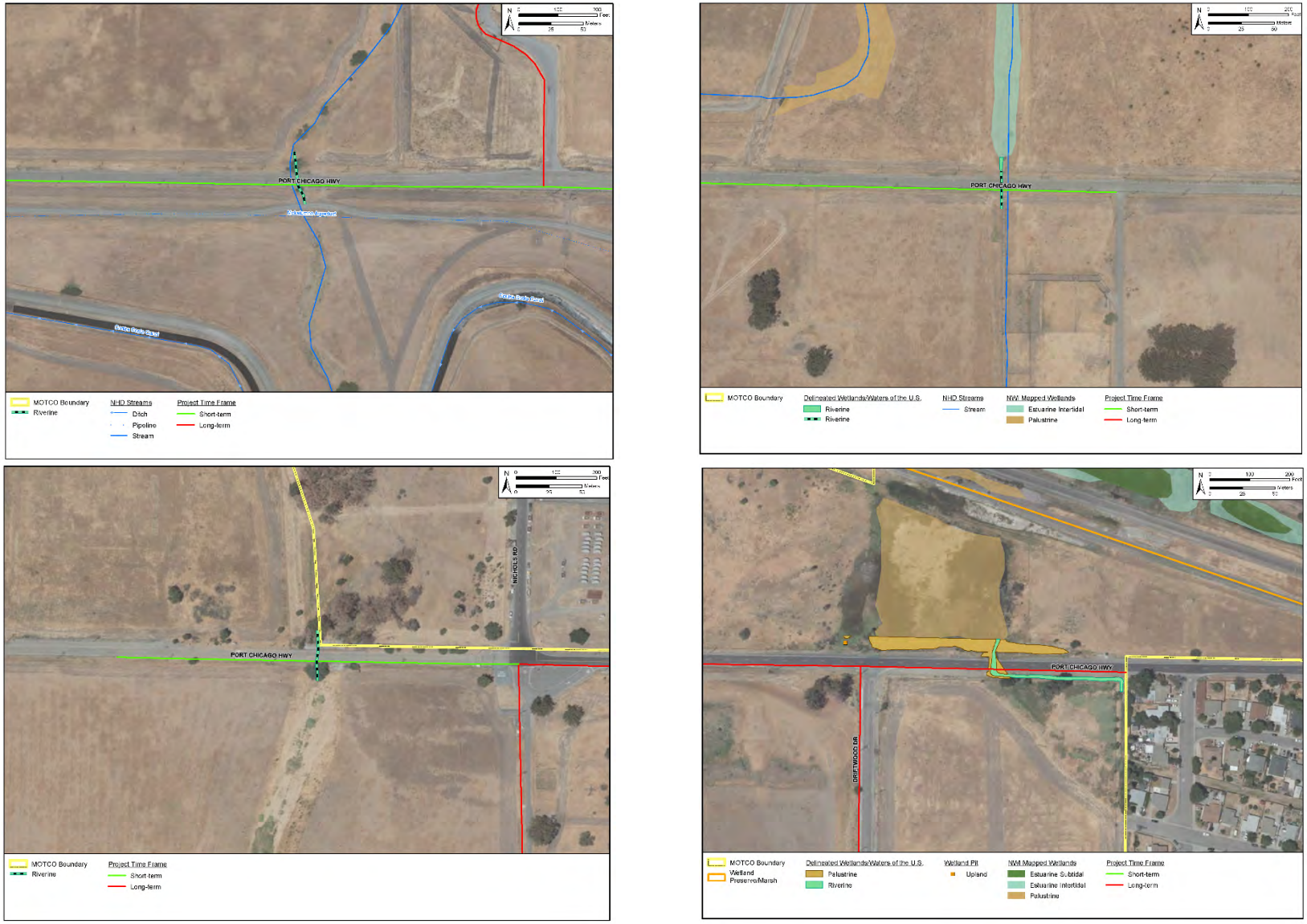

Figure 3.2-1. Potential and Delineated Wetlands (Inserts 4-7)

3.2.4 Floodplains

The 100-year floodplain represents those areas that could be inundated in the event of high flood water levels expected to occur once every 100 years from the combination of heavy rainfall, high tides, and storm surges. Development within the 100-year floodplain is constrained by regulatory requirements related to safety and environmental concerns. Executive Order (EO) 11988, *Floodplain Management*, directs federal agencies to provide leadership in avoiding direct or indirect development of floodplains, as well as to restore and preserve the natural and beneficial values of floodplains. Engineering methods can be used to reduce potential impacts from development in floodplains; however, the engineering costs involved with development in floodplains are often prohibitive.

On January 30, 2015, the president signed EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, which amended EO 11988. EO 11988 was issued in 1977. Once implemented by federal agencies, the Federal Flood Risk Management Standard is intended to reduce the risk and cost of future flood disasters by ensuring that federal investments in and affecting floodplains are constructed to better withstand the impacts of flooding. Neither DOD nor Department of the Army have updated their regulations and procedures to incorporate the amendments from EO 13690. The Army must comply with EO 11988 until DOD/Department of the Army update their regulations and procedures to incorporate the amendments from EO 13690, which is not expected prior to the finalization of this EA.

The 100-year floodplain for MOTCO based on the Flood Insurance Rate Map for MOTCO, which was updated for MOTCO in September 2015, is depicted in **Figure 3.2-2**. Also depicted is the engineering-level floodplain elevation being used for the Pier 2 modernization project, which is included for reference. As shown in Figure 3.2-2, elements of the proposed action occur within the 100-year floodplain.

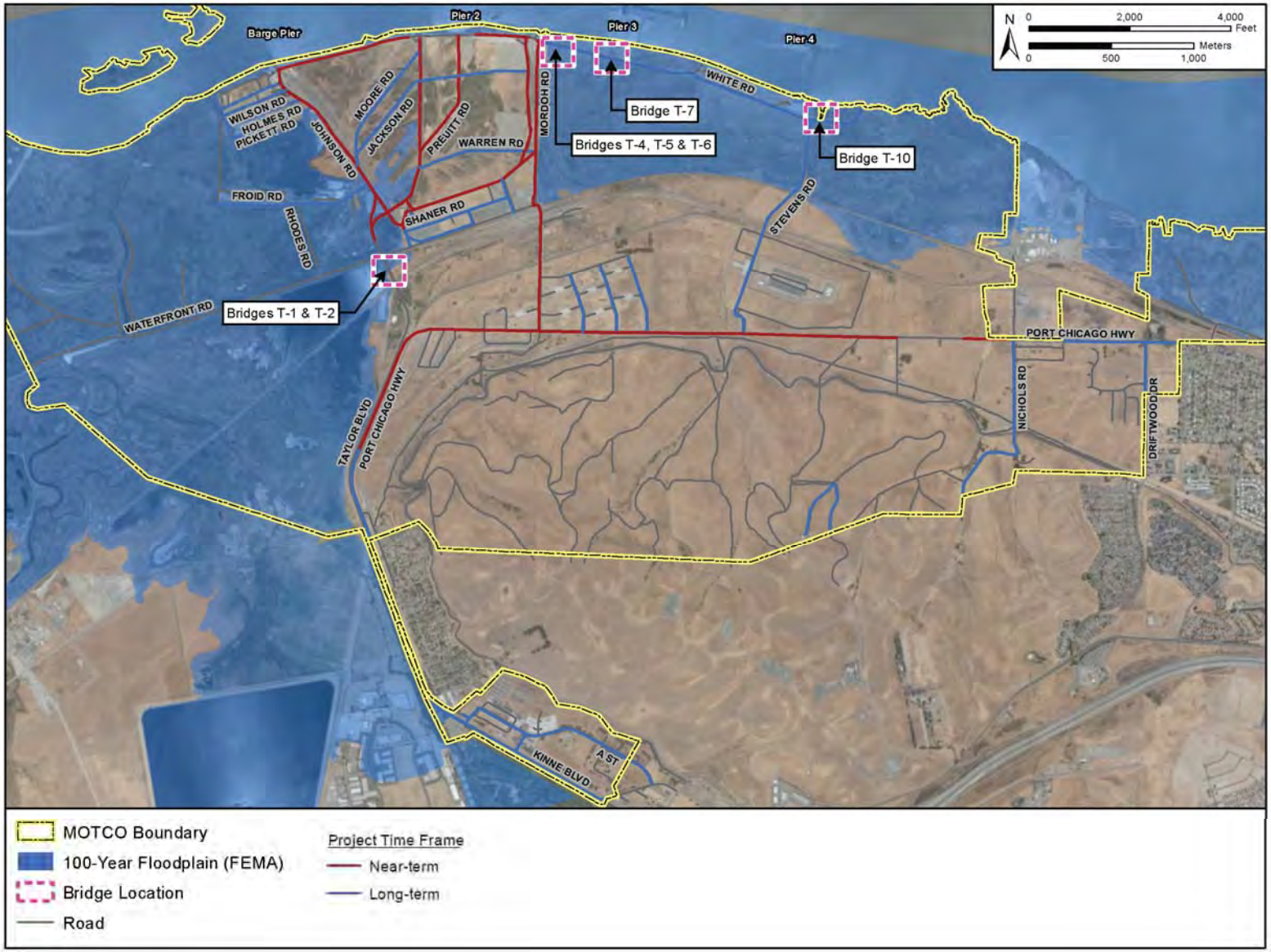

Figure 3.2-2. 100-Year Floodplain

3.3 AIR QUALITY

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern related to the health and welfare of the general public and the environment. Widespread across the U.S., the primary pollutants of concern are called "criteria pollutants" and include carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than or equal to 10 microns aerodynamic diameter (PM_{10}), particulate matter less than or equal to 2.5 microns aerodynamic diameter ($PM_{2.5}$), and lead. Under the CAA, the USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for these pollutants. These standards represent the maximum allowable atmospheric concentrations that may occur to protect public health and welfare with a reasonable margin of safety. Short-term standards (1-, 3-, 8-, and 24-hour periods) are established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) are established for pollutants contributing to chronic health effects.

States may also establish their own ambient air quality standards that are more stringent than those set by federal law. The California Health and Safety Code, Section 39606, authorizes the California Air Resources Board (CARB) to set ambient air pollution standards in consideration of public health, safety, and welfare. The Board makes area designations for 10 pollutants: O3, suspended particulate matter (PM10 and PM2.5), CO, NO2, SO2, sulfates, lead, hydrogen sulfide, and visibility reducing particles. **Table 3.3-1** lists the ambient air quality standards enforced by the USEPA and CARB and the air quality status for these standards within the Bay Area Air Quality Management District (BAAQMD).

California maintains ambient air quality standards for vinyl chloride, sulfates, and hydrogen sulfide. Because none of these are expected to be emitted as a result of the proposed action, they are not carried forward in the analysis. Additionally, airborne emissions of lead are not addressed in this EA because there are no known significant lead emission sources associated with the proposed action.

In addition to the ambient air quality standards for criteria pollutants, regulations exist for hazardous air pollutants (HAPs). The National Emission Standards for Hazardous Air Pollutants (NESHAP) regulates HAPs based on available control technologies (40 CFR Parts 61 and 63). HAPs include compounds such as benzene, which is found in gasoline; the majority of HAPs are volatile organic compounds (VOCs).

Table 3.3-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]	
		Concentration	Attainment Status	Concentration[3]	Attainment Status
Ozone (O_3)	8 hour	0.070 ppm	N	0.070 ppm	N[4]
	1 hour	0.09 ppm	N	-	-
Carbon Monoxide (CO)	8 hour	9.0 ppm	A	9 ppm	A[5]
	1 hour	20 ppm	A	35 ppm	A
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	A	100 ppb6	U
	Annual arithmetic mean	0.030 ppm	A	53 ppb	A
Sulfur Dioxide (SO_2)	24 hour	0.04 ppm	A		
	1 hour	0.25 ppm	A	0.075 ppb	A
	3 hour	-	-	0.5 ppm	A
Particulate Matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	N	-	-
	24 hour	50 µg/m^3	N	150 µg/m^3	U
Particulate Matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	N	12 µg/m3 – Primary 15 µg/m3 – Secondary	A
	24 hour	-	-	35 µg/m3	N[7]
Lead[9]	30 day average	1.5 µg/m3	A	-	A
	Rolling 3 month average	-	-	0.15 µg/m3	A
Sulfates	24 hour	25 µg/m3	A	-	-
Hydrogen Sulfide	1 hour	0.03 ppm	U	-	-
Vinyl Chloride[8]	24 hour	0.010 ppm	No information available	-	-
Visibility Reducing Particles	8 hour (1000 to 1800 Pacific Standard Time	See footnote 10	U	-	-

A=Attainment, N=Nonattainment, U=Unclassified, ppm = parts per million, ppb = parts per billion, µg/m^3 = micrograms per cubic meter

Notes:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 parts per million (ppm), a level one-half the national standard and two-thirds the state standard.
2. National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations

is 0.070 ppm (70 parts per billion [ppb]) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 microgram per cubic meter (µg/m^3).The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m^3.
Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.

3. National air quality standards are set by USEPA at levels determined to be protective of public health with an adequate margin of safety.
4. Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
5. In April 1998, the Bay Area was redesignated to attainment (as a maintenance area) for the national 8-hour carbon monoxide standard.
6. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010)
7. USEPA lowered the 24-hour PM2.5 standard from 65 µg/m3 to 35 µg/m3 in 2006. USEPA designated the Bay Area as nonattainment of the PM2.5 standard on October 8, 2009. The effective date of the designation is December 14, 2009 and the Air District has three years to develop State Implementation Plan (SIP) that demonstrates the Bay Area will achieve the revised standard by December 14, 2014. The SIP for the new PM2.5 standard must be submitted to the USEPA by December 14, 2012.
8. CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure below which there are no adverse health effects determined.
9. Statewide visibility-reducing particles (VRP) Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Hazardous air pollutants emitted from mobile sources are called Mobile Source Air Toxics (MSATs). These are compounds emitted from highway vehicles and non-road equipment that are known or suspected to cause cancer or other serious health and environmental effects. In 2001, USEPA issued its first MSATs Rule, which identified 21 compounds as being HAPs that required regulation (USEPA 2001). A subset of six of these MSAT compounds were identified as having the greatest influence on health: benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter (DPM). USEPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented (USEPA 2007).

Additionally, on July 26, 2007, CARB adopted a regulation to reduce HAPs such as DPM and oxides of nitrogen (NO_x) emissions from in-use off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The Off-Road regulation imposes idling limits and requires fleets to reduce their emissions over time by retiring, replacing, or repowering older engines or installing exhaust retrofits. The compliance deadlines for upgrading or replacing older fleet vehicles ranges depending upon fleet size, but will affect most fleets to some extent by 2019. All fleet vehicles in California are required to have Tier 2 engines (to reduce emissions), at a minimum, by 2029.

Construction equipment operating as a result of the proposed action would be operated intermittently over a large area and would produce negligible ambient HAPs in a localized area

that is not located near any publicly accessible areas. For these reasons, HAPs are not further evaluated in this EA.

Based on measured ambient criteria pollutant data, the USEPA designates all areas of the U.S. as having air quality better than the NAAQS (attainment), worse than the NAAQS (nonattainment), or unclassifiable (40 CFR Part 81, Subpart C, Section 107). The CAA requires each state to develop a State Implementation Plan (SIP) that is its primary mechanism for ensuring that the NAAQS are achieved and maintained within that state. According to plans outlined in the SIP, designated state and local agencies implement regulations to control sources of criteria pollutants. The CAA stipulates that federal actions in nonattainment and maintenance areas will not hinder future attainment with the NAAQS and must conform to the applicable SIP (i.e., California SIP).

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. MOTCO is located in Contra Costa County and, therefore, falls under the jurisdiction of the BAAQMD. The Air Basin is designated as a federal attainment area for PM_{10}, SO_2, and lead standards; a marginal federal nonattainment area for the O_3 standard; and a federal nonattainment area for 24-hour $PM_{2.5}$. The Basin was designated attainment for CO in 1998 and remains a maintenance area until 2018. The Air Basin is also designated as a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$.

The most recent BAAQMD ozone plan prepared in response to federal air quality planning requirements is the 2001 Ozone Attainment Plan.

To fulfill federal air quality planning requirements for $PM_{2.5}$, the BAAQMD's Board of Directors adopted a $PM_{2.5}$ emissions inventory for year 2010 at a public hearing on November 7, 2012. The BAAQMD transmitted the inventory to the CARB for inclusion in the California SIP.

Currently, the BAAQMD is partnered with the Association of Bay Area Governments, the Bay Conservation and Development Commission, and the Metropolitan Transportation Commission to produce the 2016 Clean Air Plan/Regional Climate Protection Strategy to serve as a roadmap for air pollution and greenhouse gas (GHG) reductions in the Bay Area.

3.3.1 Conformity Requirements

The General Conformity rule prohibits any federal action that does not conform to the applicable air quality attainment plan or SIP and applies to areas designated as nonattainment or maintenance for NAAQS. Therefore, the purpose of conformity is to ensure federal activities do not interfere with the budgets in the SIP.

Some emissions are excluded from conformity determination, such as those already subject to new source review (NSR); those covered by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (42 USC Section 9601 *et seq.*) or other

environmental laws; emissions associated with actions that are not reasonably foreseeable; and those for which the agency has no continuing program responsibility. A project is exempt from the conformity rule if the total direct and indirect project-related emissions is less than the *de minimis* thresholds established by the conformity rule. A project that produces emissions that exceed conformity thresholds is required to demonstrate conformity with the SIP through mitigation, application of offsets, or other accepted practices.

The proposed action would be located in the BAAQMD and the general conformity requirements apply to the ozone precursors VOCs and NO_x, CO and $PM_{2.5}$, and SO_2, which is considered a $PM_{2.5}$ precursor. In accordance with the air conformity requirements of 40 CFR Section 93.153(b)(1), the applicable *de minimis* levels are presented in **Table 3.3-2**.

Table 3.3-2. General Conformity de Minimis Thresholds (tons/year)

	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Applicable de minimis Thresholds	100	[1]NA	100	[2]100	NA	100

Notes:

1. CO is not included because the BAAQMD will cease to be designated a maintenance area for CO in 2018, which is before any project activities would begin.
2. SO_2 is included as a potential precursor for $PM_{2.5}$ formation.

The air quality analysis for this EA refers exclusively to regulatory requirements and air quality impacts in BAAQMD as the assumption is made that all project-related vehicles and equipment would stay within this district while performing project-related work.

3.3.2 Greenhouse Gases

GHGs are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

USEPA issued the *Final Mandatory Reporting of Greenhouse Gases Rule* on October 30, 2009 (USEPA 2009). In general, the rule is referred to as 40 CFR Part 98 or "Part 98." Implementation of Part 98 is referred to as the Greenhouse Gas Reporting Program. GHGs covered under the Greenhouse Gas Reporting Program are CO_2, methane, nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers. Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to carbon dioxide (CO_2), which has a value of one. For example, methane has a GWP of 25, which means that it has a global warming effect 25 times greater than CO_2 on an equal-mass basis. The equivalent CO_2 rate (CO_2e) is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs. Under the Greenhouse Gas Reporting Program, suppliers of fossil fuels or industrial GHGs, manufacturers of mobile sources and

engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions as CO_2e are required to submit annual reports to USEPA.

On a national scale, federal agencies are addressing emissions of GHGs. Most recently, the goal of EO 13693, *Planning for Federal Sustainability in the Next Decade,* issued on March 19, 2015, is to maintain federal leadership in sustainability and GHG emission reductions. As noted in EO 13693, through a combination of more efficient federal operations, agency direct GHG emissions can be reduced by at least 40 percent over the next decade while fostering innovation, reducing spending, and strengthening the communities in which federal facilities operate.

The California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020. The *Climate Change Scoping Plan* is California's strategy to reach the required GHG reduction goals. This plan calls for reducing the current annual emissions of 14 tons of CO_2 for every resident in California down to about 10 tons per person by 2020. The Scoping Plan identifies a cap-and-trade program as one of the strategies California will employ to reduce the GHG emissions that cause climate change. On October 20, 2011, the Board adopted the final cap-and-trade regulation and Resolution 11-32. Under cap-and-trade, an overall limit on GHG emissions from capped sectors will be established by the cap-and-trade program and facilities subject to the cap will be able to trade permits (allowances) to emit GHGs.

In an effort to reduce energy consumption, GHGs, and dependence on petroleum and increase the use of renewable energy resources in accordance with the goals set by EO 13693 and the Energy Policy Act of 2005, the Army published the *Army Energy Security Implementation Strategy* in 2009 with the following goals:

- Reduce energy consumption,
- Increase energy efficiency across platforms and facilities,
- Increase use of renewable/alternative energy supplies,
- Assure access to sufficient energy supplies, and
- Reduce adverse impacts on the environment.

GHG emissions occur locally, but GHG impacts are both global and cumulative. Therefore, GHG emissions for the baseline and the proposed action have been calculated and are presented and assessed in Chapter 5, *Cumulative Impacts*.

3.3.3 Permitted Stationary Sources

MOTCO maintains a permit, B2769, issued by BAAQMD, for the operation of stationary sources of air emissions. The permit covers nine permitted emergency generators and three exempt sources (a propane engine emergency generator, a fixed fuel storage tank, and a piece of woodworking equipment) (BAAQMD 2015).

3.4 BIOLOGICAL RESOURCES

Biological resources include native or naturalized plants and animals and the habitats in which they occur. This section is focused on biological resources within the immediate area of potential direct and indirect effects, to include a 50-foot buffer on either side of the roads proposed for repair as well as adjacent to bridges, and larger areas of potential indirect effects adjacent to or up- and downstream of repair locations. Biological resources discussed include habitats (Section 3.4.1), flora (Section 3.4.2), fauna (Section 3.4.3), and special status species (Section 3.4.4).

3.4.1 Habitats

MOTCO is located on the south side of Suisun Bay, which comprises the eastern, upstream portion of San Francisco Bay and the western extent of the Sacramento-San Joaquin Delta. Suisun Bay represents the central, brackish-transition zone of the largest estuary, and contains the largest continuous area of brackish wetlands found in the Western United States. Habitat types are defined by the San Francisco Estuary Institute EcoAtlas Baylands Mapping Project (California Wetlands Monitoring Workgroup 2013) and associated species existing within the project area are discussed below. The habitat mapping is based on detailed vegetative mapping of the Tidal Area conducted in 2010 and re-validated in 2015 (HT Harvey and Associates 2011, 2015) (**Figure 3.4-1**). Special status species are discussed in Section 3.4.4.

The majority of the project road repairs would occur within developed/disturbed areas on MOTCO, which support mostly non-native vegetation including areas of highly invasive, non-native ice plant (*Carpobrotus edulis*).

Brackish tidal marsh areas in the project area occur as follows:

- near-term projects: along the eastern portion of White Road and Bridges T-4, T-5, T-6, T-7, and T-10; the Rinquist Road realignment area; and underlying and at the base of Bridges T-1 and T-2
- long-term projects: along the northern portion of Stevens Road and Fields Road, Wilson Road, Holmes Road, Pickett Road, Miller Road, and Froid Road west of Johnson Road.

These brackish tidal marshes either front Suisun Bay or are connected to it by sloughs, channels, and ditches. These areas are subject to regular daily or monthly tidal action, but to an extent that is lessened where tidal circulation that has been constricted, impeded, or diverted relative to historic conditions. The distribution of tidal marsh plants is strongly influenced by the frequency and duration of inundation. As a result, plant communities change along elevational gradients, and distinct low-, mid-, and high-marsh habitats can be recognized at MOTCO.

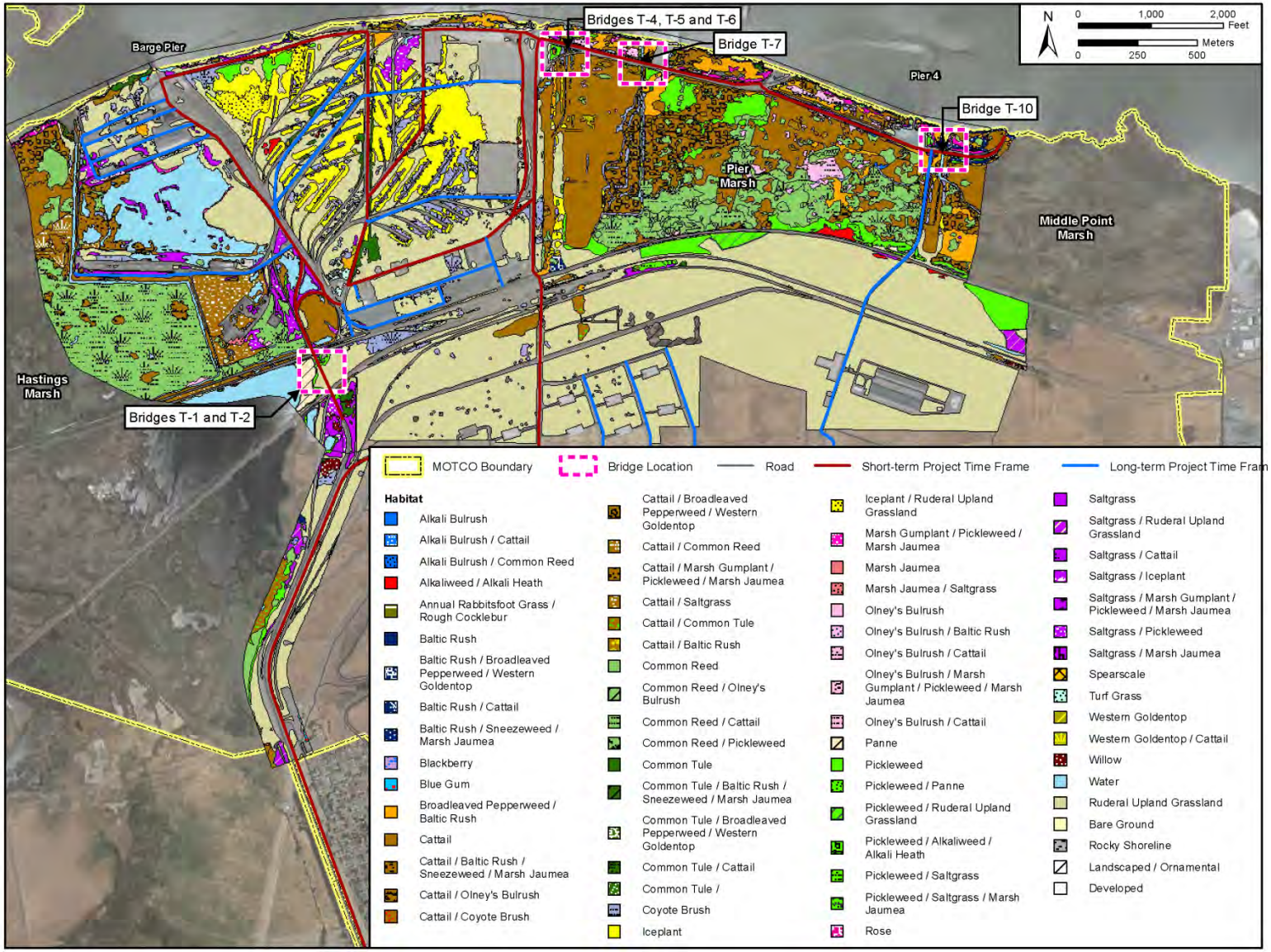

Figure 3.4-1. Habitats

The tidal marshlands at MOTCO are a mosaic of marsh vegetation and bodies of water including tidal sloughs, channels, ponds, and man-made ditches, all of which function as a circulatory system for water, oxygen, sediment and nutrient transport, and as pathways for the movement of fish and aquatic wildlife. The interface between marsh vegetation and water throughout the marshes provides a structurally complex and productive habitat that is used for nesting, foraging, nursery, and refuge by a variety of fish and wildlife. These channels are relatively wide, deep, and open and, within the project area, include the sloughs crossed by Bridges T-4, T-5, T-6, T-7, and T-10.

In the past, linear ditches were excavated across the Tidal Area for drainage and agricultural use, resulting in a series of parallel or intersecting ditches that crisscross the historic marsh plain. In these areas, the natural tidal channels were largely obliterated as soils were excavated and mounded along the banks of the ditches. The linear stands of upland (often weedy) vegetation established on the banks of the ditches fragment the native marsh habitat. Benthic invertebrate communities in slough channels are similar to those found in the shallow subtidal habitat described above, although species abundance is much lower (NMFS 2007). There has been an effort in recent times to fill in these ditches and restore the natural wetlands. While the primary purpose of these actions was to address past environmental contamination issues, the secondary benefit is that the wetlands have been restored by the filling of more than 90 percent of these ditches (Personal communication, G. Romine, 2016).

All aquatic habitats in the project area are brackish or saline (USACE 2011). Within the project area, patches of non-tidal brackish/saline marsh occur in areas that are not well drained such as along Anderson Road. Non-tidal brackish marsh is highly variable and often includes alkali heath, saltgrass, pickleweed, cattails, alkali and three-square bulrush, creeping spikerush, heliotrope (*Heliotropum currasavicum*), and Italian ryegrass (*Lolium multiflorum*).

3.4.2 Flora

The vegetation in the project area is dominated by ruderal grassland with areas of the indirect effect area vegetated with regionally common tidal brackish marsh species including Baltic rush (the *Juncus balticus-lesueurii* complex), pickleweed (*Salicornia virginica*), California bulrushes (*Scirpus californicus*), Hardstem tules (*Scirpus acutus*), cattail (*Typha* spp.), and common reed (*Phragmites australis*), as well as the invasive perennial pepperweed (*Lepidium latifolium*). The low-tidal brackish marsh fringe is discussed further under Special Status Species. The inland areas west of Mordoh Road consist largely of fill and comprises developed/disturbed areas, extensive mats of the invasive iceplant and ruderal (weedy) upland grasses, and a fairly large stand of saltgrass – a native wetland plant which is indicative of saline soils. The inland areas east of Mordoh Road are primarily native soil supporting muted tidal brackish marsh dominated by cattail, bulrush, and pickleweed (USACE 2011).

3.4.3 Fauna

3.4.3.1 Invertebrates

Studies specific to Suisun Bay have revealed species assemblages of small infauna and epifauna broken down by locations including channels, channel edges, shallow subtidal, and slough channels. The channels are dominated by the bivalves *Corbula amurensis* and *Corbicula fluminea*, the polychaetes *Marenzellaria viridis* and *Heteromastus filiformis*, and the surface-dwelling cumacean (small crustacean) *Nippoleucon hinumensis*. Channel edges house a greater species diversity and abundance, with the dominant species being those mentioned above for the channel areas, with the addition of the deposit feeding isopod, *Synidotea laevidorsalis*, and the non-native filter feeding barnacle, *Balanus improvisus*. In shallow subtidal areas, the dominant species include the bivalve *C. amurensis*, the polychaete *M. viridis*, and an amphipod species, *Monocorophium alienense*. In the slough channels, the benthic invertebrate communities are similar to those found in the shallow subtidal habitat described above, although species abundance is much lower (NMFS 2007).

3.4.3.2 Fish and Essential Fish Habitat

Common bony fish species in Suisun Bay include various smelt species, gobies, small fish such as herring and anchovy, white sturgeon, flatfish, and perches.

Designated EFH for various species occurs in the project area. Special status fish species presumed to occur in the project area are described in Section 3.4.4, below, and include the green sturgeon (*Acipensir medirostris*), steelhead (*Oncorhynchus mykiss irideus* and *Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*) (comprising four distinct races), delta smelt (*Hypomesus transpacificus*), Longfin smelt (*Spirinchus thaleichthys*), and Sacramento splittail (*Pogonichthys macrolepidotus*).

The Pacific Fishery Management Council has designated EFH for each of the four primary fisheries that they manage within their Fisheries Management Plans (FMPs). Three of these (Pacific Coast Groundfish, Pacific Coast Salmon, and Coastal Pelagic) contain species for which EFH has been designated within Suisun Bay. EFH species covered by the respective FMPs that are likely to occur in the project area are listed in **Table 3.4-1**.

Table 3.4-1. Fish Species with Designated EFH that Are Expected to Occur in Suisun Bay and the Project Area

Common Name	Scientific Name	Life Stage in Area[1]
Pacific Coast Groundfish Species		
Brown rockfish	*Sebastes auriculatus*	J
English sole	*Parophrys vetulus*	A, J, L
Starry flounder	*Platichthys stellatus*	A, E, J
Coastal Pelagic Species		
Northern anchovy	*Engraulis mordax*	A, L, E
Pacific Coast Salmon Species		
Chinook salmon	*Oncorhynchus tshawytscha*	A, J

Sources: Pacific Fishery Management Council 1998, 2005, 2011a, b, 2012; NMFS 2013a
Note: *[1] A = Adult, J = Juvenile, L = Larvae, E = Eggs.*

MOTCO is also within an area designated as Habitat Area of Particular Concern (HAPC) for various federally managed fish species within the Pacific Coast Groundfish FMP. HAPCs are subsets of EFH that provide extremely important ecological functions or are especially vulnerable to degradation based on one or more of the following reasons: 1) importance of the ecological function provided by the habitat; 2) the extent to which the habitat is sensitive to human-induced environmental degradation; 3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and 4) rarity of the habitat type (National Oceanic and Atmospheric Administration [NOAA] 2004).

3.4.3.3 Reptiles and Amphibians

There are 10 amphibian and 22 reptilian species known or likely to occur on MOTCO (USACE 2011). Of these, the northwestern pond turtle (*Actnemys m. marmorata*), a California Department of Fish and Wildlife (CDFW) species of concern; American bullfrog (*Rana catesbeiana*); Pacific chorus frog (*Pseudacris regilla*); valley garter snake (*Thamnophis sirtalis fitchi*); red-sided garter snake (*Thamnophis sirtalis infernalis*); Pacific gopher snake (*Pituophis catenifer catenifer*); California kingsnake (*Lampropeltis getula californiae*); Pacific ringneck snake (*Diadophis punctatus amabilis*); sharptail snake (*Contia tenuis*); California alligator lizard (*Elgaria multicarinata multicarnata*); coast garter snake (*Contia tenuis terrestris*); and the coast range fence lizard (*Sceloporus occidentalis bocourtii*) are known or likely to occur in the project area, although occurrence of some species is uncertain. Species observed only within the Tidal Area during installation-wide surveys are valley garter snake, ringneck snake, and California red-sided garter snake (Morrison et al. 1999). Targeted surveys for California red-legged frog and California tiger salamander have been conducted within the MOTCO Tidal Area during 2014, 2015, and 2016, but neither of these species has been detected (USFWS 2016).

3.4.3.4 Birds

The MOTCO INRMP (USACE 2011) lists 160 bird species known or likely to occur at MOTCO, including a large number of shorebird and waterfowl species, as well as raptors and songbirds. Water- and wetland-associated species are especially numerous and are to be expected in the project area. Birds of Conservation Concern (USFWS 2008) that are on the INRMP list and are

known or likely in the project area include peregrine falcon (*Falco peregrinus*), black rail (*Laterallus jamaicensis*), long-billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), yellow warbler (*Dendroica petechia*), common yellowthroat, Suisun song sparrow, and tricolored blackbird (*Agelaius tricolor*). All migratory birds found on MOTCO are protected by the Migratory Bird Treaty Act (MBTA) and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

3.4.3.5 Mammals

There are 40 mammal species that have been observed or are considered to potentially occur at MOTCO (USACE 2011). Mammals most likely to occur within the project area vicinity include wide-ranging generalists and predators and a few that are specific to brackish marshes in the region. These include the following:

- Wide-ranging species: house mouse (*Mus musculus*), big brown bat (*Eptesicus fuscus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), brush rabbit (*Sylvilagus bachmani*), California ground squirrel (*Spermophilus beecheyi*), western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), Pinyon mouse (*Peromyscus truei*), Black-tailed jackrabbit (*Lepus californicus*), California vole, Norway rat (*Rattus norvegicus*), coyote (*Canis latrans*), red fox (*Vulpes fulva*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), long-tailed weasel (*Mustela frenata*), badger (*Taxidea taxus*), western spotted skunk (*Spilogale gracilis*), striped skunk (*Mephitis mephitis*), river otter (*Lutra canadensis*), and mule deer (*Odocoileus hemionus*).
- Brackish marsh species: salt marsh wandering shrew (*Sorex vagrans halicoites*) and Suisun shrew (*Sorex ornatus sinuosus*).

3.4.3.6 Special Status Species

For the purposes of this EA, special status species include species that are federally listed as threatened or endangered, or considered a candidate species by USFWS or NMFS under the ESA. Special status species also include species protected under the Bald and Golden Eagle Protection Act or the Marine Mammal Protection Act; species listed as threatened or endangered by the State of California, for which CDFW (formerly the California Department of Fish and Game) is the responsible agency, under the California Endangered Species Act or Native Plant Protection Act; and other species of concern. The emphasis of the analysis is on federally listed species. The listing of federal and/or state listed threatened or endangered species and other state or federal species of concern is provided in **Table 3.4-2** along with information regarding their potential occurrence in the action area (as in the species has been located, there has been a verified sighting, or the species is known or assumed to be present based on what is known about the foraging area or home range size of the species).

Table 3.4-2. Special Status Species Potentially Occurring in the Action Area

Common Name	Scientific Name	Status* Federal/State/CNPS *Critical Habitat Present?*	Occurrence within Action Area	Responsible Agency	Habitat/Regional Occurrence
PLANTS					
Soft Bird's-beak	*Cordylanthus mollis ssp. mollis*	E / R / -1B	Adjacent	USFWS	Low and middle marsh zones and eroding banks of Delta tidal brackish marshes. Occurs in Middle Point Marsh and near White Road Bridge projects.
Delta Mudwort	*Limosella subulata*	-- / -- / 2B	Adjacent	CDFW	Mud banks of the Delta, usually in marsh associations with Mason's lilaeopsis.
Mason's Lilaeopsis	*Lilaeopsis masonii*	-- / R / 1B	Adjacent	CDFW	Exposed sediments, mud banks along Delta brackish-tidal shorelines. On base, found in Middle Point Marsh and along Suisun Bay shoreline.
Delta Tule Pea	*Lathyrus jepsonii ssp. jepsonii*	-- / -- / 1B	Adjacent	USFWS	Upper edges of fresh and brackish marshes and along streams and rivers of the Delta. On base, found seaward of White Road.
Suisun Marsh Aster	*Symphyotrichum lentum*	-- / -- / 1B	Adjacent	USFWS	High marsh zone of Delta freshwater and tidal brackish marshes, also along slough and creek banks. On base, found in Middle Point Marsh, Pier Marsh, Hastings Slough.
FISH					
Delta Smelt	*Hypomesus transpacificus*	T / -- / -- Suisun Bay Designated as Critical Habitat	Possible	USFWS	Larval, juvenile, and adult delta smelt may all be found in Suisun Bay, including the shallow edges and backwater sloughs.
Sacramento Splittail	*Pogonichthys macrolepidotus*	-- / SC / --	Possible	USFWS	Occurs in Suisun Bay, but prefers shallow water with low salinity (0-10 ppt).
Longfin Smelt	*Spirinchus thaleichthys*	C / T / --	Possible	USFWS	Larval and juvenile longfin smelt may be found in Suisun Bay.
Green Sturgeon	*Acipensir medirostris*	T / -- / -- Suisun Bay Designated Critical Habitat	Possible	NMFS	Suisun Bay supports juvenile, sub-adult, and adult Southern Distinct Population Segment fish, serving as important rearing habitat and an important migratory corridor from the San Pablo and San Francisco Bays to and from the Delta and Sacramento River system.

Table 3.4-2. Special Status Species Potentially Occurring in the Action Area

Common Name	Scientific Name	Status* Federal/State/CNPS *Critical Habitat Present?*	Occurrence within Action Area	Responsible Agency	Habitat/Regional Occurrence
Central Valley Steelhead	*Oncorhynchus mykiss irideus*	T / -- / --	Possible during migration	NMFS	An ocean-maturing species that migrates through Suisun Bay, primarily December-April, to spawn upstream.
Central California Coast Steelhead	*Oncorhynchus mykiss*	T / -- / --	Possible during migration	NMFS	An ocean-maturing species that migrates through Suisun Bay, primarily January-April, to spawn upstream.
Sacramento Chinook Salmon, Winter Run	*Oncorhynchus tshawytscha*	E / -- / -- Suisun Bay Designated as Critical Habitat	Possible during migration	NMFS	Adults migrate through Suisun Bay in December-July, with smolts returning downstream to the ocean within one year.
Central Valley Chinook Salmon, Spring Run	*Oncorhynchus tshawytscha*	T / -- / --	Possible during migration	NMFS	Adults migrate through Suisun Bay in March-July, with smolts returning downstream to the ocean within one year.
Central Valley Chinook Salmon, Fall Run	*Oncorhynchus tshawytscha*	SOC / -- / --	Possible during migration	NMFS	Adults migrate through Suisun Bay in June-December, with smolts returning downstream to the ocean within one year.
AMPHIBIANS					
California Red-legged Frog	*Rana aurora draytonii*	T/SC/-	Extremely unlikely	USFWS	Freshwater streams, ponds, associated marshes. Not known to occur in Contra Costa County north of Highway 4 or in the Tidal Area of MOTCO. Targeted surveys conducted in 2013-2014 and 2015-2016 seasons did not detect any red-legged frogs.
REPTILES					
Northwestern Pond Turtle	*Actinemys m. marmorata*	-- / SC / --	Unlikely	CDFW	Permanent or near-permanent freshwater ponds. Was found in Tidal Area on base in Otter Slough and Seal Creek Marsh.

Table 3.4-2. Special Status Species Potentially Occurring in the Action Area

Common Name	Scientific Name	Status* Federal/State/CNPS *Critical Habitat Present?*	Occurrence within Action Area	Responsible Agency	Habitat/Regional Occurrence
BIRDS					
California Ridgway's Rail (formerly the California Clapper Rail)	*Rallus obsoletus (formerly Rallus longirostris obsoletus)*	E / E / --	Extremely unlikely; limited potential habitat, no recent occurrences, and not detected in surveys	USFWS	Salt and brackish marshes. Rare in Suisun Bay. No occurrences were found within or adjacent to the project action area during 2010, 2014, 2015, or non-protocol 2013 survey.
California Black Rail	*Laterallus jamaicensis coturniculatus*	-- / T / --	Likely	CDFW	Low-lying salt marshes with abundant pickleweed. Found during 2010 and other surveys at numerous sites within Tidal Area.
California Least Tern	*Sternula antillarum browni*	E / E / --	Possible transient occurrence	USFWS	Colonial breeder on bare or sparsely vegetated sand beaches or alkali flats. Last observed on installation in 1982. Nesting colony ~10 mi up Delta in Montezuma Slough.
San Francisco Common Yellowthroat	*Geothlypis trichas sinuosa*	-- / SC / --	Likely	CDFW	Endemic to marshes bordering San Francisco Bay. Observed on base in numerous tidal marsh areas (2009).
Suisun Song Sparrow	*Melospiza melodia maxillaris*	-- / SC / --	Likely	USFWS	Endemic to marshes bordering San Francisco Bay. Observed on base in numerous tidal marsh areas (2009).
Loggerhead Shrike	*Lanius ludovicianus*	-- / SC / --	Likely	USFWS	Dry grasslands with scattered trees and shrubs. Observed on base at numerous locations within Tidal Area (2009).

Table 3.4-2. Special Status Species Potentially Occurring in the Action Area

Common Name	Scientific Name	Status* Federal/State/CNPS *Critical Habitat Present?*	Occurrence within Action Area	Responsible Agency	Habitat/Regional Occurrence
MAMMALS					
Salt Marsh Harvest Mouse	*Reithrodontomys raviventris*	E / E / --	Unlikely given limited extent of potential habitat	USFWS	Requires large pickleweed flats with adjoining refuge areas above the High Tide line. Based on 2010 survey data, there is an up to 30 percent probability for this species to occur on MOTCO, primarily in areas of Pier Marsh; occurrence in other marsh areas cannot be discounted, but regarded as very low potential.
Salt Marsh Wandering Shrew	*Sorex vagrans halicoetes*	-- / SC / --	Unlikely given limited extent of potential habitat	USFWS	Marsh upland (6-8 feet above MSL) pickleweed habitat, similar to the harvest mouse and California Ridgway's rail.

Sources: USACE 2011; HT Harvey and Associates 2011

Notes: * T = Threatened; E = Endangered; SOC = Species of Concern; R = Rare; SC = Special Concern; 1B = Plants that are considered by the California Native Plant Society (CNPS) as Rare, Threatened, or Endangered in California and elsewhere; and 2B = Plants that are considered by CNPS as Rare, Threatened, or Endangered in California but are more common elsewhere. The Species of Concern category does not apply at the federal level as it is an informal term and is not defined in the federal ESA.

Species occurrence data is based on special status surveys conducted in 2010, 2013, and 2015 for the MOTCO Tidal Area covering the area of potential effect analyzed in this EA (HT Harvey and Associates 2015, 2014, and 2011; Cardno TEC et al. 2013), as well as previous comprehensive survey efforts conducted in 1998 and 1999 (Downard et al. 1999), targeted and localized survey efforts conducted in association with interim environmental restoration projects and the INRMP (USACE 2011), and a California Natural Diversity Database (CNDDB) search (CNDDB 2013). Documented occurrences of federally listed special status plant and animal species within the project area are shown in **Figures 3.4-2** and **3.4-3**, respectively. Existing conditions for federally listed species are summarized below.

3.4.3.7 Federally Listed Plant Species

Soft Bird's Beak

Soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*) is listed by USFWS as endangered, and by the State of California as rare; it is also a California Native Plant Society (CNPS) list 1B.2 species, indicating it is rare, threatened, or endangered in California and elsewhere (CNPS 2013). Soft bird's-beak is a hemi-parasitic annual herb in the Orobanchaceae (broomrape) family. It grows in the coastal salt marshes and brackish marshes of San Pablo and Suisun Bays, in Solano, Contra Costa, Sonoma, and Marin counties.

Two small populations of this plant were observed at various locations within the Tidal Area during the University of Arizona surveys in 1998 and 1999 (Morrison et al. 1999), including populations in Middle Point Marsh and Hasting's Slough West Marsh. There were 14 occurrences (totaling approximately 2,600 individuals) observed in the MOTCO Tidal Area in 2010. Three occurrences, totaling over 450 individuals, were found near the eastern Pier 4 access way and Bridge T-10 at the eastern end of White Road. The remainder of occurrences was observed at the eastern end of Middle Point Marsh, well outside of the project area (HT Harvey and Associates 2011). The soft bird's beak survey area and survey results are shown on Figure 3.4-2.

The Tidal Area marshes were re-assessed in May 2013 and in May 2015 (Cardno TEC et al. 2013; HT Harvey and Associates 2015). For on-site reference locations, the areas along the Barge Pier, Pier 4, and other marsh areas along White Road were assessed. In addition, 2010, 2013, and recent aerial images were compared to identify whether disturbances or habitat changes occurred at the locations where rare plants had been reported in prior years. It was determined habitat conditions had not changed significantly since the 2010 surveys. During a site visit with MOTCO and USFWS personnel in January 2017, soft bird's beak was detected near one of the White Road Bridges (G. Romine, personal communication 2017). Therefore, with the possible exception of the White Road bridge projects, it is not likely soft bird's-beak occurs within the project action area.

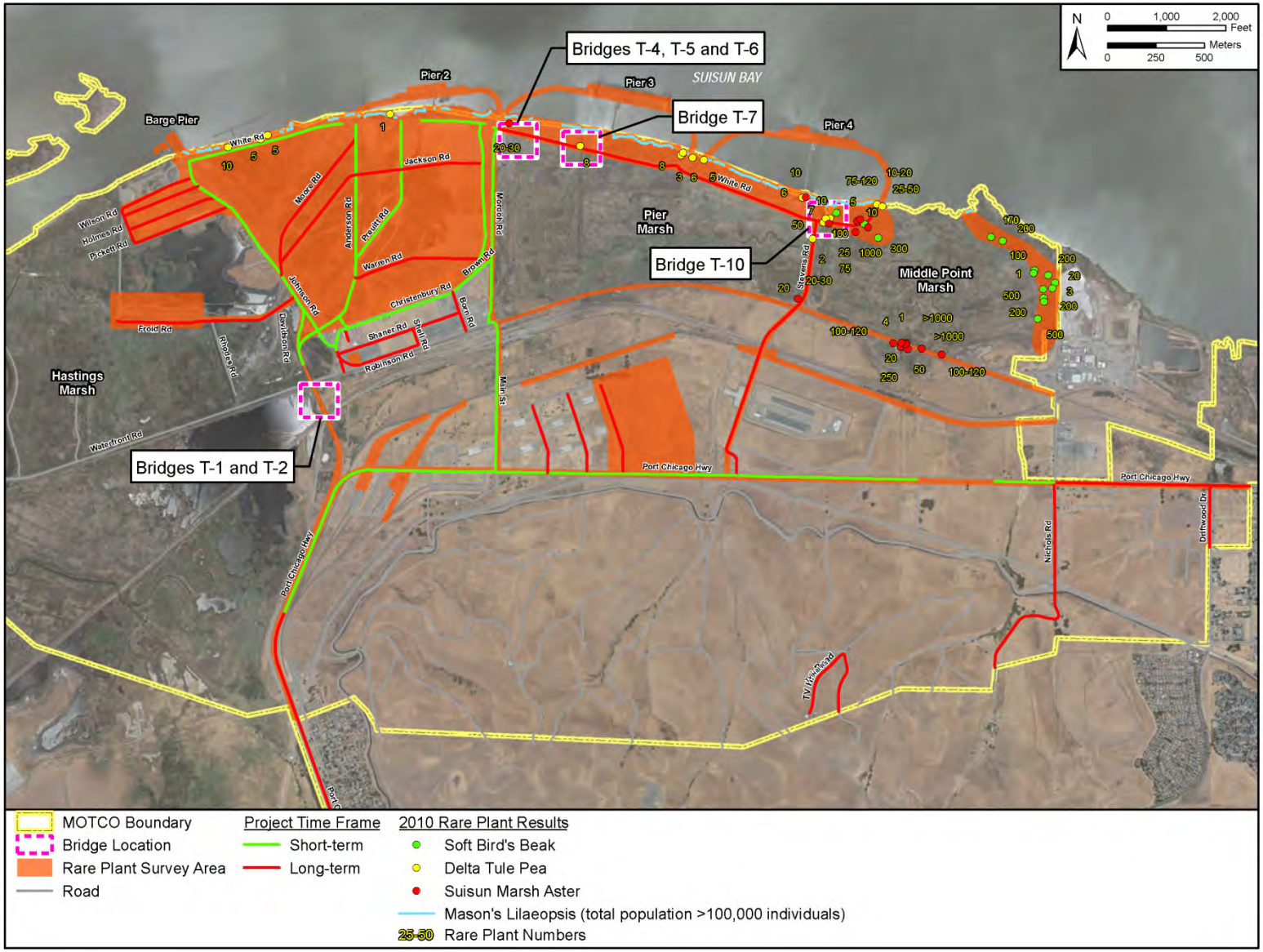

Figure 3.4-2. Rare Plant Survey Area and Survey Results

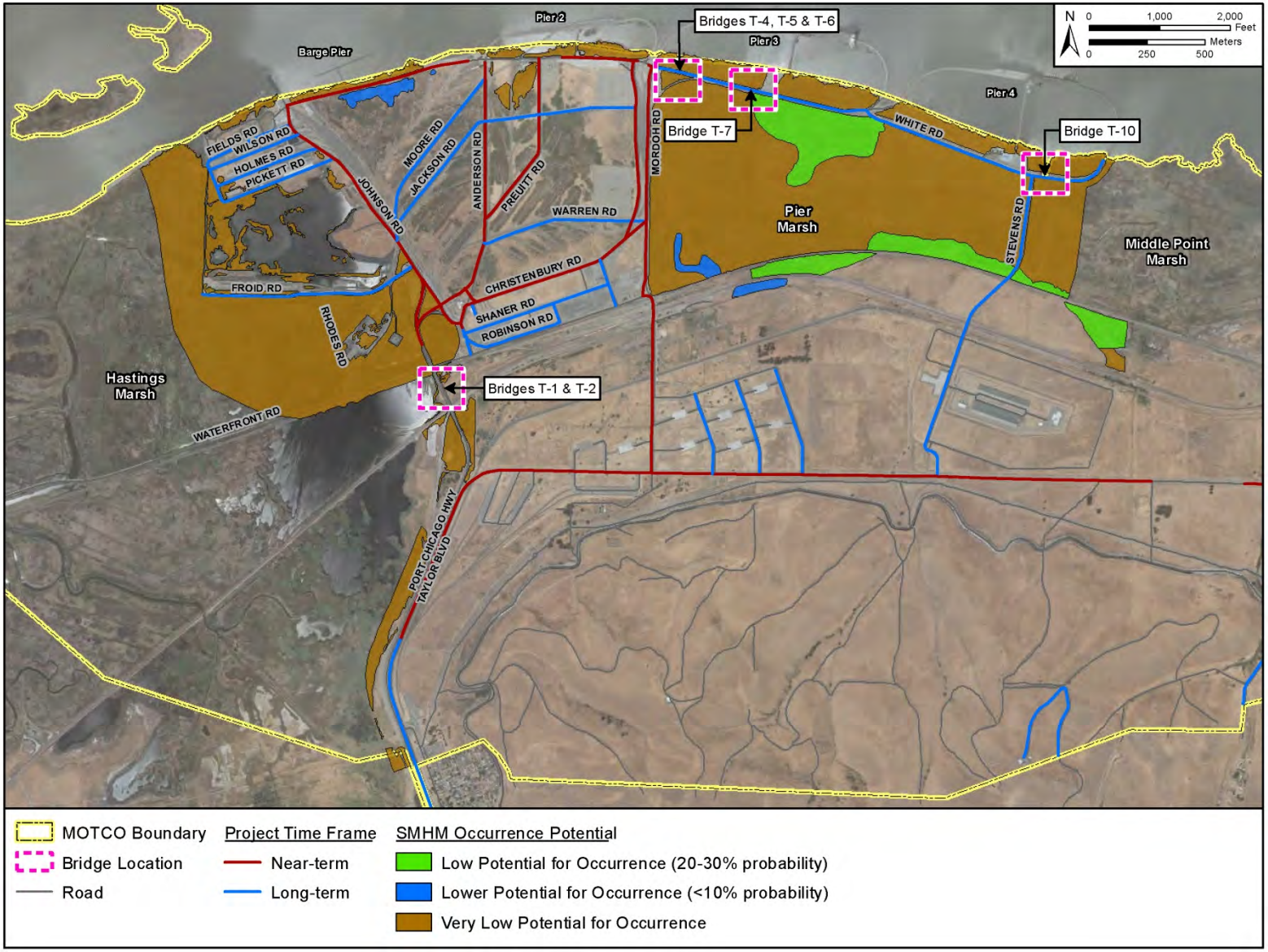

Figure 3.4-3. Salt Marsh Harvest Mouse Occurrence Potential

3.4.3.8 Federal Listed Fish Species

Chinook Salmon

Chinook salmon are anadromous fish, meaning they are born in freshwater and migrate out to the marine environment to grow into adults before returning to their natal streams to spawn. They are also semelparous, meaning they spawn only once and then die (Groot and Margolis 1991). Two ESA-listed Evolutionarily Significant Units (ESUs) of Chinook salmon occur within the project area. These include the Sacramento River winter-run Chinook salmon ESU and the Central Valley spring-run Chinook salmon ESU.

Sacramento River Winter-Run Chinook Salmon ESU. The Sacramento River winter-run Chinook salmon ESU was originally listed as threatened in 1989 under an emergency rule but then reclassified in 1994 as endangered (NMFS 2011). NMFS proposed to reclassify the ESU as threatened due to increasing run sizes, but a final ruling was issued in 2005 for the Sacramento River winter-run Chinook salmon ESU to remain under the status of endangered (NMFS 2005a). A 5-year review of the Sacramento River winter-run Chinook salmon ESU showed a drastic decline from 2006 based on carcass surveys conducted 2005 through 2010. The recommendation from NMFS was for this ESU to remain listed as an endangered species (NMFS 2011). Critical habitat was designated for the Sacramento River winter-run ESU on June 16, 1993. All waters of Suisun Bay (overlapping the project area), as well as areas upstream through the Delta and in the Sacramento River, downstream through the Carquinez Strait and San Pablo Bay to the Golden Gate Bridge, are included in the critical habitat designation (NMFS 1993). Sacramento River winter-run Chinook salmon could transit the nearshore waters adjacent to the project area during adult migration and juvenile rearing (**Table 3.4-3**).

Central Valley Spring-Run Chinook Salmon ESU. The Central Valley spring-run Chinook salmon ESU was listed as threatened by NMFS in 2005 (NMFS 2005a). The final critical habitat designations for the Central Valley spring-run Chinook salmon ESU excluded the entire San Joaquin Delta watershed and therefore critical habitat for this ESU is not present within or adjacent to the project area (NMFS 2005b). Central Valley spring-run Chinook salmon may be present within the nearshore waters of Suisun Bay adjacent to the project area during migration and rearing (Table 3.4-3).

Steelhead

Steelhead trout (like Chinook salmon and other Pacific salmonids) are anadromous. Unlike salmon, however, steelhead trout are iteroparious, meaning they can spawn more than one time (NMFS 2013b). Two ESA-listed Distinct Population Segments (DPSs) of steelhead trout occur within the project area. These include the Central Valley Steelhead DPS and the Central California Coast Steelhead DPS. Both DPSs are of the ocean-maturing type and are described in more detail below.

Table 3.4-3. Lifestage Timing and Distributions of Protected Fish Species Potentially Affected by the Proposed Action

Species/Life Stage	Distribution	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
ESA-Listed Salmonid Species (T/E)													
Chinook													
Sacramento River Winter-run ESU													
Adult Migration	San Francisco Bay to Sacramento River												
Spawning	Sacramento River - mainstem												
Juvenile Movement/rearing	Sacramento River through Delta												
Central Valley Spring-run ESU													
Migration (as immature fish)	San Francisco Bay to Sacramento River tributaries												
Immature Growth to Adults and Holding	Sacramento River tributaries												
Spawning	Upper Sacramento River and tributaries												
Juvenile Movement/rearing (yearlings)	Upper Sacramento River and tributaries to San Francisco Bay												
Steelhead													
Central Valley Steelhead DPS													
Adult Migration	Sacramento and San Joaquin River systems and tributaries												
Spawning	Sacramento and San Joaquin River systems and tributaries												
Juvenile rearing	Sacramento and San Joaquin River systems and tributaries												
Central California Coast Steelhead DPS													
Adult Migration	San Francisco Bay to San Pablo Bay and tributaries												
Spawning	San Francisco Bay tributaries												
Rearing	San Francisco Bay tributaries												
Other ESA-listed Fish Species													
North American Green Sturgeon Southern DPS													
Migration	San Francisco Bay to Sacramento River												
Spawning	Sacramento River												

Table 3.4-3. Lifestage Timing and Distributions of Protected Fish Species Potentially Affected by the Proposed Action

Species/Life Stage	Distribution	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Rearing	Rearing in Sacramento River and Estuarine waters (possibly Delta)												
Delta Smelt													
Adult migration	Low Salinity estuary to freshwater spawning sites												
Spawning	Possibly near Suisun Bay												
Larval movement	From spawning sites through Delta												
State Listed Species and Federally Listed Species of Concern													
Central Valley Fall and Late-fall Run Chinook ESU													
Adult Migration (fall-run)	San Francisco Bay into Sacramento and San Joaquin Rivers and tributaries												
Spawning (fall-run)	Sacramento-San Joaquin River systems and tributaries												
Juvenile Rearing (fall-run)	Sacramento-San Joaquin Rivers, tributaries, potential presence in Delta												
Adult Migration (late fall-run)	San Francisco Bay into Sacramento and San Joaquin Rivers and tributaries												
Spawning (late fall-run)	Sacramento-San Joaquin River systems and tributaries												
Juvenile Rearing (late fall-run)	Sacramento-San Joaquin Rivers, tributaries, potential presence in Delta												
Sacramento Splittail													
Adult Migration	San Francisco Estuary, Suisun Marsh, or Sacramento-San Joaquin Delta to upstream tributaries												
Spawning	Upstream tributaries												
Juvenile Rearing (year-round with increased juvenile presence spring and summer months)	In Delta and Marsh												

Sources: CDFW 2013a, b; NMFS 2005c, 2006a, 2011; Moyle 2002; USFWS 2010a, b
Notes: Grey shading indicates presence as indicated during that month; E-Endangered; T-Threatened

Central Valley Steelhead DPS. The Central Valley Steelhead DPS was listed by NMFS as threatened in 1998 with status reaffirmed in 2006. The DPS includes all naturally spawned anadromous steelhead populations below natural and man-made impassable barriers in the Sacramento and San Joaquin Rivers and their tributaries, excluding steelhead from San Francisco and San Pablo Bays and their tributaries. The DPS also includes fish spawned at the artificial propagation programs at the Coleman National Fish Hatchery and the Feather River Hatchery (NMFS 2006a). Critical habitat has not been designated for the Central Valley Steelhead DPS within or adjacent to the project area (NMFS 2005b). Small numbers of adult steelhead from this DPS may transit the nearshore waters of Suisun Bay adjacent to the project area during migration (see Table 3.4-3).

Central California Coast Steelhead DPS. The Central California Coast Steelhead DPS was listed by NMFS as threatened in 2006 (NMFS 2006a). The DPS includes all naturally spawned anadromous steelhead populations below natural and man-made impassable barriers in California streams from the Russian River (inclusive) to Aptos Creek (inclusive) and the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. It also includes tributary streams to Suisun Marsh including Suisun Creek, Green Valley Creek, and an unnamed tributary to Cordelia Slough (commonly referred to as Red Top Creek) (NMFS 2006a). Critical habitat has not been designated for the Central California Coast Steelhead DPS within or adjacent to the project area (NMFS 2005b). The Central California Coast Steelhead DPS is expected to occur infrequently in the nearshore waters of Suisun Bay adjacent to the project area due to the scarcity of suitable spawning habitat (Williams et al. 2011).

North American Green Sturgeon Southern DPS

The North American Green Sturgeon Southern DPS was listed by NMFS as threatened in April 2006 (NMFS 2006b). They are broadly distributed, ranging from Mexico to Alaska in marine waters and observed in bays and estuaries up and down the West Coast of North America (Moyle et al. 1995). Critical habitat was designated for this DPS with a portion of it including the Sacramento-San Joaquin Delta and Suisun, San Pablo, and San Francisco Bays (NMFS 2009). A status review has not been conducted on the green sturgeon since 2005. However, a notice of intent to conduct one was published in the Federal Register in 2012 (NMFS 2012). The 2005 review stated that the San Joaquin River and its tributaries have been heavily modified and that no green sturgeon has ever been documented in the San Joaquin River or its tributaries (NMFS 2005c). However, two adult green sturgeons were captured in the Delta in 2002. Juvenile, sub-adult, and adult green sturgeon may be present within the nearshore waters of Suisun Bay adjacent to the project area either rearing or passing by within the migration corridor between San Pablo and San Francisco Bays to the Delta and Sacramento River System (see Table 3.4-3).

Delta Smelt

Delta smelt was listed by USFWS as threatened in 1993 (USFWS 1993). Their historic distribution was from San Pablo Bay upstream to the city of Sacramento on the Sacramento River and Mossdale on the San Joaquin River. Critical habitat was designated for the delta smelt in 1994 and includes areas of all water and all submerged lands below the ordinary high water and the entire water column bounded by and contained in Suisun Bay (including contiguous Grizzly and Honker Bays); the length of Goodyear, Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma sloughs; and the existing contiguous waters contained within the Delta (USFWS 1994).

Although spawning has not been observed in the wild, spawning location and timing has been inferred from the collection of larvae in sloughs and shallow edge-waters of channels in the upper Delta and in Montezuma Slough near Suisun Bay (USFWS 2010a).

A 2010 5-year status review of delta smelt showed a continued decline from surveys conducted in 2002. Surveys conducted in 2009 were the lowest ever recorded (USFWS 2010a).

The 20-mm Survey and Smelt Larva Survey conducted by the CDFW and its regional partners (CDFW 2015) provide the best available data on the recent abundance and distribution of delta smelt. Review of the past 5 years (2011-2015) of data from these surveys indicates that the species' range has generally contracted eastward and upstream since 2011, which was the last time it was recorded in the waters offshore of Suisun Bay near MOTCO. During the past 3 years, delta smelt have only been found much farther east and/or upstream, primarily in the Sacramento River and to a lesser extent in Montezuma Slough, approximately 7 miles north and east of the project area. Although survey results from 2015 and early 2016 indicated the near-absence of delta smelt from Suisun Bay, the most recent data suggest that with the lessening of drought, in response to increased outflow and reduced salinities, delta smelt spawned upstream during the spring and that larvae subsequently moved downstream to Suisun Bay, making occurrence near MOTCO likely.

Dewatering of the East Marsh with use of temporary cofferdams as part of an environmental cleanup action included monitoring for fish species affected in accordance with the USFWS and NMFS Biological Opinions for this action. No delta smelt were identified during this monitoring effort (Personal communication, B. Wilcer, 2016).

3.4.3.9 Federally Listed Wildlife Species

California Ridgway's Rail

The California Ridgway's rail (*Rallus obsoletus obsoletus),* formerly known as the California clapper rail (*Rallus longirostris obsoletus*) was federally listed as endangered on 13 October 1970 and state listed as endangered on 27 June 1971 (CDFW 2013c). California Ridgway's rails live in salt water and brackish marshes and favor tidal sloughs and marsh channels

(USFWS 2012). Historically, the California Ridgway's rail has ranged from the tidal marshes of Humboldt Bay south to Morro Bay as well as within the estuarine marshes of the San Francisco Bay and San Pablo Bay (Solano County Water Agency 2012). California Ridgway's rails are now restricted almost entirely to the marshes of San Francisco estuary, where the only known breeding populations occur (USFWS 2010c).

California Ridgway's rails have previously been recorded at MOTCO, including in the vicinity of Pier 3, in Middle Point Marsh, in the vicinity of Otter Slough, and west of Taylor Bridge. In 1994, three pairs of California Ridgway's rails were reported in the west end of Pier Marsh near Belloma Slough; all other detections of Ridgway's rails at MOTCO were sporadic and may have been related to unmated and/or young individuals that were dispersing through the area (HT Harvey and Associates 2011). During 1998 and 1999 surveys, the California Ridgway's rail was found in the brackish habitat of Seal Creek Marsh as well as within Hastings Slough East Marsh (Morrison et al. 1999).

No California Ridgway's rails were detected during two survey efforts completed in 2010 (HT Harvey and Associates 2010; WRA 2010). Additionally, no California Ridgway's rails were detected during four rounds of targeted Ridgway's rail surveys were conducted in 2014 in the narrow strips of marshes in the vicinity of Piers 2 and 3 in support of the EIS for the Modernization and Repair of Piers 2 and 3.

Furthermore, no California Ridgway's rails were detected in four rounds of targeted Ridgway's rail surveys conducted in the 2015 breeding season in support of this EA. These surveys were conducted in the narrow strips of marshes near bridges T-1, T-2, T-4, T-6, T-7, and T-10 and along White Road, Mordoh Road, Johnson Road, Taylor Boulevard, and Port Chicago Highway West between January 15, 2015 and March 23, 2015. The surveys were conducted following the USFWS (2009) survey protocol during California black rail surveys that were also conducted in portions of the Tidal Area (HT Harvey and Associates 2015).

The lack of recent Ridgway's rail detections, despite substantial survey efforts, indicates the marshes lack extensive, well-developed tidal channels that are used by Ridgway's rails. In addition, there is evidence that the marsh vegetation at MOTCO has become less saline since the 1990s and earlier. Therefore, it is very unlikely that California Ridgway's rails occur within the Tidal Area at MOTCO (HT Harvey and Associates 2015). Likewise, a call counting survey along White Road adjacent to the Pier 3 repair project site concluded that the Ridgeway's rail was also not using potential habitat at this location during the 2016 breeding season (WRA Environmental Consultants 2016).

California Least Tern

The California least tern (*Sternula antillarum browni)* was federally listed as endangered in October 1970 and was state listed as endangered in June 1971 (USFWS 1970; CDFW 2013c). The California least tern is a migratory species that arrives to breed in the end of April and

leaves in August. Its breeding range extends along the Pacific coast from Monterey County to southern Baja. Nesting sites in the San Francisco Bay area have been documented since 1970 (USFWS 1985, 2006).

The California least tern was not seen during the 1998 and 1999 surveys or during the 2010 surveys (Morrison et al. 1999; HT Harvey and Associates 2011). This species was last observed on the installation in 1982, but has recently established nesting colonies at the Montezuma Wetlands project site and at the Pittsburg power plant, both approximately 5 miles to the east of the closest portion of the proposed action. In 2012, there were 18 breeding pairs at Montezuma Wetlands, and 5 breeding pairs at Pittsburg (Sea & Sage Audubon Society 2014). As of 2014, however, preliminary results indicated no nesting at Pittsburg, whereas between 11 and 16 pairs were estimated to have nested at Montezuma Wetlands (Sea & Sage Audubon 2016). There is no suitable nesting or shoreline roosting habitat in the project area, and it is extremely unlikely that the birds nesting more than 5 miles to the east would forage that far from their nests. Therefore, California least terns are not likely to occur in the project action area except as possible transients during migration through Suisun Bay.

Salt Marsh Harvest Mouse

In 1970, the salt marsh harvest mouse (*Reithrodonomys raviventris*) was federally listed as an endangered species (USFWS 2009). Salt marsh harvest mice are endemic to San Francisco Bay salt marsh habitats. Their distribution is defined by salinity in that they require pickleweed habitats (USFWS 1984). During the 1998 and 1999 University of Arizona surveys, populations of salt marsh harvest mouse were found within seven locations in the Tidal Area, including Ryer Island, Hastings Slough West Marsh, Middle Point Marsh, Hastings Slough East Marsh, and Tug Slough Marsh (Morrison et al. 1999). In 2010, a detailed vegetation mapping effort was conducted to assess the potential for occurrence of the harvest mouse at the MOTCO Tidal Area. Salt marsh harvest mouse occurrence potential was identified and mapped as low potential (20-30 percent probability), lower potential (less than 10 percent potential), and very low potential for occurrence.

The MOTCO Tidal Area was assessed in May 2013 and in May 2015 to determine whether conditions at the time of the visit closely resembled conditions assessed in 2010 (Cardno TEC et al. 2013; HT Harvey and Associates 2015). In addition, habitat mapping was extended to the southernmost area of Port Chicago Highway to Gate 3. As shown in Figure 3.4-3, suitable salt marsh harvest mouse habitat occurs in the project area most notably for the eastern White Road and Bridge T-7 repairs.

California Red-legged Frog

Despite extensive surveys conducted at MOTCO, there is no record of the federally threatened California red-legged frog (*Rana draytonii*) occurring at MOTCO (north of Highway 4 or in the Tidal Area), nor are suitable freshwater aquatic or adjacent riparian and upland habitats likely to

support the species present in the action area. Moreover, the nearest known occupied habitat is located approximately 4 miles southeast of the project site, on the former Naval Weapons Station Seal Beach Detachment (NWSSBD) Concord property south of Highway 4. Accordingly, the Army believes that the likelihood of occurrence of this species is so low as to be discountable. Surveys completed during the 2013-2014 and 2015-2016 seasons by USFWS have not detected any California red-legged frogs (USFWS 2016).

3.5 LAND USE, RECREATION, AND COASTAL ZONE MANAGEMENT

3.5.1 Land Use

Land use generally refers to human modification of land, often for residential or economic purposes. It also refers to the use of land for preservation or protection of natural resources such as wildlife habitat, vegetation, or unique features. Attributes of land use described in this EA include general land use and ownership, land management plans, and special use areas. The existing land use at MOTCO is predominantly dictated by the military mission of the installation.

Developed land use within the Tidal Area is dedicated to operational uses including piers, holding pads, transfer facilities with some operational support such as warehousing, and maintenance. The Inland Area supports administrative uses as well as maintenance, safety, and security functions. There are some minor tenant uses within the Inland Area and the Army Reserves has a complex within the Inland Area.

Major land management plans for MOTCO include the RPMP (and supporting plans such as the Utility Master Plan and the LUCIP), INRMP (and supporting plans such as the Integrated Pest Management Plan), and Integrated Cultural Resources Management Plan (ICRMP). Together, these planning documents provide for optimization of land use at MOTCO while ensuring protection of natural and cultural resources.

There are two special use areas of note within the Tidal Area: the Port Chicago National Memorial and the Wetlands Preserve. The Port Chicago Naval Magazine National Memorial, which is administered by the NPS, became the 392nd unit of the NPS on October 28, 2009 (NPS 2013). The memorial is located on 1.8 acres of the proposed 5-acre site along White Road at MOTCO that has been developed for use by NPS per the National Defense Authorization Act for FY 2010 (Department of the Army 2015). The Wetland Preserve, which was first established through a memorandum of understanding between the Navy and USFWS (February 1, 1984), is now a component of MOTCO's INRMP, and occupies approximately 30 percent of the Tidal Area (see Figure 3.2-1). The Army has committed to continuing to maintain the tidal marsh within the Wetland Preserve Area and has prioritized protecting and managing the Wetland Preserve Area to the extent possible, while still being consistent with the military mission (USACE 2011).

3.5.2 Recreation

Recreation refers to the use of natural resources in an outdoor setting for human enjoyment. Recreational resources consider outdoor recreational activities that take place away from the residences of participants. The affected environment for outdoor recreation for this EA is limited as most of MOTCO is not generally accessible to the public and use of the waterfront area is restricted per a designated Water Restricted Area that prohibits public access within 300 feet of the MOTCO shoreline. However, public access is provided to the Port Chicago Naval Magazine National Memorial, which honors the memory of those who gave their lives or were injured in the Port Chicago munitions explosion on 17 July 1944, recognizes those who served at the magazine, and commemorates the role of the facility during WWII (NPS 2013).

Public access to the Port Chicago Naval Magazine National Memorial is through 2-week advance reservation only. There is no access Thanksgiving Day, Christmas Day, New Year's Day, and during MOTCO missions. In addition to advance reservation tours, the NPS also works with the Army to coordinate NPS access to the Port Chicago Naval Magazine National Memorial for maintenance and other operational activities, and for an annual commemorative event held on the weekend closest in date to the July 17, 1944 anniversary of the Port Chicago explosion in remembrance of those who lost their lives in the tragedy (Department of the Army 2015).

Access for tours is granted based on Army and NPS scheduling availability. MOTCO is a controlled access area and all visitors to the site must be U.S. citizens or permanent residents. All visitors are shuttled to the Port Chicago Naval Magazine National Memorial in NPS vehicles from the MOTCO Identification Office. NPS personnel report that there were a total of 81 tours for 663 visitors at the National Memorial in 2015. In addition, 300 visitors attended the annual Memorial Event on July 17, 2015 (Personal communication, T. Leatherman, 2016).

3.5.3 Coastal Zone Management

The federal CZMA (16 USC Section 1451, *et seq*., as amended) is a voluntary law enacted to encourage coastal states and territories to develop and implement programs to manage the nation's coastal resources. In accordance with Section 307 of the CZMA and 15 CFR Part 930, Subpart C, federal agency activities affecting a land or water use or natural resource of a state's coastal zone must be "consistent to the maximum extent practicable" with the enforceable policies of the state's coastal management program. The CZMA establishes national policy to protect resources in the coastal zone; CZMA policy is implemented by state coastal management programs that have been approved by NOAA.

Federal lands are excluded from the jurisdiction of such approved state coastal management programs. However, the CZMA and its implementing regulations provide that federal agencies must determine if it is reasonably foreseeable that their proposed actions, whether inside or outside of a state's coastal zone, will directly or indirectly affect any land or water use or natural

resource within that coastal zone. To implement the provisions of the CZMA, federal agencies must make "consistency determinations" on their proposed activities.

The San Francisco BCDC is the federally designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. This designation empowers the Commission to use the authority of the federal CZMA to ensure that federal projects and activities are consistent with the policies of the San Francisco Bay Plan and state law to the maximum extent practicable. The coastal zone for the BCDC includes the open water, marshes, and mudflats of greater San Francisco Bay, and areas 100 feet inland from the line of highest tidal action. The boundary also includes the Suisun marsh and buffer zone, managed wetlands diked off from the Bay, and open waters diked off from the Bay and used in salt production.

The BCDC coastal management program is based on the provisions and policies of the McAteer-Petris Act, the Suisun Marsh Preservation Act of 1977, the San Francisco Bay Plan, the Suisun Marsh Protection Plan, and BCDC administrative regulations. MOTCO is located in the Suisun Bay and Marsh area of the San Francisco Bay Plan (Department of the Army 2015).

3.6 TRANSPORTATION AND TRAFFIC

For the purposes of this EA, transportation consists of road infrastructure and associated traffic conditions for the MOTCO vicinity with a focus on truck transportation infrastructure as the proposed action would involve transport of equipment and materials using local roadways.

California Highway 4 provides the main access to MOTCO with State Highway 242 and Interstates 680, 80, 580, and 780 providing access towards San Francisco, Oakland, San Jose, and Sacramento. Port Chicago Highway, a county road, provides access to MOTCO from California Highway 4.

MOTCO's Main Gate (Gate 1) is the access point into the Inland Area via Kinne Boulevard. Gate 2, located at Port Chicago Highway and Taylor Boulevard, currently serves as the primary entry point for trucks entering the Tidal Area. Gate 5, located in the eastern portion of the Tidal Area at the intersection of Port Chicago Highway and Nichols Road, is being upgraded to serve as the new truck entry point and should be available for use in 2019 based on the current project timeline.

The City of Concord has designated a truck route for vehicles exceeding a maximum gross weight of 3 tons. Trucks exceeding this weight are prohibited from using all other streets except when necessary to travel to their destination for the purposes of loading or unloading (passenger buses, public utility vehicles while in use, and refuse collection vehicles are exempt) (City of Concord 2015a, 2015b). Near the MOTCO Tidal Area, designated truck routes include Willow Pass Road and Port Chicago Highway near Arnold Industrial Way.

In addition, Contra Costa County issues special permits to operate or move a vehicle, combination of vehicles, or special mobile equipment of a size or weight of vehicle or load exceeding the maximums specified in the California Vehicle Code. Permits available include single trip, repetitive, and annual transportation permits (Contra Costa County 2015).

A summary of Annual Average Daily Traffic (AADT) data from 2014 for locations near MOTCO is provided in **Table 3.6-1**.

