Final

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR ROUTINE MAINTENANCE AND REPAIR AT MILITARY OCEAN TERMINAL CONCORD, CA

APRIL 2022

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FINAL
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR ROUTINE MAINTENANCE AND REPAIR AT MILITARY OCEAN TERMINAL CONCORD, CA

Submitted to:
Military Ocean Terminal Concord
5110 Port Chicago Highway
Concord, CA 94520

April 2022

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PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

FOR

ROUTINE MAINTENANCE AND REPAIR AT

MILITARY OCEAN TERMINAL CONCORD, CA

Proponent: Military Ocean Terminal Concord

NEPA Lead Agency: Military Ocean Terminal Concord

APPROVAL

This Programmatic Environmental Assessment for Routine Maintenance and Repair at MOTCO meets the requirements of NEPA, 40 CFR 1500-1508 and 32 CFR 651, effective July 30, 1979. The Agency relied on the earlier version of the Council on Environmental Quality (CEQ) regulations as the PEA was substantially completed prior to the effective date of the new version of the CEQ regulations published July 16, 2020 and effective September 14, 2020.

7 September 2021

Date

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Luke R Clover
LTC, LG
CDR, 834th Trans BN (SDDC)
Military Ocean Terminal Concord

FINDING OF NO SIGNIFICANT IMPACT

(33 C.F.R. pt. 230-325)

Routine Maintenance and Repair at Military Ocean Terminal,

Concord, CA

Calendar Years 2022 - 2032

1. Introduction: The Military Ocean Terminal, Concord (MOTCO), proposes to implement routine maintenance and repair activities for a period of 10 years (2022 through 2032). The types of installation facilities identified for routine maintenance are waterfront facilities, railyard and rail lines, road transportation and pavement systems, utilities, buildings and structures, landscaping, fencing and security.

2. Action: The Proposed Action is to implement routine installation maintenance and repair activities for the following installation facilities: waterfront facilities, railyard and rail lines, road transportation and pavement systems, utilities, buildings and structures, landscaping, fencing and security. Specific project types and actions for these facilities are described for compliance under this Programmatic Environmental Assessment (PEA). These project actions were analyzed for environmental impacts. Projects not specifically identified in this PEA, or projects that exceed the criteria described for routine maintenance in this document shall require separate environmental compliance.

Best Management Practices (BMPs) to reduce impacts of maintenance actions are described in the Environmental Consequences section for each of the resources. Under the Proposed Action, BMPs will be implemented during routine maintenance and repair activities to minimize potential impacts to installation resources. Implementation of the suite of BMPs identified for each maintenance activity will ensure that the Proposed Action does not adversely affect environment resources on the installation and in the surrounding community.

3. Factors Considered: Factors considered for this Finding of No Significant Impact were direct, indirect, and cumulative impacts on water resources; geology, soils, and mineral resources; air quality; climate change and sea level rise; biological resources, including Federally-listed species; land use and recreation; traffic and transportation; noise; utilities, energy and sustainability; hazardous and toxic materials; socioeconomic and environmental justice; aesthetics and visual resources; and cultural resources. Environmental resources that are not affected by the routine maintenance and repairs include land use, population and regional growth.

4. Conclusion: Based on a review of the information incorporated in the Programmatic Environmental Assessment and supported by the administrative record,

the United States Army Corps of Engineers concludes the proposed activity will not significantly affect the quality of the physical, biological, and human environment. In addition, avoidance, minimization, and mitigation measures are proposed to further support this determination. Therefore, pursuant to the provisions of the National Environmental Policy Act of 1969, the preparation of an additional Environmental Impact Statement will not be required.

28 April 2022

Date

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Luke R Clover
LTC, LG
CDR, 834th Trans BN (SDDC)
Military Ocean Terminal Concord

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ACRONYMS AND ABBREVIATIONS	
µg/m^3	micrograms per cubic meter
µm	micrometers
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
ACM	asbestos containing material
ACP	access control point
ACZA	ammoniacal copper zinc arsenate
AIRFA	American Indian Religious Freedom Act
AR	Army Regulation
Army	U.S. Army
ARPA	Archaeological Resources Protection Act
AST	aboveground storage tank
AT/FP	anti-terrorism/force protection
BAAQMD	Bay Area Air Quality Management District
BCDC	Bay Conservation and Development Commission
BMP	best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCWD	Contra Costa Water District
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CNEL	community noise equivalent level
CO	carbon monoxide
CO^2	carbon dioxide
CPRC	California Public Resources Code
CPS	Coastal Pelagic Species
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibels
dBA	A-weighted decibels
DOD	Department of Defense
DPW	Directorate of Public Works
DTSC	California Department of Toxic Substances Control
EO	Executive Order

ACRONYMS AND ABBREVIATIONS	
EP	Engineering Pamplet
EPA	Environmental Protection Agency
ER	Engineering Regulation
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FNSI	Finding of No Significant Impact
FS	Feasibility Study
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
FY	Fiscal Year
GHG	greenhouse gas
HPT	hydraulic profiling tool
HTRW	hazardous, toxic, and radioactive substances/wastes
HVAC	heating, ventilation, and air conditioning
HWMP	Hazardous Waste Management Plan
ICRMP	Integrated Cultural Resources Management Plan
ICRP	Installation Climate Resilience Plan
IDG	Installation Design Guide
INRMP	Integrated Natural Resources Management Plan
IPMP	Integrated Pest Management Plan
IPS	installation planning standards
IR	installation restoration
LBP	lead-based paint
Leq	equivalent energy level
Leqh	hour equivalent energy level
LTM	long-term maintenance
LUC	land-use control
MBTA	Migratory Bird Treaty Act
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
MMPA	Marine Mammal Protection Act
MMRP	Military Munitions Response Program
MOTCO	Military Ocean Terminal Concord
MRS	Munitions Response Sites
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
Navy	U.S. Navy

ACRONYMS AND ABBREVIATIONS	
NEPA	National Environmental Policy Act
NFA	no further action
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuaries Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
O^3	ozone
Pb	lead
PCB	polychlorinated biphenyl
PCG	Pacific Coast Groundfish
PCNMNM	Port Chicago Naval Magazine National Memorial
PCS	Pacific Coast Salmon
PEA	Programmatic Environmental Assessment
PM_{10}	inhalable particles, with diameters less than or equal to 10 micrometers
$PM_{2.5}$	fine particulate matter, with diameters less than or equal to 2.5 micrometers
PP	Proposed Plan
ppb	parts per billion
ppm	parts per million
RA	Remedial action
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REC	Record of Environmental Consideration
RI	Remedial Investigation
ROD	Record of Decision
ROI	Region of Influence
ROW	right of way
RPMP	Real Property Master Plan
SAV	submerged aquatic vegetation
SCCWRP	Southern California Coastal Water Research Project
SDDC	Surface Deployment and Distribution Command
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SLR	sea level rise
SO_2	sulfur dioxide
SOP	standard operating procedure
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SWPPP	Storm Water Pollution Prevention Plan

ACRONYMS AND ABBREVIATIONS	
SWRCB	State Water Resources Control Board
SY	square yards
TAC	toxic air contaminant
TDS	total dissolved solids
U.S.	United States
USACE	U.S. Army Corps of Engineers
USBOR	U.S. Bureau of Reclamation
USC	U.S. Code
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USOSHA	U.S. Occupational Health and Safety Administration
VOC	volatile organic compound

EXECUTIVE SUMMARY

This Programmatic Environmental Assessment (PEA) analyzes the potential environmental consequences of the United States Army (Army) programmatic and routine maintenance and repair actions at the Military Ocean Terminal Concord (MOTCO) Installation. These routine maintenance and repair actions are necessary to sustain, enhance, and modernize the Installation's existing utilities and infrastructure to meet the Army and U.S. Department of Defense (DOD) missions. The Army began preparing this PEA in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] § 4321 et seq.); Council on Environmental Quality (CEQ) NEPA regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508); and Army's NEPA regulations (32 CFR Part 651). As the internal draft EA was circulated for review prior to the September 14, 2020 effective date of CEQ's updated NEPA regulations, CEQ's pre-2020 version of its NEPA regulations apply.

ES-1 Background

MOTCO's infrastructure was initially constructed by the U.S. Navy (Navy) during World War II. While the Army first began operations at MOTCO in 1997, the Installation was transferred from the Navy to the Army in 2008 as a result of recommendations issued by the Base Realignment and Closure Commission. This installation is the primary West Coast common-user transshipment terminal, home to the SDDC's 834th Transportation Battalion.

Primary MOTCO infrastructure elements include four wharves / piers; railyards and rail lines; a road transportation system; utilities; and buildings. Certain routine maintenance and repair activities may in part qualify for categorical exclusions under Appendix B of the Army's National Environmental Policy Act (NEPA) regulations, but require additional evaluation and analysis where these undertakings have the potential to impact sensitive habitat or species, or other environmental resources. Undertakings described in the Proposed Action may also have been partially covered by previous NEPA analysis but are being evaluated programmatically in this EA to ensure that the entire suite of routine actions are evaluated Installation-wide.

Routine actions and emergent small-scale restoration or modernization requirements at MOTCO are not usually covered under an existing planning program such as the Installation's Real Property Master Plan (RPMP), and its principal components such as the current Installation Development Plan (IDP), Installation Design Guide (IDG), Integrated Natural Resources Management Plan (INRMP), and the Integrated Cultural Resources Management Plan (ICRMP). MOTCO has identified a list of maintenance and repair actions that are routine in nature and often require rapid implementation (e.g., in response to weather-related / accelerated deterioration of conditions). Because of the presence of sensitive habitats and species throughout much of the Installation, a need exists to streamline the environmental review process for these projects that critically support MOTCO's mission.

ES-2 Purpose and Need

The *purpose* of the Proposed Action is to programmatically evaluate for a suite of infrastructure maintenance and repair actions at MOTCO. These actions comprise relatively small-scale, routine measures and are necessary to support and fulfill MOTCO's mission. In some cases, these activities require short-notice or unscheduled mobilization to address developing infrastructure issues and are necessary to allow the Installation to continue to accomplish its mission safely and efficiently.

The *need* for the Proposed Action is driven by the presence of large-scale areas of sensitive habitat and of multiple Federally-listed sensitive, threatened, and endangered species on the Installation and in the adjacent Suisun Bay. Maintenance and repair requirements often intersect or pass through these sensitive habitats, especially in the case of linear infrastructure (i.e. transportation, utilities). Actions which in most cases might be covered under a Categorical Exclusion (CX) are being evaluated as part of an overall "hard look" ensuring that best management practices and mitigations are adequate to protect the environment. MOTCO currently implements maintenance and repair actions on a project-specific review basis. Evaluating the maintenance and repair actions as a whole will allow the Installation to manage these activities more effectively.

ES-3 Proposed Action

The Proposed Action is being undertaken in accordance with Army Regulation (AR) 200-1, Environmental Protection and Enhancement. This regulation implements Federal, State, and local environmental laws and DOD policies for preserving, protecting, conserving, and restoring the quality of the environment. AR 200-1 is used in conjunction with 32 Code of Federal Regulations Part 651 (32 CFR 651), which provides Army policy on NEPA (42 USC 4321–4347) requirements, and supplemental program guidance, which the proponent of this regulation may issue, as needed, to assure that programs remain current.

Table ES-1 presents a compilation of project types and routine actions that have recurred in recent years and are likely to be necessary in the future as identified within seven infrastructure categories:

- Waterfront Facilities
- Railyard and Rail Lines
- Road Transportation and Pavement Systems
- Utilities
- Buildings and Structures
- Landscaping
- Fencing and Security

Under the Proposed Action, maintenance and repair activities would be conducted at the MOTCO Installation over the next 10 years (2022-2032) in a manner that would enhance the mission of MOTCO, improve the efficiency of the environmental review process, and ensure that adequate environmental protection occurs. While some or all of these activities taken individually would be eligible for a Categorical Exclusion from NEPA review, due to the collective nature of these activities and the presence of sensitive species and habitat, and other environmental resources at MOTCO, a PEA is required to evaluate potential impacts. This is especially true of linear infrastructure which may move in and out of those habitats.

The PEA develops a site-specific project-level screening process, best management practices (BMPs), and standard operating procedures (SOPs) that could be applied to each action evaluated under a subsequent Record of Environmental Consideration (REC) and/or Categorical Exclusion, if needed. Programmatic consultations with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), California State Historic Preservation Office (SHPO), Bay Conservation and Development Commission (BCDC), and other agencies will be conducted concurrently with the PEA. Regulatory permits such as Clean Water Act (CWA) Section 401/404 permits would be applied for on a site-specific basis, as needed, following completion of the PEA.

The overall intent of this PEA is to cover environmental review for routine actions. It is not intended to address environmental impacts associated with new military construction, beyond the kinds of modernization or recapitalization actions specifically identified. Types of projects not listed in Table ES-1 are not covered by this PEA.

ES-4 Alternatives

As a result of master planning and ongoing environmental management programs, the following alternatives are addressed:

- No Action
- Proposed Action (infrastructure maintenance and repair over a 10-year period)

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. Environmental analysis of some incidental maintenance and repair tasks may be missed. Implementation of the No Action Alternative would maintain the status quo and its selection would impact MOTCO's ability to sustain, enhance, and modernize its infrastructure and, ultimately, mission capability. This alternative does not meet the project's purpose and need, or objectives. Additional project alternatives were considered but dismissed and not fully analyzed in this PEA.

Table ES-1. Programmatic and Routine Actions

Programmatic Project Type	Action Description
Waterfront Facilities	
Berthing / Mooring Systems and Signage	Removal and replacement of berthing / mooring system components, including marine hardware, fixtures, fittings, fasteners, and fenders. Replacement parts to be engineered according to current industry standards. Placement of individual signs or markers required to improve safety and security of the Installation and or mariner safety. Replacement of floating docks or other mooring apparatus to aid in fire and emergency services berthing.
Pile Wrap Repair	Wooden pile wrap repairs including partial replacement or application of a structural pile jacket (comprised of fiberglass filled with cement grout) or polypropylene protection wrap system (comprised of high-density polyethylene [HDPE] or ethylene propylene diene monomer [EPDM]). Concrete piles may be wrapped or repaired using industry standard concrete repair techniques.
Pile and Pile Cap Replacement	Individual wooden piles that cannot be repaired as described above due to structural integrity concerns, would be replaced with the same size, diameter, and material as the existing piles. Up to 20 per year. Where structurally feasible, wooden pile clusters would be replaced with concrete or composite material. i.e.: Fender system or mooring dolphin piles. Pile caps are an above water repair that would be replaced in-kind according to industry standards. Compliance requires permits from RWQCB and BCDC.
Wharf and Trestle Decking	Degraded or damaged decking would be replaced with wood, concrete, or asphalt. Stringers, bracing, and accessory components would be replaced with marine-grade hardware, fixtures, fittings, fasteners including any federal or state required improvements.
Gantry Cranes and Rails	Replacement of rails, cables, or physical or mechanical components of the Installation's cranes. Preventative maintenance would include replacement of filters and fluids, electrical improvements, minor corrosion abatement, and spot painting. Projects would be limited to 10 feet from footprint of existing facilities.
Anti-Terrorism / Force Protection (AT/FP)	Measures necessary to provide safety and security including installation of fire suppression systems may include installation of cameras, high-intensity lighting features, etc. AT/FP installation would occur on existing facilities (e.g., wharves / piers).
Shoreline Erosion Control	Reinforcement and repair of the existing shoreline riprap would use materials similar to the existing riprap associated with these features. Working limits would be within 20 feet of the existing area and accessed from the shore-side only. Expansion of the riprap revetment beyond the existing footprint shall require new environmental compliance (NEPA).

Programmatic Project Type	Action Description
Railyard and Rail Lines	
Rail Expansion	Projects limited to urban and development areas with no more than 3 miles of linear track or 15,000 square yards (SY) (3.1 acres) of total yard expansion over the 10-year period.
Track / Rail, Siding, Turnout, and Cross-tie Replacement	Routine maintenance, repair, and replacement of track segments to include replacement of worn or undersized rail track, treated wooden cross-ties, components such as anchors, wheel stops, grounding rods, bump posts etc. Projects limited to less than 0.5 mile of consecutive linear trackage and no more than 6 miles total in over the 10-year project period. Work would be concentrated within the rail bed, with an area of disturbance limited to 50 feet either side of the ballast to allow for equipment access. Minor adjustments to rail footprint may be necessary to correct deficiencies in track geometry within this area of disturbance.
Ballast Replacement	Replacement / replenishment of ballast rocks along any part of the rail network. Projects limited to a 50-foot buffer from existing edge of ballast.
Crossing, Switching System, and Signal Upgrades	Includes at-grade crossing installation and modification, routine repair, and maintenance of mechanical, electrical, and other switching and signalization systems components necessary to support the controlled flow of rail traffic throughout MOTCO. Projects to meet current Federal Railroad Administration standards. Projects limited to 50-foot buffer from existing switching and signal systems.
Crossing, Abutment, and Transfer Pad Extensions and Upgrades	Includes maintenance and upgrades of rail abutments to address safety concerns at at-grade crossings and where existing transfer pads require additional surface area to accomplish site-specific tasks. Projects limited to a 10-foot buffer from existing crossings and transfer pads.
Road Transportation System	
Road Resurfacing	Pavement repairs, including sealing, milling, patching, and resurfacing not to exceed 5,000 SY (3.1 acres) of pavement area to be replaced per year Installation-wide. Projects limited to no more than 0.5 mile per year.
Road Grading and Base Replacement	Minor grading, re-profiling, and resurfacing of unimproved aggregate roadways and fire breaks. Road base may be replaced or upgraded to facilitate longer-term solutions to maintenance issues. Projects limited to no more than 10 miles of unimproved road per calendar year. Working limits within 20 feet of the existing area.

Programmatic Project Type	Action Description
Culverts and Stormwater Drainage	Maintain positive drainage away from roadways and pavement by keeping drainage swales and conveyance system free of debris and vegetation, and excavation to return ditches to their original design levels when needed. Replace damaged or undersized culverts and components in conjunction with roadway repairs or failure of conveyance system elements. Minor grading and alteration of flow patterns to address storm water flow issues (e.g. ponding / localized flooding of pavements). Overall system issues and maintenance needs discussed further under Utilities. Stormwater drainage and culvert projects would be conducted within a 50-foot project buffer.
Bridge Strengthening and Elevated Road Crossings	Minor corrosion abatement and spot painting. Includes footing and foundation patching and repairs such as wood, metal or concrete replacement, and minor seismic upgrades such as the addition of stiffeners or re-enforcement of columns etc. Projects limited to 50-foot buffer from existing features.
Geometry Improvements	Shoulder widening, curb installation, repair replacement, minor adjustments to profile or slope.
Holding Pad / Transfer Pad Maintenance, Repair, and Improvements	Pavement repairs, including sealing, milling, patching, and resurfacing not to exceed 9,000 SY (1.9 acres) of pavement replacement per year Installation-wide. Enlargement of existing ammunition pads to enhance use (e.g. addition of curbing, turning aprons, etc.). May occur in conjunction with rail system improvements.
Parking Lots / Ammo Lots, Staging Areas, and Other Miscellaneous Pavements Expansion, Maintenance, and Repair	Staging areas, parking and ammo lot expansion limited to less than 1 acre of pavement area per year in previously disturbed, urban and development or inland areas. Repairs include sealing, milling, patching, and resurfacing limited to less than 1 acre of pavement area per year Installation-wide.
Lighting, Traffic Safety, Signage, and Pavement Markings	Repair and replacement of traffic safety features and signage. Projects limited to 20 feet from the edge of existing road surface.
Utilities	
Aboveground and Underground Utility Systems	Includes removal of old / inactive lines, component upgrades and replacements (e.g. poles, lines, transformers, backflow preventers, and stand-alone elements such as leach fields, generators, fuel tanks etc.), excavation, and directional boring. Disturbance limited to within 20 feet of existing utility rights-of-ways for project work.
Storm Water System Upgrades	Maintenance and repair of existing retention basins would not exceed 25 percent of total basin size per year. Removal, rerouting, and replacement of existing storm water piping plus additional piping needed to meet regulatory requirements and functionality.