Table 3.6-1. 2014 AADT Volumes Near MOTCO

ID	Description	S/W AADT	S/W Peak Hour	S/W Peak Month	N/E AADT	N/E Peak Hour	N/E Peak Month
1	Junction Interstate-680	88,000	7,600	91,000	82,000	5,800	84,000
1	Junction State Route 4	133,000	10,700	136,000	116,000	9,300	118,000
2	Solano Way	82,000	5,800	84,000	80,000	5,700	82,000
3	Concord, Junction State Route 242	80,000	5,700	82,000	93,000	6,600	95,000
3	Concord, Junction State Route 4	106,000	7,300	111,000	NA	NA	NA
4	Concord, Port Chicago Highway West	93,000	6,600	95,000	153,000	10,900	156,000
5	Willow Pass Road	153,000	10,900	156,000	150,000	10,700	153,000
6	Port Chicago Highway East	150,000	10,700	153,000	133,000	9,500	136,000
7	Bailey Road	133,000	9,500	136,000	132,000	9,400	135,000

Source: Caltrans 2016a.
Notes: S/W and N/E denote travel on the roadway in the South or West, or North or East direction, respectively, depending on the orientation of the roadway.

In addition, available AADT data for truck traffic is provided in **Table 3.6-2**. Note that truck traffic volumes are not collected at all the locations where total AADT data is collected. Based on these data, truck traffic in the area ranges from 2.7 to 6.8 percent of total traffic. For comparison, the highest truck traffic percentage in Contra Costa County is approximately 15 percent at the Junction of State Route 4 and Byron Highway, which is approximately 25 miles east of MOTCO.

Table 3.6-2. Truck AADT Volumes Near MOTCO

ID	Description	S/W Total AADT	S/W Truck AADT	S/W Truck %	N/E Total AADT	N/E Truck AADT	N/E Truck %
1	Junction Interstate 680	88,000	4,242	4.82	82,000	4,173	5.09
1	Junction State Route 4	133,000	3,592	2.70	116,000	7,900	6.81
3	Concord, Junction State Route 242	80,000	5,409	6.76	93,000	5,822	6.26
3	Concord, Junction State Route 4	106,000	5,438	5.13	NA	NA	NA
6	Port Chicago Highway East	150,000	7,756	5.17	133,000	7,343	5.52
7	Bailey Road	133,000	NA	NA	132,000	6,071	4.60

Source: Caltrans 2016b.
Notes: S/W and N/E denote travel on the roadway in the South or West, or North or East direction, respectively, depending on the orientation of the roadway.

Figure 3.6-1 shows the road network near MOTCO. The AADT count locations in the figure correspond to the location IDs from Tables 3.6-1 and 3.6-2.

The Contra Costa Congestion Monitoring Program (CMP) analyzes roadway Level of Service (LOS) for the entirety of Contra Costa County. LOS is represented by one of the letters "A" through "F." A LOS of "A" is considered the least restricted, or freest, flow of traffic while a LOS of "F" is considered the most restricted flow of vehicles. Out of the 65 intersections monitored, all achieved acceptable LOS (LOS D or better). Out of 21 freeway segments monitored, all but one achieved acceptable LOS. However, the one freeway segment that was below its acceptable LOS was the segment of State Route 4 between Interstate-680 and State Route 242, which is the area between data locations 1 and 3 on Figure 3.6-1. This segment of State Route 4 has an LOS standard of E for peak hours, and achieved an LOS level of F on the eastbound segment during the p.m. peak hour (Contra Costa County 2014).

Figure 3.6-1. AADT Data Locations Near MOTCO

3.7 UTILITIES AND SERVICE SYSTEMS

Utilities include the infrastructure and services provided to MOTCO that is interrelated with the linear infrastructure that is the subject of this EA.

3.7.1 Sanitary Sewer

Sanitary sewer infrastructure is connected to most buildings in the Tidal Area. The Delta Diablo Sanitation District receives discharge from the Tidal Area (Naval Facilities Engineering Command Southwest [NAVFAC SW] 2008). In 2013, Delta Diablo treated an average (dry weather flow) of 13.1 million gallons per day; the plant is capable of treating up to 16.5 million gallons per day (Delta Diablo Sanitation District 2013, 2015).

3.7.2 Potable Water

All major facilities at MOTCO are connected to the potable water lines. The Contra Costa Water District (CCWD) supplies potable water to MOTCO, which is treated at the Bollman Water Treatment Plant located in Concord and also owned and operated by the CCWD. Together with the Randall Bold treatment facility, the CCWD has the capacity to treat the current and projected service population (City of Concord 2013). In addition, MOTCO has the capacity to receive raw (non-potable) water from the East Bay Municipal Utility District Aqueducts for emergency fire protection (USACE Sacramento 2016).

3.7.3 Electrical Service

Power at MOTCO is delivered to an electrical substation located in the Inland Area. Electricity is delivered to the Tidal Area through 12-kilovolt transmission lines. The lines typically branch out to 4 kilovolt transmission lines with the exception of the piers, which are served by 12 kilovolt lines. The Tidal Area also contains four substations owned by Pacific Gas and Electric; two are 12 kilovolt and two are 4.16 kilovolt (Department of the Army 2015).

3.7.4 Telecommunications

Telecommunications services are provided to MOTCO by AT&T via pole lines and conduit communications ducts for voice and data services (Department of the Army 2015).

3.7.5 Solid Waste and Recycling Service

Solid waste, recyclable materials, and green waste accumulated in containers at MOTCO are collected and transported off site by Concord Disposal Services. There are two active solid waste landfills located within Contra Costa County: Acme Landfill and Keller Canyon Landfill (CalRecycle 2015a). In 2011, Contra Costa County disposed of a total of 722,292 tons of solid waste at Acme or Keller Canyon Landfill (CalRecycle 2015b). Acme Landfill has a maximum permitted throughput of 1,500 tons per day and remaining capacity of 175,000 CY (CalRecycle 2015c). Keller Canyon Landfill has a maximum permitted throughput of 3,500 tons per day and a remaining capacity of 63,408,410 CY (CalRecycle 2015d).

Waste diversion is the prevention and reduction of generated waste through source reduction (reduce amount of waste generated), recycling (process used products into new products), reuse (delaying final disposal or recycling by reusing the product), or composting (recycling organic [e.g., food and yard waste] material) (USEPA 2013). EO 13693, *Planning for Federal Sustainability in the Next Decade*, which requires (where life-cycle cost effective beginning FY2016) the diversion of at least 50 percent of non-hazardous solid waste, including food and compostable material but not construction and demolition materials and debris, annually. In addition, EO 13693 also requires diverting at least 50 percent of non-hazardous construction and demolition materials and debris.

3.8 NOISE

Noise is often defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, diminishes the quality of the environment, or is otherwise annoying. Noise may be intermittent or continuous, steady or impulsive, and may be generated by stationary or mobile sources. The individual response to similar noise events can vary widely and is influenced by the type and characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day.

The perception and evaluation of sound involves three basic physical characteristics:

1. *Intensity, or loudness, expressed in decibels;*
2. *Frequency, or the number of cycles per second, in hertz; and*
3. *Duration or the length of time the sound can be detected.*

Sound, expressed in decibels (dB), is created by vibrations travelling through a medium such as air or water. A sound level of 0 dB is the approximate threshold of human hearing and is barely audible under extremely quiet conditions. By contrast, normal speech has a sound level of approximately 60 dB. Sound levels above 100 dB begin to be felt inside the human ear as discomfort. Sound levels between 110 and 130 dB are felt as pain (Berglund and Lindvall 1995). The minimum change in the sound level of individual noise events that an average human ear can detect is about 3 dB. On average, a person perceives a doubling (or halving) of a sound's loudness when there is a 10 dB change in sound level.

The noise analysis in this EA focuses on noise as it relates to worker and community exposure. The analysis uses the "A-weighted" metric for noise, denoted as dBA. A-weighting provides a good approximation of the response of the average human ear and correlates well with the average person's judgment of the relative loudness of a noise event.

Noise in the U.S. is regulated under a number of different statutes and regulations. The Noise Control Act of 1972 and as amended by the Quiet Communities Act of 1978, set forth the policy of the U.S. to promote an environment for all citizens that is free from noise that jeopardizes human health and welfare. The Occupational Safety and Health Administration (OSHA)

regulates noise impacts to workers and sets forth thresholds for a safe work environment. According to OSHA, an employee should not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day (**Table 3.8-1**). As the level increases, the allowed duration of noise decreases. The maximum limit is 115 dBA for duration of 15 minutes or less. OSHA standards are the best documented requirements in regards to long-term human noise exposure. In addition, OSHA standards state that exposure to impulsive or impact noise (loud, short duration sounds) is not to exceed 140 dB peak sound pressure level (OSHA 2012).

Table 3.8-1. OSHA Permissible Noise Exposures

Duration per Day (hours)	Sound Level (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25	115

The primary source of noise in the study area is vehicular traffic along California Highway 4 and local roads. The daily operation of privately owned vehicles (POVs) and use of government and contractor equipment during mission and non-mission related activities (e.g., construction) are considered minor sources of noise. Typically, the dBA value for POVs is 50 dBA (for light traffic) (U.S. Department of Transportation 2006). Common government and contractor equipment used at MOTCO during mission events include locomotives, tractors, gantry cranes, diesel and electric forklifts, reach stackers, and trucks. Typically, the dBA value for these types of equipment is less than 80 dBA. Construction noise varies greatly depending on the construction process, type and condition of equipment used, and the layout of the construction site. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment (e.g., dump truck, excavator, grader, pile hammer, and operational equipment) with dBA values up to 101 dBA. Typically, the sound level attenuates, or diminishes, at a rate of 6 dBA for each doubling of the distance (i.e., if the noise level is 85 dBA at 50 feet, it is 79 dBA at 100 feet) from a point source (USEPA 1971).

3.9 Socioeconomics and Environmental Justice

For the purposes of this EA, socioeconomics refers to the economic impact of MOTCO in context of the surrounding community in terms of jobs and the general population, employment, and housing conditions in Contra Costa County. It also includes environmental justice and

protection of children as these are a component of the demographic and social considerations of NEPA.

3.9.1 Socioeconomics

MOTCO employs 123 personnel, including military, civilian, and contractor personnel. There are 10 personnel at MOTCO on a daily basis associated with the new Army Reserve Center; during drill weekends, the weekend population could be 200 to 300 reservists. During missions, an additional 75 to 85 personnel are present for contracted terminal operations and as stevedore personnel (Department of the Army 2015). This comprises less than 1 percent of the total number of people employed in Contra Costa County, which was 348,200 in 2015 (U.S. Bureau of Labor Statistics 2015).

The 2015 population estimate for Contra Costa County was estimated at 1,126,745, a 7.4 percent increase from the 2010 population as compared to a 5.1 percent increase for California. The total minority population in Contra Costa County is 55.0 percent as compared to California, which is at 62.0 percent. There are 408,708 total housing units in Contra Costa County and the owner-occupied housing unit rate is 64.6 percent as compared to 54.3 percent in California. The median household income in Contra Costa County is $80,185 as compared to $61,818 for California. The poverty rate in Contra Costa County is 10.5 percent as compared to 15.3 percent for California. The population under 18 years old is 23.2 percent, which is similar to California, which is at 23.3 percent (U.S. Census Bureau 2016).

3.9.2 Environmental Justice

On February 11, 1994, President Clinton signed EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The general purposes of the EO are to 1) focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice; 2) foster nondiscrimination in federal programs that substantially affect human health or the environment; and 3) give minority communities and low-income communities greater opportunities for public participation in and access to public information on matters relating to human health and the environment. EO 12898 directs federal agencies to develop environmental justice strategies.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* was issued in 1997 to identify and address issues that affect the protection of children. Children may suffer disproportionately more environmental health and safety risks than adults because of various factors: children's neurological, digestive, immunological, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves; and children's size and weight may diminish the protection they receive from standard safety features.

The two census tracts near MOTCO (Census Tracts 3142 and 3150) have greater proportions of minority and low-income populations as compared to Contra Costa County as a whole. The total minority population of Census Tract 3142, which is located east of the MOTCO Tidal Area, is 52.5 percent. The total minority population of Census Tract 3150, which is located west of the Tidal Area and south of the Inland Area to Highway 4 to include the community of Clyde, is 44.4 percent. Contra Costa County's minority population is 41.4 percent. The percent of the population below the poverty line is 21.5 percent in Census Tract 3142, 12.1 percent in Census Tract 3150, and 8.6 percent in Contra Costa County (U.S. Census Bureau 2010). Therefore, in Section 4.9, adverse impacts that extend beyond the MOTCO property boundary are evaluated for potential disproportionate impacts to these populations. Additionally, the community of Bay Point, which is just east of the Tidal Area (Census Tract 3142), was awarded an Environmental Justice grant by the USEPA in 2007. Among many issues, there is concern about residents from chronic exposures to air toxics including diesel truck emissions are of particular concern since Bay Point residents have a "significantly higher risk of lung cancer than residents of the County overall" (USEPA 2009). Projects that would increase the amount of vehicular traffic, especially truck traffic, would have to consider the environmental justice aspects of any projected increase to the residents of Bay Point. Based on the 2010 Census, there is a higher proportion of the total population that is under age 18 in Census Tract 3142 (32.2 percent) as compared to Contra Costa County (23.4 percent). However, the under age 18 population in Census Tract 3150 is lower than the county at 22.7 percent (U.S. Census Bureau 2010).

3.10 CULTURAL RESOURCES

Cultural resources are defined as prehistoric or historic sites, buildings, structures, objects, or other physical evidence of human activity that are considered important to a culture or community for scientific, traditional, or religious reasons. Cultural resources are divided into three resource categories: archaeological, architectural, and traditional cultural resources or properties.

Federal agencies are required to review their projects in accordance with Sections 106 and 110 of the NHPA of 1966, as amended, and as implemented by 36 CFR Part 800. Section 106 requires federal agencies to consider the effects of their actions on historic properties before undertaking a project. A historic property is defined as any cultural resource that is included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). The NRHP, administered by NPS, is the official inventory of cultural resources that are significant in American history, prehistory, architecture, archaeology, engineering, and culture. The NRHP also includes National Historic Landmarks. In consideration of 36 CFR Part 800, Federal agencies are required to initiate consultation with SHPO to inform them of the planned action and to request their submittal of any comments or concerns. Once an undertaking has been identified, the area of potential effects (APE) must be determined and documented. The APE is the geographical area or areas within which an undertaking may directly or indirectly cause

alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. The APE for the proposed project includes all proposed linear infrastructure repairs. The determination and documentation for the APE associated with this proposed action was submitted to SHPO for comment and concurrence in accordance with Section 106.

Section 110 of the NHPA requires federal agencies to locate, inventory, and nominate all properties that may qualify for the NRHP. The APE has been inventoried twice for cultural resources; by William Self Associates (William Self Associates 1993) and by JRP Consulting (JRP Historical Consulting Services 1998). Additionally, the ICRMP and updates cover the APE (Rosenthal et al. 2002; MOTCO 2011; USACE 2014; and MOTCO *in prep*).

3.10.1 Archaeological Resources

Archaeological resources, as governed by the Archaeological Resources Protection Act (ARPA, Section 3(l) 16 USC 470aa *et seq.*), include any material remains of past human life or activities that are capable of providing scientific or humanistic understandings of past human behavior and cultural adaptation through the application of scientific or scholarly techniques (ARPA, Section 3(l) 16 USC 470bb). As of September 2009, 24 cultural resources investigations have been conducted at MOTCO (JRP Historical Consulting Services 2009). No prehistoric archaeological resources have been recorded on the landside APE.

The Port Chicago Explosion of 1944 occurred at Pier 1, sinking two ships, the S.S. Quinalt Victory and S.S. E.A. Bryant and destroying the pier. Based on historic aerial photography, standing pilings that are visible in the area of the former Pier 1 are likely associated with Pier 1 located near the Port Chicago Naval Magazine National Memorial in the Tidal Area.

The Port Chicago Naval Magazine National Memorial is a NRHP-listed property. The proposed repairs to White Road would occur just west of the land currently used for the memorial. However, repairs to the segment of White Road at the Memorial and westward for approximately 1,500 feet and including the Johnson Road intersection would occur under the Pier 2 modernization and repair project (see Section 5.2.2.2). The memorial was established by the Port Chicago Memorial Act of 1992 (Public Law 102-562), and was made a unit of the national park system in 2009, which automatically entered the memorial into the NRHP as a listed historic district. The Port Chicago Naval Magazine National Memorial is a tribute to the 320 men who died in the WWII explosion at Port Chicago Pier 1. The Port Chicago Naval Magazine National Memorial is located along White Road west of Pier 2 and in the Tidal Area.

In addition, the Port Chicago Naval Magazine Explosion Site has been recorded and evaluated as an underwater cultural resource that is eligible for listing in the NRHP under Criterion A and B.

The majority of the APE has no archaeological potential due to fill over this area. An approximately 0.5-acre portion of the Rinquist Road realignment area south of the existing intersection with Johnson Road that has not been previously filled and has high archaeological potential. In addition, portions of the Port Chicago Highway and Stevens Road area of potential temporary disturbance are within an area of high archaeological potential (MOTCO 2011). A survey of these areas was conducted in February 2016. The majority of these areas were highly disturbed from previous road and infrastructure construction or were fenced and inaccessible. No cultural resources were encountered during the archaeological survey. Shovel testing was conducted in two locations where disturbance areas met areas of high probability for buried cultural resources: Stevens Road and Rinquist Road. Shovel testing along the southern portion of Port Chicago Highway could not be conducted due to road fill and the close proximity of a chain-link fence. No shovel tests were positive for cultural resources.

There are seven known historic archaeological resources in the vicinity of the roads and bridges APE (USACE 2014). However, none of these sites have been determined eligible for listing in the NRHP.

3.10.2 Architectural Resources

Architectural resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. The 1993 and 1998 Section 110 surveys evaluated the WWII and Cold War Era resources at MOTCO, and as a result, all of the cultural resources built before 1990 have been previously determined not eligible for listing in the NRHP (JRP Historical Consulting Services 1993; William Self Associates 1993). MOTCO is in the process of updating an inventory and evaluation of structures within the Inland and Tidal areas that have reached 50 years of age as part of the ICRMP update (MOTCO *in prep*). With the exception of T-7, the bridges that would be repaired under the proposed action (T-1, T-2, T-4, T-5, T-6, and T-10) were constructed in 1944 and 1945. These bridges have been evaluated and determined not eligible for listing in the NRHP (MOTCO 2011; MOTCO *in prep*).

An inventory of the roads to be repaired under the proposed action was conducted in February 2016. Physical features and elements within 50 feet of each side of each road segment, including the roadbed, curbs, and culverts, were recorded using the appropriate California Department of Parks and Recreation inventory forms. The materials and condition of the each road and its general setting was noted, and representative photographs were taken. Historical as-built drawings of the installation and road repair projects were reviewed to document changes to the roads over time, and aid in evaluating historic integrity. Based on the results of the field and research data, the roads within the project area do not have historical or engineering significance, and have been recommended not eligible for listing on the NRHP.

3.10.3 Traditional Cultural Properties

Traditional cultural properties can include archaeological resources, buildings, neighborhoods, prominent topographic features, habitats, plants, animals, or traditional hunting and gathering areas that American Indians or others consider essential for the continuance of traditional cultures (NPS 1998). There are no known traditional cultural properties within the APE/Action Area. In addition, no items subject to the Native American Graves Protection and Repatriation Act (25 USC Section 3001 *et seq.*) have been recovered from or identified at MOTCO through cultural resources studies conducted to date (MOTCO 2011; Department of the Army 2015). As part of this EA, interested federally recognized Native American tribes were contacted and their input was solicited.

3.11 HAZARDOUS MATERIALS, HAZARDOUS WASTE, TOXIC SUBSTANCES, AND CONTAMINATED SITES

This EA analyzes impacts related to hazardous materials (HM), hazardous waste (HW), toxic substances, and contaminated sites. Specifically, this EA analyzes the potential for HM to be introduced to the environment during the course of site demolition and construction activities; for HW to be generated as a result of construction and demolition activities; and for encounters with toxic substances and contaminated media during the course of site preparation and construction/demolition activities.

3.11.1 Hazardous Materials

Hazardous materials and other regulated substances (e.g., petroleum products) are generally in use at MOTCO for the operation and maintenance of buildings, facilities, vehicles, and equipment. In order to fulfill its mission, MOTCO also stores and transports HM within the boundaries of the installation as required by Army activities. Common hazardous substances used on the installation include petroleum, oil, and lubricant (POL) products such as motor oils, hydraulic fluids, diesel fuel, and motor gasoline; paints; sealants; solvents; antifreeze; and batteries.

The MOTCO Spill Prevention, Control, and Countermeasure (SPCC) Plan and the Oil and Hazardous Substance Spill Prevention and Response Plan (OHSSPRP) establish procedures, methods, equipment, and other criteria to prevent and respond to unintentional releases of oils or hazardous substances from onshore and offshore facilities (MOTCO 2013a; OHSSPRP is Appendix A of the SPCC Plan). Releases requiring response include DOD and non-DOD spills occurring on the installation, offsite spills affecting the installation, and possibly other spills in the geographic area for which DOD assistance would be deemed appropriate. Hazardous substances include those involved in operations, processes, cargo, and HW. The SPCC Plan addresses on-Post storage locations and proper handling procedures of all POL and HM to minimize potential spills and releases at the point of use. The OHSSPRP further outlines

activities to be undertaken to minimize the adverse effects in the incidence of a spill, including notification, containment, decontamination, and cleanup of spilled materials.

The MOTCO SWPPP addresses proper management of POLs and HM at construction sites to reduce the potential for soil and surface water/groundwater contamination and to describe procedures to expediently address any spills or breaches of protective systems in accordance with applicable laws and regulations (MOTCO 2015). The SWPPP has been developed to comply with California NPDES General Permit Requirements for Stormwater Discharges Associated with Industrial Activities. The Plan addresses construction activities, including requirements for site-specific permitting, dust and particulate suppression, and erosion and sediment control. It also establishes the BMPs designed to control pollutants in discharges of stormwater and to achieve compliance with the General Permit.

3.11.2 Hazardous Waste

Although the amount of HW disposed of fluctuates between calendar years, MOTCO is regulated as a Small Quantity Generator of HW as defined under the Resource Conservation and Recovery Act (RCRA). MOTCO disposed of 15.46 tons of HW in Calendar Year 2015, 10.5 tons in Calendar Year 2014, and 11.93 tons in Calendar Year 2013 (California Department of Toxic Substances Control 2016). Typically, the common HW generated at MOTCO includes spent, contaminated, off-spec, or unrecyclable HM, although fluctuations and abnormal disposal requirements can be attributed to facility cleanup efforts.

The MOTCO Directorate of Public Works Environmental Division oversees HW management via the HWMP on behalf of the military units and activities that generate the waste (MOTCO 2012a). MOTCO established procedures for the handling of HW through the development of a Hazardous Waste Management Plan (HWMP) (MOTCO 2012a). The HWMP describes the hazards and techniques associated with HW handling specific to MOTCO activities so that personnel will be better able to protect their health, prevent damage to the environment, and comply with applicable laws, regulations, and policies.

3.11.3 Toxic Substances

Toxic chemical substances regulated by USEPA and typically associated with buildings and utilities include asbestos, lead, mercury, and PCBs. For the purposes of this EA, existing buildings and structures are inspected for the presence of the most common forms of these chemicals. Asbestos-containing materials (ACMs) include materials that contain more than 1 percent asbestos and are categorized as either friable or non-friable. LBP includes paint with lead levels equal to or exceeding 0.5 percent by weight or 50 parts per million (ppm) total concentration. Fluorescent lighting fixture ballasts have the potential to contain PCBs. Additionally, the USEPA regulates the disposal of paints that have greater than or equal to 50 ppm PCB content, and these PCB paints may be present on structures and exterior surfaces such as pipes, tanks, and towers, and within buildings on interior surfaces as they were

commonly used as a plasticizer in paints, sealants, mastics, and caulk. Creosote, used to preserve wooden marine structures including the old timber piles in existing bridges addressed in this EA as well as railroad ties, is considered a pesticide and thus is regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Additionally, new wooden fender pilings are treated with common marine-specific pesticides, including ammoniacal copper arsenate, ACZA, or chromated copper arsenate. These substances are also regulated under FIFRA, and ACZA is selected as representative of this class of preservatives for further analysis in this EA.

The MOTCO Directorate of Public Works Environmental Division provides guidance for the location, condition, and recommended methods of managing toxic substances found throughout the installation. An installation asbestos register is maintained and updated regularly, including the type and the percentage of asbestos found in each type of material. Buildings and suspect materials are screened for fixtures that may contain toxic materials prior to demolition and disposal. Buildings are tested for LBP and PCB paint before maintenance or demolition, especially if they were built prior to 1978 when the federal government banned consumer uses of lead and PCBs in paint. With respect to PCB paints, both the surface and the building material below the surface are tested in order to determine proper disposal requirements; in California, materials with greater than 50 ppm PCB concentrations must be sent to a Class 1 HW landfill (California Code of Regulations Title 22, Division 4.5, Section 66). This is different from the federal regulation that allows PCB bulk waste materials to be disposed at a permitted municipal landfill (USEPA 2012); however, MOTCO is authorized to ship bulk PCB waste out of California for disposal in a permitted landfill. Certified contractors are used in all renovation or demolition projects; contractors follow MOTCO, Army, and California regulatory guidance for asbestos, LBP, PCBs/PCB paints, and mercury management.

Creosote is a wood preservative used commercially to protect utility poles, railroad ties, and marine infrastructure from animal, insect, and fungal pests (USEPA 2008a). Pressurized-creosote-treated wood has been used to protect timber pilings of MOTCO's structures, including those that would be repaired with the proposed projects for Bridges T-4, T-7, and T-10. Creosote is obtained from high-temperature distillation of coal tar and hundreds of chemical components in creosote have been identified, including polycyclic aromatic hydrocarbons (PAHs), phenol, and arsenic (Agency for Toxic Substances and Disease Registry [ATSDR] 2002; USEPA 2008b). Although creosote application is restricted, creosote-treated lumber is not generally subject to regulation as a HW unless testing reveals that it leaches arsenic above a certain threshold (USEPA 2008b). In California, creosote-treated wood waste (TWW) may be disposed of in a HW landfill or in the composite-lined portion of a municipal solid waste landfill that meets specific water protection standards (California Environmental Protection Agency [CA EPA] 2011; California Code of Regulations Chapter 34, Title 22). It is the generator's responsibility to determine whether the wood should be classified as HW and treated as such;

otherwise, a TWW-approved landfill facility may be used for disposal (CA EPA 2012; California Department of Toxic Substances Control 2008). TWW may be recycled, but its use is limited only to onsite purposes consistent with FIFRA-approved use of creosote-treated wood. Although risk to workers is minimal, the use of personal protection equipment when handling creosote-treated materials is recommended to reduce demolition crew exposure to the skin- and eye-irritating effects of creosote contact (ATSDR 2002). Although creosote is generally not water-soluble, PAH is known to leach from treated wood and migrate to sediments and/or accumulate in marine organisms. While the exposure risk will be removed as the creosote-treated piling materials are removed, contaminated sediments localized around the pilings may occur (USEPA 2008b).

As an alternative to creosote, ACZA is currently widely used in small-scale marine projects to prevent the deterioration of wood from marine borer invertebrates. The main environmental concern surrounding the use of ACZA in aquatic environments is its potential to leach copper into the water and for it to accumulate in sediments; however, both of these concerns are reduced greatly in areas where at least moderate current velocities exist. Likewise, most leaching of copper into the environment takes place within the first few days of placement in the water. ACZA and similar substances are not thought to cause serious environmental effects so long as the project area is relatively small (i.e., less than 100 pilings), water is consistently flushed through the system (i.e., currents greater than 1 centimeters per second [cm/s]), and there is minimal background contamination (National Oceanic and Atmospheric Administration 2009; NMFS 1998).

3.11.4 Contaminated Sites

The Defense Environmental Restoration Program (DERP) was developed by the DOD pursuant to legislation codified at 10 USC Section 2700 *et seq*., to identify, investigate, and remediate potentially hazardous material disposal sites on DOD property. As part of DERP, the DOD has created the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP). IRP evaluations at MOTCO began in 1983 in response to speculation that certain areas of the installation had contamination above acceptable levels .**Figure 3.11-1** shows the IRP and MMRP sites at MOTCO in relation to the proposed repairs to MOTCO's linear infrastructure. The IRP is designed to address the cleanup of hazardous substances on military installations. The MMRP addresses the challenges presented at sites called munitions response sites (MRS) that are located on other than operational ranges. Munitions responses are response actions, including investigation, removal actions, and remedial actions that address the explosives safety, human health, or environmental risks presented by MEC. The DERP is implemented using the process developed for cleanup under the CERCLA legislation, including a series of eight steps that follow the accepted plan of action beginning with a site investigation and, if necessary, ending in the remediation/clean-up of the site.

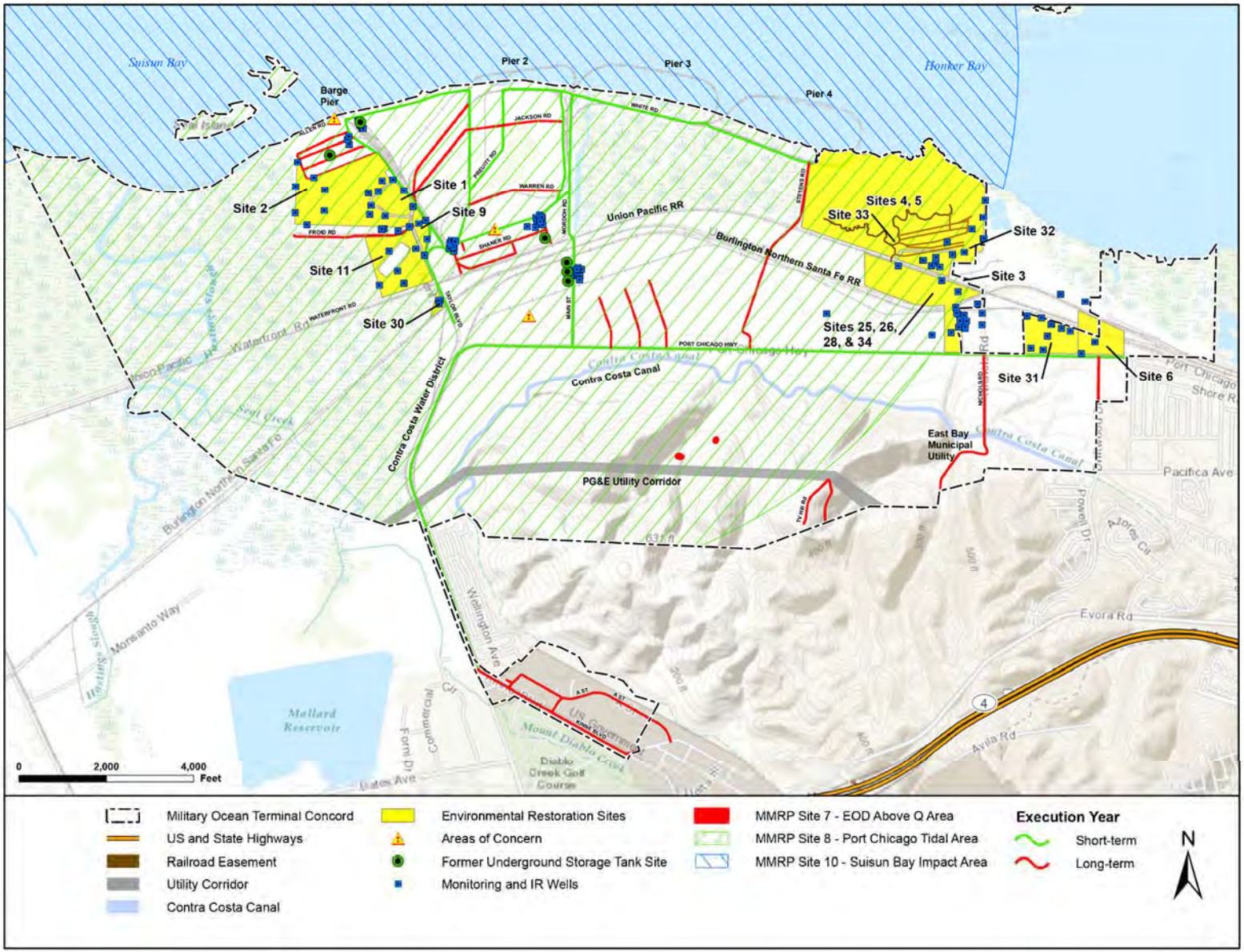

Figure 3.11-1. MOTCO Environmental Contamination Sites

Land Use Controls (LUCs) are often established at terrestrial IRP and MMRP sites, and Navigation Controls at water sites, to afford continuous or interim protection at a site as DERP steps are implemented. The DOD's *Policy on Land Use Controls Associated with Environmental Restoration Activities* defines LUCs as any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property to prevent or reduce risks to human health and the environment (DOD 2001). The purpose of this policy is to select and implement LUCs that minimize the potential for human exposure to explosive hazards and to maintain the integrity of the MRS with respect to the current land use.

3.11.4.1 Military Munitions Response Program

There are three MMRP MRSs at MOTCO, one of which is located within the proposed action area: MRS 8, Port Chicago Terrestrial Explosion Area (MOTCO-008-R-01). The Port Chicago Tidal Area and Suisun Bay Impact Area sites represent the 1944 Port Chicago disaster blast radius from the shipboard explosion at the former Pier 1, an incident that involved more than 5,000 tons of ammunition (MOTCO 2011c, 2010). The Port Chicago Tidal Area/MRS 8 encompasses approximately 5,232 acres including the main Tidal Area and Roe and Ryer Islands. This site is currently in the Remedial Investigation/Feasibility Study (RI/FS) phase and Site Closeout occurred in February 2017 (TetraTech EMI 2011; MOTCO 2013c; personal communication, G. Romine 2017).

There have been no recorded unexpected explosive incidents since the original explosion in 1944 (NAVFAC 2003). MEC and UXO have been encountered in and safely removed from the upland Tidal Area/MRS 8 (USACE 2009). Specifically, excavations associated with construction activities in MRS 8 (an area adjacent to White Road between Preuitt and Christenbury Roads) recovered a MEC item (Mk27 3-inch/0.50-caliber high explosive projectile) (USACE 2009). In February 2013, Phase II field work was completed and three live munitions (two 5-inch projectiles and one 40-millimeter projectile) were recovered (MOTCO 2013c). The MRS 8 RI/FS was recently completed by the Army.

Based on the MEC finding in MRS 8, it is assumed that the probability of encountering MEC is considered "moderate to high" through the entire Port Chicago Blast Area (MOTCO 2013d). An Explosives Safety Submission (ESS) covers the munitions response action for ongoing construction activities within the Port Chicago Terrestrial Explosion Area MRS 8. The munitions response actions include UXO/MEC oversight for all on-going construction activities in both MRSs. Construction activities that involve ground disturbance may require a MEC survey and UXO clearance of construction limits. Projects exempted from this requirement are those taking place in an area where clearance activities have already been performed. In such cases, UXO Standby Support is used during construction activities.

3.11.4.2 Installation Restoration Program

Continuous military missions have taken place at MOTCO since the early 1940s. Over this period, waste disposal practices deemed appropriate at the time and accidental spills of hazardous substances led to the contamination of soils and groundwater in several locations throughout the installation. The IRP identified 32 potentially contaminated areas designated as IRP management sites; nine of those sites remain active in various DERP stages (USEPA 2012; MOTCO 2011c). The majority of the proposed action would occur in areas that are not near IRP sites (see Figure 3.11-1. However, the following projects are near or within IRP sites:

- Bridge T-10 is located within the northwestern corner of what is referred to as the "Litigation Area" (encompasses Site Nos. 3–6; 25, 26, and 28). Metals contamination in soils in this area has been addressed with remedial actions implemented from 1992 to 1996. The sites are currently in long-term management under the Litigation Area Sites Monitoring Program, which started on March 31, 2003.
- Bridges T-1 and T-2 are located within the boundaries of Site 30 (MOTCO-030), the Taylor Boulevard Bridge Disposal Site. Contamination at this site (metals and PCBs in soil) was addressed with remedial action (removal) implemented in October 2009 and the Completion Report issued October 2010. This site has been closed out.
- Taylor Boulevard and Johnson Road form the eastern boundary of Sites 1, 2, 9, and 11. All four of these sites are in long-term management with land use controls. Site 1 is a former landfill, and remedial action for this site was completed in May 2012. Site 2 (MOTCO-002, R Area), Site 9 (MOTCO-009, Froid and Taylor Roads), and Site 11 (MOTCO-011, Wood Hogger Site) are collectively known as the Tidal Area Sites. The June 2012 ROD included LUCs at Sites 2 and 9, and removal of mercury-contaminated soils at Site 11, which was completed in January 2013. The LUCs for Sites 2, 9, and 11 are limited to prohibiting residential development.
- Rinquist Road Realignment is just south of Site 9, Froid and Taylor Road Disposal Site with the segment of Taylor Boulevard that would be returned to its native condition currently serving as the southern boundary of this site.

In addition, the following long-term road repair projects are located near the IRP sites:

- Stevens Road mill/overlay repairs on the eastern boundary of the "Litigation Areas;"
- Picket Road borders the northern boundary of Site 2;
- Froid Road borders the northern boundary of Site 11;
- Port Chicago Highway borders the southern boundary of Sites 25, 26, 28, 24, 31, and 6.

3.11.4.3 Sediment Sampling Conducted in Support of this EA

In accordance with the LUCIP, the roadways proposed for repair were evaluated for potential contamination in support of this EA analysis. Specifically, in November 2015, a total of 58 discreet sediment samples were collected to characterize the material that may be potentially disturbed by road repairs within the proposed project areas (specifically, along the Anderson Road, Brown Road, Christenbury Road, Johnson Road, and White Road segments) to assess the concentration of select metals underlying the roadway. Sampling consisted of one sample every 300 linear feet through the asphalt roads proposed for repair, to a depth not exceeding 4 feet below ground surface in accordance with MOTCO's LUCIP.

The key results of this sampling (MOTCO 2016) are as follows:

- None of the reported concentrations of antimony, barium, beryllium, cadmium, mercury, molybdenum, nickel, selenium, silver, or vanadium exceeded the Tier 1 Environmental Screening Levels defined by the SFBRWQCB's Board's December 2013 Interim Final Environmental Screening Levels (action levels).
- Thallium was not reported above the laboratory reporting limit; however, the reporting limit for two samples exceeded the action level. None of the reporting limits exceeded the ambient levels according to the August 2008 Updated Revised Final Remedial Investigation Report for Tidal Area Sites 2, 9, and 11, Naval Weapons Station Seal Beach Detachment Concord, Concord, California (ambient levels).
- Less than 10 percent of the samples have reported concentrations of cobalt exceeding the action level; however, all of these exceedances were lower than the ambient levels.
- In the majority of the samples, levels of arsenic exceeded the action level; however, the reported concentrations were below the ambient levels. The reported arsenic concentrations were lowest along the Anderson Road segment.
- In one sample collected near the intersection of Johnson Road and White Road adjacent to the rail line, concentrations of cadmium, copper, lead, and zinc exceeded action levels for these analytes. The cadmium, copper, and zinc levels also exceeded ambient levels, but the lead concentration level was lower than the ambient level (MOTCO 2016).

  This site is within IRP site 40; the Army is now beginning an RI/FS analysis for this site. Past industrial practices at the site included gold, silver, and copper ore processing (May 1901 through December 1902), lumber mill (1915 through 1932), shipbuilding (1918 through 1921), a chemical laboratory evaluating potash production from alunite (1921 through unknown), and locomotive house and railroad

equipment and maintenance shop (Parsons undated; Personal communication, G. Romine 2016).

3.11.4.4 Underground Storage Tanks and Pipelines

Former Underground Storage Tank (UST) petroleum sites occur at MOTCO adjacent but not within the area of potential effect (see Figure 3-7). In addition, three active pipelines, one refined, one crude, and one natural gas, and remnants of two former crude oil pipelines run through the installation (USACE 2011; MOTCO 2013d). All petroleum pipelines cross the MOTCO Tidal Area generally following the railroad corridor and/or Port Chicago Highway. It is not anticipated that any current or former pipelines are located within proximity to the proposed action area or would be impacted by construction or demolition activities (Personal communication, G. Romine, 2016). However, a petroleum release site associated with the Chevron pipeline is located near Port Chicago Highway. A determination of No Further Action has been made for the site, which requires a soil management plan for any grading, excavation or subsurface activities at the site, which is consistent with the LUCIP (SFBRWQRB 2015).

4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4 presents an analysis of the potential direct and indirect effects of each alternative on the affected environment. Cumulative impacts of the proposed action alternatives with other past, present, and foreseeable future actions are presented in Chapter 5. Significance was determined according to NEPA implementing regulations at 40 CFR Section 1508.27, which requires considerations of both context and intensity as follows. Consistent with 32 CFR Part 651.39, factors considered in determining significance of impacts are identified for each resource area. These include thresholds, which are based on regulatory requirements, wherever appropriate. Potential impacts are characterized as adverse or beneficial, direct or indirect, and short- or long-term.

4.1 EARTH RESOURCES

Factors considered in determining if impacts to earth resources would be considered significant were if ground disturbance or other activities would violate applicable federal or state laws and regulations, and result in the potential for Notices of Violation for the failure to receive or follow stipulations within applicable state permits.

4.1.1 No Action Alternative

Under the No Action Alternative, erosion issues at existing roads and bridges (e.g., Bridge T-2 abutment and roadway shoulders) would continue and exacerbate. Additionally, the subgrade of existing roads would continue to compact and result in uneven road surfaces and grade inconsistencies at rail crossings. The magnitude of the adverse impact to earth resources under the No Action Alternative would exacerbate in the long-term if not remedied under another action. In conclusion, the No Action Alternative would have adverse impacts to earth resources, but such impacts are not expected to be significant.

4.1.2 Alternative 1

There would be long-term, beneficial impacts in terms of improved erosion control localized to the areas of roadways and bridge abutments repaired under Alternative 1 from restoration of the original/consistent grade and repair of the road shoulders and bridge abutments for proper stormwater drainage. The permanent area of disturbance associated with the 7.2 miles of road repairs in the near-term is estimated at 30 acres of predominantly previously disturbed roadway. The temporary disturbance during the period of construction, estimated at 97 acres, would occur in the roadway shoulders primarily where soils have been previously disturbed by past or present installation activities. In addition, the 12 miles of road repair in the long-term plan would result in similar impacts to an additional 36 acres of predominantly previously disturbed roadway and 142 acres of temporary construction disturbance to primarily previously disturbed areas. The repairs to road segments and bridge abutments would be consistent with past modification to the natural topography. If determined to be suitable material, the use of RAP would reduce

the need for new fill for the full-depth road repair projects. Stockpiling of excavated materials would occur at any of the approved, previously established staging areas. The sites to be used for receipt of excess native soils determined to be unsuitable for reuse for the road repair projects are appropriate for receipt of these materials (see Figure 2.4-1). The Army would continue to manage these sites in accordance with BMPs for erosion control.

In total, for all aspects of the project, an estimated 12,500 CY of new fill would be introduced. It is estimated that approximately 10,500 CY of material not suitable for reuse would be transported to one or both of the material receiving sites at MOTCO.

The realignment of Rinquist Road would result in long-term localized modifications of terrain by cut and fill techniques and other grading, including the introduction of new fill material at an average minimum depth of 4 feet with a general range of 4 to 11 feet. No significant topographic features would be affected and the changes would be offset in that some areas would be returned to natural grade, most notably the segment of North Taylor Boulevard that would be removed. When the project is completed, there would be little change in the net impervious surface. The proposed realignment would occur primarily on soils characterized by NRCS as Urban Land, a heavily developed soil type that does not have serious limitations to the proposed type of construction activities. The requirement to surcharge would ensure that the road meets geotechnical design and safety parameters and the 3:1 slope would minimize the overall footprint to the minimum necessary. The surcharge materials would be transported onto the installation from a local or regional source and remain in place for approximately 12 months.

Replacement of deteriorated pile sections on Bridges T-4, T-7, and T-10 would potentially redistribute small amounts of sediment in the localized areas around the affected piles in the event that pile sections below the mudline need to be replaced. As further discussed in Section 4.11, such sediment could contain contaminants as the timber piles are creosote treated and controls would be required to ensure that treatment of replacement pile material with wood preservative would not impact sediment quality. The use of temporary cofferdams during this phase of the construction as proposed would allow for control and stabilization of disturbed sediment prior to the exposure of the affected areas to tidal action, thereby minimizing post-construction transport of sediments at the mudline (see Section 4.2 for discussion of water quality impacts).

All design and construction would adhere to seismic standards to minimize hazards associated with earthquakes and fault rupture.

As further detailed in Section 3.11, the results of the sediment sampling that was conducted in support of this EA indicates that, per the LUCIP, the soils potentially impacted by the proposed action are considered clean and may be reused at MOTCO as fill at a location different from where it was excavated with one exception. The exception was a site located near the intersection of White Road and Johnson Road adjacent to the rail line. As further detailed in

Section 4.11, the site at White Road and Johnson Road is undergoing additional evaluation and the reuse of these disturbed soils in the road repair projects would need to continue to be coordinated through the MOTCO project manager to ensure that the conditions are appropriate and consistent with the MOTCO LUCIP. The sediment sampling also evaluated constituent levels according to the SFBRWQB *Interim Final Environmental Screening Levels.* The results of this analysis indicate that the exceedance of these action levels were consistent with ambient levels of arsenic, cadmium, and cobalt. Therefore, no soil contamination issues are expected with implementation of Alternative 1.

Construction BMPs to control the runoff and to prevent erosion during and after construction would be part of the project-specific SWPPPs, which will be required of all construction contractors. The standard BMPs for soil resources that would be part of these SWPPPs are detailed in Section 6.2. They include development of site-specific Erosion and Sediment Control Plans and the use of BMPs such as silt fencing, soil stabilization blankets, and matting around areas of land disturbance during construction and revegetating bare soils at project completion with native vegetation to reduce erosion and stormwater runoff velocities.

The long-term road repair projects under Alternative 1 would have similar impacts as the near-term projects, though fewer of these projects are full-depth repairs. A total estimated 36 acres of temporary disturbance and 142 acres of permanent disturbance would occur with the long-term road repair projects. Most of this area is within the previously disturbed roadbeds of existing roads to be repaired.

The installation's SWPPP (see Section 3.2.1) would be updated at the appropriate time(s) in the implementation of the proposed repair projects to address additional BMPs for soils and erosion that may be necessary due to the long-term changes to stormwater flow, velocity, and volume that would result from implementation of Alternative 1.

In conclusion, the implementation of Alternative 1 would not have significant impacts to earth resources. Adherence to permitting requirements and associated BMPs would ensure adherence with all applicable federal or state laws or regulations for the protection of earth resources.

4.1.3 Alternative 2

The potential impacts to earth resources under Alternative 2 would be similar to those described for Alternative 1. However, under Alternative 2 an additional estimated 12 acres would be permanently impacted by wider road surfaces as compared to Alternative 1. This additional area of permanent disturbance includes some impermeable surface associated with the widening of select road segments, but is primarily the additional permeable surface of the roadway shoulders.

4.2 WATER RESOURCES

Factors, considered in determining the potential for significant impact to water resources, include any long-term impacts (chemical, physical, or biological effects) that would adversely alter the historical baseline or violate standard water quality conditions as well as project actions adversely impacting a water body currently considered impaired under CWA. Factors considered in determining significant impacts to the floodplain are those that would alter floodplain capacity in a manner increasing flood risk for human safety, health, and/or welfare and the extent of the impact in terms of adverse impacts to natural and beneficial values served by floodplains.

4.2.1 No Action Alternative

Under the No Action Alternative, road repairs and the related direct and indirect impacts would not occur. However, there would be the potential for minor long-term increased sediment in stormwater runoff from roadways and bridge abutments if existing erosion issues continue and are not addressed through some other action. Over time, unrepaired bridge structures would eventually fail, which could result in debris falling into the sloughs and wetland areas. Regular inspections of the structural condition of the bridges would be required and the Army would be required to adjust operations due to safety, which would reduce the risk that a catastrophic failure could occur during operations (a risk to surface water quality if bridge failure results in a vehicle falling into the sloughs and/or wetlands). No impacts to groundwater would occur with implementation of the No Action Alternative.

In conclusion, the No Action Alternative could potentially result in indirect adverse impacts to water resources in the long-term; however, the impacts are not expected to be significant.

4.2.2 Alternative 1

4.2.2.1 Water Quality

The long-term impacts of implementation of Alternative 1 on water resources would be improved sediment control from runoff from roads and bridges as a result of restoration of the subgrade of this infrastructure to the original design height and rehabilitation of road shoulders in accordance with current design standards and SWPPP requirements. The four culverts that underlie segments of the White Road repairs that are stormwater discharge points would not be disturbed under Alternative 1, as the depth of the proposed road repairs is above the height of the culverts.

There would be relatively no change in impervious surface due to the realignment of Rinquist Road due to the removal of road segments and pavement planned along with the new road segments. The realignment is being designed in accordance with applicable long-term standards for control and management of stormwater runoff. As the design progresses, additional consideration may be given for retention or detention needs for stormwater

treatments as appropriate and in consideration of the installation-wide general SWPPP annual review process. Installation-wide or project-specific measures would be taken at appropriate times in the implementation phase for the Alternative 1 projects so as to ensure continued ongoing compliance with applicable regulations for the protection of water resources.

During the construction phase for the Alternative 1 projects, there would be the potential for increased sedimentation in runoff due to disturbed soils being suspended in stormwater runoff. The area of temporary disturbance for the near-term projects is estimated at 97 acres with an additional 142 acres potentially impacted in the area of temporary disturbance for the long-term projects. However, the Army would obtain a NPDES permit for construction activities, develop a project specific SWPPP or amend the overall installation SWPPP to include the proposed construction activities, and use BMPs for all construction disturbances in excess of an acre. The BMPs include measures to reduce stormwater runoff and the transport of sediments from the construction sites into receiving bodies of water. Requirements of these BMPs include erosion control measures, control all project-related materials and wastes from exposure to stormwater runoff, spill prevention control and countermeasures, and containment of process water, prohibiting maintenance of construction-related vehicles and equipment onsite, weekly inspection reports, and final inspection reports. Such measures would be required at the staging area sites where soils and RAP would be temporarily stockpiled during repair projects.

At locations where LBP is present, the contractor will be required to develop and adhere to a debris containment and collection plan, lead compliance plan, and provide a containment system around the work area where LBP is being disturbed. Thus, the contractor would contain all water, resulting debris, and visible dust produced when the existing paint system is disturbed. Low Impact Development (LID) principles and *USEPA Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects* under Section 438 of the Energy Independence and Security Act (USEPA 2009) would be adhered to. A listing of all applicable standard BMPs is provided in Section 6.2.

Sediment sampling results collected in November 2015 for the roadways (see Section 3.3) were compared to Tier 1 Environmental Screening Levels defined by the SFBRWQCB's *Interim Final Environmental Screening Levels* dated December 2013 (action levels). Results from the analysis indicate that while some of the samples exceed these action levels, levels of constituents are consistent with background/natural conditions. The one exception is the sample collected at IRP Site 40 (see Section 3.11.4.3). The implementation of the road repair projects would be coordinated with the RI/FS for this site and all actions would be implemented in accordance with applicable regulatory requirements (see Section 4.11.2.4). Therefore, there would not be a concern for water quality impacts resulting from excavation and relocation of roadway materials.

For repairs to Bridges T-4, T-7, and T-10, some in-water sections of existing creosote treated timber piles would be replaced with new timber pile sections treated with wood preservative. As

also noted in Section 6.3, all debris and damaged pile sections will be slowly lifted from the water and placed on the work surface within a containment basin that is constructed with durable plastic sheeting and designed to contain all sediment, without attempting to clean or remove any adhering sediment. The cut up piling sections, sediments, construction residue, and plastic sheeting will then be properly disposed of offsite. Because the creosote has low solubility and is denser than water, any constituents released would tend to settle out of suspension in the vicinity of the treated pile. The wood preservative pesticide applied to the pile sections is likewise not anticipated to cause effects to water quality, including elevated copper levels in the water column. The application of the preservative would be sealed in accordance with industry-specific BMPs to minimize leaching, and any copper that may be leached from the pilings within the sloughs would be rapidly flushed from the area and would not accumulate in any significant amount (Section 4.11.2.3).

For all bridge projects, there is the potential for debris to inadvertently fall into the water or wetland areas. To control floating debris, floating booms would be in place during the duration of these projects where feasible and effective. In addition, debris that falls within the wetlands or dewatered areas would be removed to the maximum extent practicable by hand or using non-disruptive, hand held, non-motorized tools in a manner that does not disturb the wetlands.

The implementation of Alternative 1 would not be expected to result in discharges of chemicals on the TMDL list for Suisun Bay into the bay.

The Rinquist Road realignment and bridge repair projects involving temporary dewatering and potential work on replacement of pile sections below the mudline (T-4, T-7, and T-10) would require CWA Section 404 permits from USACE and associated Section 401 Water Quality Certification from the SFBRWQCB. This permitting process would ensure that state water quality standards would not be affected by implementation of these demolition or construction activities.

The long-term road repair projects under Alternative 1 would have similar impacts to water resources as the near-term projects, though fewer of these projects are full-depth repairs. A total estimated 36 acres of permanent disturbance is within the long-term road repair projects.

As first noted in Section 1.5, MOTCO would adhere to applicable Contra Costa Health Services permitting requirements for proposed soil borings. The permitting process is used to determine the suitability of the boring site and protection of groundwater in the boring process and sets forth a requirement that work be conducted by a licensed and insured contractor (Contra Costa Health Services 2014).

In conclusion, the linear infrastructure repairs and Rinquist Road realignment under Alternative 1 would not result in significant impacts to water quality.

4.2.2.2 Wetlands and Floodplains

With implementation of Alternative 1, there would be localized adverse as well as beneficial impacts to wetlands associated with the Rinquist Road realignment. The realignment would involve constructing a new road segment through an area of wetlands. However, this new alignment would make it unnecessary to continue the use of an existing road segment that was constructed on fill in tidal wetlands, so the road and fill would be removed, thus restoring the original elevation and tidal circulation to that site. Consistent with CWA Section 404(b)(1) and EO 11990, *Protection of Wetlands*, the Army has determined there is no practicable alternative to realigning Rinquist Road outside wetlands habitat due to current safety concerns with the existing configuration. The new roadway configuration would eliminate the sharp curve and convert multiple intersections into a single intersection, which as detailed in Section 2.4.4 is necessary for roadway safety at MOTCO under the concept of operations for the modernized Pier 2. In the design process, the minimization of wetlands impacts was taken into consideration as well as inclusion of removing the North Taylor Boulevard segment, removal of fill, and revegetation to benefit the affected wetlands area.

The State of California has a policy of no net loss of wetlands and requires all impacts to wetlands be mitigated under Section 404 of the CWA. The California Wetlands Policy (EO W-59-93) specifies that, in addition to the no net loss of wetlands, there should be a regional increase in both the acreage and quality of wetlands. The proposed removal of the 0.57 acre of former North Taylor Boulevard road surface and/or road shoulder south and west of the new road/intersection to estuarine wetlands is consistent with this policy. The proposed 0.57-acre restoration provides a 1.5:1 acre replacement ratio for the 0.38 acre of impacted wetlands and provides a net improvement to wetland function consistent with the no net loss of acreage or functions requirement for mitigation under the CWA. Under current conditions, the southern portion of the wetland area bisected by North Taylor Boulevard periodically becomes anaerobic with diminished wetland value. The proposed action is to remove the fill for this segment of road to a height of 1 foot below mean high tide and revegetate the area with appropriate wetlands vegetation with the approved seed mix used for other projects at MOTCO. These actions would be expected to be sufficient to attain assimilation with the adjacent wetland. A restoration/planting plan is currently in development by the USACE Sacramento District. After the restoration actions have been taken, the larger continuous wetland would be expected to have improved flow/connectivity, quality, and function, due to the removal of North Taylor Boulevard.

Under Alternative 1, approximately 0.38 acre of riverine/palustrine wetlands would be permanently impacted from the realignment of Rinquist Road and 0.57 acre would be restored. Prior to the commencement of any work, the Army will submit and receive approval from BCDC on a restoration/planning plan that will include the seed mix, cross-sections depicting proposed elevations, and include a monitoring program over a two-year period with success criteria and

measures for assessing that criteria. Invasive species shall cover no more than 5 percent of the total cover at the restored side. The plan shall describe the status and type of the surrounding wetlands at the restoration site and shall design the restoration to be continuous and congruent with these areas. The plan shall include a contingency plan outlining the actions to be implemented if adverse conditions are identified during the monitoring period. If there is a failure to meet success criteria, MOTCO will coordinate with BCDC and take corrective action as specified by BCDC within 1 year of failure. MOTCO will submit a post-construction report and two additional annual monitoring reports following the completion of this work. These reports will be submitted by December 1 of each year following the completion of construction and will specify the requirements noted above and the success criteria agreed upon by the restoration/planning plan.

All other of the approximately 18 acres wetlands delineated within the area surveyed for the linear infrastructure repair projects (see Section 3.2), would be avoided. Minor indirect impacts (localized changes in runoff, extent of ponding) may occur during and after construction impacts, but these would be minimized through BMPs and restoration of temporarily disturbed sites. Overall wetland quality, connectivity, and functionality would not be impacted.

As noted in Section 3.2 and depicted in Figure 3-2, elements of the proposed action are within the 100-year floodplain. The Rinquist Road realignment and the removal of North Taylor Boulevard would involve fill and removal, respectively, of material within the 100-year floodplain. All other construction resulting in fill in the 100-year floodplain would occur along existing roadways. The proposed realignment and other improvements would improve safety of operations at MOTCO and there are no practicable alternatives that would meet the purpose and need. Although this construction would result in a net fill of approximately 7,500 CY new fill within the 100-year floodplain, this loss in volume would result in a negligible increase in surface water elevation because Suisan Bay is an open system that can absorb storm surge over a very large area.

In conclusion, the linear infrastructure repairs and Rinquist Road realignment under Alternative 1 would not result in significant impacts to water quality, wetlands, or floodplains.

4.2.3 Alternative 2

Alternative 2 is the same as Alternative 1 with the exception of select road segments that would be widened under Alternative 2. Impacts to water resources under Alternative 2 would be similar to those described under Alternative1. The existing culverts that underlie segments of the White Road would be lengthened to accommodate the widening of the road. Although this construction would result in minor increase of fill within the 100-year floodplain, this loss in volume would result in a negligible increase in surface water elevation because Suisan Bay is an open system that can absorb storm surge over a very large area.

4.3 AIR QUALITY

Air quality impacts within the affected environment were reviewed for significance in light of federal air pollution standards and regulations. Potential air quality impacts include:
1) exceeding the General Conformity Rule *de minimis* thresholds for the ozone precursors VOCs or NO_x, the $PM_{2.5}$ precursor SO_2, or $PM_{2.5}$,; or 2) increasing net mobile source emissions in excess of 250 tons per year for CO or PM_{10}.

Pollutants considered in this analysis include the criteria pollutants, excluding lead (airborne emissions of lead are not included because there are no known significant lead emission sources in the region or associated with the proposed action). For CO and PM_{10} emissions, 250 tons per year per pollutant was used as a comparative analysis threshold. This value is used by the USEPA in their NSR Standards as an indicator for impact analysis for listed new major stationary sources in attainment areas. No similar regulatory threshold is available for mobile source emissions, which are the primary emission sources for the proposed action. Lacking any mobile source emissions thresholds, the 250 tons per year major stationary source threshold was used to equitably assess and compare mobile source CO and PM_{10} emissions.

Air quality impacts were assessed by comparing the emissions generated by the repair/demolition/construction activities to these defined thresholds. The repair/demolition/construction emissions represent the additive short-term net change in emissions within the MOTCO environs as compared to the already existing operational emissions

4.3.1 No Action Alternative

Under the No Action Alternative for this EA, existing air quality conditions as described in Section 3.3 would continue.

4.3.2 Alternative 1

Emissions from the Alternative 1 repair, demolition, and construction activities would include temporary emissions from off-road heavy-duty diesel-powered construction equipment, on-road vehicular traffic, and fugitive dust emissions generated during construction. BMPs and California-required vehicle retrofits and emissions system modifications will be identified as requirements in construction contracts. These BMPs, detailed in Section 6.2, would include restricting idling time, proper maintenance of engines, use of best available emissions control technology where practical, and controlling fugitive dust.

Emission estimate calculations for demolition and construction activities utilize information from California's mobile source emission inventory. Emissions for highway vehicles were estimated using the CARB's Emission Factor model. For additional information on the methodology utilized to calculate emissions from construction equipment, watercraft, highway vehicles, and fugitive dust, refer to **Appendix E**.

Estimated emissions that would be generated as the result of operating diesel construction equipment; and a variety of highway vehicles, including dump trucks, delivery trucks, and pickup trucks are presented in **Table 4.3-1**. VOC, NO_x, and $PM_{2.5}$ emissions are compared to the General Conformity Rule *de minimis* thresholds.

Table 4.3-1. Alternative 1 Estimated Air Emissions from Demolition and Construction Activities

Year	VOCs	CO	NO_x	[2]SO_2	PM_{10}	$PM_{2.5}$
2017	0.32	1.42	4.30	0.00	0.21	0.20
2018	0.53	2.24	7.03	0.01	0.41	0.38
2019	0.08	0.36	0.77	0.00	0.06	0.05
2020	0.22	0.70	1.99	0.00	0.10	0.09
2021	0.02	0.11	0.32	0.00	0.02	0.01
[1]*de minimis* thresholds	100	250	100	100	250	100
Potential Exceedance	No	No	No	No	No	No

Notes: [1]40 CFR Section 93.153; [2]SO_2 is a precursor for $PM_{2.5}$

Emissions associated with Alternative 1 activities would result in minor emissions and would not require a Conformity Determination. Should this alternative be selected, it would fall under a Record of Non-Applicability (RONA).

Additional road repairs are planned in future years past 2021; however, the implementation timeline for these repairs remains uncertain and subject to future funding decision. It is anticipated that repairs conducted in any given future year would not exceed the amount of construction analyzed for 2018 (the year of greatest activity and emissions calculations). Therefore, the long-term road repairs would also result in minor annual emissions.

Once the Alternative 1 actions have been completed, operational air emissions are not expected to change as a result of implementation of this alternative.

4.3.3 Alternative 2

Road, bridge, utility, and geotechnical investigation activities that would be performed as a result of implementing Alternative 2 are very similar to the activities analyzed under Alternative 1. The primary difference in terms of emissions is the amount of disturbed area that would be re-graded. Estimated emissions that would be generated as the result of operating diesel construction equipment; and a variety of highway vehicles, including dump trucks, delivery trucks, and pickup trucks are presented in **Table 4.3-2**. VOC, NO_x, and $PM_{2.5}$ emissions are compared to the General Conformity Rule *de minimis* thresholds. For additional information on the methodology utilized to calculate emissions from construction equipment, watercraft, highway vehicles, and fugitive dust, refer to **Appendix E**.

Table 4.3-2. Alternative 2 Estimated Air Emissions from Demolition and Construction Activities

Year	VOCs	CO	NO_x	[2]SO_2	PM_{10}	$PM_{2.5}$
2017	0.35	1.52	4.56	0.00	0.23	0.21
2018	0.53	2.26	7.08	0.01	0.42	0.38
2019	0.08	0.36	0.77	0.00	0.06	0.05
2020	0.22	0.70	2.01	0.00	0.10	0.09
2021	0.03	0.12	0.36	0.00	0.02	0.02
[1]*de minimis* thresholds	100	250	100	100	250	100
Potential Exceedance	No	No	No	No	No	No

Notes: [1]40 CFR Section 93.153; [2]SO_2 is a precursor for $PM_{2.5}$

Emissions associated with Alternative 2 activities would result in minor emissions and would not require a Conformity Determination. As a result, and given that Alternative 2 is the preferred alternative, a RONA has been prepared for this alternative (**Appendix E**). As with Alternative 1, it is anticipated that the long-term road repairs conducted in any given future year would not exceed the amount of construction analyzed for 2018 (the year of greatest activity and emissions calculations). Therefore, the long-term road repairs would also result in minor annual emissions.

Once the Alternative 2 actions have been completed, operational air emissions are not expected to change as a result of implementation of Alternative 2.

4.4 BIOLOGICAL RESOURCES

Criteria indicating the potential significance of impacts to biological resources are as follows:

- Substantial loss or degradation of habitat or ecosystem functions (natural features and processes) essential to the persistence of native plant and animal populations.
- Substantial loss or degradation of a sensitive habitat that support high concentrations of special status species or migratory birds.
- Disruption of a federally listed species, its normal behavior patterns, or its habitat that substantially impedes MOTCO's ability either to avoid jeopardy or conserve and recover the species.
- Substantial loss of population or habitat for a state-protected or non-listed but special status species, increasing the likelihood of federal listing action to protect the species in the future.

The definition of "substantial" is dependent on the species and habitats in question and the regional context in which the impact would occur. Impacts may be considered more adverse if the action affects previously undisturbed habitat or if the impact would occur over a large portion of available habitat in the region. Impact reduction measures that are included in the Proposed Action are factored into the determination of significance.

4.4.1 No Action Alternative

Under the No Action Alternative for this EA, the linear infrastructure throughout MOTCO would not be repaired, and the associated impacts to habitats and species would not occur. MOTCO's linear infrastructure would continue to degrade and potentially result in operational restrictions in speed, weight, and vehicle travel patterns over time. Ongoing conservation measures of the INRMP would continue to be implemented to the most practical extent possible, but access for some natural resource management activities could be impacted.

4.4.2 Alternative 1

The potential impacts to habitats, flora, fauna, and special status species under Alternative 1 would be similar to those detailed in Alternative 2. Because the Army has consulted with USFWS and NMFS on an informal basis on potential effects to federally listed species and critical habitat on the preferred alternative, the bulk of the analysis for impacts to these resources is presented under Alternative 2. The Alternative 1 project footprint would potentially impact a similar area as Alternative 2 (see **Appendix B**). The difference is in that Alternative 1 would have a smaller area of permanent impact as the current width of all roads would be retained under Alternative 1. The habitat that occurs along the roadside areas that is not included in the Alternative 2 area of long-term impact is low quality ruderal habitat that is fragmented by the roadways and associated activities.

4.4.3 Alternative 2

4.4.3.1 Habitats

The habitat within the Alternative 2 project footprint (see **Appendix B**) is primarily non-native previously disturbed areas within the existing road shoulder. Direct long-term impacts from restoration of roads and associated shoulders to these habitats would be minor. In addition, direct temporary impacts would occur from the activities of equipment and workers during repair activities. Areas that would be temporarily impacted would be stabilized and re-vegetated with appropriate native species immediately following completion of the project. Therefore, such impacts would be negligible and short-term.

As noted in Section 3.2, a total of approximately 18 acres of total wetland habitat within the project area. Of this, 15.50 acres was found to be estuarine, 2.43 acres palustrine, and 0.10 acre riverine wetland habitat. The Army has committed to avoiding direct impacts to these wetlands. However, indirect impacts may occur as a result of short-term construction impacts that are not fully mitigated (e.g., minor amounts of sediment that erosion control measures do not fully address) and long-term changes in stormwater flow from the restoration of roads to their original design heights. Such impacts would be minor and localized; overall wetland quality and functionality would not be impacted.

As noted in Section 4.2.2, there would be impacts to estuarine wetlands from the realignment of Rinquist Road, including the construction of a new road segment, including fill of wetlands and use of a temporary cofferdam while new soils are stabilized, and removal of the North Taylor Boulevard road segment and revegetation to meet targeted wetland conditions. With the anticipated success of the North Taylor Boulevard removal, it is expected that the habitat quality of the wetland would be improved into a contiguous estuarine wetland no longer be bisected by a road segment.

With repair of Bridges T-4, T-7, and T-10, the temporary dewatering of up to 10 areas around bents, which would include one bent for approximately 8 working days on average (not to exceed the approximately 16-week in-water work window), would have temporary adverse impacts to habitat within the slough and adjacent wetland areas. Within the dewatered areas of the channels, aquatic habitat would be displaced and the dewatered area would become eutrophic with the loss of circulation and decay of plant and animal remains. These impacts would be temporary; and would be expected to recover over time after the project is completed and normal tidal circulation is fully restored to pre-construction conditions. All in-water work associated with these efforts will occur between August 1st and November 30th.

Based on the foregoing, the impacts on habitats from the implementation of Alternative 2 would not be significant.

4.4.3.2 Flora

The vegetation potentially impacted by implementation of Alternative 2 is primarily ruderal grasslands with some wetlands vegetation potentially impacted by the realignment of Rinquist Road. Special status plants potentially impacted by implementation of the proposed action are discussed in Section 4.4.2.4. Therefore, impacts to terrestrial and wetland vegetation would be minor with the implementation of Alternative 2.

The temporary dewatering of one bent at a time within the sloughs for repairs to Bridges T-4, T-7, and T-10 would temporarily disturb and stress aquatic vegetation within the sloughs and adjacent areas. Surveys of submerged aquatic vegetation have been performed at Piers 2 and 3 in 2015 and 2016. Submerged aquatic vegetation trends to local water salinity and depth with no evidence to suggest variation in plant cover is influenced by construction activities at Pier 3 (MOTCO 2016). Although productivity (including vegetative growth as well as flowering and seed production) would be affected temporarily, mid- and high-tidal marsh plants are adapted to bi-weekly and longer cycles of wetting and drying, and would generally be expected to survive and recover following the restoration of tidal circulation. Submerged aquatic vegetation would probably die and begin to decay within a few days of channel dewatering. Adherence to BMPs, including the use of matting as necessary within the wetland areas, would minimize these impacts.

Temporary and localized impacts associated with turbidity would potentially occur, particularly if segments of piles to be replaced at Bridges T-4, T-7, and T-10 are below the mudline. However, a temporary increase in turbidity is unlikely to adversely impact aquatic vegetation because the natural turbidity levels near the bridges are high.

In conclusion, the implementation of Alternative 2 would result in moderate but localized and temporary adverse impacts to aquatic vegetation and adjacent wetland vegetation.

4.4.3.3 Fauna

Invertebrates

Under Alternative 2, invertebrates would experience localized mortality and displacement due to proposed linear infrastructure earth-moving activities, including dewatering of some areas. These impacts would be limited to the project sites and temporary as it is anticipated the affected areas would be recolonized within a short time following work completion. Therefore, implementation of Alternative 2 would have a minor adverse impact on invertebrates.

Fish and Essential Fish Habitat

Possible effects associated with implementation of Alternative 2 to fish and EFH would be slight, temporary, and highly localized impacts associated with the Bridge T-4, T-7, and T-10 projects where there would be temporary dewatering and possible disturbance of benthic habitat including the associated biological community. MOTCO consulted with NMFS regarding the Army's EFH Assessment in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. NMFS concurred with the Army's assessment and provided no practical EFH Conservation Recommendations on December 21, 2016 (**Appendix F**).

Reptiles and Amphibians

Impacts to reptiles and amphibians would most likely consist of these species avoiding the areas impacted by the earth-moving and temporary dewatering activities that would be implemented under Alternative 2. However, some common species may be injured or killed.

Birds

Demolition, construction, and repair activities would create localized disturbances due to noise, earth moving activity and equipment use, and human presence that may disrupt individual birds foraging, resting, nesting, or movement between habitats. All native bird species that occur at MOTCO are protected under the MBTA. Repair activity conducted during the breeding season (February 1 through August 31, for most species), could result in indirect impacts to nesting activity (e.g., the abandonment of nests). Many common bird species including marsh wrens (*Cistothorus palustris*), western meadowlarks (*Sturnella neglecta*), bushtits (*Psaltriparus minimus*), and northern mockingbirds (*Mimus polyglottos*) have been observed and may nest in vegetated areas near the proposed linear infrastructure improvements. Killdeer (*Charadrius*

vociferus) have also been observed in the area and may nest on the ground, particularly in graveled areas. The Alternative 2 electrical and communications upgrades would move these utilities underground. Existing electrical and telephone poles and lines, which can provide nesting and perching habitat for birds, would be removed.

In addition to common bird species, Suisun song sparrows (*Melospiza melodia maxillaris*) and San Francisco common yellowthroats (*Geothlypis trichas sinuosa*), both of which are listed as California species of special concern, nest in varying densities in the Tidal Area, including the marsh areas near some of the proposed repairs (HT Harvey and Associates 2011). Northern harriers (*Circus cyaneus*), also a California species of special concern, have been observed nesting in Middle Point Marsh in 2010 (HT Harvey and Associates 2011) and a pair likely nested in Pier Marsh in 2013. Cliff swallows (*Petrochelidon pyrrhonota*), barn swallows (*Hirundo rustica*), and black phoebes (*Sayornis nigricans*) will attach nests to artificial structures and have been observed nesting on Piers 2 and 3 during surveys for other species. House finches (*Haemorhous mexicanus*) may also nest on the horizontal areas or crevices on artificial structures and may nest on the piers.

Standard avoidance and minimization measures would be incorporated into the project to protect migratory birds, consistent with the INRMP's Migratory Bird Management Plan for MOTCO. These measures include avoidance, pre-construction/pre-disturbance surveys, and inhibition of nesting measures, and are detailed in Section 6.3. With these protective measures, implementation of Alternative 2 would not adversely affect migratory bird populations.

Mammals

The impacts from implementation of Alternative 2 (apart from special status species discussed in the next section) are anticipated to be temporary and minor based on the limited use of the project area to mammals. Although demolition, construction, and repair activities would create localized disturbances due to noise, human presence, and turbidity, and these disturbances may disrupt individuals' foraging, resting, or movement between habitats, recolonization of the areas is anticipated following the repair and modernization efforts. No long-term adverse impacts are anticipated due to the net increase in acreage of more valuable habitats as discussed previously.

4.4.3.4 Special Status Species

The Army consulted with USFWS and NMFS on Alternative 2, the preferred alternative, in accordance with the ESA on an informal basis based on the Army's assessment that the proposed action may affect listed species but, that the Army has taken into consideration sufficient measures to avoid potentially adverse effects. The Army received concurrence from NMFS in a letter

As part of the analysis for special status species, two conclusions are included to reflect compliance with NEPA and ESA. ESA consultation and additional details on ESA impacts is provided in Appendix F.

dated December 21, 2016 that the proposed action is not likely to adversely affected listed species or designated critical habitat administered by NMFS. The Army received official concurrence from USFWS on May 5, 2017 that the proposed action is not likely to adversely affected listed species or designated critical habitat administered by USFWS (**Appendix F**). Since initiating informal consultation with USFWS in June 2016, the Army has coordinated with the USFWS on a periodic basis, including hosting USFWS for an on-site field survey in January 2017 and a number of subsequent coordination calls and emails..

Federally Listed Soft Bird's Beak

The Army has consulted with the USFWS under ESA Section 7 on this species. The Army determined, and the USFWS is expected to concur, that implementation of Alternative 2 may affect, but is not likely to adversely affect soft bird's beak and is not likely to adversely affect and not likely to destroy or adversely modify soft bird's beak critical habitat. During a field survey with MOTCO and USFWS personnel in January 2017, soft bird's beak was observed near one of the near-term White Road Bridge projects. Populations of soft bird's beak also have been observed within 50 feet of the edge of existing roads to be repaired along the eastern portion of White Road and within the vicinity of Bridge T-10 where the long-term project of White Road (East) repairs is proposed. A USFWS-approved biologist will conduct pre-construction surveys for presence of soft bird's beak within the area of potential temporary impact and that occurrence of soft-birds beak will be flagged and avoided during project implementation. Where the species is confirmed present, a temporary exclusion fence (TEF) between work areas and the soft bird's beak population will be established to avoid the potential for direct loss of individuals or impacts to occupied habitat.

Soft bird's beak is not known or likely to occur in the vicinity of the relatively disturbed, isolated, muted tidal marsh wetlands that exists adjacent to the Rinquist Road realignment. This species would not be affected by the realignment project.

In conclusion, these impacts would not be significant.

Other State Special Status or California Native Plant Society Plant Species

Delta mudwort is not known to occur in the project area; therefore, no impacts to this species would occur from implementation of Alternative 2.

Mason's lilaeopsis, Delta tule pea, and Suisun marsh aster occur within 50 feet of the existing White Road surface, particularly in the eastern portion of White Road and in the vicinity of Bridges T-7 and T-10. Prior to earth disturbing activity, pre-construction surveys would also be conducted to confirm absence/presence of these species within the project area. If present, these species would be avoided to the maximum extent possible with the erection of TEF and other protective measures to be implemented.

In conclusion, the implementation of Alternative 2 would have no effect on Delta mudwort and may affect Mason's lilaeopsis, Delta tule pea, and Suisun marsh aster. Protective measures would be avoid impacts to these species and, therefore, impacts would not be significant.

Federally Listed Fish Species

The Army determined that the implementation of Alternative 2 may affect but is not likely to adversely affect Central California Coast steelhead DPS, Central Valley steelhead DPS, Central Valley spring-run chinook ESU, Sacramento River winter-run chinook ESU, Green Sturgeon southern DPS, and delta smelt. As noted in the introductory paragraph to this section (Section 4.4.3.4), the Army consulted with NMFS and USFWS pursuant to Section 7 of the ESA. NMFS and the USFWS have concurred with the Army's may affect, not likely to adversely affect and no effect tor not likely to destroy or adversely modify critical habitat determinations for these federally listed fish species under their respective jurisdiction.

With adherence to the delta smelt work window for in-water work window for the repair projects at Bridges T-4, T-7, and T-10, no effects to delta smelt are anticipated. Individuals of the Central California Coast steelhead DPS, Central Valley steelhead DPS, Central Valley spring-run chinook ESU, Sacramento River winter-run chinook ESU, and Green Sturgeon southern DPS may experience localized, temporary, and minor effects resulting from dewatering and project-related activities at Bridges T-4, T-7, and T-10. The brackish slough channels and upstream tributaries are not suitable spawning habitat for any of the listed fish species, although they could provide foraging or juvenile rearing habitat. Temporary displacement or avoidance of the channels during in-water work would be expected to have minor, if any, effects on energetics. Additionally, the pesticide treated wood in the replacement pile segments would not be expected to release copper into the environment in a manner that would affect fish species due to the use of BMPs, the small-scale of the pile repairs, the short-term nature of the potential release, and the high current velocities in the area.

In conclusion, any impacts to federally listed fish would be minor and would not be significant.

Other Special Status Fish Species

<u>Central Valley Fall, Late-fall Chinook Salmon ESU</u>

Impacts to the Central Valley fall, late-fall Chinook salmon ESU and juvenile Sacramento splittail would be similar to those described for the federally listed fish species above. Therefore, there would be no significant impacts to these species with implementation of Alternative 2.