Programmatic Project Type	Action Description
Lightning Protection Systems	Installation, maintenance, repair, or replacement of lighting protection systems to including building mounted components or stand-alone catenary structures. Installation would be accessory to existing facilities. Area of disturbance limited to within 100 feet of the existing facility footprint as a wider buffer is required for the tall, expansive lightning protection infrastructure.
Solar Installation(s) (<5 megawatts [MW])	Installation of solar photovoltaic panels and associated storage and distribution components in previously disturbed or inland areas. Up to 1 MW per location.
Buildings	
Minor Building / Structure Expansions	Projects limited to an addition of up to 2,000 SF or 25% of existing building square footage, whichever is less for any facility located in previously disturbed, urban and development or inland areas
Interior Maintenance and Repairs	Interior maintenance activities include annual preventative maintenance of interior systems such as insulation, painting, lighting, phone, gas, plumbing heating, ventilation, and air conditioning (HVAC) systems, security, fire alarms, fire protection, and energy-saving electronic monitoring and control systems. Changes to floorplans may be conducted within the existing footprint. Interior renovations limited to 100,000 square feet per year.
Exterior Maintenance and Repairs	Includes lighting, HVAC, electrical communication management systems (fiber optics), electrical, plumbing, gas, sidewalks, new siding, stucco repair, painting, window/door replacement, and roofing.
Anti-Terrorism / Force Protection (AT/FP) and Seismic Retrofits	Seismic and AT/FP retrofit activities may be triggered for modernization projects as dictated by mission critical decisions or as a result of security recommendations. May include both interior and exterior features such as installation of isolation bearings and structural re-engineering of frame and or foundation elements for building hardening to meet DOD minimum anti-terrorism standards for buildings. Work area would be confined to within 30 feet of building footprint. When feasible, and frequently in conjunction with other routine maintenance activities, small-scale building retrofits to address earthquake preparedness and resiliency would be accomplished.
Berms, Barricades, and Accessory Safety / Security Structures	Earthen / earth-filled berms and physical barriers are part of the explosive safety and AT/FP programs. Includes removal, grading to repair damage from subsidence, erosion, rodent burrows etc., and revegetation to stabilize slopes. Accessory structures such as, guard booths, security towers etc. may be installed, repaired relocated, or replaced, as necessary.

Programmatic Project Type	Action Description
Landscaping	
Maintenance and Beautification of Inland Cantonment Common Areas	Includes installation or upgrade of irrigation systems for the establishment of plantings, implementation of new planting programs, tree pruning, mowing, etc. consistent with the MOTCO Installation Design Guide (IDG). Application of herbicides and pesticides would be in accordance with the MOTCO Integrated Pest Management Plan (IPMP, U.S. Army 2021d).
Maintenance of Tidal Operational Areas	Manual brush clearing and removal of debris within 10 feet of rail lines and operational buildings. Tree pruning to maintain clear line of site and fire safety. Chemical treatment for invasive species removal as specified in the INRMP (June 2018) and IPMP (U.S. Army 2021d).
Fencing & Security	
Fence Installation and Repair	Installation, repair, and replacement of the perimeter fence and interior areas requiring fencing for safety and/or security.
Anti-Terrorism / Force Protection (AT/FP) Measures	Includes the installation of mechanical and electronic security measures (e.g., cameras, intrusion detection systems, vehicle barriers, bollards, etc.).

ES-5 Public Involvement

During the PEA development process (November 2018), MOTCO sent scoping letters to the USFWS, NMFS, NPS, U.S. Environmental Protection Agency (USEPA) Region 9, U.S. Army Corps of Engineers (USACE) Regulatory Division, California State Clearinghouse, SHPO, BCDC, San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), California Department of Fish and Wildlife (CDFW), Cortina Band of Indians, and Ione Band of Miwok Indians. These letters notified these agencies and Federally-recognized tribes of the Proposed Action and associated consultations and solicited comments. No responses to these letters were received. Additional coordination continued with USFWS, NMFS, USACE Regulatory Division, SHPO, BCDC, NPS, and SFBRWQCB on consultation and permitting in support of the Proposed Action.

In accordance with 32 CFR Part 651.35, the draft Finding of No Significant Impact (FNSI) for this PEA will be made available to the public for review and comment for 30 days prior to the initiation of the Proposed Action. A notification of the draft FNSI will be published in the *Contra Costa Times*. The draft FNSI will be distributed to agencies and tribes listed in the above paragraph and any other agencies, organizations, and individuals that have expressed interest in the project. The draft FNSI will articulate the deadline for receipt of comments, availability of the PEA for review, and steps required to obtain the PEA. The draft FNSI and PEA will be available at the Concord Public Library and Bay Point Library and at:
https://www.sddc.army.mil/motco/Pages/MOTCO.aspx.

Although this PEA is not a joint NEPA/California Environmental Quality Act (CEQA) document, it includes CEQA-specific analysis to facilitate and expedite permit issuance from state agencies. The intent is for state agencies issuing permits to be able to use this PEA to meet CEQA requirements.

ES-6 Environmental Consequences

Based upon the programmatic evaluation performed in this PEA, the Proposed Action would not be anticipated to result in significant impacts and, therefore, would not contribute to adverse cumulative impacts within the region. Therefore, MOTCO has determined an EIS is unnecessary for implementing the Proposed Action, and that a FNSI is appropriate.

ES-7 Best Management Practices

The following is a list of BMPs for applicable resource categories under the Proposed Action. Implementation of these BMPs during routine maintenance and repair actions would keep project impacts below the significance thresholds.

- AIR-1. Reduce vehicle use by developing a trip management plan for maintenance and repair projects.
- AIR-2. Reduce unnecessary idling from project vehicles and heavy equipment, placing a time restriction of five minutes on vehicle idling.
- AIR-3. Ensure project vehicles are maintained to perform at state and federal certification levels. Lease new equipment and use USEPA “Tier 4” engines in off-road equipment where practicable.
- AIR-4. Perform periodic project inspections to ensure compliance with these mitigation measures.
- BIO-1. Pollution and erosion control: Similar to GEO-1 construction BMPs would be used in accordance with the MOTCO NPDES Permit and SWPPP for proposed actions that involve earthwork. Site-specific spill pollution prevention and erosion control measures will be put in place to minimize or eliminate impacts to habitat from soil erosion, runoff, and spills.
- BIO-2. Stormwater management: For proposed actions that involve temporary actions such as the reconditioning, reconstructing, or replacement of pavement, replacement of a stream crossing, or permanent actions that may otherwise increase the contributing impervious surface area within the vicinity of the project, the Installation SWPPP will be followed with a site-specific Stormwater Management Plan. The SWPPP / Stormwater Management Plan would be implanted in a manner to protect habitat from changing volumes of stormwater runoff.

- BIO-3. Site restoration: For proposed actions that would have the potential to result in the disturbance of riparian vegetation, soils, or streambanks, a site restoration plan would be developed prior to construction, and restoration would be commensurate with the scale of the action.
- BIO-4. Heavy equipment and vehicle use: Heavy equipment necessary to implement proposed actions will be selected and operated as necessary to minimize adverse effects on the environment (e.g., minimally sized, low pressure tires).
- BIO-5. 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.
- BIO-6. Approved work windows (e.g. daily construction will occur during daylight hours. In-water work will be completed in the approved delta smelt work window between August 1 and November 30 or as otherwise specified during consultation with USFWS and NMFS).
- BIO-7. Piling installation: Replacement pilings would involve the replacement of same-size piles with either concrete, steel, or treated wood piles. When practical, a vibratory hammer will be used for piling installation. If an impact hammer is needed to install concrete piles or proof piles, noise attenuation measures would be implemented.
- BIO-8. Piling removal: Specific practices would be followed to minimize creosote release from treated piles and/or sediment disturbance and resuspension.
- BIO-9. Deck replacement: Specific practices would be followed for proposed actions that involve the removal and replacement of existing decking.
- BIO-10. Biological Monitoring for projects where the resource agencies and the Army have agreed on monitoring.
- BIO-11. Reporting and/or Notification of Regulatory agencies.
- CR-1. Follow current ICRMP procedures (U.S. Army, 2018). The ICRMP includes 18 SOPs for cultural resources compliance procedures. ICRMP SOPs applicable to the Proposed Action include the following:
    - SOP-1: Maintenance and Care for Historic Buildings and Structures
    - SOP-2: Disposal or Demolition of Excess Property
    - SOP-3: Mission Training of Military and Tenant Personnel
    - SOP-4: Emergency Actions
    - SOP-5: Inadvertent Discovery of Archaeological Deposits/Cultural Materials
    - SOP-7: Department of Public Works Activities
    - SOP-10: Section 106 Process

- SOP-11: Tribal Consultation Process
- SOP-12: Compliance with Executive Order 13007: Indian Sacred Sites
- SOP-13: Government to Government Relations
- SOP-14: Properties of Traditional Religious and Cultural Importance
- SOP-15: Native American Graves Protection and Repatriation Act
- SOP-16: Archaeological Resources Protection Act of 1979
- SOP-17: Antiquities Act of 1906
- SOP-18: National Park Service Consultation Process

- CR-2. Although substantial excavation work is not a typical part of routine maintenance and repair operations, potential excavation in areas with high or moderate archaeological potential at MOTCO should have an archaeological survey done prior to construction or be conducted in the presence of an archaeological monitor. In the event that archaeological deposits are encountered during any excavation activities, the activity must stop and the MOTCO Environmental Coordinator must be notified. If bone is present within the deposit, a qualified professional will determine if the materials represent human remains.
- GEO-1. Use of construction BMPs in accordance with the MOTCO NPDES Permit and SWPPP. The BMPs would include but not be limited to the following:
    - Schedule excavations (e.g., utility work) to minimize land disturbance during rainy and dry seasons;
    - Provide soil stabilization to steep slope work areas;
    - Provide sediment controls to intercept and slow down stormwater flows;
    - Cover stockpiled soil;
    - Use dust suppressants, such as watering soils and unpaved roadways;
    - Preserve existing vegetation where no construction activities are planned; and
    - Replant/revegetate all exposed disturbed areas immediately upon completion of projects.
- GHG-1. Increase acquisition and use of electric fleet vehicles.
- HM-1. The Installation Hazardous Waste Management Plan (HWMP) will be followed during project activities with regard to the proper storage, use, and disposal of hazardous, toxic, and radioactive substances/wastes.
- HM-2. Where ACM and/or LBP is present on project actions (e.g., building exterior renovations) develop and adhere to a debris containment and collection plan for protection of worker safety and the environment. A containment system would be placed around applicable work areas to collect all dust and debris where ACM/LBP is disturbed. These waste building materials would be segregated and disposed of properly.

- HM-3. Coordinate any work within IR site boundaries with Installation Environmental Chief to ensure no impacts to remedial measures.
- LU-1. To the extent possible the Army will work with the National Park Service (NPS) to attempt to avoid disruptive project activities during times that conditions of quiet and reverence are important for ceremonial events at the Port Chicago Naval Magazine National Memorial (PCNMNM) Site.
- NS-1. Project workers should wear appropriate protection to limit hearing damage during maintenance and repair activities. U.S. Occupational Health and Safety Administration (USOSHA) regulations, DOD Instruction 6055.12, *Hearing Conservation Program* and Army Pamphlet 40-501, *Hearing Conservation Program*.
- NS-2. A potential sound measure that could be considered on a project action basis is temporary sound barriers near a high project-related noise source.
- NS-3. Construction would take place during weekday, daytime hours (Monday through Friday from 7:00 am to 5:00 pm.
- TR-1. Develop traffic control plans for project actions that describe traffic detours away from applicable project activities, particularly road maintenance and repairs. Distribute traffic control plans to Installation employees.
- WR-1. Continue with routine maintenance of permanent and temporary landscape irrigation systems per the Installation SWPPP. Continue with quarterly inspections, sampling, and annual reporting, as described in the SWPPP.
- WR-2. Use of construction BMPs in accordance with the MOTCO National Pollution Discharge Elimination System (NPDES) Permit and SWPPP.
- WR-3. Monitoring adjacent stormwater outfalls and conduits when conducting maintenance and repair activities and perform simultaneous maintenance on these features as needed to keep them operational.
- WR-4. No vehicles or equipment (except for small watercraft) 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. No vehicles will be fueled on wharves or piers or over water (except for small watercraft).
- WR-5. For projects requiring water use, reduce the use of water in maintenance and repair activities by application of conservation measures. Examples would include using more drought-tolerate plantings in landscaping to reduce irrigation requirements and recycling water used in power washing.
- WR-6. For in-water work (e.g., pile replacements) floating booms will be in place in the work area to assist in capture of floating debris and potential fluid spills from project activities.

- WR-7. For selection of treated wood pilings, select products that have been certified through a third party (e.g. Western Wood preservers Institute) to be treated to proper retention standards that maximize fixation of ACZA and minimize leaching rates.

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1.0 INTRODUCTION

1.1 BACKGROUND

The U.S. Army's (Army's) Military Ocean Terminal Concord (MOTCO) has prepared this Programmatic Environmental Assessment (PEA) to address the environmental effects of programmatic and routine maintenance and repair actions necessary to sustain, enhance, and modernize the MOTCO Installation's existing utilities and infrastructure to meet the Army and U.S. Department of Defense's (DOD's) missions. This PEA has prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] § 4321 et seq.); Council on Environmental Quality (CEQ) NEPA regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508); and Army's NEPA regulations (32 CFR Part 651). As the internal draft EA was circulated for review prior to the September 14, 2020 effective date of CEQ's updated NEPA regulations, CEQ's pre-2020 version of its NEPA regulations apply. The Surface Deployment and Distribution Command (SDDC) at MOTCO is the NEPA lead agency for this EA. MOTCO is located on Suisun Bay, 30 miles northeast of San Francisco, in Contra Costa County. MOTCO's infrastructure was constructed by the U.S. Navy beginning in WWII and operated as a Navy installation. The U.S. Army MOTCO began operations in 1997. Under a Base Realignment and Closure (BRAC) process, the installation was transferred to the Army in 2008. This installation is the primary West Coast common-user transshipment terminal, home to the SDDC's 834th Transportation Battalion.

Primary MOTCO infrastructure elements include three wharves and a pier (Wharves 2, 3, 4, referred to in previous documents as "Piers 2, 3, and 4," and the Barge Pier); railyards and rail lines; a road transportation system including transfer and holding pads; utilities (water, wastewater, and electricity); and buildings (operations, administration, maintenance, warehouse/supply, ammunition holding/storage, and security). MOTCO's current planning documents include Installation Master Plan (2015), Real Property Master Plan (RPMP 2011), 2016 Installation Development Plan (IDP; U.S. Army 2016), and Installation Planning Standards (IPS 2021) provide detailed descriptions of the Installation's history and mission functions, and comprehensive lists and assessments of existing and planned infrastructure.

The PEA only covers maintenance and repair of existing infrastructure. Certain routine maintenance and repair activities have been determined to qualify for Categorical Exclusions (CX, 32 CFR 651, Appendix B of the Army's NEPA regulations), and various Army-wide and MOTCO-specific documents address a variety of routine actions. Other routine and recurring actions at MOTCO do not currently have standardized or streamlined NEPA-compliant documentation, or are not covered under an existing program or plan. Therefore, a need exists to streamline the environmental review process for these projects that critically support MOTCO's mission. If this PEA determines that no adverse significant or cumulative impacts would occur, additional

analyses would not be necessary to support implementation of the discrete maintenance and repair actions assessed herein.

MOTCO has compiled a list of maintenance and repair actions that have not been previously reviewed, but are routine in nature and often require rapid implementation (e.g., in response to weather-related / accelerated deterioration of conditions), have recurred in recent years, and are likely to be necessary in the future. The maintenance and repair actions for infrastructure described in Section 1.1.1 (below) are summarized in Table 2-1.

1.2 REGULATORY AUTHORITIES

Key federal laws, Army Regulations (ARs), and Executive Orders (EOs) that are applicable to the development of this PEA are listed below. Additional details on these laws, as well as other regulatory drivers in place to ensure the protection of environmental resources, are presented in the Regulatory Setting section for each environmental resource area analyzed in Section 3.0.

- NEPA
- 32 CFR 651 (Environmental Analysis of Army Actions)
- 36 CFR 800 (Protection of Historic Properties)
- Antiquities Act
- Clean Water Act (CWA)
- Safe Drinking Water Act
- Coastal Zone Management Act (CZMA)
- National Marine Sanctuaries Act (NMSA)
- Endangered Species Act (ESA)
- Magnuson-Stevens Fishery Conservation and Management Act
- Native American Graves Protection and Repatriation Act (NAGPRA)
- Archaeological Resources Protection Act (ARPA)
- Marine Mammal Protection Act (MMPA)
- American Indian Religious Freedom Act (AIRFA)
- Federal Wildlife Coordination Act (FWCA)
- Rivers and Harbors Act
- National Historic Preservation Act (NHPA)
- National Register of Historic Places (NRHP)
- Migratory Bird Treaty Act (MBTA)
- Clean Air Act (CAA)
- Noise Control Act
- AR 200-1, Environmental Protection and Enhancement
- AR 405-70, Utilization of Real Property
- EOs
    - 11514 – Protection and Enhancement of Environmental Quality

- 11988 – Floodplain Management
- 11990 – Protection of Wetlands
- 12088 – Federal Compliance with Pollution Control Standards
- 12373 – Intergovernmental Review of Federal Programs
- 12898 – Environmental Justice in Minority and Low-Income Populations
- 13045 – Protection of Children from Environmental Health Risks and Safety Risks
- 13175 – Consultation and Coordination with Indian Tribal Governments
- 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds
- 13327 – Federal Real Property Asset Management
- 13693 – Planning for Federal Sustainability

In addition to these applicable environmental laws, regulations, and EOs, there are several specific regulatory agency approvals and permitting requirements that apply to the proposed Project. Compliance with regulatory permitting processes and permit requirements can also be addressed programmatically; however, some project types may require individual permits prior to initiating work. Table 1-1 lists some of the state and federal agencies with environmental permitting and approval requirements that may apply to some specific maintenance and repair projects as appropriate at MOTCO. MOTCO shall request permits from the Regional Water Quality Control Board (RWQCB) and Bay Conservation and Development Commission (BCDC) when appropriate to address environmental issues.

Table 1-1. Environmental Approval/Permit Requirements

Permits and Approvals	Agency
CWA, Section 404 / Rivers and Harbors Section 10 Permit	U.S. Army Corps of Engineers (USACE)
CWA, Section 401 Permit	Regional Water Quality Control Board (RWQCB)
CZMA – Consistency Determination	Bay Conservation and Development Commission (BCDC)
Magnuson-Stevens Fishery Conservation and Management Act – Essential Fish Habitat Assessment	National Marine Fisheries Service (NMFS)
ESA, Section 7 Consultation	U.S. Fish and Wildlife Service (USFWS) and NMFS
NHPA, Section 106 Consultation	State Historic Preservation Office (SHPO)
Lake or Streambed Alteration	California Department of Fish and Wildlife (CDFW)

This PEA is a public document intended for use by the Army, other governmental agencies, and the public to enable a determination and evaluation of potential environmental consequences of the proposed projects, identification of mitigation measures to reduce or eliminate adverse effects, and an examination of feasible alternatives to the proposed projects. The programmatic and qualitative impact analyses in this document are based on the regulatory setting and resource constraints information that was readily available at the time of preparation. The information

contained in this PEA will be reviewed and considered by the Army and MOTCO Installation Directorate of Public Works (DPW) prior to the final decision to approve, deny, or modify the proposed infrastructure projects.

1.3 STUDY AREA

Located along Suisun Bay in north-central Contra Costa County, California, MOTCO sits in the East San Francisco Bay Area, with Oakland 20 miles to the southwest, Sacramento 65 miles to the northeast, and Concord approximately five miles to the south of the Installation, and is about 10 miles east of the Carquinez Straight that connects Suisun Bay to San Pablo Bay (Figure 1-1 Regional Map).

The Installation includes an approximately 115-acre administrative complex (Inland Area / Administrative District) and an approximately 6,242-acre Tidal Area (Mission District), which are connected by a road running parallel to and west of Port Chicago Highway. The Tidal Area includes about 2,045 acres of islands located in Suisun Bay (Figure 1-2 Installation map). The MOTCO restricted area extending from the shore to the ship channel includes the navigational approaches to the wharves (33 CFR Part 334). Infrastructure on the islands is minimal and outside the area for maintenance and repair in this PEA.

MOTCO's Real Property inventory includes 141 general buildings/structures, numerous magazines, barricaded magazines, berms, and bridges / trestles, as well as 38 paved areas, (e.g., parking lots), 4 wharves / piers, 27 miles of road, and about 38 miles of railroad track. The basic layout of MOTCO and its infrastructure are illustrated in Figures 1-3a through 1-3f). All of these facilities require regular maintenance and repairs. Information about buildings and structures at MOTCO was provided in the *Final ICRMP Update 2017-2022* and is summarized below.

1.3.1 Waterfront Facilities

Structures in the Tidal Area consist of piers and wharves and associated operational support buildings and structures, including offices and the Barge Pier (used for docking of all small watercraft at MOTCO). There are three operational wharves located along the Tidal Area's shoreline of Suisun Bay: Wharf 2, Wharf 3, and Wharf 4 (Wharf 1 was an original World War II-era structure and was destroyed in the Port Chicago explosion on July 17, 1944). Each of the wharves originally included wood trestle bridges to facilitate rail access to the western end of the wharves where materials were loaded onto rail cars. All three operational wharves have had concrete extensions added to their eastern ends allowing trains to continue back to land in a loop, rather than requiring them to back up.

1.3.2 Railyard and Rail Lines

The MOTCO-owned railroad network consists of approximately 38 miles of track, more than 270 turnouts, two classification yards, 11 railroad crossings, and 38 barricaded rail sidings. There are six railroad bridges and trestles in the tidal area at MOTCO. Some of the older track is not currently in use.