Federally Listed Wildlife Species

<u>California Ridgway's Rail</u>

The Army determined that the proposed action may affect, but is not likely to adversely affect California Ridgway's rail. As noted in the introductory paragraph to this section (Section

4.4.3.4), the Army informally consulted with the USFWS pursuant to Section 7 of the ESA, and the USFWS concurred on the may affect, not likely to adversely affect determination for this species. The project site is located within the range of the California Ridgway's rail, near areas where the species has been recorded in the past. However, the non-detection of the species in the area despite multiple surveys (see Section 3.4.4.3) indicates that the species rarely if ever occurs in the project action area. Furthermore, the project action area is deficient in the features of tidal marsh habitat typically used by California Ridgway's rails. In particular, the marshes near the piers lack extensive channel networks with tidally exposed mud banks and channel bottoms that Ridgway's rails could use for foraging, as well as bordering stands of Pacific cordgrass, pickleweed, and marsh gumplant that Ridgway's rails would be most likely to nest in. Therefore, no loss of individuals or occupied habitat is expected as a result of implementation of Alternative 2.

Pre-construction surveys will be conducted as a precautionary measure and, in the unlikely event that Ridgway's rails are found, avoidance areas will be established within 700 feet of rail calling centers during the breeding season, in order to minimize any disturbance impacts. Therefore, implementation of Alternative 2 would result in no significant impact to the California Ridgway's rail.

In conclusion, impacts to this species would not be significant.

<u>California Least Tern</u>

The Army determined that the proposed action may affect, but is not likely to adversely affect California least tern. As noted in the introductory paragraph to this section (Section 4.4.3.4), the Army informally consulted with the USFWS pursuant to Section 7 of the ESA, and the USFWS concurred on the may affect, not likely to adversely affect determination for this species. Although the species may occasionally disperse past MOTCO, least terns do not nest on or very near the MOTCO site. Moreover, disturbance to individuals is not expected because this species is not known to forage in the immediate vicinity of MOTCO. No individuals are expected to experience loss of foraging opportunities as a result of the in-water work. Therefore, implementation of Alternative 2 would result in no impacts to the California least tern.

In conclusion, impacts to this species would not be significant.

<u>Salt Marsh Harvest Mouse</u>

The Army determined that the proposed action may affect, but is not likely to adversely affect salt marsh harvest mouse. As noted in the introductory paragraph to this section (Section 4.4.3.4), the Army informally consulted with the USFWS pursuant to Section 7 of the ESA, and the USFWS concurred on the may affect, not likely to adversely affect determination for this species. The project site is located within the range of the salt marsh harvest mouse, near areas where the species has been recorded in the past, and thus it is concluded that the project may result in minor temporary impacts to habitat with the implementation of Alternative 2.

Where the salt marsh harvest mouse may be present, all project activities will strictly adhere to the protective measures noted in Section 2.4.1 and further detailed in Chapter 6. The areas of temporary disturbance includes some areas of relatively dense pickleweed, but these areas would be avoided to the greatest extent practicable. The Rinquist Road realignment would affect some low quality pickleweed, but the removal of North Taylor Boulevard would result in a larger, more continuous and less fragmented area of tidal habitat than exists at present. Given the reestablishment of tidal elevations where fill is removed, tidal marsh vegetation is expected to colonize newly exposed areas vegetatively and by seed from the surrounding habitat, resulting in improved conditions for the salt marsh harvest mouse.

In conclusion, impacts to this species would not be significant.

California Red-legged Frog

Past surveys for the California red-legged frog in the Tidal Area of MOTCO, including surveys by USFWS in recent years, have not detected this species. As discussed in Section 3.4.4.3, the Army believes that the likelihood of the California red-legged frog's occurrence in the action area is so low as to be discountable and concludes that implementation of Alternative 2 would have no effect on this species.

State-Listed Threatened and Endangered Species

California Black Rail

California black rails inhabit Middle Point Marsh, Pier Marsh, and Belloma Slough, and thus may be negatively impacted in terms of foraging, prey base, or predation risk, by the temporary dewatering of sloughs at bridges T-4, T-7, and T-10 and Rinquist Road realignment. Elsewhere, given no direct disturbance and limited activity on the shoreline of this area, negligible impacts to California black rails would occur from the implementation of Alternative 2. These impacts would not be significant.

Other State Special Status Wildlife Species

Northwestern Pond Turtle

The temporary dewatering of sloughs for Bridge projects T-4, T-7, and T-10 would have the potential to impact habitat for the northwestern pond turtle. However, this potential is remote given that the likelihood of their presence is low, the species if present would be expected to move away from the construction activity, and such behavioral impacts would be minor and temporary. Known occurrences of this species are within Otter Slough and Seal Creek Marsh in the western portion of the Tidal Area inland from the shoreline in comparison to where the bridges are located. Therefore, no significant impacts to this species are anticipated.

Bird Species of Concern

Several bird species of concern may occur in the marshes within MOTCO. With the implementation of measures described above for migratory birds, the disturbance of these species would be largely avoided. No long-term adverse effects to habitat are anticipated. As a result, minor adverse impacts would occur to bird species of concern from the implementation of Alternative 2. These potential impacts would not be significant.

4.5 LAND USE, RECREATION, AND COASTAL ZONE MANAGEMENT

Impacts on land use were evaluated for significance based on if one or more of the following would occur within the proposed action area for any of the alternatives.

- The action is substantially incompatible with surrounding land uses.
- The action changes land use in such a way that mission-essential operations are degraded.
- The action is substantially inconsistent or in conflict with the environmental goals, objectives, or guidelines of a community or county comprehensive plan for the affected area.

Factors, considered in determining the significance of potential impacts to recreational resources, are the potential for loss of a large portion of a particular type of recreational need that could not be suitably substituted with a similar activity, or if demand could not be met by similar facilities or natural areas.

The main factor considered in determining significance of potential impacts to the coastal zone is consistency to the maximum extent practicable with the federally enforceable policies of the Coastal Management Program for San Francisco Bay.

4.5.1 No Action Alternative

4.5.1.1 Land Use

Under the No Action Alternative, the current land use pattern in the Tidal Area would not change from existing conditions; however, as the condition of linear infrastructure continues to degrade it is possible that land use adjustments would be necessary if roads, bridges, and utilities limit land use functionality requiring adjustments to land use patterns. The No Action Alternative is inconsistent with the RPMP and impacts could be significant over time if mission-essential operations are degraded.

4.5.1.2 Recreation

Under the No Acton Alternative, baseline conditions as described in Section 3.5.1 would remain unchanged and there would be no alteration to the recreational resources located at/or near MOTCO. Access to the Port Chicago Naval Magazine National Memorial would continue as

currently prescribed for the foreseeable future except with respect to effects of other actions (see Chapter 5).

4.5.1.3 Coastal Zone Management

Under the No Action Alternative, the Army would not have a requirement for making a coastal consistency determination or obtaining BCDC concurrence with any consistency determination since there would be no action to review. The Army would continue to manage coastal resources in accordance with the INRMP and adhere to CZMA requirements in other actions.

4.5.2 Alternative 1

4.5.2.1 Land Use

Implementation of Alternative 1 would not result in any changes to land use as the proposed improvements to linear infrastructure are areas of the installation already dedicated to transportation and utilities to and between functional areas of the installation. The Rinquist Road realignment would result in minor alterations to land use in the minor alteration of lands being dedicated to transportation infrastructure and road segments removed and revegetated to targeted adjacent wetland conditions. All of the Alternative 1 actions are consistent with the installation RPMP and would provide for improved functionality of land uses for tenant uses and visitors to the Port Chicago National Memorial. Therefore, all elements related to the linear infrastructure repairs would be consistent with existing land uses, management, and ownership and conform to plans and regulations. No reasonably foreseeable impacts to land use would occur from implementation of the proposed action under Alternative 1.

4.5.2.2 Recreation

As also discussed in Section 4.10.2, under Alternative 1, construction activities may result in minor reroutings for access to the Port Chicago Naval Magazine National Memorial, which would cause potential delays in accessing the Monument estimated not to exceed 10 minutes. The Memorial would be accessible as it is under existing conditions. To the extent practicable, the Army will work with NPS to attempt to avoid the most disruptive types of construction activities during those times when conditions of relative quiet and reverence are important for the interpretive, ceremonial, or commemorative events planned at the memorial site. Once the demolition or construction activity is over, access to the Port Chicago Naval Magazine National Memorial would return as under baseline conditions.

The potential delays in access to the Port Chicago Naval Magazine National Memorial would be temporary, not lasting longer than proposed construction period. There would be a long-term beneficial impact associated with improved roadways for access to the Memorial. In conclusion, there would be minor short-term negligible adverse impacts and minor beneficial long-term impacts to recreational resources as a result of the implementation of Alternative 1. These impacts would not be significant.

4.5.2.3 Coastal Zone Management

Alternative 1 would be consistent to the maximum extent practicable with the BCDC coastal management program for the San Francisco Bay segment of the California coastal zone. However, a formal Coastal Consistency Determination was only prepared for Alternative 2 (the preferred alternative).

4.5.3 Alternative 2

The Army has determined that Alternative 2 is consistent to the maximum extent practicable with the BCDC coastal management program for the San Francisco Bay segment of the California coastal zone. Because the planning and design for the Bridge T-1 and T-2 projects are further along and would be covered by a Nationwide Permit, the Army has prepared a Coastal Consistency Negative Determination for this part of the action. A second Coastal Consistency Determination was prepared for the remainder of the Alternative 2 project components, which would require a CWA Section 404 permit and SFBRWQRB water quality certification. On April 11, 2017, BCDC concurred with the Army Negative Determination for the Bridge T-1 and T-2 projects. On June 28, 2017, BCDC issued a conditional concurrence with the Army's Consistency Determination for the remainder of Alternative 2 project components as amendment eight to the Letter of Conditional Concurrence for Consistency Determination No.C2003.003.08 (**Appendix G)**. The Letter of Conditional Concurrence includes additional commitments regarding the restoration plan for the Rinquist Road realignment/North Taylor Boulevard area, which is noted in Sections 4.2.2 and 6.3.4.

4.6 TRANSPORTATION AND TRAFFIC

The main factor considered in determining the significance of impacts to transportation and traffic is the potential for an intersection to fail under an action alternative that would otherwise not have not failed under the No Action Alternative. A failed intersection refers to the ability of an area to provide reasonable egress of traffic without substantial stacking or delay and/or the ability for the intersection's infrastructure to maintain safe conditions as increased volumes of traffic pass through. Additional impacts to transportation and traffic may include alterations of local traffic patterns or trends or significant deterioration to transportation infrastructure beyond normal wear and tear.

4.6.1 No Action Alternative

Under the No Action Alternative, the linear infrastructure throughout MOTCO would not be repaired. Roads and bridges at MOTCO would continue to degrade to a point at which they would be unsafe for intended uses. Additionally, the concept of operations for Pier 2, which would require capacity to accommodate two-way traffic with ammunition-laden vehicles at the Rinquist Road intersection would not be able to be safely implemented. As the condition of roads and bridges decline, adjustments would be needed in order to ensure safe transport on

MOTCO roads and bridges. Over time, this could result in restrictions on uses of MOTCO's road and bridges and the safety and efficiency of MOTCO's transportation network would degrade over time. As a result, under the No Action Alternative, there would be long-term direct adverse impacts to transportation and traffic.

4.6.2 Alternative 1

During construction and demolition activities that occur with the implementation of Alternative 1, there would be temporary impacts to traffic flow from construction-related traffic in the vicinity of MOTCO. Construction-related traffic would include heavy equipment and transport vehicles, dump/haul trucks, personnel transport vehicles, and others as necessary. During construction and demolition activities and depending on the location of the project site, vehicle size, timing, and operational status of the gates, it is anticipated that vehicular traffic would either use Gate 2 (located at the southern end of Taylor Boulevard) or Gate 5 (located in the eastern portion of the Tidal Area at the intersection of Port Chicago Highway and Nichols Road, which is being upgraded). Based on the current project timeline for the Gate 5 project, the upgraded gate should be available for use in 2019. Therefore, temporary impacts near Port Chicago Highway and Nichols Road, as well as along Kinne Boulevard, are likely. **Table 4.6-1** summarizes the anticipated number of vehicular trips under Alternatives 1 and 2 for 2017, the year of the greatest amount of proposed repair activity.

Table 4.6-1. Anticipated Vehicular Trips Mileage to/from MOTCO for Action Alternatives for 2017 (Peak Year)

	Total Estimated Mileage of Vehicle Trips	
Repair Activity	Alternative 1	Alternative 2
Mobilization	1,933	1,933
Materials Transport	50,447	50,447
Worker Commutes	13,000	14,000
Totals	65,380	66,380
Average Weekly	1,257	1,278
Average Daily (Mon – Fri)	251	255

Construction contractors would be required to use the City of Concord's designated truck routes and obtain special permits from Contra Costa County as required (see Section 3.6). Traffic impacts would be short-term in nature, and likely distributed relatively evenly throughout normal working hours.

The addition of approximately 250 vehicles per day to local roads under Alternative 1 would not result in alterations of local traffic patterns or trends. The impacts would be minor and short-term in context of the existing traffic patterns on these roads.

Within MOTCO, the construction contractor would also be required to develop a Traffic Control Plan addressing potential impacts on MOTCO transportation. This plan would include, but is not limited to describing the traffic control measures to be used to ensure repair activities occur in a manner that affects the MOTCO mission to the minimal amount practicable, reroute of

traffic to accommodate/detour traffic flow during road and bridge closures in the most efficient manner possible. In addition, as may be deemed necessary, MOTCO may consider alternative work schedules during the periods of closures/detours for Tidal Area workers to minimize impacts to project activities and will work with the construction contractor to notify affected employees and activities associated with the proposed action (also see Section 6.3).

In conclusion, there would be long-term beneficial impacts to transportation from the implementation of the infrastructure upgrades proposed under Alternative 1. The repair/construction-related traffic would be minor and short-term in context of the local traffic conditions both on and off the installation. Therefore, implementation of Alternative 1 would not have significant impacts to transportation or traffic.

4.6.3 Alternative 2

The potential impacts to transportation and traffic under Alternative 2 would be essentially the same as those assessed for Alternative 1, with a slightly higher number of vehicle trips (see Table 4.6-1). However, the wider roadways under this alternative would provide long-term advantages to the Army in terms of flexibility for routing mission-related traffic.

4.7 UTILITIES AND SERVICE SYSTEMS

Impacts to utilities and service systems are considered significant if an action increases demand for these systems beyond the planned capacity of the system in the foreseeable future.

4.7.1 No Action Alternative

Under the No Action Alternative, repairs to wastewater, water, electrical, and communication systems identified in the Utility Master Plan as required to keep the systems functional for the foreseeable future would not occur. Over time, the systems would degrade along with their service level. The service levels and capacity of these systems would be expected to reduce over time potentially resulting to significant adverse impacts to these utility services if other action is not taken. Additionally, without repairs to roads, solid waste service may be less efficient if solid waste and recycling vehicles are restricted in the roads available for servicing MOTCO. In conclusion, there would be the potential for long-term adverse impacts to MOTCO's utilities and service systems under the No Action Alternative.

4.7.2 Alternative 1

Under Alternative 1, there would be direct and long-term, beneficial impacts on MOTCO's utility service systems. Specifically:

- Wastewater: insufficient wastewater pipe slopes at Christenbury Road, Kinne Boulevard, and Mordoh Road would be corrected.
- Potable water: upgrades to fire hydrants, isolation valves, backflow preventers, and piping.

- Electrical: removal of existing overhead, non-operational distribution system components and (to the extent that funding is available) replacement of the existing Tidal Area overhead electrical distribution system with an underground system.
- Communications: movement of infrastructure underground into a conduit or ductbank (to the extent funding is available) and installation of ductbanks at utility crossings to accommodate future burying of utility lines.

With respect to solid waste and recycling service, implementation of Alternative 1 would result in temporary increases in the waste/recycling stream. However, to the maximum extent possible, at least 50 percent of non-hazardous solid waste generated through construction and demolition activities would be diverted in accordance with the requirements set forth in EO 13693, *Planning for Federal Sustainability in the Next Decade*, CAL Green Sections 4.408 and 5.408, and the City of Concord construction and demolition materials ordinance. Wherever possible, removed asphalt would be used in recycled asphalt product for the road repair projects. The removed timber utility poles and defunct utility system components would be recycled through DOD protocols. Because some of these materials may contain ACM, LBP, PCB paint, or creosote, the construction contractor would be responsible for testing suspected building materials for such constituent and disposing of the waste appropriately based on the results of the sampling and in accordance with federal and state regulations (refer to Section 4.12 for additional information). With respect to the creosote-TWW from the replacement of pile sections on Bridges T-4, T-7, and T-10, it may be reused or recycled if the wood contains less than 50 ppm creosote. Otherwise, the creosote treated piles are considered TWW, which is further discussed in Section 4.11.

Whatever repair and demolition debris that cannot be recycled and is characterized as solid waste would be disposed of at nearby municipal waste landfills. As noted in Section 3.7.5, nearby municipal waste landfills have adequate capacity.

Additionally, the repairs of the roadways would provide a long-term benefit for efficient solid waste servicing of the Tidal Area with roadways adequate to accommodate waste and recycling trucks.

In conclusion, the implementation of Alternative 1 would have direct, beneficial, long-term benefits for utility systems and minor, short-term impacts to solid waste service systems as the result of generation of solid waste debris when implementing the Alternative 1 repairs to linear infrastructure. These impacts would be minimized by the diversion of at least 50 percent of non-hazardous solid waste generated. Therefore, impacts to utilities and service systems from implementation of Alternative 1 would not be significant.

4.7.3 Alternative 2

The potential impacts to utilities and service systems under Alternative 2 would be the same as those assessed for Alternative 1.

4.8 NOISE

Noise impacts result from perceptible changes in the overall noise environment that increase annoyance or affect human health. Annoyance is a subjective impression of noise wherein people apply both physical and emotional variables. To increase annoyance, the cumulative noise energy must measurably increase. Human health effects such as hearing loss and noise-related awakenings can result from exposures to noise. The evaluation criteria used in this noise analysis include the potential for:

- A person to be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day. This evaluation criteria is based on OSHA standards (29 CFR Section 1910.95), whereby employees should not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day (OSHA 2012).
- Noise to perceptibly change at sensitive receptor locations in the short and long term.
- Short-term construction and long-term, post-construction noise levels exceeding ambient background sound levels.

4.8.1 No Action Alternative

Under the No Action Alternative, baseline noise conditions would continue with no reasonably foreseeable change in noise conditions.

4.8.2 Alternative 1

Typical construction assumes standard construction and demolition practices. This would include the use of some heavy equipment over a temporary period. Construction-related noise emissions from the types of equipment that would be used in implementation of Alternative 1 would range from 74 to 90 dBA when measured 50 feet from the respective piece of equipment (Federal Highway Administration 2006). Construction noise is modeled using the *Federal Highway Administration's Road Construction Noise Model Version 1.1*, which was developed to calculate noise levels emanating from various types of construction equipment. Although developed for road construction, the equipment types and noise calculations apply to any type of construction activity. The Army would adhere to OSHA noise safety standards and ensure that construction workers and employees would not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day.

The noise associated with repair, construction, and demolition activities would be most likely confined to general working hours (7:00 a.m.–8:00 p.m.) and are unlikely to adversely alter the surrounding noise environment. However, if the repairs to Port Chicago Highway are via mill/overlay, this would require the use of a rubblizer machine that rapidly breaks concrete in such a manner that the broken pieces can be used for the road base. This equipment is the

loudest equipment proposed for use and expected noise exposures would be 59 dB at the nearest house in Clyde on and 54 dB in Bay Point at residences on Wharf Drive. However, the rubblizer machine can use up to ten hydra break rams and break up the pavement very quickly. Noise levels would be short-term, with expected durations less than one hour in the vicinity of either location. Additionally, construction-related vehicles would incrementally add to traffic-related noise in the communities of Bay Point and Clyde.

Noise impacts would be minimized through the implementation of the BMPs detailed in Section 6.2 including restrictions on idling time and using/maintaining equipment in proper working order. In addition, as also noted in Section 6.3, the Army is committed to providing advance notification to neighbors if construction activities are planned for weekends or holidays notifying nearby sensitive receptors in advance of commencing the noisiest phases of the planned construction projects, and using standard DOD protocols to log and respond to noise complaints received during implementation of Alternative 1.

In conclusion, noise associated with repair, construction, and demolition would not adversely affect sensitive receptors since the noise would attenuate ambient background noise levels. Moreover, BMPs and minimization measures will be implemented by the contractor and the Army will implement a public outreach program to further reduce noise impacts. Therefore, implementation of Alternative 1 would not result in significant noise impacts.

4.8.3 Alternative 2

The potential noise exposure impacts of implementing Alternative 2 would be the same as those described for Alternative 1.

4.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The socioeconomic impact analysis focuses on the local economic benefit associated with implementation of Alternative 1. Economic impacts include direct effects, such as changes to employment and expenditures and indirect effects, which result from spending and re-spending in response to direct effects. Consideration of significance is within the context of the local/regional economic environment.

This analysis also addresses potential disproportionately high and adverse impacts to minority and/or low-income populations consistent with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and environmental health and safety risks to children consistent with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks.* As discussed in Section 3.9.2, the two census tracts that include an area adjacent to MOTCO have greater proportions of minority and low-income populations as compared to Contra Costa County as a whole and Census Tract 3142 has a higher proportion of under 18 population than Contra Costa County. The analysis includes the potential for increased, disproportionately high, and/or adverse risks for any

minority or low-income populations and/or increased, disproportionate environmental, health, or safety risk to children under the alternatives. This analysis focuses on noise and traffic impacts associated with Alternatives 1 and 2.

4.9.1 No Action Alternative

Under the No Action Alternative, existing socioeconomic conditions related to MOTCO would continue without investment in the linear infrastructure. No related changes to employment and expenditures and associated direct and indirect effects are reasonably foreseeable. Additionally, there would be no disproportionate environmental justice impacts to minority or low-income populations or impacts that would adversely impact children's health and safety.

MOTCO Gate 2 (left); community of Clyde (right)

4.9.2 Alternative 1

The repairs to linear infrastructure would result in several million dollars in military spending annually for projects that interested private firms would be invited to submit bids and provided an opportunity to be awarded contracts to perform the work. The military expenditures for each contract would produce direct employment for workers that would perform the repairs to the linear infrastructure as well as indirect employment and expenditures from the ripple effect of that spending in the local economy. This would be a short-term beneficial impact to the local/regional economy although

Not all construction labor and materials would be procured locally. The regional labor force would be expected to absorb the increased demand for direct construction jobs, as well as any associated secondary jobs. No in-migration to the area would be expected as a result of construction spending. Additional taxes would accrue to federal, state, and local governments as a result of the increase in construction activities; however, these impacts would be minor and temporary. In summary, the military spending for implementation of Alternative 1 would result in minor short-term beneficial impacts to the local region.

4.9.2.1 Environmental Justice

As discussed in Section 4.8, the noise from the proposed repair of the eastern segment of Port Chicago Highway under Alternative 1 would potentially result in short-term noise exposure in the Bay Point area. The impacts would be reduced by the BMPs detailed in Sections 6.2 and 6.3. As discussed in Section 4.6, traffic impacts would be short-term in nature, lasting no more than the duration of the repairs and road realignment and minor within the context of the average roadway traffic volumes.

The MOTCO Gate 2 and Gate 5 access control points are both in relatively close proximity to the communities of Clyde and Bay Point, respectively. There is no access point to MOTCO that is not adjacent to a minority and/or low-income community. Whereas the upgraded Gate 5 (which is expected to be available in 2019 based on the current project schedule) will be internal to the installation and buffered from Bay Point, the Gate 2 area offers little offset or screening between the activities at the gate and the community of Clyde. However, as detailed Section 6.3, the Army would provide notification to the community when high levels of truck traffic are anticipated.

USEPA has expressed concern about the trucking of HW through the community of Bay Point. However, there would be a limited amount of HW that may be generated during this project (e.g., LBP contaminated debris from Bridge T-2 and removed utility components with ACM or PCBs) and transportation of all such waste would be in compliance with all federal, state, and local regulations including adhering to local regulations on transportation routes.

In summary, with the above considerations, there would be no disproportionate impacts to minority or low-income populations or impacts that would adversely impact children's health and safety with the implementation of Alternative 1.

4.9.3 Alternative 2

The potential socioeconomic and environmental justice impacts of implementing Alternative 2 would be the same as described for Alternative 1.

4.10 CULTURAL RESOURCES

The term "historic property" refers to cultural resources that have been found eligible for listing, or are listed, in the NRHP. Section 106 of the NHPA of 1966, as amended, outlines the process in which federal agencies are required to determine the effects of their undertakings on historic properties. Any adverse effects on historic properties are considered to be significant. Effects are considered to be adverse if they alter, directly or indirectly, any of the characteristics of a cultural resource that qualify that resource for the NRHP so that the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association is diminished. Analysis of the potential impacts was based on evaluation of the changes to the existing historic properties that would result from implementation of the project.

In making a determination of the effects to historic properties, consideration was given to the following:

- specific changes in the characteristics of historic properties in the study area;
- the temporary or permanent nature of changes to historic properties;
- the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's historical features; and

- the existing integrity considerations of historic properties in the study area and how the integrity was related to the specific criterion that makes a historic property eligible for listing in the NRHP.

The threshold also applies to any cultural resource that has not yet been evaluated for its eligibility to the NRHP or if the proposed action disturbs a traditional cultural property. Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment by introducing visual or audible elements that are out of character for the period the resource represents, or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect impacts are those that may occur as a result of the completed project, such as increased vehicular or pedestrian traffic in the vicinity of a resource. Any adverse effects on cultural resources that are listed or eligible for listing in the NRHP are considered to be significant. Effects are considered to be adverse if they alter, directly or indirectly, any of the characteristics of a cultural resource that qualify that resource for the NRHP so that the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association is diminished.

4.10.1 No Action Alternative

Under the No Action Alternative, the linear infrastructure repairs would not occur. The Army would continue to manage cultural resources on MOTCO in accordance with the ICRMP and all applicable laws, regulations, and policies. Access to the Port Chicago National Memorial would continue under existing conditions into the reasonably foreseeable future.

4.10.2 Alternative 1

The potential impacts to cultural resources under Alternative 1 would be similar to those described below for Alternative 2. Because the Army's NHPA Section 106 consultation occurred for the preferred alternative, Alternative 2, the more detailed analysis of potential impacts is provided in Section 4.10.3.

4.10.3 Alternative 2

The Army consulted with the SHPO, NPS, and federally recognized tribes regarding this undertaking in accordance with Section 106 of the NHPA (see **Appendix H**). The Army coordinated with NPS and incorporated pedestrian improvements and amenities for the Port Chicago Memorial into the Pier 2/White Road improvement projects. These included benches at the memorial and improvements to the aesthetics and safety of the White Road pedestrian crossing to the barricaded railcar feature of the Memorial that is south of White Road.

The implementation of Alternative 2 would result in temporary disturbance of areas that have been previously surveyed for cultural resources with negative results or have no archaeological potential due to fill over this area. There are two exceptions to this: the approximately 0.5-acre

area in the previously undisturbed footprint of the proposed Rinquist Road realignment and some areas adjacent portions of Stevens Road and eastern Port Chicago Highway (repair of this segment in the long-term) (see Section 3.1.0). A survey of these areas was conducted in February 2016 with negative results. The negative results indicate that the undertaking would result in no significant impacts to historic properties. Additionally, the roads to be repaired were inventoried and are recommended as not eligible for listing on the NRHP. As part of the consultation for this EA, MOTCO consulted with the California SHPO on this eligibility determination.

Although unlikely due to the roadways being previously disturbed and filled areas, MOTCO's ICRMP addresses the potential for inadvertent discovery of archaeological deposits encountered during any construction or excavation activities. The contractors would be required to adhere to the SOP that requires the stoppage of work and notification to occur to trigger the necessary steps for a qualified professional to assess the discovery and advise on next steps that are in compliance with Native American Graves Protection and Repatriation Act, Archaeological Resources Protection Act (ARPA), and other related federal and state laws (MOTCO *in prep).*

The repairs to White Road and the White Road/Johnson Road intersection near the Port Chicago Naval Magazine National Memorial, a NRHP listed property, would occur in conjunction with the modernization and repair of Pier 2 and were, therefore, addressed in the EIS for this action (Department of the Army 2015) and are being further addressed in a Supplementary EA for this action that is currently in preparation. (See Section 5.2 for further discussion of cumulative impacts.)

Repairs to White Road west of the Port Chicago Naval Magazine National Memorial and south of the White Road/Johnson Road intersection are removed enough from the Memorial site that visual, atmospheric, and audible impacts anticipated during demolition and construction activities would be minimal. However, the repairs to White Road would be adjacent to the parking area for the National Memorial site. To the extent practicable, the Army would not engage in construction activities that would result in visual, atmospheric, or audible impacts during times when visits to the Memorial are scheduled. The proposed repair, demolition, and construction activities would not diminish the integrity of the Memorial or remaining Pier 1 pilings. Therefore, implementation of Alternative 2 would have no adverse effect and no significant impacts to the Port Chicago Naval Magazine National Memorial.

Although access to the Memorial for public visitation may be inconvenienced by rerouting when road construction projects are underway, access would remain available throughout the implementation of the linear infrastructure repairs. The rerouting is not anticipated to result in more than 10-minute delays as compared to normal access conditions. Once all projects have been completed, transportation routing would return to normal conditions.

In conclusion, the implementation of Alternative 2 would not result in significant impacts to cultural resources.

4.11 HAZARDOUS MATERIALS, HAZARDOUS WASTE, TOXIC SUBSTANCES, AND CONTAMINATED SITES

The nature and magnitude of potential impacts associated with HM, HW, and toxic substances depend on the toxicity, storage, use, transportation, and disposal of these substances. Impacts associated with contaminated sites could include disruption of existing characterization, containment, or cleanup activities resulting in the potential for increased risk of contamination exposure, transport, and danger to workers or the environment. The threshold for significant impacts to HM, HW, toxic substances, and contaminated sites is met if the storage, use, handling, or disposal of these substances or disruption of contaminated areas substantially increases the risk to human health due to direct exposure, substantially increases the risk of environmental contamination, or violates applicable federal, state, and local regulations.

4.11.1 No Action Alternative

Under the No Action Alternative, implementation of the proposed action would not occur. Operations at MOTCO would continue but likely at decreasing levels due to increased infrastructure degradation. All regulations and plans that pertain to HM, HW, toxic substances, and contaminated sites would continue to be followed. Therefore, no adverse impacts related to HM, HW, toxic substances, or contaminated sites would be expected from implementation of the No Action Alternative.

4.11.2 Alternative 1

4.11.2.1 Hazardous Materials

Contract documents would specify that procedures for HM management established for MOTCO would be followed by the contractors during all linear infrastructure repairs. To minimize the potential for impacts to humans and the environment associated with hazardous or regulated materials, all POL and solvents required to operate and maintain the equipment used to perform the various tasks comprising the proposed action would be stored outside of the construction zone. The contractor(s) would be required, in advance of its delivery to the installation, to provide the MOTCO Environmental Office a Safety Data Sheet for the epoxy material proposed for use on Bridge T-1, the crack filler proposed for use on the surface of Bridge T-10, and the wood preservative with which the pilings proposed for installation on Bridge T-10 have been treated. Upon delivery of the materials to the installation and throughout the course of the project activities, the contractor(s) would be required to manage the material in accordance with relevant environmental protection and worker safety regulations and MOTCO environmental management policies. Any spill of such materials on MOTCO property would be immediately reported to the MOTCO Fire Department, Directorate of Public Works, and Environmental Compliance Office to ensure response actions are appropriate and in

accordance with the MOTCO SWPPP, SPCC Plan, and OHSSPRP (MOTCO 2001, 2013). Thus, the potential effects from HM are expected to be negligible from the implementation of Alternative 1.

4.11.2.2 Hazardous Waste

Contract documents would specify that established HW procedures would be followed during all linear infrastructure repairs, and MOTCO would continue to operate within its small quantity generator HW permit conditions. All HW generated through the implementation of the proposed action (e.g., LBP removed from Bridge T-2, used POL products associated with the operation of construction equipment) would be managed by the construction contractors in accordance with the relevant requirements of the MOTCO HWMP (MOTCO 2012), and applicable federal, state, and local regulations. It is not anticipated that significant quantities of HW would be generated by the infrastructure project activities. Thus, the potential effects from HW expected with the implementation of Alternative 1 would be negligible.

4.11.2.3 Toxic Substances

Where lead-based or PCB paint is present (e.g., Bridge T-2), required abatement and waste management planning and control measures would be implemented in accordance with federal and California law. Removed timber pile sections would be stockpiled onsite, cut into smaller pieces using sawdust capture and recovery BMPs, and disposed of in a landfill facility as required for TWW per CCR Title 22, Section 67386. The removal of toxic substances as part of the infrastructure repair activities, including sections of creosote treated timber pilings, would be conducted in accordance with applicable federal, state, and local regulations. Therefore, negligible to minor impacts from toxic substances are anticipated from the removal of ACM, LBP, mercury, PCBs/PCB paint, or TWW from the implementation of Alternative 1.

The waterborne pesticide would be used in accordance with the American Wood Preservers Association and Western Wood Preservers Institute Standard A2, *Standard Methods for Analysis of Waterborne Preservatives and Fire-Retardant Formulations* and P5, *Standard for Waterborne Preservatives*, which would minimize leaching into the water column and Bay sediments at Bridges T-4, T-7, and T-10. The proposed action would install 33 treated timber piling sections, well under the threshold expected to cause significant copper accumulation in the water column and sediment. Likewise, the tidal action and currents surrounding the in-water work areas are substantial; Bay currents have been measured near Pier 4 at approximately 74 cm/s, and the connected sloughs and marshlands are influenced accordingly. Within the adjacent wetland areas, however, there is more limited tidal influence than within the slough. However, it is not likely that copper would accumulate significantly in either area due to the strength and regularity of tidal flushing in both locations. Pile sections would not all be repaired on the same day, and as most leaching of copper into the environment takes place within the first few days of placement in the water, it is unlikely that the piles will collectively contribute to

elevated copper levels before a tidal cycle occurs. Moreover, the existing pile sections are treated with creosote and creosote-related contaminants from such piles leach in small amounts into the surrounding environment. Any debris generated during the repair of the pile sections during repair would be captured and disposed of properly. Thus, the use of BMPs, the small-scale of the project, and the high current velocities/regular tidal flushing in the area will result in minimal, if any, release and accumulation of toxic substances into the environment.

4.11.2.4 Contaminated Sites

The implementation of Alternative 1 would result in temporary disturbance of areas managed under the MOTCO MMRP and IRP due to the need for excavation below and adjacent to existing roadways and work on bridges in the Tidal Area. The work would be conducted in accordance with the LUCIP installation-wide Land Use Control for Environmental Sampling and Results Screening for Excavation Projects (MOTCO 2014). Soil sampling and analysis was conducted in accordance with this policy. The results indicate that, with one exception, these soils did not exceed the higher of the minimum screening level or the ambient concentration and are thus considered clean and may be reused at MOTCO as fill at a location different from where it was excavated. The exception is the sample collected in the vicinity of White and Johnson Road intersection. This sample had the maximum reported concentration of several metals, exceeds the action and ambient levels for cadmium, and are considered potentially contaminated according to the LUCIP. These sample results will be taken into consideration in the RI/FS for IRP Site 40 and the road repairs would be implemented in accordance with all applicable regulations.

During the Bridge T-10 repairs, if the removal of deteriorated creosote-treated pile sections below the mud line is required, then the underlying sediments and soils would be temporarily disturbed. Metals contamination in soils in the Litigation Area IPR site have been addressed with remedial actions implemented from 1992 to 1996 The proposed Bridge T-10 repair activities would not be expected to interfere with the ongoing Litigation Area Monitoring.

The proposed repair work on Bridges T-1 and T-2 would occur within/overlying the IRP Site 30, and given that the site was previously investigated, subject to remedial action and restoration, and closed out, no impacts related to the former contamination are anticipated to result from the implementation of Alternative 1. Contractors would be required to follow all scheduling, coordination, security, safety, permitting, and other matters pertinent to work accomplishment in accordance with DOD Manual 6055.09, *DOD Ammunition and Explosives Safety Standards.* An ESS would be developed that includes specific discussion of the type of activity, responsibilities, and ESS approval processes in order to minimize serious injury, loss of life, and damage to property associated with implementation of the proposed action. The ESS would be submitted to the DOD Explosive Safety Board for approval, and based on adherence to the ESS, potential impacts associated with MMRP sites under Alternative 1 are considered minor.

4.11.3 Alternative 2

The potential impacts to HM, HW, and toxic substances depend on the toxicity, storage, use, transportation, and disposal of these substances from implementation of Alternative 2 would be the same as described for Alternative 1.

4.12 COMPARISON OF ENVIRONMENTAL CONSEQUENCES

A summary of environmental consequences for all alternatives analyzed in this EA is provided in **Table 4.12-1**.

Table 4.12-1. Comparison of Environmental Consequences

Resource	Alternative 1	Alternative 2	No Action
Earth Resources	• No impacts to geology or seismology. • Minor impacts to soils from short-term impacts of temporary disturbance to 97 acres and long-term impacts of 30 acres of permanent disturbance with implementation of the near-term projects and 36 acres of temporary disturbance and 142 acres of permanent disturbance with implementation of the long-term projects. • Beneficial long-term impacts to topography and soils due to improved erosion control to roadways and bridge abutments and restoring of flood control properties along White Road. • Negligible impacts to topography from addition of approximately 12,500 CY fill of roadbeds to provide even driving surfaces (including for the Rinquist Road realignment) and use of existing material receiving sites for an estimated 10,500 CY of removed soils determined to be unsuitable for reuse in the road repair projects. Use of fill minimized to the minimum necessary; most existing roadbed materials would be reused as RAP. • Existing management programs such as BMPs would continue and minimize adverse impacts.	• Similar to Alternative 1 except for the wider roads would result in an estimated 12 acres in additional area of permanent disturbance. Most of this area would be in the permeable surface of the road shoulders.	• No impacts to geology, seismology, or topography. • Adverse impacts due to continued erosion at existing roads and bridges.
Water Resources	• No adverse impacts to hydrology or floodplains. • No net loss of wetlands. • Impacts to wetlands from Rinquist Road realignment would be offset by benefit of improved wetland quality and function once North Taylor Boulevard is revegetated to targeted wetland conditions. Wetlands area impacted estimated at approximately 0.4 acre and North Taylor Boulevard area estimated at approximately 0.6 acres. • Includes addition of approximately 7,500 CY of new fill. • Temporary moderate adverse impacts to water quality. • Improved sediment control from runoff from roads and bridges. • Standard erosion and sedimentation controls, spill prevention plans, and SWPPP would minimize adverse impacts to water quality.	• Similar to Alternative 1 with the negligible impact of additional fill of the floodplain.	• No impacts to hydrology or wetlands. • Potential for minor long-term increased sediment in stormwater runoff from roadways and bridge abutments if existing erosion issues continue.
Air Quality	• Minor de minimus air emissions associated with repairs, demolition, and construction activities. • A general conformity determination is not required.	• Same as Alternative 1	• No impact to air quality.

Table 4.12-1. Comparison of Environmental Consequences

Resource	Alternative 1	Alternative 2	No Action
Biological Resources	• Direct long-term impacts from restoration of roads and associated shoulders to these habitats would be minor as habitat is primarily non-native previously disturbed areas. • No direct impacts to wetlands as a result of road repairs. However, indirect impacts would be minor and localized; overall wetland quality and functionality would not be impacted. • It is anticipated that there would be no net loss of wetlands despite construction of the new road segment since the same or greater acreage of estuarine wetlands south and west of the realigned road/intersection would be restored. • No adverse impacts to reptiles and amphibians; minor, temporary adverse impacts to invertebrates, reptiles and amphibians, fish, and mammals. • No adverse effects to migratory birds anticipated; standard avoidance and minimization measures would be incorporated into the project to protect migratory birds. • No significant impacts to state-listed species including the Delta mudwort, Mason's lilaeopsis, Delta tule pea, and Suisun marsh aster, California Black Rail, northwestern pond turtle, and bird species of concern. • Potential impacts to federally listed threatened and endangered species and EFH would be the same as noted for Alternative 2.	• Same as Alternative 1, consultation with USFWS and NMFS pursuant to ESA Section 7 occurred for Alternative 2. The conclusions were that implementation of Alternative 2 may affect, but is not likely to adversely affect Green Sturgeon southern DPS, Central California Coast steelhead DPS, Central Valley steelhead DPS, Central Valley spring-run chinook ESU, Sacramento River winter-run chinook ESU and not likely to destroy or modify habitat for these species administered by NMFS. Additionally, the proposed action may affect, but is not likely to adversely affect delta smelt, soft bird's beak, California Ridgway's rail, California least tern, or salt marsh harvest mouse and is not likely to destroy or modify habitat for these species administered by USFWS. USFWS concurred with these findings on May 5, 2017. Additionally, the Army consulted with NMFS regarding EFH assessment and NMFS concurred with the Army's assessment and provided with no practical EFH Conservation Recommendations on December 21, 2016.	• No adverse impacts to flora, fauna, or special status species.

Table 4.12-1. Comparison of Environmental Consequences

Resource	Alternative 1	Alternative 2	No Action
Land Use, Recreation, and Coastal Zone Management	• No adverse impacts to land use or recreation. • Consistent, to the maximum extent practicable, with the BCDC coastal management program.	• Same as Alternative 1. On April 11, 2017, BCDC concurred with the Army Negative Determination for the Bridge T-1 and T-2 projects and a BCDC Conditional Concurrence with the Army's Consistency Determination on the remainder of the proposed action was received on June 28, 2017.	• Current land use pattern would not change from existing conditions; however, onsite activities would lessen in frequency over the long term.
Transportation and Traffic	• Negligible short-term construction traffic impacts associated with repair, demolition, and construction activities.	• Same as Alternative 1	• No adverse impacts anticipated.
Utilities and Service Systems	• Direct, long-term beneficial impacts due to improvements to utility service systems. • Temporary increases in the waste/recycling stream though at least 50 percent of non-hazardous waste would be diverted.	• Same as Alternative 1	• Existing conditions would remain.
Noise	• Minor, short-term adverse impacts.	• Same as Alternative 1	• Noise would be generated as under existing conditions, but the noise generated would decline in proportion to the number of missions.
Socioeconomics and Environmental Justice	• Spending for repairs, demolition, and construction activities not expected to result in noticeable regional economic impacts. • No disproportionate high and adverse human health or environmental effects on minority and low-income populations. • No disproportionate environmental health and safety risks to children.	• Same as Alternative 1	• Existing socioeconomic conditions would continue. • No disproportionate environmental justice impacts to minority or low-income populations, or impacts that would adversely impact children's health and safety.

Table 4.12-1. Comparison of Environmental Consequences

Resource	Alternative 1	Alternative 2	No Action
Cultural Resources	• No adverse effect and no significant impacts to the Port Chicago Naval Magazine National Memorial. • In most instances, the proposed repairs of linear infrastructure are not anticipated to have any impact to cultural resources. Although unlikely due to the roadways being previously disturbed and filled areas, MOTCO's ICRMP addresses the potential for inadvertent discovery of archaeological deposits encountered during any construction or excavation activities. • No effects to historic properties would occur.	• Same as Alternative 1; the Army consulted with SHPO and NPS on Alternative 2 on the determination that no effects to historic properties would occur.	• The Port Chicago Naval Magazine National Memorial would continue to operate as a unit of the national park system and would not be affected. • The Port Chicago Naval Magazine Explosion Site and potential submerged cultural resources at MOTCO would not be affected. • No effects to historic properties would occur.

Table 4.12-1. Comparison of Environmental Consequences

Resource	Alternative 1	Alternative 2	No Action
Hazardous Materials, Hazardous Waste, Toxic Substances, and Contaminated Sites	• Established procedures for the management of hazardous materials would be followed during repair, demolition, and construction activities; therefore, negligible impacts are anticipated. • Established procedures for the management of hazardous waste would be followed during repair, demolition, and construction activities; therefore, negligible impacts are anticipated. • Negligible to minor impacts from toxic substances are anticipated from the removal of ACM, LBP, mercury, PCBs/PCB paint, or creosote-treated timber, or installation of new in-water infrastructure. The removal of toxic substances as part of the infrastructure repair activities would be conducted in accordance with applicable federal, state, and local regulations. • There would be temporary disturbance of areas managed under the MOTCO MMRP and IRP due to the need for excavation below and adjacent to existing roadways and work on bridges in the Tidal Area. The work would be conducted in accordance with the MOTCO IRP program. Sediment sampling analysis conducted in accordance with the LUCIP indicates that roadway soils are considered clean and appropriate for reuse at MOTCO with the exception of one location which is adjacent to an IRP site and further analysis and coordination with the ongoing RI/FS would occur prior to implementation of the proposed road repairs at this location. • Contractors would be required to follow all scheduling, coordination, security, safety, permitting, and other matters pertinent to work accomplishment in accordance with DOD Manual 6055.09, DOD Ammunition and Explosives Safety Standards. An ESS would be developed that includes specific discussion of the type of activity, responsibilities, and ESS approval processes in order to minimize serious injury, loss of life, and damage to property associated with implementation of the proposed action. The ESS would be submitted to the DOD Explosive Safety Board for approval, and based on adherence to the ESS, potential impacts associated with MMRP sites are considered minor.	• Same as Alternative 1	• Existing programs for management of HM, HW, toxic substances, and contaminated sites would continue.

4.13 OTHER CONSIDERATIONS

4.13.1 Unavoidable Adverse Environmental Effects

Avoidance, minimization, or mitigation of adverse effects to natural, cultural, and other environmental resources were integrated into the proposed action to the greatest extent possible and practicable; however, all impacts may not be completely avoided and/or mitigated. Unavoidable adverse environmental effects and associated management measures are further discussed in Chapter 6.

4.13.2 Relationship between Short-Term Use of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

NEPA and 32 CFR requires analyzing the relationship between a project's short-term impacts on the environment and the effects those impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Choosing one option may reduce future flexibility in pursuing other options or committing a resource to a certain use may eliminate the possibility for other uses of that resource. As discussed in Sections 4.1 to 4.12, implementation of Alternative 1 or 2 would result in both short- and long-term environmental effects to various resource areas. However, implementation of Alternative 1 or 2 is not expected to result in the types of impacts that would reduce environmental productivity, affect biodiversity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to human safety or the general welfare of the public.

4.13.3 Irreversible and Irretrievable Commitments of Resources

An irreversible effect is the result of the permanent use (and subsequent loss) of a nonrenewable resource (e.g., minerals or energy). An irretrievable resource commitment involves the loss in value of an affected resource that cannot be restored as a result of an action (e.g., disturbance of a cultural site) or consumption of a renewable resource that is not permanently lost (e.g., old growth forests, wetlands). Secondary impacts could also result from environmental accidents, such as fires.

Implementation of Alternative 1 or 2 would involve irretrievable commitments of nonrenewable and renewable resources. With regard to construction and demolition activities, resources such as capital, labor, fuels, and construction materials would be committed. The total amount of construction materials required for this action is relatively small when compared to the resources available in the region. The construction materials and energy required for construction and missions are not in short supply; their use would not have an adverse impact on the continued availability of these resources and the energy resource commitment is not anticipated to be excessive in terms of region-wide usage.

To the extent possible, all construction would comply with EO 13693, *Planning for Federal Sustainability in the Next Decade*, which set goals for Federal agencies in energy efficiency, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, and water conservation. The proposed utility upgrades would further MOTCO's compliance posture with this EO.

5.0 CUMULATIVE IMPACTS

5.1 DEFINITION OF CUMULATIVE IMPACTS

The approach taken in the analysis of cumulative impacts in this document follows the objectives of NEPA, CEQ regulations, and CEQ guidance. Cumulative impacts are defined in 40 CFR Section 1508.7 as follows:

> The impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

To determine the scope of environmental impact statements, agencies shall consider …[c]umulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement (40 CFR Section 1508.25).

In addition, CEQ and the USEPA have published guidance addressing implementation of cumulative impact analyses—*Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (CEQ 2005) and *Consideration of Cumulative Impacts in EPA Review of NEPA Documents* (USEPA 1999). CEQ guidance entitled *Considering Cumulative Impacts Under NEPA* (1997) states that cumulative impact analyses should "...determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts…[and]...focus on truly meaningful impacts."

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

1. Does a relationship exist such that impacts to affected resource areas by the proposed action might interact with the impacts to resources of past, present, or reasonably foreseeable actions?
2. If so, what would the combined impact be?
3. Are there any potentially significant impacts not identified when the proposed action is considered alone?

5.2 POTENTIAL CUMULATIVE EFFECTS BY RESOURCE

5.2.1 Resources of Concern

This cumulative impacts analysis focuses on those resource areas where the incremental impact of the proposed action could have the potential for significant direct or indirect cumulative effects, as well as those resources that are of concern in the MOTCO region. Based on the analysis presented in Chapters 3.0 and 4.0, the following resource areas were carried forward for further analysis of potential cumulative effects: water resources, air quality, biological resources, transportation and traffic, cultural resources, toxic substances, and environmental justice.

For the purposes of this EA, the following resource areas were not carried forward for cumulative effects analysis: earth resources; land use, recreation, and coastal zone; utilities and service systems; noise; socioeconomics; and HM, HW, and contaminated sites. Since the direct and/or indirect impacts to these resource areas are localized and temporary, and the respective resources are anticipated to recover within a short period of time, another action would need to occur in the same localized area at the same time for cumulative impacts to be possible. While a few of the other actions potentially affecting these resource areas may occur in the same localized area, the potential for cumulative significant impacts due to the incremental impact of the proposed action would not exist as the proposed action was found to result in no, negligible, or minor direct/indirect adverse impacts to these resource areas.

5.2.2 Other Actions Affecting the Resources of Concern

Other past, present, and reasonably foreseeable actions that could influence the resource areas carried forward for further analysis (water resources, air quality, biological resources, transportation and traffic, cultural resources, toxic substances, and environmental justice) are addressed here. This includes consideration of the other past and present actions and their locations, the extent of their direct and indirect effects, any likely future actions, and their relative contribution to cumulative impacts on the specific resource.

5.2.2.1 Past, Present, and Reasonably Foreseeable Actions

In accordance with CEQ's guidance, past actions are relevant and useful in analyzing whether or not the reasonably foreseeable effects of the proposed action may have a continuing, additive, and significant relationship to those effects. CEQ guidance emphasizes a focus on the current aggregate effects of past actions without delving into the historical details of individual past actions unless such information is necessary to describe the cumulative impact of all past actions combined.

A comprehensive list of relevant recent past, ongoing, and reasonably foreseeable future actions, along with the status of the NEPA analysis (if applicable) is provided in **Table 5.2-1 and Figure 5.2-1**. These actions focus on those that were found to have potential for cumulative

effects with the proposed action on water resources, air quality, biological resources, transportation/traffic, cultural resources, toxic substances, and/or environmental justice.

Table 5.2-1. Cumulative Action Evaluation

Action	Level of Analysis Completed or Planned	Decision Document	Lead Agency
Past Actions			
Facility Reduction Program Demolition	Programmatic EA and CXs	FNSIs and RECs (February 2014) (August 2014)	Army
Investigative Borings for Gate 5 Road Repair and Other Road Repair Geotechnical Investigations	CX	REC (August 2014)	Army
Barge Pier Repair	CX	REC (Summer 2015)	Army
Repair and Modernization of Piers 2 and 3	EIS	ROD (April 2015)	Army
Present and Reasonably Foreseeable Actions			
IRP Remedial Actions	Regulatory Consultations	NA	Army
Military Munitions Response Program	Regulatory Consultations	NA	Army
Real Property Master Plan Projects	EA	FNSI (June 2013)	Army
Facility Reduction Program Demolition	Programmatic EA and CXs	FNSIs and RECs (February 2014) (August 2014)	Army
Pier 2 Modernization and Repair Design Changes	Supplemental EA	FNSI (April 2017)	Army
Lot 2 Lightning Protection System Modification	CX	REC[2] (TBD)	Army
Gate 5 Upgrades	EA	FNSI[2] (April 2017)	Army
Homeporting of U.S. Maritime Administration (MARAD) Vessels at Pier 4[1]	TBD	TBD	MARAD
Gate 1 Upgrades	CX	REC[2] (TBD)	Army
Building 245 Renovations	CX	REC (June 2016)	Army
Periodic Dredging of Piers	EA	FNSI[2] (Fall 2017)	Army
Various Installation Maintenance Projects	Programmatic EA	FNSI[2] (Fall 2017)	Army
Mission Activities and Facility Reinvestment	Programmatic EIS	ROD[2] (Spring 2019)	Army

Notes:

1. *May be part of the Programmatic EIS for Mission Activities and Facility Reinvestment for MOTCO.*
2. *Anticipated decision document subject to change.*

EA = Environmental Assessment; EIS = Environmental Impact Statement; CX = Categorical Exclusion; FNSI = Finding of No Significant Impact; NA = not applicable; REC = Record of Environmental Consideration; ROD = Record of Decision; TBD = to be determined

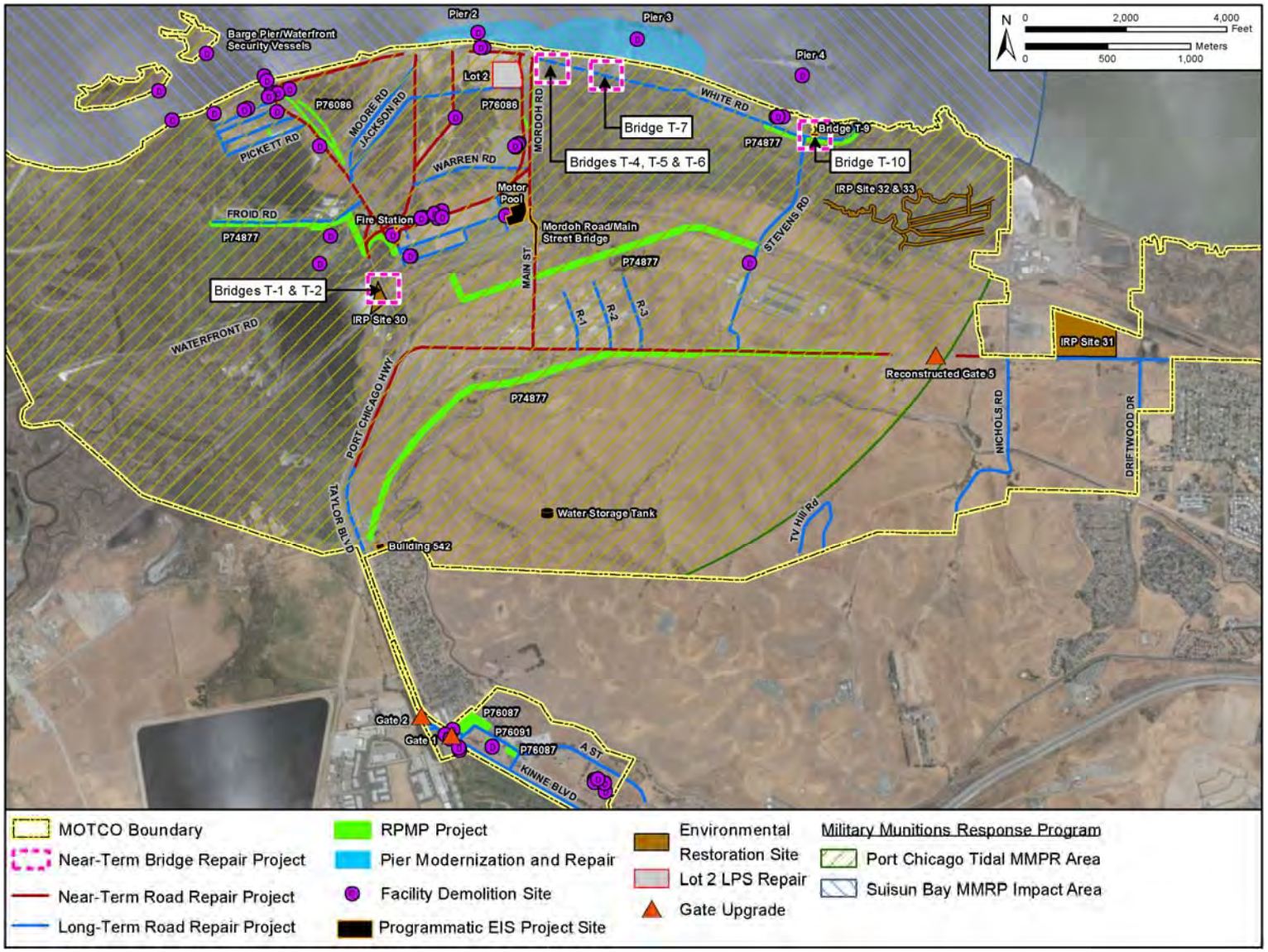

Figure 5.2-1. Past, Present, and Reasonably Foreseeable Project Locations at MOTCO

Barge Pier Repair

The Army is proposing to make future improvements to the water supply, fire protection, sanitary sewer, and electrical power systems; make structural repairs; and make improvements to the lighting and security systems. The structural repair effort, as analyzed in the EIS for Modernization and Repair of Pier 2 and 3 cumulative effects analysis, called for the removal of 22 timber piles and replacement of 46 timber piles that would be wrapped using high-density polyethylene. However, the project was subsequently downscaled to the installation of 8 fender piles, which was completed by October 2015 (Personal communication, G. Romine, 2016). Note that additional barge pier maintenance is currently planned for evaluation in the Programmatic Maintenance EA.

IRP Remedial Actions

As discussed in Section 3.11, remedial actions within the Tidal Area are ongoing. In addition to USEPA oversight, the Army completes ESA Section 7, BCDC, and NHPA Section 106 consultations and CWA permitting for these actions. The capping of contaminated sediment at Sites 32 and 33 was completed in November 2015(MOTCO 2015). The action includes establishing an in-situ cap of clean material over contaminated sediment in select former mosquito abatement ditches and slough with San Francisco Bay clay. The cap was put in place with a helicopter to spread the material in the mosquito ditches and slough, eliminating the need for road construction in order to minimize the disturbance of the sensitive marsh surfaces and vegetation (USEPA 2011). With capping complete, Sites 32 and 33 are now in long-term management (estimated at 10 years).

The remediation of Site 31, which includes the excavation of metal-contaminated waste material and trucking an estimated 32,000 CY of contaminated soil to an off-site disposal facility, is scheduled for 2017 (MOTCO 2015). Site 31 is mostly vegetated with non-native grasses, although some areas of the site contain mature stands of coyote bush. There are two wetland areas (less than 1,000 square feet each) at the northern boundary of the site. The haul route will go through the installation and out Gate 2, thus the trucking of contaminated soil through Bay Point will be avoided (USEPA 2012, Personal communication, G. Romine, 2017).

Military Munitions Response Program

As discussed in Section 3.11, the MRS 8, Port Chicago Tidal Area MMRP site includes most of the Tidal Area and the proposed action would occur within this site. The ongoing program for LUCs to prohibit residential development, to require installation-wide dig restrictions, and to note the LUCs in the installation's RPMP (in the form of the LUCIP) continues. In the offshore MRS 10, Suisun Bay Impact Area, ferrous material was removed from Suisun Bay using a barge-mounted, crane-operated electromagnet in fall 2013 (Department of the Army 2015).

Real Property Master Plan Projects

In June 2013, the Army signed a FNSI for the implementation of several MOTCO RPMP projects. The action included the analysis of six construction projects, demolition of up to 50 structures, proposed livestock grazing/fire management/upland invasive species control and management, cantonment area wildlife control, perennial pepperweed control and management, cantonment area wildlife control, perennial pepperweed control and management, and inventory and evaluation of cultural resources at MOTCO. Some elements of the construction projects have changed from those evaluated in the EA and addressed in this FNSI. The status of the six construction projects and notes regarding additional NEPA to address changes in project elements are as follows:

- P76086, Lightning Protection: included the installation of a Lightning Protection System (LPS) at sites with high levels of previous disturbance in the Tidal Area. The EA evaluated installation of approximately 280 steel poles ranging in heights of 60 to 80 feet set in concrete foundations, overhead wiring that serves the functions of both a strike termination device and a main conductor, and buried ground loop wires and rods. This project was completed in 2016.
- P74877, Visitor Control Center and Security Fencing: the security fencing was implemented, but the Visitor Control Center is now part of the Gate 1 improvement project further described below. The fenceline project installed 6 miles of existing chain link fenceline topped with barbed wire and approximately four swing gates to connect with existing fencelines adjacent to existing roadways in the Tidal Area where there has been varying levels of previous disturbance. The trimming of tall or bushy vegetation that would impede visibility along the fenceline (in non-wetland areas) was also included.
- P76091, Facilities Maintenance Building: construction of this facility was completed and building occupied in May 2016. This project is also commonly referred to as the Engineering Maintenance and Housing Shop.
- P76093, Gate 5 Truck Inspection Station: the location, scope, and potential impacts of this project were further analyzed in a separate EA, as described on page 5-9.
- P76087, Equipment Maintenance Building: Final design has been completed and construction is planned for 2017. The planned construction footprint in the Inland Area is consistent with that evaluated in the EA and included an 8,848-square-foot maintenance building; 3,000-square-foot storage building; and site pavements and improvement for access, parking, sidewalks, and curbing. This project is also commonly referred to as the General Purpose/Equipment Maintenance Shop.

- P76092, Security Headquarters Building: this project has been reevaluated and repackaged as part of the Gate 1 project and the project for renovation of Building 245, which are further described below (MOTCO 2013, Personal communication, K. Garber, 2016).

Additionally, as some of the building demolition projects were evaluated under this EA, the RPMP EA and others under the facility reduction program, they are discussed together below.

Building Demolition

The building demolition program at MOTCO was analyzed in the RPMP EA and in the Army's February 2014 Final Programmatic EA for the U.S. Army Materiel Command Building Demolition Program (Army Materiel Command 2014) as well as tiered Records of Environmental Considerations (RECs) with Categorical Exclusions (CXs) covering the site-specific conditions at MOTCO. The approximate summary of demolished facilities by demolition year is as follows:

- 2014: 1,800 square feet
- 2015: 113,000 square feet, four picnic shelters, two 25,000-gallon above ground storage tanks, three tennis courts, and a winch trainer facility
- 2016: 43,000 square feet
- 2017 and/or 2018: 73,500 square feet and a tower/wind direction indicator
- 2019: five lighter berth systems in the Suisun Bay (Personal communication, K. Garber, 2016). (Note, the demolition of these berthing systems was also included in the Pier 2 Submerged Aquatic Vegetation Mitigation Plan cited in the EIS for the Modernization and Repair of Pier 2 and, therefore, could be used for Submerged Aquatic Vegetation mitigation for the Pier 2 project or, if not needed for Pier 2, considered for mitigation for future projects.)

A reduced building footprint provides long-term beneficial impacts to the environment due to the reduced energy and water use and facilities maintenance requirements. Many of these buildings were built in the 1940s-1960s and lack the efficiencies of modern construction, systems, and fixtures.

All demolition activities are conducted in accordance with BMPs and SOPs for construction waste materials including:

- Waste diversion: is the prevention and reduction of generated waste through source reduction, recycling, reuse, or composting. EO 13693, *Planning for Federal Sustainability in the Next Decade*, requires diverting at least 50 percent of non-hazardous construction and demolition materials and debris annually beginning in FY 2016, where life-cycle cost-effective.

- Toxic materials: buildings and suspect materials are screened for fixtures that may contain toxic materials prior to demolition and disposal. Buildings are tested for asbestos, lead-based paint, PCBs, and mercury prior to demolition and all applicable federal, state, and local requirements are adhered to in the demolition and disposal process. As described in Section 3.11.3, creosote-treated wood waste is evaluated for classification as a HW or TWW (creosote-treated lumber is not generally subject to regulation as a HW unless testing reveals that it leaches arsenic above a certain threshold) and is disposed of in a HW landfill or TWW-approved landfill facility. TWW may be recycled, but its use is limited only to onsite purposes consistent with the FIFRA-approved use of creosote-treated wood (California Environmental Protection Agency 2011, California Department of Toxic Substances Control 2008, USEPA 2008).

Repair and Modernization of Piers 2 and 3

In April 2015, the Army issued a Record of Decision for the modernization and repair of Pier 2 and repair of Pier 3. The selected alternative, Alternative 1, would fully implement repairs to Piers 2 and 3, with Pier 2 re-oriented to align the west end with the existing shipping channel to create a more modernized configuration. The Army completed consultation with SHPO and NPS concerning the proposed action as required by Section 106 of the NHPA regarding the Army's determination that the proposed action will have no adverse effect on cultural resources or historic properties. The Army has also completed consultation with NMFS and USFWS as required by Section 7 of the ESA, as well as with NMFS as required by the Magnuson-Stevens Fishery Conservation and Management Act. As a result of these consultations, the Army has committed to the implementation of various avoidance, minimization, and compensation measures.

To extend the useful life of Pier 3 until Pier 2 is ready for missions, high-density polyethylene jackets will be installed around up to 1,753 of the most structurally significant timber piles located under the Main Platform and walkway that are currently infested by marine borers. Repairs to Pier 3 began in October 2015.

Pier 2 Modernization and Repair Design Changes

With respect to Pier 2, the EIS preferred alternative (Alternative 1) included demolition of a considerable portion of Pier 2 and replacement of the main platform and trestles and reorienting the west end of the pier. As the design of the modernization and repair progressed, the Army identified changes in the proposed Pier 2 layout (primarily the consolidation to a single trestle) that would result in more efficient pier operations and a reduction in construction costs. The Army is currently conducting a Supplemental EA to evaluate the changes between EIS Alternative 1 and the revised design. As part of the NEPA process, consultation with SHPO,

USFWS, and NMFS has occurred. The Supplemental EA was finalized in February 2017 and a FNSI was signed in April 2017.

In general, there are anticipated to be lesser environmental impacts with the revised design due to the reduced pier footprint. One of the elements of the revised design is further clarification regarding White Road repairs that would be implemented as part of the Pier 2 project. Specifically, two segments of White Road – from just west of Anderson Road intersection to just east of Pruett Road intersection and the Pier 2 east trestle approach between the Christenbury Road and Mordoh Road intersections are included in the Supplemental EA. These projects are designed consistent to the White Road repair projects evaluated in this EA; however, they have independent utility with respect to the modernization and repair of Pier 2. As with the White Road improvements, the height of these road segments would be raised from the existing level of 8-10 feet to 10-12 feet to restore the elevation of White Road. The width of the paved surface would be 24 feet (includes 11-foot lanes, with one additional foot between the lane line and edge of pavement, and two additional feet of aggregate shoulder). Access for individuals with disabilities would run from the existing parking lot to the new west trestle. Existing railroad lines crossing White Road would be removed at the west, middle, and east trestle approaches, and terminated adjacent to the south side of White Road, where railroad wheel stops would be installed.

Lot 2 LPS Repair

A need to enhance the safety of the existing LPS at Lot 2 has been identified. The modifications would consist of strengthening and adjusting existing construction by installing two new steel poles at a height to match existing poles and relocating an existing pole to within 10 feet of its existing location to support the reconfiguration of the catenary system. Two of the east-west running catenaries will be reconfigured and a third, located in the center of the lot, would be removed. The poles will sit on 36-inch diameter pile foundations (USACE Sacramento 2015). Work on this project is currently planned to occur in 2018.

Gate 5 Upgrades

The RPMP EA evaluated the construction of the Gate 5 Access Control Point (ACP) at a site near Nichols Road south of Port Chicago Highway. The preferred site was subsequently updated to occur near the existing ACP 5 location on the north side of Port Chicago Highway.

The Gate 5 upgrades would encompass a 374,616-square-foot (8.6-acre) footprint with an additional 169,884 square feet (3.9 acres) of paved surfaces. The project includes the demolition of road signage, fencing, and the existing 25-square-foot guard booth at ACP 5. The project would also include the relocation of aerial communication and Pacific Gas & Electric power lines; the extension of existing water, sewer, and underground telecommunications lines from the existing infrastructure to the proposed ACP; and the installation of a new transformer to

meet the increased demand for electricity. An existing portion of Port Chicago Highway parallel to the proposed ACP location would be decommissioned.

When the facility is completed, which would be in 2019 based on the current project schedule, truck and stevedore-related traffic would be shifted from Gate 2 to Gate 5. This would reduce the overall traffic at Gate 2 during MOTCO missions and increase safety and efficiency. The Gate 5 EA estimates that during a mission event averaging approximately 36 days, cargo handling truck traffic would be 258 trucks total (or an average of 7 trucks per day). Eighty personnel would be present each day for contracted terminal operations and as stevedore personnel during a mission, which would affect bus/personally-owned vehicle traffic along Port Chicago Highway and through the ACP. The current and anticipated future utilization of Gate 5 for daily, non-mission-related traffic is estimated to include four trucks and less than five personally-owned vehicles per day. A FNSI for the Gate 5 EA was signed in April 2017.

Investigative Borings for Gate 5 Road Repair and Other Road Repair Geotechnical Investigations

In FY14 a REC was prepared in support of investigative borings for Gate 5 Road Repair. A maximum of 72 12-foot-deep investigative boring potholes were drilled and backfilled in order to determine the locations of and soil properties surrounding nine known gas and petroleum pipelines along Port Chicago Highway adjacent to the new location for ACP Gate 5. A hydro-vacuum system was used to excavate the holes, but minimal water was necessary to operate the hydrovac system and thus no slurry was created or released into the environment. Less than 150 square feet of previously disturbed area was temporarily impacted as the boreholes were immediately backfilled with concrete with the last foot filled with soil. The USFWS concurred with a “may affect but not likely to adversely affect” determination for California red legged frog and California tiger salamander (USFWS 2014). Additionally, a CX was prepared for other road repair geotechnical investigations. Thirteen geotechnical borings were drilled to determine the characteristics of subsurface materials and the extent and condition of these materials at locations requiring road repairs. Eleven 10-foot borings were required for most road areas with two 80-foot borings for White Road. No effect to listed species were anticipated and all holes were immediately backfilled.

Homeporting of MARAD Vessels at Pier 4

MARAD has expressed interest is homeporting one or two vessels at MOTCO Pier 4. Initial discussions with MOTCO have occurred, but planning remains under development. Under the concept being discussed, any plans to upgrade Pier 4 would be analyzed in the Programmatic EIS for Mission Activities and Facility Reinvestment. There could be a potential need to install a septic collection system as there may be four to five people living aboard the homeported vessels. MARAD would be responsible for any upgrades and compliance with all applicable

regulatory requirements, including NEPA. MOTCO will continue to coordinate with MARAD as these plans progress (Personal communication, K. Garber, 2016).

Gate 1 Upgrades

As previously noted, some components of upgrades to this gate were evaluated in the 2013 EA for Real Property, Natural Resource, and Cultural Resource Management Programs at MOTCO. In lieu of the Visitor Control Center evaluated in that EA, however, the current concept includes several smaller facilities – instead of a 2,508-square-foot Visitor Control Center, the current design includes a 940-square-foot guard house, a 900-square-foot Visitor Control Center, a 500-square-foot mail freight facility, two 40-square-foot guard booths, and two 36-square-foot overwatch booths. An existing ammunition storage locker would be relocated. The demolition of two structures (Buildings IA-2 and 262) and 118,800 square feet of existing pavement are associated with this project. The overall footprint is similar to that analyzed in the EA, but additional NEPA requirements (likely a CX) are currently under evaluation by MOTCO (Personal communication, K. Garber, 2016).

Building 245 Renovation

This 2016 project renovates Building 245, the 8,300-square-foot former Navy transient quarters and police station, to provide an adequate facility to serve as the consolidated security headquarters for MOTCO. The approximately 460-square-foot, one-story dining facility associated with Building 245 was demolished. The renovated building is designed to house approximately 55 security and firefighter personnel relocated from other facilities at MOTCO.

Periodic Dredging of Piers

MOTCO is preparing an EA to address the potential impact of dredging for shipping access to all piers and docks at MOTCO. Maintenance dredging was performed on a regular basis at NWSSBD Concord (now MOTCO) until 1986; since 1943, Piers 2, 3, and 4 have been dredged nearly 20 times. Dredging was typically performed using a clamshell method to -32 feet MLLW at Piers 2, 3, and 4; -14 feet MLLW at the Barge Pier and east lighter mooring; and -22 feet MLLW at the west lighter mooring. Since 1943, a total of 1.8 million CY of dredged material has been removed from NWSSBD Concord (Department of the Army 2015). It is expected that within the next 5-10 years, maintenance dredging beyond that required for and analyzed as part of the Piers 2 and 3 renovations would be required at one or more of the piers to address shoaling that has occurred since the last dredging event. The quantity of dredging is not yet determined. The EA and permitting will address all CZMA and CWA requirements prior to initiating any dredging actions.

Programmatic EA for Various Installation Maintenance Projects

There are additional unmet maintenance needs further identified at MOTCO to be initiated in the near-term that the Army is evaluating together with some of the Installation Development Plan

projects, some of which may have potential environmental effects and thus may require NEPA analysis. These include remodeling of an existing building and maintenance activities within existing building footprints, utilities maintenance/minor upgrades, minor parking lot expansions, rail maintenance, and pier maintenance to include periodic pile wrapping (estimated at approximately 500 piles/year) and pile repair (estimated at approximately 25 piles/year).

Community Transportation Projects

A unique feature of the road transportation network near MOTCO is the presence of the Bay Point Area of Benefits. The Bay Point Area of Benefits is located east of MOTCO and encompasses portions of the Bay Point neighborhood of unincorporated Contra Costa County as well as the cities of Concord and Pittsburg. The Area of Benefits is a traffic mitigation fee program that is used to improve the capacity and safety of the transportation network. Fees are collected from property developers that add vehicle trips to the road network. These fees are then used for improvement projects that mitigate impacts from new developments. Funds from the Bay Point Area of Benefits have been previously used to help pay for improvements to Willow Pass Road, Bailey Road, Port Chicago Highway, Evora Road, Pacifica Avenue, and Driftwood Drive (Contra Costa County 2013).

The City of Concord has identified the following transportation improvement projects near MOTCO.

- Arnold Industrial Place/State Route 4 Eastbound ramps: install a new traffic signal.
- Arnold Industrial Way/State Route 4 Westbound ramps: install a new traffic signal.
- Bates Avenue/Commercial Circle (east): install a new traffic signal.
- Bates Avenue – Industrial Way to Mason Circle (east): widen Bates Avenue to four lanes.
- Citywide: install traffic signals and/or other improvements/upgrades.
- Port Chicago Highway – Bates Avenue to Union Pacific Railroad crossing: widen Port Chicago Highway to four lanes (Kimley-Horn and Associates 2013).

Programmatic EIS for Mission Activities and Facility Reinvestment Projects

The January 2016 MOTCO Installation Development Plan identified a number of projects, some of which have had some level of planning (and in some cases, are in the initial design stage). Based on current planning, the potential environmental effects of implementation of the following projects are being considered for this Programmatic EIS:

Demolition

- In order to assist MOTCO in meeting the Department of the Army's Facility Investment Strategy and the Army 2020 Plan, various MOTCO facilities are planned

for demolition through 2024. The proposed demolitions can be generally categorized as maintenance, administrative, operational, ammunition storage magazines, and other facilities as well as ancillary structures to be demolished/removed (e.g., boiler room equipment, storage tanks, oil/water separators, foundations, berms, utility components, and associated rail infrastructure).

- The planned redevelopment of the barricaded rail sidings area includes planned demolition of an estimated 35 magazines (estimated at 18,000 square feet) as well as 36 barricaded rail siding berms.

Utility Construction and Maintenance

- Utility Upgrades. Additional improvements are needed to electrical, communication, water, and wastewater systems outside of those that occur within the road footprints analyzed in the EA for General Upgrades to Bridges, Roads, and Linear Infrastructure at MOTCO. These include improvements to various lines where the system is leaking, to include piping to the 1-million-gallon storage tank that is located on the MOTCO Tidal Area hillside and large-scale replacement/upgrade of exterior lighting or substations. Parameters will be established for when electrical lines should be buried and when boring is preferable to trenching.
- Renewable Solar Energy Projects. Standalone solar arrays of 5 megawatts or less are under consideration.

Realignment and Addition of Rail Lines

- Barricaded Rail Siding Area Redevelopment: Following the demolition in this area described above, the area would be redeveloped with realigned/new rail lines.
- Redevelopment of the rail lines associated with the former “R” Buildings.
- Addition of rail lines to support the expansion and reconfiguration of the transfer and holding pad area.

Reconfiguration and Expansion of Holding Pads

- Includes the redevelopment of the area currently east of the existing holding pads, which was previously used as a borrow pit to additional holding pads.

New Construction/Major Renovation of Individual Buildings and Structures

- Mordoh/Main Street Bridge. This project, which would construct a new bridge over the rail lines at this location and provide for more efficient mission operations, would replace the mission function of the existing T-2 Bridge.

- Locomotive Shed. A new locomotive shed will allow the installation's locomotives to be protected from inclement weather and provide a location for fueling that meets current safety and environmental protection standards.
- Access Control Point 2 Upgrades. This project would include lighting and traffic flow upgrades and safety improvements.
- Logistics Warehouse/Storage Building. This project would provide replacement storage facilities located outside the explosive quantity distance arcs.
- Fire Truck Storage. A new storage facility for a fire truck would be constructed in the Inland Area.
- Building 542 Anti-Terrorism/Force Protection Improvements. This project would harden the existing structure to meet anti-terrorism and force protection requirements so that the facility can be used as a primary gathering facility. Work largely includes interior construction activities, as well as exterior berming, parking, and landscaping changes. Personnel would be relocated as appropriate prior to, during, and after the improvements have been made.

Pier Repair

- Additional Pier Repair. Repairs to piers beyond those that would be within the threshold established for the Programmatic Maintenance EA would be addressed within this EIS. This could include major repair of the Barge Pier/Boat Ramp.

5.2.3 Determination of the Magnitude and Significance of Cumulative Effects on the Selected Resource

5.2.3.1 Water Resources

Description of Geographic Study Area

Impacts to water resources, including wetlands, are typically localized. Therefore, the study area considered in the cumulative analysis for this resource area is limited to projects that may occur at or in very close proximity to the proposed action area and, more specifically, the bridge projects and Rinquist Road realignment area.

Relevant Past, Present, and Future Actions

Several of the projects planned by the Army within the Tidal Area (as listed in Table 5.2-1) are relevant in that they could impact surface waters or wetlands within a similar timeframe as the proposed action. These actions include the Pier 2 modernization, RPMP projects, and upgrades, IRP remedial actions, barge pier repairs, and Gate 5 upgrades.

Cumulative Impact Analysis

Under the proposed action, there would be potential for impacts to water resources from temporary dewatering of one bent at a time for replacement of pile sections below the mudline at Bridges T-4, T-7, and T-10. In addition, there would be negligible change in the amount of impervious surface and approximately 0.38 acre of riverine/palustrine wetlands would be permanently impacted from the realignment of Rinquist Road and 0.57 acre would be restored. Implementation of these elements of the proposed action would require a CWA Section 404 permit from USACE and a CWA Section 401 Water Quality Certification from the SFBRWQCB. This permitting process would ensure that state water quality standards would not be affected by these actions.