1.3.3 Road Transportation System

The vehicular transportation system includes three transfer pads and eight holding pads in the Tidal Area, as well as vehicle parking, open storage, and staging areas located throughout MOTCO. The current real property inventory includes 38 paved transport areas and 3 bridges. The transport system areas do not include repairs previously evaluated in the *Environmental Assessment for General Repair of Bridges, Roads, and Utilities at Military Ocean Terminal Concord* (U.S. Army, 2017).

1.3.4 Utilities

While the *Environmental Assessment for General Repair of Bridges, Roads, and Utilities at Military Ocean Terminal Concord* (U.S. Army, 2017) covers maintenance for some MOTCO utilities along roadways, this PEA is applicable for MOTCO utilities outside of the road network including water, sewer, communication, and electricity, as shown on Figure 1-3. There will be no impact to wetlands and undisturbed habitat areas from the maintenance and repair of utilities. If a utility crosses into these areas, maintenance and repair work would be addressed in a separate NEPA document.

Regional Map
Military Ocean Terminal Concord
Contra Costa County, CA

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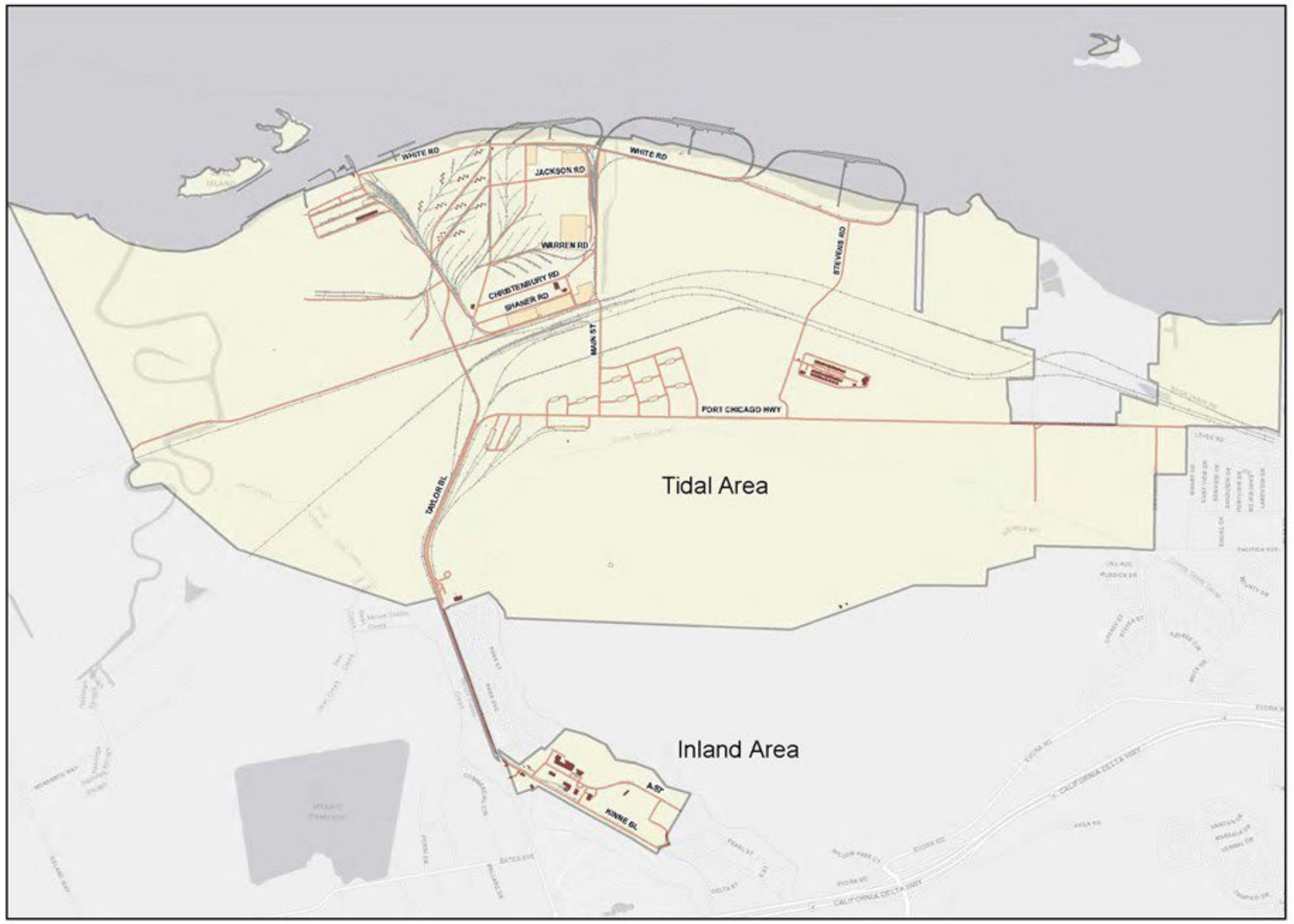

Installation Map
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 1-2

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Legend

Electrical, Utility Line
electricalSegmentType
- primary overhead
- primary underground
- secondary overhead
- secondary underground

Water, Segment
- ABANDONED
- EBMUD AQUEDUCT
- MAIN

Wastewater, Pipe
- ABANDONED
- MAIN
- SERVICE

Stormwater, Pipe
- ABANDONED
- MAIN
- SERVICE

RoadCenterline
Is Paved, Op Status
- No, Active
- No, Not In Service
- Yes, Active
- Yes, Not In Service
- Yes, Proposed
- Rail Segments
- Installation
- DocksAndWharfs
- Buildings - In Service

Site Map for
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 1-3a

Site Map – Proposed Projects

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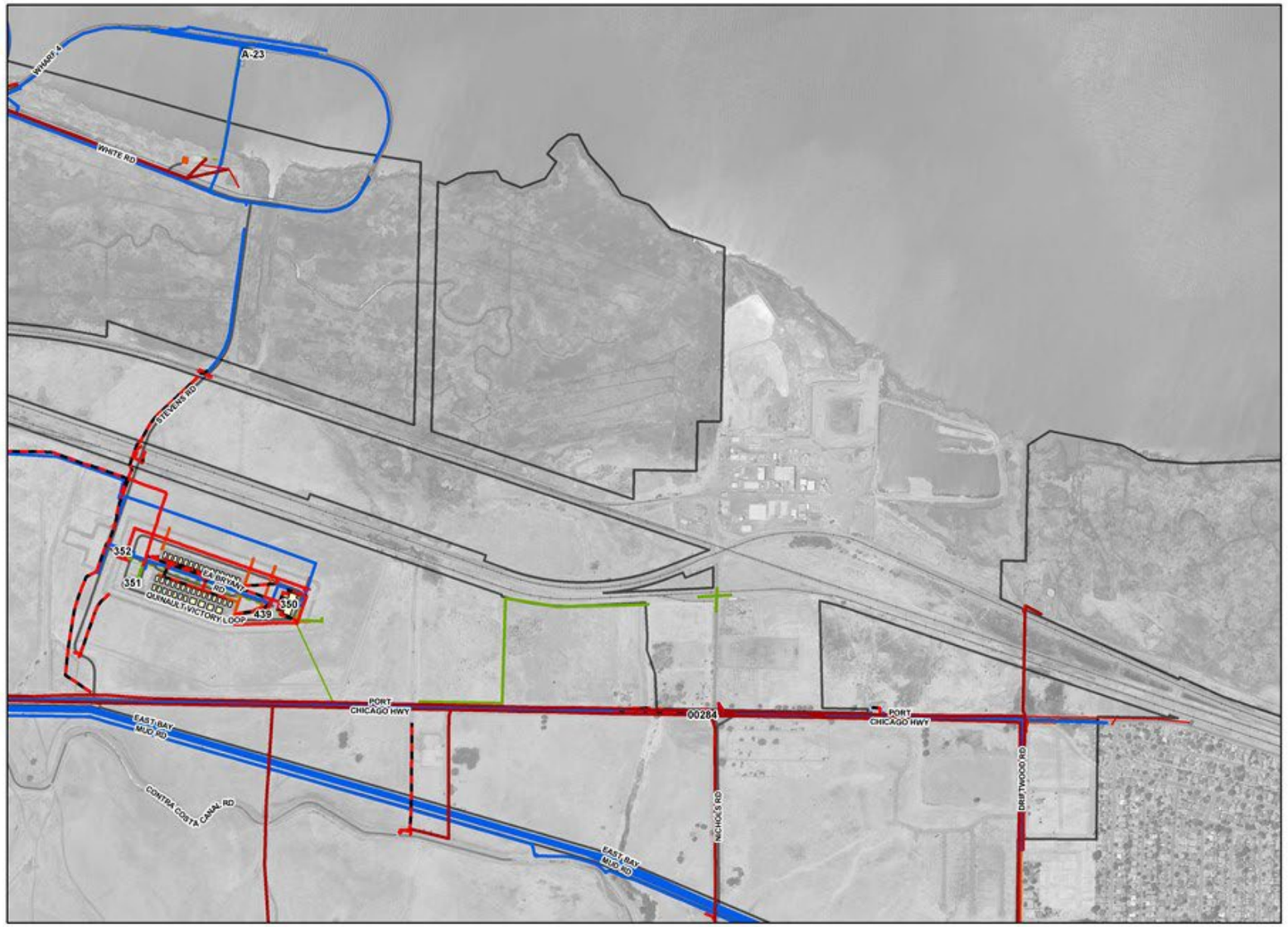

Site Map for
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 1-3b

Site Map – Proposed Projects

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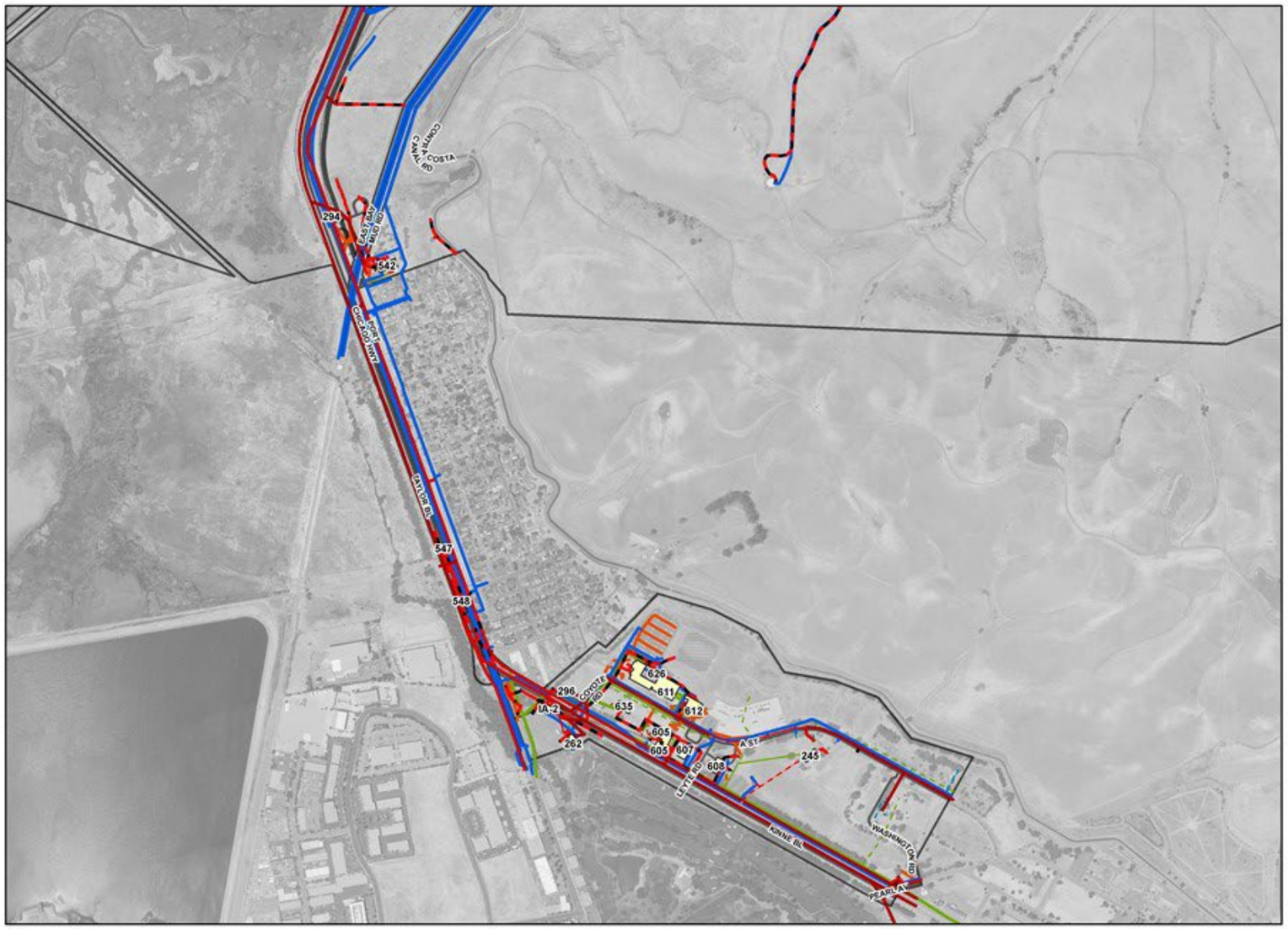

Site Map for
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 1-3c

Site Map – Proposed Projects

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Site Map for
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 1-3d

Site Map – Proposed Projects

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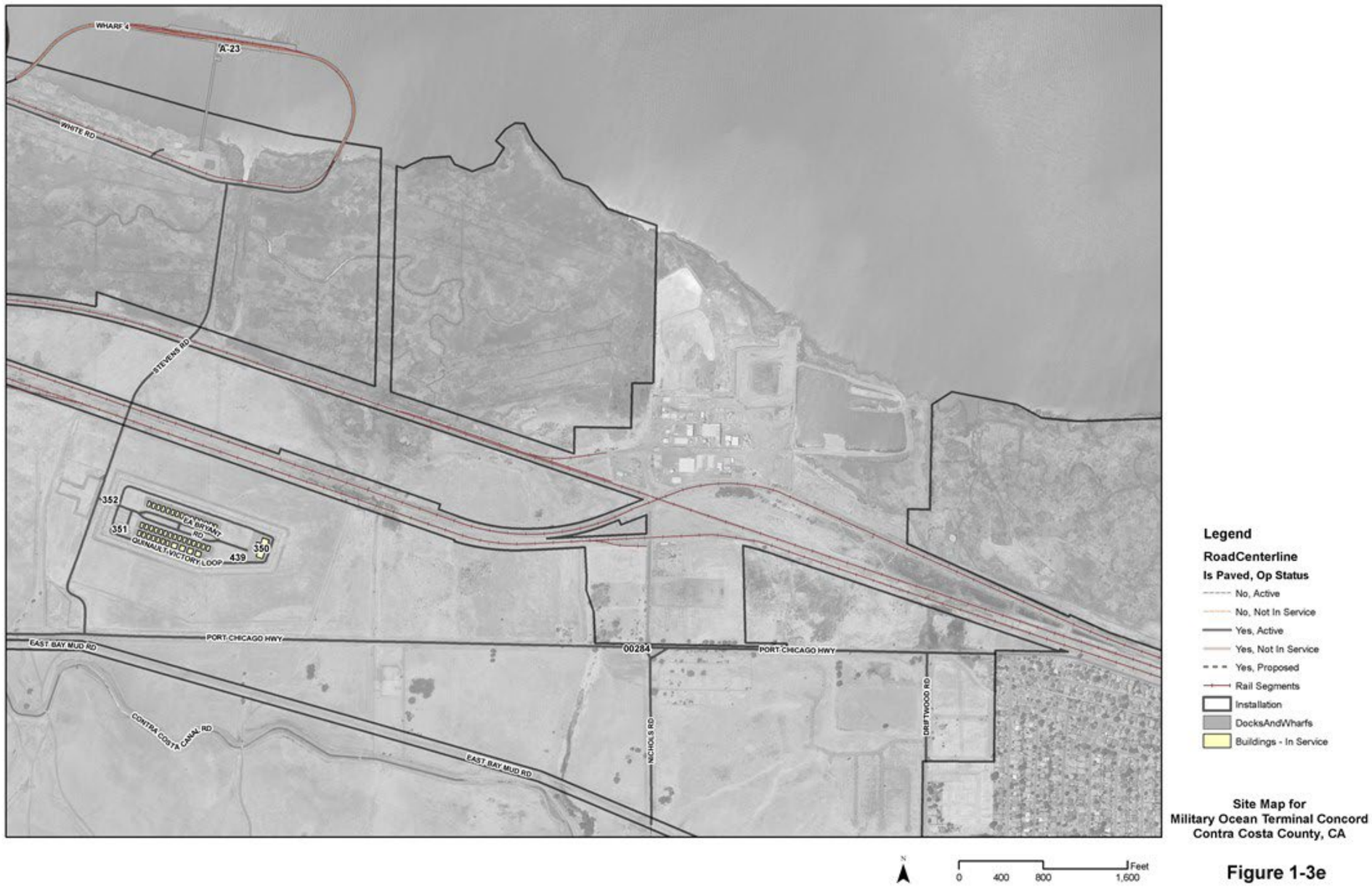

Site Map for
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 1-3e

Site Map – Proposed Projects

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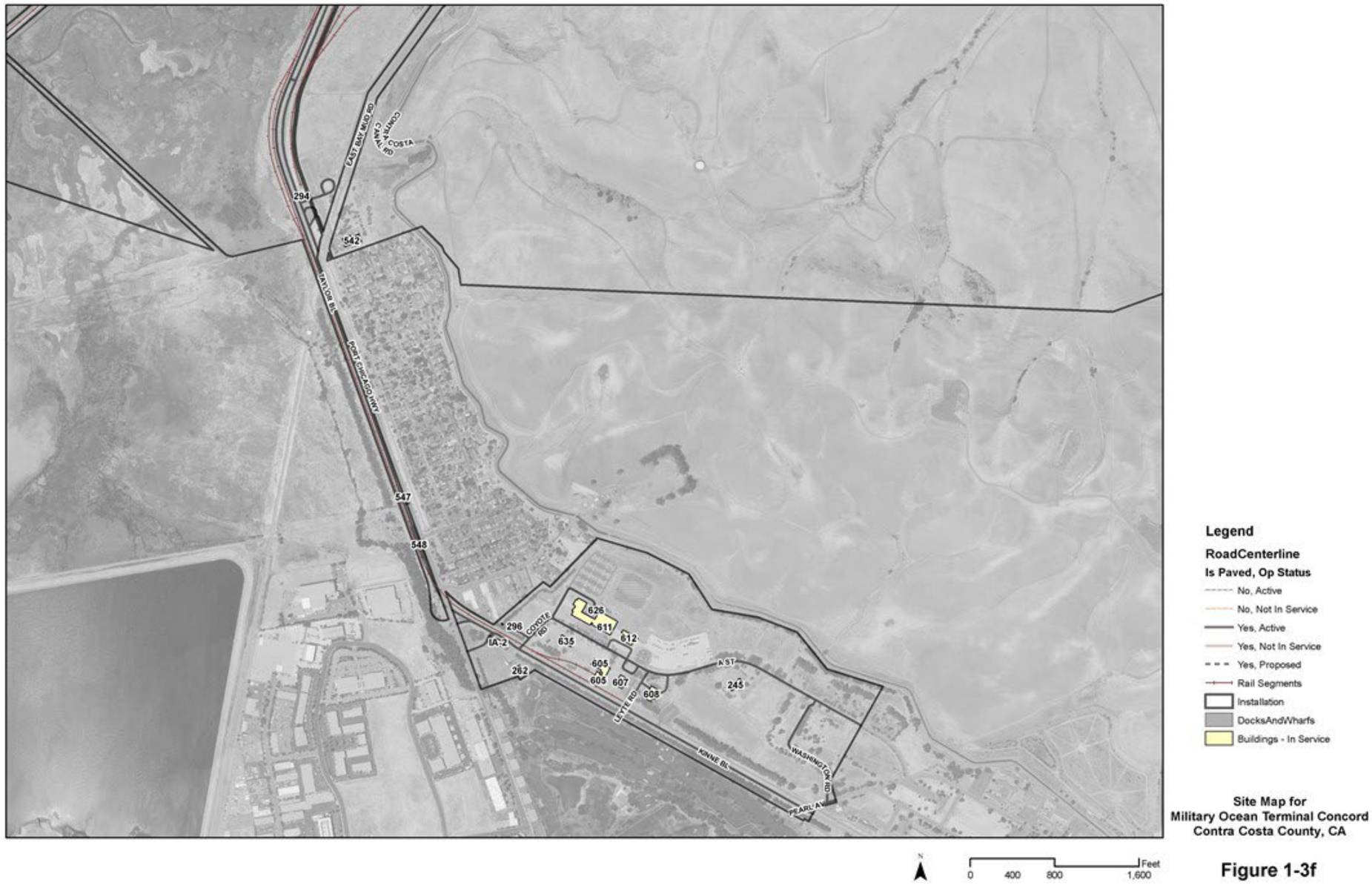

Site Map for
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 1-3f

Site Map – Proposed Projects

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1.3.5 Buildings

A wide variety of buildings and structures are located in both the Tidal and Inland areas. These include office, security, training, public works, utility, and operational buildings, as well as sheds, shops, generators, and other general support facilities. Since 2009, construction in the Inland Area has included locomotive wash rack, locomotive maintenance, electrical substation, headquarters, fire station, Army Reserve Center (2 buildings), DPW Facility, maintenance and storage facility, and two photovoltaic (solar energy) arrays.

There are numerous magazines located in the "Q Area" that were originally designed and built to support weapons storage and maintenance. The magazines are arranged in one single row and one double row. Each magazine is covered by tapered earthen berms over metal-plate vaults, and the magazines are separated by concrete access roads. Additional facilities in the "Q Area" consist of support structures that provide a variety of storage, maintenance, and security functions.

1.3.6 Landscaping

Landscaping is the planted vegetative cover in and around facilities throughout the installation, excluding native vegetation in the wetlands and other protected natural areas. Landscaping is essential for stabilizing soil and preventing non-point source runoff.

1.3.7 Fencing and Security

Fencing are the primary structures for defining areas on the installation and managing access for safety and security. Other physical and electronic infrastructure are included in this category.

1.4 PREVIOUS STUDIES AND ENVIRONMENTAL DOCUMENTS

In addition to this PEA for routine maintenance and repair projects, MOTCO is currently preparing or has recently completed NEPA-compliant plans, EAs, and an Environmental Impact Statement (EIS), including the following:

- *Final PEA and Finding of No Significant Impact for Implementation of a Real Property Master Plan, Integrated Natural Resources Management Plan, and Integrated Cultural Resources Management Plan at Military Ocean Terminal Concord* (2013)
- *Final Military Ocean Terminal Concord Integrated Cultural Resources Management Plan Update 2017-2022*
- *Final Military Ocean Terminal Concord Integrated Natural Resources Management Plan* (2018)

- *Final EIS for the Modernization and Repair of Piers 2 and 3 at Military Ocean Terminal Concord, CA* (2015)
- *Environmental Assessment for General Repair of Bridges, Roads, and Utilities at Military Ocean Terminal Concord, CA* (2017)
- Draft Programmatic Environmental Assessment for Mission Activities and Facility Reinvestment at Military Ocean Terminal Concord, California (2020)
- *Draft Environmental Assessment for Military Ocean Terminal Concord (MOTCO) Wharf Maintenance Dredging Project Contra Costa County, Concord, California Calendar Years 2022-2031* (2021)

These documents provide useful background information regarding MOTCO's history, physical setting, and operations; however, they were determined to not sufficiently address potential impacts associated with programmatic maintenance and repair activities. As such, these documents are not appropriate from which to tier analyses of potential impacts associated with this Proposed Action, though are referenced in this PEA, as applicable.

1.5 PURPOSE AND NEED

The *purpose* of the Proposed Action is to programmatically allow for a suite of infrastructure maintenance and upgrade actions at MOTCO. These actions comprise relatively small-scale, routine measures (e.g., road re-paving) and are necessary to support and fulfill MOTCO's mission. In some cases, these activities require short-notice or unscheduled mobilization to address developing infrastructure issues. These small-scale activities would support MOTCO in accomplishing its mission.

This PEA is intended to address the potential environmental impacts of the Proposed Action. Part of the goal of this PEA is to make sure maintenance and repair activities are being conducted in a manner that is consistent and compliant with environmental regulations.

The *need* for the Proposed Action is driven by maintenance and repair requirements necessary to ensure the viability of operations at MOTCO. MOTCO currently implements maintenance and repair actions on a project-specific review basis, which could lead to deferred / delayed actions, duplicative environmental reviews, cost and schedule over-runs, and a degradation in MOTCO's infrastructure. This can impact MOTCO's mission capabilities.

To fulfill the purpose and need identified above, MOTCO would perform routine maintenance and repair utilizing a Record of Environmental Consideration (REC) and Checklist where appropriate that ensures compliance with applicable environmental regulations. MOTCO would also perform as-needed maintenance and repair activities on short notice and/or unscheduled conditions, not requiring individual project consideration and approval.

Ultimately, specific project objectives include:

- Streamlining the NEPA analysis process, to avoid unnecessary and costly duplication of effort;
- Conducting maintenance and repair actions in a manner that adequately protects the environment, including Federally-listed species;
- Ensuring consistency with applicable MOTCO and Army policies, regulations, and consultation efforts; and
- Providing the forces that work and train on MOTCO with state-of-the-art and modernized infrastructure.

1.6 SCOPE AND CONTENT OF THE PROGRAMMATIC EA

This PEA identifies, documents, and evaluates the potential direct, indirect, and cumulative environmental effects of the maintenance and repair projects proposed over a 10-year planning horizon, using 2021 as the base year. An interdisciplinary team consisting of archaeologists, biologists, engineers, economists, environmental scientists, master planners, and military personnel analyzed the proposed federal actions. The relevant adverse and beneficial effects associated with the actions are identified.

Section 1.0 of this PEA covers the Purpose and Need, describes the project objectives, briefly addresses the project's relationship to other plans and policies, and presents the regulatory framework. Section 2.0, Proposed Action and Alternatives, describes the alternatives development process for the project, and the Proposed Action/Project and its alternatives. Section 3.0, Affected Environment, presents the regulatory and environmental setting for the project, and qualitatively addresses anticipated environmental impacts of the project alternatives. Section 4.0, Environmental Consequences, presents a summary of impacts and mitigation measures, and describes cumulative effects. Section 5.0, Public Involvement, describes the public scoping and public review process, including agency coordination. Section 6.0, Comparison of Alternatives and Conclusions, provides a comparison of the environmental consequences of the project alternatives. Section 7.0, References, provides the list of documents used in preparation of this PEA. Section 8.0, Glossary, defines terms used in this document. Section 9.0, List of Preparers, provides a list of agency and consultant staff who contributed to the preparation of the PEA.

Environmental resources addressed in this document include: Water Resources; Geology, Soils and Mineral Resources; Air Quality; Climate Change; Vegetation and Wildlife; Land Use and Recreation; Traffic and Transportation; Noise; Utilities, Energy, and Public Services; Hazardous and Toxic Materials/Wastes; Sustainability; Socioeconomics and Environmental Justice; Aesthetics/Visual Resources; and Cultural Resources. Per 40 CFR Part 1501.7 (a)(3), the CEQ recommends agencies identify and eliminate from detailed study any issues that are not

significant. Because of the programmatic nature of this analysis, all resource areas listed above were examined. A brief discussion of resources determined not to be significant will be provided in Section 3.0.

To ensure proper utilization of this PEA, and to facilitate compliance with CEQ guidance (40 CFR Parts 1500-1508) and the Army NEPA rule (32 CFR Part 651), a REC template and accompanying checklist forms are included and provide a framework for assessing Installation- and project-specific environmental impacts for maintenance and repair activities (Appendix A). If conditions outlined in the checklist are met, and if procedures and mitigations are adopted at the Installation-level, a REC or a CX may be prepared that incorporates by reference this PEA, and the Proposed Action may proceed.

As specified under NEPA and CEQ regulations (40 CFR 1500-1508), a monetary cost-benefit analysis is not required as part of a NEPA-compliant PEA. The Proposed Action and its alternatives have been developed based on military training needs and mission requirements. As such, no quantitative financial assessment has been performed as part of this PEA.

1.6.1 Decision to Be Made

The primary legislation affecting the decision-making process is NEPA, which requires that federal agencies consider potential environmental consequences of their proposed actions. The law's intent is to protect, restore, or enhance the environment through well-informed federal decisions, with public and agency input. The CEQ was established under NEPA for the purpose of implementing and overseeing federal policies as they relate to this process. In 1978, the CEQ issued Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR §1500-1508 [CEQ ,1978]). These regulations specify that an EA be prepared to:

- Briefly provide sufficient analysis and evidence for determining whether to prepare an EIS or a Finding of No Significant Impact (FNSI), the latter of which is the "decision document" that would close the PEA process when no unavoidable significant impacts are identified;
- Aid in an agency's compliance with NEPA when no EIS is necessary; and
- Facilitate preparation of an EIS when one is necessary.

The decision to be made by the Installation Commander of MOTCO is whether or not the Proposed Action qualifies for a FNSI under NEPA, or whether an EIS must be prepared.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This section characterizes the Proposed Action and alternatives, including the No Action Alternative. Proposed project alternatives considered but dismissed are also discussed. The NEPA Guidelines emphasize the need for an evaluation of a range of alternatives. The federal NEPA lead agency is responsible for selecting the range of alternatives. NEPA requires that federal agencies explore and objectively evaluate a range of reasonable alternatives to provide a clear basis for choice among options by the decision-makers and the public (40 CFR 1502.14). At minimum, a project alternative (Proposed Action) and the No Action Alternative must be evaluated.

2.2 PROPOSED ACTION

The Proposed Action consists of programmatic and routine maintenance and repair actions at MOTCO over the next 10 years (2022-2032). These maintenance and repair actions, presented in Table 2-1, are intended to sustain, enhance, and modernize existing Installation infrastructure to meet the Army and DOD missions. The maintenance and repair activities associated with the Proposed Action for the installation would take place in previously disturbed and maintained areas where the maintenance actions would not have significant impacts. Existing habitat are outside the infrastructure footprint described in this PEA. The overall intent of the PEA is to improve the efficiency of the environmental review process and ensure that adequate environmental protection occurs for minor maintenance projects. Projects not specifically listed in Table 2-1 are not covered by this PEA, nor is it intended to address environmental impacts associated with new construction. This includes construction of new roads and buildings, extensive renovations, new landscaping, and any other projects outside of the parameters listed in Table 2-1 that will require separate environmental compliance.

2.3 ALTERNATIVES CONSIDERED

This PEA is prepared to analyze potential environmental effects associated with routine maintenance and repair activities that support MOTCO's mission, goals, and objectives. The goals of MOTCO are built on the commitment of the Army to provide the right service, at the right time, and within the right cost to the assigned service members, civilian work force, and family members at all Army installations. As a result of master planning, environmental management, and public scoping, the following alternatives are addressed:

- No Action;
- Proposed Action (infrastructure maintenance and repair over a 10-year period).

Other alternatives considered and dismissed from analysis are described in Section 2.4, along with the reasons for dismissal.

2.3.1 No Action

An environmental analysis of the No Action Alternative is required by CEQ regulations to serve as a benchmark against which the Proposed Action and its alternatives can be evaluated. The No Action Alternative is defined as the environmental baseline conditions that would result (and continue) if the Proposed Action was not implemented. Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. NEPA-compliant evaluation and documentation would be conducted for each individual project without a holistic review of the infrastructure's current and long-range maintenance and repair needs. Environmental analysis of some incidental maintenance and repair tasks and application of mitigation measures may be inconsistent. Implementation of the No Action Alternative would simply maintain the status quo and its selection would impact MOTCO's ability to sustain, enhance, and modernize its infrastructure and, ultimately, mission capability. This alternative does not meet the project's purpose and need, or objectives. However, per CEQ stipulations, it will be carried forward for analyses in the PEA.

2.3.2 Proposed Action

This alternative evaluates programmatic and routine maintenance and repair actions necessary to sustain, enhance, and modernize existing MOTCO Installation infrastructure such that it is capable of meeting its assigned Army and DOD missions. The MOTCO DPW identified programmatic and routine actions in Table 2-1 for analysis during the 10-year performance period from 2022 until 2032. These maintenance and repair projects would be in addition to larger actions such as construction of new security access control points (ACP), buildings, etc. and implementation of the INRMP and ICRMP, potential impacts of which have been evaluated in previously completed NEPA-compliant and other management and decision documents.

Programmatic consultations with the USFWS, NMFS, SHPO, BCDC, and other agencies will be conducted concurrently with this PEA development. Following completion of this PEA and issuance of the FNSI, if applicable, MOTCO would implement the Proposed Action within the Installation boundaries over a 10-year timeframe, and regulatory permits (i.e.: CWA Section 401/404 permits) would be applied for on a site-specific basis, as needed. The identified proposed maintenance and repair projects would then be evaluated with the developed checklist leading to preparation of a REC or a CX where appropriate to include the applicable BMPs and SOPs included herein. If individual/site-specific projects require additional NEPA-compliant documentation or permits, MOTCO would prepare tiered NEPA documents incorporating the findings of this PEA and would apply for appropriate permits.

Once a proposed programmatic or routine action is planned for implementation, MOTCO would complete an analysis of the project using a MOTCO-specific checklist (sample in Appendix A) to assess the scope and potential impacts of the project. The checklist screening process includes consideration of sensitive resources (e.g., wetlands, surface waters, protected species, and cultural sites), environmental constraints (e.g., contaminated sites), and whether the action would involve an increase of pollutants (e.g., air, noise, discharges). Potential impacts to resources would be coordinated through MOTCO environmental staff. The proponent would also employ applicable BMPs, SOPs, or other environmental stewardship guidelines listed in the *Final Standard Operating Procedures to Support the INRMP* (August 2015) for each project, thereby reducing or avoiding adverse impacts to environmental resources. Where necessary, appropriate regulatory agency consultation and NEPA documentation, typically in the form of a REC, would be completed for these routine actions.

Table 2-1. Programmatic and Routine Actions

Infrastructure Category	Programmatic Project Type	Action Description
Waterfront Facilities	Berthing / Mooring Systems and Signage	Removal and replacement of berthing / mooring system components, including marine hardware, fixtures, fittings, fasteners, and fenders. Replacement parts to be engineered according to current industry standards. Placement of individual signs or markers required to improve safety and security of the Installation and or mariner safety. Replacement of floating docks or other mooring apparatus to aid in fire and emergency services berthing.
	Pile Wrap Repair	Wooden pile wrap repairs including partial replacement or application of a structural pile jacket (comprised of fiberglass filled with cement grout) or polypropylene protection wrap system (comprised of high-density polyethylene [HDPE] or ethylene propylene diene monomer [EPDM]). Concrete piles may be wrapped or repaired using industry standard concrete repair techniques.
	Pile and Pile Cap Replacement	Individual wooden piles that cannot be repaired as described above due to structural integrity concerns, would be replaced with the same size, diameter, and material as the existing piles. Up to 20 per year. Compliance requires permits from RWQCB and BCDC. Where structurally feasible, wooden pile clusters would be replaced with concrete or composite material. ie: Fender system or mooring dolphin piles. Pile caps are an above water repair that would be replaced in-kind according to industry standards.
	Wharf and Trestle Decking	Degraded or damaged decking would be replaced with wood, concrete, or asphalt. Stringers, bracing, and accessory components would be replaced with marine-grade hardware, fixtures, fittings, fasteners including any federal or state required improvements.
	Gantry Cranes and Rails	Replacement of rails, cables, or physical or mechanical components of the Installation's cranes. Preventative maintenance would include replacement of filters and fluids, electrical improvements, minor corrosion abatement, and spot painting. Projects would be limited to 10 feet from footprint of existing facilities.
	Anti-Terrorism / Force Protection (AT/FP)	Measures necessary to provide safety and security including installation of fire suppression systems may include installation of cameras, high-intensity lighting features, etc. AT/FP installation would occur on existing facilities (e.g., wharves).
	Shoreline Erosion Control	Reinforcement and repair of the existing shoreline riprap would use similar materials currently associated with this feature. Working limits would be within 20 feet of the existing area and accessed from the shore-side only.
Railyard and Rail Lines	Rail Expansion	Projects limited to urban and development areas no more than 3 miles of linear track or 15,000 square yards (SY) (3.1 acres) of total yard expansion over the 10-year period. Expansion beyond developed areas will require separate environmental compliance.
	Track / Rail, Siding, Turnout, and Cross-tie Replacement	Routine maintenance, repair, and replacement of track segments to include replacement of worn or undersized rail track, treated wooden cross-ties, components such as anchors, wheel stops, grounding rods, bump posts etc. Projects limited to less than 0.5 mile of consecutive linear trackage and no more than 6 miles total in over the 10-year project period. Work would be concentrated within the rail bed, with an area of disturbance limited to 50 feet either side of the ballast to allow for equipment access. Minor adjustments to rail footprint may be necessary to correct deficiencies in track geometry within this area of disturbance.
	Ballast Replacement	Replacement / replenishment of ballast rocks along any part of the rail network. Projects limited to a 50-foot buffer from existing edge of ballast.
	Crossing, Switching System, and Signal Upgrades	Includes at-grade crossing installation and modification, routine repair, and maintenance of mechanical, electrical, and other switching and signalization systems components necessary to support the controlled flow of rail traffic throughout MOTCO. Projects to meet current Federal Railroad Administration standards. Projects limited to 50-foot buffer from existing switching and signal systems.

Infrastructure Category	Programmatic Project Type	Action Description
	Crossing, Abutment, and Transfer Pad Extensions and Upgrades	Includes maintenance and upgrades of rail abutments to address safety concerns at at-grade crossings and where existing transfer pads require additional surface area to accomplish site-specific tasks. Projects limited to a 10-foot buffer from existing crossings and transfer pads.
Road Transportation System	Road Resurfacing	Pavement repairs, including sealing, milling, patching, and resurfacing not to exceed 5,000 SY (3.1 acres) of pavement area to be replaced per year Installation-wide. Projects limited to no more than 0.5 mile per year.
	Road Grading and Base Replacement	Minor grading, re-profiling, and resurfacing of unimproved aggregate roadways and fire breaks. Road base may be replaced or upgraded to facilitate longer-term solutions to maintenance issues. Projects limited to no more than 10 miles of unimproved road per calendar year. Working limits within 20 feet of the existing area.
	Culverts and Stormwater Drainage	Maintain positive drainage away from roadways and pavement by keeping drainage swales and conveyance system free of debris and vegetation, and excavation to return ditches to their original design levels when needed. Replace damaged or undersized culverts and components in conjunction with roadway repairs or failure of conveyance system elements. Minor grading and alteration of flow patterns to address storm water flow issues (e.g. ponding / localized flooding of pavements). Overall system issues and maintenance needs discussed further under Utilities. Stormwater drainage and culvert projects would be conducted within a 50-foot project buffer.
	Bridge Strengthening and Elevated Road Crossings	Minor corrosion abatement and spot painting. Includes footing and foundation patching and repairs such as wood, metal or concrete replacement, and minor seismic upgrades such as the addition of stiffeners or re-enforcement of columns etc. Projects limited to 50-foot buffer from existing features.
	Geometry Improvements	Shoulder widening, curb installation, repair replacement, minor adjustments to profile or slope.
	Holding Pad / Transfer Pad Maintenance, Repair, and Improvements	Pavement repairs, including sealing, milling, patching, and resurfacing not to exceed 9,000 SY (1.9 acres) of pavement replacement per year Installation-wide. Enlargement of existing ammunition pads to enhance use (e.g. addition of curbing, turning aprons, etc.). May occur in conjunction with rail system improvements.
	Parking Lots / Ammo Lots, Staging Areas, and Other Miscellaneous Pavements Expansion, Maintenance, and Repair	Staging areas, parking and ammo lot expansion limited to less than 1 acre of pavement area per year in previously disturbed, urban and development or inland areas. Repairs include sealing, milling, patching, and resurfacing limited to less than 1 acre of pavement area per year Installation-wide.
	Lighting, Traffic Safety, Signage, and Pavement Markings	Repair and replacement of traffic safety features and signage. Projects limited to 20 feet from the edge of existing road surface.
Utilities	Aboveground and Underground Utility Systems (electrical, fiber optic, phone, potable water, sanitary and storm sewer, and gas)	Includes removal of old / inactive lines, component upgrades and replacements (e.g. poles, lines, transformers, backflow preventers, and stand-alone elements such as leach fields, generators, fuel tanks etc.), excavation, and directional boring. Disturbance limited to within 20 feet of existing utility rights-of-ways (ROWs) for project work. Disturbance of wetland habitat or areas outside the ROW will require separate environmental compliance.
	Storm Water System Upgrades	Maintenance and repair of existing retention basins would not exceed 25 percent of total basin size per year. Removal, rerouting, and replacement of existing storm water piping plus additional piping needed to meet regulatory requirements and functionality.