Some of the projects with potential water resource impacts could be implemented concurrent with the proposed action. These include the Pier 2 modernization, homeporting of MARAD vessels at Pier 4, Gate 5 upgrades, and IRP projects. Other projects with potential water resources impacts are not expected until further in the future – these include the periodic dredging of the piers and various installation maintenance and master plan projects. Where the projects could be implemented concurrently, there is potential for additive impacts in terms of increased turbidity within Suisun Bay from Pier 2 modernization and from the proposed action in-water work at Bridges T-4, T-7, and T-10. However, the potential increased turbidity associated with these projects would be highly localized to the project sites. The homeporting of MARAD vessels at Pier 4 is currently not anticipated to require in-water work. The IRP remedial actions at Site 32 and 33 would result in localized impacts to Middle Point Marsh and Lost Slough wetlands. The potential for contaminated soil excavation at IRP Site 31 to impact water resources would be minimal with adherence to proper soil and erosion control protocols. Effects of the proposed action are near the water resources potentially affected by the IRP actions and there could be combined effects if actions occur at or near the same time. Impacts to water resources from Gate 5 upgrades include stormwater management pre- and post-construction, including additional impervious surface and associated increased runoff. The Army will obtain proper permits and update the installation SWPPP as appropriate. The potential for additive impacts to water resources from the proposed action in combination with Gate 5 upgrades would be addressed appropriately in the updates to the installation SWPPP.

In conclusion, individually, the projects would result in short-term and localized impacts to water quality and it is expected the environment would recover following conclusion of each project. Moreover, permit requirements would minimize individual project impacts to the fullest extent possible. As a result, no significant adverse cumulative impacts to water resources are anticipated.

5.2.3.2 Air Quality

Description of Geographic Study Area

The study area considered in the cumulative impacts analysis for air quality includes areas in and near MOTCO. Refer to Section 5.2.3.3 for a discussion on cumulative impacts for Climate Change and GHGs.

Relevant Past, Present, and Future Actions

The local construction projects planned by the Army, including the IRP projects, are relevant in that they would produce emissions that would be additive to those produced by implementation of the proposed action.

Cumulative Impact Analysis

In terms of short-term cumulative impacts, the proposed action and other regional projects could produce short-term additive amounts of emissions if they are concurrent. As part of the air quality analysis in this EA, a General Conformity applicability analysis was performed to determine if maximum annual direct and indirect emissions from the proposed action would exceed *de minimis* thresholds. Based on the air quality analysis performed for the proposed action, the maximum estimated emissions would be below conformity *de minimis* levels. The other actions listed in Table 5.2-1 were either assessed through NEPA to be below conformity *de minimis* level or would be expected to have *de minimus* levels of emissions. Therefore, it is not anticipated that air emissions from other past, present, and future actions, when considered incrementally with the proposed action, would exceed any regulatory standards.

5.2.3.3 Greenhouse Gas Emissions and Climate Change

Recent climate research has documented global warming during the 20th century and has predicted continued or accelerated global warming for the 21st Century and possibly beyond (Intergovernmental Panel on Climate Change 2007). One impact of continued or accelerated climate warming is the continued or accelerated rise of Global Mean Sea Level. Sea level rise can cause a number of impacts in coastal and estuarine zones, including changes in shoreline erosion, inundation or exposure of low-lying coastal areas, changes in storm and flood damages, shifts in extent and distribution of wetlands and other coastal habitats, changes to groundwater levels, and alterations to salinity intrusion into estuaries and groundwater systems.

Description of Geographic Study Area

Since the potential effects of climate change are by nature global, the study area for this aspect is not defined.

Relevant Past, Present, and Future Actions

Because of the global nature of climate changes, any GHG-producing action in the past, present and future, due to anthropogenic or natural causes, would be relevant. Given this broad scope, these actions do not require further delineation.

Regulatory Framework

In June 2014, the DOD released the *2014 Climate Change Adaptation Roadmap* to document the DOD's efforts to plan for the changes that are occurring or expected to occur as a result of climate change. The Roadmap provides an overview and specific details on how the DOD's adaptation will occur and ongoing efforts (DOD 2014).

The California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020. The *Climate Change Scoping Plan* is California's strategy to reach the required GHG reduction goals. The BAAQMD has set a goal for the Bay Area region to reduce GHG emissions by 2050 to 80 percent below 1990 levels; developing a 10-point program to guide the BAAQMD's climate protection activities; and developing a Regional Climate Protection Strategy to make progress towards the 2050 goal.

Climate Change Impacts to MOTCO Operations

Changes in California's climate are well documented. Statewide average temperatures increased by about 1.7 degrees Fahrenheit from 1895 to 2011, and warming has been greatest in the Sierra Nevada, which is the location of the snowpack storage on which California's water supply system depends. By 2050, California is projected to warm by approximately 2.7 degrees Fahrenheit above 2000 averages, a three-fold increase in the rate of warming compared to last century. Springtime warming, which is a critical influence on snowmelt, will be particularly pronounced (California Commission on Climate Change 2012). Recent studies have projected that sea levels along the California coast could be 10 to 18 inches higher in 2050 than in 2000 (California Commission on Climate Change 2012). The USACE, Sacramento District has further evaluated sea level rises up to 1.4 feet during this period (USACE 2011). Given the current projections of sea rise within that planning horizon, it is possible that storms defined as 100-year storms today could occur annually in the future.

Planning for increased sea levels and increased storm frequency would help mitigate potential flooding issues at MOTCO. The USACE, Sacramento District has evaluated sea level rise and storm impacts for MOTCO and determined that a design stage of 9.01 feet for a 100-year flood. In addition, the increased risk of severe storms, wildfires, drought, and higher frequencies of extreme heat associated with climate change all have the potential to impact MOTCO operations on a periodic basis.

Cumulative Impact Analysis

The proposed project, which would involve small-scale construction and renovation projects occurring over a range of years, will primarily generate GHG emissions as a result of construction equipment operations. There are no apparent carbon sequestration impacts that would result from implementation of the proposed action. Thus, the total direct and indirect impacts would most likely be constrained to small increases in GHG emissions to the atmosphere as a result of demolition and construction activities.

In conclusion, the proposed action, which involves repair, demolition, and construction activities over the near-term 2017-2021 and long-term projects for 2021 would incrementally contribute to global emissions. These emissions, while small, would increase the atmosphere's concentration of GHGs, and, in combination with past and future emissions from all other sources, contribute incrementally to the global warming that produces the adverse effects of climate change. The total direct and indirect impacts would most likely be constrained to small increases in GHG emissions to the atmosphere as a result of demolition and construction activities.

5.2.3.4 Biological Resources

Description of Geographic Study Area

The study area considered in the cumulative impacts analysis for biological resources includes the area located in proximity to the proposed linear infrastructure improvements. The limits of the study area for cumulative impacts encompass the area within which biologically meaningful changes in the environment of these resources would occur as a result of the implementation of the proposed actions. This includes consideration of the project's effects on habitats, flora, fauna, and special status species.

Since the biological resources of the Bay-Delta region are mobile, they may experience impacts of the types caused by the proposed action but relatively far from MOTCO. Accordingly, consideration is given to whether the project's impacts would contribute to cumulative effects that are occurring to the species and habitats of interest on a regional scale from diffuse activities.

Relevant Past, Present, and Future Actions

All projects listed in Table 5-1 are relevant for potential cumulative impacts to biological resources. However, the past actions MMRP RI/FS actions would not be expected to have cumulative impacts to biological resources with the proposed action and there are no reasonably foreseeable components of this program that would impact biological resources.

Cumulative Impact Analysis

The RPMP projects, portions of the Pier 2 improvement projects, Lot 2 LPS modifications, and Gate 5 upgrades are occurring in primarily previously disturbed area of the installation similar to the proposed action. The noise and activity associated with the construction and demolition from these actions would be expected to have similar impacts to terrestrial species. To the extent that project activities occur in close proximity and at or near the same time, there would be additive impacts to resident and transient species. These impacts would be expected to be minor.

With respect to the shoreline/in-water actions, the improvements for Pier 2 modernization, homeporting of MARAD ships, periodic dredging of piers, and possible projects under the maintenance and master plan all have the potential for impacts to the shoreline and offshore areas of MOTCO that have the potential to have additive impacts with the proposed White Road repairs and the repairs to Bridges T-4, T-7, and T-10. The potential biological resource impacts of other identified projects are primarily at the shoreline are due to on-shore construction activity and in-water noise from in-water work associated with some aspects of these projects. Based on the Army's current project schedules, the largest scale project – the Pier 2 modernization project – would be completed before the White Road repairs and three bridge projects would be implemented and many of the future projects are such as those under the maintenance and master plan would not occur until after the proposed action is implemented. The highest potential for additive impacts is in the highly impacted White Road corridor, where the portions of the White Road improvements that are occurring with the Pier 2 modernization would have additive impacts with the White Road improvements under the proposed action. Both actions would be implemented with similar protective measures for biological resources and under the terms of consultations with USFWS and NMFS regarding federally threatened and endangered species and critical habitat. Therefore, any cumulative shoreline/in-water impacts to biological resources would be minimal to negligible. In conclusion, significant adverse cumulative impacts to biological resources are not anticipated.

5.2.3.5 Transportation and Traffic

Description of Geographic Study Area

For any project, traffic increases would be observed on roads used for the transport of construction equipment/materials and workers to and from jobsites. Thus, the study area considered in the cumulative analysis for transportation infrastructure includes roadways on the installation, ACPs (Gate 2 or Gate 5), and roadways off the installation, particularly including the City of Concord's designated truck routes en route to the Contra Costa County municipal waste landfills (noted in Section 3.7.5).

Relevant Past, Present, and Future Actions

Most all construction, demolition, and remediation projects described in Section 5.2.2.1 would utilize existing transportation infrastructure and are thus relevant to the cumulative analysis thereof. A total trip count has not been provided for each project, but potential traffic impacts have been evaluated at varying levels of detail of where NEPA documentation has been completed.

Cumulative Impact Analysis

Although the proposed action would implement long-term, beneficial improvements to transportation resources at MOTCO, a significant amount of work is proposed to occur at MOTCO between 2017 and 2021 that would increase the volume of traffic in the study area during normal work hours on a cumulative basis. It is anticipated that some projects may overlap, but there are uncertainties on timing as all projects are subject to implementation timelines that can change based on numerous factors. For each project, traffic impacts would be short-term in nature, lasting no more than the duration of the project, and the majority of the projects would confer minor volume increases within the context of average roadway traffic. Additionally, each individual project would require the construction/demolition contractor to prepare a project-specific haul route or transportation plan. This plan would describe regular and mission-related detours and specific gate use for construction vehicles, deliveries, and workers; specify laydown area use; and establish appropriate traffic control and signage. This continued oversight would assist the installation in the prevention of traffic-related issues as daily traffic interacts with core mission functions and multiple or ongoing construction/demolition activities. Additionally, factors affecting off-installation traffic are principally due to activities not associated with MOTCO and are being addressed to the full extent possible through federal, state, and local transportation improvement planning initiatives. Thus, impacts to transportation resources are not expected to become cumulatively significant on or off the installation..

5.2.3.6 Cultural Resources

Description of Geographic Study Area

The study area considered in the cumulative analysis for cultural resources is the general area surrounding The Port Chicago Naval Magazine National Memorial, including parking facilities that support visitation to the Memorial.

Relevant Past, Present, and Future Actions

Both the proposed action and modernization and repair of Pier 2 projects repair segments of White Road near the National Memorial. The segment of White Road that bisects the current National Memorial site is part of the Pier 2 project. Therefore, the assessment of impacts White Road repairs on the National Memorial (including the NHPA Section 106 consultation) is primarily being addressed in the Pier 2 Supplemental EA. The segments of White Road that are

part of the proposed action may occur within a similar timeframe, such that visual, atmospheric, and audible impacts anticipated during demolition and construction activities may be perceived at the parking lot for the Port Chicago Naval Magazine National Memorial.

Cumulative Impact Analysis

Although the White Road and Pier 2 repairs may both have potential impacts to the parking lot supporting the Port Chicago Naval Magazine National Memorial, the projects are not likely to interact in a way that would exacerbate the nuisance perceived by visitors to the Memorial. To the extent practicable, the Army would not engage in construction activities that would result in visual, atmospheric, or audible impacts during times when visits to the Memorial are scheduled. Although access to the Memorial for public visitation may be inconvenienced by rerouting when various construction, demolition, or remediation projects are underway, it is intended that access to the Memorial would remain available throughout the implementation of all proposed projects and no direct impacts to the Memorial would occur. In conclusion, significant adverse cumulative impacts to cultural resources are not anticipated.

5.2.3.7 Toxic Substances

Description of Geographic Study Area

All area within the installation boundary is considered in the cumulative analysis for toxic substances, in particular Suisun Bay and the Tidal Area.

Relevant Past, Present, and Future Actions

With regard to the potential to displace toxic substances such as asbestos, lead, mercury, and PCBs/PCB paint, all MOTCO projects that include a demolition element may contribute to the volume of toxic substances removed, transported, and disposed of, especially when the subject facility was constructed prior to 1978.

With regard to the removal of creosote treated timber pilings and their disposal as TWW, the Barge Pier Repairs, Repair and Modernization of Piers 2 (including design changes) and 3 include the removal of approximately 4,500 creosote-treated wood pilings. There would also likely be creosote pile removal associated with Barge Pier repairs, the demolition of the five lighter berth systems in Suisun Bay, Rail Bridge T-9 Replacement, as well as the modernization and repair of approximately 16 miles of on-installation railway infrastructure.

With regard to the installation of new timber pilings that may be treated with waterborne pesticide, Barge Pier Repairs, Improvements to Accommodate Waterfront Security Vessels, and potential pier dredging activities may contribute to mobilization or accumulation of copper in the aquatic environment. It should be noted that the majority of pilings installed as part of the repair and modernization of Pier 2, including design changes, are anticipated to be pre-stressed concrete instead of wood pilings.

Cumulative Impact Analysis

In all projects, regardless of the ultimate volume of toxic material generated for disposal, required abatement and waste management planning and control measures would be implemented in accordance with federal and California law. The removal of toxic substances at MOTCO is always conducted in accordance with applicable federal, state, and local regulations. Therefore, significant adverse cumulative impacts from toxic substances are not anticipated from the removal of ACM, LBP, mercury, PCBs/PCB paint, or creosote treated timber pilings. Likewise, as copper mobilization in the aquatic environment generally occurs within the first 1-2 days of installation, it is not likely that any new treated timber pilings that may be associated with Barge Pier Repairs or Improvements to Accommodate Waterfront Security Vessels would interact with the proposed action in a way that would cause a significant rise in copper levels. Likewise, due to the high current velocities experienced in Suisun Bay it is not likely that sediments would become contaminated with copper released from the proposed action or that potential future pier dredging activities would cause the resuspension or mobilization of copper in Bay sediments. In conclusion, significant adverse cumulative impacts from the removal or use of toxic substances are not anticipated.

5.2.3.8 Environmental Justice

Description of Geographic Study Area

The study area considered in the cumulative analysis for environmental justice includes the two minority and/or low-income communities in proximity to MOTCO: Clyde and Bay Point (see Sections 3.9.2 and 4.9.2.1). These communities would be affected by the movement of construction/demolition/remediation traffic on existing roadways and through MOTCO Gate 2 and Gate 5.

Relevant Past, Present, and Future Actions

As analyzed for transportation, most all of the construction, demolition, and remediation projects described in Section 5.2.2.1 would require the use of Gate 2 or Gate 5 and thus are collectively relevant to environmental justice concerns.

Cumulative Impact Analysis

Due to the short-term nature of most projects and the relatively minor volume increases within the context of average roadway traffic, it is not anticipated that traffic increases related to construction, demolition, or remediation activities would have a long-term or substantial impact on local communities. However, increased construction, demolition, and remediation activities at MOTCO would increase the volume of traffic and noise experienced at and near the gates and thus cause the disproportionate exposure of low income/minority neighborhoods to increased traffic and noise near these locations. These effects would be additionally pronounced if traffic backs up at Gate 2 or at Gate 5, however, this is not anticipated. Further,

some of the trucks would be hauling demolition material classified as HW, toxic substances, or TWW. Neither the increased traffic nor the transport of contaminated materials put adjacent communities at increased safety risk; the Army has committed to avoid trucking of MOTCO IRP Site 31 HW through Bay Point.

As there is no truck access point to MOTCO that is not adjacent to a minority and/or low-income community, there are no options for hauling materials and debris for off-site disposal that do not in some way impact the Clyde or Bay Point communities. Thus, in order to complete the various projects anticipated at MOTCO, BMPs would be established for each project in order to alleviate the potential nuisance to these areas. Each project requires the construction/demolition contractor to prepare a project-specific haul route or transportation plan to manage traffic flow and prevent stacking at the ACPs to the greatest extent possible, and the Army would provide notification to the community when high levels of truck traffic are anticipated. Transportation plans would likewise dictate alternate off-installation routes that would avoid trucking all materials through residential areas. There would be a limited amount of HW that may be generated from most projects at any given time, and transportation of all such waste would be in compliance with all federal, state, and local regulations including adhering to local regulations on containment, transportation, signage, and routing.

In conclusion, individually each project may result in short-term and localized traffic impacts that may disproportionally affect low income/minority communities adjacent to the installation. However, BMPs would minimize the magnitude and duration of individual project impacts to the fullest extent possible. As a result, no significant adverse cumulative impacts to Clyde and Bay Point communities are anticipated.

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6.0 MITIGATION MEASURES

6.1 INTRODUCTION AND DEFINITION OF MITIGATION MEASURES

Mitigation is a specific NEPA term that refers to additional action taken to avoid, minimize, rectify, reduce/eliminate, or provide compensation for an adverse impact resulting from implementation of an action alternative. In 40 CFR Section 1508.20 and 32 CFR Part 651.15, mitigation includes the following:

- avoiding the impact altogether by not taking a certain action or parts of an action;
- minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- compensating for the impact by replacing or providing substitute resources or environments.

6.2 BEST MANAGEMENT PRACTICES AND STANDARD OPERATING PROCEDURES

As discussed in Chapter 4, there are management actions such as BMPs and standard operating procedures (SOPs) that the Army implements on an ongoing basis to provide environmental protection. BMPs and SOPs are distinguished from mitigation measures in this EA because they are 1) existing requirements for the proposed action, 2) ongoing, regularly occurring practices, and 3) not specific to the proposed action. **Table 6.2-1** provides a summary of the relevant BMPs and SOPs to the proposed action analyzed in this EA. The table indicates the BMP and/or SOP that would be applied, what phase of the project the BMP and/or SOP would be applied, and the primary resource areas that would benefit from the BMP and/or SOP. Implementation, monitoring of effectiveness, and revisions and updates of BMPs and SOPs are part of the Army's overall environmental management system cycle of continual improvement.

Table 6.2-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area				
			Design	Construction	Geology and Soil	Water Resources	Biological Resources	Cultural Resources	Transportation and Traffic
1.	LUCIP	• Contractor implementing projects for infrastructure improvement will coordinate with MOTCO to obtain dig permit. • Sediment sampling analysis conducted in accordance with the LUCIP in support of this E.A	X	X	X	X	X		
2.	Erosion Control	A range of BMPs would control erosion during construction and operations to eliminate and/or minimize nonpoint source pollution in surface waters due to sediment. Erosion control BMPs include, but are not limited to, the following practices and procedures. • An Erosion and Sediment Control Plan would be prepared and implemented in construction plans and practices to the maximum extent practicable. • Topsoil removed from the site would be placed in the immediate area and reused for re-compaction purposes (if appropriate). • Soil exposed near water as part of the project would be protected from erosion with erosion control blankets (organic or synthetic fibers held together with net to cover disturbed areas) after exposure and stabilized as soon as practicable (with vegetation matting, hydroseeding, etc.). • Silt-containment (silt fences and other physical barriers that intercept runoff from drainage areas). • Re-vegetate as soon as possible after any ground disturbance or grading. • Minimize construction and grading during inclement weather. • Soil piles and exposed slopes covered during inclement weather. • Stockpiling of excavated materials behind impermeable berms and away from the influence of water bodies and runoff. • Vegetation/mulch stabilization (applying coarse plant residue to cover soil surface). The vegetation/mulch should be free of invasive species viable reproductive parts, such as rhizomes, seeds, and plants. • Level spreader (non-erosive outlet for runoff to disperse flow uniformly across slope). • Sediment basin (barrier that retains sediment from runoff).		X	X	X	X		

Table 6.2-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area				
3.	Storm Water Management Plan (SWMP)	In compliance with the CWA under Section 401, the proposed action will require a SWMP. A SWMP is a document that describes the minimal procedures and practices used to reduce the surface flow and subsequent discharge of pollutants to storm drainage systems. Elements of a SWMP include structural and non-structural practices such as: • Check dams (small temporary stone dam across drainage). • Diversion dike/swale (berm or ditch that channels water to desired location). • Lined waterway (lined outlet for drainage). • Storm drain inlet protection (permeable barrier around inlets reducing sediment let into storm drain). • Stormwater ponds and wetlands. • Infiltration practices (capture/temporarily store water before infiltrating into the soil). • Use of groundwater recharge wells and infiltration basins, where applicable. • Filtering practices (capture/temporarily store water and pass through filter beds of sand, organic matter, soil, or other media).	X	X	X	X	X		
4.	Stormwater Pollution Prevention Plan (SWPPP)	• A SWPPP is a self-implementing plan for compliance with an installation's stormwater permit. • Facilities would be required to comply with the SWPPP during construction and then during day-to-day operations to ensure that stormwater remains free of contaminants. • The SWPPP requires development of pollution prevention measures to reduce and control pollutants in stormwater discharge.		X	X	X	X		

5.	Low Impact Development (LID) Design Technology	Examples of LID design include:
		• Grassed vegetation maintained on berms.
		• Native plant landscaping.
		• Avoidance of pesticides and fertilizers.
		• Watershed-based management.
		• A watershed protection management approach could consider:
		  ○ Participating in the development of a watershed management plan.
		  ○ Implementing and adopting specific watershed protection strategies.
		  ○ Designing land use planning techniques that reduce or shift impervious cover and enhance percolation.
		Work towards achieving important water resource goals.
			X	X	X	X	X		

6.	Hazardous Materials Management Plan (HMMP)	HMMPs describe implementation procedures for the transportation, storage, use, and disposal of HM. HMMPs would also include waste minimization plans that provide protocols designed to encourage and promote the efficient use of HM, substitute products that are less toxic whenever feasible, minimization of their use, and promote recycling and reuse of HM. HMMPs would contain procedures such as: • Hazardous materials spill/release control (use of secondary containment and leak detection methods in operations involving liquid hazardous substances).		X	X	X	X		

Table 6.2-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area				
		• Construction materials and all construction-related materials should be free of leachable pollutants. • Train personnel (DOD personnel and contractors in proper labeling, container, storage, staging, and transportation requirements for hazardous substances. Also, they are trained in accordance with spill prevention, control, and cleanup methods). • Perform all vehicle maintenance activities at existing DOD maintenance shops. • Ensure that all personnel and contractors store, handle, and dispose of all POL per all applicable local and federal laws, regulations, and requirements. • Temporary equipment laydown or construction staging areas would be located in previously disturbed (e.g., paved) areas.							
7.	Hazardous Waste Management Plan (HWMP)	HWMPs include waste minimization plans that provide protocols designed to encourage the efficient use of HW, substitute products that are less toxic whenever feasible, minimize their use, and promote recycling and reuse of HW. HWMPs include the following recommendations: • Update and implement the existing HWMP to include procedures for the transportation, storage, use, handling, and disposal of HW. • Modify project-specific HW disposal protocol as appropriate. • Ensure personnel and contractor training regarding project- and facility-specific HW plans. • The use of spill/release control (use of secondary containment and leak detection methods in operations involving liquid hazardous substances). • Ensure appropriate housekeeping protocol (improving overall HW housekeeping practices, keeping area swept, wiping up spills, etc.) • Perform all maintenance activities at existing DOD maintenance shops. • Ensure all federal, state, and DOD laws and regulations are being observed via inspections/audits/surveillances and implement corrective actions as necessary. Also ensure that all personnel and contractors manage, store, handle, transport, and dispose of HW in accordance with applicable federal and state regulations. • Temporary equipment laydown or construction staging areas would be located in previously disturbed (e.g., paved) areas. • When new construction occurs on sites where contamination and/or MEC has been identified, ensure that the risk of human/ecological exposure is minimized via the use of site-specific health and safety plans, engineering and administrative controls, and personal protective equipment in accordance with 29 CFR Section 1910.120 (HW operations and emergency response operations). These site-specific health and safety plans must specifically address how these controls would be implemented to ensure the protection of human health and the environment.		X	X	X	X		

Table 6.2-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area				
8.	Spill Prevention Control and Countermeasure (SPCC) Plans	• Update and implement existing SPCC Plan to assess and respond to hazardous substance spills and/or releases. • Ensure DOD personnel and contractors are trained as to proper labeling, container, storage, staging, and transportation requirements for hazardous substances. Also, ensure they are trained in accordance with spill prevention, control, and cleanup methods. • Ensure POL fuel transfers kept away from water bodies and a response/contingency plan is in place in the event of any releases, leaks, or spills. • Ensure proper labeling of all hazardous substance containers to prevent inappropriate storage or use. • Contaminant migration control (e.g., reducing contaminant migration pathways by preventing releases to drains, pipelines, and sewers and the use of absorbent pads and materials to prevent and control spills and releases). • Ensure that contaminants (e.g., oils, greases, lubrication fluids for heavy equipment) are properly stored at work sites and temporary construction staging areas to avoid spills, releases, and leaks. • Ensure that emergency response plans are in place for responding to releases, leaks, or spills of hazardous substances. • Minimize the risk of uncontrolled leaks, spills, and releases through industry and Army accepted methods for spill prevention, containment, control, and abatement. • Minimize the risk of human exposure to contaminated media through the use of a site-specific health and safety plan, engineering and administrative controls, and appropriate personal protective equipment (e.g., indicating where eye-wash stations, fire extinguishers, etc., are located).		X	X	X	X		
9.	Munitions and Explosives of Concern (MEC)	• Comply with all applicable MEC protocol, procedures, and guidance. • Reduce the potential exposure to UXO through completion of limited MEC clearance operations by qualified UXO technicians. • Implement all applicable DOD MEC operations guidance to minimize or eliminate potential MEC explosion hazards and other adverse impacts. • Train construction crews on identifying and responding to MEC encountered in the field. UXO personnel would be available to monitor earthmoving activities.		X		X	X		
10.	Natural Resources Management (Terrestrial Focused)	• Achieve INRMP obligations.		X		X	X		

Table 6.2-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area				
11.	Natural Resources Management (Marine Focused)	Minimize contamination of the marine environment from project-related activities through actions such as: • Contractors are required to have and to implement a contingency plan to control and contain toxic spills, including petroleum products. Appropriate materials to contain and clean potential spills would be maintained and readily available at the work site. These materials would include absorbent pads and kitty litter and secondary containment absorbent booms. • All construction project-related materials and equipment placed in the water would be maintained so as not to release pollutants into the bay and/or be used to control pollutants that may be released by the demolition and construction activities. The project manager and heavy equipment operators would perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations would be postponed or halted should a leak be detected, and would not proceed until the leak is repaired and equipment cleaned. This requirement is written into the construction contract conditions. • Fueling of construction project-related vehicles and equipment would take place at least 100 feet away from the water unless a bermed and lined refueling area is constructed. With respect to construction equipment that cannot be fueled out of the water, spill prevention booms would be employed to contain any potential spills. Any fuel spilled would be cleaned up immediately. • A plan would be developed and implemented to prevent construction debris from entering or remaining in the marine environment during the project.		X		X	X		
12	Noise Abatement	BMPs to abate noise from roadway construction include the following: • Ensure that all equipment items have the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures, and engine vibration isolators, intact and operational. • Inspect all construction equipment at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding). • Turn off idling equipment when no longer in use. • Implement a construction noise monitoring program to limit potential impacts. • Plan noisier operations during times least sensitive to receptors. • Avoid scheduling construction during nighttime hours (10:00 p.m. to 7:00 a.m.) and on weekends. • Keep noise levels relatively uniform and avoid impulsive noises. • Maintain good public relations with the community to minimize objections to the unavoidable construction impacts. • Provide frequent activity updates of all construction activities.		X			X		
13.	Cultural Resources	• For post-review discoveries, an assessment would be made for NRHP eligibility in consultation with SHPO.		X	X			X	

Table 6.2-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area				
14.	Seismic Design	• During project design and construction, hazards associated with earthquakes and fault rupture would be minimized.	X	X	X				
15.	Air Quality (Construction Emissions)	• Place a time restriction of five minutes on unnecessary heavy equipment idle time and incorporating unscheduled inspections to verify compliance with the restriction. • Ensure equipment engines are maintained and tuned to perform at CARB and/or USEPA certification levels, preventing tampering, and conducting unscheduled inspections to ensure these measures are followed. • Lease new equipment, where practicable, that meets the most stringent of applicable Federal or California standards. • Commit to the best available emissions control technology where practical and reasonable. Use of Tier 4 engines will be utilized as much as is feasible. For equipment that does not meet Tier 4 standards, CARB and USEPA-verified controls such as particulate traps and oxidation catalysts will be used to reduce emissions of diesel particulate matter and other pollutants.							

6.3 MITIGATION MEASURES INCLUDED IN THIS EA

The BMPs and SOPs included in Chapter 4 and summarized in Section 6.2 minimize overall effects associated with the proposed action. This section summarizes the additional project-specific protective measures that were identified in Chapter 2 and/or Chapter 4. These include the measures that resulted from the consultation with SHPO concerning the proposed action as required by Section 106 of the NHPA, NMFS and USFWS as required by Section 7 of the ESA, and NMFS as required by the Magnuson-Stevens Fishery Conservation and Management Act.

6.3.1 Proposed Action

- No more than 6 miles (31,680 linear feet) of roadway would be under repair in any calendar year.
- The majority of daily construction activities would commence between 7:00 a.m. and 8:00 p.m. Certain construction activities, such as concrete placement, may have to extend beyond these hours in order to accomplish activities that must be performed without interruption until completion. This is expected to occur rarely and would only be undertaken with appropriate notification and minimization measures employed. Most work will occur during daylight, no artificial temporary lighting would be used within work zones.
- Work on Bridges T-1 and T-2 would be conducted using under bridge scaffolding, hanging platforms, and ladders. A pre-determined flagged travel route would be established for personnel and equipment to access the area to avoid adverse impacts to habitat, as well as to avoid MEC. If necessary, a temporary rail crossing will be established. All repair work would occur above the mean higher high water level and would avoid salt marsh harvest mouse habitat.
- For the Bridge T-4, T-7, and T-10 repairs, pile sections will be removed and replaced with a land-based crane and work sites will be temporarily dewatered. Temporary dewatering will be accomplished through the use of an inflatable cofferdam or a similar device. With each installation of the cofferdam, the slough channel would be allowed to naturally dewater from the ebb flow at low tide prior to the installation of the cofferdam. All in-water work associated with these efforts will occur between August 1st and November 30th.

6.3.2 Earth/Water Resources/Wetlands

- Obtaining and adhering to construction NPDES permit conditions and coordinated updates to the installation SWPPP.
- Obtaining and adhering to a Nationwide Permit and associated Section 401 Water Quality Certification for the Bridge T-1 and T-2 repairs.

- Use of existing material receiving sites for unsuitable materials and adherence to BMPs for sedimentation control at these sites.
- Obtaining and adhering to CWA Section 404 and Section 401 Water Quality Certification permit conditions for Rinquist Road realignment and repairs to Bridges T-4, T-7, and T-10.
- For geotechnical borings, obtaining and adhering to all applicable Contra Costa Health Services Soil Boring Permit requirements.
- For all bridge projects, floating booms would be in place during the duration of these projects where feasible and effective. In addition, debris that falls within the wetlands or dewatered areas would be removed to the maximum extent practicable by hand or using non-disruptive, hand held, non-motorized tools in a manner that does not disturb the wetlands.
- For the Bridge T-4, T-7, and T-10 repairs, all debris and damaged pile sections will be slowly lifted from the water and placed on the work surface within a containment basin that is constructed with durable plastic sheeting and designed to contain all sediment, without attempting to clean or remove any adhering sediment. The cut up piling sections, sediments, construction residue, and plastic sheeting will then be properly disposed of offsite.
- Removal of North Taylor Boulevard roadbed and establishment of appropriate grade and revegetation to attain targeted wetland conditions to improve the quality and function of the wetland area that is current bisected by this road segment.

6.3.3 Biological Resources

General

- A USFWS- NMFS-approved biologist(s) will serve as the biological monitor(s) and will be onsite during the duration of the project. In order to be approved, the biological monitors will possess a bachelor's degree in biological, ecology, natural resources, or related field or possess an equivalent amount of relevant professional experience. In addition, the biologists will have completed coursework or equivalent related experience specific to herpetology, mammalogy, and fish for the purposes of monitoring for the soft bird's beak, salt marsh harvest mouse, California Ridgway's rail, delta smelt, green sturgeon, and listed salmonids. The approved biologist(s) shall maintain written monitoring records that include: (1) the beginning and ending time of each days' construction monitoring effort; (2) a statement identifying the species, including general fish and wildlife species, when they are observed, and the location of the observation; (3) the condition the species was in when found, and by whom; (4) a description of any actions taken. The biological monitor shall maintain

complete records in their possession and shall immediately surrender copies of these records to USFWS upon verbal or written request. Copies of the monitoring records or a final report for the construction monitoring shall be provided to USFWS within ninety (90) days of completion of the construction monitoring.

- A USFWS- and NMFS-approved biologist will conduct mandatory contractor/worker awareness training for construction personnel. The awareness training will be provided to all construction personnel to brief them on the need to avoid effects to listed species and their habitat and the potential for any such wildlife species to occur on the site. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A representative will be appointed during the employee education program to be the contact for any employee or contractor who might inadvertently kill or injure a listed species or who finds a dead, injured, or entrapped species. The representative's name and telephone number will be provided to USFWS prior to the initiation of any demolition or construction activity.
- Project personnel will be directed to use BMPs where applicable, such as for prevention of soil erosion and sedimentation of aquatic habitats and introduction and spread of invasive plant species. These measures will be identified prior to construction and incorporated into the construction operations.
- Vehicular traffic will be confined to existing roads and the proposed access routes.
- No pets will be permitted in the project area to avoid harassment, killing, or injuring of wildlife.
- Access roads, staging areas, and in-water work areas shall be clearly identified in the field using orange construction fence, signage, buoys, or similar as appropriate. Work shall not be conducted outside designated work areas.
- The project site will be maintained trash-free, and food refuse will be contained in secure bins and removed daily during construction.
- Nighttime work near tidal marsh habitat will be avoided to the extent feasible. If nighttime work cannot be avoided, lighting will be directed to the work area, minimizing the lighting of tidal marsh habitat.
- No vehicles or equipment will be refueled within 100 feet of wetlands or aquatic habitats unless a bermed and lined refueling area is constructed. Any vehicles driven and/or operated within or adjacent to wetlands or aquatic habitats will be checked and maintained daily to prevent leaks of materials.
- Use of chemicals, fuels, lubricants, or biocides will be in compliance with all local, state, and federal regulations. This is necessary to minimize the possibility of

contamination of habitat or poisoning of wildlife. All uses of such compounds will observe label and other restrictions mandated by the USEPA, California Department of Food and Agriculture, and other state and federal legislation.

- The Army's contractors will be required to produce an Environmental Protection Plan that will address the known or potential environmental issues at the project site. The Environmental Protection Plan will contain, but is not limited to, names and qualifications of individuals who will be responsible for hazardous waste disposal and biological monitoring, authorized work areas, environmental compliance training program, drawings showing material storage areas and construction material containment, and methods to control water runoff.

Soft Bird's-Beak

- Prior to construction within or adjacent to tidal marsh habitats, including staging areas, TEF will be installed between the work area and any remaining marsh vegetation adjacent to the project footprint immediately to prevent encroachment by construction vehicles and personnel. The TEF will be a temporary, plastic mesh-type fence (Tensor Polygrid or equivalent) at least 4 feet tall. A USFWS-approved biologist will determine the exact location of the fencing. The fencing will be strung tightly on posts set at maximum intervals of 10 feet and will be checked and maintained as needed until construction is complete.
- No grading, clearing, storage of equipment or machinery, or other disturbance or activity will occur within or adjacent to tidal marsh habitats until the TEF has been installed and approved by the USFWS-approved biologist.
- A USFWS-approved biologist will conduct pre-construction surveys for presence of soft bird's beak within the area of potential temporary impact and that occurrence of soft-birds beak will be flagged and avoided during project implementation.

California Ridgway's Rail

- Activities within or adjacent to tidal marsh habitat will be avoided during the California Ridgway's rail breeding season from February 1st through August 31st each year until protocol surveys are conducted and either 1) Ridgway's rails are determined not to occur in the action area; or 2) any Ridgway's rail territories discovered in the surveys will be avoided. The surveys will be conducted according to the most recent survey protocol issued by USFWS (dated December 7, 2009), unless an updated protocol is released prior to survey initiation. The 2009 protocol entails conducting four passive surveys of 2-hour duration at each survey station, with no taped playback being used during any of the four surveys. Surveys will be conducted between January 15th and April 15th; surveys are to be initiated between January 15th and February 1st with at least two to three weeks between each survey to

ensure surveys are conducted throughout the optimal calling period. All potential Ridgway's rail nesting habitat within 700 feet of project work areas will be surveyed.

- If breeding Ridgway's rails are determined to be present, activities will not occur within 700 feet of an identified calling center. If the intervening distance across a major slough channel or across a substantial barrier between the Ridgway's rail calling center and any activity area is greater than 200 feet, then it may proceed at that location within the breeding season upon USFWS approval.
- If protocol surveys detect California Ridgway's rails in the project action area as defined above, activities within or adjacent to California Ridgway's rail habitat (salt marsh wetlands) will not occur within two hours before or after extreme high tides (6.5 feet or above, as measured at the Golden Gate Bridge), when the marsh plain is inundated. This measure is appropriate because protective cover for California Ridgway's rails is limited and activities could prevent them from reaching available cover.
- A USFWS-approved biologist will be present during all project related ground disturbances or vegetation removal/cutting, this includes the initial disturbance and any subsequent work necessary for maintenance of clear space. The USFWS-approved biologist will conduct surveys for listed species prior to vegetation removal/cutting activities and also monitor during the work.
- To prevent/deter raptors from using project lighting as perches, lighting will either be designed to prevent/deter raptor perching or avian anti-perching devices will be permanently installed on lighting structures.
- A pre-construction California Ridgway's rail survey shall be conducted up to 72-hours before construction by a qualified biologist who holds a 10(a)1(A) permit and has previous California Ridgway's rail survey experience. If nest sites are located in areas that will be disturbed by the construction, the Army will consult with USFWS to determine what additional protective measures could be implemented to avoid or reduce mortality, injury or harm to California Ridgway's rail. Construction activities in the area of concern may be rescheduled or modified to avoid adverse construction effects to the nesting birds.

Salt Marsh Harvest Mouse

- Where marsh vegetation representing potentially suitable habitat for salt marsh harvest mice is present and needs to be removed, work will be conducted using hand-held tools in a manner to enable and encourage wildlife to escape from the construction area. Vegetation shall be removed only with non-mechanized hand tools (i.e., trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers or lawn mowers, shall be used to remove this vegetation. Vegetation will

first be trimmed to a canopy height of 6 inches (which appears to be the lowest commonly used by salt marsh harvest mice). Then, a USFWS-approved biologist will conduct pre-construction surveys for presence of salt marsh harvest mice within the areas where the vegetation will be removed to bare ground. If a mouse that could potentially be this species is observed within the pre-construction survey area, USFWS shall be notified. Removal of vegetation to bare ground may begin when no mice are observed and shall start at the edge farthest from highest quality habitat, or the poorest habitat, and work its way towards any higher quality habitat.

- A USFWS-approved biologist will be present during all project related ground disturbances or vegetation removal/cutting, this includes the initial disturbance and any subsequent work necessary for maintenance of clear space. The USFWS-approved biologist will conduct surveys for listed species prior to vegetation removal/cutting activities and also monitor during the work.
- To prevent salt marsh harvest mice from moving into the project site during construction, a second type of TEF (distinct from the TEF that is designed to protect soft bird's beak habitat from encroachment) will be installed between the work area and any remaining marsh vegetation adjacent to the project footprint immediately after the vegetation removal and prior to the start of any other construction activities. This TEF will be made of a heavy plastic sheeting material that does not allow salt marsh harvest mice to pass through or climb, and the bottom should be buried to a depth of 2 inches so that these species cannot crawl under the fence. This TEF height will be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet, and may be installed either inside of or attached to the lower part of the soft birds beak habitat TEF where both types of fencing are required. The TEF will be removed after all construction is complete.
- No materials or supplies that could potentially entrap salt marsh mice will be stored in salt marsh vegetation. These include pipes, storage containers, landscaping materials, plastic sheeting, or other materials that small animals could use for cover. All equipment will be stored at designated staging areas, which consists of existing lots devoid of vegetation.
- A USFWS-approved biologist will monitor all construction activities within potentially suitable habitat. The on-site biologist(s) will possess a working cellular telephone, and this phone number will be provided to USFWS. The USFWS-approved biologist will also be the contact for any employee or contractor who might inadvertently injure a salt marsh harvest mouse, or find an injured or entrapped salt marsh harvest mouse.
- The USFWS-approved biologist will look for salt marsh harvest mice immediately prior to and during all construction activities (i.e., immediately prior to ground disturbance). If a salt marsh harvest mouse, or any mouse that the biologist or

construction personnel believe may be this species, is encountered, all work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease, and the foreman and USFWS-approved biologist will be immediately notified. The USFWS-approved biologist will monitor it until he/she determines that the animal(s) is not imperiled by predators or other dangers. The USFWS-approved biologist will notify USFWS within one working day following any encounters with a potential salt marsh harvest mouse during construction via electronic mail and telephone.

- Prior to the start of daily construction activities, the USFWS-approved biologist will inspect the salt marsh harvest mouse TEF to ensure that it is neither ripped nor has holes and that the base is still buried. Any necessary repairs identified by the USFWS-approved biologist will be made immediately. The fenced area will also be inspected to ensure that no mice are trapped in it. Any mice found along and outside the fence will be closely monitored until they move away from the construction area.
- Any contractor, employee, or agency personnel who inadvertently kills or injures a salt marsh harvest mouse will immediately report the incident to the USFWS-approved biologist. The USFWS-approved biologist will contact USFWS to report the dead or injured animal via electronic mail and telephone within one working day.

Delta Smelt, Green Sturgeon, Central California Coast Steelhead DPS, Central Valley Steelhead DPS, Central Valley Spring-run Chinook ESU, and Sacramento River Winter-run Chinook ESU

- A USFWS- and NMFS-approved biological monitor will be on-site during construction activities to ensure the Army and all construction personnel are compliant with the avoidance and minimization measures to minimize adverse effects to delta smelt and its critical habitat.
- No equipment or vehicles will be stored on bridge structures when not in use to reduce the potential for any spills or debris entering the water column. (Note that a crane that is in place for occasional use during project execution is considered in use.)
- All vehicles and equipment will be properly maintained to reduce the potential for spills of petroleum-based products. Containment booms and sorbent materials will be available during the activity and will be deployed immediately in the event of a spill to limit its spread.
- To minimize the potential for impacts from hazardous or regulated materials, all fuel, waste oils, and solvents will be stored well away from the construction zone. Any spill of such materials will be immediately contained in accordance with the SPCC

Plan. (A copy of the SPCC Plan will be submitted to USFWS and NMFS for review and approval once developed.)

- Minimal cutting and boring will occur over the water; if necessary, tarps or other capture devices will be used to reduce the likelihood of materials entering the water.
- A floating surface boom will be placed around the work area to ensure that debris that falls in the water will be captured and promptly removed. The upper part of the boom will consist of sorbent material to capture floating hydrocarbons that may be associated with the creosote piles.
- All debris and damaged piles will be slowly lifted from the water and placed on the work surface of the barge within a containment basin that is constructed with durable plastic sheeting and designed to contain all sediment, without attempting to clean or remove any adhering sediment. The cut up piling, sediments, construction residue, and plastic sheeting will then be disposed of properly offsite in a manner that does not expose or affect aquatic resources.

Migratory Birds

- Avoidance. To the extent feasible, construction activities within or adjacent to (within 100 feet) vegetated marsh and upland habitats where migratory birds are likely to nest and within 300 feet of any known raptor nest should be scheduled to avoid the nesting season. If construction activities are scheduled to take place outside the nesting season, all impacts on nesting birds protected under the MBTA and California Fish and Game Code will be avoided. The nesting season for most birds in the vicinity of MOTCO extends from February 1st through August 31st.
- Pre-construction/Pre-disturbance Surveys. For repair activities that would occur during the nesting season, pre-construction surveys for nesting birds would be conducted by a qualified ornithologist to ensure no nests will be disturbed. These surveys should be conducted no more than seven days prior to the initiation of activities. During this survey, the ornithologist will inspect all potential nesting habitats (e.g., trees, shrubs, ruderal grasslands, buildings) in and immediately adjacent to the impact areas for nests. If an active nest is found sufficiently close to work areas to be disturbed by these activities, the ornithologist will determine the extent of a construction-free buffer zone to be established around the nest (typically 300 feet for raptors and 100 feet for other species), to ensure that no nests of species protected by the MBTA and California Fish and Game Code will be disturbed during project implementation.
- Inhibition of Nesting. If repair activities will not begin until after the start of the nesting season, all potential nesting substrates (e.g., bushes, trees, grasses, and other vegetation) that are scheduled to be removed by the project, will be removed

prior to the start of the nesting season (i.e., prior to 1 February). This will preclude the initiation of nests in vegetated areas to be removed and prevent the potential project delays due to the presence of active nests in these substrates. Additionally, nest deterrence (e.g., installation of netting, removal of nest starts) would be necessary to ensure that no nests of native birds will be impacted during construction.

6.3.4 Land Use, Recreation, and Coastal Zone Management

- To the extent practicable, the Army will work with NPS to attempt to avoid the most disruptive types of construction activities during those times when conditions of relative quiet and reverence are important for the interpretive, ceremonial, or commemorative events planned at the memorial site.
- Prior to the commencement of any work authorized on the Letter of Conditional Concurrence for this action (**Appendix G**), the Army will submit and receive approval from BCDC on a restoration/planning plan that will include the seed mix, cross-sections depicting proposed elevations, and include a monitoring program over a two-year period with success criteria and measures for assessing that criteria. Invasive species shall cover no more than 5 percent of the total cover at the restored side. The plan shall describe the status and type of the surrounding wetlands at the restoration site and shall design the restoration to be continuous and congruent with these areas. The plan shall include a contingency plan outlining the actions to be implemented if adverse conditions are identified during the monitoring period. If there is a failure to meet success criteria, MOTCO will coordinate with BCDC and take corrective action as specified by BCDC within 1 year of failure. MOTCO will submit a post-construction report and two additional annual monitoring reports following the completion of this work. These reports will be submitted by December 1 of each year following the completion of construction and will specify the requirements noted above and the success criteria agreed upon by the restoration/planning plan.

6.3.5 Transportation/Traffic

- Develop a Traffic Control Plan that defines the necessary reroute/detour of regular traffic away from construction sites to minimize impacts to mission; specifies gate use for construction vehicles, deliveries, and workers; and specifies laydown area use and establish appropriate traffic control and signage.
- Notify affected employees about the Traffic Control Plan detours and consider alternative work schedules during the periods of closures/detours for Tidal Area workers to minimize impacts to project activities.

6.3.6 Noise

- Advance notification to neighbors if construction activities are planned for weekends or holidays by notifying nearby sensitive receptors in advance of commencing the noisiest phases of the planned construction projects (including times of heavy truck traffic), and using standard DOD protocols to log and respond to noise complaints.

6.3.7 Cultural Resources

- The Army will incorporate pedestrian improvements and amenities for the Port Chicago Memorial into the Pier 2/White Road improvement projects. These include benches at the memorial and improvements to the aesthetics and safety of the White Road pedestrian crossing to the barricaded railcar feature of the Memorial that is south of White Road.

6.3.8 Hazardous and Toxic Substances and Waste

- Where LBP is present, develop and adhere to a debris containment and collection plan and lead compliance plan for protection of the environment and worker safety. A containment system would be provided around the work area where LBP is being disturbed, which must contain all water, resulting debris, and visible dust produced when the existing paint system is disturbed.
- Coordinate the road repairs at the intersection of Johnson Road and White Road with the RI/FS and IPR program actions and take all appropriate measures regarding soils with high cadmium levels requiring further consideration under the LUCIP.

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7.0 REFERENCES

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Chapter 2 Description of Proposed Action and Alternatives

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Paulson, Amy	Hazardous Materials and Hazardous Waste and Cumulative Impacts	B.S., Ecology M.S., Conservation Ecology and Sustainable Development	18
Rudolph, Teresa	Cultural Resources	B.A., Anthropology M.A., Anthropology	39
Wardwell, Robert	Quality Assurance/ Quality Control	B.A., Economics/Physical Sciences M.S., Environmental Science MBA, Business Administration	46
Wilson, Kimberly	Technical Editing		30
Wirth, Carol	Project Manager	B.S., Ecology and Evolutionary Biology	22

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APPENDIX A
DESCRIPTION OF ROADS AND REPAIRS

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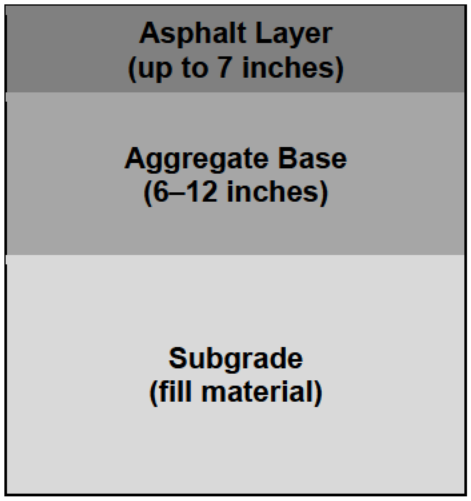
A.1 Types of Road Repairs

This EA includes the following four types of road repairs:

1. Full Depth: Primary roads with Level 1 or Level 2 usage would require complete pavement replacement due to the failure of the current pavement to support the weight of the reach stackers and other operational vehicles.
2. Mill and Overlay: Primary or secondary roads with Level 1 or Level 2 usage that support mission activities would require resurfacing to restore the roads to a satisfactory condition.
3. Crack Sealing: Secondary and tertiary roads with Level 2 or 3 usage to support that support mission activities and are in generally good condition would require sealing of the minor cracks to maintain the roads at a satisfactory condition for general use.
4. Aggregate Surface Replacement: Roads not primarily used for mission or mission support activities and infrequently used roads would require the removal of the existing damaged pavement and replacement with a low cost easy maintenance surface.

A.1.1 Full Depth Road Repair

The roads at MOTCO generally consist of an asphalt layer (up to 7 inches), an aggregate base layer (6-12 inches), and subgrade (usually fill material consisting of combination of sands, silt, and clays). In addition, Port Chicago Highway consists of an asphalt layer (up to 8 inches), a reinforced Portland cement concrete (PCC) layer (up to 10 inches), and a subgrade layer consisting mostly of lean clay. Over the years, the weight of heavy vehicles has caused compression of the asphalt and subbase layers. In order to repair the roads to accommodate reach stackers and other vehicles used during mission activities, complete reconstruction of the road is needed in accordance with current Army standards. Complete reconstruction of an asphalt roadway for a full depth reconstruction effort generally involves the following steps:



Cross-Section of a Typical Road at MOTCO

- Adjustment and/or temporary relocation of utilities to allow construction equipment to traverse the roadway without damaging utility assets.
- Demolition and removal of the existing asphalt layer and underlying base materials.
- Compaction and reconstruction of the new base and subbase with a combination of new and recycled asphalt product (RAP).

- Elevation of the subbase (where needed).
- Application of the new asphalt layer by paving machines.
- Application of new thermal plastic pavement markings on new pavement surface.
- Installation of appropriate traffic signage.

Recycled Asphalt Product *is asphalt that is milled into smaller, gravel-sized pieces. RAP can be reused as part of the new asphalt layer, mixed with existing base to create subbase for a road, or on a shoulder for soil stabilization.*

Roads would typically be raised approximately 1.5 feet in elevation to compensate for the compression and sinking that has taken place over time. Portions of White Road have experienced the most dramatic changes in elevation. In order to return White Road to its original design elevation, it may be elevated up to 3 feet above existing grade to become flush with existing railroad crossings.

White Road near Bridge T-9 looking west.

A.1.2 Mill and Overlay

The general steps of "mill and overlay" construction, to include mill/rubblization of PCC/seat, and new asphalt concrete (AC) commonly involves the following:

- Adjustment and/or temporary relocation of utilities to allow milling machines to traverse the roadway without damaging utility assets.
- Milling or rubblizing the existing asphalt or PCC layer using a milling machine (producing RAP).
- Re-adjustment (raising) of utilities so that they are flush with the new road surface.
- Application of a tack coat to the milled surface to serve as a binder for the new asphalt layer.
- Application of the new asphalt or AC layer by paving machines.
- Application of new thermal plastic pavement markings on new pavement surface.
- Installation of appropriate traffic signage.

A.1.3 Crack Sealing

Crack cleaning and sealing of an asphalt roadway generally involves the following steps:

- The cracks in the roadway are cut to a specified depth.
- Workers clean and dry the open roadway cracks with high-pressure air and heat.
- A hot-pour crack sealant is applied.
- Sand is placed over the sealant to reduce stickiness.
- Application of new thermal plastic pavement markings on new pavement surface, as necessary.
- Installation of appropriate traffic signage.

A.1.4 Aggregate Surface Road Replacement

Under this repair, existing damaged pavement, including asphalt surface and the aggregate road base, is removed and replaced with a low cost easy maintenance aggregate surface. Aggregates are used in granular base and subbase layers below the driving surface layer(s) in both AC and PCC pavement structures. The aggregate base layers serve a variety of purposes, including reducing the stress applied to the subgrade layer and providing drainage for the pavement structure. The granular base layer is directly below the pavement surface and acts as the load bearing and strengthening component of the pavement structure. The granular subbase forms the lowest (bottom) layer of the pavement structure, and acts as the principal foundation for the subsequent road profile, provides drainage for the pavement structure, and protects the structure from frost. Aggregate surface road replacement generally involves the following steps:

- Adjustment and/or temporary relocation of utilities to allow milling machines to traverse the roadway without damaging utility assets.
- Milling the existing asphalt layer using a milling machine (producing RAP).
- Application of RAP or adequate base material.
- Installation of appropriate traffic signage.

A.2 Design Criteria

For Level 1 use roads that carry the majority of loaded ammunition vehicle traffic, the design load is 192,000 pounds, (to accommodate container handling equipment). This requirement must be met in order for the road to support the weight of modern operations. Since the existing roads were built when operations were conducted using smaller, lighter vehicles, the current haul routes are settling and showing signs of severe distress. For Level 2 use roads that are not used by container handling equipment, the design load is equal to an H20, which reflects a two-axle truck weighing 40,000 pounds. MOTCO's fire trucks would be able to use Level 2 and 3 roads without causing long-term damage. Level 3 use roads serve

Per Technical Manual 5-822-2,

Primary highways *include all installation roads and streets which serve as the main distributing arteries for all traffic originating outside and with an installation and which provide access to, through, and between the various functional areas. For the purpose of this EA, Level 1 use roads are considered primary roads.*

Secondary highways *include all installation roads and streets which supplement the primary highway system by providing access to, between, and within the various functional areas. For the purpose of this EA, Level 2 use roads are considered secondary roads.*

Tertiary highways *include all installation roads and streets which provide access from other roads and streets to individual units of facilities of a functional area. For the purpose of this EA, Level 3 use roads are considered tertiary roads.*

non-mission related activities and do not require a load capacity beyond their original design capacity. It is assumed these roads would only be traveled by light-weight trucks and non-specialty motor vehicles.)

In determining the level of repair needed, the Army determined the minimum acceptable service levels for pavement using a Pavement Condition Index (PCI) as defined in Army Technical Manual 5-623, *Pavement Maintenance Management*. The PCI measures the pavement's structural integrity and surface operational condition and is obtained using the Pavement Engineered Management System (PAVER) Sustainment Management System. PCI is standard for the American Society for Testing Material (ASTM), now known as ASTM International. The PCI is based on a scale of 0 to 100. Minimum acceptable service levels for installation vehicular pavement are found in AR 420-1, Paragraph 7-9. Primary Roads must have a PCI of 60, Secondary Roads 50, and Tertiary Roads 45.

All road repairs would be designed to meet, at a minimum, applicable California Department of Transportation specifications with regard to subgrade preparation, compaction, materials, and placement.

APPENDIX B
PLANNED ROAD AND BRIDGE REPAIR PROJECT DETAILS

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B.1 Proposed Road Repairs

Table B-1 lists each road at MOTCO, the types of repair needed, and expected year of project execution. In some cases road repairs for the same road would be completed in phases; this is due to operational need and the type of repair proposed. Construction for any road may be expected to span fiscal or calendar years but will be limited to a total of no more than 6 total miles per calendar year.

Table B-1. Description of Proposed MOTCO Road Repairs

Road Name	Road Segment	Road Use Priority Classification[1]	Existing Conditions		Repair Information		Execution Schedule
			Length (linear feet)	Width (feet)	Pavement Condition Index	Repair Type	Year (FY)
Near-Term Projects (2017–2021)							
Anderson Road	Christenbury Road to White Road	Level 1 Use	2,200	22	34	Full Depth	2017
Port Chicago Highway (East)[3]	East of R-3 holding pad to Nichol's Road	Level 2 Use	9,375	22–28	53–61	Mill / Overlay or Full Depth	2017
Rinquist Road Intersection	Realignment	Level 1 Use	2,700	24	26	Realign-ment	2017
North Taylor Boulevard	Removal	Level 1 Use	712	26-32	25	N/A	2017
Port Chicago Highway (West)[3]	Bridge T-2 to eastern holding pad (R-3)	Level 1 Use	5,100	22–28	28	Mill / Overlay or Full Depth	2018
Christenbury Road (includes Brown Road)	White Road to Anderson Road	Level 1 Use	5,973	20–28	25–55	Full Depth	2018 w/utilities
Johnson Road	Anderson Road to White Road	Level 1 Use	4,142	24	39	Full Depth	2018 utilities
White Road (West)[4]	Johnson Road to Anderson Road	Level 1 Use	2,661	28	40–56	Full Depth	2019 w/ductbank/ elec
Main Street[3]	Port Chicago Highway to Mordoh Road	Level 1 Use	2,615	26	37–81	Full Depth	2020
Mordoh Road[3]	White Road to Main Street	Level 1 Use	3,270	26	52–63	Full Depth	2020
White Road (Center)[4]	Preuitt Road to Christenbury Road	Level 1 Use	1,124	24	20–50	Full Depth	2021
Long-Term Projects (After 2021)							
White Road (East)	Christenbury Road to east end of Pier 4	Level 1 Use	6,815	24	20–50	Full Depth	2021+
Preuitt Road	White Road to Anderson Road	Level 1 Use	2,542	20	88	Full Depth	2021+
Robinson Road	Johnson Road to Born Road	Level 2 Use	2,123	10	32	Mill / Overlay	2021+
Born Road	Christenbury Road to Waterfront Road	Level 1 Use	650	28	36	Full Depth	2021+
Shaner Road	Born Road to Johnson Road	Level 1 Use	2,125	40	61	Full Depth	2021+
A Street	Full length	Level 1 Use	3,225	25	57–100	Full Depth	2021+
Driftwood Road	Southern base boundary to Port Chicago Highway	Level 2 Use	2,614	30	N/A	Crack Seal	2021+
Fields Road	Johnson Road to Miller Road	Level 2 Use	1,240	18	59	Mill / Overlay	2021+
Froid Road	Johnson Road to west road terminus	Level 2 Use	3,100	24	47	Mill / Overlay	2021+
Holding Pad Roads (R-1, R-2, and R-3)	Full length	Level 2 Use	1,125; 1,329; 1,476	35	66–71	Crack Seal	2021+

Table B-1. Description of Proposed MOTCO Road Repairs

Road Name	Road Segment	Road Use Priority Classification[1]	Existing Conditions		Repair Information		Execution Schedule
			Length (linear feet)	Width (feet)	Pavement Condition Index	Repair Type	Year (FY)
Holmes Road	Johnson Road to Miller Road	Level 2 Use	1,531	20	34	Mill / Overlay	2021+
Jackson Road	Johnson Road to Christenbury Road	Level 2 Use	4,140	24	7–34	Mill / Overlay	2021+
Johnson Road (Phase 2)	Anderson Road to Robison Road	Level 2 Use	4,050	24	39–60	Full Depth	2021+
Leyte Street	A Street to Kinne Boulevard	Level 2 Use	385	22	95–98	Full Depth	2021+
Miller Road	Pickett Road to Fields Road	Level 2 Use	615	20	66	Mill / Overlay	2021+
Moore Road	Anderson Road to Johnson Road	Level 2 Use	2,470	24	58	Mill / Overlay	2021+
Pearl Avenue	Kinne boulevard to base boundary	Level 2 Use	280	22	N/A	Full Depth	2021+
Pickett Road	Johnson Road to Miller Road	Level 2 Use	1,660	22	74	Mill / Overlay	2021+
Warren Road	Anderson Road to Christenbury Road	Level 2 Use	2,300	24	55-59	Mill / Overlay	2021+
Wilson Road	Johnson Road to Miller Road	Level 2 Use	1,320	20	70	Mill / Overlay	2021+
Port Chicago Highway (Phase 4)[3]	Nichol's Road east to installation boundary	Level 2 Use	3,297	22–28	53–61	Mill / Overlay or Full Depth	2021+
Attu Street	A Street to Kinne Boulevard	Level 3 Use	421	24	N/A	Full Depth	2021+
Gun Road	Full length	Level 3 Use	319		26	Mill / Overlay	2021+
Kinne Boulevard	ACP 1 to Pearl Avenue	Level 3 Use	3,869	30	66–100	Mill / Overlay	2021+
Nichols Road	Port Chicago Highway to southern base boundary	Level 3 Use	1,721	11	N/A	Subbase	2021+
Shell Road	Shaner Road to Robinson Road	Level 3 Use	280	17	22	Subbase	2021+
Stevens Road	White Road to south end of road	Level 3 Use	2,600	16	10-48	Mill / Overlay	2021+
TV Hill Road	Southern base boundary to top of TV Hill Road	Level 3 Use	4,388	10	N/A	Subbase	2021+

Notes:

1. Level 1 use roads are mission critical and must be designed to carry up to 192,000 pounds; Level 2 use roads support mission-related activities; and Level 3 use roads support other installation activities.
2. Year represents the fiscal year the contract for road repair is executed and not necessarily the year the road would be repaired. It is anticipated road repair and utility repair would be completed concurrently.
3. Inspections confirm Port Chicago Highway is currently designed to carry up to 192,000 pounds. A segment of the eastern portion of Port Chicago Highway would not be repaired as the Gate 5 upgrade project reroutes traffic on a new road and abandons this segment of road. Based on the current project schedule, the upgraded Gate 5 is anticipated to be available for use in 2019.
4. An approximately 1,400-linear-foot (LF) segment of White Road extending between the former and proposed new Pier 2 West Trestle approach and the Pier 2 East Trestle approach be would be repaired as part of a project for the modernization and repair of Pier 2 (see Chapter 5.0 for more discussion). The Center segment of White Road is the gap between the two segments being repaired as part of the Pier 2 project. The West Segment is to the west of the segment extending along between the former and proposed new Pier 2 West Trestle approach.

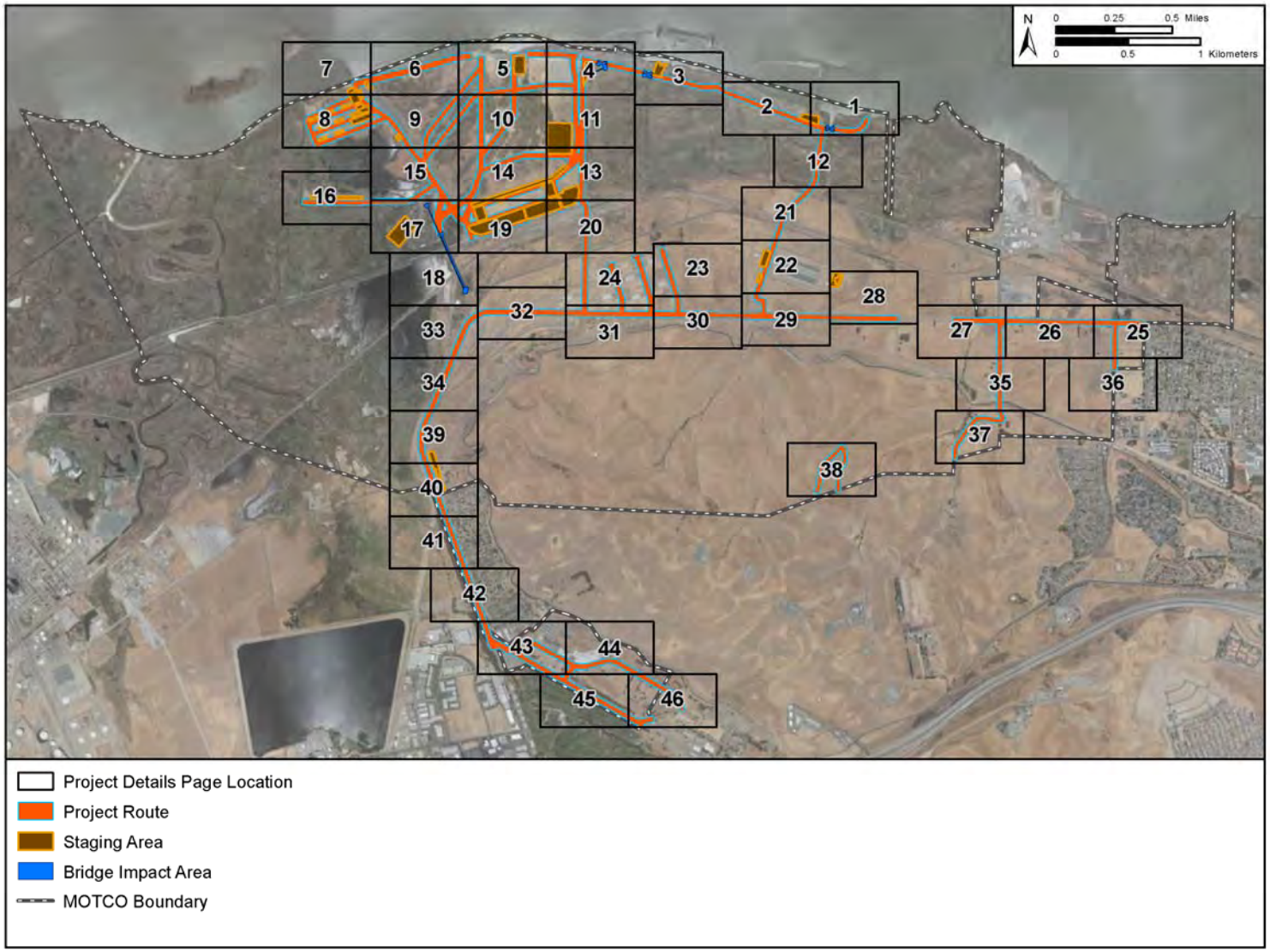
Table B-2. Bridge Repair Summary

Facility #	Bridge Name	Type	Length (LF)	Material	Proposed Repair[1]	Execution Year (FY)	Construction Timeline (FY)
107	T-1	Rail	2,142	Concrete	• Stabilize cracks with epoxy injection if possible • Remove and replace deteriorated (spalled) concrete where needed	2018	2018-2020
108	T-2	Vehicle	1,385	Steel & Concrete	• Replace joint filler material (1,187 linear feet) • Remove existing lead paint & repaint steel members • Clean/ repair concrete spalls (400 square feet) • Replace existing north and south approach railing/end treatment (333 linear feet) • Replace missing approach, transitional railing, and end treatment (653 linear feet) • Removal of loose soil from under the southern abutment and replacement with controlled low-strength material to improve drainage at south abutment to divert runoff away from abutment slope (60 CY) • Construct new AC dike at south side (50 linear feet)	2017	2017–2019
445	T-4	Vehicle	129	Timber	• Seal cracks approach roadway(100 feet) • Seal bridge deck (550 feet) • Replace approach railing on left and right (20 feet each side) • Replace end treatments (4 each) • Tighten guardrail system bolts • Remove deteriorated pile sections and replaced with new sections of timber piling reinforced with external steel sleeves (10) • Remove and replace AC approach pavement on west side (500 square feet) • Install center striping on bridge (170 linear feet)	2018	2018–2020
446	T-5	Rail	129	Timber	• Replace deteriorated timber planks on walkway (500 square feet)	2018	2018–2020
447	T-6	Rail	333	Timber	• Replace warped walkway planking (1,330 square feet) • Replace missing nuts, tighten bolts (20 each)	2018	2018–2020
448	T-7	Vehicle	128.5	Timber	• Fill and backfill void under pile cap with CLSM (15 cubic feet) • Re-direct roadway draining away from abutment • Seal cracks on deck (500 feet) • Install approach and transition railing (20 feet) • Tighten all railing bolts and adjust spacer blocks • Replace timber railing posts (2 each) • Install railing at left approach (50 feet) • Install new end treatments (4 each) • Remove decayed wood. Apply wood preservative (1 square foot) • Remove deteriorated pile sections and replaced with new sections of timber piling reinforced with external steel sleeves (8) • Install center striping on bridge (170 linear feet)	2018	2018–2020
451	T-10	Vehicle	131	Timber	• Seal the transverse and longitudinal cracks approach roadway (100 feet) • Seal the transverse and longitudinal cracks bridge deck (300 feet) • Shim between cap beams/piles (20 each) • Extend approach railing (20 feet/1 each)	2018	2018–2020

Table B-2. Bridge Repair Summary

Facility #	Bridge Name	Type	Length (LF)	Material	Proposed Repair[1]	Execution Year (FY)	Construction Timeline (FY)
					• Install new end treatments (4 each) • Shim between stringers and pile caps (10 each) • Tighten all bridge railing bolts (1 each) • Deteriorated pile sections will be removed and replaced with new sections of timber piling reinforced with external steel sleeves. • Repair timber piles (15) • Fill gaps around railing posts (25 square feet)		

Detailed mapping of the proposed road and bridge projects and associated areas of temporary and permanent impact analyzed are presented in the pages that follow.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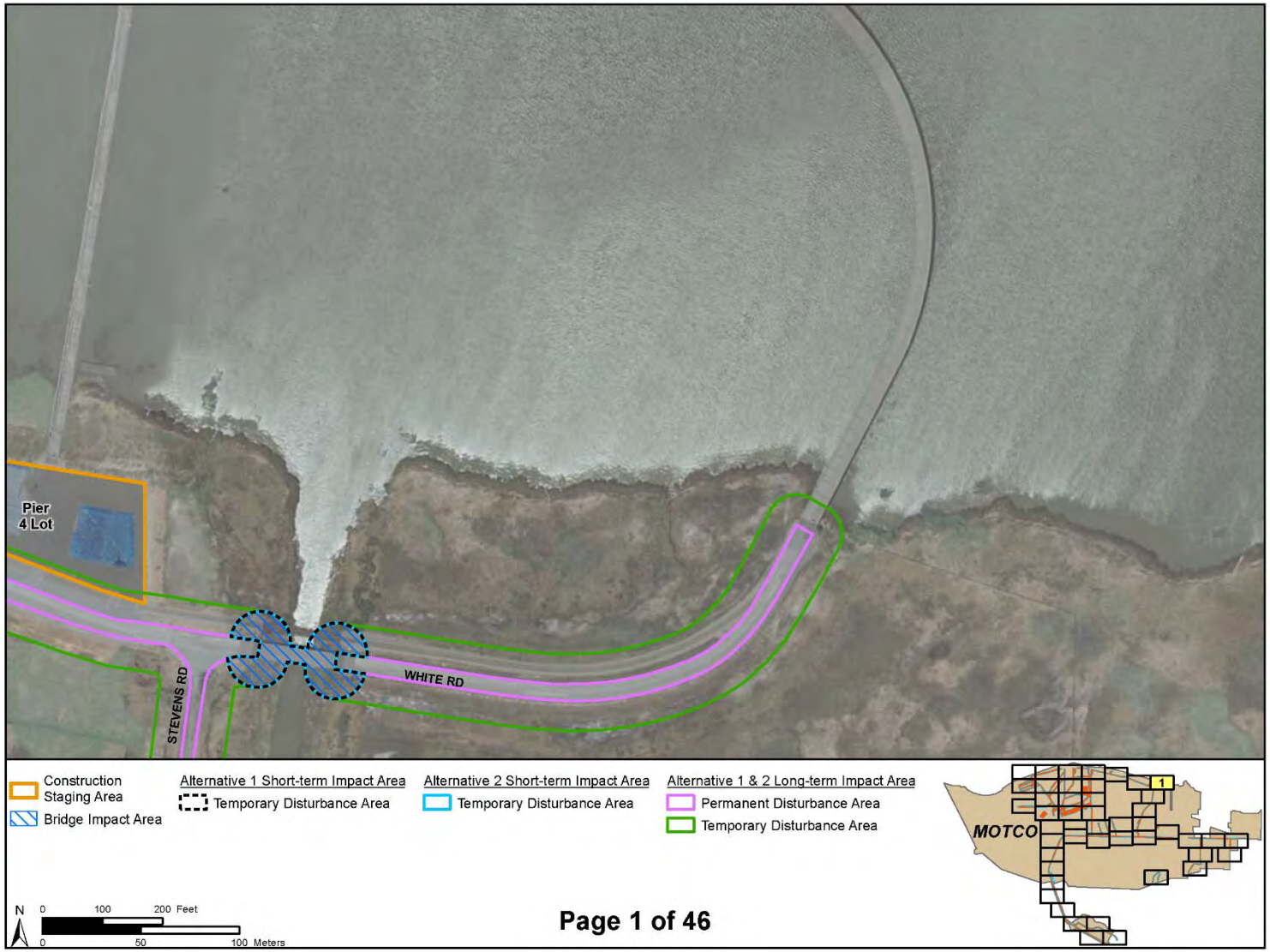
Project Details Page Location
Project Route
Staging Area
Bridge Impact Area
MOTCO Boundary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WHITE RD
Construction Staging Area
Bridge Impact Area
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Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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Page 1 of 46