Infrastructure Category	Programmatic Project Type	Action Description
	Lightning Protection Systems	Installation, maintenance, repair, or replacement of lighting protection systems to including building mounted components or stand-alone catenary structures. Installation would be accessory to existing facilities. Area of disturbance limited to within 100 feet of the existing facility footprint as a wider buffer is required for the tall, expansive lightning protection infrastructure.
	Solar Installation(s) (<5 megawatts [MW])	Installation of solar photovoltaic panels and associated storage and distribution components in previously disturbed or inland areas. Up to 1 MW per location. The Renewable Energy Zone is located in the inland administrative district.
Buildings	Minor Building / Structure Expansions	Such expansions would be limited to an addition of up to 2,000 SF or 25% of existing building square footage, whichever is less for any facility located in previously disturbed, urban and development or inland areas.
	Interior Maintenance and Repairs	Interior maintenance activities include annual preventative maintenance of interior systems such as insulation, painting, lighting, phone, gas, plumbing heating, ventilation, and air conditioning (HVAC) systems, security, fire alarms, fire protection, and energy-saving electronic monitoring and control systems. Changes to floorplans may be conducted within the existing footprint. Interior renovations limited to 100,000 square feet per year.
	Exterior Maintenance and Repairs	Includes lighting, HVAC, electrical communication management systems (fiber optics), electrical, plumbing, gas, sidewalks, new siding, stucco repair, painting, window / door replacement, and roofing.
	Anti-Terrorism / Force Protection (AT/FP) and Seismic Retrofits	Seismic and AT/FP retrofit activities may be triggered for modernization projects as dictated by mission critical decisions or as a result of security recommendations. May include both interior and exterior features such as installation of isolation bearings and structural re-engineering of frame and or foundation elements for building hardening to meet DOD minimum anti-terrorism standards for buildings. Work area would be confined to within 30 feet of building footprint. When feasible, and frequently in conjunction with other routine maintenance activities, small-scale building retrofits to address earthquake preparedness and resiliency would be accomplished.
	Berms. Barricades, and Accessory Safety / Security Structures	Earthen / earth-filled berms and physical barriers are part of the explosive safety and AT/FP programs. Includes removal, grading to repair damage from subsidence, erosion, rodent burrows etc., and revegetation to stabilize slopes. Accessory structures such as, guard booths, security towers etc. may be installed, repaired relocated, or replaced, as necessary.
Landscaping	Maintenance and Beautification of Inland Cantonment Common Areas	Includes installation or upgrade of irrigation systems for the establishment of plantings, implementation of new planting programs, tree pruning, mowing, etc. consistent with the MOTCO Installation Design Guide (IDG) and Installation Planning Standards (IPS). Application of herbicides and pesticides would be in accordance with the MOTCO Integrated Pest Management Plan (IPMP, U.S. Army 2018c).
	Maintenance of Tidal Operational Areas	Manual brush clearing and removal of debris within 10 feet of rail lines and operational buildings. Tree pruning to maintain clear line of site and fire safety. Chemical treatment for invasive species removal as specified in the INRMP (June 2018) and IPMP (U.S. Army 2018c).
Fencing & Security	Fence Installation and Repair	Installation, repair, and replacement of the perimeter fence and interior areas requiring fencing for safety and/or security.
	Anti-Terrorism / Force Protection (AT/FP) Measures	Includes the installation of mechanical and electronic security measures (e.g., cameras, intrusion detection systems, vehicle barriers, bollards, etc.).

2.4 ALTERNATIVE CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Development of the project alternatives included consideration of one additional alternative that was considered but eliminated for reasons described below.

Partial Implementation of Maintenance Program: Partial implementation of the MOTCO maintenance program does not accomplish the purpose and need for the Proposed Action. Partial implementation would consist of deferring a portion of maintenance actions based on priorities. This partial implementation program would not meet the purpose and need of the Proposed Action or fulfill the mission of the Installation, would not be cost effective, and would pose safety risks to MOTCO personnel. Therefore, this alternative was dismissed from further consideration.

2.5 ALTERNATIVES IMPACTS COMPARISON MATRIX

To comply with 40 CFR Part 1502.14 and following completion of the PEA, MOTCO will develop an impacts comparison matrix to emphasize the issues and options associated with each alternative considered. This table will summarize the differences in potential environmental effects between the Preferred Action Alternative and No Action Alternative. The comparison matrix is provided in Section 5.

2.6 MITIGATION MEASURES AND MONITORING PROCEDURES

Following completion of the PEA, MOTCO will develop a tabular summary listing BMPs for programmatic and routine maintenance to address any potentially substantive impacts identified as a result of this environmental analysis. The summary of BMPs is provided in Table 4-2 and Appendix A.

2.7 PREFERRED ALTERNATIVE

The preferred alternative is to address the implementation of programmatic and routine maintenance plans under a single NEPA document. Implementation of this alternative allows for the MOTCO DPW to conduct programmatic and routine maintenance and repair actions to sustain, enhance, and modernize existing MOTCO Installation infrastructure to meet Army and DOD missions (refer to Table 2-1).

3.0 AFFECTED ENVIRONMENT

This section describes the environmental baseline conditions of each resource area. Environmental baseline conditions are the "as is" or "before the action" conditions at MOTCO. The baseline facilitates subsequent identification and quantification of changes in conditions that would result from the proposed action. The resources that would be affected and described in this section include Water Resources; Geology, Soils and Mineral Resources; Air Quality; Vegetation and Wildlife; Land Use and Recreation; Traffic and Transportation; Noise; Utilities, Energy, and Sustainability; Hazardous and Toxic Materials/Wastes; Socioeconomics and Environmental Justice; Aesthetics/Visual Resources; and Cultural Resources.

The geographic extent of the "affected environment" or "Region of Influence" (ROI) is determined by the potential for impacts from the proposed action. The ROI can change depending on the resource category. For instance, soils may be impacted within the Installation, so the affected environment for soils would be MOTCO; however, the air quality ROI would be the geographic extent that emissions could possibly impact the regional air quality.

3.1 WATER RESOURCES

This section describes the potable water supply available to MOTCO, and the Installation's available surface and groundwater resources, stormwater quality, wetlands, floodplains, and tidal areas. The study area is encompassed by the physical boundaries of MOTCO, as described in Section 1.3.

3.1.1 Regulatory Setting

This section describes the federal, state, and local regulations and agreements applicable to the water supplies of the study area.

3.1.1.1 Federal

Clean Water Act

The federal CWA includes provisions for improving surface water and stormwater quality. Under the CWA, Section 402, discharge of pollutants from non-point sources (including construction sites) into navigable waters is prohibited, unless the discharges are in compliance with a National Pollution Discharge Elimination System (NPDES) permit. This pertains to construction sites where soil erosion (sediment) and other pollutant discharges (construction-related materials) could affect water quality. For construction sites with disturbed soil areas of one acre or more, construction activities must comply with a NPDES Stormwater Construction General Permit. The permitting process in California is described in section 3.1.1.2.

Safe Drinking Water Act

Enacted in 1974, the Safe Drinking Water Act gave the USEPA the authority to establish drinking water regulations to protect human health from contaminants in the nation's drinking water supply (Title XIV, Part B). As a result, the USEPA set primary (health-based) and secondary (aesthetic-based) drinking water standards. The primary drinking water standards consist of contaminant-specific standards, known as Maximum Contaminant Levels, which are enforceable at the federal level. Secondary standards are non-enforceable guidelines for contaminants that may cause cosmetic or aesthetic effects, such as taste or color.

Executive Order 11988 – Floodplain Management

EO 11988 of May 24, 1977, requires each federal agency to evaluate the potential effects of any actions it may take in a floodplain; to ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management; and to prescribe procedures to implement the policies and requirements of this Order. If an agency proposes to conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains. If the head of the agency finds that the only practicable alternative consistent with the law and EO 11988 requires siting in a floodplain, the agency shall, prior to taking action, (i) design or modify its action in order to minimize potential harm to or within the floodplain, consistent with regulations issued in accord with Section 2(d) of EO 11988, and (ii) prepare and circulate a notice containing an explanation of why the action is proposed to be located in the floodplain.

Executive Order 11990 – Protection of Wetlands

EO11990 of 1977 is intended to avoid, to the extent possible, the long and short term adverse impacts associated with the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Federal agencies are required, to the extent permitted by law, to avoid undertaking or providing assistance for new construction located in wetlands, unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental, and other pertinent factors.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Appropriation Act of 1899 prohibits the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the U.S. USACE permitting is required to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead,

haven, harbor, canal, navigable river, or other water of the U.S., outside established harbor lines, or where no harbor lines have been established.

3.1.1.2 State

California Stormwater Permitting

In California, the Stormwater Construction General Permit authorizes discharges of stormwater associated with construction activities that are in compliance with all requirements and conditions of the Stormwater Construction General Permit. All discharges are prohibited except stormwater and non-stormwater discharges specifically authorized in the General Permit. For each project greater than one acre in area, Permit Registration Documents would be prepared for submission to the State Water Resources Control Board (SWRCB) and would include a Notice of Intent, Risk Assessment, site map, SWPPP, a signed certification statement, and payment of fees.

3.1.1.3 Local

Contra Costa Water District

The Contra Costa Water District (CCWD) provides potable water to approximately 500,000 people in central and eastern Contra Costa County. The CCWD ordinances provide rules and restrictions on water use and drought management. A temporary drought charge and mandatory water-use reductions for roughly a quarter million people in Central Contra Costa County was eliminated in June 2016.

3.1.2 Existing Conditions - Potable Water

Potable water is water that is drinkable based on health and aesthetic standards. MOTCO receives its potable water from a connection with a CCWD water trunk line at ACP 1 on Port Chicago Highway. The existing water distribution system at the site includes one water storage tanks with three pump stations.

The CCWD provides water treated at the Bollman Water Treatment Plant in Concord. The major supply source of CCWD's water is the Sacramento–San Joaquin Delta. The CCWD has the capacity to treat water for the current Installation population. In addition, the Tidal Area has access to an auxiliary water supply feed from the East Bay Municipal Utility District, which provides MOTCO with a non-potable water source. All major facilities at MOTCO are connected to the potable water supply (City of Concord, 2010).

3.1.3 Existing Conditions - Surface Water

MOTCO is located on Suisun Bay in the East San Francisco Bay region, about 10 miles east of the Carquinez Straight that connects Suisun Bay to San Pablo Bay. Suisun Bay is a shallow basin between Chipps Island to the east, at the west end of the Sacramento-San Joaquin River Delta, and the Carquinez Straight to the west. The San Francisco Bay/Sacramento-San Joaquin Delta make up the largest estuary on the West Coast (BCDC, 1998). Most of the water in the Tidal Area is brackish. Water quality in Suisun Bay is considered impaired by USEPA due to the presence of contaminants from agricultural and industrial sources (U.S. Army, 2015a).

Suisun Bay is a 303(d) listed Category 5 waterbody, per the list of impaired and threatened waters maintained by the SWRCB. Primary constituents of concern include chlordane, dichloro diphenyl trichloroethane, dieldrin, dioxin compounds, furan compounds, invasive species, polychlorinated biphenyls, selenium, mercury (SFBRWQCB, 2012).

Freshwater at MOTCO originates as precipitation, from groundwater springs in the Los Medanos Hills and from channel flow within the Salt Creek watershed. Surface drainages including streams ditches, canals, and sloughs across the Installation all drain ultimately northward toward Suisun Bay. The six sloughs at the Installation (Hastings, Otter, Belloma, Anderson, Wharf 4, and East) eventually drain to Suisun Bay. Nichols Creek drains from hills south of the Installation and empties into the wetlands on the north end of MOTCO. Some flow is restricted by engineering controls at MOTCO including culverts and tide gates. In addition to past diking and filling of wetlands the natural drainage pattern at MOTCO has been altered by the roads, rail lines, and the Contra Costa Canal that all transect the Tidal Area (U.S. Army, 2013a).

The Contra Costa Canal traverses the Inland Area along the northern edge of MOTCO's Inland Area and traverses the Tidal Area south of the Port Chicago Highway at the base of the foothills. The Contra Costa Canal is owned and managed by the U.S. Bureau of Reclamation (USBOR) (U.S. Army, 2018).

3.1.4 Existing Conditions – Groundwater

MOTCO lies within the boundaries of the Clayton Valley and Pittsburg Plain Groundwater Basins, as defined in the California Water Quality Control Plan, San Francisco Bay Region (SWRCB, 2017). The existing and potential beneficial uses identified for these groundwater basins include the following: municipal and domestic supply, industrial process supply, industrial service supply, and agricultural supply.

Shallow groundwater at MOTCO contains average total dissolved solids (TDS) at levels that are significantly higher than the 3,000-milligrams per liter (mg/L) level that SWRCB Resolution 88-63 (SWRCB, 2006) sets as a maximum for a municipal or domestic water supply, and the 10,000

mg/L level set forth in USEPA's groundwater classification guidelines (USEPA, 1998). The elevated TDS is primarily related to the proximity of brackish water from Suisun Bay and is also influenced by groundwater contaminants on Installation sites undergoing remediation as described in Section 3.9.2.

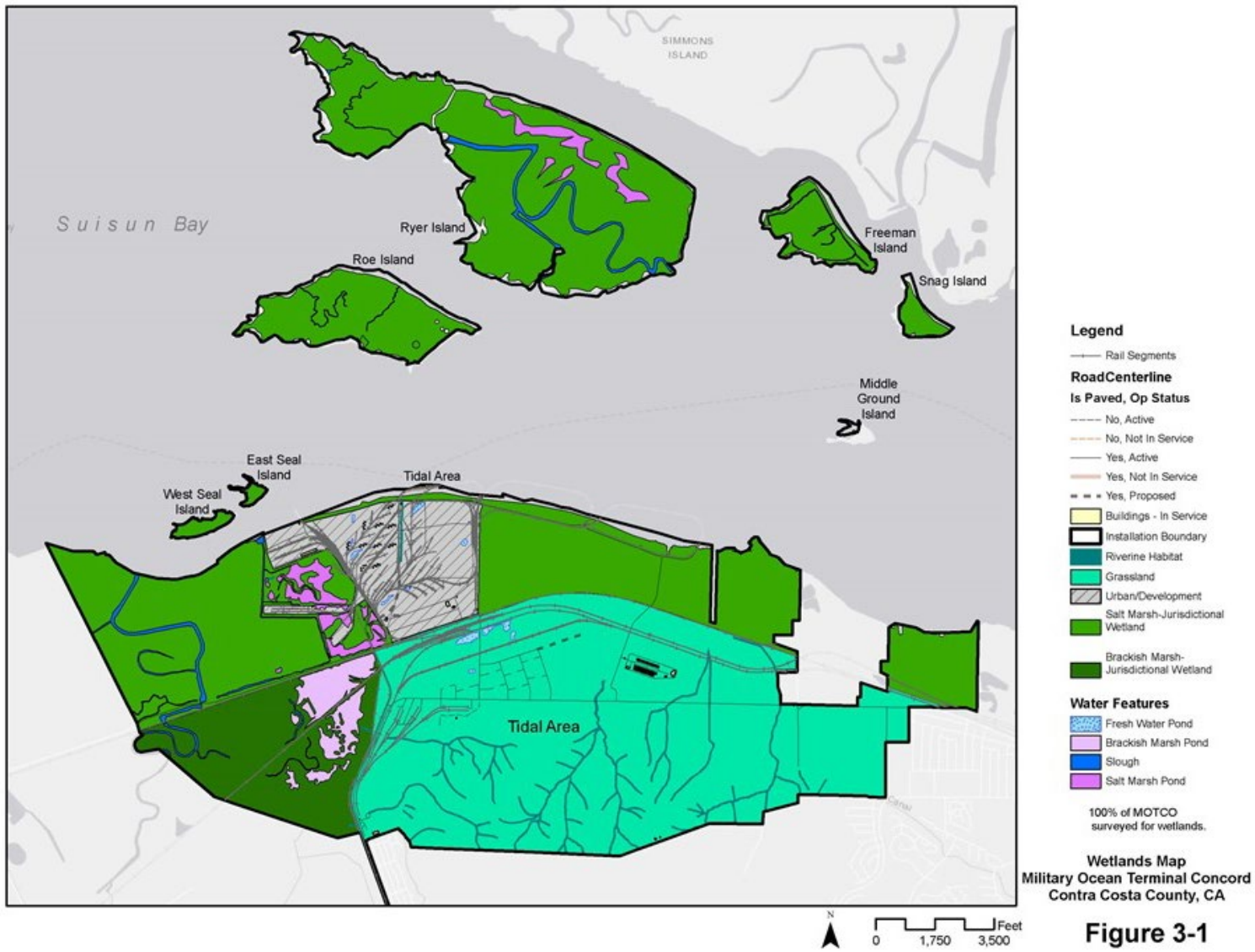
Groundwater in the Tidal Area occurs in a shallow unconfined water-bearing zone that is predominantly composed of fine-grained silty clays. Depth to groundwater ranges from about five feet to 45 feet below the ground surface in the Tidal Area. The prevailing groundwater flow direction is to the northwest. Groundwater at MOTCO is not used as a drinking water source (Cabrera Services and Tetra Tech, 2016).

3.1.5 Existing Conditions – Stormwater

An Installation-wide SWPPP was prepared for MOTCO in accordance with the requirements of the California SWRCB General Permit for Discharges of Storm Water Associated with Industrial Activities (General Permit No. CAS000001, effective 1 July 2015). The SWPPP includes a description of potential pollution sources, BMPs for preventing water quality impairment, and a plan for stormwater quality monitoring. The main objectives of the SWPPP are to provide information on how MOTCO controls discharge of pollutants from stormwater and to provide practical guidance on implementing the SWPPP. Stormwater also affects habitat and sediment. The Installation contains 20 sites with industrial activities that have the potential to impact stormwater quality. The Inland Area drains into four retention basins. Of the 21 stormwater outfalls at MOTCO, Outfalls ADL2-3A and ADL4-3A are monitored for industrial stormwater runoff. Outfalls 4-1, 3-1, 4-2, 4-3 and 5-1 along with ADL 2-3A and ADL 4-3A are visually monitored under the MOTCO industrial stormwater program. All other outfalls at MOTCO discharge to wetlands or directly to the Suisun Bay. All outfalls are gravity flow only (U.S. Army, 2019).

3.1.6 Existing Conditions – Wetlands

Wetlands at MOTCO are primarily estuarine via connection with Suisun Bay. There are also small areas of palustrine (inland, freshwater) wetlands that support brackish vegetation due to the presence of saline soils and poor drainage. National Wetland Inventory data indicate 3,175 acres of potential wetlands occur at MOTCO. These include 404 acres of estuarine subtidal wetlands, 2,687 acres of estuarine intertidal wetlands, and 84 acres of estuarine wetlands (U.S. Army, 2015a). The offshore islands and the majority of the marshlands at MOTCO are part of a Wetland Preserve Area established in 1984 as a Memorandum of Understanding between the Navy and the USFWS and later as part of MOTCO's INRMP. The locations of wetlands at MOTCO with respect to the proposed projects are shown on Figure 3-1. National Wetland Inventory data are a national scale mapping based on soils, topography, and aerial photograph interpretation. Approximately 3,154 acres of wetlands and other features are potentially USACE jurisdictional Waters (U.S. Army 2021e).



Wetlands Map
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 3-1

Wetlands

The State of California has a policy of no net loss of wetlands and requires all impacts to wetlands be mitigated under Section 401 of the CWA. The USACE requires CWA Section 404 permitting for work in jurisdictional wetlands, which are defined as having a significant nexus to navigable waters. The State may assert jurisdiction over some waters not subject to USACE permit jurisdiction (U.S. Army, 2013a).

3.1.7 Existing Conditions – 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 as a result of precipitation, high tides, and storm surges. Development within the 100-year floodplain is constrained by regulatory requirements. EO 11988, Floodplain Management, directs federal agencies to provide leadership in avoiding direct or indirect development of floodplains. Flood hazard areas in the Inland Area at MOTCO based on mapping by the Federal Emergency Management Agency (FEMA) (Figure 3-2) include a floodway that affects ACP 1, several bridges, Johnson Road, and the Tidal Area floodplain. Based on an analysis by the Army in 2013, most existing facilities within the Tidal Area are not within the 100-year floodplain. Land along Suisun Bay in the Tidal Area is within the 100-year floodplain. Mount Diablo/Seal Creek, which discharges to tidal marshes on MOTCO, floods various parts of its watershed nearly annually (U.S. Army, 2013a).