WHITE RD
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Staging Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
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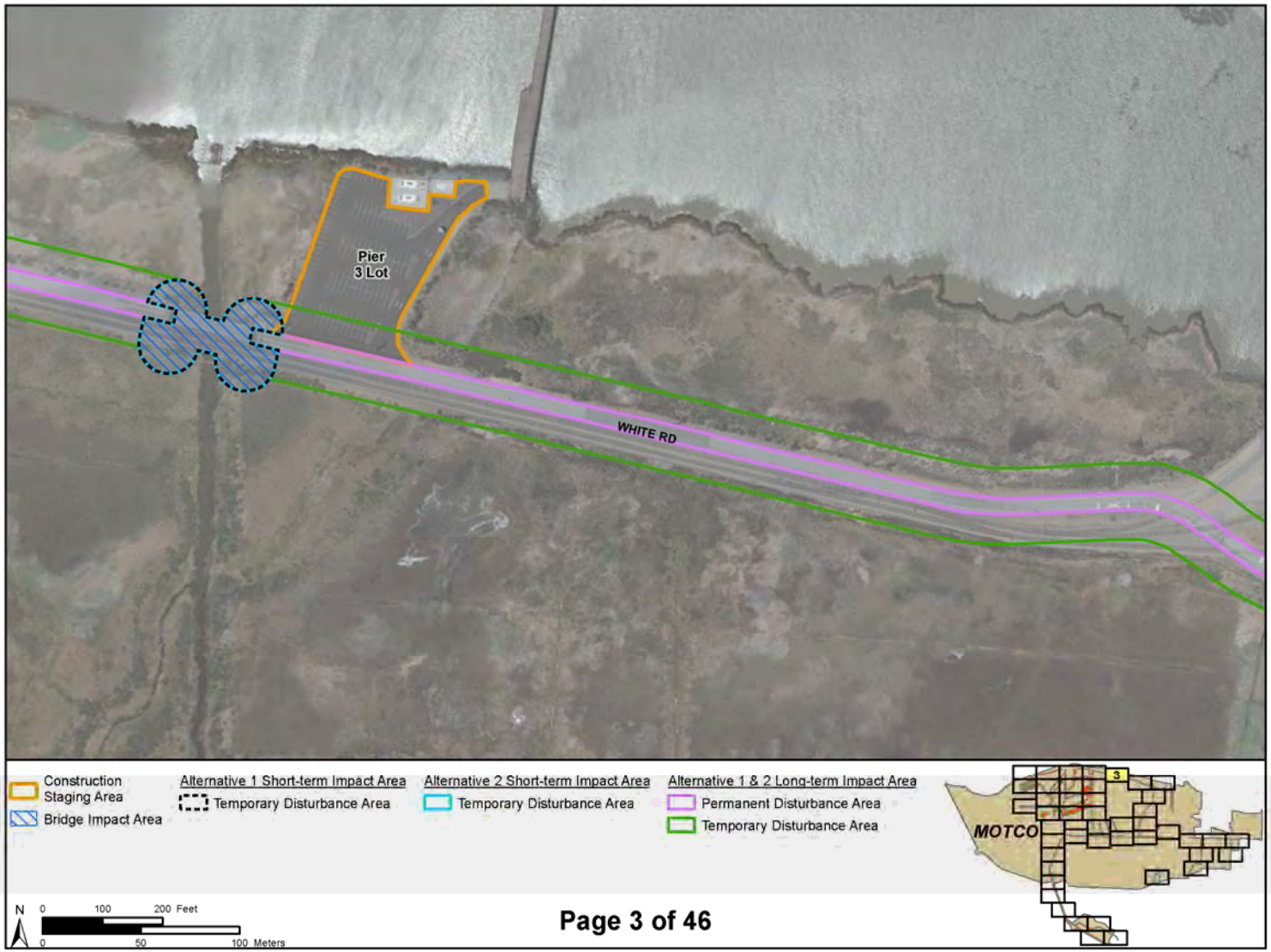
Page 2 of 46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Bridge Impact Area
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Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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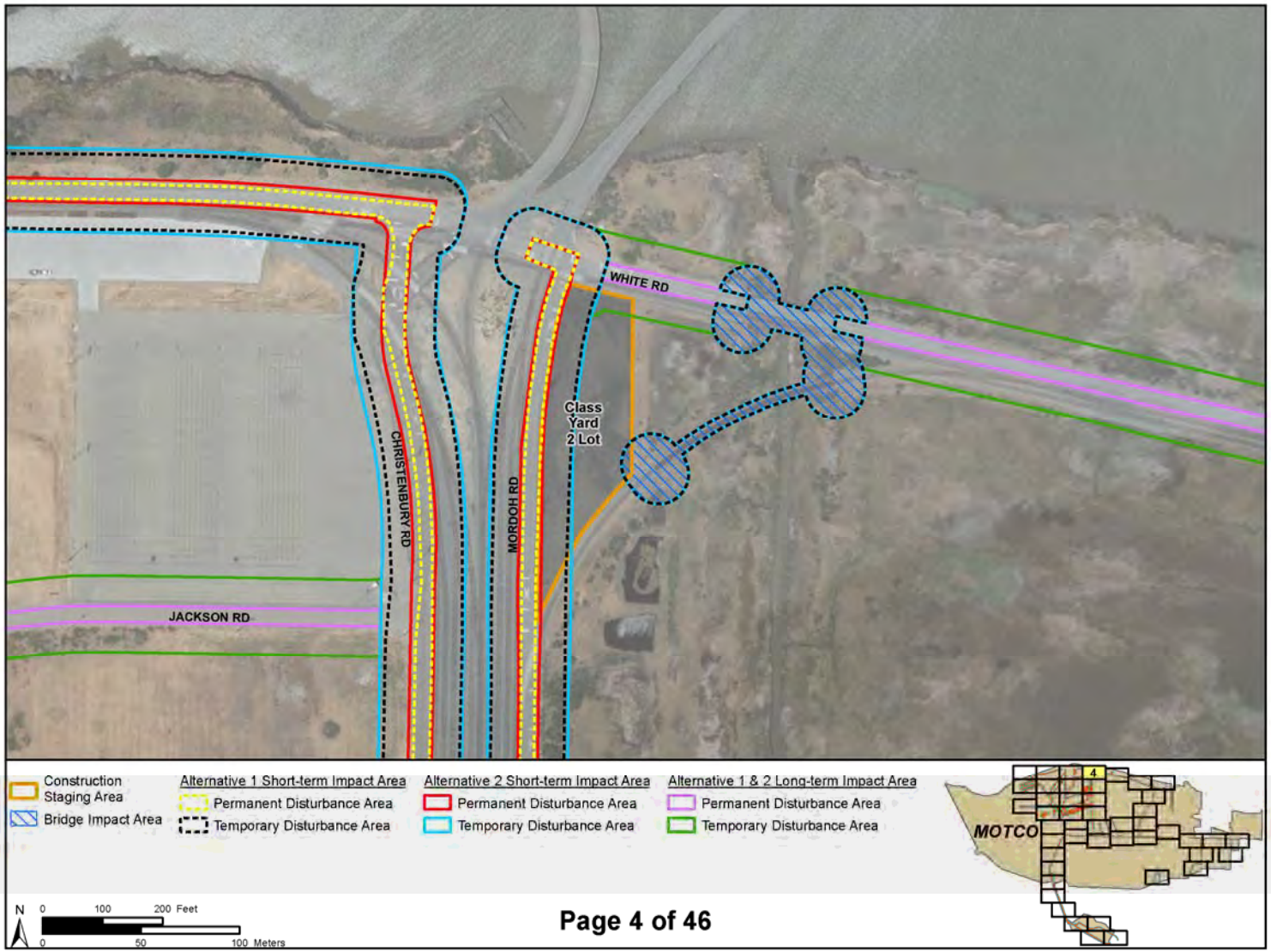
Page 3 of 46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Class Yard 2 Lot
CHRISTENBURY RD
MORDOH RD
JACKSON RD
Construction Staging Area
Bridge Impact Area
Alternative 1 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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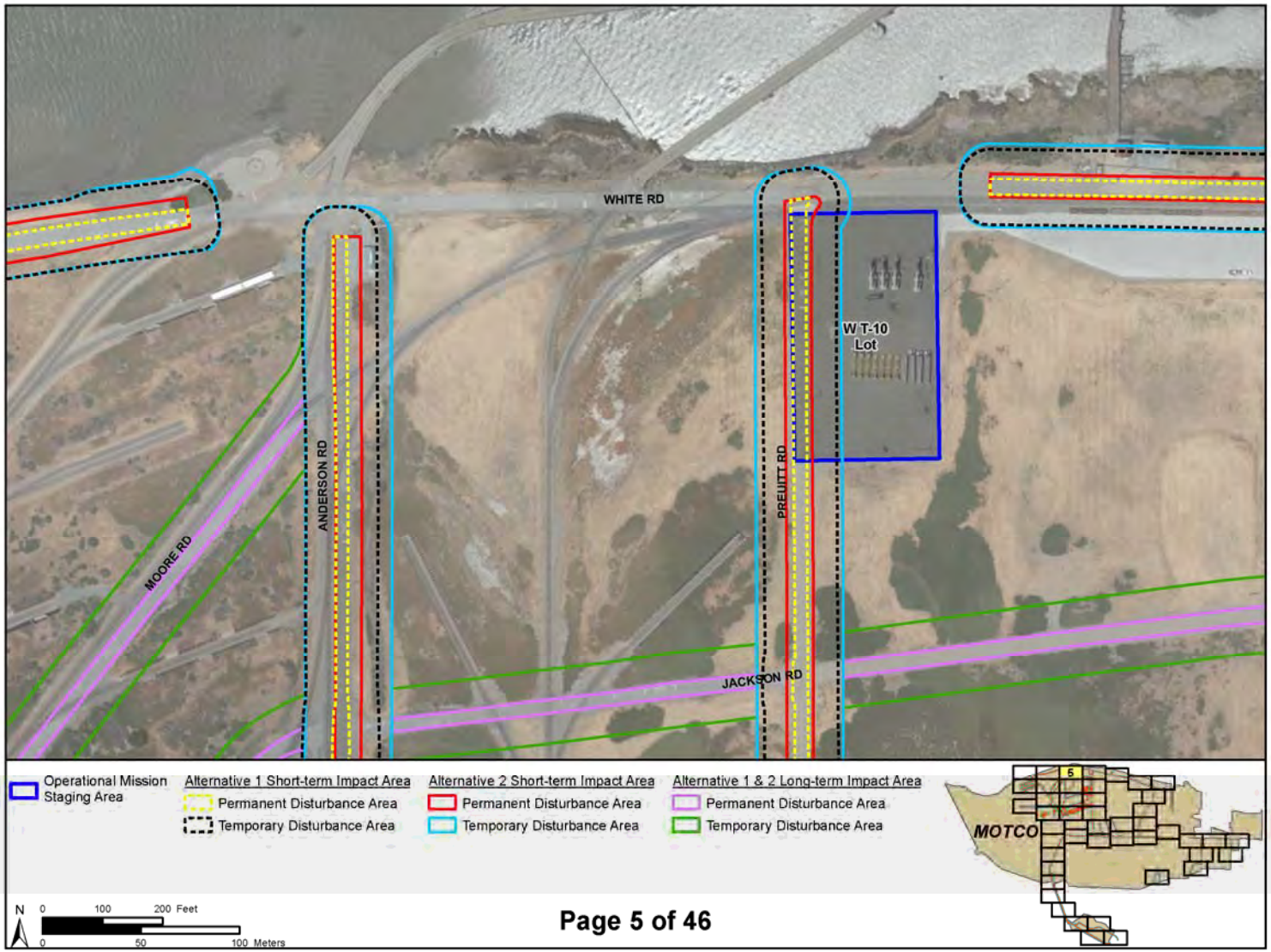
Page 4 of 46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ANDERSON RD
PREUITT RD
MOORE RD
JACKSON RD
Operational Mission Staging Area
Alternative 1 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 2 Short-term Impact Area
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Alternative 1 & 2 Long-term Impact Area
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Temporary Disturbance Area
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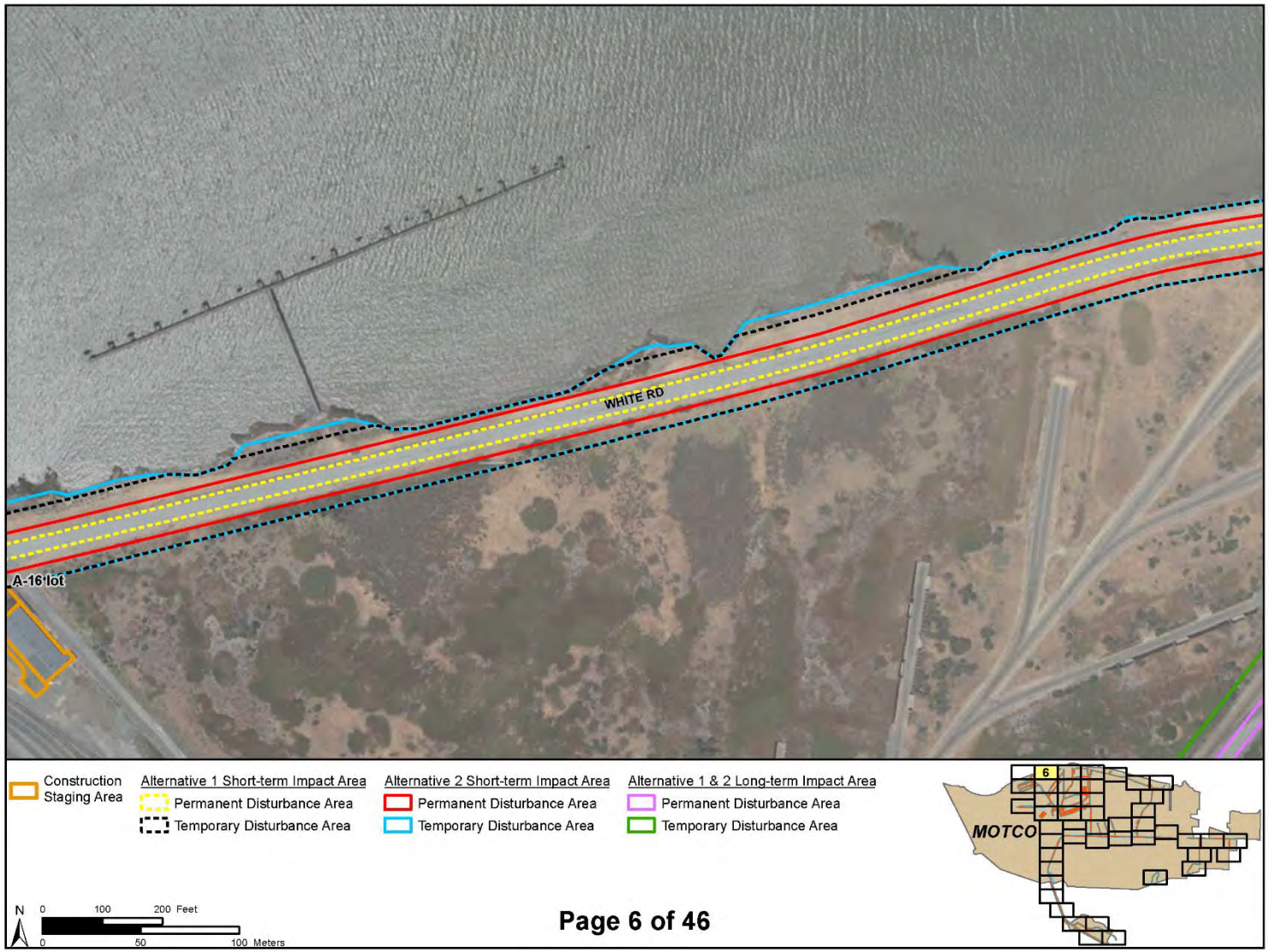
Page 5 of 46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A-16 lot
Construction Staging Area
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Page 6 of 46
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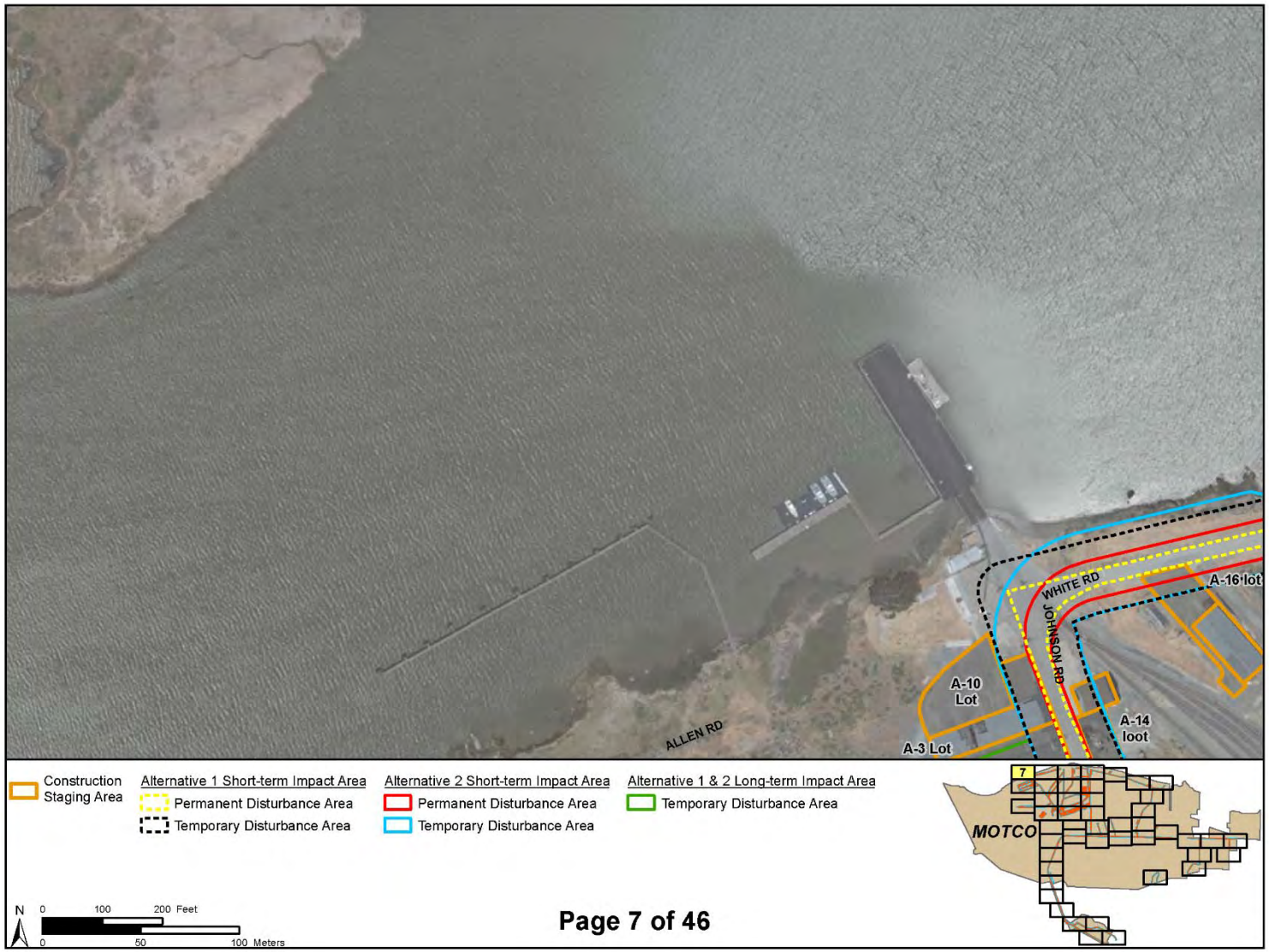
MOTCO


WHITE RD
JOHNSON RD
A-16 lot
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A-3 Lot
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Construction
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Temporary Disturbance Area
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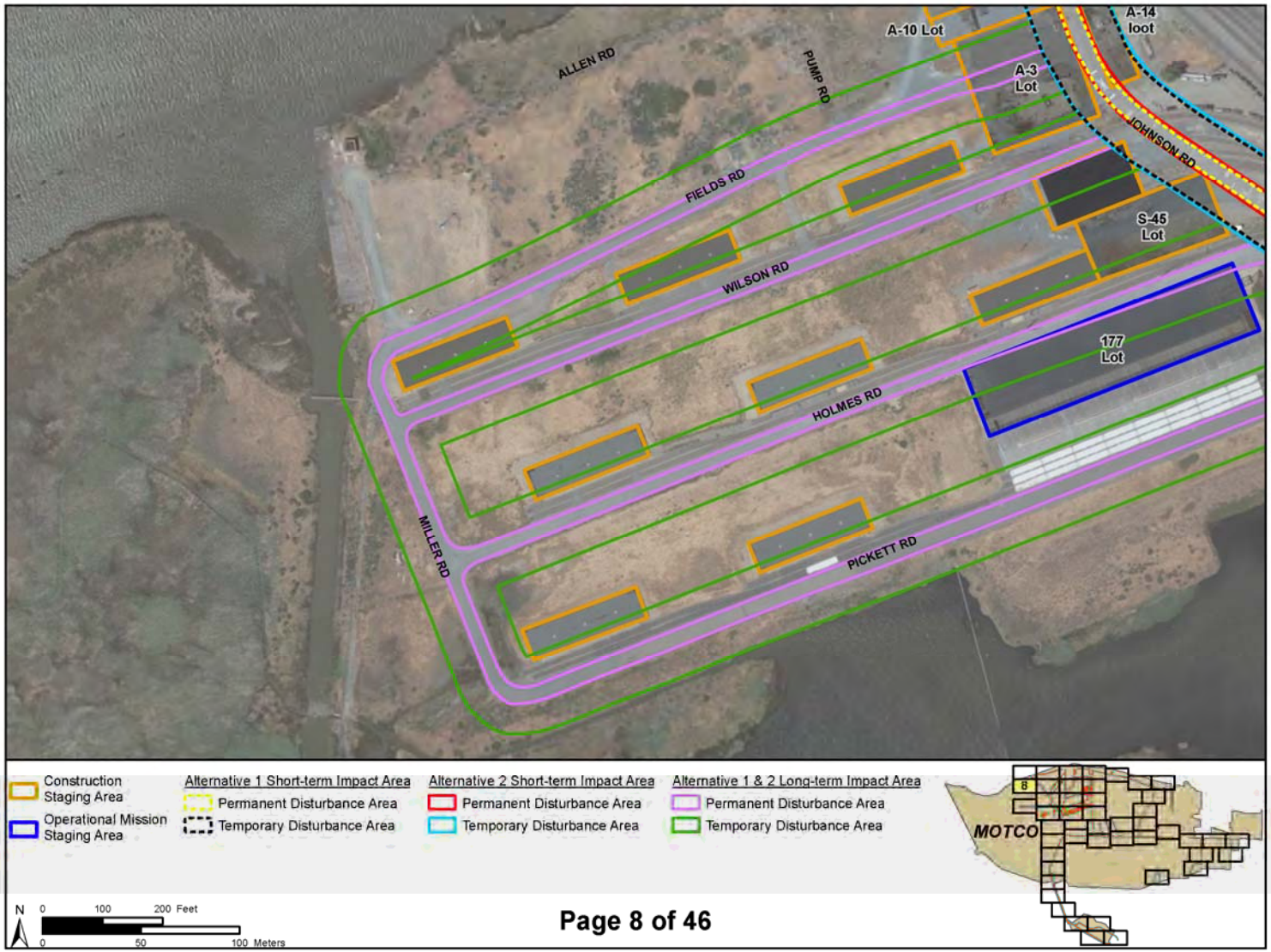
Page 7 of 46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PUMP RD
A-10 Lot
A-14 loot
A-3 Lot
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FIELDS RD
S-45 Lot
WILSON RD
177 Lot
HOLMES RD
MILLER RD
PICKETT RD
Construction Staging Area
Operational Mission Staging Area
Alternative 1 Short-term Impact Area
Permanent Disturbance Area
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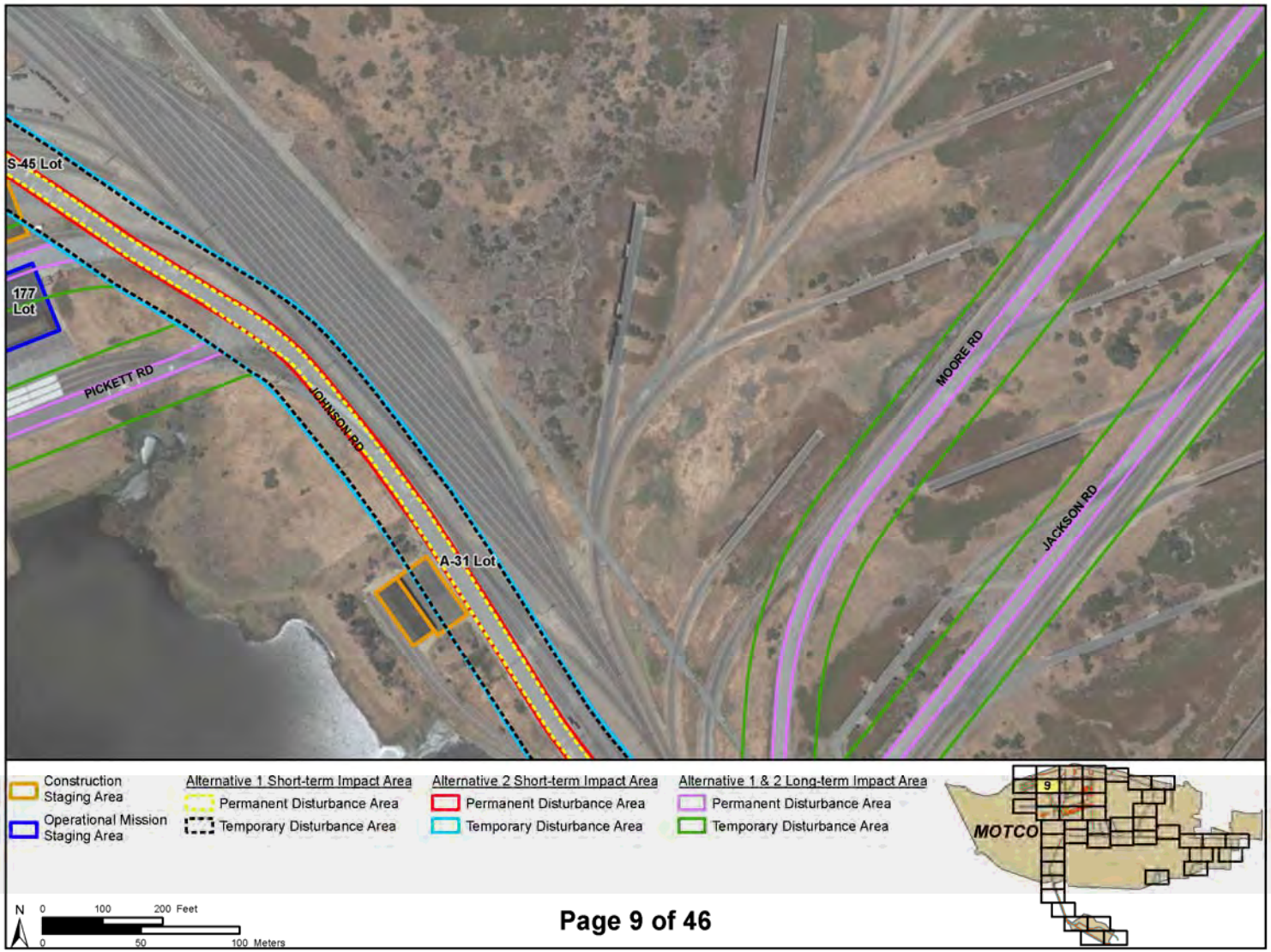
Page 8 of 46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177 Lot
PICKETT RD
JOHNSON RD
A-31 Lot
MOORE RD
JACKSON RD
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Temporary Disturbance Area
Alternative 2 Short-term Impact Area
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MOTCO
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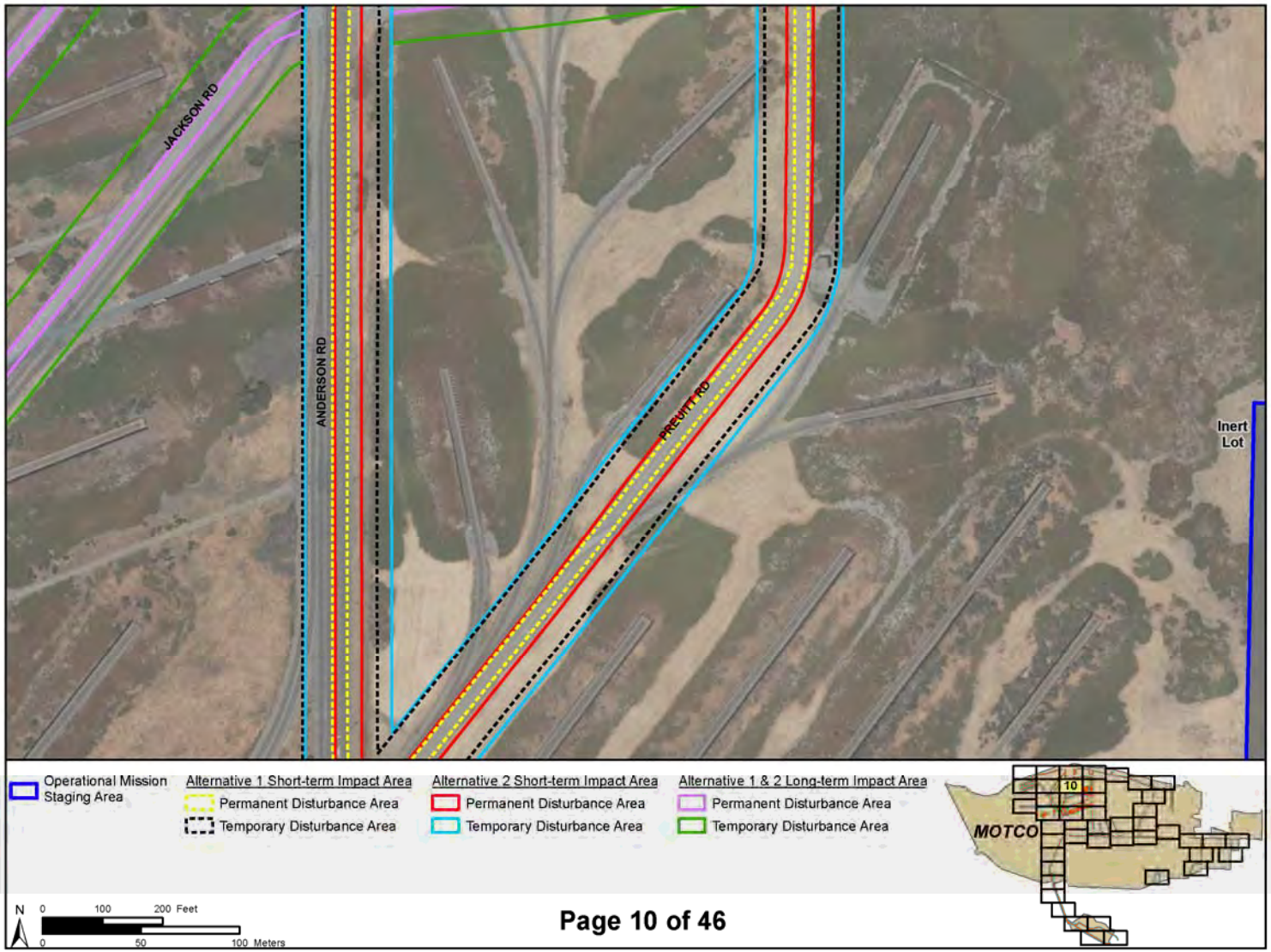
Page 9 of 46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MOTCO
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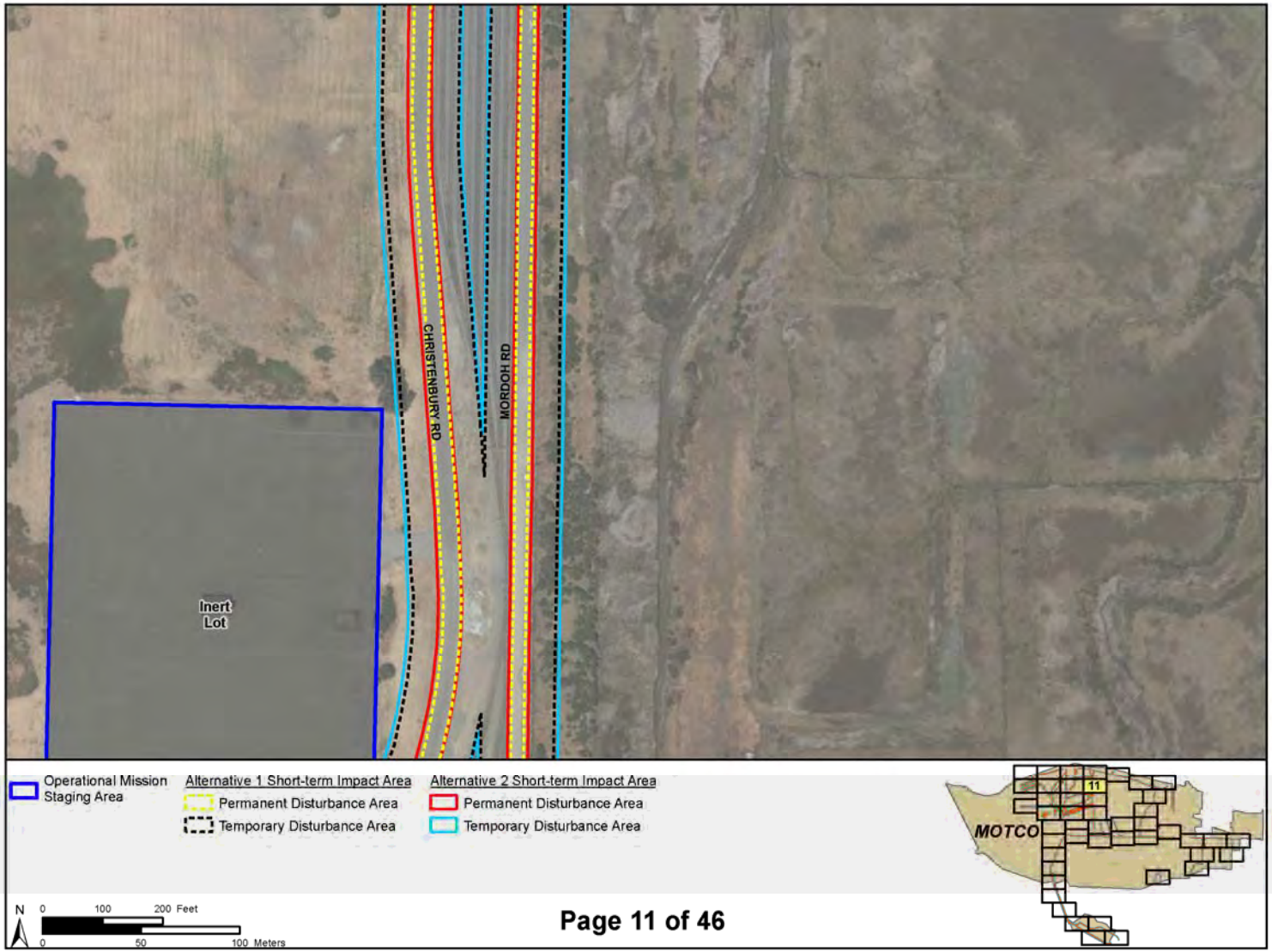
Page 10 of 46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Operational Mission Staging Area
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Permanent Disturbance Area
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MOTCO
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Page 11 of 46

STEVENS RD
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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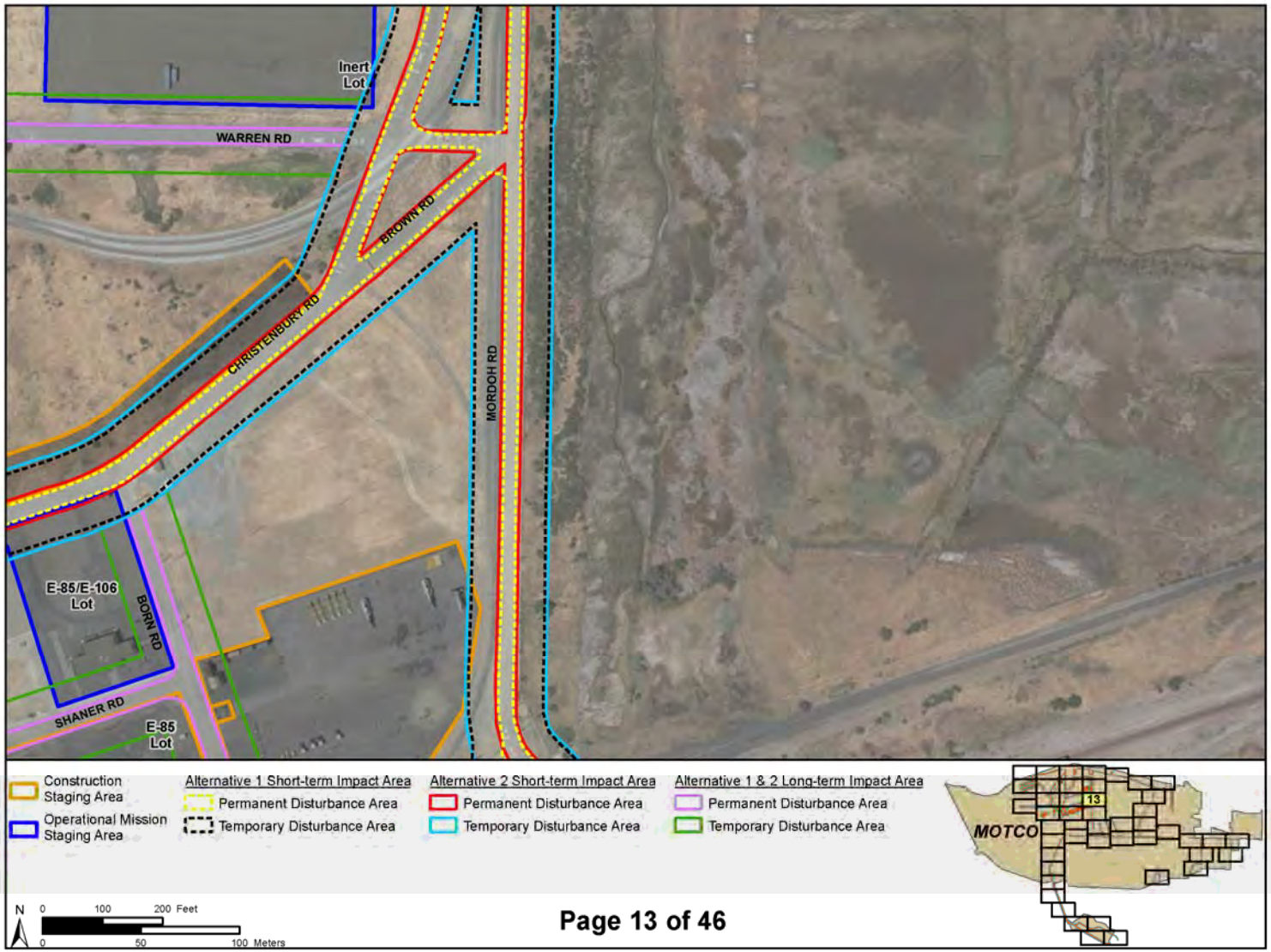
0 50 100 Meters
Page 12 of 46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BROWN RD
CHRISTENBURY RD
MORDOH RD
E-85/E-106 Lot
BORN RD
SHANER RD
E-85 Lot
Construction Staging Area
Operational Mission Staging Area
Alternative 1 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
13
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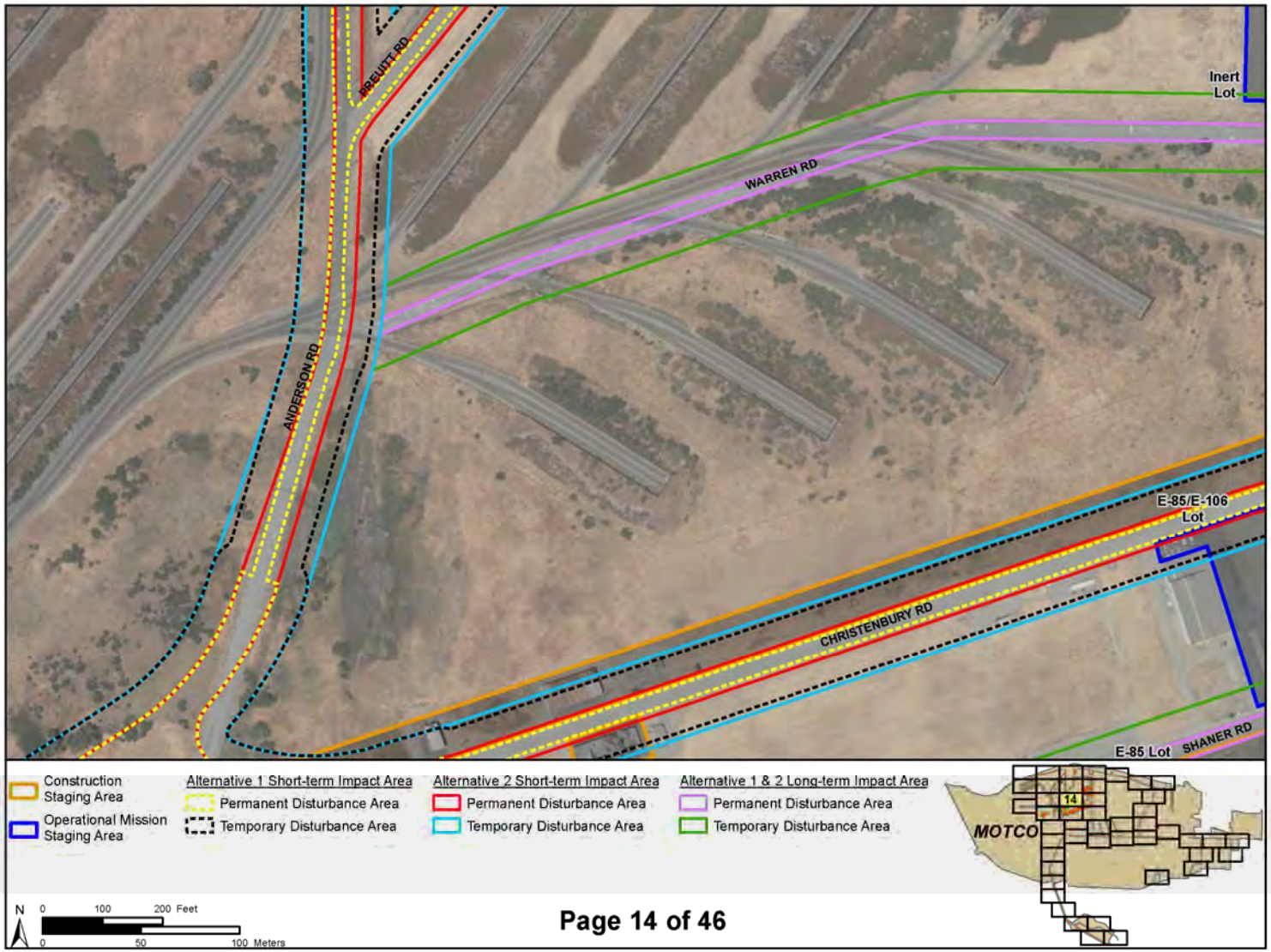
0 50 100 Meters
Page 13 of 46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ANDERSON RD
WARREN RD
Inert Lot
E-85/E-106 Lot
CHRISTENBURY RD
E-85 Lot
SHANER RD
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Alternative 1 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
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Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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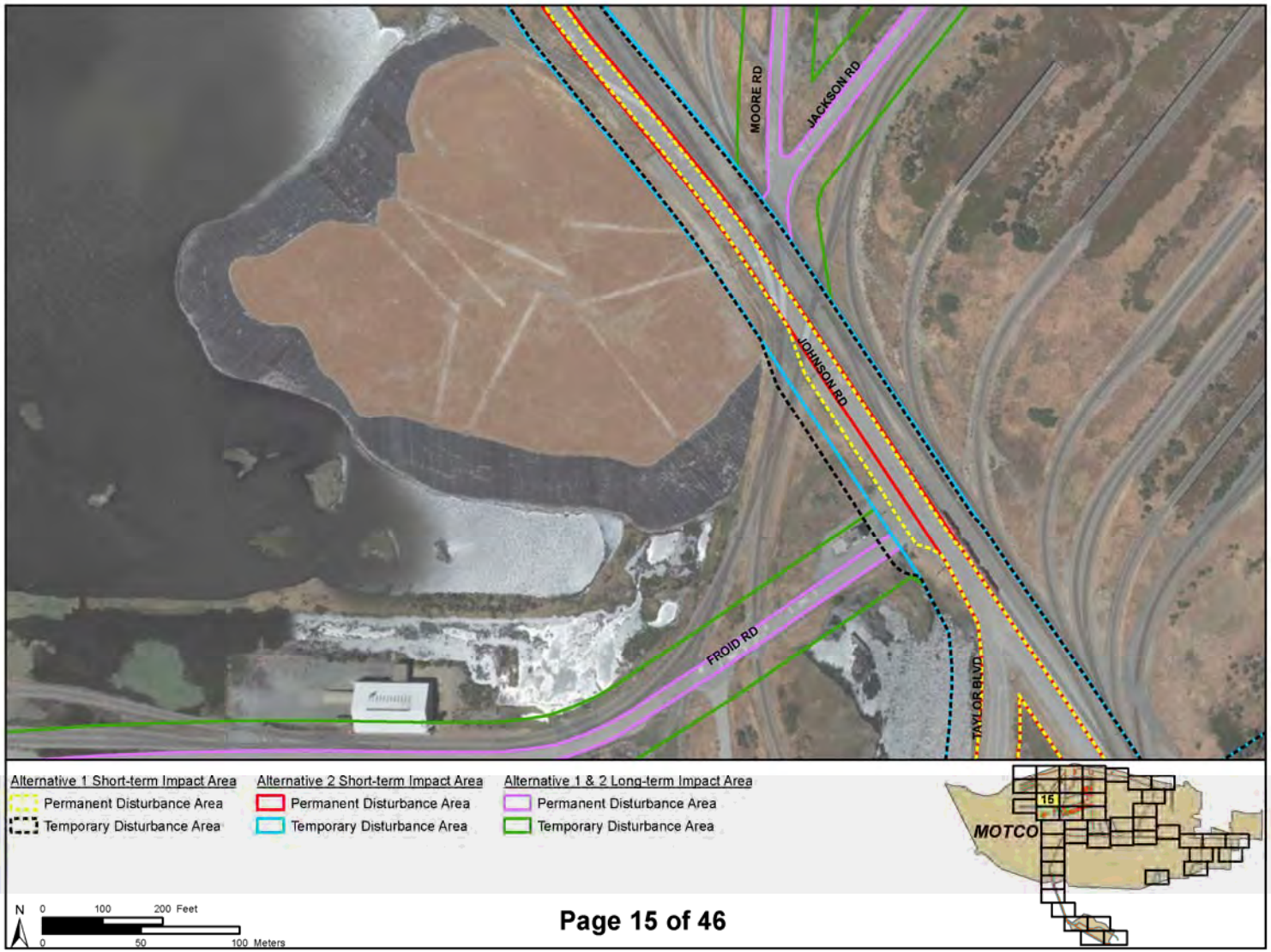
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JACKSON RD
JOHNSON RD
FROID RD
TAYLOR BLVD
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Alternative 2 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
15
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Page 15 of 46

FROID RD
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
N
0 100 200 Feet
0 50 100 Meters
16
MOTCO
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FROID RD
DAVIDSON RD
JOHNSON RD
RINQUIST RD
RHODES RD
TAYLOR BLVD
WATERFRONT RD
Bridge Impact Area
Alternative 1 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
17
N
0 100 200 Feet
0 50 100 Meters
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RHODES RD
WATERFRONT RD
TAYLOR BLVD
Bridge Impact Area
Alternative 1 Short-term Impact Area
Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Temporary Disturbance Area
MOTCO
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200 Feet
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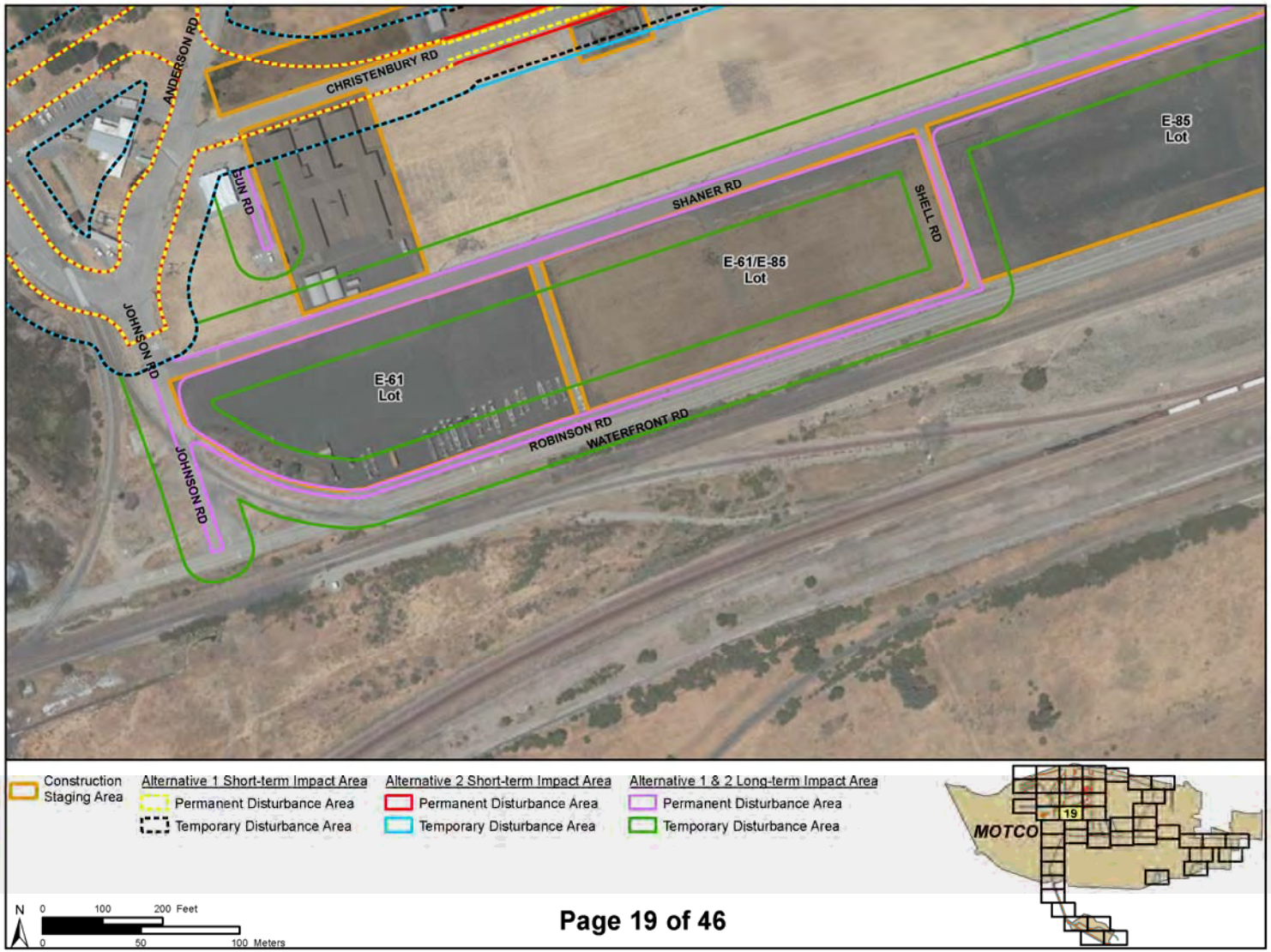
100 Meters
Page 18 of 46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CHRISTENBURY RD
SUN RD
SHANER RD
SHELL RD
E-85
Lot
E-61/E-85
Lot
JOHNSON RD
E-61
Lot
ROBINSON RD
WATERFRONT RD
JOHNSON RD
Construction
Staging Area
Alternative 1 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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100 Meters
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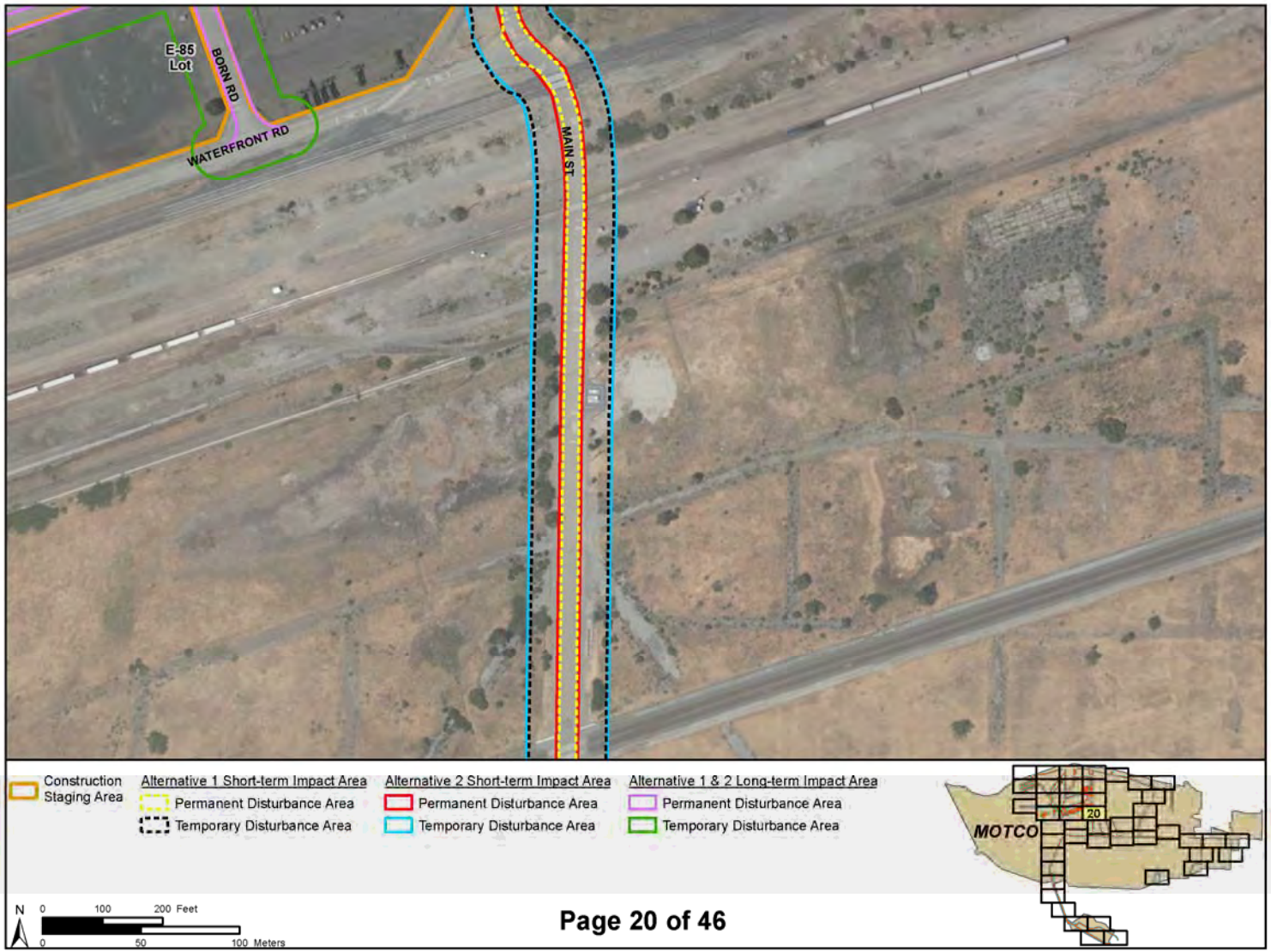
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Permanent Disturbance Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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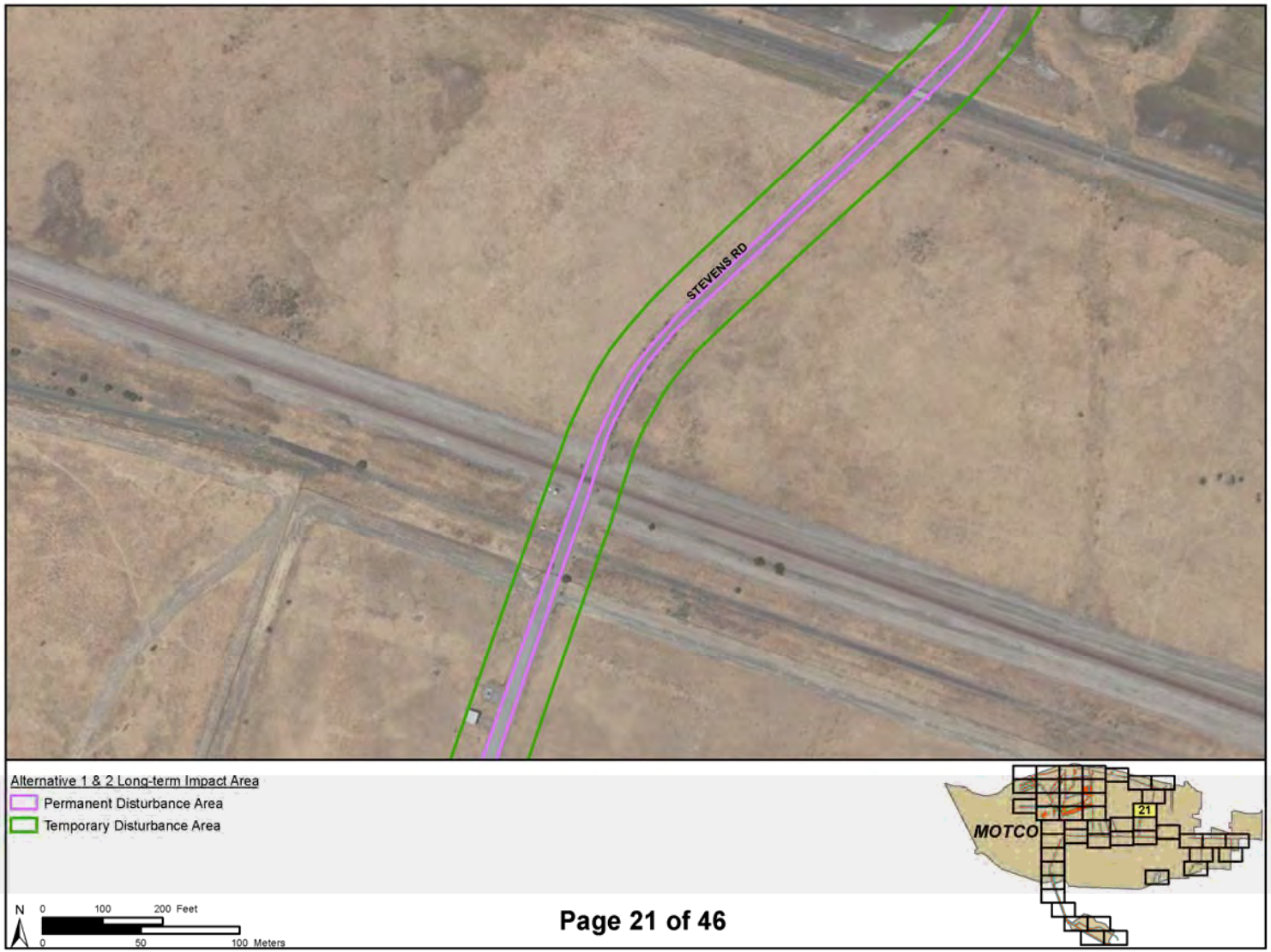
0 50 100 Meters
Page 20 of 46


STEVENS RD
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Temporary Disturbance Area
MOTCO
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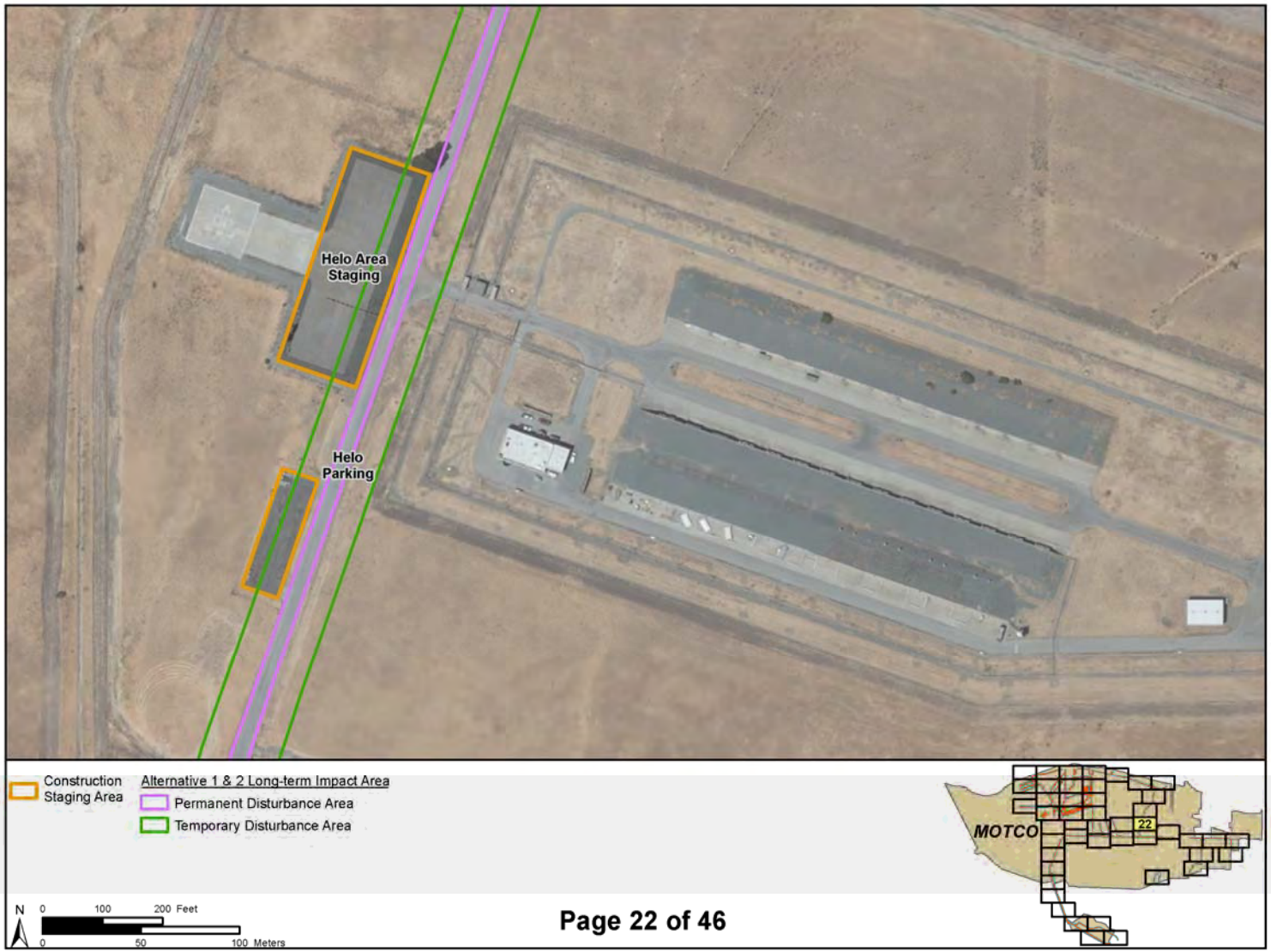
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Helo Parking
Construction Staging Area
Alternative 1 & 2 Long-term Impact Area
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Temporary Disturbance Area
MOTCO
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0 50 100 Meters
Page 22 of 46

Alternative 1 & 2 Long-term Impact Area
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Temporary Disturbance Area
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0 50 100 Meters
MOTCO
23

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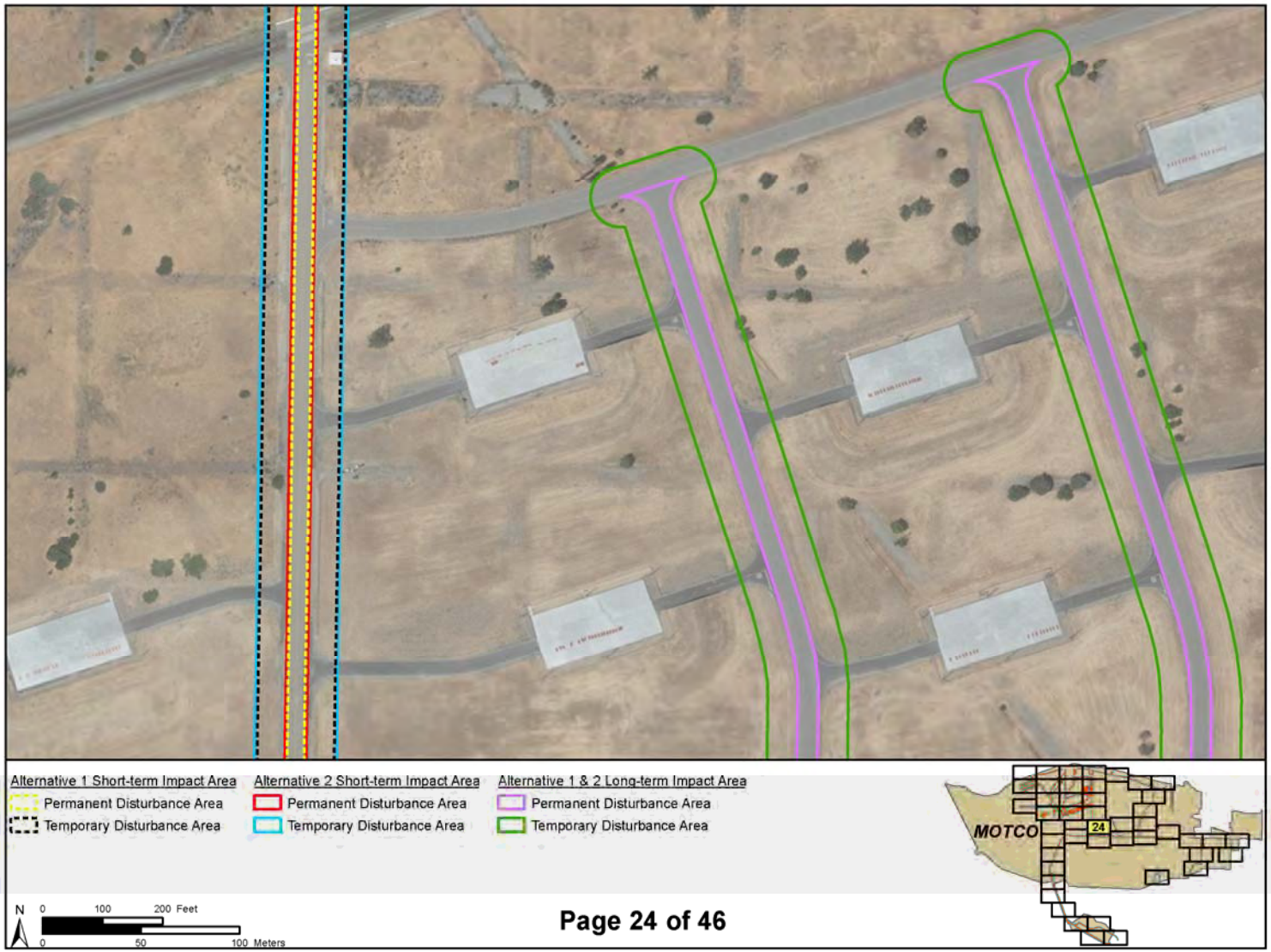
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Temporary Disturbance Area
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Permanent Disturbance Area
Temporary Disturbance Area
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Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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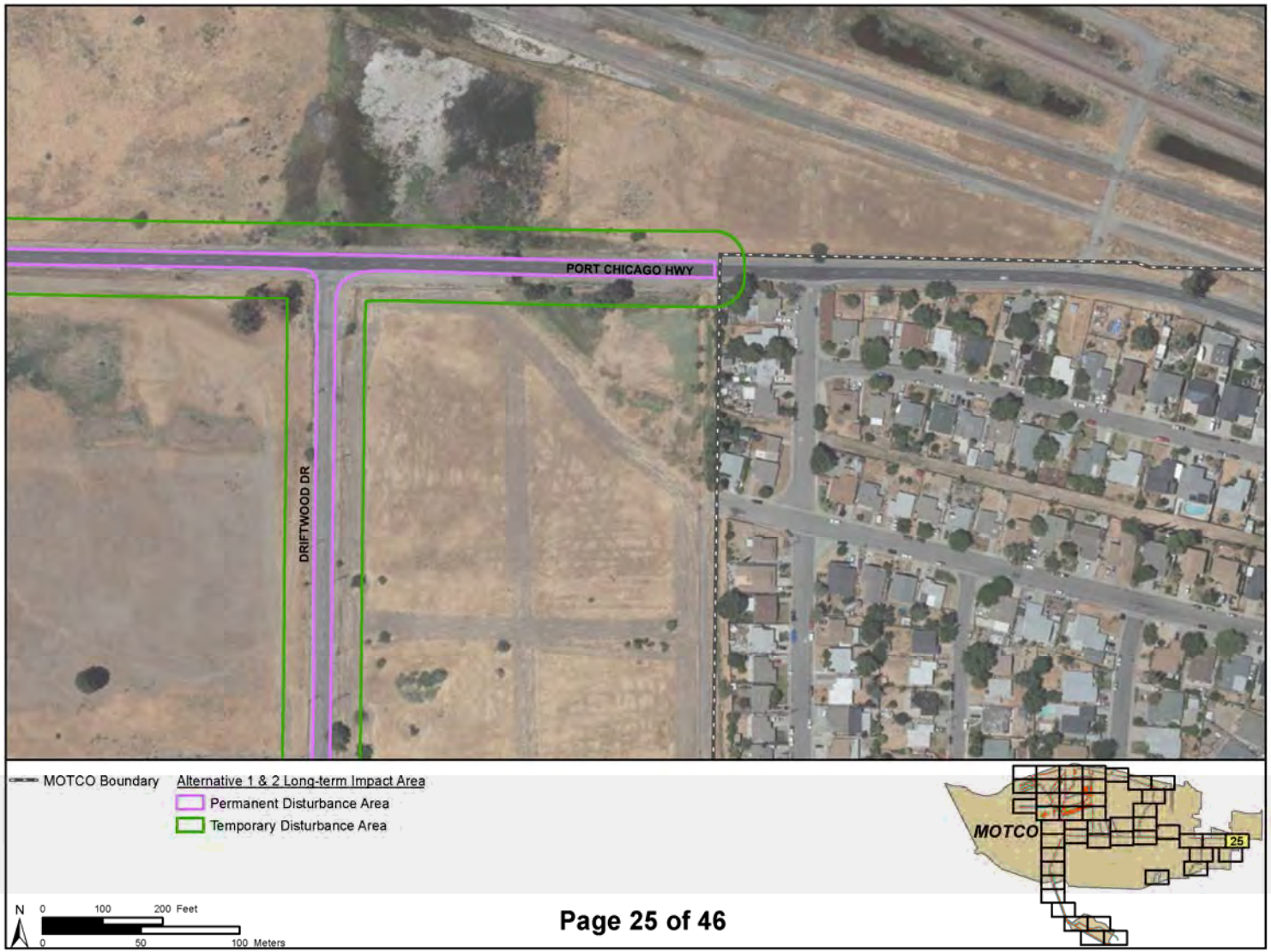
0 50 100 Meters
Page 24 of 46


PORT CHICAGO HWY
DRIFTWOOD DR
MOTCO Boundary
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
25
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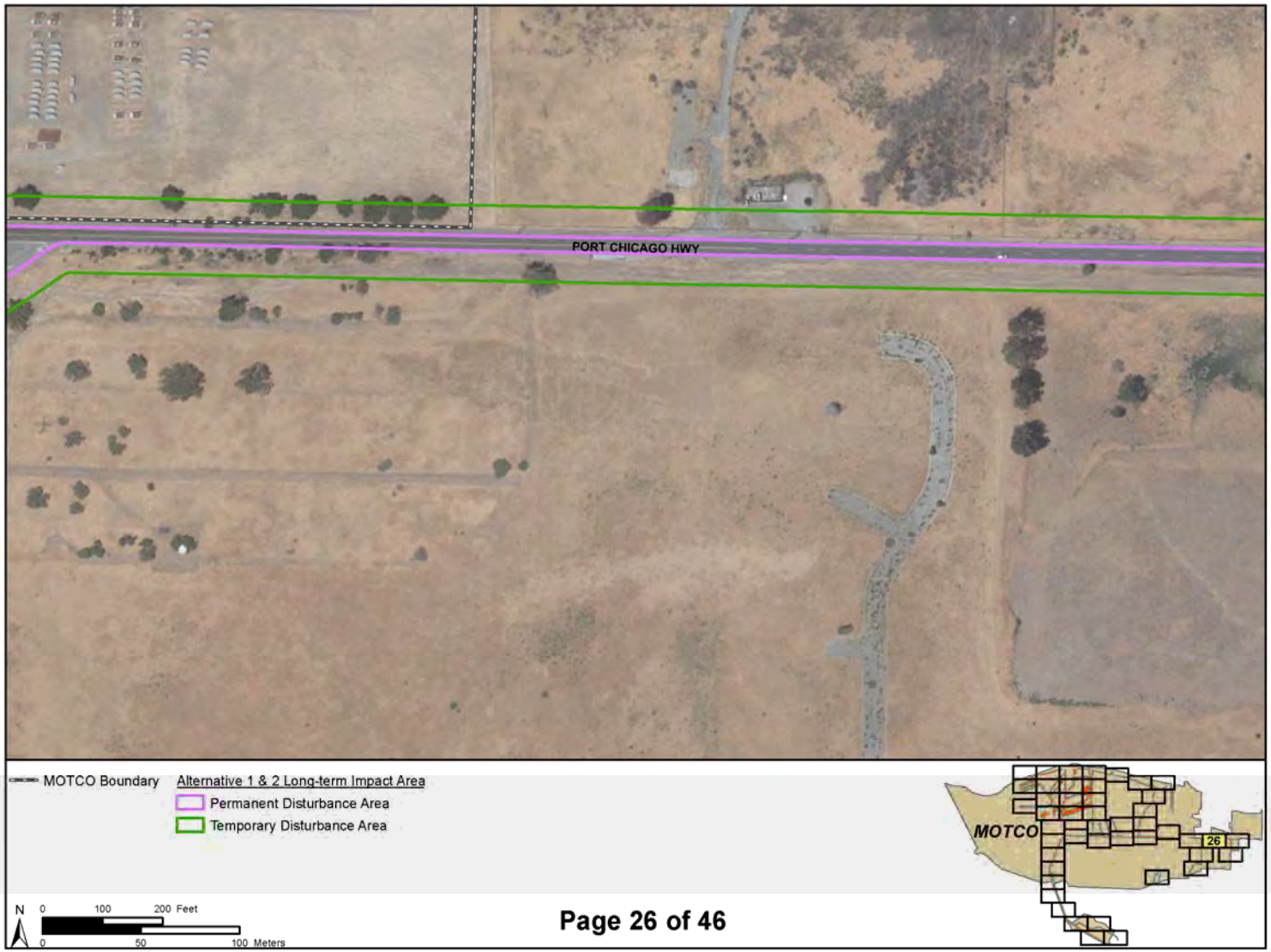
0 50 100 Meters
Page 25 of 46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MOTCO Boundary
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Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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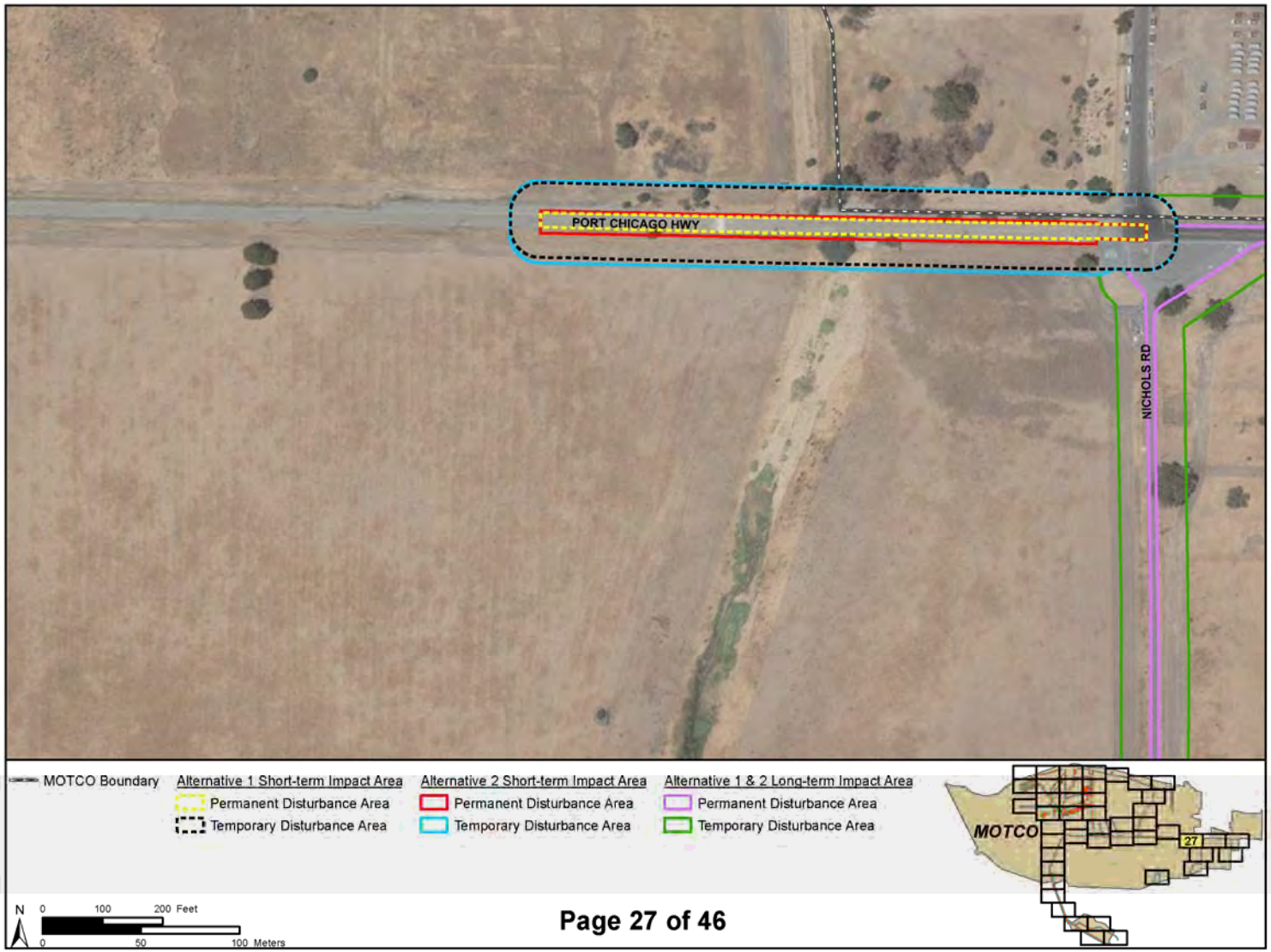
Page 26 of 46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NICHOLS RD
MOTCO Boundary
Alternative 1 Short-term Impact Area
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Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
27
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0 50 100 Meters
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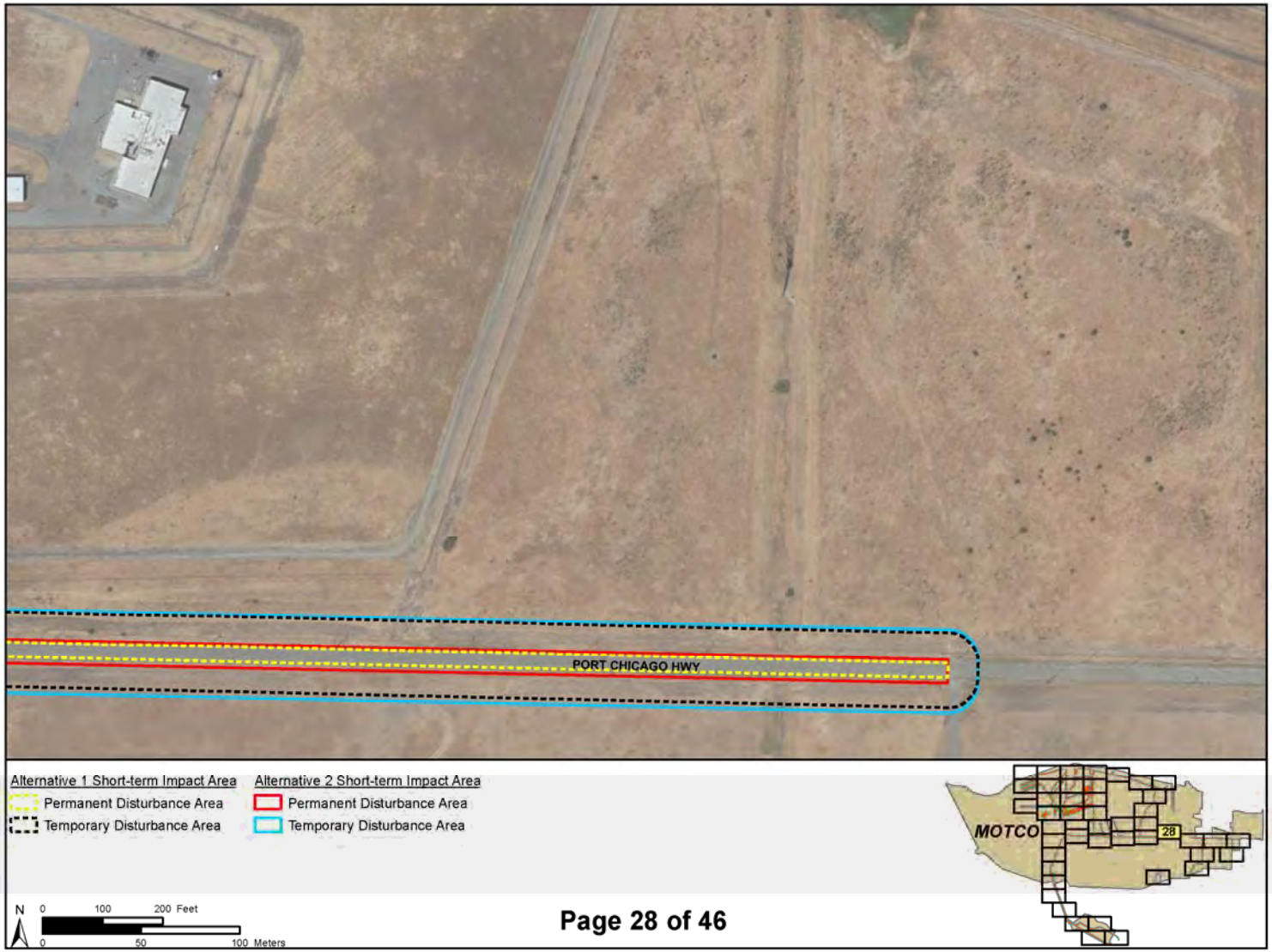
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Temporary Disturbance Area
MOTCO
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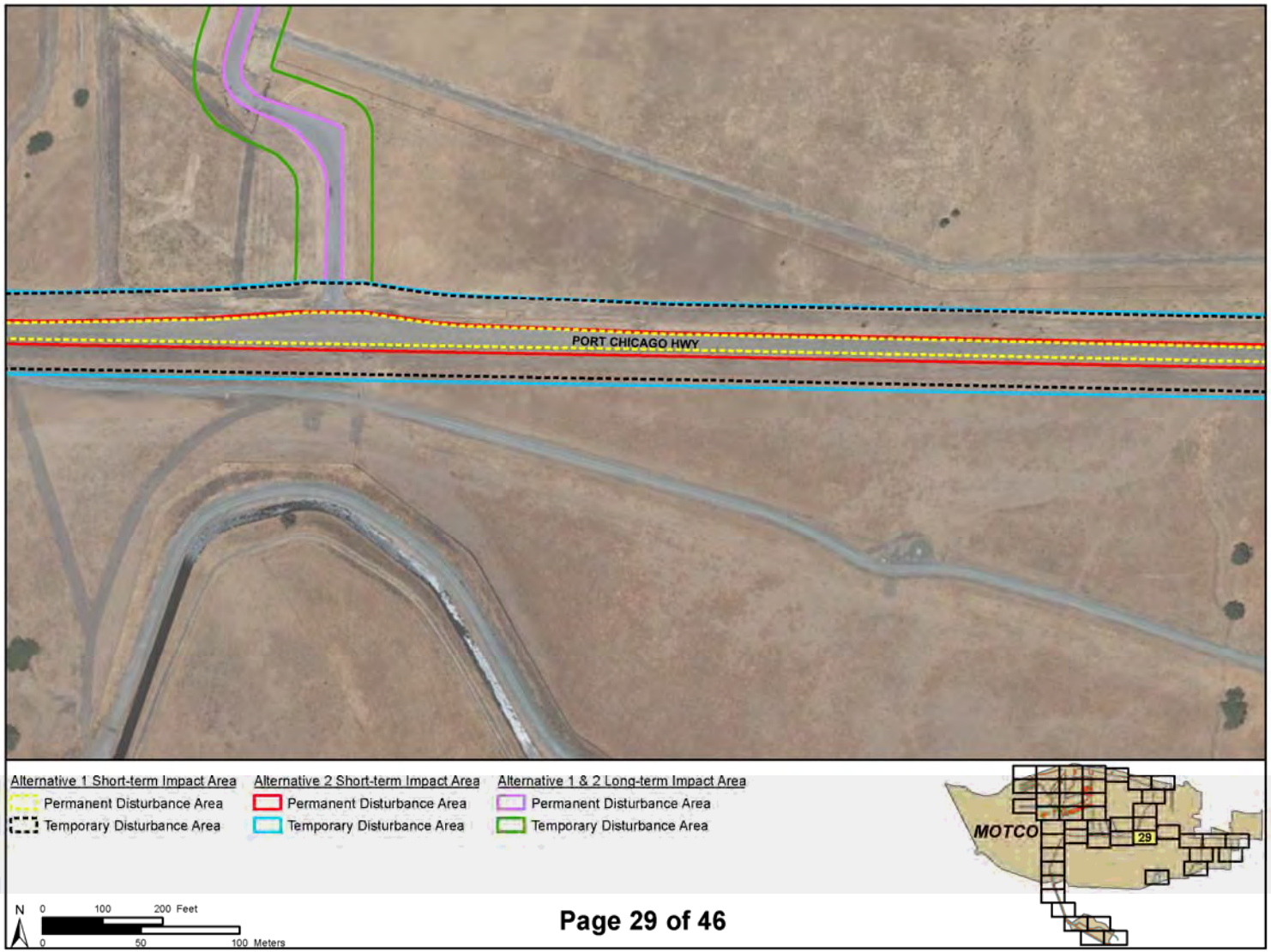
0 50 100 Meters
Page 28 of 46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Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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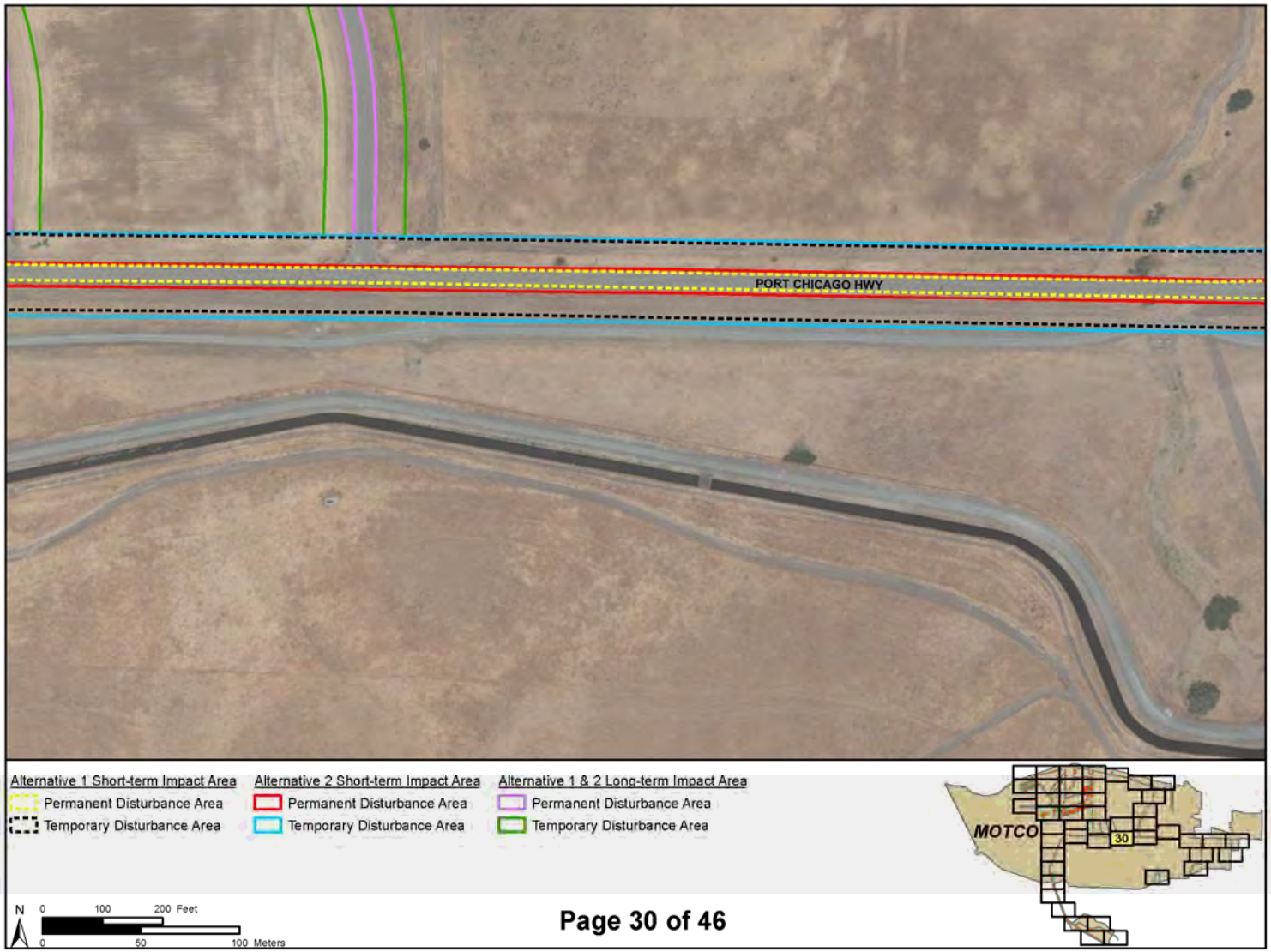
0 50 100 Meters
Page 29 of 46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Temporary Disturbance Area
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Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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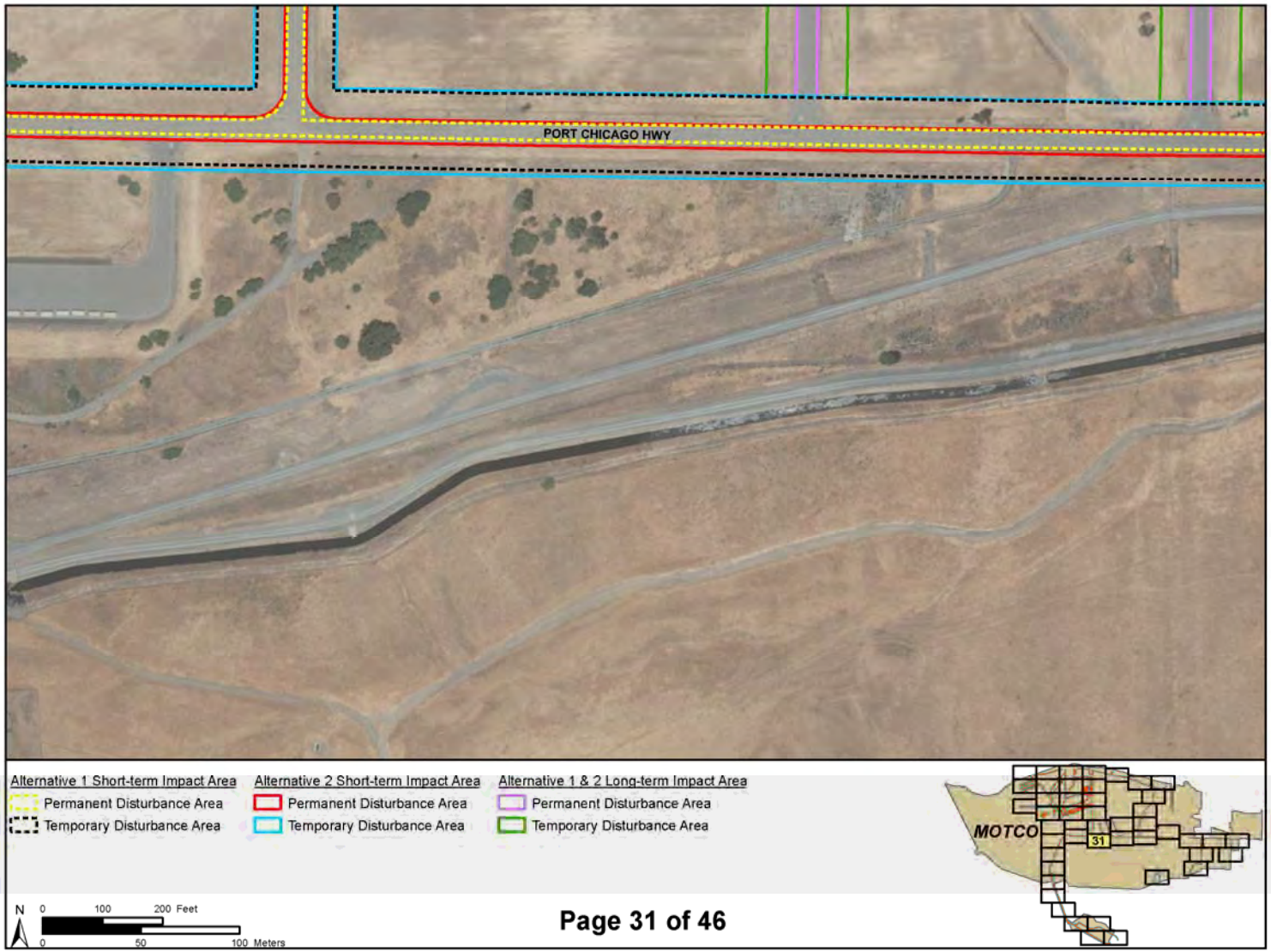
0 50 100 Meters
Page 30 of 46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Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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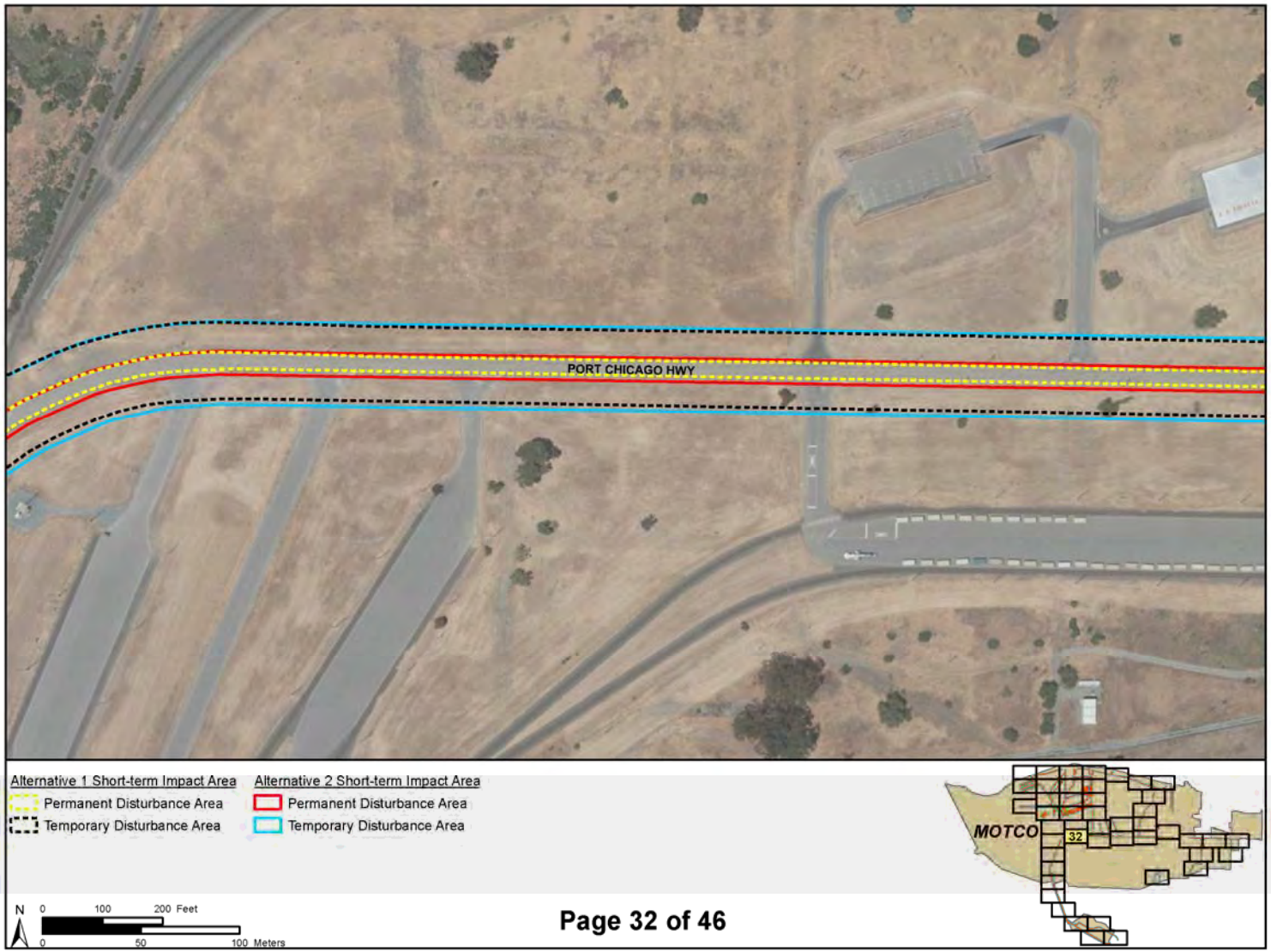
0 50 100 Meters
Page 31 of 46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Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
32
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0 50 100 Meters
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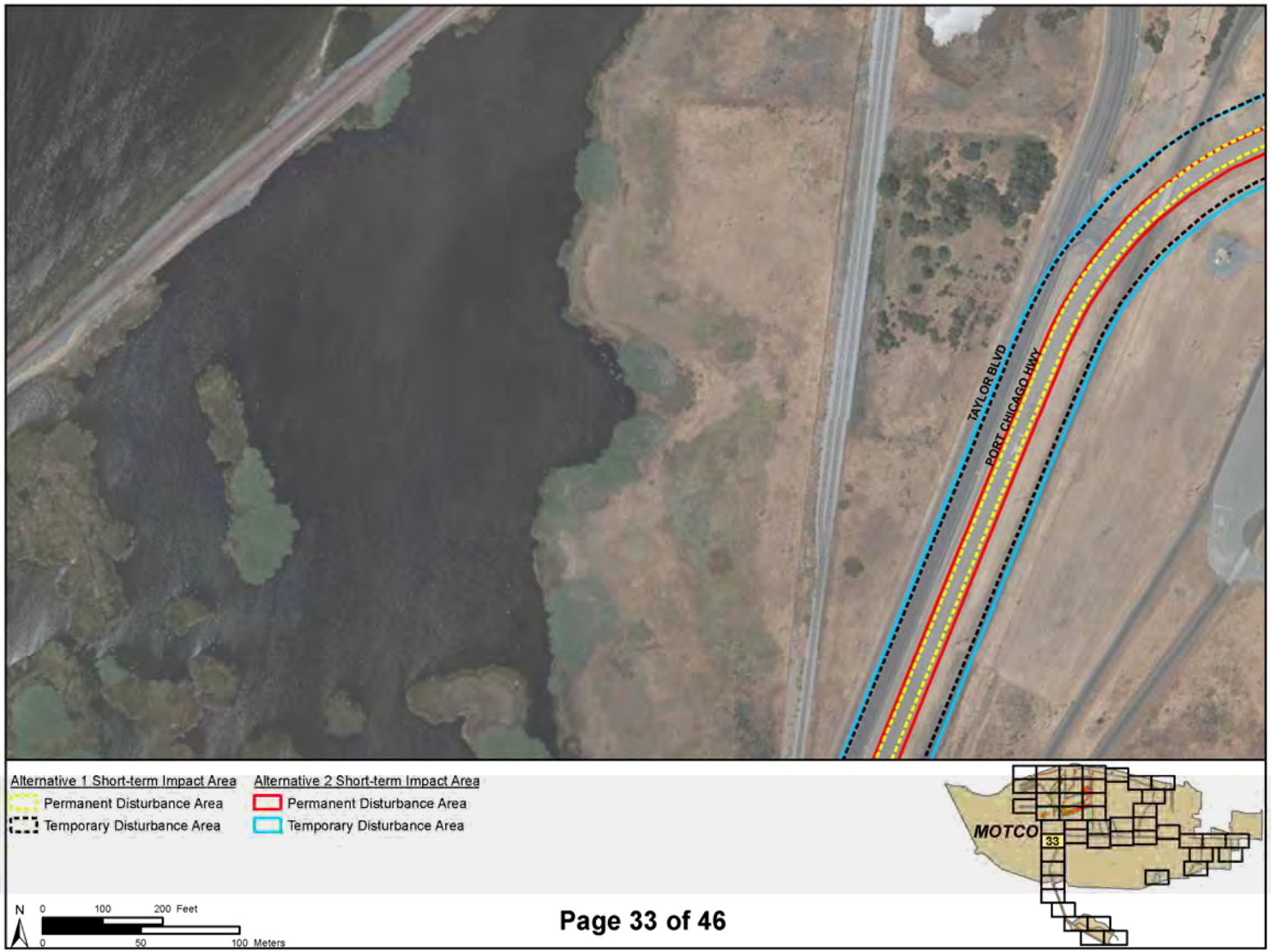
TAYLOR BLVD
PORT CHICAGO HWY
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Temporary Disturbance Area
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Temporary Disturbance Area
MOTCO
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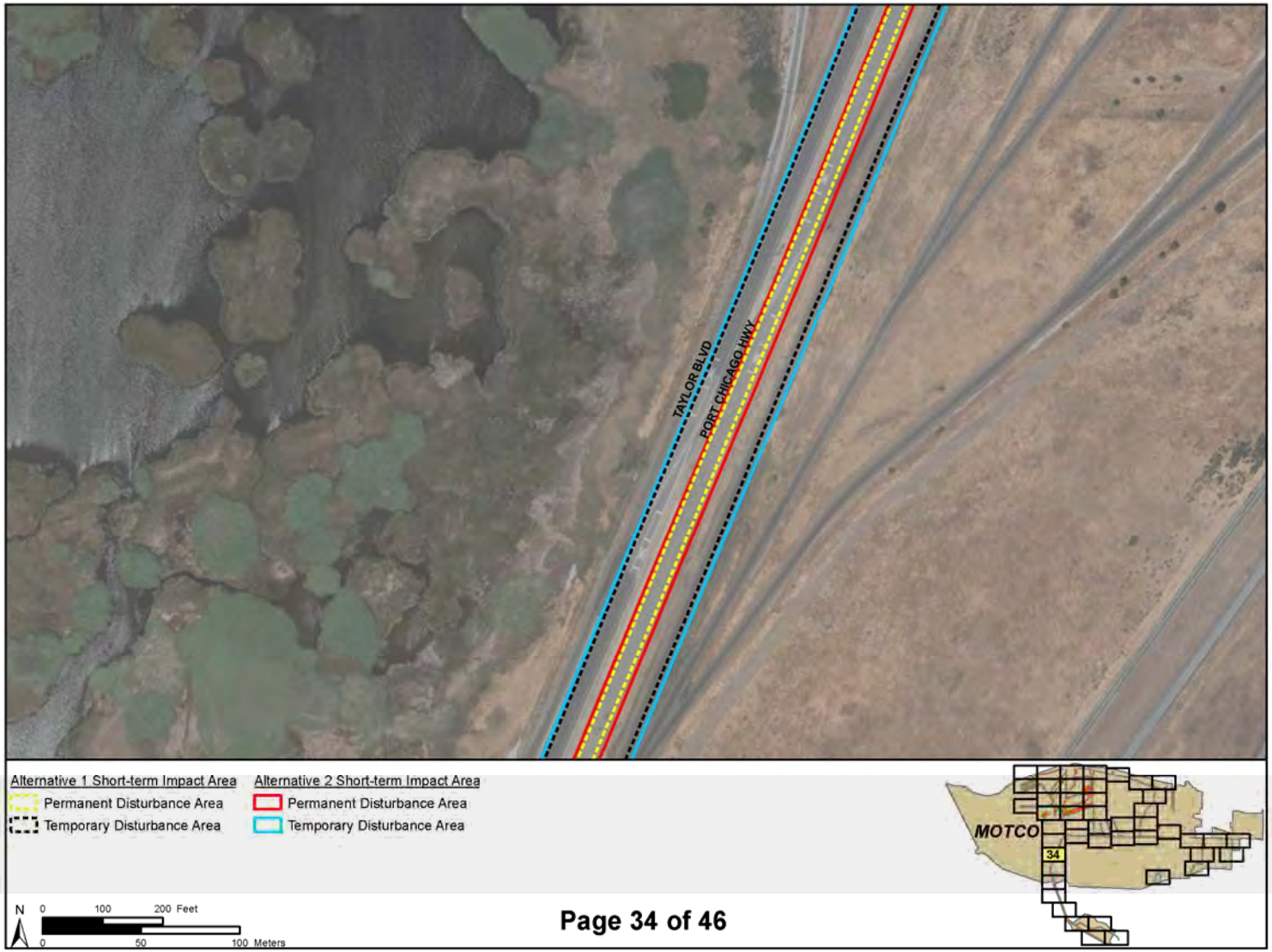
0 50 100 Meters
Page 33 of 46


TAYLOR BLVD
PORT CHICAGO HWY
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Temporary Disturbance Area
Alternative 2 Short-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
34
N
0 100 200 Feet
0 50 100 Meters
Page 34 of 46

NICHOLS RD
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
35
N
0 100 200 Feet
0 50 100 Meters
Page 35 of 46

DRIFTWOOD DR
MOTCO Boundary
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
36
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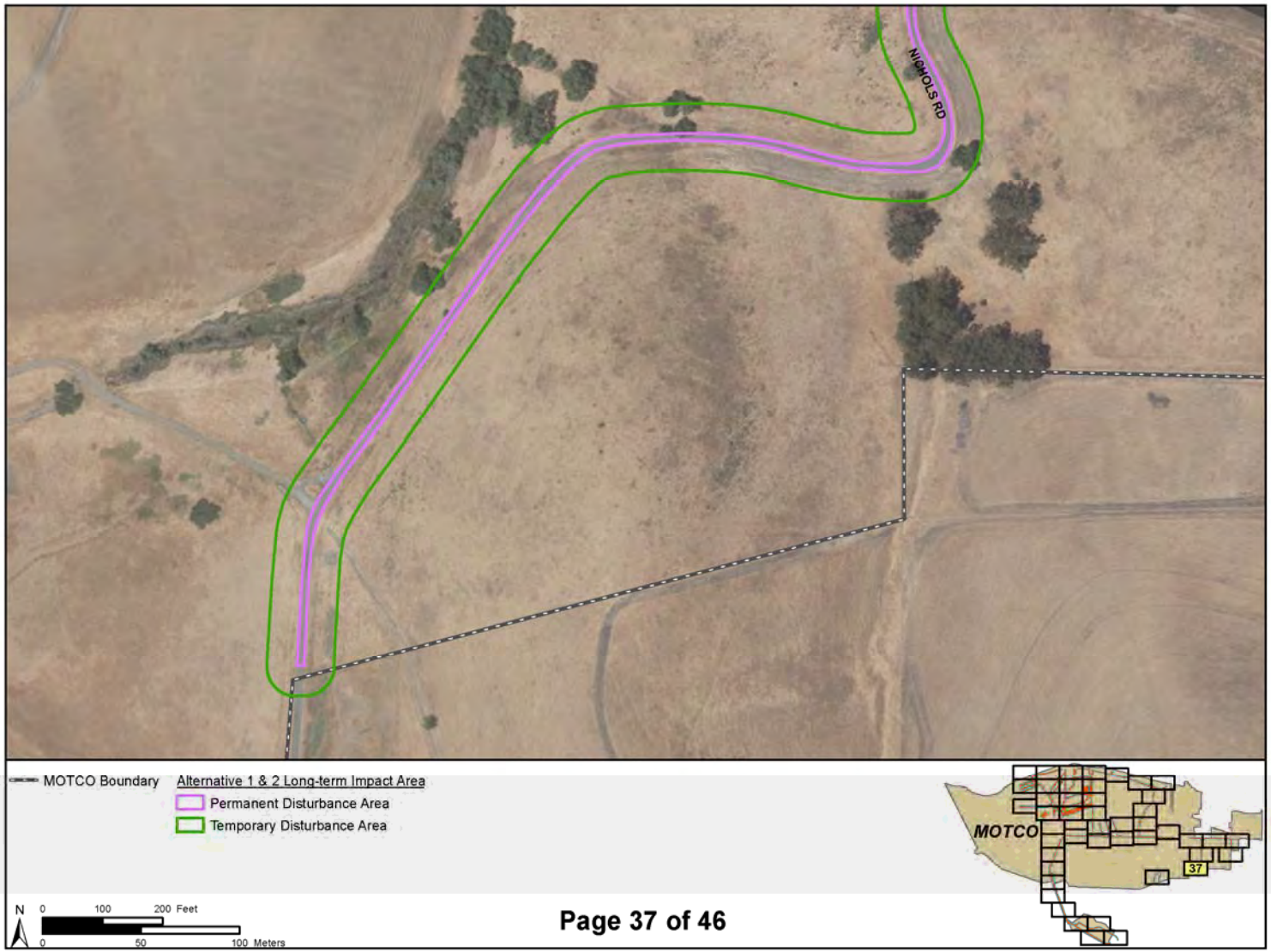
0 100 200 Feet
0 50 100 Meters
Page 36 of 46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MOTCO Boundary
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Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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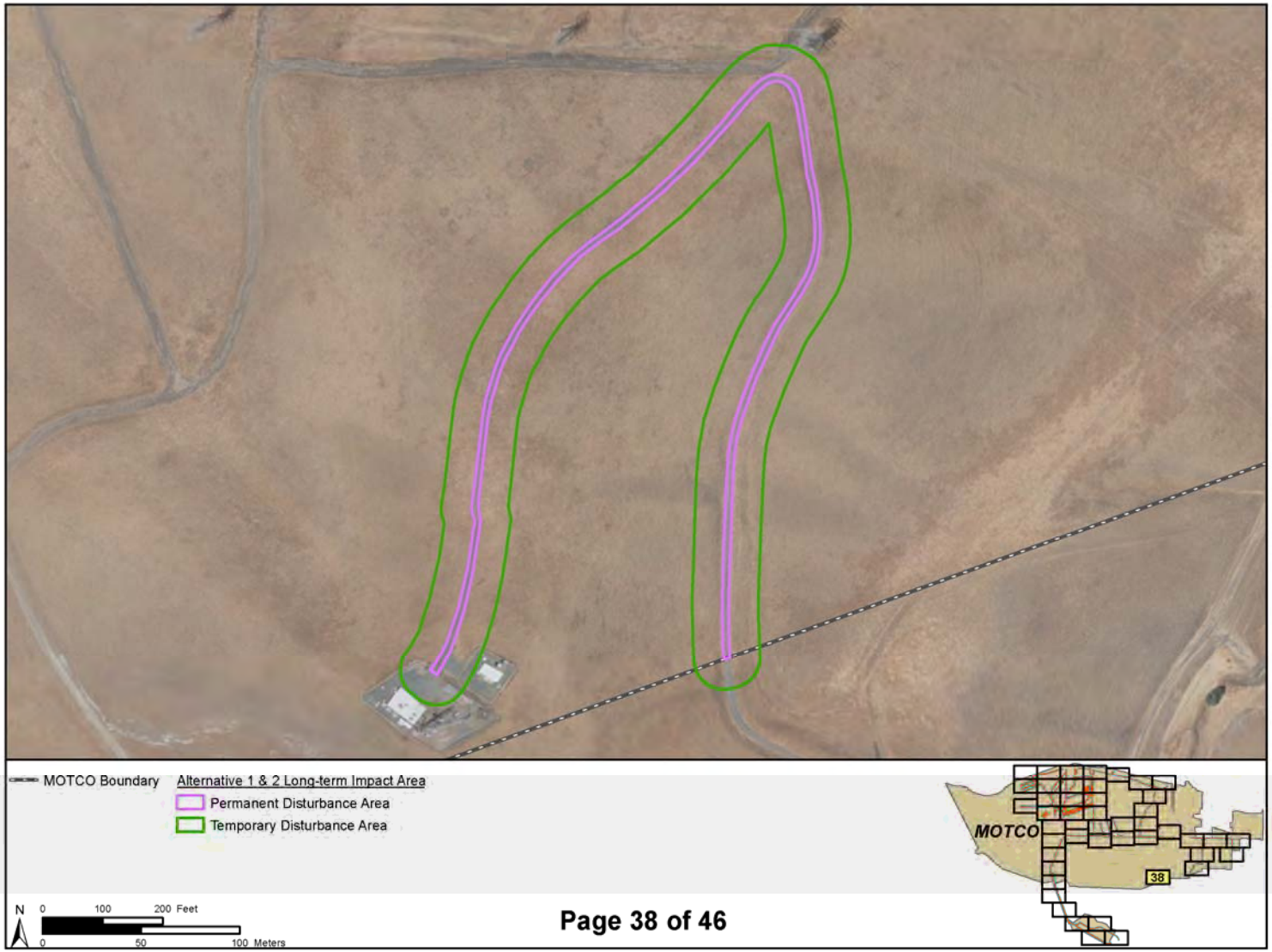
0 50 100 Meters
Page 37 of 46


MOTCO Boundary
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Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
38
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0 50 100 Meters
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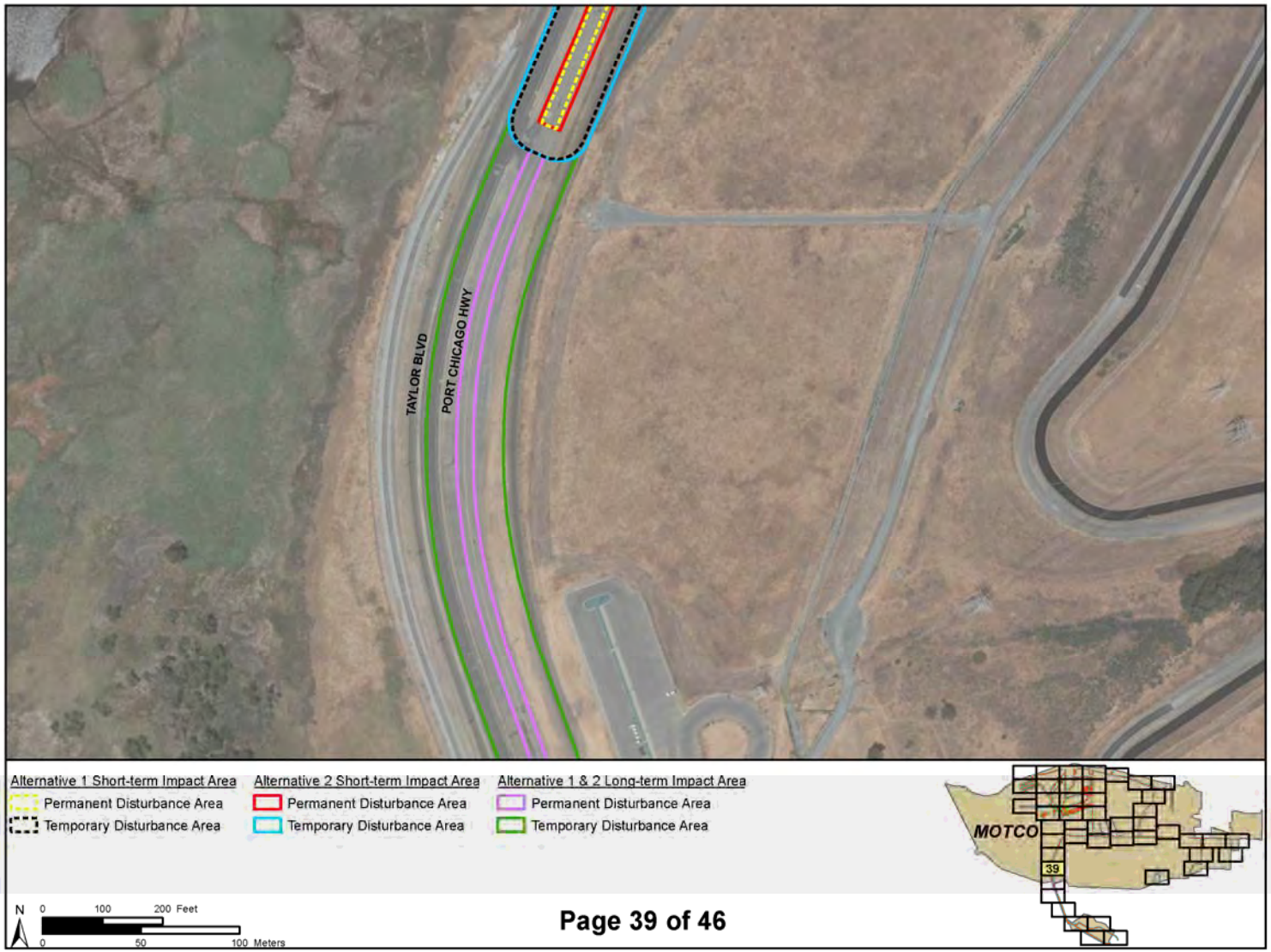
TAYLOR BLVD
PORT CHICAGO HWY
Alternative 1 Short-term Impact Area
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Temporary Disturbance Area
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
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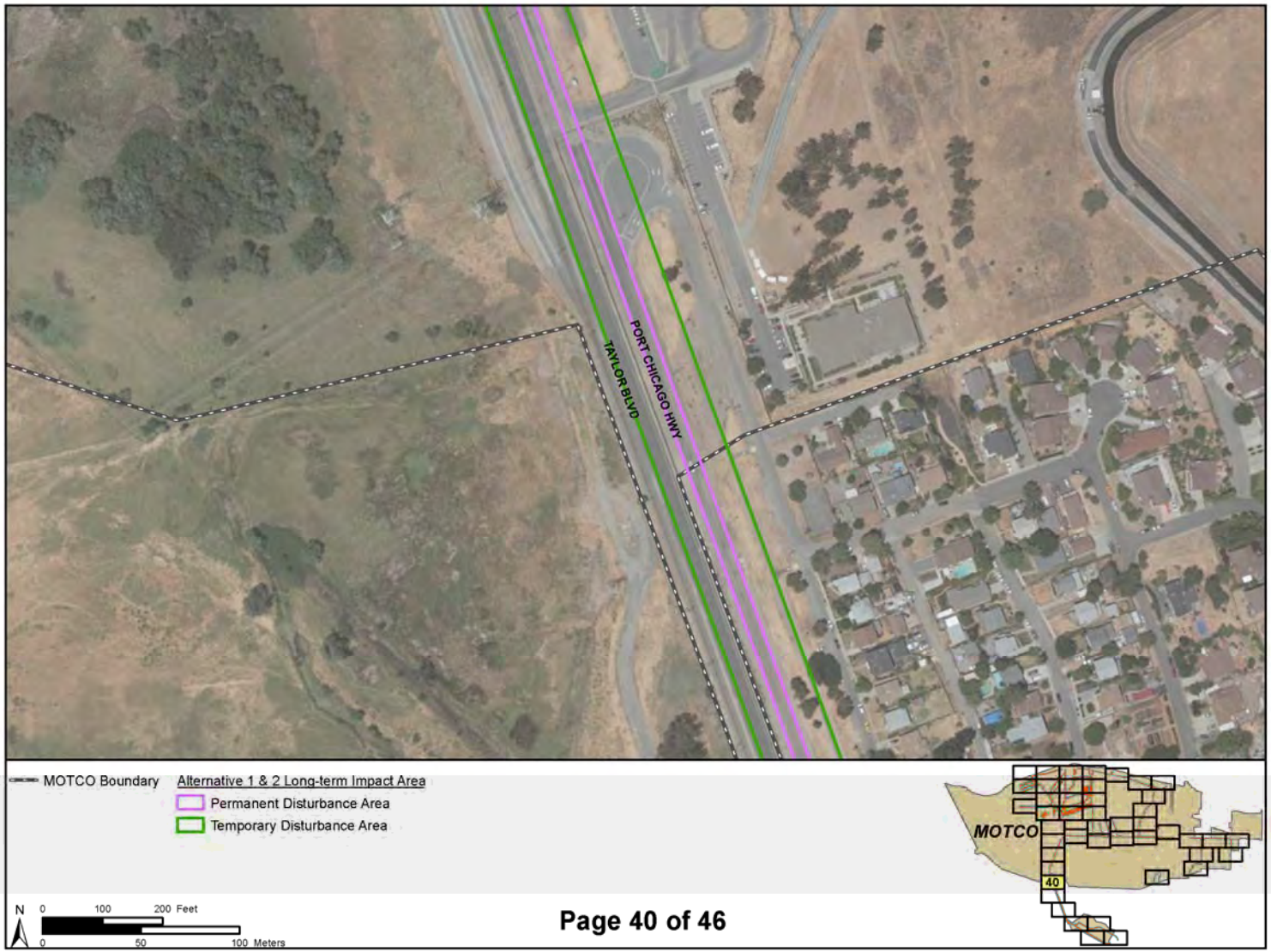
TAYLOR BLVD
PORT CHICAGO HWY
MOTCO Boundary
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Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
40
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0 100 200 Feet
0 50 100 Meters
Page 40 of 46

PORT CHICAGO HWY
TAYLOR BLVD
MOTCO Boundary
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
41
N
0 100 200 Feet
0 50 100 Meters
Page 41 of 46

PORT CHICAGO HWY
TAYLOR BLVD
MOTCO Boundary
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
42
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0 50 100 Meters
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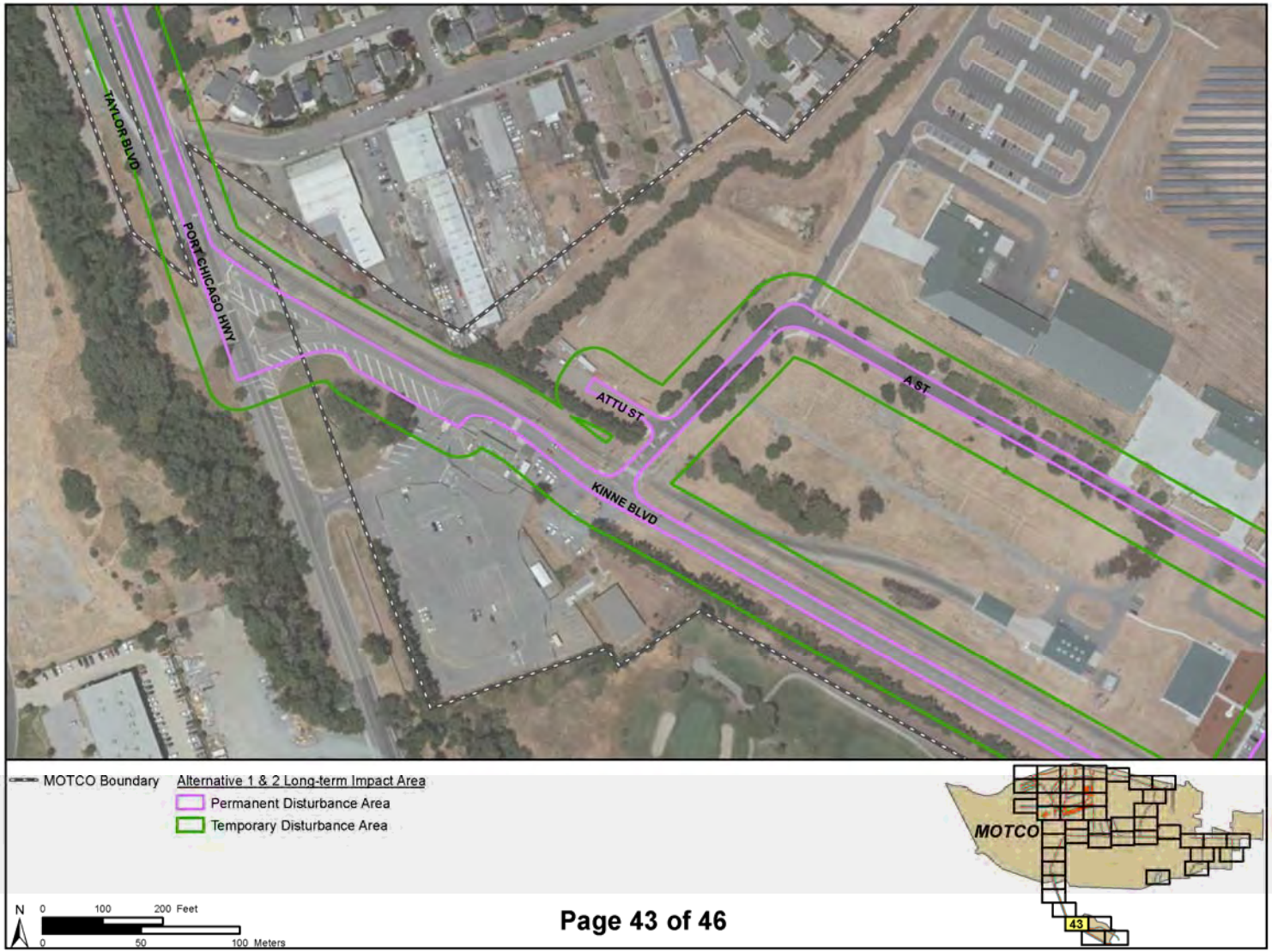
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PORT CHICAGO HWY
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KINNE BLVD
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MOTCO Boundary
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
43
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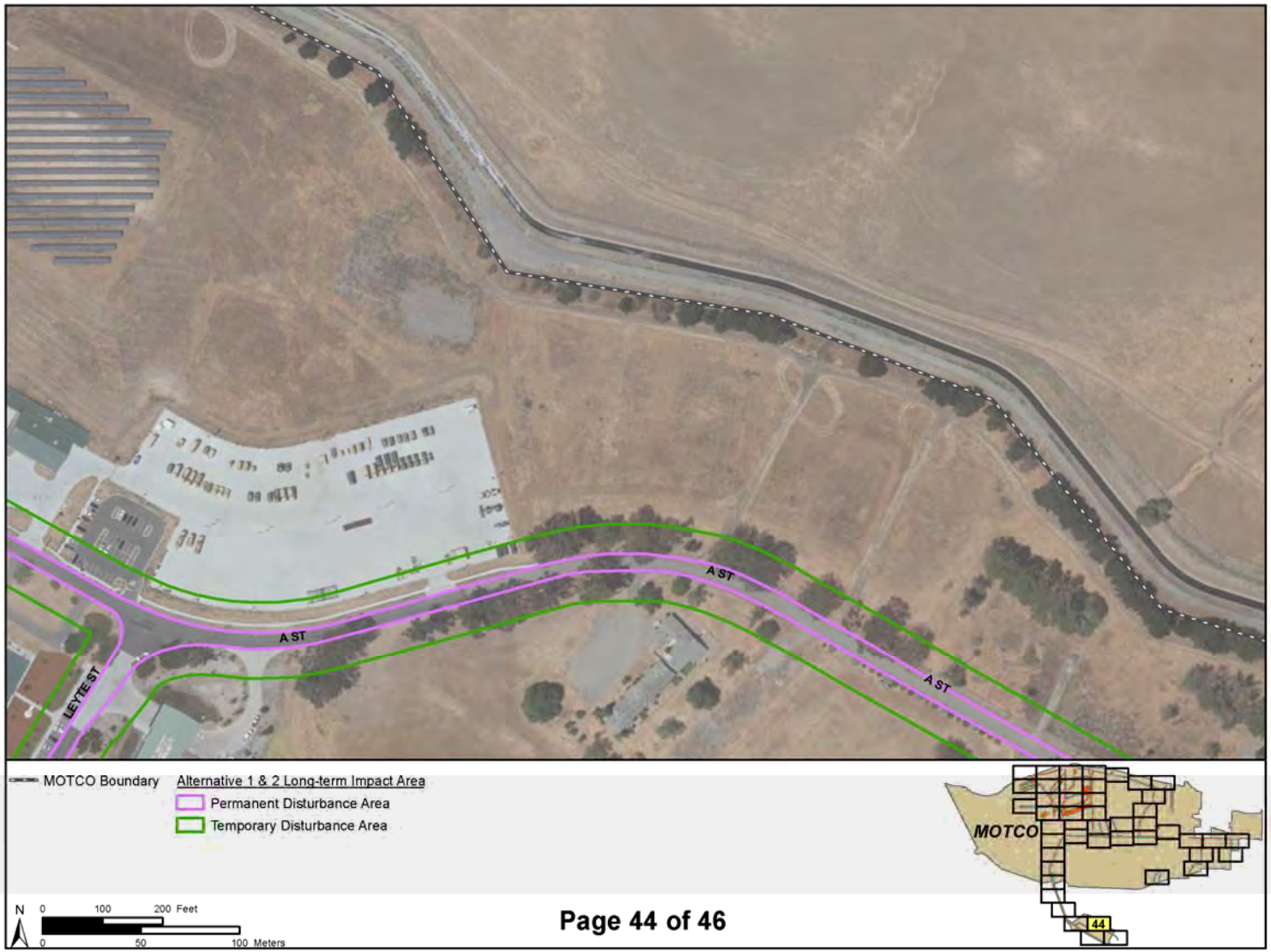
0 50 100 Meters
Page 43 of 46


A ST
A ST
A ST
LEYTE ST
MOTCO Boundary
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
44
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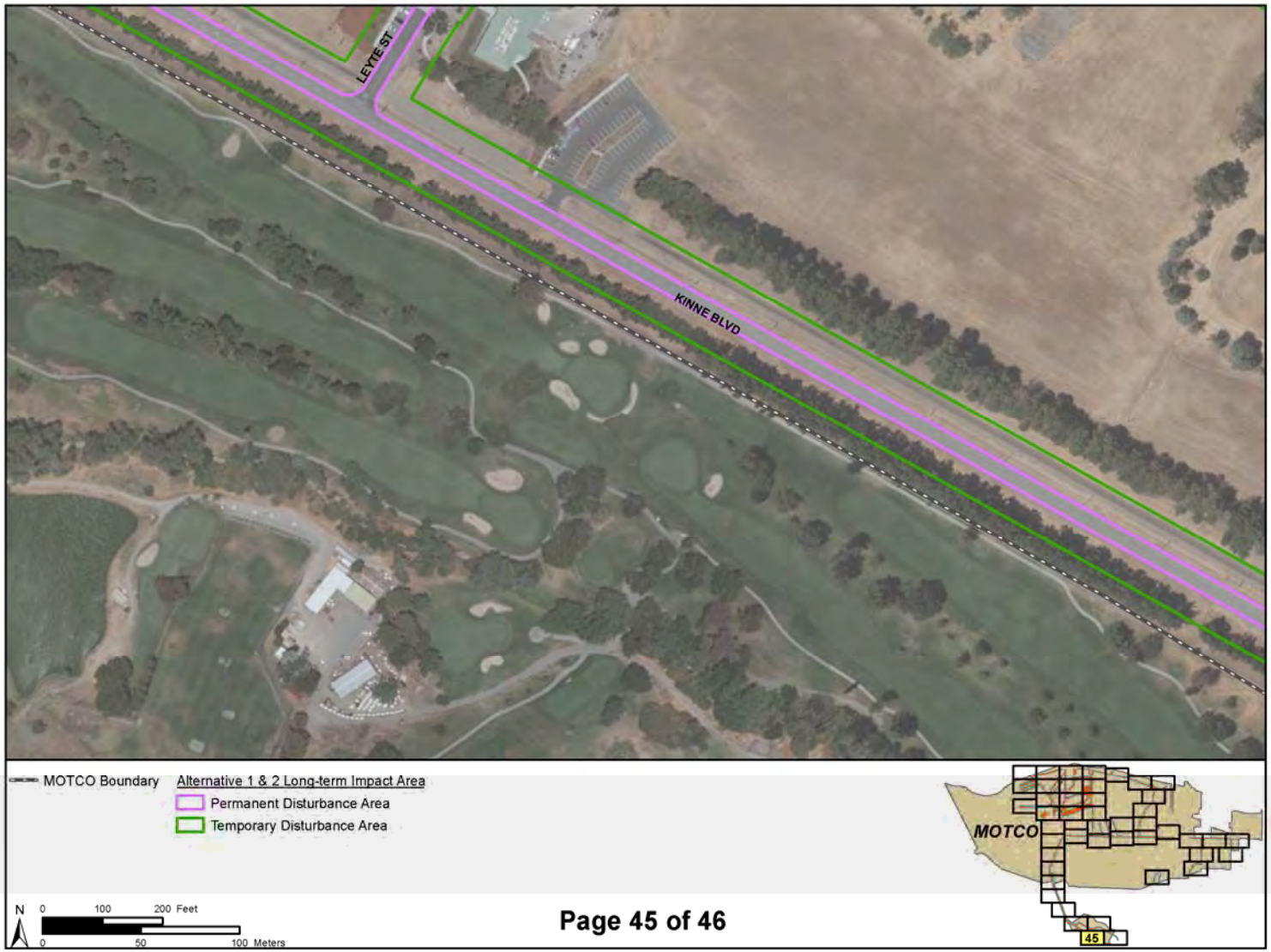
LEYTE ST
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MOTCO Boundary
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Temporary Disturbance Area
MOTCO
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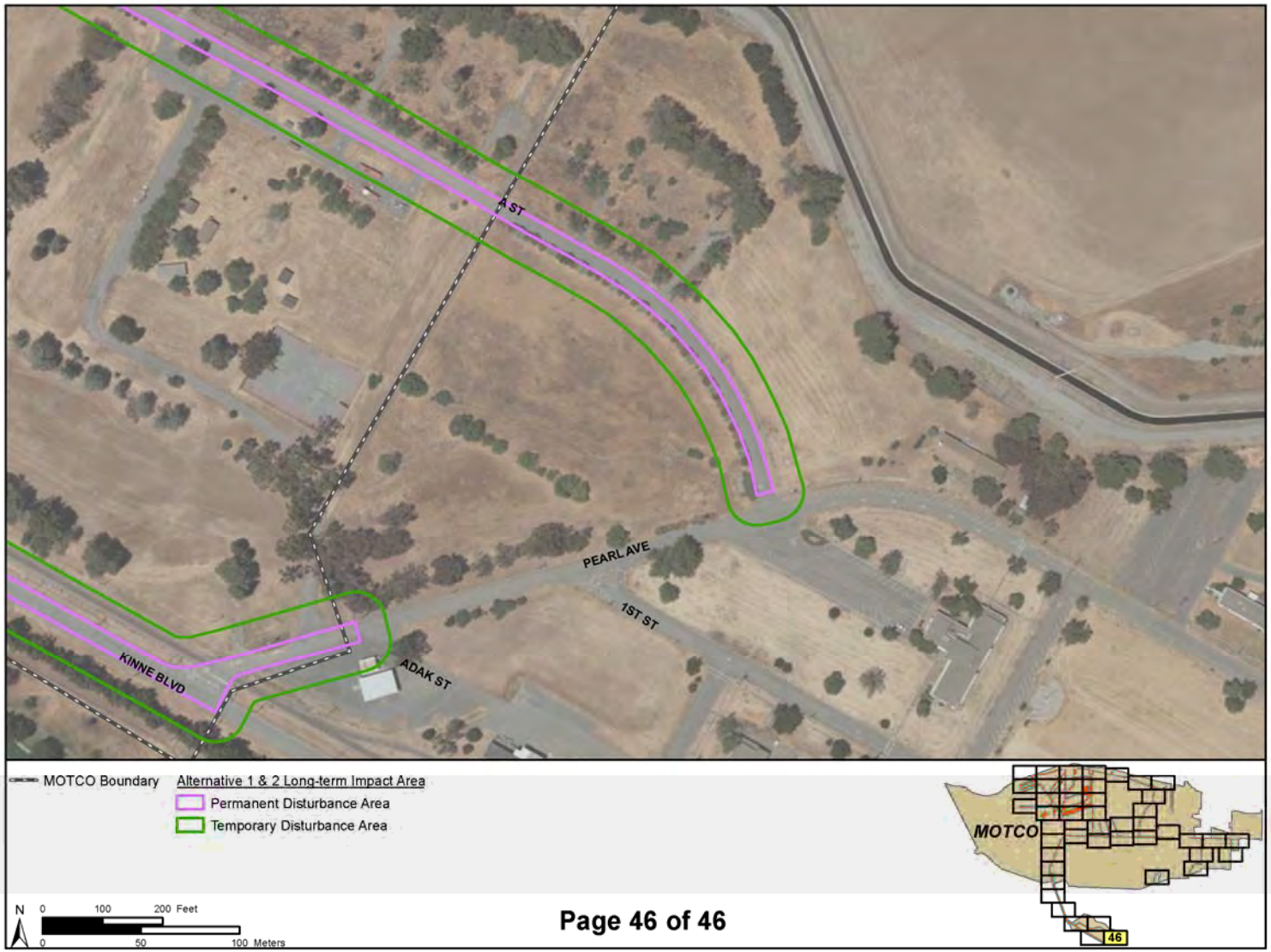
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MOTCO Boundary
Alternative 1 & 2 Long-term Impact Area
Permanent Disturbance Area
Temporary Disturbance Area
MOTCO
46
N
0 100 200 Feet
0 50 100 Meters
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APPENDIX C
EQUIPMENT LISTS

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Table C-1. Proposed Equipment for Full Depth Replacement Road Repairs

Phase Type	Equipment Type	Engine HP (Default Values)	Hours of Operation per Square Foot of Road Repair[1]
Milling	Pickup	300	0.0004
	Dump Truck	400	0.0027
	Milling Machine	254	0.0012
	Grader	175	0.0004
Excavate and Export	Dump Truck	400	0.0026
	Street Sweeper	64	0.0006
	Excavator	163	0.0006
Site Preparation and Import	Pickup	300	0.0004
	Dump Truck	400	0.0020
	Grader	175	0.0004
	Excavator	163	0.0004
Paving	Dump Truck	400	268 hrs per 3,200 feet
	Pavers	126	96 hrs per 3,200 feet
	Rollers	81	32 hrs per 3,200 feet
	Tractors / Loaders / Backhoes	98	64 hrs per 3,200 feet
	Paving Equipment	131	96 hrs per 3,200 feet

Note: [1] Hours of operations based on worst-case full depth replacement.

Table C-2. Proposed Equipment for Bridge Repairs

Bridge	Equipment Type	Engine HP (Default Values)	Hours of Operation
Bridge T-2	14-Ton 80-foot Hydraulic Truck-Mounted Crane	400	490
	65-Ton 126-foot Hydraulic Truck-Mounted Crane	400	7
	4,000-pound Rough Terrain 14-foot Fork Lift	100	1,061
	3,000-gallon Hydroseeder	400	10
	Flatbed Truck	400	1
	Highway Truck	400	1
	6,000-gallon Water Truck	330	10
	Welder	46	328
Bridge T-4	Aerial Lift	63	80
	Crane	226	60
	Tractors/Loaders/Backhoes	98	80
	Dump Truck	400	40
	Rough Terrain Forklift	100	80
	Pumps	53	160
	Welder	45	80

Table C-2. Proposed Equipment for Bridge Repairs

Bridge	Equipment Type	Engine HP (Default Values)	Hours of Operation
Bridge T-7	Aerial Lift	63	60
	Crane	226	50
	Tractors/Loaders/Backhoes	98	60
	Dump Truck	400	30
	Rough Terrain Forklift	100	60
	Pumps	53	140
	Welder	45	60
Bridge T-10	Aerial Lift	63	90
	Crane	226	70
	Tractors/Loaders/Backhoes	98	90
	Dump Truck	400	50
	Rough Terrain Forklift	100	90
	Pumps	53	180
	Welder	45	90

Table C-3. Proposed Equipment for Utilities and Borings

Project Component	Equipment Type	Engine HP (Default Values)	Hours of Operation
Utilities	Tractors/Loaders/Backhoes	98	60 hrs per 3200 ft
	Generator Sets	66	100 hrs per 3200 ft
	Aerial Lift	63	20 hrs per 3200 ft
	Trenchers	81	100 hrs per 3200 ft
	Welder	45	20 hrs per 3200 ft
	Rough Terrain Forklift	100	40 hrs per 3200 ft
	Pickup	300	120 hrs per 3200 ft
Borings	Bore/Drill/Rigs	206	200/year (assumes 25 boring/hydrovacing days per year)

APPENDIX D
DETAILS REGARDING PROPOSED GEOTECHNICAL BORINGS

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Borings: Drilling and Sampling

Soil borings would be performed using a cone penetration tool/cone penetrometer test, mud rotary wash, and hollow stem auger drilling techniques. The cone penetration tool/cone penetrometer test uses a truck to push a cone into the ground and no drilling spoil are generated. Mud rotary wash borings would be approximately 5 inches in diameter and to a maximum depth of 100 feet deep below grade. Drilling fluids would be kept in a closed system. Hollow stem auger borings are approximately 8 inches in diameter and 10 feet below grade.

At each soil boring, soil samples would be collected at approximately 5-foot intervals or when change in soil type occurred, by using Standard Penetration Test (SPT) sampler and at other intermittent depths using Modified California Drive (MCD) sampler. The SPT sampler has an outside diameter of 2 inches and inside diameter of 1.4 inches. The MCD sampler has an outside diameter of 3.25 inches and is lined inside with 2.5-inch diameter brass rings to obtain relatively undisturbed soil samples. Both samplers would be driven by an automatic hammer system using a 140-pound hammer with a drop height of 30 inches. Bulk samples would be collected from willow hollow stem auger borings.

Soil cuttings from drilling operations would be contained in 55 gallon drums, labeled with soil boring numbers, and stored onsite at a designated staging area. Samples from soil cuttings would be tested and soil cuttings contained in drums would be disposed of off-site per agency requirements within 4 to 6 weeks. At the end of drilling, the boreholes would be grouted as necessary and debris disposed of in accordance with applicable federal, state, and local regulations. Borings would be backfilled with bentonite grout with a small amount of dirt trimmings at the top layer. Asphalt or concrete pavement would be restored if cut during the course of sampling.

Hand Excavation: Digging and Sampling

The California Bearing Ratio (CBR) is a penetration test for evaluation of the mechanical strength of road subgrade or natural ground and is used in pavement design. The bag sample used for this testing is collected discretely using hand tools (e.g., shovels and picks) at specified intervals, in a band approximately 6 to 24 inches thick and to a maximum depth of approximately 3 feet below ground surface. Typically, the bag sample is no more than 100 pounds.

Hydrovac: Drilling and Sampling

Hydrovac investigation would be used to determine the depth of buried pipelines in areas where the exact location and depth of buried pipelines and utilities are unknown.

The hydrovac excavation equipment is a system of vertical excavation uses a vacuum truck in tandem with a high-pressure water jet to loosen soil and evacuate it from a hole. During a hydrovac, the water used in the operation is minimal and is applied only as necessary to break

up and loosen the soil without creating a slurry mix. The operation uses a minimum amount of water to maintain the stability of the hole and to maximize the storage space in the soil storage compartment of the truck, reducing the number of trips to dispose of the soil. The hydrovac is operated by the driver/vacuum and water jet operators. The water is applied with a wand similar to a pressure washer. The water jet is applied as needed, not necessarily continuously, by an operator standing directly over the hole. The water jet operator uses the wand to break up the soil while the vacuum operator uses the vacuum intake to excavate a hole. In most circumstances under normal daylight conditions, the wand operator has sufficient visibility to a depth of 6 to 8 feet and uses that visibility to judiciously break apart soil and keep the wall of the excavation vertical as work proceeds. The typical rate of excavation is about 20 minutes for the first 4 to 5 feet and about 15 minutes per foot thereafter.

The hydrovac method creates holes 1 to 2 feet in diameter to a maximum depth of 12 feet below ground surface. Following the hydrovac investigation, each hole would be backfilled starting at the bottom of the hole and backfilled to within 1 foot of the ground surface using controlled low strength concrete slurry, or with a material specified by the individual utility owner or applicable county specification. The remaining 1 foot of the borehole depth would be filled with soil from an acceptable source.

APPENDIX E
AIR QUALITY CALCULATIONS AND RECORD OF NONAPPLICABILITY

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TAB A. Annual Summary of Emissions

Table 1. Alternative 1 Emissions Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr	CO_2e MT/yr
2017	0.32	1.42	4.30	0.00	0.21	0.20	441
2018	0.53	2.24	7.03	0.01	0.41	0.38	724
2019	0.08	0.36	0.77	0.00	0.06	0.05	70
2020	0.22	0.70	1.99	0.00	0.10	0.09	200
2021	0.02	0.11	0.32	0.00	0.02	0.01	33

Table 2. Alternative 2 Emissions Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr	CO_2e MT/yr
2017	0.35	1.52	4.56	0.00	0.23	0.21	457
2018	0.53	2.26	7.08	0.01	0.42	0.38	727
2019	0.08	0.36	0.77	0.00	0.06	0.05	70
2020	0.22	0.70	2.01	0.00	0.10	0.09	201
2021	0.03	0.12	0.36	0.00	0.02	0.02	35

TAB B. **Construction/Demolition**

Table 1. Mobilization - 2017

On-road Equipment	Mileage	Engine HP	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Pickup Truck	4,670	180	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
Delivery Truck	600	380	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Pickup Truck	2.95	26.89	2.60	0.05	0.44	0.29	0.26	5,168.75
Delivery Truck	0.79	3.63	9.16	0.02	0.84	0.72	0.05	2,526.38
Tons/year:	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**3**

Table 2. Road Demo/Construction & Bridge Repair - 2017

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fue
Crane	166	400	0 29	0.68	0 00002	2.7	0 0000535	8.17	0 000136	0.0048614	0.38	2.02E-05	0.41	0 08	10,206
Forklift	153	100	0.40	0 28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0 08	10,206
Paver	525	126	0.42	0 28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0 08	10,206
Grader	278	175	0.41	0.68	3.15E-05	2.70	7.14E-05	6 9	1.60E-04	0 0048614	0.38	2.76E-05	0.41	0 08	10,206
Roller	175	81	0 38	0 28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0 08	10,206
Welder	55	187	0.42	1.45	1.85E-04	4.10	4.20E-04	5.55	1 03E-04	0 0048383	0.60	4.65E-05	0.41	0 08	10,206
Generator Set	199	66	0.46	0 37	6.90E-05	3 00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2.93E-05	0.41	0 08	10,206
Boring Rig	200	206	0.46	0 37	6.90E-05	3 00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2.93E-05	0.41	0 08	10,206
Trencher	199	81	0 38	0 28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0 08	10,206
Excavator	348	163	0 38	0.16	2.57E-05	2.70	7.14E-05	4.44	6.46E-05	0 004877	0.16	1.18E-05	0.41	0 08	10,206
Loader	469	98	0 37	0 99	4.58E-05	3.49	9.23E-05	6 9	1.60E-04	0 0048521	0.69	5.02E-05	0.41	0 08	10,206
Milling Machine	417	254	0.42	0.14	2.30E-05	0.92	2.43E-05	4.58	7 23E-05	0 0048776	0.11	6.03E-06	0.41	0 08	10,206
Dump Truck	4,002	290	0 38	0.14	2.22E-05	0 92	1.82E-05	4.51	6 32E-05	0 0048776	0.11	6.03E-06	0.41	0 08	10,206
Street Sweeper	209	64	0.46	0 37	6.90E-05	3 00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2.93E-05	0.41	0 08	10,206
Paving Equipment	525	131	0 36	0 28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0 08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Crane	36	130	385	0 21	22	20	0.41	0.08	10,147
Forklift	5	47	75	0 07	13.08	12 04	0.13	0.03	3,231
Paver	22	204	330	0 30	21.03	19 35	0.59	0.12	14,499
Grader	37	135	339	0 21	22.80	20 98	0.43	0.09	10,534
Roller	4	40	64	0 06	4.02	3.70	0.12	0.02	2,842
Welder	19	51	56	0 05	7	6.42	0.09	0.02	2,276
Generator Set	8	52	70	0 06	6	5.71	0.13	0.03	3,196
Boring Rig	24	162	219	0 20	19	17 87	0.41	0.08	10,007
Trencher	5	46	74	0 07	5	4 37	0.13	0.03	3,234
Excavator	12	141	222	0 23	10	8 93	0.46	0.09	11,368
Loader	44	131	259	0.18	33	30.78	0.36	0.07	8,987
Milling Machine	17	94	461	0.48	12	10 80	0.95	0.19	23,494
Dump Truck	301	1,030	4,854	4.74	152	139 58	9.45	1.89	232,859
Street Sweeper	7	50	70	0 07	6	5 56	0.13	0.03	3,242
Paving Equipment	20	184	297	0 27	19	17.46	0.53	0.11	13,064
Tons/year:	**0.28**	**1.25**	**3.89**	**0.00**	**0.18**	**0.16**			
CO_2e Metric tons/year:									**354**

Table 3. Material Transport - 2017

On-road Equipment	Engine HP	Total miles	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Concrete Truck	400	568	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Delivery Truck	400	10,728	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Dump Truck	400	32,183	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Concrete Truck	0.91	4.00	10.72	0.02	0.99	0.87	0.04	2,392
Delivery Truck	17.28	75.59	202.47	0.42	18.76	16.34	0.81	45,170
Dump Truck	51.83	226.76	607.41	1.27	56.28	49.03	2.42	135,510
Tons/year:	**0.04**	**0.15**	**0.41**	**0.00**	**0.04**	**0.03**		
CO_2e Metric tons/year:								**83**

Table 4. Mobilization - 2018

On-road Equipment	Mileage	Engine HP	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Pickup Truck	9,592	180	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
Delivery Truck	600	380	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211

On-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Pickup Truck	6.07	55.23	5.34	0.10	0.90	0.59	0.54	10,615.84
Delivery Truck	0.79	3.63	9.16	0.02	0.84	0.72	0.05	2,526.38
Tons/year:	**0.00**	**0.03**	**0.01**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**6**

Table 5. Road Demo/Construction & Bridge Repair - 2018

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fue	N_2O g/gal fuel	CO_2 g/gal fue
Crane	226	400	0.29	0.68	0.00002	2.7	0.0000535	8.17	0.000136	0 0048614	0.38	2 02E-05	0.41	0.08	10,206
Forklift	364	100	0.40	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Generators	323	400	0.42	0.32	0.0000112	0.92	0.0000182	6.25	0.000104	0 0048722	0.15	7 96E-06	0.41	0.08	10,206
Paver	738	126	0.42	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Grader	485	175	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0 0048614	0.38	2.76E-05	0.41	0.08	10,206
Roller	246	81	0.38	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Welder	133	187	0.42	1.45	1.85E-04	4.10	4.20E-04	5.55	1 03E-04	0 0048383	0.60	4.65E-05	0.41	0.08	10,206
Pumps	167	53	0.46	0.37	6.90E-05	3.00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2 93E-05	0.41	0.08	10,206
Boring Rig	200	206	0.46	0.37	6.90E-05	3.00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2 93E-05	0.41	0.08	10,206
Trencher	323	81	0.38	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Excavator	606	163	0.38	0.16	2.57E-05	2.70	7.14E-05	4.44	6.46E-05	0 004877	0.16	1.18E-05	0.41	0.08	10,206
Loader	763	98	0.37	0.99	4.58E-05	3.49	9.23E-05	6.9	1.60E-04	0 0048521	0.69	5 02E-05	0.41	0.08	10,206
Milling Machine	254	254	0.42	0.14	2.30E-05	0.92	2.43E-05	4.58	7 23E-05	0 0048776	0.11	6 03E-06	0.41	0.08	10,206
Dump Truck	6,511	290	0.38	0.14	2.22E-05	0.92	1.82E-05	4.51	6 32E-05	0 0048776	0.11	6 03E-06	0.41	0.08	10,206
Street Sweeper	364	64	0.46	0.37	6.90E-05	3.00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2 93E-05	0.41	0.08	10,206
Paving Equipment	738	131	0.36	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Crane	48	156	472	0.28	22	20	0 56	0.11	13,822
Forklift	13	101	168	0.16	6 57	6.05	0 31	0.06	7,689
Generators	44	110	749	0.58	174 00	160.08	1.16	0.23	28,691
Paver	31	287	464	0.42	29.61	27.24	0 83	0.17	20,409
Grader	64	234	591	0.37	39.75	36.57	0.74	0.15	18,363
Roller	6	56	90	0.08	5.66	5.20	0.16	0.03	4,001
Welder	46	122	135	0.11	17	15.57	0 22	0.04	5,516
Pumps	5	35	47	0.04	4	3.83	0 09	0.02	2,146
Boring Rig	24	162	219	0.20	19	17.87	0.41	0.08	10,007
Trencher	8	74	120	0.11	8	7.09	0.21	0.04	5,250
Excavator	21	246	387	0.40	17	15.56	0 80	0.16	19,815
Loader	72	213	421	0.30	54	50.04	0 59	0.12	14,609
Milling Machine	11	57	281	0.29	7	6.58	0 58	0.12	14,308
Dump Truck	490	1,675	7,898	7.72	247	227.09	15 37	3.07	378,860
Street Sweeper	12	87	122	0.11	11	9.70	0 23	0.05	5,651
Paving Equipment	28	259	418	0.37	27	24.58	0.75	0.15	18,389
Tons/year:	**0.46**	**1.94**	**6.29**	**0.01**	**0.34**	**0.32**			
CO_2e Metric tons/year:									**569**

Table 6. Material Transport - 2018

On-road Equipment	Engine HP	Total miles	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Concrete Truck	400	2934	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Delivery Truck	400	18,699	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Dump Truck	400	56,098	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

On-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Concrete Truck	4.72	20.67	55.37	0.12	5.13	4.47	0.22	12,353
Delivery Truck	30.11	131.76	352.93	0.74	32.70	28.49	1.40	78,736
Dump Truck	90.34	395.27	1,058.78	2.22	98.10	85.46	4.21	236,209
Tons/year:	**0.06**	**0.27**	**0.73**	**0.00**	**0.07**	**0.06**		
CO_2e Metric tons/year:								**149**

Table 7. Mobilization - 2019

On-road Equipment	Mileage	Engine HP	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Pickup Truck	1,134	180	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
Delivery Truck	2,300	380	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211

On-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
	0.72	6.53	0.63	0.01	0.11	0.07	0.06	1,255.50
Delivery Truck	3.03	13.91	35.10	0.09	3.21	2.76	0.17	9,682.89
Tons/year:	**0.00**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**5**

Table 8. Bridge Repair - 2019

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Crane	226	400	0 29	0.68	0.00002	2.7	0 0000535	8.17	0.000136	0.0048614	0.38	2.02E-05	0.41	0 08	10,206
Forklift	238	100	0.40	0 28	2 92E-05	3.14	8 33E-05	5.22	8.40E-05	0.0048734	0.29	2.12E-05	0.41	0 08	10,206
Welder	111	187	0.42	1.45	1 85E-04	4.10	4 20E-04	5.55	1.03E-04	0.0048383	0.60	4.65E-05	0.41	0 08	10,206
Loaders	141	98	0 37	0 99	4 58E-05	3.49	9 23E-05	6.9	1.60E-04	0.0048521	0.69	5.02E-05	0.41	0 08	10,206
Pumps	167	53	0.46	0 37	6 90E-05	3 00	3 05E-04	4.95	9.67E-05	0.0048707	0.38	2.93E-05	0.41	0 08	10,206
Boring Rig	200	206	0.46	0 37	6 90E-05	3 00	3 05E-04	4.95	9.67E-05	0.0048707	0.38	2.93E-05	0.41	0 08	10,206
Trencher	63	81	0 38	0 28	2 92E-05	3.14	8 33E-05	5.22	8.40E-05	0.0048734	0.29	2.12E-05	0.41	0 08	10,206
Generators	63	400	0.42	0 32	0 0000112	0.92	0 0000182	6.25	0.000104	0.0048722	0.15	7.96E-06	0.41	0 08	10,206
Dump Truck	40	290	0 38	0.14	2 22E-05	0 92	1 82E-05	4.51	6.32E-05	0.0048776	0.11	6.03E-06	0.41	0 08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Crane	48	177	525	0 28	30	27.43	0.56	0.11	13,822
Forklift	8	73	116	0.10	8	7.18	0.20	0.04	5,023
Welder	38	102	112	0 09	14	12.98	0.19	0.04	4,601
Loaders	13	42	83	0 05	9	8.67	0.11	0.02	2,702
Pumps	5	35	47	0 04	4	3.83	0.09	0.02	2,146
Boring Rig	24	162	219	0 20	19	17.87	0.41	0.08	10,007
Trencher	2	14	23	0 02	2	1.38	0.04	0.01	1,024
Generators	8	23	153	0.11	4	3.72	0.23	0.05	5,590
Dump Truck	2	9	46	0 05	1	1.14	0.09	0.02	2,328
Tons/year:	**0.07**	**0.32**	**0.66**	**0.00**	**0.05**	**0.04**			
CO_2e Metric tons/year:									**47**

Table 9. Material Transport - 2019

On-road Equipment	Engine HP	Total miles	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Dump Truck	400	6,899	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Delivery Truck	400	2,300	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

On-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Dump Truck	11.11	48.61	130.21	0.27	12.06	10.51	0.52	29,049
Delivery Truck	3.70	16.20	43.40	0.09	4.02	3.50	0.17	9,683
Tons/year:	**0.01**	**0.03**	**0.09**	**0.00**	**0.01**	**0.01**		
CO_2e Metric tons/year:								**18**

Table 10. Mobilization - 2020

On-road Equipment	Mileage	Engine HP	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Pickup Truck	952	180	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11

On-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Pickup Truck	122.41	5.48	0.53	0.01	0.09	0.06	0.05	1,053.72
Tons/year:	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**0**

Table 11. Road Demo/Construction & Bridge Repair - 2020

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fue	N_2O g/gal fuel	CO_2 g/gal fue
Crane	60	400	0.29	0.68	0.00002	2.7	0.0000535	8.17	0.000136	0 0048614	0.38	2 02E-05	0.41	0.08	10,206
Forklift	204	100	0.40	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Paver	177	126	0.42	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Grader	122	175	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0 0048614	0.38	2.76E-05	0.41	0.08	10,206
Roller	59	81	0.38	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Welder	96	187	0.42	1.45	1.85E-04	4.10	4.20E-04	5.55	1 03E-04	0 0048383	0.60	4.65E-05	0.41	0.08	10,206
Pumps	167	53	0.46	0.37	6.90E-05	3.00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2 93E-05	0.41	0.08	10,206
Boring Rig	200	206	0.46	0.37	6.90E-05	3.00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2 93E-05	0.41	0.08	10,206
Generators	63	400	0.42	0.32	0.0000112	0.92	0.0000182	6.25	0.000104	0 0048722	0.15	7 96E-06	0.41	0.08	10,206
Trencher	63	81	0.38	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Excavator	153	163	0.38	0.16	2.57E-05	2.70	7.14E-05	4.44	6.46E-05	0 004877	0.16	1.18E-05	0.41	0.08	10,206
Loader	232	98	0.37	0.99	4.58E-05	3.49	9.23E-05	6.9	1.60E-04	0 0048521	0.69	5 02E-05	0.41	0.08	10,206
Milling Machine	184	254	0.42	0.14	2.30E-05	0.92	2.43E-05	4.58	7 23E-05	0 0048776	0.11	6 03E-06	0.41	0.08	10,206
Dump Truck	1,650	290	0.38	0.14	2.22E-05	0.92	1.82E-05	4.51	6 32E-05	0 0048776	0.11	6 03E-06	0.41	0.08	10,206
Street Sweeper	92	64	0.46	0.37	6.90E-05	3.00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2 93E-05	0.41	0.08	10,206
Paving Equipment	177	131	0.36	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Crane	13	47	139	0.07	8	7	0.15	0.03	3,675
Forklift	7	62	100	0.09	7	6.17	0.18	0.04	4,319
Paver	7	69	111	0.10	7	6.51	0 20	0.04	4,879
Grader	16	59	149	0.09	10	9.24	0.19	0.04	4,638
Roller	1	13	22	0.02	1	1.24	0 04	0.01	956
Welder	33	88	97	0.08	12	11.23	0.16	0.03	3,979
Pumps	5	35	47	0.04	4	3.83	0 09	0.02	2,146
Boring Rig	24	162	219	0.20	19	17.87	0.41	0.08	10,007
Generators	8	23	153	0.11	4	3.72	0 23	0.05	5,590
Trencher	2	14	23	0.02	2	1.38	0 04	0.01	1,024
Excavator	5	62	98	0.10	4	3.93	0 20	0.04	5,004
Loader	22	72	140	0.09	17	15.23	0.18	0.04	4,445
Milling Machine	8	41	203	0.21	5	4.75	0.42	0.08	10,343
Dump Truck	124	424	2,001	1.96	63	57.54	3 89	0.78	96,001
Street Sweeper	3	22	31	0.03	3	2.45	0 06	0.01	1,427
Paving Equipment	7	62	100	0.09	6	5.88	0.18	0.04	4,396
Tons/year:	**0.14**	**0.63**	**1.82**	**0.00**	**0.09**	**0.08**			
CO_2e Metric tons/year:									**163**