3.1.8 Existing Conditions – Tidal Circulation

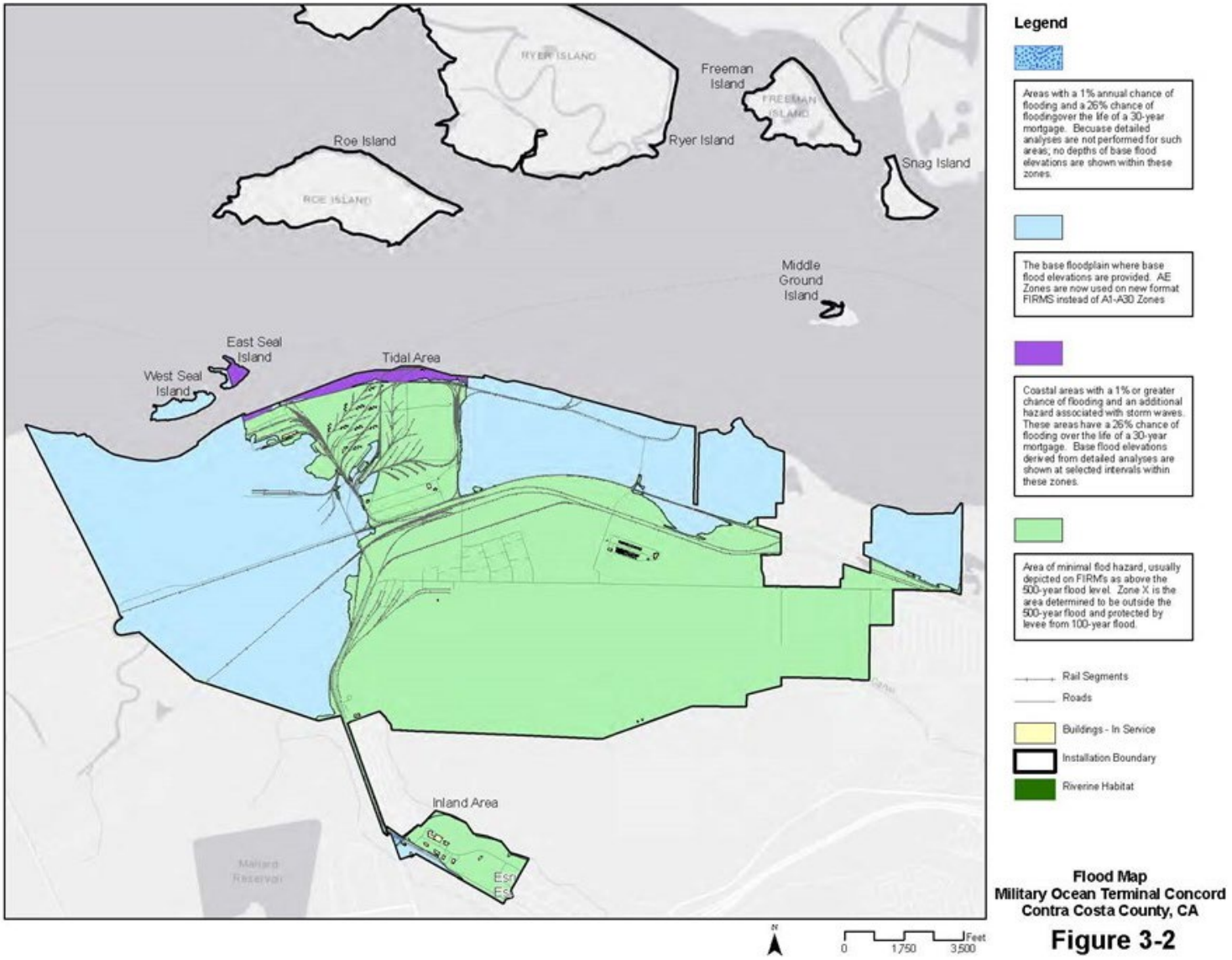
Brackish waters from Suisun Bay inundate the tidal marsh during high tides via a network of natural and artificial channels. Extensive ditching and berms located along ditches have resulted in muted tidal inundation/circulation in most portions of MOTCO's Tidal Area marshes and Hastings Slough. In addition, natural flow paths have been altered by ditching alongside elevated roadways and railroad tracks. Areas of open water in the eastern portion of Salt Creek Marsh and Tug Slough Marsh have limited tidal circulation, with observed changes of water surface elevation on the order of 1-foot over the course of a 6-foot tidal fluctuation in Suisun Bay (U.S. Army, 2018).

3.2 GEOLOGY, SOILS, AND MINERAL RESOURCES

This section describes geology, soils, and mineral resources in the study area. This section also discusses the potential for seismic events, landslides, and liquefaction in the study area and provides the basis to determine whether the Proposed Action could increase their occurrence or affect the proposed construction. The study area is the portions of MOTCO where potential maintenance and repair activities would occur.

3.2.1 Regulatory Setting

This section describes the federal, state, and local regulations and agreements applicable to geology, soils, and mineral resources of the study area.



Flood Map
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 3-2

Floodplains

3.2.1.1 Federal

Clean Water Act

The federal CWA includes provisions for reducing soil erosion relevant to water quality as previously described in Section 3.1.1.1.

Clean Air Act

The federal CAA also includes provisions for reducing soil erosion relevant to air quality. On maintenance and repair sites, exposed soil surfaces are vulnerable to wind erosion, and small soil particulates are carried into the atmosphere. Suspended particulate matter ($PM_{2.5}$ and PM_{10}) is one of the six criteria air pollutants of the CAA (see Section 3.3.1.1 for additional details). Maintenance and repair sites may be required to implement wind erosion BMPs for reducing air quality and soil erosion effects.

Historic Sites Act

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features."

3.2.1.2 State

Alquist-Priolo Earthquake Fault Zoning Act

The 1972 Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code [CPRC] 2621 et seq.) requires local agencies to regulate development within earthquake fault zones to reduce the hazards associated with surface fault ruptures. The act also regulates construction in earthquake fault zones.

Seismic Hazards Mapping Act

The 1990 Seismic Hazards Mapping Act (CPRC 2690–2699.6) addresses strong ground shaking, liquefaction, landslides, or other ground failures as a result of earthquakes. This Act requires statewide identification and mapping of seismic hazard zones that are used by cities and counties to adequately prepare the safety element of their general plans and protect public health and safety (California Geological Survey, 2003). Local agencies are also required to regulate development in any seismic hazard zones, primarily through permitting. Permits for development projects are not issued until geologic investigations have been completed and mitigation has been developed to address any issues.

3.2.2 Existing Conditions – Geology

MOTCO is located in the Coast Ranges geological province of west-central California, which consists of deep alluvial materials underlain by basement rock of the Sierran Block province. It is sited at the northern terminus of the Diablo Range, where the north-south trending Coast Ranges meet Suisun Bay. Non-marine sedimentary rocks compose the northern slope of the Los Medanos Hills and the lowermost reaches of the Inland Area. Surficial deposits of sandstone are unconformably underlain by a basement complex of sedimentary, igneous, and metamorphic rocks that form most of the northern half of the coastal hills and lie beneath Suisun Bay (U.S. Army, 2018).

MOTCO's natural landscape is characterized by a flat, low-lying marsh at the northern half of the Tidal Area, and hills that rise abruptly to approximately 600 feet above sea level within the south half of the Tidal Area. Most of the Tidal Area's built environment consists of fill material deposited during the construction of the Installation. No geologic features protected by the Historic Sites Act of 1935 are present at MOTCO.

3.2.3 Existing Conditions – Soils

The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service has mapped 20 soil types at MOTCO. The Tidal Area is composed of muck soils of the Joice-Reyes Association. These soils are very deep and poorly drained and consist of silty clays and saline mucks. The soils formed in saltwater marshes from hydrophytic plant material and fine-textured mineral alluvium from mixed parent rocks. The Joice mucks form uniform wetlands that are subject to saltwater inundation, most commonly at high tide. 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 (USDA, 1977 and Army, 2018)

The Inland Area is composed primarily of soils belonging to the Altamont Diablo-Fontana Association. These soils are found to be moderately deep to deep. They formed in material weathered from soft, fine-grained sandstones and shales. This Association is composed of varying degrees of Altamont clay and Fontana silty clay loam, depending on the degree of slope. Steeper slopes (50 - 70% have a higher percentage of Fontana silty clay loams. On bare soils, runoff is medium to high and erosion hazard is moderate to high.

Soils in the developed areas of MOTCO are mapped as Urban Land, which indicates they are heavily developed (i.e., covered by at least 75% buildings or asphalt) (USDA, 1977). Urbanization and alteration of natural hydrology patterns in the MOTCO watersheds has led to increased stream bank erosion, and sediment-laden flows entering the tidal marshes and Suisun Bay (USACE, 2011).

3.2.4 Existing Conditions – Sediments

The majority of deep-water, subtidal habitat in Suisun Bay is comprised of unconsolidated bottom sediments. The John F. Baldwin Ship Channel is located just offshore of MOTCO between the mainland and the islands. Regular dredging of the Baldwin Ship Channel is conducted annually. Three access channels to the MOTCO wharves have not been dredged since 1986. Sediments in the access channels to the MOTCO wharves are predominantly sandy due to strong tidal currents which tend to keep finer grained materials in suspension. Underneath the wharves and piers, and immediately inshore from them, sediments consist of finer-grained silt and clay which settle out of suspension where currents and turbulence are reduced by the piers (U.S. Army, 2015a).

In the Tidal Area, soils consist of silty clay and saline muck – soils that are very deep and poorly drained. In the deep-water, subtidal habitat, substrate is mostly comprised of unconsolidated bottom sediments, with some areas of sand where tidal currents are stronger.

Within the MOTCO Restricted Zone, approximately 211 acres have been mapped as shallow bay (<18’ deep), and five acres have been mapped as deep bay/channel (>18’ deep) (USACE, 2011). The John F. Baldwin Ship Channel averages 35 feet deep and is maintained by regular dredging.

Results from the Southern California Coastal Water Research Project (SCCWRP) indicate that Suisan Bay contains contaminated sediments (SCCWRP, 2013). Sediments adjacent to Wharves 2 and 3 were tested in 2014 by the Army and found to contain metals, ammonia, organochlorine pesticides, polychlorinated biphenyls (PCBs), and polynuclear aromatic hydrocarbons (PAHs) (NMFS, 2014).

3.2.5 Existing Conditions – Seismicity

MOTCO is located in a highly seismically active region with several major faults and fault zones in proximity. MOTCO is in Seismic Risk Zone 4, identified as a seismically active area by the Uniform Building Code. Areas within Zone 4 are expected to experience severe ground shaking and "major destructive damage" in response to seismic activity within the region (International Council of Building Officials, 1997). Based on estimates from geologists the fault systems in Contra Costa County have a probable 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).

Liquefaction is the process in which water-saturated sand and silt change from a solid to a liquid state. Liquefaction can be caused by strong shaking of the sediments, which happens during an earthquake. Liquefied sediments lose their strength to support overlying structures. Areas with a shallow groundwater table or perched groundwater would be susceptible to liquefaction in a strong earthquake. The potential for liquefaction of soils during an earthquake at MOTCO is high

for portions of the Tidal Area containing artificial fill. The liquefaction potential is moderate in areas of MOTCO underlain by Quaternary period (2.588 million years ago to present) bay mud and alluvial deposits. The liquefaction potential is low in the upland Los Medanos Hills and associated alluvial fan areas (U.S. Geological Survey, 2006).

3.2.6 Existing Conditions – Mineral Resources

Approximately 65 percent of the Tidal Area, including the offshore islands, is under split estate rather than fee simple ownership. For the split estate areas the land surface is Federally-owned and the subsurface mineral estate is privately owned by others. A natural gas field on Ryer Island is the only mineral estate on MOTCO property (U.S. Army, 2015a). Future requests for lease agreements for mineral exploration or development at MOTCO would be subject to Army safety and security requirements, California Division of Oil, Gas, and Geothermal Resources regulatory requirements, and NEPA.

3.3 AIR QUALITY

This section describes air quality at MOTCO, as well as the regulatory and environmental setting. The study area includes the boundaries of MOTCO and adjacent areas where air emissions from potential maintenance and repair activities could migrate to.

3.3.1 Regulatory Setting

The following section describes the federal, state, and local rules and regulations applicable to the proposed project.

3.3.1.1 Federal

Clean Air Act

The CAA is a federal law that was created to reduce air pollution, set ambient air quality standards, and establish the regulatory authorities responsible for enforcing regulations designed to attain those standards. The CAA covers the entire country, but federal, state, and local levels of government have the responsibility to monitor air quality and meet the protection standards, including those for toxic air contaminants (TACs), as discussed below.

The federal CAA, as amended in 1990, currently comprises six titles:

- Title I – Air Pollution Prevention and Control
- Title II – Emission Standards for Moving Sources
- Title III – General
- Title IV – Acid Deposition Control
- Title V – Permits

- Title VI – Stratospheric Ozone Protection

Titles I and V contain the provisions that typically address emissions from construction projects and stationary sources (e.g., chemical plants and gas stations). Title I includes, among other provisions, requirements to (1) establish National Ambient Air Quality Standards (NAAQS) for air pollutants that protect human health with an adequate margin of safety, as well as public welfare, (2) limit emissions from new stationary sources, (3) prevent significant deterioration of air quality in regions with air quality that is already better than the NAAQS, and (4) develop state implementation plans (SIPs) that establish the steps to be taken to bring areas with air quality that is worse than the NAAQS back into attainment of the NAAQS by mandated attainment dates. As part of Title I, federal agencies cannot engage in, support in any way or provide financial assistance for, license or permit, or approve any activity that does not conform to an USEPA-approved SIP. The remaining CAA Titles do not apply to the proposed project.

National Ambient Air Quality Standards

As required by the federal CAA, the USEPA has established and continues to update the NAAQS for specific "criteria" air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide (SO_2), inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. The two particulate matter categories refer to solid and liquid particles of dust, soot, aerosols, smoke, ash, pollen and other matter that are small enough to remain suspended in air for a long period. $PM_{2.5}$ refers to particulates with aerodynamic diameters less than or equal to 2.5 micrometers (µm) and PM_{10} have diameters less than or equal to 10 µm. The NAAQS for these pollutants represent the levels of air quality deemed necessary to protect the public health and welfare with an adequate margin of safety, see Table 3-1 for a list of these NAAQS.

The federal CAA requirements classify air basins (or portions thereof) as either "attainment" or "non-attainment" with respect to criteria air pollutants, based on whether the NAAQS have been achieved, and stipulate the preparation of air quality plans containing emission reduction strategies for those areas designated as "non-attainment." Non-attainment means that the air quality levels exceed the standards that have been established for that area. The San Francisco Bay Air Basin (which includes Contra Costa County) is in non-attainment for $PM_{2.5}$, PM_{10} and ozone (Bay Area Air Quality Management District [BAAQMD], 2017).

Table 3-1. Summary of National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1,2]	National Standards [3]	
			Primary [2, 4]	Secondary [2, 5]
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	-	-
	8-hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Same as primary standard
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	-
	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	-
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	53 ppb (100 µg/m^3)	Same as primary standard
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb	-
Inhalable particulate matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	-	Same as primary standard
	24-hour	50 µg/m^3	150 µg/m^3	
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	15 µg/m^3	Same as primary standard
	24-hour	-	35 µg/m^3	
Sulfur dioxide (SO_2) [6]	24-hour	0.04 ppm (105 µg/m^3)	-	-
	3-hour	-	-	0.5 ppm (1,300 µg/m^3)
	1-hour	0.025 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	-
Lead (Pb) [7]	30-day Average	1.5 µg/m^3	-	-
	Calendar Quarter	-	1.5 µg/m^3	Same as primary standard
	Rolling 3-Month Average	-	0.15 µg/m3	

Sources: California Code of Regulations Title 17 Section 7020 2010, and USEPA National Ambient Air Quality Standards (40 CFR Part 50) last updated 2010.

Notes: ppb = parts per billion; ppm = parts per million; µg/m3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; – = no standard exists

[1] California standards for ozone, CO (except Lake Tahoe), NO_2, and particulate matter are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] Concentrations are expressed first in units in which they were issued (i.e., ppb, ppm or µg/m^3). Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[3] National standards (other than ozone, particulate matter, and those standards based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1 day. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[4] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[5] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[6] The USEPA strengthened the NAAQS for SO_2 on June 2, 2010, by establishing a new 1-hour standard. The USEPA also has revoked the annual and 24-hour standards because they will not add additional public health protection given the new 1-hour standard.

[7] The California Air Resources Board has identified lead as a toxic air contaminant with no threshold of exposure for adverse health effects. This action allows for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

State Implementation Plans

Counties or regions that are designated as federal non-attainment areas for one or more criteria air pollutants must prepare a SIP that demonstrates how the area would achieve attainment of the standards by the Federally mandated deadlines. In addition, those areas that have been re-designated from non-attainment to attainment are required to have a maintenance plan that shows how the area would maintain the standard for up to 10 years.

Contra Costa County had been designated a non-attainment area for ozone and particulate matter. The most recently adopted clean air plan for the BAAQMD is the 2010 Multi-Pollutant Clean Air Plan, which the BAAQMD adopted in September 2010.

General Conformity

Section 176(c) of the CAA requires that any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity must demonstrate that the action conforms to the applicable SIP required under Section 110(a) of the CAA (42 U.S.C. 7410[a]) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP's purpose to eliminate or reduce the severity and number of violations of the NAAQS and achieve expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and is subject to the regulations implementing the conformity requirements would, in fact, conform to the applicable SIP before the action is taken. Only those federal actions that take place in a region designated as an NAAQS non-attainment area or maintenance area must be evaluated for general conformity. This includes the proposed project.

3.3.1.2 State

The California Clean Air Act (CCAA) substantially added to the authority and responsibilities of the state's air pollution control districts. The CCAA establishes an air quality management process that generally parallels the federal process; however, it focuses on attainment of the California Ambient Air Quality Standards (CAAQS) that are, for certain pollutants and averaging periods, more stringent than the comparable NAAQS.

The CCAA requires that the CAAQS be met as expeditiously as practicable, but it does not set precise attainment deadlines. Instead, the CCAA established increasingly stringent requirements for areas that will require more time to achieve the standards. The air quality attainment plan requirements are based on the severity of air pollution problems caused by locally generated emissions. Upwind air pollution control districts are required to establish and implement emission control programs commensurate with the extent of pollutant transport to downwind districts. The San Francisco Bay Air Basin is in non-attainment for ozone and particulate matter, so a Multi-Pollutant Clean Air Plan was prepared by BAAQMD in 2010.

The California Air Resources Board (CARB) is responsible for developing emission standards for on-road motor vehicles and some off-road equipment in the state. In addition, the CARB develops guidelines for the local districts to use in establishing air quality permit and emission control requirements for stationary sources subject to the local air district regulations.

3.3.1.3 Local

The BAAQMD maintains air quality conditions in the plan area through comprehensive programs of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean-air strategy involves the preparation of plans and programs for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAAQMD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA and the CCAA.

On June 2, 2010, the BAAQMD's Board of Directors unanimously adopted thresholds of significance to assist in the review of projects under the California Environmental Quality Act (CEQA). The 2010 adopted thresholds of significance were challenged in a lawsuit. On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds. The court found that the adoption of the thresholds was a project under CEQA and ordered the BAAQMD to examine whether the thresholds would have a significant impact on the environment under CEQA before recommending their use. The court did not determine whether the thresholds are or are not based on substantial evidence and thus valid on the merits. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them they had complied with CEQA. The court's order permits the BAAQMD to develop and disseminate these CEQA Guidelines, as long as they do not implement the thresholds of significance. In light of the court's order, all references of the BAAQMD's June 2010 adopted thresholds, including related screening criteria, have been removed from the CEQA Guidelines (BAAQMD, 2012).

3.3.1.4 Toxic Air Contaminants

Air quality regulations also focus on TACs or hazardous air pollutants. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health effects may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 3-1). Instead, the USEPA and the CARB regulate hazardous air pollutants and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology for toxics to limit emissions. These, in conjunction with additional rules set forth by the BAAQMD, establish the regulatory framework for TACs. Under the BAAQMD's rules and regulations, all sources that possess the potential to emit TACs are required to obtain permits from the BAAQMD.

The BAAQMD limits emissions and public exposure to TACs through a number of programs, and it prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. Of the listed TACs, particulate emissions from diesel-fueled engines are the only type expected to result from the proposed project.

3.3.2 Existing Conditions - Air Quality

California is divided into 15 air basins for air pollution management. MOTCO is located in the San Francisco Bay Air Basin, known as the BAAQMD. The existing air quality conditions for the project area are the result of meteorological conditions and existing emission sources in the area. MOTCO is located downwind of the San Francisco/Oakland urban area that includes many air pollution sources. The San Francisco Bay Area is designated as a federal attainment area for CO, SO_2, and lead air quality standards; a federal marginal attainment area for the ozone standard; and a federal nonattainment area for $PM_{2.5}$. The Bay Area is designated as a state nonattainment area for ozone, $PM_{2.5}$ and PM_{10} (U.S. Army, 2015a).

Prescribed burning at MOTCO produces CO, $PM_{2.5}$ and PM_{10} emissions as well as other pollutants including carbon dioxide (CO_2) and methane. The State Smoke Management Guidelines, adopted by CARB, establish California's smoke management program framework. The BAAQMD Regulation 5, Subsection 401.11 addresses fire management for the purposes of range management and grazing (CARB, 2017). The MOTCO Fire Department manages the prescribed burns in accordance with these rules and regulations. This includes submitting a smoke management plan to BAAQMD for approval. As part of this process PM_{10} emissions are calculated for each burn (U.S. Army, 2013a).

3.4 CLIMATE CHANGE AND SEA LEVEL RISE (SLR)

This section describes the existing climate of San Francisco Bay/Sacramento-San Joaquin Delta Estuary and analyzes the potential impacts of the project alternatives. The Climate Change Section (2.2.5) from the *San Francisco Bay to Stockton, California, Navigation Improvement Project IGRR-EIS* (USACE 2020b), including Suisun Bay adjacent to MOTCO is incorporated by reference.

Observed environmental changes in California due to global warming include rising temperatures, rising sea levels, a lengthened growing season, and shifts in plant and animal ranges. At a local level, area surrounding the navigation channel may be at greater risk of changing weather patterns, such as the current drought affecting water resources, the increasing intensity of rainfalls that can cause localized flooding, and the local effects from SLR. As discussed above, because the effects of climate change are regional in nature, the environmental setting in regard to climate change is the same throughout the study area.