Table 12. Material Transport - 2020

On-road Equipment	Engine HP	Total miles	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Delivery Truck	400	4,723	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Dump Truck	400	14,168	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

On-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Delivery Truck	7.60	33.28	89.13	0.19	8.26	7.19	0.35	19,885
Dump Truck	22.81	99.83	267.40	0.56	24.77	21.58	1.06	59,654
Tons/year:	**0.02**	**0.07**	**0.18**	**0.00**	**0.02**	**0.01**		
CO_2e Metric tons/year:								**36**

Table 13. Mobilization - 2021

On-road Equipment	Mileage	Engine HP	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Pickup Truck	168	180	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11

On-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Pickup Truck	0.00	0.97	0.09	0.00	0.02	0.01	0.01	185.77
Tons/year:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**0**

Table 14. Road Demo/Construction & Bridge Repair - 2021

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fue	N_2O g/gal fuel	CO_2 g/gal fue
Forklift	38	100	0.40	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Paver	34	126	0.42	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Grader	22	175	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0 0048614	0.38	2.76E-05	0.41	0.08	10,206
Roller	11	81	0.38	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Welder	13	187	0.42	1.45	1.85E-04	4.10	4.20E-04	5.55	1 03E-04	0 0048383	0.60	4.65E-05	0.41	0.08	10,206
Trencher	63	81	0.38	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206
Excavator	27	163	0.38	0.16	2.57E-05	2.70	7.14E-05	4.44	6.46E-05	0 004877	0.16	1.18E-05	0.41	0.08	10,206
Loader	60	98	0.37	0.99	4.58E-05	3.49	9.23E-05	6.9	1.60E-04	0 0048521	0.69	5 02E-05	0.41	0.08	10,206
Milling Machine	32	254	0.42	0.14	2.30E-05	0.92	2.43E-05	4.58	7 23E-05	0 0048776	0.11	6 03E-06	0.41	0.08	10,206
Dump Truck	291	290	0.38	0.14	2.22E-05	0.92	1.82E-05	4.51	6 32E-05	0 0048776	0.11	6 03E-06	0.41	0.08	10,206
Street Sweeper	16	64	0.46	0.37	6.90E-05	3.00	3.05E-04	4.95	9.67E-05	0 0048707	0.38	2 93E-05	0.41	0.08	10,206
Paving Equipment	34	131	0.36	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0 0048734	0.29	2.12E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Forklift	1	12	18	0.02	1	1.14	0 03	0.01	799
Paver	1	13	21	0.02	1	1.24	0 04	0.01	932
Grader	3	10	26	0.02	2	1.63	0 03	0.01	818
Roller	0	3	4	0.00	0	0.24	0 01	0.00	183
Welder	4	12	13	0.01	2	1.48	0 02	0.00	523
Trencher	2	14	23	0.02	2	1.38	0 04	0.01	1,024
Excavator	1	11	17	0.02	1	0.69	0 04	0.01	882
Loader	6	19	36	0.02	4	3.95	0 05	0.01	1,154
Milling Machine	1	7	36	0.04	1	0.84	0 07	0.01	1,823
Dump Truck	22	75	353	0.34	11	10.15	0.69	0.14	16,936
Street Sweeper	1	4	5	0.01	0	0.43	0 01	0.00	252
Paving Equipment	1	12	19	0.02	1	1.12	0 03	0.01	840
Tons/year:	**0.02**	**0.10**	**0.29**	**0.00**	**0.01**	**0.01**			
CO_2e Metric tons/year:									**26**

Table 15. Material Transport - 2021

On-road Equipment	Engine HP	Total miles	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Delivery Truck	400	833	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Dump Truck	400	2,498	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Delivery Truck	1.34	5.87	15.71	0.03	1.46	1.27	0.06	3,506
Dump Truck	4.02	17.60	47.14	0.10	4.37	3.81	0.19	10,517
Tons/year:	**0.00**	**0.01**	**0.03**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**6**

Table 16. Additional Grading Associated with Road work Under Alternative 2

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fue
Grader - 2017	426	175	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0.0048614	0 38	2.76E-05	0.41	0 08	10,206
Grader - 2018	78	175	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0.0048614	0 38	2.76E-05	0.41	0 08	10,206
Grader - 2020	21	175	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0.0048614	0 38	2.76E-05	0.41	0 08	10,206
Grader - 2021	68	175	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0.0048614	0 38	2.76E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Grader - 2017	56	206	519	0 33	35	32.14	0.65	0.13	16,136
Tons/year:	**0.03**	**0.10**	**0.26**	**0.00**	**0.02**	**0.02**			
CO_2e Metric tons/year:									**16**
Grader - 2018	10	38	96	0 06	6	5.92	0.12	0.02	2,971
Tons/year:	**0.01**	**0.02**	**0.05**	**0.00**	**0.00**	**0.00**			
CO_2e Metric tons/year:									**3**
Grader - 2020	3	10	25	0 02	2	1.58	0.03	0.01	792
Tons/year:	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**			
CO_2e Metric tons/year:									**1**
Grader - 2021	9	33	83	0 05	6	5.11	0.10	0.02	2,567
Tons/year:	**0.00**	**0.02**	**0.04**	**0.00**	**0.00**	**0.00**			
CO_2e Metric tons/year:									**3**

TAB C. Construction/Demolition Assumptions

Table 1. Alternative 1 Construction/ Demo

Project Name	Grading (SY)	Length (LF)	Trenching (LF)	Site Prep - Excavate/Fill (CY)	Gravel Work (CY)	Concrete Work (CY)	Paving Surface Area (SF)	Paving - HMA (CF)
2017								
Bridge Repairs (T2)	11,084			60		365		
Anderson Rd		2,200	4,730	2,689	0		48,400	24,200
Port Chicago Highway East		9,375					234,375	117,188
Rinquist Road Intersection		2,700	1,650	3,600	0		64,800	32,400
North Taylor Blvd		712		316				
Temp roads for fill area access/staging	3,333	2,500			733			
Grading for all road work	177,144							
	191,561	17,487	6,380	6,665	733	365	347,575	173,788
2018								
Bridge Repairs (T1)						3		
Bridge Repairs (T4)	10,212					178		
Bridge Repairs (T7)								
Bridge Repairs (T10)								
Port Chicago Highway West		15,100					377,500	188,750
Christenbury Rd (inc Brown Rd)		5,400	5,400	7,200	0		129,600	64,800
Johnson Rd		4,115	4,950	5,487	0		98,760	49,380
Grading for all road work	159,236			1				
	169,448	24,615	10,350	12,687	0	181	605,860	302,930
2019								
White Rd (West)	29,040	2,661	6,050	25,919	21,780		74,508	37,254
2020								
Main St		2,615		3,777	0		67,990	33,995
Mordoh Rd		3,270		4,723	0		85,020	42,510
Grading for all road work	62,920							
	62,920	5,885		8,501	0		153,010	76,505
2021								
White Rd Center	43,076	1,124		33,806	32,307		26,976	13,488

Table 2. Additional Construction /Demo for Alternative 2

Project Name	Grading (SY)	Add'l Hrs
2017		
Additional Grading	42,592	426
2018		
Additional Grading	21,780	78
2020		
Additional Grading	5,808	21
2021		
Additional Grading	6,776	68

Table 3. Material Trips

Material	Source Location	One way distance (mi)	Total Round Trip Time (hrs)	2017 Total # of trips	Computed Total time (hrs)	Total mi traveled	2018 Total # of trips	Computed Total time (hrs)	Total mi traveled	2019 Total # of trips	Computed Total time (hrs)	Total mi traveled	2020 Total # of trips	Computed Total time (hrs)	Total mi traveled	2021 Total # of trips	Computed Total time (hrs)	Total mi traveled
Concrete	Martinez	7	1.8	41	73	568	20	36	2934									
Asphalt	Richmond	30	2.7	536	1,448	32,183	935	2,524	56,098	115	310	6,899	236	638	14,168	42	112	2,498
Other Materials	Richmond	30	2.7	179	483	10,728	312	841	18,699	38	103	2,300	79	213	4,723	14	37	833

Equipment Usage	Engine HP (Default Values)	Hours/ft^2 road	2017 Hrs	2018 Hrs	2019 Hrs	2020 Hrs	2021 Hrs
Milling							
Pickup Truck	300	0.0004	139	242		61	11
Dump Truck	400	0.0027	938	1,636		413	73
Milling Machine	254	0.0012	417	727		184	32
Grader	175	0.0004	139	242		61	11
Excavate and Export							
Dump Truck	400	0.0026	904	1,575		398	70
Street Sweeper	64	0.0006	209	364		92	16
Excavator	163	0.0006	209	364		92	16
Site Prep and Import							
Pickup Truck	300	0.0004	139	242		61	11
Dump Truck	400	0.002	695	1,212		306	54
Grader	175	0.0004	139	242		61	11
Excavator	163	0.0004	139	242		61	11
Paving							
Dump Truck	400	268 hr/3,200 ft	1465	2062		493	94
Pavers	126	96 hr/3,200 ft	525	738		177	34
Rollers	81	32 hr/3,200 ft	175	246		59	11
Tractors/Loaders/Backhoes	98	64 hr/3,200 ft	350	492		118	22
Paving Equipment	131	96 hr/3,200 ft	525	738		177	34
Bridge Repair T2 - 2017							
14-Ton Hydraulic Truck-Mounted Crane	400		166	166	166		
All-Terrain Forklift	100		33	33	33		
Welder	46		15	15	15		
Bridge Repair T4 - 2018							
Aerial Lift	63			27	27	27	
Crane	226			20	20	20	
Tractors/Loaders/Backhoes	98			27	27	27	
Dump Truck	400			13	13	13	
Rough Terrain Forklift	100			27	27	27	
Pumps	53			53	53	53	
Welder	45			27	27	27	
Bridge Repair T7 - 2018							
Aerial Lift	63			20	20	20	
Crane	226			17	17	17	
Tractors/Loaders/Backhoes	98			20	20	20	
Dump Truck	400			10	10	10	
Rough Terrain Forklift	100			33	33	33	
Pumps	53			53	53	53	
Welder	45			27	27	27	
Bridge Repair T10 2018							
Aerial Lift	63			30	30	30	
Crane	226			23	23	23	
Tractors/Loaders/Backhoes	98			30	30	30	
Dump Truck	400			17	17	17	
Rough Terrain Forklift	100			30	30	30	
Pumps	53			60	60	60	
Welder	45			30	30	30	
Utilities							
Tractors/Loaders/Backhoes	98	19	120	194	113		
Generator Sets	66	31	199	323	189		
Aerial Lift	63	6	40	65	38		
Trenchers	81	31	199	323	189		
Welder	45	6	40	65	38		
Rough Terrain Forklift	100	13	80	129	76		
Bore/Drill Rigs	206		200	200	200	200	
Pickup	300	38	239	388	227		

TAB D. Data Used in Calculations

Construction Equipment

Equipment	Cumul. Hrs	Ave Age	HP	HC-ZH	HC-DR	CO-ZH	CO-DR	NOx-ZH	NOx-DR	PM_{10}-ZH	PM_{10}-DR
Crane	6761	18	400	0.68	2E-05	2.7	5.4E-05	8.17	0.000136	0.38	2.02E-05
Forklift	3874	12	100	0.28	3E-05	3.14	8.3E-05	5.22	0.000084	0.29	2.12E-05
Hydroseeder	3312	16	400	0.32	1E-05	0.92	1.8E-05	6.25	0.000104	0.15	7.96E-06
Paver	2709	11	126	0.28	3E-05	3.14	8.3E-05	5.22	0.000084	0.29	2.12E-05
Grader	5017	18	175	0.68	3E-05	2.7	7.1E-05	6.9	0.00016	0.38	2.76E-05
Roller	2294	11	81	0.28	3E-05	3.14	8 3E-05	5.22	0.000084	0.29	2.12E-05
Welder	2898	14	46	1.45	0.0002	4.1	0.00042	5.55	0.000103	0.6	4.65E-05
Excavator	3769	9	163	0.16	3E-05	2.7	7.1E-05	4.44	6.46E-05	0.16	1.18E-05
Loader	4019	14	98	0.99	5E-05	3.49	9 2E-05	6.9	0.00016	0.69	5.02E-05
Milling Machine	1606	12	254	0.14	2E-05	0.92	2.4E-05	4.58	7.23E-05	0.11	6.03E-06
Dump Truck	7636	13	400	0.14	2E-05	0.92	1.8E-05	4.51	6.32E-05	0.11	6.03E-06
Street Sweeper	2277	11	64	0.37	7E-05	3.00	0.00031	4.95	9.67E-05	0.38	2.93E-05
Paving Equipment	2736	11	131	0.28	3E-05	3.14	8 3E-05	5.22	0.000084	0.29	2.12E-05

Notes:

Cumulative Hours -based on ave age by equipment type, Table 2 of Attachment A of App D

CO Efs from App D of App D, rest from CARB Construction Equipment Database Input Tables

For construction equipment:

soxdsl	0.0015	weight percent of sulfur in diesel	(CARB ULS Diesel)
soxcnv	0.02247	fraction of fuel sulfur converted to PM	

From Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition, USEPA July

On-Road Vehicles

onsite transport to storage area	1.4	miles one way (worst case scenario used)
semi truck fuel efficiency assumed	6.5	mpg
combined pickup trucks/van fuel efficiency assumed	17	mpg

BSFC (g/hp-hr) for >100 HP	166.468	From Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition,
BSFC (g/hp-hr) for <100 HP	185.065	From Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition,

BSFC gal/hp-hr	0.05282		
BSFC gal/hp-hr	0.05873	6.942	lb/gal density of diesel fuel

Greenhouse Gases

density of diesel	0.85	g/cc
gal:cc conversion	3785	cc/gal

TAB E. References

General

Diesel Fuels Technical Review, Chevron Corporation, 2007

Documentation of California's Greenhouse Gas Emission Inventory - Index, Category: Energy, Fuel Combustion Activities, Transport, March 2013

Not Specified Transportation - Distillate

Cars, On Road: Light-duty Vehicles - Gasoline

Heavy-duty Trucks and Buses, On Road: Heavy-duty Vehicles: Heavy-duty Trucks, Buses & Motorhomes - Gasoline

VOC conversion of diesel hydrocarbons based on "Table for Conversion Factors for Hydrocarbon Exhaust Emission Results", from Conversion Factors for Hydrocarbon Emissi

Construction Equipment Data

California In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling 2011 Inventory Model, CARB [http://www.arb.ca.gov/msei/categories.htm]

Appendix D: OSM and Summary of Off-Road Emissions Inventory Update, from Staff Report: Initial Statement of Reasons for Proposed Rulemaking,
Proposed Amendments to the Regulation for In-Use Off-Road Diesel-fueled Fleets and the Off-Road Large Spark-Ignition Fleet Requirements, CARB, October 2010.

Appendix E: Emissions Inventory Methodology and Results, from Technical Support Document: Proposed Regulation for In-Use Off-Road Diesel Vehicles, CARB April 2007

SO2 emissions calculated from Equation 7 of Exhaust and Crankcase Emission factors for Nonroad Engine Modeling - Compression-Ignition, USEPA July 2010

On-Road Vehicles

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Passenger Vehicles & Delivery Trucks, SCAQMD

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks, SCAQMD

Fugitive Dust

WRAP Fugitive Dust Handbook, Western Governors' Association, September 2006

Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Western Regional Air Partnership, October 2005

Greenhouse Gases

Documentation of California's Greenhouse Gas Emission Inventory - Index, Category: Energy, Fuel Combustion Activities, Transport, March 2013

RECORD OF NON-APPLICABILITY FOR CLEAN AIR ACT CONFORMITY Military Ocean Terminal Concord, CA

The preferred alternative for implementing the proposed action (Alternative 2) falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Project/Action Name: General Repair of Bridges, Roads, and Utilities at Military Ocean Terminal Concord (MOTCO).

Project/Action Point of Contact: LTC James R. Wiley
Commanding Officer
834th Transportation Battalion

Begin Date: 2017

End Date: 2022

General Conformity under the Clean Air Act (CAA), Section 176 has been evaluated for the project described above according to the requirements of 40 CFR Part 93, Subpart B. The General Conformity Rule applies to federal actions occurring in regions designated as being in nonattainment for the National Ambient Air Quality Standards (NAAQS) or attainment areas subject to maintenance plans (maintenance areas). Threshold (*de minimis)* rates of emissions have been established for federal actions with the potential to have significant air quality impacts. If a project/action located in an area designated as non-attainment or maintenance exceeds these *de minimis* levels, a general conformity determination is required. Contra Costa County is designated as a marginal ozone (8-hour) (O_3) non-attainment area, a nonattainment area for the 24-hour particulate matter less than or equal to 2.5 microns aerodynamic diameter ($PM_{2.5}$) standard, and a maintenance area for carbon monoxide (CO). Because ozone and $PM_{2.5}$ form or can form from other emissions, the analysis focuses on O_3 precursors, volatile organic compounds (VOCs) and nitrogen oxides (NO_x), as well as sulfur dioxide (SO_2) as a precursor for $PM_{2.5}$. The region is in attainment for other criteria pollutants.

A General Conformity applicability analysis of this project/action was performed to assess the air emissions associated with the proposed action to determine if maximum annual direct and indirect emissions from this project/action would exceed *de minimis thresholds.* Total emissions resulting from construction activities have been estimated using available project data, general air quality assumptions, and California Air Resources Board (CARB) and the United States Environmental Protection Agency (USEPA) emission factors. There are no operational air emissions. Based on the air quality analysis for the proposed action, the maximum estimated emissions would be below conformity *de minimis* levels (Table 1).

Table 1. Proposed Action (Alternative 2) Emissions Compared to General Conformity Rule *de Minimis Thresholds*

Year	VOCs	NO_x	SO_2	$PM_{2.5}$
2017	0.35	4.56	0.00	0.21
2018	0.53	7.08	0.01	0.38
2019	0.08	0.77	0.00	0.05
2020	0.22	2.01	0.00	0.09
2021	0.03	0.36	0.00	0.02
2022	0.53	4.56	0.00	0.05
de minimis thresholds	100	100	100	100
Potential Exceedance	No	No	No	No

Attached to this RONA is a summary of the calculations, and data including the estimated construction emissions due to implementation of the Proposed Action.

CONCLUSION

The project area is a nonattainment area for the $PM_{2.5}$ and the 8-hour O_3 NAAQS. Sulfur dioxide is a precursor to the formation of $PM_{2.5}$ and VOCs and NO_x are precursors to the formation of O_3. Emissions associated with construction activities for the proposed action were calculated based on standardized methodologies. Emissions were then compared with *de minimis* thresholds for the Bay Area Air Quality Management District.

The U.S. Army concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the proposed action. The emissions data supporting that conclusion is shown in Table 1, which is a summary of the calculations, methodology, and data attached to this RONA. Therefore, the U.S. Army concludes that formal Conformity Determination procedures are not required, resulting in this RONA.

RONA APPROVAL

To the best of my knowledge, the information presented in this RONA is correct and accurate, and I concur in the finding that the proposed action does not require a formal CAA Conformity Determination.

LTC James R. Wiley
Commanding Officer

27 June 2017
Date

APPENDIX F
ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

December 21, 2016 **Refer to NMFS No:** WCR-2016-5402

[redacted]
Military Ocean Terminal Concord
Department of Army
410 Norman Avenue
Concord, California 94520-1142

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Military Ocean Terminal Concord General Bridges, Roads, and Utilities Project in Suisun Bay, Contra Costa County, California

Dear [redacted]:

On August 8, 2016, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that the Department of Army's (DOA) general repair of bridges, roads, and utilities located at the Military Ocean Terminal Concord (MOTCO) is not likely to adversely affect species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency guidance for preparations of letters of concurrence.

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The concurrence letter will be available through NMFS' Public Consultation Tracking System (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts).[1] A complete record of this consultation is on file at NMFS North Central Coast Office, Santa Rosa, California.

[1] Once on the PCTS homepage, use the following PCTS tracking number within the Quick Search column: WCR-2016-5402.

Proposed Action and Action Area

The DOA proposes to repair three existing vehicle bridges and two existing rail bridges located at MOTCO between the years of 2018 and 2020. MOTCO is an Army Military Surface Deployment and Distribution Command's munitions and general cargo transshipment facility, and it is located on the southern shore of Suisun Bay, approximately 6 miles north of Concord, in Contra Costa County, California.

The five bridges to be repaired are located along White Road at MOTCO and cross over tidal sloughs and wetlands along the southern shoreline of Suisun Bay. Following is a summary of proposed repair activities for each bridge:

1. Bridge T-4 is a timber vehicle bridge and the proposed repairs include sealing existing cracks, replacing the approach railings/end treatments, and removing 10 deteriorated creosote-treated timber pile sections and replacing them with new sections of timber piling that will consist of treated wood with preservative and reinforced external steel sleeves.
2. Bridge T-5 is a timber girder railroad bridge and the proposed repairs consist of replacing warped or deteriorated timber walkway planks.
3. Bridge T-6 is a timber girder railroad bridge and the proposed repairs consist of replacing warped or deteriorated walkway planks.
4. Bridge T-7 is a timber girder vehicle bridge and the proposed repairs include filling the void under the existing concrete abutment, redirecting roadway drainage, sealing pavement cracks, installing or repairing railings/end treatments, removing decayed wood and applying wood preservative, and removing eight deteriorated creosote-treated timber pile sections and replacing them with new sections of timber piling that will consist of treated wood with preservative and reinforced external steel sleeves.
5. Bridge T-10 is a timber girder vehicle bridge and the proposed repairs consist of sealing cracks in the roadway and deck, extending railings and new end treatments, removing 15 deteriorated creosote-treated timber pile sections and replacing them with new sections of timber piling that will consist of treated wood with preservative and reinforced external steel sleeves, replacing a retaining wall, and filling gaps around railing posts.

Repair work will be conducted from land or with barge-based equipment. Staging areas will include existing paved areas, concrete pads, and previously disturbed vegetated areas that are located away from waterways. All debris and damaged piles will be slowly lifted from the water and disposed of at an appropriate upland facility. Minimal cutting and boring will occur over the water and tarps will be used if necessary. A floating surface boom will be placed around the work areas to ensure that no debris enters the water. The upper part of the boom will consist of sorbent material to capture any floating hydrocarbons that may be associated with the removed timber pile sections. Repair work will be conducted with a crane and jacking equipment.

In-water work is required for replacement of deteriorated pilings at three bridges. In total, 33 piles will be removed and replaced at bridges T-4, T-7, and T-10 with a land-based crane. For the replacement of the timber pile sections, temporary dewatering of the pile area will occur. The dewatering will be accomplished through the use of a temporary inflatable cofferdam or a similar device. No sheet piles will be used to construct cofferdams. Up to 10 sites of approximately 800 square feet each will be dewatered at the three bridge repair locations. The period of cofferdam use

for site dewatering at each of the 10 sites will range from 8 days to 2 weeks. Installation of the cofferdams will occur during periods of low tide when little to no water is anticipated to be within the area to be enclosed. All in-water work, including cofferdam installation and removal, will occur between August 1 and November 30. The replacement pile sections will be wood treated with a waterborne preservative that minimizes leaching of contaminants into the water column and bay sediments. A small crane located on the bridge abutment or the bridge deck will be used for pile section removal and replacement.

Other repair activities proposed by DOA in upland areas at MOTCO between 2018 and 2020 include: (1) the repair of 7 miles of various existing road segments, with no more than 6 miles being repaired per year; (2) the repair of one existing vehicle bridge and one parallel rail bridge; (3) the repair of the existing utility systems; and (4) geotechnical exploration within the footprint of the road systems at MOTCO. These other repair activities are anticipated to have no effect on NMFS-listed species, designated critical habitat, or EFH due to their locations in upland areas at MOTCO.

The project action area is located at DOA's MOTCO facility along the southern shore of Suisun Bay. Suisun Bay is in the upper portion of the San Francisco estuary and receives freshwater inflow from the Sacramento-San Joaquin Delta, which creates a brackish-transition zone. Proposed in-water construction activities in the action area are located in tidal brackish marsh adjacent to the shoreline of Suisun Bay. The upland portion of the action area consists of developed or altered land along road corridors within MOTCO.

Action Agency's Effects Determination
DOA has determined that the proposed project is not likely to adversely affect ESA-listed fish and designated critical habitat, and has requested NMFS' concurrence with this determination.

Available information indicates the following listed species (Distinct Population Segments [DPS] and Evolutionary Significant Units [ESU]) and critical habitat under the jurisdiction of NMFS may be affected by the proposed project:

Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*) **ESU**
endangered (70 FR 37160; June 28, 2005)
critical habitat (58 FR 33212; June 16, 1993);
Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*) **ESU**
threatened (70 FR 37160; June 28, 2005);
California Central Valley steelhead (*Oncorhynchus mykiss*) **DPS**
threatened (71 FR 834; January 5, 2006);
Central California Coast steelhead (*Oncorhynchus mykiss*) **DPS**
threatened (71 FR 834; January 5, 2006); and
North American Green Sturgeon (*Acipenser medirostris*) **southern DPS**
threatened (71 FR 17757; April 7, 2006)
critical habitat (74 FR 52300; October 9, 2009).

The life history of steelhead is summarized in Busby *et al.* (1996) and Chinook salmon life history is summarized in Myers *et al.* (1998). Sacramento River winter-run Chinook salmon and Central Valley spring-run Chinook salmon use San Francisco Bay as a migration corridor. These

anadromous salmonids pass through the greater San Francisco Bay on their way to the ocean to rear as juveniles or to upstream areas to spawn as adults. Their migrations generally take place in the winter and spring months. Steelhead migrate to the ocean as smolts from January through May and migrate from the ocean upstream to spawn from December through April (Fukushima and Lesh 1998).

The life history of green sturgeon in California is summarized in Adams et al. (2002) and NMFS (2005). The southern DPS of North American green sturgeon spawn in the deep turbulent sections of the upper reaches of the Sacramento River. As juvenile green sturgeon age, they migrate downstream and live in the lower delta and bays, spending from three to four years there before entering the ocean. Adult green sturgeon return from the ocean every few years to spawn, and generally show fidelity to their upper Sacramento River spawning sites. Adult southern DPS green sturgeon enter San Francisco Bay in late winter through early spring (NMFS 2015) and juvenile and adult southern DPS green sturgeon may be present in San Francisco Bay and near the project site year-round.

DOA has determined the proposed project will have adverse effects on EFH, but that these effects will temporary and minor. The project area is located within an area identified as EFH for various life stages of fish species managed through the Pacific Coast Salmon Fishery Management Plan (FMP), Coastal Pelagic FMP, and the Pacific Groundfish FMP. The project area is also within an area designated as Habitat Areas of Particular Concern (HAPC) for various federally-managed fish species within the Pacific Groundfish and Pacific Coast Salmon FMPs. HAPC are described in the regulations as subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPC are not afforded any additional regulatory protection under MSA; however, federal projects with potential adverse impacts to HAPC are more carefully scrutinized during the consultation process. As defined in the Pacific Groundfish and Pacific Coast Salmon FMPs, San Francisco Bay, including the project area, is identified as estuary HAPC.

Consultation History

On February 1, 2016 NMFS received a letter from DOA requesting early coordination regarding the proposed project. DOA initiated informal consultation with NMFS by letter dated August 2, 2016, and provided a July 2016 biological assessment prepared by DOA. Emails were exchanged between DOA and NMFS discussing the project description between August and December of 2016. Sufficient information regarding the project description was provided to NMFS to initiate consultation on December 20, 2016.

ENDANGERED SPECIES ACT

Effects of the Action

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. Beneficial effects

are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

The effects of the proposed action are reasonably likely to include degradation of water quality during in-water construction activities, elevated noise levels during pile driving, and entrapment of fish behind cofferdams.

Removal of deteriorated piles and installation of replacement piles at three of the five bridges will disturb bottom sediments in tidal marsh areas. Water quality is expected to be degraded as old piles are pulled from the substrate and new piles installed. Some of the 33 piles to be repaired will involve work below the mudline and generate increased levels of turbidity in the water column. If sediment loads remain high for an extended period of time, the primary productivity of an aquatic area may be reduced (Cloern 1987) and fish may suffer reduced feeding ability and be prone to fish gill injury (Benfield and Minello 1996; Nightingale and Simenstad 2001). For this project, increased levels of turbidity will be confined to dewatered areas enclosed by cofferdams. Isolation of the work sites by cofferdams and dewatering will minimize the movement of sediment into adjacent waterways in the tidal marsh and avoid degradation of water quality in Suisun Bay downstream of the sites. The marginal increases in turbidity associated with project activities will be short-term and localized. Increased levels of turbidity are expected to be minor in the water column outside the cofferdams and, thus, will not occur at levels that cause adverse effects in ESA-listed anadromous salmonids and green sturgeon. Therefore, NMFS expects effects from increased turbidity will be insignificant for ESA-listed anadromous salmonids and green sturgeon.

In-water construction activities may also affect water quality in the action area through the resuspension of contaminated sediments during pile section removal and replacement. Polycyclic aromatic hydrocarbons (PAHs) leach from creosote-treated wood into the environment. Although the largest impact to fish is from dietary ingestion of invertebrates with high levels of PAHs in their system, impacts to fish also occur through leaching into the water column (NMFS 2009). PAHs are known to cause cancer, reproductive anomalies, and immune dysfunction in fishes. Exposures to embryos can result in a suite of detrimental effects: edema (swelling) of the yolk sack, hemorrhaging, disruption of cardiac function, enzyme induction, mutation of progeny, craniofacial and spinal deformities, neuronal cell death, anemia, reduced growth, and impaired swimming (NMFS 2009). PAHs are known to occur in sediments at MOTCO due to presence of creosote-treated piles in the action area. However, the amount of potentially contaminated sediments released into the waterway associated with pile section removal and replacement is expected to be low because only sediments in the immediate vicinity of piles are expected to be disturbed. Similar to increased turbidity levels, any contaminant-laden sediments will be confined to the area enclosed by the cofferdams. Additionally, the DOA will utilize a sorbent boom to absorb any PAHs released into adjacent waters, which will minimize the amount of PAHs that will be available to enter the waterways of the marsh or move downstream. Construction activities have the potential to cause accidental spill of pollutants or debris into the waterway. However, a tarp and a sorbent boom will be used to ensure any debris is caught and pollutants are absorbed. Therefore, NMFS anticipates the effects of resuspension of contaminated sediments and accidental spill of pollutants or debris during construction to be insignificant in waters outside of the cofferdams where ESA-listed anadromous salmonids and green sturgeon may be present.

Pile installation can create elevated levels of underwater sound that can be harmful to fish. However, DOA proposes to install the pile sections with a crane and work sites will be dewatered by cofferdams. With the use of a crane and site dewatering, no elevated underwater sound levels are expected during pile installation. The installation of cofferdams creates the potential for entrapment of fish as the work area is closed off with an inflatable cofferdam or a similar device. The DOA proposes to restrict the period of cofferdam installation and associated dewatering to the period between August 1 and November 30. The DOA also proposes to limit the installation of cofferdams to periods of low tide. Because of the included work window, ESA-listed anadromous salmonids are very unlikely to be present in the project's action area during the period of cofferdam installation. Thus, the potential for entrapment of ESA-listed anadromous salmonids due to dewatering at the cofferdams is discountable. Green sturgeon may be present in Suisun Bay year-round; however, this species is very unlikely to be in shallow channels of the tidal marsh during periods of low tide. Due to the shallow water conditions at the work sites during low tide, green sturgeon are not expected to be present when the cofferdams are installed. Once installed, the cofferdams will isolate the work sites from tidal waterways in the marsh. Therefore, entrapment of green sturgeon during construction activities by this project is discountable.

The action area is located within designated critical habitat for winter-run Chinook salmon and the southern DPS of green sturgeon. The designations of critical habitat for the above use the term primary constituent element (PCE) or essential features. The new critical habitat regulations (81 FR 7414) replace this term with physical or biological features (PBFs). This shift in terminology does not change the approach used in conducting our analysis, whether the original designation identified primary constituent elements, physical or biological features, or essential features. In this letter of concurrence, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The PBFs essential for the conservation of Sacramento River winter-run Chinook salmon are: (1) access from the Pacific Ocean to appropriate areas in the upper Sacramento river, (2) availability of clean gravel for spawning substrate, (3) adequate river flows for spawning, incubation of eggs, fry development and emergence, and downstream transport of juveniles, (4) water temperatures between 42.5 and 57.5 °F (5.8 and 14.1 °C) for successful spawning, egg incubation, and fry development, (5) habitat areas and adequate prey that are not contaminated, (6) riparian habitat that provides for successful juvenile development and survival, and (7) access downstream so that juveniles can migrate from spawning grounds to San Francisco Bay and the Pacific Ocean. For the southern DPS of green sturgeon, the PBFs of designated critical habitat in estuarine areas include food resources, water flow, water quality, migratory corridor, water depth, and sediment quality.

During construction, critical habitat will be temporarily affected by degraded water quality and disturbance of benthic habitat. As discussed above, water quality effects in the form of increased turbidity, potential release of pollutants or debris, and potential resuspension of contaminated sediment are expected to be temporary and insignificant. A very small portion of the tidal channel will be disturbed by the bridge pile replacements and the sites are within the footprint of existing pilings. Bottom habitat disturbed by construction activities may impact benthic invertebrates at the work site; however, the benthic community is expected to rapidly recover due to the small area affected by project activities. The project's replacement piles will be coated with a preservative compound that minimizes leaching of the wood treatments into the water. Additionally, the piles

will be wrapped with a steel sleeve which will further minimize leaching into the water column and sediment. Based on the above, the potential effects of this project are considered insignificant or discountable and are not expected to result in either a net change to existing habitat values in the action area or result in adverse impacts to designated critical habitat.

Conclusion
Based on this analysis, NMFS concurs with DOA that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

Reinitiation of Consultation
Reinitiation of consultation is required and shall be requested by the DOA or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Under the MSA, this consultation is intended to promote the protection, conservation and enhancement of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10), and "adverse effect" means any impact which reduces either the quality or quantity of EFH (50 CFR 600.910(a)). Adverse effects may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Based on information provided by the DOA, the proposed action may result in localized and temporary degradation of water quality and disturbance of the benthic community during project activities. Therefore, NMFS has determined the proposed action would adversely affect EFH for various life stages of fish species managed under the Pacific Groundfish and the Coastal Pelagic FMPs. However, adverse effects are localized, temporary and minimal in nature. Furthermore, the proposed action will benefit EFH after completion by removing creosote-treated piles. Thus, NMFS has no practical EFH Conservation Recommendations to provide.

The DOA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH (50 CFR 600. 920(l)). This concludes the MSA portion of this consultation.

8

Please direct questions regarding this letter to Autumn Cleave, North Central Coast Office in Santa Rosa, California at (707) 575-6056, or via e-mail at autumn.cleave@noaa.gov.

Sincerely,

For Barry Thom

Barry A. Thom
Regional Administrator

cc: [redacted] Military Ocean Terminal Concord, CA
Copy to ARN File # 151422WCR2016SR00300
Copy to Chron File

Literature Cited

Adams, P.B., C.B. Grimes, J.E. Hightower, S.T. Lindley, and M.L. Moser. 2002. Status Review for North American Green Sturgeon, *Acipenser medirostris*. National Marine Fisheries Service, Southwest Fisheries Science Center. 49 pages. [Document available at: http://www.westcoast.fisheries.noaa.gov/publications/status_reviews/other_species/green_sturgeon/greensturgeon.pdf].

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
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Sacramento, California 95814

In Reply Refer To:
08FBDT00-2016-I-0226

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Environmental Coordinator
Department of the Army
Military Surface Deployment and Distribution Command
834th Transportation Battalion
Military Ocean Terminal Concord
410 Norman Ave
Concord, CA 94520-1142

MAY 5 2017

Subject: Informal Consultation on the General Repairs of Bridges, Roads, and Utilities Project at Military Ocean Terminal Concord (MOTCO), Concord, California

Dear Mr. Romine:

This document is in response to the Department of the Army's (Army) August 2, 2016, letter requesting informal consultation with the U.S. Fish and Wildlife Service (Service) on the General Repairs of Bridges, Roads, and Utilities Project at MOTCO (project) in the City of Concord, Contra Costa County, California. Your request was received by the Service on August 9, 2016. You determined that the project as described may affect, but is not likely to adversely affect the federally endangered soft bird's-beak (*Chloropyron molle* ssp. *molle*), the threatened delta smelt (*Hypomesus transpacificus*) and its designated critical habitat, the endangered California clapper rail (*Rallus longirostris obsoletus*) (CCR), the endangered California least tern (*Sternula antillarum browni*)(CLT), and the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*)(SMHM). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*)(Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

In reviewing this project, the Service has relied upon: (1) the Army's August 2, 2016, letter requesting consultation; (2) the July 2016, *Biological Assessment for Potential Effects on USFWS- and NMFS-Listed Species and Critical Habitat From the General Repair of Bridges, Roads and Utilities at Military Ocean Terminal Concord , Ca* (BA); (3) the January 26, 2017, site visit; (4) phone and electronic mail (email) conversations occurring between September 2016

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through January 2017 between the Service and the Army; and (5) other information available to the Service.

Project Description

The proposed action includes the implementation of required repairs to MOTCO's linear infrastructure as further specified in the subsections that follow. The proposed repairs are separated into near-term (fiscal year [FY] 2016 to 2021) and long-term (after FY 2021) planned projects. For the near-term projects, the FY identified for each individual repair project is the anticipated execution year. The execution year is the planned timeline for the Army to have a contract in place for each project. The construction timeline follows, but lags behind the execution timeline (due to pre-planning and associated work that precedes construction actions). The long-term planned projects are reasonably expected to be implemented sometime after FY 2021. The type of repair to be implemented is based on recommendations made in the Real Property Master Plan (RPMP) and Utility Master Plan and subsequent individual road and bridge inspections conducted from 2013 to 2015 by the U.S. Army Corps of Engineers (Corps) Engineer Research and Development Center. Details on proposed repairs for the near-term projects are based on design work conducted by the Corps' Sacramento District.

All repair activities (i.e., those having direct effects) would occur within the existing roadway, previously disturbed shoulder, or existing bridge footprint. This includes necessary geotechnical borings to support road and bridge design and repair efforts. The previously disturbed road shoulder varies by road segment, but is generally approximately 10 to 15 feet from the edge of the existing roadway. Exceptions include the Rinquist Road realignment and the White Road East and Anderson Road segments. For White Road East and Anderson Road, these segments would be widened to accommodate a roadway that is 24 feet (it includes 11-foot lanes, with one additional foot between the lane line and edge of road pavement, and two additional feet of aggregate shoulder). This would provide the flexibility to accommodate 2-way traffic on these road segments, which is optimal due to increased efficiency and flexibility for meeting MOTCO's military mission requirements. For Rinquist Road, realignment would eliminate the sharp curves in the road between the Taylor Boulevard Bridge and Johnson Road and Anderson Road. Construction would include a new approximately 500-linear-foot segment of road at a perpendicular to Johnson Road (and adjacent rail) and straight-line connection between the current northeastward curve of Rinquist Road to Anderson Road. In addition, the intersections of the realigned Rinquist Road with Anderson Road and Christenbury Road would be improved to meet applicable standards.

Construction staging areas (i.e., laydown areas for temporary storage of equipment and supplies including short-term placement of asphalt millings and base materials) would include currently paved surfaces, concrete pads, and previously disturbed vegetated areas. The total combined area of these staging areas is approximately 33.2 acres. The use of staging areas for implementation of projects would be determined on a case-by-case basis for each project depending on needs and efficiency of project execution and confliction with other concurrent activities or use of staging areas. Per MOTCO's Land Use Control Implementation Plan (LUCIP), any materials removed from roadbeds that are deemed unsuitable for reuse in the road repair projects due to soil properties, but are considered clean and may be reused at MOTCO as fill at a location different

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from where it was excavated would be transported to one or both of two sites identified at MOTCO that are appropriate for receiving such materials. Materials that are identified as potentially contaminated will be subject to site-specific or stockpile-specific evaluation to identify the appropriate handling and disposal or relocation of the materials. Disposal of these materials would be off-installation at an approved site in accordance with all applicable federal, state and local regulations.

Construction-related traffic would use Gate 5 (which is being upgraded and is located in the eastern portion of the Tidal Area at the intersection of Port Chicago Highway and Nichols Road) or Gate 2 (located at the southern end of Taylor Boulevard) depending on the project site, vehicle size, timing, and operational status of the gates. Based on the current project timeline for the Gate 5 project, the upgraded gate should be available for use in 2019. Workers would be directed to park at a consolidated location and be transported to and from the work site in larger transport vans or busses at the start and end of the workday and for off-site lunch breaks, as needed to reduce construction related traffic.

The following assumptions are made for the proposed project:

- No more than 6 miles (31,680 linear feet) of roadway would be under repair in any calendar year.
- The majority of daily construction activities would occur between 7 a.m. and 8 p.m. Certain construction activities, such as concrete placement, may have to extend beyond these hours in order to accomplish activities that must be performed without interruption until completion. This is expected to occur rarely and would only be undertaken with appropriate notification and minimization measures employed. Most work will occur during daylight, and no artificial temporary lighting would be used within work zones.
- Because the proposed long-term projects are similar in nature to the near-term projects and are part of the reasonably foreseeable components of the linear infrastructure repair program for MOTCO, they are included as part of the proposed action at a programmatic level consistent with 32 Code of Federal Regulations (CFR) Part 651.14(c).
- All work would be conducted in accordance with the MOTCO installation-wide Land Use Control Environmental Sampling and Results Screening for Excavation Projects (MOTCO 2014). This policy is part of the LUCIP, which is an appendix to the installation's RPMP that addresses avoidance of unexploded ordnance and munitions and explosives of concern at MOTCO. Additionally, all mitigation measures detailed in Chapter 6 of the BA would be implemented.

Table 2-1 summarizes the estimated areas of temporary and permanent disturbance that would occur under the proposed action by execution including all road and bridge projects and the utility and geotechnical investigations that would occur within this footprint. As previously noted, the execution year is the planned timeline for the Army to have contracts in place for the proposed project. The construction timeline follows, but lags behind the execution timeline and continues for the duration required to complete

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each project. The details of the proposed road and bridge projects follow the detailed project maps submitted concurrently with the BA.

Table 2-1. Summary of Estimated Temporary and Permanent Disturbance Areas from Road and Bridge Projects by Execution Year

Execution Year	Project Elemen	Permanent Disturbance Area	Temporary Disturbance Area
2016	Bridge Repairs	0	2.
2017	Road Repairs	17.	40.1
	Rinquist Road Realignment	1.1	1.
	Bridge Repairs	0	2.
2018	Road Repairs	14.	25.0
2019	Road Repairs	0	0
2020	Road Repairs	4.6	13.0
2021	Road Repairs	3.5	8.
Total Near-Term		**40.**	**92.4**
Long-term	Road Repairs	36.	142.0

Road repairs

Proposed repairs to roads address deficiencies and include several different pavement treatments including full depth reconstruction, mill and overlay, crack sealing, and subbase replacement. The proposed road repairs are designed for the intended uses, which include frequent use of reach stackers, specialized vehicles for transporting intermodal containers and other port related vehicles that weigh up to 192,000 pounds. Near-term (FY 2016 to 2021) road repairs are listed in Table 2-2 by execution year.

Table 2-2. Summary of Near-Term (Execution Year 2016-2021) Road Repairs

Execution Year	Road Segment	Repair Type	Distance (Linear	Total Mileage by Execution Year[1]
2017	Anderson Road	Full Depth	3,713	3.3
	Port Chicago Highway[2]	Mill/Overlay	13,174	
	Rinquist Road Intersection	Realignment	725	
	North Taylor Boulevard	Removal	712	Not Applicable
2018	White Road (West)[3]	Full Depth	2,661	2.4
	Christenbury Road (includes Brown Road)	Full Depth	5,973	
	Johnson Road	Full Depth	4,142	
2020	Main Street	Full Depth	2,615	1.1
	Mordoh Road	Full Depth	3,270	
2021	White Road (Center)[3]	Full Depth	1,124	0.2

Notes:
1. Construction timeline will lag behind the execution year; no more than 6 miles of roadway would be under repair in any given calendar year.
2. A segment of the eastern portion of Port Chicago Highway would not be repaired as the Gate 5 upgrade project reroutes traffic on a new road and abandons this segment of road. Based on the current project schedule, the upgraded Gate 5 is anticipated to be available for use in 2019.
3. An approximately 1,400-linear-foot segment of White Road extending between the former and proposed new Pier 2 West Trestle approach and the Pier 2 East Trestle approach be would be repaired as part of a project for the modernization and repair of Pier 2. The Center segment of White Road is the gap between the two segments being repaired as part of the Pier 2 project. The West Segment is to the west of the segment extending along between the former and proposed new Pier 2 West Trestle approach.

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The total mileage of the proposed near-term road repair projects is 7.0 miles. With the exception of the Port Chicago Highway and Rinquist Road realignment segments, the short-term projects are all full depth reconstruction. The proposed repairs to the 2.5-mile Port Chicago Highway road segment are mill and overlay involving the rubblization of the current concrete surface and replacement with an overlay consisting of an aggregate asphalt concrete surface with some areas that may need full depth replacement. The total estimated mileage of the long-term road repair projects is 12.3 miles.

Since water infiltration is a primary cause of pavement distress, repair of the stormwater drainage systems in areas where unintentional ponding is occurring is also included in the road repairs. In areas where the subgrade has been compacted or otherwise compromised, road segments would be raised to original design height. In most areas, the roadway would be raised by approximately 1.5 feet to restore grade. However, areas of White Road would be raised approximately 3 feet to restore grade height consistent with existing railroad crossings. In addition, dips in White Road would be corrected to provide an even grade in order to improve safety and rideability. The existing grade of White Road is approximately 8 to 10 feet and the finished height would be approximately 10 to 12 feet.

Fill material will consist of satisfactory materials (which may include sand-clay, sand-silt, clay/low plasticity, and sand/poorly graded to sand/well-graded soils). If determined to be satisfactory material, recycled asphalt product would be used and thereby minimize waste generation and the need for new fill material for the roadway full depth repair projects. It is conservatively estimated that up to approximately 12,500 cubic yards (cy) of new fill material would be required primarily in support of the Rinquist Road realignments and the evening out of the grade of White Road. Additionally, it is expected that the characteristics of approximately 10,500 cy of soils that would be removed from existing roadbeds would not be suitable for reuse. These materials would be transported to one or both of two sites on MOTCO that are appropriate for receiving these materials.

The proposed Rinquist Road realignment would eliminate the sharp curves in the road between the Taylor Boulevard Bridge and Johnson Road and Anderson Road. Construction would include a new approximately 500-linear-foot segment of road perpendicular to Johnson Road (and adjacent rail) and straight-line connection between the current northeastward curve of Rinquist Road to Anderson Road. In addition, the intersections of the realigned Rinquist Road with Anderson Road and Christenbury Road would be improved to meet applicable design standards. The resultant configuration would provide for a safer and more efficient circuitous route between the Taylor Boulevard and Anderson Road segments of the proposed Pier 2 future mission operations route (Holding Pads-Taylor Boulevard-Anderson Road-Preuitt Road-Pier 2). Road segments and surfaces that would no longer be needed would be removed and the areas revegetated as appropriate. This includes approximately 712 linear feet of North Taylor Boulevard northeast of the realigned Rinquist Road (0.8 acre) and areas southeast of the new Rinquist Road/Johnson Road intersection (0.2 acre). It is estimated that the net change in impervious surface associated with the proposed realignment would be relatively equal.

This segment of North Taylor Boulevard would be removed to the natural subgrade, which is estimated to be 1 foot below the mean high water mark. It is estimated that 3,500 cy of material

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would be removed with a depth of excavation up to 5 feet below the current elevation. Based on geotechnical evaluations, this material would not be suitable for reuse and, therefore, would be transported to one or both of the two sites at MOTCO appropriate to receive native soil materials. After removal of materials, the appropriate grade would be established to allow for appropriate tidal flow to maintain the function of existing wetlands on either side of the road. The former roadbed would be revegetated with appropriate native plantings to result in a contiguous wetland of improved value and functionality to the current wetland areas bisected by this segment of North Taylor Boulevard. Revegetation methods could include use of "seed bank" top soil from the nearby area or cut plugs from nearby vegetation. The revegetation plan would include considerations on the effects that seasonal conditions may have on the success of the effort and the contractor would be held to success criteria for the targeted condition. Additionally, ensuing geotechnical investigations will indicate whether the soil properties in the new footprint of the Rinquist Road realignment would require surcharge loading in order to provide adequate stability for the design load of the roadway. Surcharge loading consists of using excess fill material to compact, strengthen, and dewater the soil over a period of time. Based on current design, it is expected that surcharge loading would be necessary and it is estimated that a surcharge of up to 12 months would be required for the area. During this time, a temporary cofferdam would be installed approximately 12 feet from the surcharged area on the northern side of the new roadway to allow the settling to occur without the influence of water and allow continued equipment access to the surcharged area. The total estimated period of construction for the Rinquist Road realignment is 18 to 24 months. The new intersection would need to be completed prior to the removal of North Taylor Boulevard. The design height of the realignment would be at-grade with the rail crossings east of Johnson Road. The average minimum depth of estimated roadway fill would be 4 feet with a general range of 4 feet to 11 feet at the lowest points (within the wetland area). A 3:1 side slope is proposed, which is the minimal practicable to meet safety standards. The use of recycled asphalt product (including that removed from the abandoned segment of North Taylor Boulevard) would reduce the need for new fill material. However, only materials determined to be satisfactory for fill purposes would be utilized as such. The new fill material needed for the Rinquist Road realignment is included within the estimate of 12,500 cy of fill needed for all road repair projects.

Typical equipment used for road repairs includes milling machines, excavators, bulldozers, graders, asphalt pavers, material transfer vehicles, compactors/rollers, water trucks, dump trucks, forklifts, scrapers, trenchers, line-up trucks, and pickup trucks. The Port Chicago Highway mill/overlay project would include use of a rubblization machine (i.e., a hydraulic ram breaker on a tractor) to break up the existing concrete into small, interconnected pieces, which serve as a base course for a new asphalt pavement.

Bridge Repairs

Under the proposed action, there would be varying levels of repairs to seven MOTCO bridges implemented in the near-term (FY 2016–2021). Table 2-3 provides a summary listing of the bridge repairs and associated generalized project footprint. The bridges proposed for repair include three rail bridges and four road bridges. Typical equipment used for bridge repairs include an articulating boom lift (person lift) and a truck- or trailer-mounted engine driven welder.

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Table 2-3. Summary of Bridge Repairs

Bridge Name	Type	Length (linear feet)	Material	General Project Footprint	Execution Year (FY)	Construction Timeline (FY)
T-1	Rail	2,142	Concrete	Existing bridge surfaces; all construction debris and runoff would be fully contained	2016	2017–2019
T-2	Vehicle	1,385	Steel & Concrete	Existing bridge surfaces and area surrounding the southern abutment; all construction debris and runoff would be fully contained	2016	2017–2019
T-4	Vehicle	129	Timber	Existing bridge surfaces, replacement of sections of 10 piles	2017	2018–2020
T-5	Rail	129	Timber	Existing walkway planking	2017	2018–2020
T-6	Rail	333	Timber	Existing walkway planking	2017	2018–2020
T-7	Vehicle	128.5	Timber	Existing bridge surfaces, replacement of sections of 8 piles, and roadway draining away from abutment	2017	2018–2020
T-10	Vehicle	131	Timber	Existing bridge surfaces, replacement of sections of 15 piles, and roadway draining away from abutment	2017	2018–2020

Bridge T-1 is a multi-steel beam railway trestle bridge carrying one set of railroad tracks. The bridge is comprised of 55 spans and is approximately 2,142 feet long. The proposed repairs are to stabilize cracks with epoxy injection if possible and to remove and replace deteriorated (spalled/delaminated) concrete where needed.

Bridge T-2 is a steel girder vehicle bridge used for two-lane traffic. The bridge is comprised of 11 spans and is 1,385 feet long with a curb-to-curb width of 26 feet. The proposed repairs include:

- removal of existing lead-based paint (LBP) and repainting,
- cleaning/repairing concrete spalls,
- replacement of joint filler material,
- replacing existing approaches, railings/end treatments, and
- removal of loose soil from under the southern abutment and replacement with controlled low-strength material.

Bridge T-4 is a timber girder vehicle bridge carrying two lanes of traffic. The bridge is comprised of 11 spans and is 129 feet long with a curb-to-curb width of 22.5 feet. The proposed repairs include:

- sealing cracks in the roadway and deck,
- replacing the approach railings/end treatments, and

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- removing 10 deteriorated pile sections and replacing them with new sections of timber piling treated with wood preservative and reinforced with external steel sleeves.

Bridge T-5 is a timber girder railroad bridge supporting one set of tracks. The bridge is comprised of 11 spans and is 129 feet long with a curved alignment. The proposed repairs consist of replacement of deteriorated timber walkway planks.

Bridge T-6 is a timber girder railroad bridge supporting one set of tracks. The bridge is comprised of 29 spans and is 333 feet long with a curved alignment. The proposed repairs primarily consist of replacing warped walkway planking.

Bridge T-7 is a timber girder vehicle bridge carrying two lanes of traffic. The bridge is comprised of 11 spans and is 128.5 feet long with a curb-to-curb width of 22 feet. The proposed repairs include:

- filling the void under the concrete abutment,
- re-directing roadway drainage,
- sealing pavement cracks,
- installing or repairing railings/end treatments,
- removing decayed wood and applying wood preservative, and
- removing eight deteriorated pile sections and replacing them with new sections of timber piling treated with wood preservative and reinforced with external steel sleeves.

Hot-applied asphalt rubber fill such as "Crafco Asphalt Rubber Plus" would be used to address the void under the Bridge T-7 concrete abutment. This work is anticipated to occur above the mean higher high water level. The material would be below the water elevation once cured.

Bridge T-10 is a timber girder vehicle bridge carrying two lanes of traffic. The bridge is comprised of 10 spans and is 131 feet long with a curb-to-curb width of 28 feet. Proposed repairs include:

- sealing of cracks in the roadway and deck,
- extending railings and new end treatments,
- removing 15 deteriorated pile sections and replacing them with new sections of timber piling treated with wood preservative and reinforced with external steel sleeves, and
- replacing a retaining wall, and filling gaps around railing posts.

Repairs to Bridges T-4, T-7, and T-10 would require the temporary dewatering of the localized area around bridge pilings that would be repaired in order to gain access to the pilings in a semi-dry environment, which minimizes potential water quality impacts. The dewatering would likely be accomplished using a temporary inflatable water cofferdam or similar device. A minimum area required for work would be dewatered at any one time. Water would flow around the temporary dam and natural flows downstream or upstream would not be impeded. It is estimated that the work that is required could be accomplished by dewatering one bent at a time (an estimated area of approximately 800 square feet). As work on one work area is completed, the cofferdam would be moved to the next adjacent work area. It is estimated that up to 10 areas

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would sequentially dewatered for the length of each of these three bridges. The period of dewatering required at each bent is approximately 8 working days on average not to exceed the approximately 16-week in-water work window. It is expected that the initial dewatering would require more time than subsequent efforts as efficiencies would be expected as the process is repeated.

Utility Repairs

The proposed action includes proposed repairs to the utility systems that are under, above, or adjacent to the road network. This includes repairs to electrical, communication, water, and wastewater systems identified in the Utility Master Plan that would keep the systems functional for the foreseeable future. To the maximum extent feasible, these repairs would be undertaken in advance of or concurrent with paving to avoid having to cut or otherwise damage the new pavement once it is in place.

Improvements to the electrical distribution system that would be implemented under the proposed action include the following actions:

- Removal of existing overhead, non-operational distribution system components,
- Replacement of existing overhead electrical distribution system in the Tidal Area with an underground system composed of conduit, manholes, concrete encased duct banks, conductors, pad-mounted switchgear and sectionalizing cabinets, pad-mounted transformers, and new service laterals to each facility, and
- Repairs and/or movement of overhead electrical systems that would not be relocated underground, as needed. For example, some of the road projects would call for the relocation of some overhead powerline components.

Installation of new underground power lines on Christenbury, Johnson, and White Roads would occur within the FY 2016 to 2021 timeframe. The construction timeline for these repairs would be coordinated with the scheduled repairs to these roadways. In the event the existing overhead utilities cannot be relocated underground due to funding limitations, utility crossings, conduits, or duct banks would be installed to accommodate the future burying of utility lines. The utility crossings would be installed where the utilities cross the respective roadway.

Telecommunication lines would be moved underground into a conduit or duct bank to bring telecommunications up to current standards and protect the installation from outages due to severe weather. Similar to the electrical line upgrades, in the event the utilities cannot be moved underground due to funding limitations, utility crossings (i.e., conduit or duct bank) would be installed to accommodate the future burying of utility lines. The utility crossings would be installed where the utilities cross the respective roadway.

Minor repairs to water lines would be implemented. General types of repairs would include replacing fire hydrants, isolation valves, backflow preventers, increase fire flow capacity at fire hydrants, and fix leaks in water lines.

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Repairs to existing roads includes repairs to grading, drop inlets, and culverts as incorporated into roadway and bridge design to divert any standing water away from roadways and shoulders. Design requirements would be coordinated with updates to the MOTCO Storm Water Pollution Prevention Plan and National Pollutant Discharge Elimination System permit, which occur at least annually. In addition, a specific stormwater drainage improvement project is included to address erosion rills at the right abutment of Bridge T-2. Improper grading near an adjacent drop-inlet allows runoff to spill over and erode the surrounding soil causing the drop-inlet to fail. The proposed repair provides a new asphalt concrete dike, which would run for 50 feet at the edge of pavement parallel to the new metal beam guard rail end treatment. The runoff would be directed away from the abutment and toward a gravel depression between Taylor Road and the nearby railroad tracks. The existing drop-inlet would be abandoned in place.

Geotechnical Investigation

Types of geotechnical investigation may include mud rotary wash borings, hollow stem auger borings, hand excavation, hydrovac, and cone penetration or cone penetrometer tests. The specific boring locations and number of borings would depend on the project nature and size. The estimated total number of borings needed in an average year would be up to 200; primarily mud rotary wash borings or hollow stem auger borings would be used. Investigation sites would be marked and evaluated by Corps geotechnical professionals prior to commencement of any exploration and coordination with MOTCO would occur in accordance with the installation's dig permit standard operating procedure. Typical equipment used for geotechnical investigations include a truck-mounted drill rig.

Avoidance and Minimization Measures

General:

1) Demolition debris has the potential to contain LBP and other toxic substances. The construction contractor would be responsible for ensuring that hazardous waste and contamination is managed in compliance with all applicable laws and regulatory requirements. The existing paint on Bridge T-2, which is proposed for repainting, is known to contain LBP. At this location and other sites where LBP is present, the contractor will be required to develop and adhere to a debris containment and collection plan and lead compliance plan for protection of the environment and worker safety. A containment system would be provided around the work area where LBP is being disturbed, which must contain all water, debris, and visible dust produced when the existing paint is disturbed.

2) To avoid and minimize wetlands and habitat impacts, work at Bridges T-1 and T-2 would be conducted using under bridge scaffolding, hanging platforms, and ladders. A pre-determined flagged travel route would be established for personnel and equipment to access the area to avoid adverse impacts to habitat, as well as to avoid munitions and explosives of concern. All repair work would occur above the limits of ordinary high water and adjacent wetlands and would avoid salt marsh harvest mouse habitat.

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3) As part of the proposed repairs to deteriorated pile sections at Bridges T-4, T-7, and T-10, sections of affected timber piles would be cut, removed, and replaced with new sections of timber piling that have been treated with a waterborne preservative. The waterborne preservative would be either ammoniacal copper arsenate, ammoniacal copper zinc arsenate, or chromated copper arsenate in accordance with the American Wood Protection Association Standard A2, *Standard Methods for Analysis of Waterborne Preservatives and Fire-Retardant Formulations* and P5, *Standard for Waterborne Preservatives* to minimize leaching of preservative products into the water column and bay sediments. Between the existing timber piles and the new pile splices, a waterproof epoxy with a consistency of putty would be used.

4) A Service -approved biologist(s) will serve as the biological monitor(s) and will be onsite during the duration of the project. The biologists will have completed coursework or equivalent related experience specific to herpetology, mammalogy, and fish for the purposes of monitoring for the SMHM, CCR, and delta smelt. The approved biologist(s) shall maintain written monitoring records that include: (1) the beginning and ending time of each days' construction monitoring effort; (2) a statement identifying the species, including general fish and wildlife species, when they are observed, by whom and the location of the observation; (3) the condition of the species; and (4) a description of any actions taken. The biological monitor shall maintain complete records in their possession and shall immediately surrender copies of these records to the Service upon verbal or written request. Copies of the monitoring records or a final report for the construction monitoring shall be provided to Service within ninety (90) days of completion of the construction monitoring.

5) The Service-approved biologist will conduct mandatory contractor/worker awareness training for construction personnel. The awareness training will be provided to all construction personnel to brief them on the need to avoid effects to listed species and their habitat and the potential for any such wildlife species to occur on the site. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work.

6) Project personnel will be directed to use best management practices (BMPs) where applicable, such as for prevention of soil erosion and sedimentation of aquatic habitats and introduction and spread of invasive plant species. These measures will be identified prior to construction and incorporated into the construction operations.

7) Prior to construction within or adjacent to tidal marsh habitats, including staging areas, temporary exclusion fencing (TEF) will be installed between the work area and any remaining marsh vegetation adjacent to the project footprint immediately to prevent encroachment by construction vehicles and personnel. A Service-approved biologist will determine the exact location of the fencing. The fencing will be strung tightly on posts set at maximum intervals of 10 feet and will be checked and maintained as needed until construction is complete. No grading, clearing, storage of equipment or machinery, or other disturbance or activity will occur within or adjacent to tidal marsh habitats until the TEF has been installed and approved by the Service-approved biologist.

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8) Vehicular traffic will be confined to existing roads and the proposed access routes.

9) No pets will be permitted in the project area to avoid harassment, killing, or injuring of wildlife.

10) Access roads, staging areas, and in-water work areas shall be clearly identified in the field using orange construction fence, signage, buoys, or similar as appropriate. Work shall not be conducted outside designated work areas.

11) The project site will be maintained trash-free, and food refuse will be contained in secure bins and removed daily during construction.

12) Nighttime work near tidal marsh habitat will be avoided to the extent feasible. If nighttime work cannot be avoided, lighting will be directed to the work area, minimizing the lighting of tidal marsh habitat.

13) No vehicles or equipment will be refueled within 100 feet of wetlands or aquatic habitats unless a bermed and lined refueling area is constructed. Any vehicles driven and/or operated within or adjacent to wetlands or aquatic habitats will be checked and maintained daily to prevent leaks of materials.

14) Use of chemicals, fuels, lubricants, or biocides will be in compliance with all local, state, and federal regulations. This is necessary to minimize the possibility of contamination of habitats or poisoning of wildlife. All uses of such compounds will observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation.

15) The Army's contractors will be required to produce an Environmental Protection Plan that will address the known or potential environmental issues at the project site. The Environmental Protection Plan will contain, but is not limited to, names and qualifications of individuals who will be responsible for hazardous waste disposal and biological monitoring, authorized work areas, environmental compliance training program, drawings showing material storage areas and construction material containment, and methods to control water runoff.

16) Minimal cutting and boring will occur over the water; if necessary, tarps or other capture devices will be used to reduce the likelihood of materials entering the water. A floating surface boom will be placed around the work area to ensure that debris that falls in the water will be captured and promptly removed. The upper part of the boom will consist of sorbent material to capture floating hydrocarbons that may be associated with the creosote piles. All debris and damaged piles will be slowly lifted from the water and placed on the work surface of the barge within a containment basin that is constructed with durable plastic sheeting and designed to contain all sediment, without attempting to clean or remove any adhering sediment. The cut up piling, sediments, construction residue, and plastic sheeting will then be disposed of properly offsite in a manner that does not expose or affect aquatic resources.

[redacted] 13

In addition to the measures described above, the proposed action will include implementation of the following avoidance, minimization, and compensation measures for the following species and/or critical habitat:

Soft bird's-beak:

1) A Service-approved biologist will conduct pre-construction surveys for presence of soft bird's beak within the areas where the vegetation will be removed to bare ground. Removal of vegetation to bare ground may begin when no soft bird's beak are located.

Delta smelt:

1) To minimize the effects of the initial dewatering on fish species, with each installation of the cofferdam the slough channel would be allowed to naturally dewater from the ebb flow at low tide prior to the installation of the cofferdam. Once the cofferdam is in place, the area would be dewatered until the water level allows for visibility of the substrate. All in-water work associated with these efforts would be scheduled to occur during the delta smelt in-water work window (August 1st through November 30th).

California clapper rail:

1) Activities within or adjacent to tidal marsh habitat will be avoided during the CCR breeding season from February 1st through August 31.

2) Activities will not occur within 700 feet of an identified calling center.

3) A Service-approved biologist will be present during all project-related ground disturbances or vegetation removal/cutting, this includes the initial disturbance and any subsequent work necessary for maintenance of clear space. A pre-construction survey shall be conducted up to 72 hours prior to construction.

4) To prevent/deter raptors from using project lighting as perches, lighting will either be designed to prevent/deter raptor perching or avian anti-perching devices will be permanently installed on lighting structures.

Salt marsh harvest mouse:

1) Where marsh vegetation representing potentially suitable habitat for SMHM is present and needs to be removed, work will be conducted using hand-held tools in a manner to enable and encourage wildlife to escape from the construction area. Vegetation shall be removed only with non-mechanized hand tools (i.e., trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers or lawn mowers, shall be used to remove this vegetation. Vegetation will first be trimmed to a canopy height of 6 inches (which appears to be the lowest commonly used by SMHM). Then, a Service-approved biologist will conduct pre-construction surveys for presence of SMHM within the areas where the vegetation will be removed to bare ground. Removal of vegetation to bare ground may

[redacted] 14

begin when no mice are observed and shall start at the edge farthest from highest quality habitat, or the poorest habitat, and work its way towards any higher quality habitat.

2) To prevent SMHM from moving into the project site during construction, a TEF will be installed between the work area and any remaining marsh vegetation adjacent to the project footprint immediately after the vegetation removal and prior to the start of any other construction activities. The TEF will be made of a heavy plastic sheeting material that does not allow SMHM to pass through or climb, and the bottom should be buried to a depth of 2 inches so that these species cannot crawl under the fence. The TEF height will be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet. The TEF will be removed after all construction is complete. Prior to the start of daily construction activities, the Service-approved biologist will inspect the salt marsh harvest mouse TEF to ensure that it is neither ripped nor has holes and that the base is still buried. Any necessary repairs identified by the Service-approved biologist will be made immediately.

3) No materials or supplies that could potentially entrap SMHM will be stored in salt marsh vegetation. These include pipes, storage containers, landscaping materials, plastic sheeting, or other materials that small animals could use for cover. All equipment will be stored at designated staging areas, which consists of existing lots devoid of vegetation.

4) The Service-approved biologist will conduct pre-construction surveys for SMHM immediately prior to all construction activities (i.e., immediately prior to ground disturbance). If a SMHM, or any mouse that the biologist or construction personnel believe may be this species, is encountered, all work that could result in harassment or direct injury of the individual animal will immediately cease, and the foreman and Service-approved biologist will be immediately notified. The Service-approved biologist will monitor it until he/she determines that the animal(s) is not imperiled by predators or other dangers.

Conclusion

Soft bird's-beak and delta smelt

The Service concurs that the proposed project is not likely to adversely affect the soft bird's-beak, the delta smelt or the delta smelt's designated critical habitat based on the small scope of work around the areas where soft bird's-beak and delta smelt may occur and the proposed conservation measures which avoid or minimize effects to a discountable measure.

California least tern

The Service concurs that the proposed project is not likely to adversely affect the CLT as there is no suitable nesting or foraging habitat for CLT within or near the action area for the proposed project and it is expected that CLT will avoid the area during construction without adversely affecting any of their normal foraging behaviors.

[redacted]

California clapper rail and salt marsh harvest mouse

The Service concurs that the proposed project is not likely to adversely affect the CCR or the SMHM based on the following:

During the site visit by the Service on January 26, 2016, it was noted that the site contained small patches of tidal marsh vegetation such as pickleweed (*Salicornia pacifica*), various herbaceous plants, and a mix of native and non-native annual grasses around the Rinquist road realignment. Overall ground coverage and the stands of grass were too patchy, too small and/or too short to provide sufficient cover for foraging or sheltering by SMHM or CCR. Small ponded areas around the Rinquist road realignment were non-tidal and consisted of depressions that held rainwater or seepage from the larger tidal complex to the northwest of the action area. These ponded areas were not considered to be suitable tidal habitat for CCR and SMHM due to their proximity to the roads and lack of hydrodynamic exchange which creates anaerobic conditions. It is not likely that SMHM or CCR would utilize these ponded areas or be present near the proposed work site.

The T-1 and T-2 bridges have suitable habitat for SMHM under them; however, the project proposes to avoid these area with the use of under bridge scaffolding, hanging platforms, and ladders. Additionally, the project is proposing to conduct a small level of vegetation removal to discourage SMHM for entering the area under the bridge and the installation of a TEF afterwards to prevent SMHM from entering the area once bridge repairs begin. Vegetation under the bridges is expected to return to pre-project conditions shortly after work is complete. Vegetation under the T-1 and T-2 bridges is not sufficient to provide suitable habitat for CCR.

The remaining bridges all occur over permanently inundated marsh and canals and it is not anticipated SMHM would occur in these areas. Salt marsh emergent vegetation around the remaining bridges is small and patchy and would not likely provide sufficient cover for CCR. These bridges are frequently used by the Army Command personnel and the frequent disturbance would also likely dissuade CCR from occurring near these areas.

Road repairs are proposed to occur within the existing footprint and no habitat is anticipated to be affected. If SMHM or CCR were occupying the larger tidal marsh complex to the west, it is unlikely they would move into or attempt to occupy the project site. The animals would have to cross several roads and train tracks to get to the project site. Regular military activity and vehicle traffic occurs that would also likely deter any movement within the action areas.

The Army proposes several conservation measures which avoid and minimize adverse effects. These include the use of a Service-approved biological monitor, worker environmental awareness training, and the implementation of other best management practices.

Unless new information reveals effects of the proposed project that may affect listed species in a manner or to an extent not considered, or a new species is listed, no further action pursuant to the Act is necessary for the proposed project.

[redacted]

Please address any questions or concerns regarding this response to Brian Hansen, Endangered Species Biologist, at Brian_Hansen@fws.gov or (916) 930-5642 or Kim Squires, Section 7 Coordinator, at Kim_Squires@fws.gov. Please refer to Service file number 08FBDT00-2016-I-0226 in any future correspondence regarding this project.

Sincerely,

Jana Affonso
Assistant Field Supervisor

APPENDIX G
COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION

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San Francisco Bay Conservation and Development Commission
455 Golden Gate Avenue, Suite 10600, San Francisco, California 94102 tel 415 352 3600 fax 415 352 3606

April 11, 2017

TO: Department of the Army
Military Surface Deployment and Distribution Command (MOTCO)
834th Transportation Battalion
410 Norman Avenue
Concord, California 94520-1142

ATTENTION: James R. Wiley

RE: Concurrence with Negative Determination for proposed repair work to rail bridge T-1 and vehicle bridge T-2 at Military Ocean Terminal Concord site, 5110 Port Chicago Highway, in the City of Concord, Contra Costa County.

Dear Mr. Wiley:

On August 2, 2016, pursuant to Coastal Zone Management Act (CZMA) Regulations 15 CFR 930.31(b) and 15 CFR 930.35, the Department of the Army Military Surface Deployment and Distribution Command (Army) sent to the San Francisco Bay Conservation and Development Commission (Commission) the above-referenced negative determination, received on August 9, 2016, for the work within the coastal zone located at the Military Ocean Terminal Concord site, 5110 Port Chicago Highway, in the City of Concord, Contra Costa County. This work involves the following activities:

1. At a 2,142-foot-long section of railway trestle bridge T-1:
   a. Repair cracks in the bridge structure and replace deteriorated concrete.
2. At a 1,385-foot-long section of vehicle bridge T-2:
   a. Replace joint filler material; remove existing lead paint; repair 400 square feet of concrete spalls; and replace the existing north and south approach railings and transitional railing;
   b. Place 60-cubic-yards of material under the south abutment to divert runoff; and
   c. Construct a new asphalt concrete surface along the south side of a 50-foot-long section.

In this determination, the Army asserts that the proposed activity will have no foreseeable effect on coastal resources. Commission staff has reviewed your submittal on behalf of the Commission and concurs with the Army's conclusion. Accordingly, the Commission declines to assert its consistency review jurisdiction under the CZMA over the activity described in your submittal.

info@bcdc.ca.gov | www.bcdc.ca.gov
State of California | Edmund G. Brown, Jr. — Governor

James R. Wiley
Department of the Army
Military Surface Deployment and Distribution Command (MOTCO)
April 11, 2017
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Pursuant to 15 CFR § 930.45(b)(2) the Commission reserves the right to conduct a consistency review of this activity if is being conducted in a manner, or is affecting coastal resources, other than as described in your submittal.

If you should have any questions regarding this letter, please contact Hanna Miller of our staff at 415-352-3616 or hanna.miller@bcdc.ca.gov.

Kind regards,

LAWRENCE J. GOLDZBAND
Executive Director

LJG/HM/ra

cc:

Kathryn Hart, Regional Water Quality Control Board
Autumn Cleave, National Marine Fisheries Service

San Francisco Bay Conservation and Development Commission
455 Golden Gate Avenue, Suite 10600, San Francisco, California 94102 tel 415 352 3600 fax 415 352 3606

June 28, 2017

Department of the Army
Military Surface Deployment and Distribution Command
834th Transportation Battalion
410 Norman Avenue
Concord, California 94520-1142

ATTENTION: [redacted]

SUBJECT: BCDC Consistency Determination No. C2003.003.08 (Amendment No. Eight)

Dear Mr. Romine:

Enclosed please find an Amended Letter of Agreement for Consistency Determination No.C2003.003.08, incorporating the amendment requested in your letter of August 2, 2016. In the Amended Letter of Agreement, deleted language has been ~~struck through~~ and added language has been underlined. In addition, pursuant to Standard Condition IV-A, the Army Corps of Engineers must (1) **complete** the acknowledgment section of the letter of agreement stamped "BCDC Original," which indicates that you have read and that you understand all of the terms and conditions of the letter of agreement, and (2) **return** that entire executed "BCDC Original" to the Commission's office within the ten-day time period.

I am issuing this amendment on behalf of the Commission and upon the following findings and declarations:

1. The amendment to the Letter of Agreement is issued pursuant to Regulation Section 10812 upon the same criteria provided for the issuance of administrative permits and consistency determinations in that the project authorized by this amendment involves repair and maintenance work along 4.5-miles of roads and five bridges and the restoration of 0.57-acres of tidal wetlands, all within the MOTCO facility and thus is a "minor repair or improvement" for which the Executive Director may issue a letter of agreement, pursuant to Government Code Section 66632(f) and Regulation Section 10622(a).
2. The amendment to the Letter of Agreement is consistent with the Commission's Amended Management Program, the San Francisco Bay Plan, and the McAteer-Petris Act because the proposed project will not adversely affect the Bay nor public access to and enjoyment of the Bay consistent with the project.

Thank you for your cooperation. If you have any questions concerning the Amended Letter of Agreement, please contact Hanna Miller at 415/352-3616 or hanna.miller@bcdc.ca.gov.

Very truly yours,

JAIME MICHAELS
Chief of Permits

Enc.
JM/HM/ra

info@bcdc.ca.gov | www.bcdc.ca.gov
State of California | Edmund G. Brown, Jr. — Governor

San Francisco Bay Conservation and Development Commission
455 Golden Gate Avenue, Suite 10600, San Francisco, California 94102 tel 415 352 3600 fax 415 352 3606

LETTER OF CONDITIONAL CONCURRENCE FOR CONSISTENCY DETERMINATION NO. C2003.003.08
(Originally Issued on August 1, 2003, As Amended Through June 28, 2017)
AMENDMENT NO. EIGHT

Department of the Army
Military Surface Deployment and Distribution Command (MOTCO)
834th Transportation Battalion
410 Norman Avenue
Concord, California 94520-1142

ATTENTION: [redacted] Director of Public Works

Ladies and Gentlemen:

On March 19, 2015, the San Francisco Bay Conservation and Development Commission, by a vote of 15 affirmative, 0 negative, and 0 abstentions, adopted Material Amendment No. Five pursuant to which the conditional consistency determination was issued. Moreover on November 3, 2014, ~~and~~ September 24, 2015, and June 28, 2017, pursuant to Regulation Section 10822, the Executive Director approved Amendment Nos. Six, ~~and~~ Seven, and Eight, respectively, to which this amended conditional consistency determination is hereby issued:

I. Agreement

A. **Project Subject to this Consistency Concurrence**. The San Francisco Bay Conservation and Development Commission agrees with the determination of the United States Department of the Army that the following amended and conditioned project is consistent with the Commission's Amended Management Program for San Francisco Bay:

Location: Within the coastal zone, i~~I~~n the Bay and the uplands, at the Military Surface Deployment and Distribution Command (MOTCO) facility, located approximately six miles east of the Benicia-Martinez Bridge (CA Highway 680), at 5110 Port Chicago Highway, and at the "Barge Pier" located north of Kinney Boulevard, in the City of Concord, Contra Costa County.

Description: ~~**In the Bay:**~~ **Within the Coastal Zone:**

1. Repair Piers 3 and 4 by doing the following: (a) Replace 980 linear feet of pile caps; (b) repair 39 plumb piles; (c) wrap 795 linear feet of piles with a plastic barrier; (d) replace 121 linear feet of stringers;

(e) replace 200 linear feet of handrailing; (f) repair 81 square feet of concrete spall; and (g) replace 250 square feet of pier underdecking and deck pavement.