3.4.1 Regulatory Setting

On October 30, 2009, the USEPA published the final mandatory greenhouse gas (GHG) reporting rule in the Federal Register (74 FR 56260). This rule requires suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that directly emit 25,000 metric tons or more of CO_2 equivalent per year to submit annual reports to the USEPA. The regulatory setting for GHG emissions were discussed for the Suisun Bay Channel (USACE 2020b). Existing sources of GHGs in the study area are extensive and include vehicles, marine vessels, industry, and farms. However, the effect of GHGs differ from other pollutants in that they do not directly impact local or even regional settings and are not often the effect of individual large sources. Rather, excess GHG emissions from many different sources combine to increase mean global temperatures, which in turn have numerous direct and indirect effects on the environment and humans on regional and local scales.

EO 13514 and EO 13653 call for federal agencies to complete vulnerability assessments while EO 14030 focuses on climate-related financial risks. Engineering Regulation (ER) 1100-2-8162 provides guidance for incorporating the effects of future sea level change into project planning (USACE 2019a). Engineering Pamphlet (EP) describes procedures for evaluating sea level impacts and responses (USACE 2019b).

3.4.1.1 California Executive Order B-30-15 and Global Warming Solutions Act

California Executive Order B-30-15 (signed by Governor Brown on April 29, 2015) established a GHG emission reduction target for California of 40 percent below 1990 levels by 2030. California is on track to meet or exceed the current target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32).

3.4.2 Existing Conditions – Climate Change and Sea Level Rise

Greenhouse gasses are gas emissions that trap heat in the atmosphere and occur from natural resources and human activity. Scientific evidence indicates a trend of increasing global temperature corresponding with increased emissions of GHGs over the past century. One projected impact of this global warming is rising sea levels. The 2010 Quadrennial Defense Review called for a vulnerability assessment of DOD Installations to determine vulnerability to the impacts of climate change.

The Installation Climate Resilience Plan (ICRP) place MOTCO in the top ten of Army installations of concern for effects of sea level rise (U.S. Army 2021e). Sea level rise figures are based on the Digital Coast Sea Level Rise and Coastal Flooding Impacts Viewer (http://coast.noaa.gov/slr; NOAA 2017). The viewer represents sea level inundation at 1-foot increments up to 10 feet above mean higher high water. The viewer also shows predicted levels of inundation for marshlands,

economic and social vulnerability of areas that would result from SLR and the changes in flooding frequency. Although no time horizon is associated with each projected one-foot sea level rise, each map is meant to show how MOTCO could be affected in the future with additional constraints to development. The *Biological Assessment / Essential Fish Habitat Assessment for the San Francisco Bay to Stockton, California, Navigation Improvement Project* (Appendix G in USACE 2020b) describes the effects of sea level rise and increased water temperatures on special status fishes.

3.5 BIOLOGICAL RESOURCES

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive biological resources are defined as those plants and animal species listed as threatened or endangered, or proposed as such, by USFWS, NMFS, and CDFW. This section describes the regulatory setting and existing conditions as they relate to biological resources that occur at MOTCO.

3.5.1 Regulatory Setting

The following section describes the federal, state, and local rules and regulations with respect to vegetation and wildlife potentially affected by implementation of the proposed project at MOTCO.

3.5.1.1 Federal

Endangered Species Act

The ESA and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Section 7 of the ESA requires federal agencies to aid in the conservation of listed species and ensure that the activities of federal agencies will not jeopardize the continued existence of listed species or adversely modify designated critical habitat. At the federal level, the USFWS and the NMFS are responsible for administration of the ESA.

Migratory Bird Treaty Act

The MBTA decrees that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected. Nearly all native North American bird species are protected by the MBTA. Under the MBTA, pursuing, taking, killing, or possessing migratory birds is unlawful. Projects that are likely to result in taking of birds protected under the MBTA would require the issuance of take permits from the USFWS. Activities that would require such a permit would include destruction of migratory bird nesting habitat during the nesting season when eggs or young are likely to be present. To comply with the MBTA and appropriate associated regulations (50 CFR), surveys are required to determine if nests would be disturbed and, if so, a buffer area with a specified radius around the nest would be established so that no disturbance or intrusion would be allowed until

the young had fledged and left the nest. If not otherwise specified in the permit, the size of the buffer area would vary with species and local circumstances (e.g., presence of busy roads) and would be based on the professional judgment of the monitoring biologist.

Marine Mammal Protection Act

The MMPA of 1972 protects all marine mammals. The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. An incidental take permit is required from the National Oceanographic and Atmospheric Administration (NOAA) for project activities with the potential to harm marine mammals.

National Marine Sanctuaries Act

The National Marine Sanctuaries Act (NMSA) authorizes the Secretary of Commerce to designate and protect areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or aesthetic qualities. Under the NMSA, sanctuaries are managed for multiple uses provided the uses are deemed compatible with resource protection by the Secretary of Commerce. The NMSA does not prohibit any type of use but leaves it up to the Secretary to determine, through a public process, which activities will be allowed and what regulations will apply to various uses.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act is the legal provision for promoting optimal exploitation of U.S. coastal fisheries. Enacted in 1976, it has since been amended in line with sustainability policy. Regional councils of the NMFS determine when a stock is overfished and apply both regional and individual catch limits. The NMFS has implemented the Fish Stock Sustainability Index, which measures key stocks according to their overfishing status and biomass levels. The Act includes national standards for management and outlines the contents of fishery management plans. In addition, it gives the Secretary of Commerce power to review, approve, and implement fishery management plans and other recommendations developed by the councils. NMFS is charged with stewardship of the nation’s living marine resources. With input from the regional councils and stakeholder groups, NMFS provides guidance for applying the National Standards of the Act.

Fish and Wildlife Coordination Act

The FWCA of the U.S. was enacted in 1934 to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The FWCA provides the basic authority for the involvement of the USFWS in evaluating impacts to fish and wildlife from proposed water resource development projects. The FWCA authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with Federal and State

agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. Under this Act diversions or modifications to water bodies require consultation with the USFWS.

Executive Order 13112, Invasive Species

EO 13112 directs federal agencies to expand and coordinate their efforts to combat the introduction of invasive species; provide for their control; and take measures to minimize economic, ecological, and human health effects. In compliance with EO 13112, restoration of disturbed vegetation should be conducted using native plants and efforts to prevent the introduction of invasive plant species must be demonstrated.

3.5.1.2 State

California Endangered Species Act

The CDFW is responsible for administration of the California ESA. Unlike the federal ESA, there are no state agency consultation procedures under the California ESA. For projects that affect both a state and Federally-listed species, compliance with the federal ESA will satisfy the California ESA if the CDFW determines that the federal incidental take authorization is "consistent" with the California ESA. Projects that result in a take of a state-only listed species require a take permit under the California ESA. The federal and state acts also lend protection to species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or den locations, communal roosts, and other essential habitat.

Under state law, plant species may be formally designated rare, threatened, or endangered by CDFW. The California Native Plant Society operates its Rare Plant Program under an MOU with the CDFW. This MOU results in rare plant assessment, protection, and formalized cooperative ventures, such as data sharing and production of complementary information sources for rare plants.

California Fish and Game Code Sections 3500–3705, Migratory Bird Protection

Sections 3500–3705 of the California Fish and Game Code regulate the taking of migratory birds and their nests. These prohibit the taking of nesting birds, their nests, eggs, or any portion thereof during the nesting season. Typically, the breeding/nesting season is from February 1 through August 31. Depending on each year’s seasonal factors, the breeding season can start earlier and end later.

3.5.2 Existing Conditions - Vegetation, Wildlife, and Aquatic Species

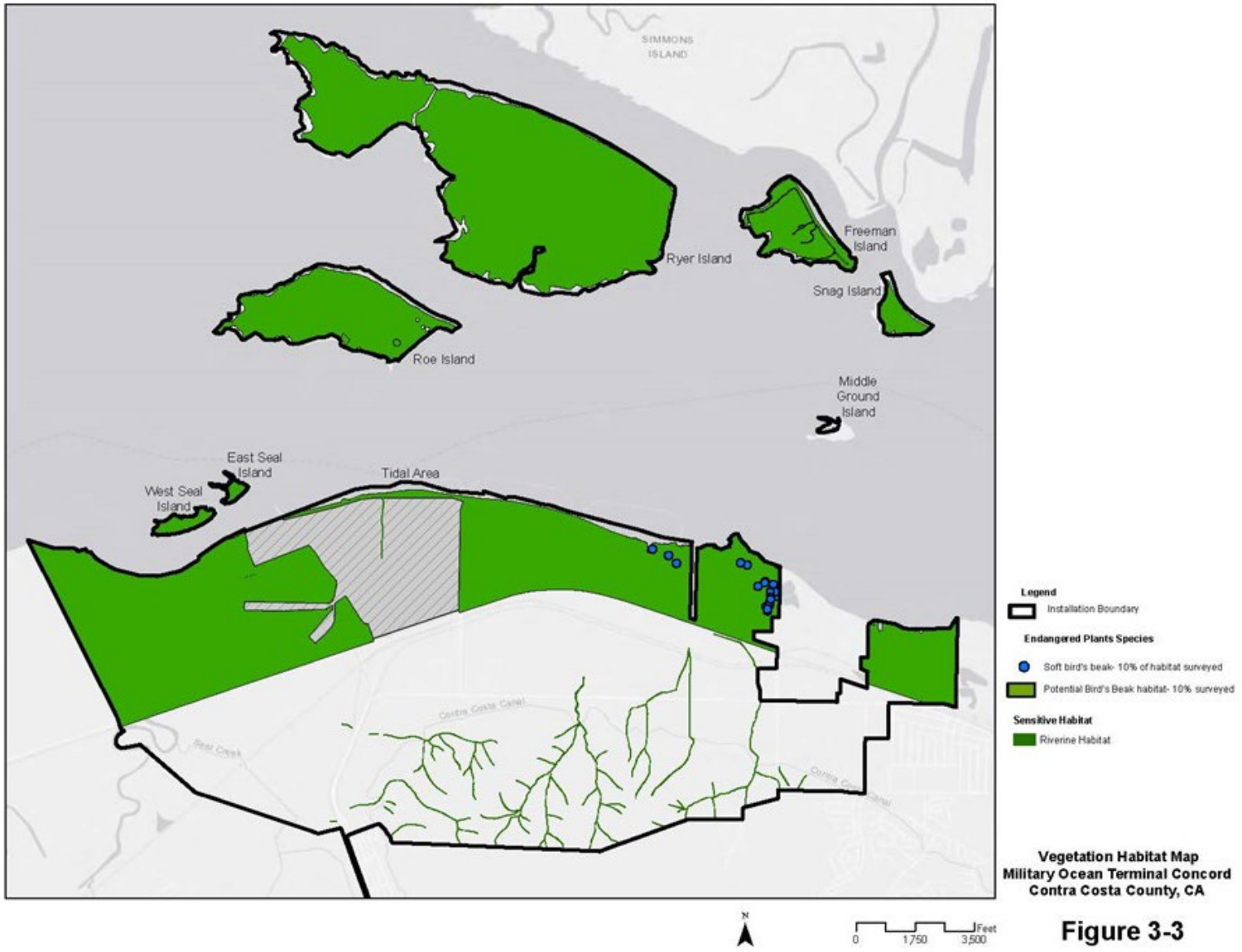
MOTCO occupies approximately 115 acres of Inland Area and 5,733 acres of Tidal Area and off-shore islands, including five miles of shoreline (U.S. Army, 2017). These areas have been altered historically with various development activities in the Inland Area and diking, dumping, and filling of the Tidal Area.

Twelve different habitat types have been defined at MOTCO including non-native annual grassland (1,706 acres), canals (7 acres), sloughs (32 acres), unimpaired tidal marshes (1,172 acres), muted tidal marshes (1,647 acres), diked marshes (12 acres), deep bay (5 acres), shallow bay (211 acres), tidal flats (4 acres), saline depressions (2 acres), and transitional brackish marsh (46 acres) (U.S. Army, 2017). In addition, a large portion (930 acres) of the Inland Area has been defined as “Developed/Disturbed” (U.S. Army, 2017).

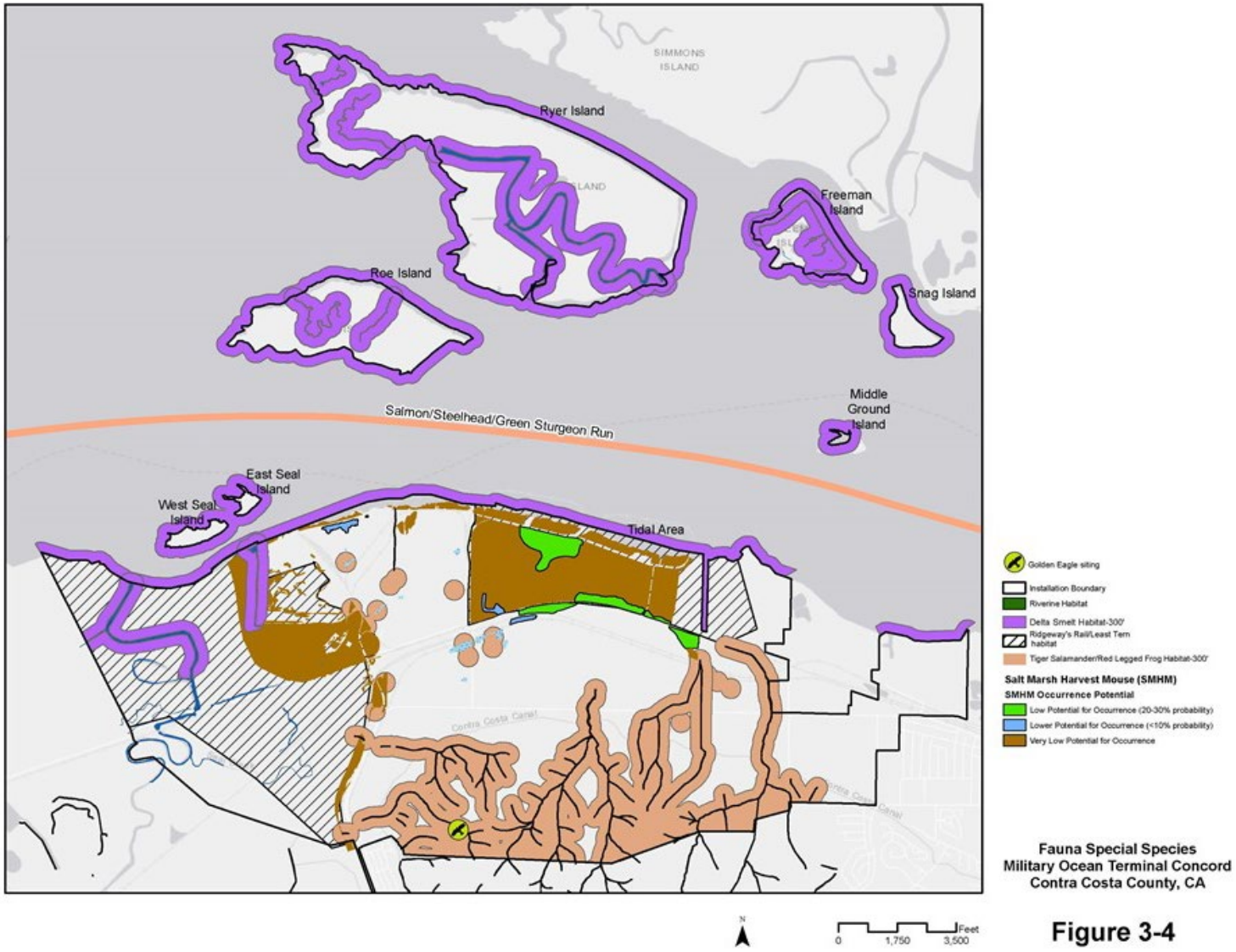
Previous biological surveys conducted at MOTCO identified the presence of species listed as Federally-threatened or endangered and habitat to support Federally-listed species as shown on Figures 3-3 and 3-4. Critical Habitat has also been designated in Suisun Bay (including MOTCO) for Delta Smelt, Green Sturgeon, and Chinook Salmon (U.S. Army, 2017). Additional information on vegetation, wildlife, and threatened and endangered species is provided in the following sections.

3.5.2.1 Vegetation

Vegetation at MOTCO varies throughout the Installation and can be generally split into three dominant categories: terrestrial vegetation, wetland/marsh vegetation, and aquatic vegetation. A brief summary of each category is provided below:



Vegetation Habitat Map



Fauna Special Species
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 3-4

Faunal Special Species

Terrestrial Vegetation

Terrestrial portions of the site include developed and disturbed areas and nonnative grasslands. In the developed and disturbed portions of the site, vegetation is dominated by patchy populations of the non-native ice plant (*Carporbrotus edulis*). Dominant plant species in the non-native grasslands include wild oats (*Avena fatua*), ripgut grass (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum*), and Italian ryegrass (*Lolium multiflorum*), along with a heavy infestation of the noxious, invasive yellow star thistle (*Centaurea solstitialis*) (U.S. Army, 2017).

Wetland Vegetation

Wetland habitat and associated vegetation within MOTCO varies greatly from non-tidal areas to low, mid, and high tide marsh areas. No maintenance activities would occur within wetland or tidal marsh habitat.

The non-tidal brackish marsh areas are highly variable and often includes alkali heath (*Frankenia salina*), saltgrass (*Distichlis spicata*), pickleweed (*Salicornia virginica*), cattails (*Typha spp.*), alkali bulrush (*Scirpus maritimus* and closely related species) and three-square bulrush (*Scirpus americanus*), creeping spikerush (*Eleocharis macrostachya*), heliotrope (*Heliotropum currasavicum*), and Italian ryegrass (U.S. Army, 2017).

Plant species that are distinctly associated with high marsh areas at MOTCO are San Francisco Bay gumplant (*Grindelia stricta var. angustifolia*), western goldenrod (*Euthamia occidentalis*), salt marsh baccharis (*Baccharis douglasii*), western ragweed (*Ambrosia psilostachya*), tarragon (*Artemisia dracunculus*), and the rare soft bird's-beak (*Cordylanthus mollis ssp. mollis*) and Suisun Marsh aster (*Aster lentus*). The inland-transition portion of the high marsh zone is structurally dominated by coyote brush (*Baccharis pilularis*) (U.S. Army, 2017).

Plant species associated with the mid marsh areas at MOTCO is dominated by saltgrass, pickleweed, Baltic rush (the *Juncus balticus-lesueurii* complex), spearscale (*Atriplex triangularis*), jaumea (*Jaumea carnosa*), creeping spikerush, alkali heath, dodder (*Cuscuta salina*), arrowgrass (*Triglochin spp*.) (U.S. Army, 2017).

Low marsh and pond species include Hardstem tule (*Scirpus acutus*), California bulrush (*Scirpus californicus*), giant reed (*Phragmites australis*), three-square bulrush, alkali bulrush, cattails, and the invasive perennial pepperweed (*Lepidium latifolium*) (U.S. Army, 2017).

Aquatic Vegetation

Aquatic flora found in estuarine environments includes submerged aquatic vegetation (SAV) and various species of algae and phytoplankton. Also common in many estuaries is non-native aquatic vegetation. SAV includes vascular plants that are adapted for life under water. In general, the occurrence of aquatic vegetation in the subtidal habitats in the vicinity of MOTCO is not common

due to the lack of hard substrate and high-water motion in the area (U.S. Army, 2017). However, during shoreline habitat surveys at MOTCO biologists observed several small beds with eelgrass (*Zostera marina*) and sago pondweed (*Stuckenia pectinate*) inshore of the wharves in 2015 (U.S. Army, 2017 and 2018b). Surveys in 2016 found mostly sago pondweed and no eel grass at the previous locations.

3.5.2.2 Wildlife and Aquatic Species

Terrestrial Wildlife

Although both non-native grasslands and developed/disturbed areas are dominated by non-native species, this habitat is of great value to grassland wildlife, particularly where the grasslands mingle with marshlands along a broad ecotone on the upper edge of the Tidal Area (U.S. Army, 2017). Further, habitats found at MOTCO including the tidal areas mainland marshes and the marshes and shallows on the offshore islands, all can support a relatively high diversity of terrestrial wildlife species. A summary of terrestrial wildlife is provided below. Threatened and Endangered species are discussed in Section 3.4.2.3.

Mammals

Mammal species observed during surveys conducted in the late 1990s include rodents (e.g., a variety of mice, voles, and rat species), foxes, skunks, bobcat (*Lynx rufus*), mule deer (*Odocoileus heminus*), opossums, shrews, moles, bats, rabbits, and squirrels. A complete listing of species can be found in the INRMP (U.S. Army, 2017) completed for the Installation.

Birds

The California Bay-Delta Area including Suisun Marsh, Grizzly Island Wildlife Area, Hill Slough Wildlife Area, and Peytonia Slough Ecological Reserve and the surrounding marshes and uplands (annual grasslands) support over 291 bird species (U.S. Army, 2017). The American Bird Conservancy has determined that this area qualifies as a Nationally Important Bird Area (American Bird Conservancy, 2009). MOTCO is within this area and is important for breeding, migrating, and wintering songbirds, raptors, shorebirds, and waterfowl. All migratory birds found on MOTCO are protected by the MBTA. A complete list of birds expected to occur at MOTCO can be found in the latest INRMP.