2. Repair Pier 4 by doing the following: (a) repair 44 plumb piles; (b) replace approximately 85 linear feet of stringers, 180 linear feet of pilecaps, and 7,100 square feet of firewall; (c) wrap with flexible plastic barrier approximately 850 linear feet of piles; (d) inject epoxy in cracks at various pier locations; (e) repair approximately 160 square feet of concrete spall; (f) repair deteriorated asphalt; (g) replace hand/guard railing; (h) replace damaged structures resulting from the collision of the military vessel "Pacific Success" with Pier 4 by: removing and replacing all damaged concrete deck members; removing and replacing four (4) damaged prestressed concrete piles and pile caps; removing and replacing nineteen (19) damaged timber fender piles and pile caps, and replacing portions of the damaged electrical system located beneath the deck (Amendment No. Two); (i) removing and replacing one concrete fender pile (at Bent 31.6 on Pier 4) and one timber pile (at Bent 34.5 on Pier 3); and (j) removing and replacing timber chocks and wales (pier structural members between pile bents 29 and 34 on Pier 3) (Amendment No. Three);
3. Repair Pier 3 by installing non-reactive, high-density polyethylene (HDPE) jackets on approximately 1,700 timber piles located under the main pier platform, resulting in a total of approximately 26,052 linear feet of pile wrapping material measuring about 0.06 inches thick, resulting in approximately 15 cubic yards of solid fill in the Bay (Amendment No. Four);
4. Prior to working on Pier 2, searching for and removing any explosive materials remaining from the 1944 Port Chicago Disaster (Material Amendment No. Five);
5. Demolishing 159,000 square feet (sf) (3.65 acres) of pier structure, including the main Pier 2 platform, west trestle, forklift trestle, and pedestrian walkway, removing 4,514 creosote-treated timber piles (or cutting them two feet below the mudline in cases where removal is not successful), removing 254 concrete square piles, 1,300 cubic yards of concrete slab, 200 tons of reinforcing steel, 1,550 timber pile

cap beams, 112,500 feet of stringers, 13,500 decking boards, 1,895 cubic yards of asphalt, and various other components including utility hangers, steel fasteners, sprinklers, risers, fender frames and floats, hose connections, circuit breakers, and electrical cables, with all removed material to be reused or disposed of at an authorized upland location outside the Commission's jurisdiction (Material Amendment No. Five);

6. Constructing a single-level, 95,000 sf (2.18 acre) main pier platform that extends 48 feet further offshore and into deeper water than the existing pier, constructing a new 21,347-square-foot (0.49 acre) west trestle, constructing a new 6,868-square-foot (0.16 acre) forklift trestle, driving 876 24-inch pre-stressed concrete piles and 125 reused square concrete piles, installing 2,000 feet of new crane rails, and adding two 80-long-ton container cranes (Material Amendment No. Five);
7. On the east trestle, removing existing rails and the top two inches of asphalt, installing high strength fibers at the beam soffits, adding diaphragm beams between the precast main beams, and replacing pile caps and precast deck slabs on the two spans adjoining the main pier to form an access ramp between the existing trestle and the elevation of the new pier platform (Material Amendment No. Five);
8. Below the mean high water line at the west and forklift trestle abutments, placing approximately 211 cubic yards of rock revetment over approximately 3,200 square feet (Material Amendment No. Five);
9. Installing four high-mast light poles for floodlights with shields and anti-perching devices approximately 50 feet behind the back of the pier (Material Amendment No. Five);
10. Constructing a new 1,500-square-foot Operations Building/Break room on Pier 2's main platform (Material Amendment No. Five);
11. Installing a drainage system and treatment device for surface runoff from the pier entering Suisun Bay (Material Amendment No. Five);
12. Installing security lighting and waterside bollards (Material Amendment No. Five);

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13. Repairing and replacing pier-side support facilities, including mooring hardware, removable bull-rails, pipelines for potable water, sanitary sewer, and fire response, and lightning protection (Material Amendment No. Five);
14. Restoring approximately 3,659 sf (0.084 acres) of high intertidal salt marsh wetlands after structures are removed by establishing target elevations, removing invasive perennial pepperweed and surface soils, and planting native high marsh species (Material Amendment No. Five);
15. Conducting maintenance dredging of approximately 750 cubic yards of sediment to a depth of minus 32 feet mean lower low water plus two feet of overdepth, using a bed-leveler device to redistribute the sediment on-site, but only after evidence has been provided to the Commission that the dredging and disposal of the dredged material is consistent with the Regional Water Quality Control Board's water quality requirements (Material Amendment No. Five); ~~and~~
16. Replace, use, and maintain in-kind eight (8) timber piles measuring approximately 14-inches-diameter and 35 to 65 feet in length on the west side of the Barge Pier to accommodate the berthing of a fire boat (Amendment No. Seven)~~.~~ ;
17. Realign an approximately 725-foot-long portion of the Rinquist Road intersection to straighten an approximately 500-foot-long segment, temporarily impacting approximately 1-acre of tidal wetlands and permanently impacting 0.38-acres of tidal wetland (Amendment No. Eight);
18. Remove an approximately 3,500-cubic yards of material over an approximately 712-foot-long section of North Taylor Boulevard and restore approximately 0.57-acres of newly exposed tidal wetland (Amendment No. Eight);
19. At Vehicle Bridges T-4, T-7, and T-10, repair, use, and maintain the bridge surfaces and replace sections of deteriorated wood piles by installing temporary cofferdams to dewater an approximately 2,400-square-foot area at Bridges T-4 and T-7, and remove an approximately 1,600-square-foot section of Bridge T-10 following completion of construction (Amendment No. Eight);

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20. At Vehicle Bridge T-10, place and maintain 0.5-cubic-yards of fill over an approximately 100-square-foot area to facilitate drainage at the east abutment;

21. At Rail Bridge T-5, repair and maintain approximately 129 linear feet of timber walkway planking, and, at Rail Bridge T-6, repair and maintain approximately 333 linear feet of timber walkway planking (Amendment No. Eight);

22. At Bridges T-4, T-5, T-6, T-7, and T-10, conduct geotechnical borings and backfill with bentonite grout and a top layer of dirt trimmings (Amendment No. Eight);

~~**On Land:**~~

~~1.~~ 23. Demolishing Building 160 (576 square feet, a former steam plant) (Material Amendment No. Five);

~~2.~~ 24. Expanding Lot T-10 by 39,500 square feet to create an approximately 240,000-square-foot (5.5 acre) staging area for handling containers (Material Amendment No. Five);

~~3.~~ 25. Along an approximately 8,500-foot-long, 39,204-square-foot section of White Road located west and east of Pier 2, removing asphalt and base material to a width of 20 feet, repaving the road, and repainting roadway stripes (Material Amendment No. Five);

~~4.~~ 26. Raising an approximately 1,000-foot-long section of White Road between the west trestle and forklift trestle approaches by approximately three feet by placing up to nine feet of surcharge fill, which will consolidate and drain, and realigning the roads servicing the pier to serve the new access point (Material Amendment No. Five);

~~5.~~ 27. Above the mean high water line at the west and forklift trestle abutments, placing surcharge fill and approximately 415 cubic yards of rock revetment over approximately 6,200 square feet (Material Amendment No. Five);

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~~6.~~ 28. Performing upgrades to the utilities infrastructure, including replacing existing transformers, panel boards, and junction boxes, and burying an existing power line along White Road between the east trestle of Pier 2 and the west trestle of Pier 4 (Material Amendment No. Five); ~~and~~

~~7.~~ 29. Constructing a 12-kilovolt electrical substation and installing two 1500-kilowatt diesel emergency generators (Material Amendment No. Five).

30. Repave, use, and maintain a 2.5-mile-long section of the Port Chicago Highway (Amendment No. Eight); and

31. At an approximately 0.70-mile-long section of Anderson Road, an approximately 0.50-mile-long section of White Road West, an approximately 0.21-mile-long section of White Road Center, an approximately 1.13-mile-long section of Christenbury Road, an approximately 0.78-mile-long section of Johnson Road, an approximately 0.50-mile-long section of Main Street, and an approximately 0.62-mile-long section of Mordoh Road, conduct and maintain road and utility repairs (Amendment No. Eight).

B. **Date of Submitted Consistency Concurrence** This amended agreement is given based on the information submitted by or on behalf of the United States Department of the Navy in its letter dated May 5, 2003, requesting the original consistency determination, its letter dated May 7, 2004, requesting Amendment No. One, its letter dated April 22, 2009, requesting Amendment No. Two, and its letter dated January 7, 2011, requesting Amendment No. Three, including all accompanying exhibits and subsequent correspondence.

Amendment No. Four to the amended agreement is given based on the information submitted by or on behalf of the United States Department of the Army in its letter dated September 25, 2014, requesting Amendment No. Four, including all accompanying and subsequently submitted exhibits and correspondence.

Amendment No. Five to the amended agreement is given based on the information submitted by or on behalf of the United States Department of the Army in its request for consistency concurrence dated October 15, 2014, requesting Amendment No. Five, including all accompanying and subsequently submitted exhibits and correspondence.

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Amendment No. Six to the amended agreement was given by matter of law on November 3, 2014 based on the information submitted by or on behalf of the U.S. Department of the Army ("Army") in its request for consistency concurrence dated October 27, 2014 on an activity involving sediment testing in the Bay at the MOTCO site.

Amendment No. Seven to the amended agreement is given based on the information submitted by or on behalf of the Army in its request for consistency concurrence dated July 9, 2015, including all accompanying and subsequently submitted exhibits and correspondence.

Amendment No. Eight to the amended agreement is given based on the information submitted by or on behalf of the Army in its request for consistency concurrence dated August 2, 2016, including all accompanying and subsequently submitted exhibits and correspondence.

C. **Consistency Concurrence Expiration Date.** Work authorized by Amendment Nos. Five and Seven to this amended agreement must commence prior to April 1, 2018, or this consistency determination will lapse and become null and void. Such work must also diligently pursued to completion, and be completed within three years of commencement, or by April 1, 2021, whichever is earlier, unless an extension of time is granted by further amendment of this amended consistency determination.

Work authorized by Amendment No. Eight to this amended agreement must commence prior to August 1, 2020 and must be diligently pursued to completion within 6 years, or by August 1, 2026, whichever is earlier, unless an extension of time is granted by further amendment to this amended consistency determination.

D. **Summary of Work found to be Consistent in Amendment No. Five**. For Amendment No. Five, the project found to be consistent with the Commission's federally authorized coastal management program involves demolishing and reconstructing Pier 2's main platform, west trestle, and forklift trestle, strengthening Pier 2's east trestle and adding a ramp to meet the elevation of the new main platform, placing surcharge fill and riprap around the new trestle abutments, demolishing and constructing ancillary buildings, repairing and raising sections of a connecting road, upgrading utilities, repairing and replacing pier-side supporting facilities, installing waterside security bollards and lighting, installing a drainage system and treatment device for surface runoff, conducting maintenance dredging of approximately 750 cubic yards of material, after the Dredged Material Management Office has reviewed and approved the dredging and dredged material disposal plan, restoring 0.084 acres of intertidal wetlands, and removing any remaining underwater explosives from the 1944 Port Chicago Disaster.

The project would remove 159,000 sf (3.65 acres) of pile-supported piers and associated structures that predate the Commission and place 123,215 sf (2.18 acres) of new pile-supported Bay fill, for an overall increase in Bay surface area of 35,785 sf (0.82 acres). The new pilings represent at least 307 cubic yards less volume and cover at least 876 sf less of the Bay floor than the current piles. In the Bay, approximately 211 cubic yards of rock revetment would be placed over 3,200 sf to protect the trestle's abutments.

Table 1. Pier 2 Fill Areas (square feet)

	Current structure	Proposed structure	Change in Bay Coverage
Main platform	122,222	95,000	-27,222
West trestle	22,336	21,347	-989
Forklift trestle	12,100	6,868	-5,232
Pedestrian walkway	2,342	0	-2,342
Total	**159,000**	**123,215**	**-35,785**

Though approximately 0.043 acres of intertidal wetlands would be removed to accommodate the new trestle approaches, approximately 0.084 acres of intertidal wetland habitat would be created by demolishing the current trestle approaches and creating suitable elevations for tidal marsh, resulting in an increase of 0.041 acres of intertidal wetlands. Additionally, because the new pier will cover 35,785 square feet (0.781 acres) less Bay surface area than the existing pier, this uncovered water area may now provide suitable conditions for the submerged aquatic vegetation found throughout the project site to colonize this newly uncovered area.

Public access is provided as described in Special Condition II-E, herein.

II. Special Conditions

The amended consistency determination shall be subject to the following special conditions:

A. Plan Review

1. **Specific Plans and Plan Review.** No work whatsoever within the Commission's jurisdiction or required by this consistency concurrence shall be commenced until final precise site, engineering, restoration, and grading plans and any other relevant criteria, specifications, and plan information for that portion of the work have been

submitted to, reviewed, and approved in writing by or on behalf of the Commission. The specific drawings and information required will be determined by staff. To save time, preliminary drawings should be submitted and approved prior to final drawings (Material Amendment No. Five). This special condition does not apply to the work, which is the subject of Amendment Nos. Six and Seven.

The work authorized in Amendment No. Eight shall be built generally in conformance with plans entitled "Repairs to Bridges T-1, T-4, T-5, T-6, T-7, and T-10 at MOTCO", prepared by the US Army Corp of Engineers Sacramento District, and dated August 31, 2015. No substantial changes shall be made to these plans without prior review and written approval by or on behalf of the Commission. No additional plan review and approval is required for the project authorized in Amendment No. Eight of this amended agreement.

a. **Site Plans**. Site, restoration, engineering and grading plans shall include and clearly label the Bay shoreline (Mean High Water (NAVD88) where there is no marsh, or the inland edge of marsh vegetation in marshlands up to the five-foot contour line above Mean Sea Level), property lines, and grading. Additional dimension lines shall be provided as necessary to indicate where this minimum dimension occurs in relation to either the property line, the top of bank, or some other fixed point upon the site.

b. **Engineering Plans**. Engineering plans shall include a complete set of construction drawings and specifications and design criteria. The design criteria shall be appropriate to the nature of the project, the use of any structures, soil and foundation conditions at the site, and potential earthquake-induced forces. Final plans shall be signed by the professionals of record and be accompanied by:

   (1) Evidence that the design complies with all applicable codes; and

   (2) Evidence that a thorough and independent review of the design details, calculations, and construction drawings has been made.

2. **Plan Approval.** Plans submitted shall be accompanied by a letter requesting plan approval, identifying the type of plans submitted, the portion of the project involved, and indicating whether the plans are final or preliminary. Approval or disapproval shall be based upon the following:

a. completeness and accuracy of the plans in showing the features required above, particularly the shoreline (Mean High Water Line or the inland edge of marsh vegetation up to 5 feet above Mean Sea Level if tidal marsh is present), property lines, and the line 100-feet inland of the shoreline, and any other criteria required by this consistency determination;

b. consistency of the plans with the terms and conditions of this consistency determination;

c. assuring that any fill in the Bay does not exceed this consistency determination and will consist of appropriate shoreline protection materials as determined by or on behalf of the Commission; and

d. assuring that appropriate provisions have been incorporated for safety in case of seismic event.

Plan review shall be completed by or on behalf of the Commission within 45 days after receipt of the plans to be reviewed (Material Amendment No. Five).

3. **Conformity with Final Approved Plans**. All work, improvements, and uses shall conform to the final approved plans. Prior to any use of the facilities authorized herein, the appropriate design professional(s) of record shall certify in writing that, through personal knowledge, the work covered by this consistency determination has been performed in accordance with the approved design criteria and in substantial conformance with the approved plans. No noticeable changes shall be made thereafter to any final plans without first obtaining written approval of the change(s) by or on behalf of the Commission (Material Amendment No. Five).

4. **Discrepancies between Approved Plans and Special Conditions**. In case of any discrepancy between final approved plans and Special Conditions of this consistency determination, the Special Conditions shall prevail. The Army is responsible for assuring that all plans accurately and fully reflect the Special Conditions of this consistency determination (Material Amendment No. Five).

B. **Riprap**

1. **Riprap Material.** Riprap material shall be either quarry rock or specially cast or carefully selected concrete pieces free of reinforcing steel and other extraneous material and conforming to quality requirements for specific gravity, absorption, and durability specified by the California Department of Transportation or the U. S. Army Corps of Engineers. The material shall be generally spheroid-shaped. The overall thickness of the slope protection shall be no more than three feet measured

perpendicular to the slope. Use of dirt, small concrete rubble, concrete pieces with exposed rebar, large, odd shaped pieces, and flat sheets of concrete, and asphalt concrete as riprap is prohibited (Material Amendment No. Five).

2. **Riprap Placement.** Riprap material shall be placed so that a permanent shoreline with a minimum amount of fill is established by means of an engineered slope not steeper than two (horizontal) to one (vertical). The slope shall be created by the placement of a filter layer protected by riprap material of sufficient size to withstand wind and wave generated forces at the site (Material Amendment No. Five).

3. **Riprap Plans**

   a. **Design.** Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design of the shoreline protection improvements authorized herein.

   b. **Plan Review**. No work whatsoever shall be commenced on the shoreline protection improvements authorized herein until final riprap plans have been submitted to, reviewed, and approved in writing by or on behalf of the Commission. The plans shall consist of appropriate diagrams and cross-sections that: (1) show and clearly label the Mean High Water Line or the inland edge of marsh vegetation in marshlands, property lines, grading limits, and details showing the location, types, and dimensions of all materials to be used; (2) indicate the source of all materials to be used; and (3) indicate who designed the proposed shoreline protection improvements and their background in coastal engineering and familiarity with the Commission's concerns. Approval or disapproval of the plans shall be based upon: (1) completeness and accuracy of the plans in showing the features required above; (2) consistency of the plans with the terms and conditions of this consistency determination; (3) assuring that the proposed fill material does not exceed this consistency determination; (4) the appropriateness of the types of fill material and their proposed manner of placement; and (5) the preparation of the plans by professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes. All improvements constructed pursuant to this consistency determination shall conform to the final approved plans. No changes shall be made thereafter to any final plans or to the constructed shoreline protection improvements without first obtaining written approval of the change(s) by or on behalf of the Commission (Material Amendment No. Five).

4. **Maintenance.** The shoreline protection improvements authorized herein shall be regularly maintained by, and at the expense of the Army, any assignee, lessee, sublessee, or other successor in interest to the project. Maintenance shall include, but not be limited to, collecting any riprap materials that become dislodged and repositioning them in appropriate locations within the riprap covered areas, replacing in-kind riprap material that is lost, repairing the required filter fabric as needed, and removing debris that collects on top of the riprap. Within 30 days after notification by the staff of the Commission, the Army or any successor or assignee shall correct any maintenance deficiency noted by the staff (Material Amendment No. Five).

C. **Public Access.** By December 31, 2019, the Army shall replace the current Visitor's Center at MOTCO's Gate 1, which is out-of-date, with a new, energy-efficient building and new landscaped area, subject to the availability of appropriated funds (Material Amendment No. Five).

D. **Marsh Restoration**

1. **Marsh Restoration Plan**. Prior to the commencement of any work authorized in Material Amendment No. Five ~~at any location pursuant to this amended authorization (excluding Amendment Nos. Six and Seven)~~, the Army shall submit a marsh restoration plan, to be approved by or on behalf of the Commission, for the restoration and enhancement of approximately 0.084 acres of intertidal wetlands located where the existing forklift trestle and pedestrian walkway will be removed. The plan shall clearly indicate the target habitats, the range of elevations where these habitats are found in the immediate surrounding marshlands, and contain a topographic map of the site in one-foot contour intervals showing the proposed site modifications and grading. All elevations shall be relative to National Geodetic Vertical Datum (NGVD 29) or North American Vertical Datum (NAVD 88). The map shall include typical cross-sections showing the proposed elevations of the marsh plain, channels, and high spots, and shall show: (1) figures for the ratios of typical horizontal to vertical slopes for existing and proposed marsh surfaces, channels, and embankments, particularly for areas where either grading, excavation, or fill will take place; (2) expected plant species along the cross-sections according to their expected zone of growth; (3) the elevation of surrounding upland areas; and (4) estimated Mean Higher High Water, Mean High Water, Mean Lower Low Water, Mean Sea Level, the maximum predicted tide, and the 100-year tide (the Base Flood Elevation); and (5) the typical elevation ranges of four dominant marsh plant species found at MOTCO (Material Amendment No. Five).

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Prior to the commencement of any work authorized in Amendment No. Eight of this amended agreement, the Army Shall submit and receive approval by or on behalf of the Commission of a restoration/planting plan for the restoration of approximately 0.57-acres of tidal wetland at the North Taylor Boulevard site. The plan shall indicate the species included in the seed mix, cross-sections depicting proposed elevations (in NAVD88), and include a monitoring program over a two-year period with associated success criteria and measures for assessing that criteria. Invasive species shall cover no more than 5-percent of the total cover of the restored site. The plan shall describe the status and type of the surrounding wetlands at the restoration site and shall design the restoration to be continuous and congruent with these areas. The plan shall also include a contingency plan outlining actions to be implemented if adverse conditions are identified during the monitoring period. The permittee shall coordinate with Commission Staff and take corrective action as specified by or on behalf of the Commission within 1 year of failure to meet success criteria.

2. **Restored Marsh Monitoring (Amendment No. Five)**

   a. **Fixed transects and photo-documentation points.** In each of the two restored marsh areas, the Army shall establish one permanent transect, extending from high marsh to the upper limit of low marsh habitat. Every other year of the five-year monitoring period (a total of three monitoring episodes), two 1-m^2 quadrats shall be sampled along each transect at fixed locations to determine percent cover of the five most dominant species, and of all non-native species. Monitoring of wetland vegetation shall be conducted at the end of the growing season, typically late summer. Additionally, at least five total photo-documentation points shall be established to show representative views of restored wetland areas. This condition does not apply to the restoration authorized in Amendment No. Eight.

   b. **Monitoring report**. By December 1 of each year following the monitoring episode (a total of three monitoring reports over the five year period following marsh restoration), a monitoring report shall be submitted to the Commission. The report shall be approximately 2-3 pages in length and shall summarize results of monitoring required in Special Condition II-D-2-a and identify any corrective actions to be taken.

      The permittee shall submit to the Commission a post-construction report and two additional annual monitoring reports following the completion of work authorized in Amendment No. Eight. These reports shall be submitted by December 1 of each year following the completion of construction and shall

summarize the requirements outlined in Special Condition II-D-1 for the North Taylor Boulevard restored site and the success criteria agreed upon in the restoration/planting plan.

c. **Invasive species control**. In the restored marsh area, undesirable exotic plant species such as perennial pepperweed (*Lepidium latifolium*), invasive common reed (*Phragmites australis*), and upland annual grasses and weedy thistles shall be controlled such that they cover, in total, five percent or less of the restored area during the five year monitoring period. Should adverse conditions be identified during this time period, the Army shall take corrective action as specified by or on behalf of the Commission (Material Amendment No. Five).

E. **Protecting Existing Marsh (Material Amendment No. Five and Amendment No. Eight)**

1. **Marsh and Upland Plant Protection During Construction.** The work authorized by this consistency determination shall be performed in a manner that will prevent, avoid, or minimize to the extent possible any significant adverse impact on any tidal marsh, other sensitive wetland resources, and existing native upland vegetation. If any unforeseen adverse impacts occur to any such areas as a result of the activities authorized herein, the Army shall restore the area to its previous condition, including returning the disturbed area to its original elevation and soil composition and, if the area does not revegetate to its former condition within one year, the Army shall seed all disturbed areas with appropriate vegetation consistent with plans approved by or on behalf of the Commission pursuant to Special Condition II-A. The Army shall employ mitigation measures to minimize impacts to wetland areas, such as: (1) minimizing all traffic in marsh/mudflat areas; (2) protecting and maintaining existing drainage channels and water circulation in impacted and adjoining areas; (3) maintaining marsh elevations and topography; and (4) carefully removing, storing, and replacing wetland vegetation that has been removed or "peeled back" from construction areas as soon as possible following construction (Material Amendment No. Five).

2. **Erosion Control in Wetland Areas**. Soil exposed near water as part of the project shall be protected from erosion with erosion control blankets until it can be stabilized with vegetation matting or hydroseeding (Material Amendment No. Five).

3. **No Creosote Wood.** No pilings or other wood structures that have been pressure treated with creosote shall be used in any area subject to tidal action within the Commission's jurisdiction as part of the project authorized herein.

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F. **Protection of Special-Status Fish and Wildlife Species.** The Army shall take all precautions to avoid adverse impacts to special-status species including the federally-listed endangered California Ridgway's Rail (*Rallus obsoletus obsoletus*, formerly known as the California clapper rail), soft bird's beak (*Chloropyron molle* ssp. *molle*), salt marsh harvest mouse (*Reithrodontomys raviventris*), and Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*), the federally-listed threatened delta smelt (*Hypomesus transpacificus*), Central Valley steelhead (*O. mykiss*), Central Valley spring-run Chinook salmon (*O. tshawytscha*), and Southern distinct population segment of green sturgeon (*Acipenser medirostris*), the state-listed threatened California black rail (*Laterallus jamaicensis coturniculus*), and the state-listed rare Mason's lilaeopsis (*Lilaeopsis masonii*) (Material Amendment No. Five, ~~and~~ Amendment No. Seven, and Amendment No. Eight).

1. **Biological Opinion (Amendment No. Four).** At least 15 working days prior to the commencement of the Pier 3 repairs, which is the subject of Amendment No. Four of the amended consistency determination, the Department of the Army shall submit to the Executive Director the U.S. Fish and Wildlife Service's (USFWS) biological opinion for the subject Pier 3 repair project. The Executive Director shall review the USFWS biological opinion on behalf of the Commission to ensure that the repairs to Pier 3, as conditioned in the Biological Opinion, remain consistent with the Commission's management program and reflect any project revisions required in the biological opinion. In the event that the Executive Director determines on behalf of the Commission that the project conditionally concurred with in Amendment No. Four is not consistent in light of information contained in the above-referenced biological opinion, s/he shall notify the DOA in writing that a further amendment to this consistency determination is necessary to address the issue and that the concurrence issued on January 21, 2015 is no longer valid (Amendment No. Four).

2. **Recommendations to Protect Special Status Fish Species and Essential Fish Habitat (Amendment No. Five).** The Army shall implement the measures described in the NOAA National Marine Fisheries Service (NMFS) Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation Management Act Essential Fish Habitat Response for the project, dated November 19, 2014, to ensure that impacts to special-status species and essential fish habitat are minimized. These measures shall be implemented to avoid and minimize impacts to special-status species and essential fish habitat, and include:

   a. Cushion blocks made of wood or composite material shall be used in pile driving to reduce the impact of pile driving noise on fish;

b. Vibratory hammers shall be used to the extent feasible when driving and removing concrete piles;

c. A floating surface boom shall be installed around the work area, the upper part of which shall consist of absorbent material to capture floating hydrocarbons associated with creosote piles;

d. If timber piles are broken as they are removed, the stub shall be removed utilizing a hydraulic shear and crane or other equipment in attempts to cleanly pull out the stub. If the stub cannot be removed, it will be cut two feet below the mudline; and

e. Surveys of submerged aquatic vegetation (SAV) in the project area shall be conducted during the active growth phase of SAV (typically March through October) prior to construction and following project completion and a brief report describing and evaluating the results of these surveys to the Commission by November 1 of the year following the surveys. If active SAV restoration is required by NMFS, the Army shall provide plans related to SAV restoration to the Commission, to be reviewed by or on behalf of the Commission pursuant to Special Condition II-A. Any SAV monitoring plans shall be provided by November 1 of every reporting year (Material Amendment No. Five).

3. **Protections for State and Federal Special Status Species.** The Army shall implement the measures described in the USFWS Biological Opinion for the project dated February 4, 2015, to ensure that impacts to special-status species and their designated critical habitat are minimized. The Army shall also implement recommended mitigation measures to protect the state listed black rail. In addition to Special Conditions II-F-2-a through II-F-2-d above, which will serve to reduce impacts to delta smelt, additional avoidance and minimization measures shall be implemented to protect other listed species, including:

   a. A USFWS-approved biologist shall be present on site at all times during construction throughout the duration of the project, shall conduct working awareness trainings, and shall have the ability to stop work if any special status species are detected and until any special status species are no longer in danger;

   b. Damaged piles, attached sediment, and debris shall be placed directly in a containment basin on a barge and disposed of at an approved upland disposal facility outside of the Commission's jurisdiction;

c. Prior to beginning work, the Army shall conduct a survey for soft bird's beak, Mason's lilaeopsis, and other state and federally-listed plant species in the project area. Listed plants shall be marked and fenced to avoid trampling or other disturbance;

d. Temporary exclusion fencing shall be installed between the work area and any remaining marsh vegetation adjacent to the project footprint. The fence shall be checked daily to ensure it is intact and has not entrapped any salt marsh harvest mice;

e. If marsh vegetation that is potentially suitable habitat for the salt marsh harvest mouse needs to be removed, work shall be conducted using non-mechanized hand tools;

f. Work within or adjacent to tidal marsh areas shall be avoided during the California Ridgway's rail breeding season (February 1 through August 31) and California black rail breeding season (March 1 through July 31) unless surveys document that these species are not present in the project area, or unless 700-foot buffer zones have been established around identified calling centers. Buffer zones may be 200 feet if there is a substantial barrier between the calling center and the activity area;

g. If surveys detect California Ridgway's rail or California black rail in the project area, activities within or adjacent to suitable habitat for the California Ridgway's rail or California black rail shall not occur within two hours before or after extreme high tides of 6.5 feet NGVD or above, as measured at the Golden Gate Bridge (and time corrected for the site) or when the marsh plain is inundated, because upland refugia cover is limited and activities could prevent the species from reaching available cover; and

h. Any dredging shall occur within the delta smelt work window, between August 1 and November 30 (Material Amendment No. Five).

4. **Protections for State and Federal Special Status Species.** The Army shall implement the measures described in the letter from the NMFS dated December 21, 2016, the letter from USFWS dated May 5, 2017, and the Mitigation Measures outlined in the Environmental Assessment prepared by MOTCO and dated April 2017. Such measures include, but not be limited to: (a) all in-water work must occur between August 1 and November 30; (b) the presence of a USFWS-NMFS approved biologist during construction; (c) confining vehicular traffic to existing roads and the proposed access routes; and (d) the removal of any construction materials.

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G. **Dredging and Water Quality**

1. **Water Quality Certification (Amendment No. Four).** At least 20 working days prior to the commencement of the Pier 3 repairs which are the subject of Amendment No. Four of the amended consistency determination, the Department of the Army shall submit to the Executive Director the project's water quality certification or any other required approvals from the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). The Executive Director shall review the water quality approval on behalf of the Commission to ensure that the repairs to Pier 3, as conditioned in the RWQCB's approval, remain consistent with the Commission's coastal zone management program and reflect any project revisions required in the water quality certification. In the event that the Executive Director determines on behalf of the Commission that the project conditionally concurred with in Amendment No. Four is not consistent in light of information contained in the above-referenced water quality approvals, s/he shall notify the DOA in writing that a further amendment to this consistency determination is necessary to address the issue and that the concurrence issued on January 21, 2015 is no longer valid (Amendment No. Four).

2. **Regional Water Quality Board Certification (Material Amendment No. Five).** At least 60 working days prior to the commencement of work, the Department of the Army shall submit to the Executive Director the project's water quality certification or any other required approvals from the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). The Executive Director shall review the water quality approval on behalf of the Commission to ensure that the project, as conditioned in the RWQCB's approval, remains consistent with the Commission's coastal zone management program. In the event that the Executive Director determines on behalf of the Commission that the project is not consistent in light of information contained in the above-referenced water quality approvals, s/he shall notify the Army in writing that an amendment to this consistency determination is necessary to address the issue and that this concurrence is no longer valid (Material Amendment No. Five).

3. **Avoidance and Minimization Measures.** The following avoidance and minimization measures shall be implemented to protect water quality:

   a. The Army shall prepare and implement a RWQCB-approved Storm Water Pollution Prevention Plan that specifically states which best management practices will be used to prevent the non-point source pollution of surface water

due to sediment, a Stormwater Management Plan to describe the procedures and practices used to reduce surface flow and subsequent discharge of pollutants to storm drainage systems, and a Water Quality Monitoring Plan;

b. Fueling of construction-related equipment shall take place at least 100 feet from the Bay or within a bermed and lined refueling area. Spill prevention booms shall be employed when refueling any equipment that cannot be refueled on land; and

c. Any process water created during the project shall not be discharged into Suisun Bay (Material Amendment No. Five).

4. **Dredged Material Management Office (DMMO) Approval.** At least 30 working days prior to the commencement of dredging described Section I-A-15, the Department of the Army shall submit to the Executive Director a letter from the DMMO approving the proposed dredging and disposal. The Executive Director shall review the dredging approval on behalf of the Commission to ensure that the project, as conditioned by the DMMO, remains consistent with the Commission's coastal zone management program. In the event that the Executive Director determines on behalf of the Commission that the project is not consistent in light of information contained in the above-referenced DMMO approval, s/he shall notify the Army in writing that an amendment to this consistency determination is necessary to address the issue and that the concurrence is no longer valid (Material Amendment No. Five).

H. **Engineering Criteria Review Board (ECRB) Recommendations and Questions and Compliance with Seismic Criteria.** Before the project authorized in Amendment No. Five reaches the 50 percent design stage, the Army shall fully satisfy the inquiries of the ECRB regarding seismic criteria, seismic considerations, and sea level rise. Until such time that the Commission has received and approved the Army's responses to the ECRB's request for additional information, the Army does not have the authorization necessary to proceed with the proposed project and should treat this conditional concurrence as an objection. The Army shall ensure that the Commission's ECRB-reviewed and -approved seismic criteria are applied throughout the design-build stage of the project that is the subject of this consistency determination. If these seismic criteria change, the Army shall inform the Commission, and may, based on review of the Commission's Staff Engineer, return to the ECRB for discussion and concurrence regarding new or revised criteria, and shall not proceed with the project authorized herein unless and until ECRB review and concurrence is complete (Material Amendment No. Five).

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I. **Seismic Instrumentation Plan.** Prior to the commencement of work authorized herein in Amendment No. Five, the Army shall develop and submit a seismic instrumentation plan for review and final approval by BCDC's Staff Engineer. The plan shall include, at a minimum, the number, type, and location of sensors to be placed at the project site, information on the transmission and recording of signals from the sensors, and a plan that provides for the long-term maintenance of the seismic instrumentation and includes the party or parties responsible for maintaining the instrumentation and gathering and interpreting the data collected into the future (Material Amendment No. Five).

J. **Certification of Contractor Review.** Prior to commencing any grading, demolition, or construction, the general contractor or contractors in charge of that portion of the work shall submit written certification that s/he has reviewed and understands the requirements of the consistency determination and the final approved plans, particularly as they pertain to any public access required herein, or environmentally sensitive areas (Material Amendment No. Five and Amendment No. Eight).

K. **Regional Water Quality Board Certification (Amendment No. Seven).** At least 60 working days prior to the commencement of work, the Army shall submit to the Executive Director the water quality certification for the Barge Pier project from the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). The Executive Director shall review the water quality approval on behalf of the Commission to ensure that the project authorized in Amendment No. Seven is consistent with the Commission's coastal zone management program. In the event that the Executive Director determines on behalf of the Commission that the project is not consistent in light of information contained in the water quality certification, s/he shall notify the Army in writing that an amendment to this consistency determination is necessary to address the issue and that this concurrence is no longer valid for that project.

III. Findings and Declarations

A. **Consistency with the McAteer-Petris Act and Bay Plan**

1. **Original Consistency Determination.** On May 5, 2003, the United States Department of the Navy submitted a description of the project and requested that the Commission concur that the proposed project is consistent with its Amended Coastal Zone Management Program for San Francisco Bay. Based on the information contained in those materials, the project is hereby found to be consistent with the provisions of the McAteer-Petris Act and the policies of the *San Francisco Bay Plan* in

that the project involves fill in the Bay for a pier, which is a water-oriented use, involves the replacement of 980 linear feet of pile caps, the repair of 39 plumb piles and 81 square feet of concrete spall, the placement of plastic barrier on 795 linear feet of piles, and the replacement of 121 linear feet of stringers, 200 linear feet of handrailing, and 250 square feet of pier underdecking and deck pavement, within the Bay, and further does not involve any substantial enlargement or change of use, as defined in Regulation Section 10601(a)(6), and thus is equivalent to a "minor repair and improvement."

2. **Non-Material Amendment No. One.** Activities found consistent in Amendment No. One to the consistency determination involve the repair of 44 plumb piles, the replacement of approximately 85 linear feet of stringers, 180 linear feet of pilecaps, and 7,100 square feet of firewall, the wrapping of approximately 850 linear feet of piles, the injection of epoxy in cracks along Pier 4, the repair of approximately 160 square feet of concrete spall, the repair of deteriorated asphalt, and the replacement of hand/guard railing, in the Bay, which also do not involve any substantial enlargement or change of use, as defined in Regulation Section 10601(a)(6), and thus is equivalent to a "minor repair and improvement."

3. **Non-Material Amendment No. Two.** On April 23, 2009, the United States Department of the Navy submitted a description of Amendment No. Two and requested that the Commission concur that the amended project was consistent with its Amended Coastal Zone Management Program for San Francisco Bay. Amendment No. Two involves repairs to Pier 4 which was damaged after the military vessel "Pacific Success" collided with the pier. Such repairs consist of replacing concrete decking, concrete pilings, fender pilings and a portion of the electrical system underneath the pier. Thus the repair activities as defined in Commission Regulation Section 10601(a)(6), and are thus considered a "minor repair or improvement" consistent with Regulation Section 10601(a)(6).

4. **Non-Material Amendment No Three.** On January 7, 2011, the United States Department of the Navy submitted a description of Amendment No. Three to the Consistency Determination which would involve repair and replacement of piles at Piers 3 and 4 as well as replacement of chocks and wales (pier structural members) at Pier 3. The Navy requested that the Commission concur that the amended project was consistent with its Coastal Zone Management Program for San Francisco Bay. The repair and replacement activities described in the proposed amendment involve routine repair, replacement and removal that do not involve any substantial enlargement or change in use, consistent with Regulation Section 10601(a)(6) and

are thus considered "minor repairs or improvements" for which the Executive Director may issue an amendment to an existing consistency determination pursuant to Regulation Section 10822.

5. **Non-Material Amendment No Four.** On September 25, 2014, the U.S. Department of the Army (DOA) submitted a proposal to repair Pier 3 by installing non-reactive, high-density polyethylene (HDPE) jackets on approximately 1,700 timber piles located under the main pier platform. Wrapping the pilings will result in a total of approximately 26,052 linear feet of 0.06-inch-thick pile wrapping material in the Bay, totaling approximately 15 cubic yards. The DOA requested that the Commission concur that the amended project was consistent with its Coastal Zone Management Program for San Francisco Bay. The DOA's consistency determination omitted two items that the Commission typically relies on for assessing consistency with the provisions of the McAteer-Petris Act and the San Francisco Bay Plan regarding the impact of the project on Bay resources and water quality. Specifically, at the date of this amended consistency determination, the U.S. Fish and Wildlife (USFWS) had not yet completed its biological opinion and the San Francisco Bay Regional Water Quality Board (RWQCB) had not issued a water quality certification. According to the DOA, the USFWS and the RWQCB intend to issue these documents prior to implementation of the Pier 3 repair project and, further, the DOA will provide these documents to the Commission staff prior to project commencement. Special Conditions II-F-1 and II-G-1 are included in this amended consistency determination requiring the DOA to provide these documents to the Commission staff and, further, allow time for the review of the document contents to ensure that the Pier 3 repair project will be consistent with the Commission's law and policies. Further, these special conditions provide that if either the Biological Opinion or Water Quality certification contain provisions that modify the project, an amendment to the subject consistency determination would be necessary.

   As conditioned, the project which is the subject of Amendment No. Four to this consistency determination, will involve repair of an existing structure in the Bay that will not involve substantial enlargement or change in use of the structure, an improvement defined in Commission's Regulation Section 10601(a)(6) as a "minor repair or improvement" for which the Executive Director may issue an amendment to a consistency determination pursuant to Regulation Section 10822.

6. **Non-Material Amendment Nos. Six, and Seven.** On November 3, 2014, the Army submitted a consistency determination to implement a project, which is the subject of Material Amendment No. Five (discussed below). Amendment No. Six to this consistency determination was issued by matter of law on November 3, 2014. On July 13, 2015, the Army submitted a consistency determination request for Amendment No. Seven, to replace pilings at a fire boat pier. The activity, including use and in-kind maintenance, involves general pier repairs and is defined in Commission Regulation Section 10601(a)(6) as a "minor repair or improvement." In concurring with the Army's determination on the work associated with Amendment No. Seven, this amended consistency determination is conditioned (Special Condition II.K) to require that the Army provide a water quality certification to the Commission's Executive Director for review to ensure project consistency with the Commission's laws and policies.

7. **Material Amendment No. Five.** The conditional consistency concurrence for the work authorized in Amendment No. Five is given on the basis of the Commission's findings and declarations that, as conditioned, the work authorized herein is consistent with the McAteer-Petris Act, the *San Francisco Bay Plan*, the *San Francisco Bay Area Seaport Plan*, the National Environmental Policy Act, and the Commission's amended coastal zone management program for San Francisco Bay for the following reasons:

   a. **Fill.** Section 66605 of the McAteer-Petris Act states, in part, that: (1) "fill should be limited to water-oriented uses..., should be authorized only when no alternative upland location is available..., and should be the minimum amount necessary to achieve the purpose of the fill...."; (2) "the nature, location, and extent of any fill should be such that it will minimize harmful effects to the Bay area, such as the reduction or impairment of the volume, surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources, or other conditions impacting the environment..."; and (3) "fill [should] be constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters."

      Pier 2 is located in the Bay and pre-dates the Commission. The proposed project will remove 159,000 sf of pile-supported structures from the Bay, and place 123,215 sf of pile-supported fill, for a 35,785 sf (0.82 acre) net increase in Bay surface area. Rock slope protection would be placed over approximately 3,200 sf of the Bay.

i. **Water-oriented Use, Alternative Upland Location, and Minimum Fill Necessary.** The proposed project would modernize and repair Pier 2 so that it can be safely used as a port to send and receive ammunition and other cargo, a water-oriented use identified in Section 66605(a) of the McAteer-Petris Act. The existing pier is both very old and was designed to handle both container and break bulk cargo. The rebuilt pier will be designed to more efficiently handle container cargo, the method used to ship most of the munitions handled at Pier 2. Because Pier 2 requires an open-water location, the proposed project has no upland alternative. The proposed Pier is 35,785 square feet smaller than the existing pier and will require fewer pilings, resulting in a net increase in Bay volume of at least 307 cubic yards and a reduction of the amount of Bay bottom occupied by the pilings of at least 876 square feet. The Army states that "the diameter, number, and spacing of [piles] were determined to provide adequate support for the minimum overwater structure required for MOTCO's mission in this environment. The number and sizes of piles could not be reduced without risking the operability and stability of the overwater structure. Therefore, the project design represents the minimum amount of fill necessary to achieve the project purpose." A small amount of fill will be placed around the new trestle abutments to protect these structures from erosion.

ii. **Minimization of Harmful Effects to the Bay Area, such as the Reduction or Impairment of the Volume, Surface Area, or Circulation of Water, Water Quality, Fertility of Marshes, or Fish or Wildlife Resources.** In addition to the relevant provision in the McAteer-Petris Act (Section 66605(d)), the Bay Plan also addresses minimizing effects of fill projects on Bay resources.

The Bay Plan Policy 1 on Fish, Other Aquatic Organisms and Wildlife states, in part, that "[t]o assure the benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay's tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased." Further, Policy No. 4 states, in part, that "[t]he Commission should: (a) consult with the California Department of Fish and Game and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service whenever a proposed project may adversely affect an endangered or threatened plant, fish, other aquatic organism or wildlife species...; (b) not authorize projects that would result in the 'taking' of any plant, fish, other aquatic organism or wildlife species listed as endangered or threatened pursuant to

the state or federal endangered species acts …unless the project applicant has obtained the appropriate "take" authorization from the U.S. Fish and Wildlife Service, National Marine Fisheries Service or the California Department of Fish and Game…; and (c) give appropriate consideration to the recommendations of the [state and federal resource agencies]…to avoid possible adverse effects of a proposed project on fish, other aquatic organisms and wildlife habitat."

The Bay Plan Subtidal Areas Policy 1 states that "[s]ubtidal areas that are scarce in the Bay or have an abundance and diversity of fish, other aquatic organisms and wildlife (e.g., eelgrass beds, sandy deep water or underwater pinnacles) should be conserved. Filling, changes in use, and dredging projects in these areas should therefore be allowed only if: (a) there is no feasible alternative; and (b) the project provides substantial public benefits."

Bay Plan Tidal Marshes and Tidal Flats Policy 1 states that "[t]idal marshes and tidal flats should be conserved to the fullest possible extent. Filling, diking, and dredging projects that would substantially harm tidal marshes or tidal flats should be allowed only for purposes that provide substantial public benefits and only if there is no feasible alternative."

Habitat types in the project vicinity include deep Bay channel immediately adjacent to the bayward-most extension of the pier, shallow subtidal areas within the pier footprint and along the shoreline, intertidal mudflats, and brackish tidal marsh. These habitats provide foraging, breeding, and resting habitat for a variety of fish and wildlife protected under federal and state endangered species laws, as well as home for special status plant species. Additionally, the shallow subtidal areas at MOTCO contain extensive submerged aquatic vegetation (SAV) beds, a habitat that is scarce in the Bay and which typically has an abundance of fish and invertebrates. Some SAV, such as the native pondweed (*Stuckenia* spp.) found at MOTCO, is designated as essential fish habitat (EFH) for federally-managed fish species.

On November 19, 2014, NMFS issued an Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation Management Act Essential Fish Habitat Response for the proposed project and pile-wrapping at Pier 3 (BCDC Consistency Determination No. C2003.003.04, a non-material amendment). In this letter, NMFS stated that it anticipates take (impact to) of threatened Southern distinct population segment (DPS) of North American green sturgeon

(*Acipenser medirostris*), threatened Central Valley steelhead (*Onchorhynchus mykiss*), threatened Central California Coast steelhead (*O. mykiss*), threatened Central Valley spring-run Chinook salmon (*O. tshawytscha*), and endangered Sacramento River winter-run Chinook salmon (*O. tshawytscha*) due to temporary habitat loss that would occur from elevated levels of underwater sound during pile driving, and degradation of water quality during construction and dredging. NMFS issued a conservation recommendation that the Army purchase credits at the Liberty Island Conservation Bank and Preserve in Yolo County for impacts to listed fish species and aquatic habitat. Over the long term, completion of the project is expected to benefit designated critical habitat, as the removal of 4,500 creosote-treated wood pilings would increase water and sediment quality, and removal of 28,211 square feet of overwater structure would reduce shading. The Army intends to purchase 3.7 acres of mitigation credits at Liberty Island.

NMFS also found that the proposed project would adversely affect EFH for various federally-managed fish species under the Pacific Salmon, Coastal Pelagic, and Pacific Groundfish Fishery Management Plans. Adverse effects would occur through increased water column turbidity, increased suspension of sediment-associated contaminants, benthic habitat disturbance to invertebrates and SAV, and elevated underwater sound levels during pile driving. As Conservation Recommendations, NMFS offered that the Army should conducted pre- and post-construction survey reports of SAV beds, and report on any compensatory mitigation for impacts to SAV, which currently occupies 22 acres in the vicinity of MOTCO. The Army will implement these recommendations through its SAV Mitigation Plan, and will mitigate project-related losses of pondweed SAV at a one to one ratio on-site by creating potential pondweed SAV habitat through the reduction in shading (approximately 0.781 acres) and by planting pondweed SAV in suitable areas.

On February 4, 2015, the USFWS issued a Biological Opinion for the proposed project and a related project to wrap piles at Pier 3 (BCDC Consistency Determination No. C2003.003.04, a non-material amendment), evaluating the project's effects on Delta smelt, soft bird's beak, California Ridgway's rail, and salt marsh harvest mouse. The USFWS stated that it anticipates take ("impact") to Delta smelt and its critical habitat due to increased noise, increased turbidity, and exposure to toxic contaminants during pile driving,

removal, and cutting, and dredging. Individual soft bird's beak plants could be destroyed by trampling or cutting. The California Ridgway's rail foraging and dispersal could be temporarily disturbed by noise from pile driving and traffic, and predation may increase due to increased lighting. Salt marsh harvest mice may be injured or killed by being crushed by personnel or equipment in the project area. Their daily rhythms may be disrupted by increased artificial lighting, and the project would remove 0.219 acres of suitable upland habitat.

The USFWS BO concluded that by implementing general and species specific conservation measures, the anticipated level of incidental take would be unlikely to jeopardize the continued existence of Delta smelt, soft birds beak, California Ridgway's rail, or salt marsh harvest mouse.

Special Conditions II-F-2 and II-F-3 have been included to ensure that impacts to federally-listed species and their habitat are minimized during and after project construction.

Though the Army is not required to consult under the California Endangered Species Act, the Bay Plan gives the Commission the authority to prevent taking of state-listed species. The Army has stated that the mitigation and minimization measures to be employed for federally-listed species would also protect state-listed species. Mason's lilaeopsis (*Lilaeopsis masonii*), a state-listed rare plant, has been found in the project area, and the state-listed threatened black rail (*Laterallus jamaicensis coturniculus*) was found at MOTCO in 2010 and in other years. Special Condition II-F-3 has been included to ensure that impacts to these species are avoided and minimized during project construction.

With respect to tidal marsh, the Army has stated that there would be direct loss of approximately 0.043 acres of tidal wetlands from construction of the new Pier 2, and temporary wetland impacts within a 100-foot buffer around the new pier. Because the new pier will be smaller than the existing structure, there is a potential for a net gain of 0.041 acres of new intertidal wetlands. Special Conditions II-F and II-G have been included to ensure that native tidal marsh vegetation is restored to this area and to prevent invasive perennial pepperweed and other invasive species from dominating the restored marsh.

The Bay Plan Water Quality Policy 1 states that "Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality...."

The Army has stated that removal of creosote-treated piles from beneath the existing pier structure would eliminate a long-term source of polyaromatic hydrocarbon pollutants, and that the project would increase the volume and surface area of the Bay by reducing the area of the pier and the volume of supporting piles. There will be temporary impacts to water quality from pulling and driving piles, debris removal, dredging, and construction runoff in intertidal and subtidal areas. The Army proposes to have its contractor submit an Environmental Protection Plan for review and approval by the U.S. Army Corps of Engineers (USACE), and has stated that they will prepare a Stormwater Pollution Prevention Plan, Stormwater Management Plan, Water Quality Monitoring Plan, and Contaminant Prevention Plan, among other items.

In addition, the Bay Plan's Water Quality Policy 2 states, in part, that "[w]ater quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the Regional Water Quality Control Board's [RWQCB] Basin Plan. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Water Quality Control Board, should be the basis for carrying out the Commission's water quality responsibilities."

The Army has stated that the Section 401 Water Quality Certification application for Pier 2 is tentatively scheduled to be submitted to the RWQCB in June 2015, and that the Army will implement all appropriate terms and conditions.

Special Condition II-G-2 has been included to ensure that the Commission reviews the RWQCB's authorization for consistency with its laws and policies. Special Condition II-G-3 has been included to ensure that water quality impacts during construction are minimized, and that the Army complies with the state RWQCB's water quality certification when issued for the project.

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iii. **Fills in Accordance with Sound Safety Standards**. In addition to the relevant provision in the McAteer-Petris Act (Section 66605(e)), the Bay Plan also requires that any authorized fill must be constructed in accord with sound safety standards.

The Bay Plan Safety of Fills Policies 1 and 2 state, in part, that "[t]he Commission has appointed an Engineering Criteria Review Board (ECRB)…competent to and adequately empowered to…review all except minor projects for the adequacy of their specific safety provisions, and make recommendations….no fill or building should be constructed if hazards cannot be overcome adequately for the intended use in accordance with the criteria prescribed by the ECRB."

The ECRB reviewed the design criteria for the project on February 26, 2015, at which time the Army explained that the new portions of Pier 2 will be designed for minor or no structural damage and temporary or no interruptions in operations due to the Level 1 seismic event (return period of 72 years), and for controlled inelastic structural behavior with repairable damage, and temporary loss of operations, restorable within months, due to the Level 2 seismic event with a return period of 475 years. The ECRB requested additional information from the Army regarding sea level rise and seismic criteria, and made recommendations regarding conducting additional seismic-related analyses. Special Condition II-H has been included to ensure that the Army responds to these recommendations and requests for additional information to the satisfaction of the ECRB prior to the start of construction on the project. It also requires the Army to return to the ECRB for further discussion and concurrence regarding seismic criteria in the event the engineering criteria change for the design-build project phase.

The Bay Plan Safety of Fills Policy 3 states, in part, that "to provide vitally needed information on the effects of earthquakes on all kinds of soils, installation of strong-motion seismographs should be required on all future major land fills. In addition, the Commission encourages installation of strong-motion seismographs in other developments on problem soils, and in other areas recommended by the U.S. Geological Survey, for purposes of data comparison and evaluation."

The ECRB recommended that the Army develop a plan in conjunction with the Strong-Motion Instrumentation Program of the California Geological Survey to record earthquake induced shaking on Pier 2, and on the nearby shore as a reference. Special Condition II-I requires the Army to install such instrumentation, and to provide an instrumentation plan to the Commission staff and/or ECRB for plan review and approval prior to project commencement.

The Bay Plan Safety of Fills Policy 4 states, in part, that "[a]dequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project…. New projects on fill…should either be…built so the bottom floor level of structures will be above a 100-year flood elevation that takes sea level rise into account for the expected life of the project, be specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity."

The Army provided sea level rise projections for 2068 (the anticipated life of the project) relative to Pier 2's main platform, west trestle, and east trestle. Using a projection of three feet of sea level rise by 2068, which is on the high end of projections currently recommended by the State of California, the soffit of the main platform would remain approximately four feet above the mean high water level. In the event of a 100-year flood event in 2068, the total water level could touch the main platform deck soffit, and could reach the top of the east trestle deck. During extreme wind wave events that coincide with the 100-year flood event, splash overtopping of the main pier platform could occur. The Army has stated that all fixtures on the pier deck will be designed to accommodate brief periods of flooding. By 2068, the stormwater treatment sumps on the main platform and the soffit of the east trestle, which is not being replaced or raised, would be subject to inundation during a 1-year flood event. The Army has stated that the storm drains could be retrofitted with a flap gate if inundation becomes an issue. The Army will calculate wave uplift and buoyancy effects on the structure during the final design development, consistent with the recommendations of the ECRB. As noted above, Special Condition II-H has been included to ensure that the Army addresses the issues raised by the ECRB with respect to safety of fills and sea level rise.

For these reasons, the Commission finds that there is no alternative upland location for the fill for Pier 2, that the amount of fill is the minimum necessary to achieve the purpose of the fill, and that, as conditioned, will minimize impacts on the Bay and its resources and will be constructed in accord with sound safety standards.

b. **Climate Change.** The Bay Plan's Climate Change Policy 2 states, in part, that "[w]hen planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared by a qualified engineer and should be based on the estimated 100-year flood elevation that takes into account the best estimates of future sea level rise.... A range of sea level rise projections for mid-century and end of century based on the best scientific data available should be used in the risk assessment. Inundation maps used for the risk assessment should be prepared under the direction of a qualified engineer. The risk assessment should identify all types of potential flooding, degrees of uncertainty, consequences of defense failure, and risks to existing habitat from proposed flood protection devices."

The Bay Plan's Climate Change Policy 3 states "[t]o protect public safety and ecosystem services, within areas that a risk assessment determines are vulnerable to future shoreline flooding that threatens public safety, all projects—other than repairs of existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas—should be designed to be resilient to a mid-century sea level rise projection. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long-term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century."

As noted above in Section III-6-A-iii, the Army has assessed how flooding and sea level rise through the life of the project would affect the proposed pier. Regarding sea level rise to the end of century, the Army has stated that freeboard at deck level ranges from 3.6 feet with the lowest sea level rise projection to being under 6 inches of water at the highest sea level rise projection (both projections based on a 100-year flood event at 2100). If the high estimate of sea level rise occurs, the deck would be inundated for a matter of hours, after which time the deck would drain. As noted above, all fixtures on the pier deck will be designed to accommodate brief periods of flooding. The Army has stated that it has an active management program for all infrastructure, and

prepares regular submittals on infrastructure needing maintenance and capital improvements. The Army will monitor Pier 2 throughout its operation, and has stated that should sea level rise, structural deterioration, or functional obsolescence require its modification or replacement, the Army will work within its authority to secure funds to repair, replace, or demolish the structure.

As noted above, Special Condition II-H has been included to ensure that the Army addresses the issues raised by the ECRB with respect to safety of fills and sea level rise.

The landside portions of MOTCO adjacent to Pier 2 currently experience periodic flooding, and though the Army proposes to raise subsided portions of the road leading to Pier 2 and place revetments around the new trestle abutments, flood protection is not part of the proposed project and will likely be addressed in a future project. Thus, risks to existing habitat from proposed flood protection devices were not identified.

Finally, Policy 7 identifies specific types of projects that are deemed to have regional benefits, advance regional goals, and that should be encouraged, if their regional benefits and their advancement of regional goals outweigh the risk from flooding. These include a "transportation facility, public utility, or other critical infrastructure that is necessary for existing development...."

The Army has stated that maintaining the Department of Defense West Coast pier-side ammunition handling capability and associated ability to conduct and support contingency operations in the Pacific theater is a regional benefit and outweighs the risk from flooding.

The Commission finds that, with implementation of the Special Conditions contained herein, the project is consistent with its laws and policies regarding Climate Change.

c. **Shoreline Protection.** The Bay Plan Protection of the Shoreline Policy 1 states, in part, that "...maintenance or reconstruction of existing projects and uses should be authorized if...the project is necessary to provide flood or erosion protection for existing development, use or infrastructure...the project is properly engineered to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account...and the protection is integrated with current of planned adjacent

shoreline protection measures…." Policy 2, states in part, that "[r]iprap revetments…should be constructed of properly size [material] and [should be placed] according to accepted engineering practice…."

New riprap would be placed at the abutments to the new west trestle and forklift trestle. The proposed revetments would provide erosion protection for new abutments at the landside entry to the trestles. It is the Army's intent is to maintain the current level of protection with as little shoreline modification as possible. The Army has stated that designing for 100-year flood protection and sea level rise would necessitate expanding the area of armored shoreline both seaward and along the shoreline, and would do little to protect the vast majority of MOTCO from sea level rise as bay waters would inundate MOTCO from around the small area proposed to be protected. As noted above, sea level rise adaptations for the portions of MOTCO are not part of the proposed project. The Army has stated that it would require its contractor to meet the requirements of Policy 2 regarding revetment material composition and placement.

Special Condition II-B has been included to ensure that the proposed riprap would be consistent with Bay Plan policies for riprap along the shoreline.

d. **Public Access.** Section 66602 of the McAteer-Petris Act states, in part, that "existing public access to the shoreline and waters of the San Francisco Bay is inadequate… [and that] maximum feasible public access, consistent with a proposed project, should be provided…." The *Bay Plan* Policies on Public Access further state that "maximum feasible public access should be provided in and through every new development in the Bay or on the shoreline…except in cases where public access would be clearly inconsistent with the project because of public safety considerations…. In these cases, in lieu access at another location, preferably near the project, should be provided."

   Due to safety and security issues associated with military installations and munitions shipping, public access to MOTCO is currently limited to the Port Chicago Naval Magazine National Memorial (Memorial) and to occasional restricted access for biological, historical, and cultural resource reviews. The Army coordinates National Park Service and visitor access to the Memorial, which involves 50 to 60 trips per year with an average groups size of six visitors, as well as an annual commemorative event. The proposed project is not expected to increase the number of visitors to the Memorial, or to increase the need to bring more employees to the installation.

During the approximately six weeks that the Army will clear the project area of underwater explosives, the Army will work with the National Park Service to ensure that the Memorial is closed when visitors could be at risk, and to avoid scheduling the most disruptive activities during times when the Memorial is being used for interpretive, ceremonial, or other commemorative events. The Army would restrict access to vessels in Suisun Bay within the potentially dangerous areas which could be up to two miles, but does not anticipate impacts to recreational boats on the weekends.

Though providing in-lieu public access was discussed, the Army does not currently have authorized funding for public access improvements. In Fiscal Year 2017, the Army has committed to seek funding from Congress to demolish and replace the existing Visitor Center at MOTCO's Gate 1 from which visitors access the Memorial. Special Condition II-C has been included to ensure that the Army provides these public access improvements should it receive authorization and appropriated funds to do so.

The Commission finds that the project, as conditioned, is consistent with its law and policies on public access.

e. **Dredging.** The Bay Plan's Dredging Policy 2 states, in part, that "Dredging should be authorized when the Commission can find: (a) the applicant has demonstrated that the dredging is needed to serve a water-oriented use or other important public purpose, such as navigational safety; (b) the materials to be dredged meet the water quality requirements of the San Francisco Bay Regional Water Quality Control Board; (c) important fisheries and Bay natural resources would be protected through seasonal restrictions established by the California Department of Fish and Game, the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, or through other appropriate measures; (d) the siting and design of the project will result in the minimum dredging volume necessary for the project…." Policy 3 further explains that dredged material should not be disposed of in the Bay unless, among other requirements, "the quality of the material disposed of is consistent with the advice of the San Francisco Bay Regional Water Quality Control Board and the inter-agency Dredged Material Management Office (DMMO)."

The proposed project would involve dredging approximately 750 cubic yards of material to a depth of approximately minus 32 feet Mean Lower Low Water using a bed-leveler. The Army has not submitted an application to the DMMO, but has stated that the DMMO permit application would be submitted following

post-construction bathymetric surveys. Preliminary sampling from May 2014 in and adjacent to the proposed dredging footprint indicates that discharge into Suisun Bay from dredging would not likely cause adverse impact to water quality or aquatic organisms. Due to the small amount of material present and due to the potential presence of explosives remaining from the Port Chicago Disaster, the Army plans to redistribute sediment on-site using a bed-leveler.

Special Condition II-G-4 has been included to ensure that the proposed dredging and on-site disposal is reviewed by the DMMO and approved by the participating agencies, including the RWQCB and BCDC, prior to any dredging at the site, as required by the Bay Plan's dredging policies.

f. **Bay Plan Map Policies and the San Francisco Bay Area Seaport Plan.** According to Bay Plan Map 3, MOTCO is located in a port and water related industry priority use area. The site-specific policy states that "when no longer owned or controlled by the federal government, give first consideration to port or water-related industrial use. Port and industrial use should be restricted so that they do not adversely affect marshes.... If not needed for port or water-related industry use, consider waterfront park use."

The San Francisco Bay Area Seaport Plan Policy for the Concord Naval Weapons Reserve (CNWR, now MOTCO) states that "the CNWR should be reserved as a port priority use area to be considered for bulk cargo marine terminal development if and when the Navy ceases its munitions operations."

Because the site is still owned and managed by the federal government, and the project is designed to continue use of the shoreline for shipping munitions, the Commission finds that the project is consistent with the Bay Plan Map Policies and the Seaport Plan.

8. **Amendment No. Eight.** On August 2, 2016, the Army submitted a consistency determination request for Amendment No. Eight, to conduct general repairs across seven-miles of roads and five bridges repairs throughout the MOTCO facility. The work authorized in this amendment includes the temporary dewatering of wetlands to facilitate repair of bents and bridge surfaces are bridges T-4, T-5, T-6, T-7, and T-10; the realignment of a 725-foot-long portion of Rinquist Road, permanently impacting 0.38-acres of tidal wetland; removal of a 712-foot-long portion of North Taylor Boulevard that will allow for the restoration of 0.57-acres of tidal wetland;

and the repair of approximately 4.5-miles of existing roads. Special Conditions II.A. and II.J. have been included to ensure that the project is constructed in a manner that is consistent with the application.

The Bay Plan policies on Mitigation state, in part, that "[p]rojects should be designed to avoid adverse environmental impacts to Bay natural resources...[and]... Whenever adverse impacts cannot be avoided, they should be minimized to the greatest extent. Finally, measures to compensate for unavoidable impacts to the natural resources of the Bay should be required..." These policies further state that "[w]hen compensatory mitigation is necessary, a mitigation program should be reviewed and approved by or on behalf of the Commission as part of the project." These programs should include clear goals, measurable performance standards, a monitoring plan, and a contingency plan. Additionally, the Bay Plan policies on Tidal Marsh and Tidal Flats state, in part, that " [a]ny ecosystem restoration project should include clear and specific long-term and short-term biological and physical goals, and success criteria, and a monitoring program to assess the sustainability of the project."

The removal of North Taylor Boulevard will expose an area that was previously tidal marsh. Special Condition II.D requires this area to be restored to mitigate for the loss of wetlands resulting from the Rinquist Road realignment. Special Condition II.D requires a restoration plan to ensure that the loss of functional habitat is replaced, and requires a monitoring program to ensure the success of the restoration plan. In addition, Special Condition II.F ensures the project is conducted in a manner consistent with the Bay Plan policies on Fish, Other Aquatic Organisms, and Wildlife.

As conditioned, the project authorized by Amendment No. Eight is consistent with the requirements of the Commission's Coastal Zone Management Program. The work authorized in Amendment No. Eight involves routine repair, reconstruction, replacement, removal, and maintenance that does not substantially enlarge or change the use of existing structures pursuant to Regulation Section 10601(a)(6). Therefore, the Executive Director, on behalf of the Commission, concurs that the project authorized in Amendment No. Eight constitutes a "minor repair or improvement" by which this amended letter is issued.

B. **Environmental Review.**

1. **Original Project.** A Categorical Exclusion conducted by the United States Department of the Navy for the original project to conduct repair and replacement activities at Pier 3, at the Naval Weapons Station Seal Beach, Detachment Concord, California, Contra Costa County, documenting the concurrences, waivers, and

permits acquired as part of the project and stating that the activity will not have a significant effect on the environment will be signed after completion of all necessary regulatory consultation and coordination, including the Commission's, per the National Environmental Policy Act (NEPA) requirements. The amended projects authorized under Amendment Nos. One, Two and Three are categorically exempt from the requirement to prepare an environmental impact report, pursuant to Regulation Section 11501, because the projects are equivalent to a "minor repair or improvement," as defined in Regulation Section 10601(a)(6), as noted in Section III.A and III.B of this amended consistency concurrence.

2. **Amendment No. Four.** In November 2013, the Department of the Army issued a Draft Environmental Impact Statement regarding the Pier 3 repair project, which is the subject of Amendment No. Four of this amended consistency determination and, at the time of issuance of this amended concurrence, is in the course of finalizing the Environmental Impact Statement which is scheduled to be issued prior to project commencement.

3. **Amendment No. Five.** On March 6, 2015, the Army issued a Final Environmental Impact Statement regarding the Pier 2 and Pier 3 projects, which are the subjects of Amendments No. Four and Five of this amended consistency determination, which found that all impacts from the projects are anticipated to be less than significant. The Army plans to issue the signed record of decision in April 2015.

C. **Coastal Zone Management Act.** The Commission, pursuant to the Coastal Zone Management Act of 1972, as amended (16 USC Section 1451), and the implementing Federal Regulations in 15 CFR Part 930, is required to review Federal projects within San Francisco Bay and agree or disagree with the Federal agency's determination that the project is consistent with the Commission's Amended Coastal Zone Management Program for San Francisco Bay. This letter constitutes such review and comment.

D. **Listing.** The Commission staff prepared a project description with the original project location of the project authorized under this letter of agreement along with the name and address of the subject federal agency, for the listing of regionwide permits, administrative permits, marsh development permits, and other federal consistency actions sent to the Commission for its meeting on July 17, 2003. Further, the Commission staff prepared a project description for the Pier 3 repair project, which is the subject of Amendment No. Four to this amended consistency determination, for the listing of regionwide permits, administrative permits, marsh development permits, and other federal consistency actions. This listing was provided to the Commission for its meeting on January 15, 2015.

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E. **Review Boards**

1. **Engineering Criteria Review Board.** The Commission's Engineering Criteria Review Board reviewed the project authorized by Material Amendment No. Five on February 26, 2015.
2. **Design Review Board.** The Commission's Design Review Board did not review the proposed project.

F. **Public Trust.** The Commission finds that the fill authorized herein is consistent with public trust needs for the area because it improves the welfare of the Bay Area and will not adversely affect public access to and enjoyment of the Bay (Material Amendment No. Five).

IV. Standard Conditions

A. **Consistency Concurrence Execution**. This consistency concurrence shall not take effect unless the Federal agency executes the original of this consistency concurrence and returns it to the Commission within ten days after the date of the issuance of the consistency concurrence. No work shall be done until the acknowledgment is duly executed and returned to the Commission.

B. **Notice of Completion**. The attached Notice of Completion and Declaration of Compliance form shall be returned to the Commission within 30 days following completion of the work.

C. **Consistency Concurrence Assignment**. The rights, duties, and obligations contained in this consistency concurrence are assignable. When the Federal agency transfers any interest in any property either on which the activity is authorized to occur or which is necessary to achieve full compliance of one or more conditions to this consistency concurrence, the Federal agency and the transferee shall execute and submit to the Commission a consistency concurrence assignment form acceptable to the Executive Director. An assignment shall not be effective until the assignees execute and the Executive Director receives an acknowledgment that the assignees have read and understand the amended consistency concurrence and agree to be bound by the terms and conditions of the consistency concurrence, and the assignee is accepted by the Executive Director as being reasonably capable of complying with the terms and conditions of the amended consistency concurrence.

D. **Consistency Concurrence Runs With the Land**. Unless otherwise provided in this consistency concurrence, the terms and conditions of this consistency concurrence shall bind all future owners and future possessors of any legal interest in the land and shall run with the land.

E. **Other Government Approvals**. All required permissions from governmental bodies must be obtained before the commencement of work; these bodies include, but are not limited to, the U. S. Army Corps of Engineers, the State Lands Commission, the RWQCB, and the city or county in which the work is to be performed, whenever any of these may be required. This consistency concurrence does not relieve the Federal agency of any obligations imposed by State or Federal law, either statutory or otherwise.

F. **Built Project Must Be Consistent with Application**. Work must be performed in the precise manner and at the precise locations indicated in your application, as such may have been modified by the terms of the consistency concurrence and any plans approved in writing by or on behalf of the Commission.

G. **Life of Authorization**. Unless otherwise provided in this consistency concurrence, all the terms and conditions of this consistency concurrence shall remain effective for so long as the amended consistency concurrence remains in effect or for so long as any use or construction authorized by this amended consistency concurrence exists, whichever is longer.

H. **Commission Jurisdiction**. Any area subject to the jurisdiction of the San Francisco Bay Conservation and Development Commission under the McAteer-Petris Act at the time the consistency concurrence is granted or thereafter shall remain subject to that jurisdiction notwithstanding the placement of any fill or the implementation of any substantial change in use authorized by this consistency concurrence. Any area not subject to the jurisdiction of the San Francisco Bay Conservation and Development Commission that becomes, as a result of any work or project authorized in this amended consistency concurrence, subject to tidal action shall become subject to the Commission's Bay jurisdiction.

I. **Changes to the Commission's Jurisdiction as a Result of Natural Processes**. This consistency concurrence reflects the location of the shoreline of San Francisco Bay when the consistency concurrence was issued. Over time, erosion, avulsion, accretion, subsidence, relative sea level change, and other factors may change the location of the shoreline, which may, in turn, change the extent of the Commission's regulatory jurisdiction. Therefore, the issuance of this consistency concurrence does not guarantee that the Commission's jurisdiction will not change in the future.

J. **Violation of Consistency Determination May Lead to Consistency Concurrence Revocation**. Except as otherwise noted, violation of any of the terms of this consistency concurrence shall be grounds for revocation. The Commission may revoke any amended consistency concurrence for such violation after a public hearing held on reasonable notice to the Federal agency or its assignee if the amended consistency concurrence has been effectively assigned. If the consistency concurrence is revoked, the Commission may determine, if it deems appropriate, that all or part of any fill or structure placed pursuant to this consistency concurrence shall be removed by the Federal agency or their assignee if the amended consistency concurrence has been assigned.

K. **Should Consistency Concurrence Conditions Be Found to be Illegal or Unenforceable**. Unless the Commission directs otherwise, this consistency concurrence shall become null and void if any term, standard condition, or special condition of this amended consistency concurrence shall be found illegal or unenforceable through the application of statute, administrative ruling, or court determination. If this consistency concurrence becomes null and void, any fill or structures placed in reliance on this consistency concurrence shall be subject to removal by the Federal agency or its assignee if the amended consistency concurrence has been assigned to the extent that the Commission determines that such removal is appropriate. Any uses authorized shall be terminated to the extent that the Commission determines that such uses should be terminated.

L. **Permission to Conduct Site Visit**. The Federal agency shall grant permission to any member of the Commission's staff to conduct a site visit at the subject property during and after construction to verify that the project is being and has been constructed in compliance with the authorization and conditions contained herein. Site visits may occur during business hours without prior notice and after business hours with 24-hour notice.

M. **Abandonment**. If, at any time, the Commission determines that the improvements in the Bay authorized herein have been abandoned for a period of two years or more, or have deteriorated to the point that public health, safety or welfare is adversely affected, the Commission may require that the improvements be removed by the Federal agency, its assignees or successors in interest, or by the owner of the improvements, within 60 days or such other reasonable time as the Commission may direct.

N. **Best Management Practices**

1. **Debris Removal.** All construction debris shall be removed to an authorized location outside the jurisdiction of the Commission. In the event that any such material is placed in any area within the Commission's jurisdiction, except as described in the

LETTER OF CONDITIONAL CONCURRENCE FOR
CONSISTENCY DETERMINATION NO. C2003.003.08
United States Department of the Army
(Originally Issued on August 1, 2003, As
Amended Through June 28, 2017)
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restoration plans, the Federal agency, its assigns, or successors in interest, or the owner of the improvements, shall remove such material, at their expense, within ten days after they have been notified by the Executive Director of such placement.

2. **Construction Operations.** All construction operations shall be performed to prevent construction materials from falling, washing or blowing into the Bay. In the event that such material escapes or is placed in an area subject to tidal action of the Bay, the Federal agency shall immediately retrieve and remove such material at its expense.

O. **In-Kind Repairs and Maintenance.** Any in-kind repair and maintenance work authorized herein shall not result in an enlargement of the authorized structural footprint and shall only involve construction materials approved for use in San Francisco Bay. Work shall occur during periods designated to avoid impacts to fish and wildlife. The Federal agency shall contact Commission staff to confirm restricted periods for construction.

Executed in San Francisco, California, on behalf of the San Francisco Bay Conservation and Development Commission on the date first above written.

LAWRENCE J. GOLDZBAND
Executive Director
San Francisco Bay Conservation and
Development Commission

By: _____
JAIME MICHAELS
Chief of Permits

JM/HM/ra

* *

Receipt acknowledged, contents understood and agreed to:

Executed at _____ _____
Applicant

On_____ By: _____

_____
Print Name and Title

LETTER OF CONDITIONAL CONCURRENCE FOR
CONSISTENCY DETERMINATION NO. C2003.003.08
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cc: U.S. Army Corps of Engineers, Attn: Regulatory Functions Branch
San Francisco Bay Regional Water Quality Control Board,
Attn: Certification Section
Environmental Protection Agency

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APPENDIX H
NHPA SECTION 106 COORDINATION

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DEPARTMENT OF THE ARMY
MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND
834th Transportation Battalion
410 Norman Avenue
Concord, California 94520-1142

January 5, 2017

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Dear Ms. Polanco:

The Department of the Army (Army) sent a letter to your office on March 9, 2016 requesting concurrence on a determination for the General Repair of Bridges, Roads, and Utilities at Military Ocean Terminal Concord, Concord, CA. Based on the results of the identification efforts, the Army determined that the Project will have no adverse effect to historic properties. In coordination with the National Park Service in the design process, the Army has incorporated minor pedestrian improvements and amenities for the Port Chicago Naval Magazine National Memorial into the Pier 2/White Road improvements to include benches at the memorial and improvements to the aesthetics and safety of the White Road pedestrian crossing to the barricaded railcar feature of the memorial that is south of White Road. As no formal response has been received from you, the Army assumes concurrence in accordance with 36 Code of Federal Regulations Part 800.3(c)(4). We value and appreciate our ongoing collaboration on stewardship responsibilities for cultural resources at our installation.

If you have any additional questions about this Project, please contact [redacted] Written communication may be mailed to the attention of [redacted] at the address on this letterhead.

Sincerely,

James R. Wiley
Lieutenant Colonel, U.S. Army
Commanding

cc:
Kimberly Garber, Surface Deployment and Distribution Command, North Charleston, SC
Pamela Whitman, U.S. Army Materiel Command, Redstone Arsenal, AL
Paul Scolari, Chief of Cultural Resources, National Park Service
Tom Leatherman, General Superintendent, National Park Service

DEPARTMENT OF THE ARMY
MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND
834th Transportation Battalion
410 Norman Avenue
Concord, California 94520-1142

January 5, 2017

Dr. Paul Scolari
Chief of Cultural Resources
National Park Service
440 Civic Center Plaza, Suite 300
Richmond, CA 94804

Dear Dr. Scolari:

The Department of the Army (Army) sent a letter to your office on March 9, 2016 requesting agreement on a determination for the General Repair of Bridges, Roads, and Utilities at Military Ocean Terminal Concord, Concord, CA. Based on the results of the identification efforts, the Army determined that the Project will have no adverse effect to historic properties. In coordination with you through the design process, the Army has incorporated minor pedestrian improvements and amenities for the Port Chicago Naval Magazine National Memorial into the Pier 2/White Road improvements to include benches at the memorial and improvements to the aesthetics and safety of the White Road pedestrian crossing to the barricaded railcar feature of the memorial that is south of White Road. As no response has been received from you, the Army has assumed that the National Park Service has no objection with the above determination pursuant to 36 Code of Federal Regulations Part 800.5(c)(1). We value and appreciate our ongoing collaboration on stewardship responsibilities for the Port Chicago National Memorial.

If you have any additional questions about this project, please contact Mr. Guy Romine at [redacted] Written communication may be mailed to the attention of Mr. Romine at the address on this letterhead.

Sincerely,

James R. Wiley
Lieutenant Colonel, U.S. Army
Commanding

cc:
Kimberly Garber, Surface Deployment and Distribution Command, North Charleston, SC
Pamela Whitman, U.S. Army Materiel Command, Redstone Arsenal, AL
Julianne Polanco, State Historic Preservation Officer
Tom Leatherman, General Superintendent, National Park Service