Amphibians and Reptiles

A variety of amphibians including salamanders, newts, and frogs can be found at MOTCO. According to the INRMP the following amphibians have been observed at the Installation: California slender salamander (*Batrachoseps attenuates),* Arboreal salamander (*Aneides lugubris),* Rough-skinned newt (*Taricha granulosa),* Coast range newt (*Taricha t. torosa),* Sierran

treefrog (*Pseudacris sierra),* Pacific chorus frog (*Pseudacris regilla*)*,* American bullfrog (*Rana catesbiana),* and California (Western) toad (*Bufo californicus).*

In addition, numerous snakes, lizards and turtles also occur in habitats at MOTCO. Per the INRMP the following reptiles have been observed at the Installation: Northwestern pond turtle (*Actinemys m. marmorata),* Red-eared slider (*Trachemys scripta elegans),* San Francisco alligator lizard (*Elgaria coerulea coerulea),* California alligator lizard (*E. multicarinata multicarinata),* California legless lizard (*Anniella pulchra),* Coast horned lizard (*Anota coronatum),* Coast Range fence lizard (*Sceloporus occidentalis bocourtii),* Skilton's skink (*Plestiodon skiltonianus skiltonianus),* Gilbert's skink (*Plestiodon gilberti),* California whiptail (*Aspidoscelis tigris munda),* Northern rubber boa (*Charina bottae),* Western yellow-bellied racer (*Coluber constrictor Mormon),* Sharp-tailed snake (*Contia tenuis),* Pacific ring-necked snake (*Diadophis punctatus amabilis),* California king snake (*Lampropeltis getula californiae),* California striped racer (*Masticophis l. lateralis),* Pacific gopher snake (*Pituophis catenifer catenifer),* Diablo Range garter snake (*Thamnophis atratus zaxanthus),* Coast garter snake (*Thamnophis elegans terrestris),* California red-sided garter snake (*Thamnophis sirtalis infernalis),* Valley garter snake (*Thamnophis sirtalis fitchi),* and the Northern Pacific rattlesnake (*Crotalus oreganus oreganus)*.

Marine Species

In addition to some of the amphibian and reptile species mentioned above, MOTCO supports a wide range of aquatic / marine species including invertebrates, fish, and marine mammal species (discussed below). Threatened and Endangered species is discussed in Section 3.5.2.3.

Marine Invertebrates

Marine Invertebrates associated with estuarine soft-bottom environments include those that live in the sediments (infaunal), on top of the sediments (epifaunal), and in the water column (pelagic). It should be noted that as a whole, the San Francisco Bay-Delta region has been altered by the introduction of various non-native invertebrates (e.g., exotic oriental shrimp (*Crangon franciscorum*) (U.S. Army, 2017).

Studies specific to Suisun Bay have revealed species assemblages of small infauna and epifauna broken down by locations including channels and channel edges, shallow subtidal, and slough channels. The channels and channel edges are dominated by bivalves (*Corbula amurensis and Corbula fluminea*), polychaetes (*Marenzellaria viridis* and *Heteromastus filiformis*), cumacean (*Nippoleucon hinumensis*), isopod (*Synidotea laevidorsalis*), and barnacle (*Balanus improvises*). In shallow subtidal areas the dominant species include a bivalve (*C. amurensis*), a 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 (U.S. Army, 2017).

Fish

A large number of fish species are known to frequent estuarine waters, including some non-native species (e.g., striped bass, *Morone saxatilis*). Common bony fish species in Suisun Bay include various smelt species, gobies, small fish such as Pacific herring (*Clupea pallasii*), white sturgeon (*Acipenser transmontanus*), flatfish, and perches (U.S. Army, 2017).

Marine Mammals

Marine mammals generally require higher salinity conditions than those occurring near MOTCO, but several species have been known to venture into the waters of Suisun Bay including the California sea lion (*Zalophus californianus*), humpback whale (*Megaptera noveangilae*) and harbor seal (*Phoca vitulina*). Although sightings have been documented, sea lions are not frequent visitors of the Suisun Bay area. Harbor seals are known to occur in low abundance, although consistently in the vicinity of MOTCO, and have been sighted in the Sacramento and San Joaquin Rivers. All marine mammals are protected by the MMPA (U.S. Army, 2017).

3.5.2.3 Federally-Listed Species

Initial review of the USFWS Information, the MOTCO INRMP (U.S. Army, 2017), Biological Assessment (U.S. Army, 2019b), Biological Opinion issued by USFWS (2020), and NMFS correspondence (NMFS, 2020) were used to document observance or potential of occurrence for special-status wildlife species within the Action Area. The following Threatened or Endangered species are currently known to likely to occur on MOTCO:

Terrestrial Species

- Soft bird's-beak (*Cordylanthus mollis* ssp. *Mollis*, plant)
- California tiger salamander (*Ambystoma californiense*, amphibian)
- California red-legged frog (*Rana aurora draytoni*, amphibian)
- Ridgeway's Rail (*Rallus longirostris obsoletus*, bird)
- California Least Tern *(Sternula antillarum browni,* bird)
- Salt marsh harvest mouse (*Reithrodontomys raviventris*, mammal)

Marine Fish Species

- North American Green Sturgeon (*Acipenser medirostris*) and associated Critical Habitat
- Central Valley Steelhead (*Onchorhynchus mykiss*)
- Central California Coast Steelhead (*Onchorhynchus mykiss*)

- Central Valley Spring-run Chinook Salmon (*Onchorhynchus tshawytscha*) and associated Critical Habitat
- Sacramento River Winter-run Chinook Salmon (*Onchorhynchus tshawytscha*)
- Delta smelt (*Hypomesus transpacificus*) and associated Critical Habitat

In addition, the essential fish habitat includes Pacific Coast Groundfish (PCG), Coastal Pelagic Species (CPS), and Pacific Coast Salmon (PCS).

3.6 LAND USE AND RECREATION

This section presents the existing land use conditions found at MOTCO, and the areas immediately adjacent to MOTCO, which together comprise the study area. Land use generally refers to human modification of land, often for residential or economic purposes, and to preservation of natural resources.

3.6.1 Regulatory Setting

The following section describes the federal regulations applicable to the proposed project. Local general plans and community ordinances do not have jurisdiction over federal operations or development actions at MOTCO; however, MOTCO generally maintains compliance with local regulations.

3.6.1.1 Federal

Army Regulation 405-70, Utilization of Real Property

This regulation establishes planning and management procedures to ensure efficient use of Army real property. It covers preparing and maintaining annual reports for the use of land, facilities, and space, and it prescribes periodic Installation surveys.

Coastal Zone Management Act

States must develop Coastal Zone Management programs in order “to preserve, protect, develop and, where possible, to restore or enhance the resources of the nation’s Coastal Zone....” Each Coastal Zone Management Plan must identify coastal zone boundaries, define permissible land and water uses within the coastal zone, inventory and designate areas of particular concern within the coastal zone, identify means by which the state proposes to exert control over land and water uses, establish guidelines for priorities of uses within particular areas, and describe the organizational structure proposed to implement the management program.

Federal lands (i.e., lands owned, leased, or held in trust by the federal government) are excluded from the CZMA; however, Federally conducted activities on excluded lands that have spillover effects on non-excluded lands, water use, or natural resources of the coastal zone will require a

consistency determination. The requirements for consistency determinations are established in NOAA regulations.

The BCDC performs CZMA consistency review for projects in the San Francisco Bay Area. Nearly all work in the portion of the Suisun Marsh below the 10-foot contour level requires permits from BCDC. Annual reports on maintenance activities will be provided to BCDC.

Marine Protection, Research, and Sanctuaries Act

Titles I and II of the Marine Protection, Research, and Sanctuaries Act, also referred to as the Ocean Dumping Act, generally prohibits (1) transportation of material from the U.S. for the purpose of ocean dumping; (2) transportation of material from anywhere for the purpose of ocean dumping by U.S. agencies or U.S.-flagged vessels; (3) dumping of material transported from outside the U.S. into the U.S. territorial sea. A permit is required to deviate from these prohibitions.

3.6.2 Existing Conditions - Land Use and Recreation

Installation and land use at MOTCO center on its function as an ammunition transshipment facility (Figure 3-5). The current land use pattern at MOTCO concentrates administrative uses in the Inland Area. Land use in the Tidal Area serves the primary mission of MOTCO, roughly divided into waterfront operations in the north adjacent to Suisun Bay, ammunition transfer and holding facilities in the center, and the “Q Area” to the east. Short-, mid-, and long-range Installation development plans in the MOTCO RPMP are being updated (U.S. Army, 2011b).

Outdoor recreation opportunities at MOTCO are extremely limited because of security needs and the safety factor associated with weapons and ammunition staging. Generally, the Installation is only accessible by authorized military and civilian personnel; however, public access has been allowed in the past, if prior request is made and visitors would not interfere with the Installation’s mission or planned military activities. The Port Chicago Naval Magazine National Memorial (PCNMNM), became a National Park Service (NPS) site in 2009; however, this memorial site is part of MOTCO and, therefore, has restricted access. Visitors must make reservations for tours with two weeks’ notice to be granted access (U.S. Army, 2017).

There is a mix of land uses adjacent to MOTCO including heavy and light industrial, recreation, high and medium density residential (mostly single family with some multi-family), agricultural, and public/semi-public lands. Notable adjacent land uses are described below:

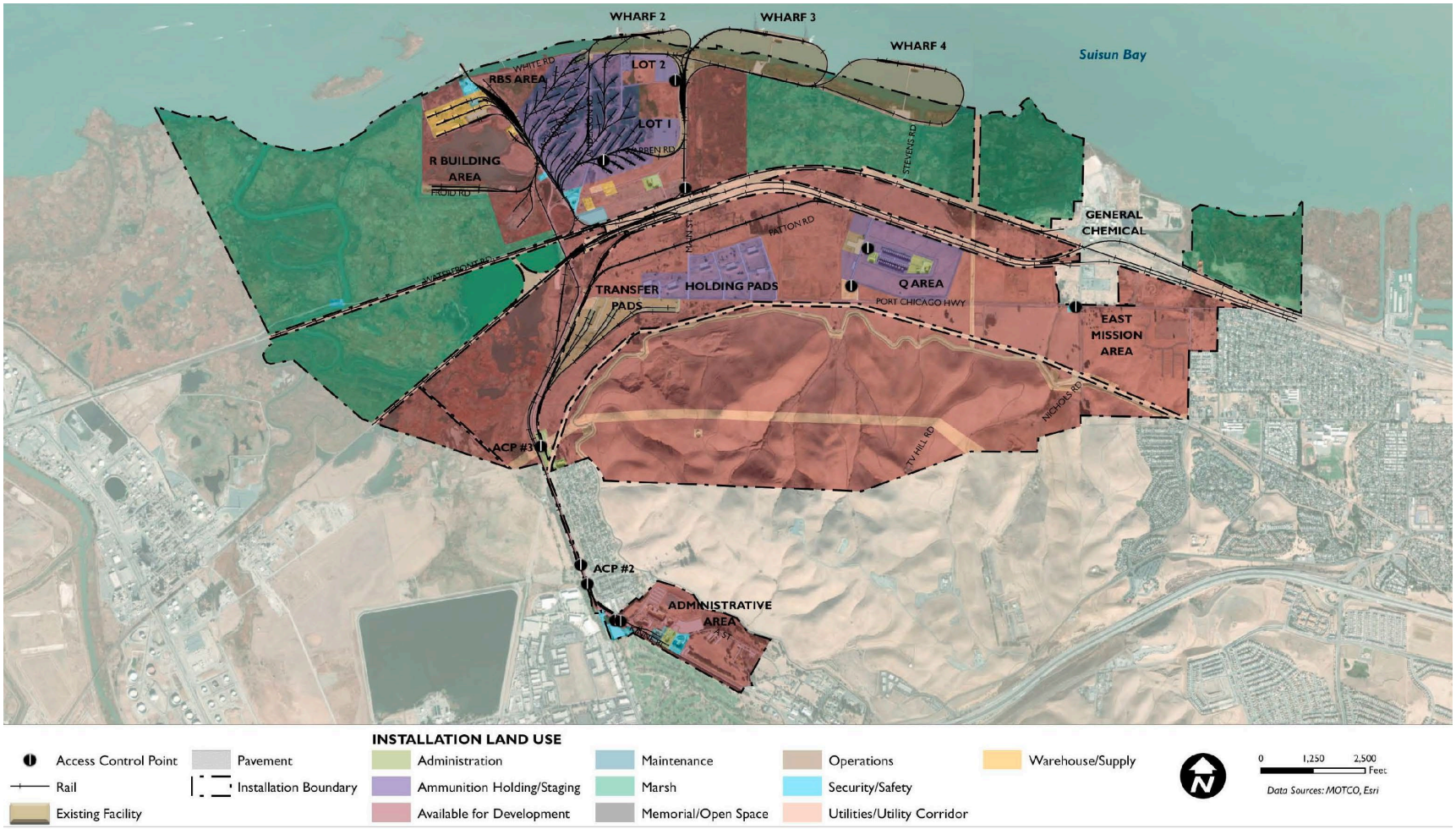


Figure 3-5 Land Use Map

3.6.2.1 Heavy Industrial in Eastern Tidal Area

The eastern Tidal Area supports some heavy industrial land uses. There are two areas zoned for heavy industrial use: a 114-acre area north of the public railroad right of way (ROW), in between Middle Point Marsh and East Marsh; and a 35-acre area between ACP 5 and the public railroad ROW. The General Chemical West, LLC, Bay Point Works facility is an industrial site that occupies approximately 26 acres in this area north of the railroad ROW (U.S. Army, 2017).

3.6.2.2 East of Tidal Area

East of the Tidal Area is Bay Point, an unincorporated area of Contra Costa County that consists primarily of residential neighborhoods with some interspersed community commercial, neighborhood parks, churches, and a mobile home development. Bay Point Regional Shoreline Park borders MOTCO at the shoreline to the east. A large swath of industrial land lies along the railroad tracks (U.S. Army, 2017).

3.6.2.3 Los Medanos Hills South of Tidal Area

The Los Medanos Hills separate the Tidal and Inland Areas. This land is partially privately owned and is leased to the Pacific Gas and Electric Company. The site is used to meet long-term storage needs for natural gas. Compressed natural gas is injected directly into depleted underground oil and gas reservoirs, thus forming new reserves. Cattle grazing occurs on these lands as well (U.S. Army, 2017).

3.6.2.4 West and Southwest of the Tidal Area

Two land uses dominate unincorporated Contra Costa County land west of the Tidal Area: recreation and heavy industrial. The CDFW Point Edith Wildlife Area represents the recreational use, which extends north from Waterfront Road to Suisun Bay. Land use classified as heavy industrial to the west of the wildlife area consists of the Tesoro Golden Eagle Refinery. This refinery occupies 2,206 acres and has a crude oil capacity of 166,000 barrels per day (U.S. Army, 2017).

3.6.2.5 North of the Inland Area (Clyde and Los Medanos Hills)

The unincorporated community of Clyde (population approximately 700) is located between the Inland and Tidal Areas on the eastern side of Port Chicago Highway. Clyde consists of single-family residences with interspersed neighborhood recreation. An approximately two-acre light industrial area is located between the Inland Area and residential area (U.S. Army, 2017).

3.6.2.6 Northeast, East, and South of the Inland Area

The northeastern boundary of the MOTCO Inland Area is defined by the Contra Costa Canal. Adjacent land use is the Los Medanos Hills gas field noted above. Former adjacent Navy property includes Diablo Creek Golf Course to the southwest and former Navy administrative areas to the southeast of the Inland Area. Formal community reuse options (concordreuseproject.org) have been formulated for the former Navy administrative area, and Contra Costa County has expressed interest in emergency response training in this area (U.S. Army, 2017).

3.6.2.7 West of the Inland Area

Port Chicago Highway, a light industrial area, and Mallard Reservoir are located west of the Inland Area (U.S. Army, 2017).

3.7 TRAFFIC AND TRANSPORTATION

This section presents the existing conditions found on the transportation system within the study area, which consists of MOTCO, and the areas immediately adjacent to MOTCO.

3.7.1 Regulatory Setting

The Association of Bay Area Governments serves as the designated Metropolitan Planning Organization for the region. Local municipalities determine their own criteria for streets and roads, while the California Department of Transportation oversees state highways.

3.7.2 Existing Conditions - Traffic and Transportation

California Highway 4 provides the primary access to MOTCO with State Highway 242 and U.S. Interstate Highways 80, 580, 680, and 780 providing connections to Highway 4 from nearby cities in the Bay Area region. The Port Chicago exit from Highway 4 provides access to MOTCO's main gate and the Willow Pass exit provides access to ACP 5. During peak summer months Highway 4 near MOTCO experiences traffic volume between 80,000 and 157,000 vehicles per day. There are two primary access points at MOTCO: ACP 1 provides access to the Inland Area via Port Chicago Highway to Kinne Boulevard, and ACP 2 provides access to the Tidal Area via Port Chicago Highway to Taylor Boulevard. Other access includes ACP 3 adjacent to the community of Clyde, with ACPs 4 and 5, at the western and eastern ends of the Tidal Area respectively. Traffic congestion is not an issue on the Installation but there are issues with the inadequacy of road surfaces and capacities (U.S. Army, 2013a).

Bay Area Rapid Transit stations are located relatively near MOTCO, with the North Concord/Martinez Station located about one mile south of the main gate and the Pittsburg/Bay Point Station located about three miles southeast of ACP 5. Amtrak passenger trains pass through

MOTCO several times per day on freight rail tracks (U.S. Army, 2013a). There is no permissible water access to MOTCO by non-Army personnel.

3.8 NOISE

Noise is defined as any sound that is undesirable because it interferes with communication, impairs hearing, and/or diminishes the quality of the environment. With respect to noise, the study area consists of MOTCO and the areas immediately adjacent to MOTCO.

Many factors affect one's perception of noise including pitch, loudness, and the character of the noise. The standard unit of sound amplitude measurement is the decibel (dB). Because the human ear cannot hear all frequencies, a special scale has been devised to relate noise to human sensitivity, the A-weighted decibel (dBA) scale. The dBA scale de-emphasizes the low- and high-end frequencies and emphasizes those frequencies the human ear is able to hear. The following terms are typically used in analyzing noise:

- **Leq** – Equivalent energy level. The A-weighted sound level corresponding to a steady state sound level containing the same total energy as a time varying signal over a given sample period. Leq is typically computed over 1-, 8-, and 24-hour measurement periods;
- **Lmax** – The maximum A-weighted sound level during the measurement period;
- **Ldn** – Day-night average level. A 24-hour average Leq, with the addition of 10 dBA to the sound level during the hours of 10:00 P.M. to 7:00 A.M. to account for greater noise sensitivity of people at night;
- **CNEL** – Community Noise Equivalent Level. A 24-hour average Leq, with the addition of 5 dBA to sound levels from 7:00 P.M. to 10:00 P.M. and the addition of 10 dBA to sound levels from 10:00 P.M. to 7:00 A.M. CNEL is widely used in California and is similar to Ldn, except it increases noise levels by 5 dBA between 7:00 P.M. and 10:00 P.M.

3.8.1 Regulatory Setting

The following section describes the federal, state, and local noise guidance and regulations applicable to the proposed project.

3.8.1.1 Federal

The Noise Control Act of 1972 (Public Law 92-574) established a national policy to promote an environment for all Americans that is free from noise that would jeopardize their health and welfare. This Act authorized and directed federal agencies to carry out programs to further the policy declared in the Act. Each federal department or agency must comply with federal, state, interstate, and local requirements regarding control and abatement of environmental noise.

Army

To comply with the Noise Control Act, the Army has established a noise policy as part of AR 200-1 (Chapter 14; Army, 2007a).

The major goals of the Army's noise policy are to:

- Control operational noise to protect the health and welfare of people, on- and off-post, affected by all Army-produced noise, including on- and off-post noise sources;
- Reduce community annoyance from operational noise to the extent feasible, consistent with Army training and materiel testing mission requirements;
- Actively engage local communities in land use planning in areas subject to high levels of operational noise and a high potential for noise complaints.

The Army's noise policy establishes noise criteria for land use compatibility planning that are specific to aviation sources, impulsive military sources (such as artillery), and small arms firing ranges. None of these categories of noise criteria are directly applicable to MOTCO or the types of noise sources associated with the proposed project. The Army's operational noise policy states, "transportation and industrial noise will be assessed on a case by case basis using appropriate noise metrics, including USDOT guidelines." Therefore, the following section provides an overview of some of the key noise criteria used by the USDOTs various modal administrations.

U.S. Department of Transportation

The Federal Highway Administration (FHWA) has established noise abatement criteria used to determine effects and mitigation measures for new roadways or the reconstruction of existing roadways (23 CFR Part 772). The FHWA requires state Departments of Transportation to further define how the FHWA policy will be implemented in each state. Caltrans issued a revised Traffic Noise Analysis Protocol in May 2011 (Caltrans, 2011). The Caltrans noise policy effect criteria are based on 1-hour equivalent sound levels (Leqh) for the hour of the day with the highest traffic noise level. For residential exterior uses, a noise effect occurs under the Caltrans policy when:

- The predicted Leqh with the project is equal to or greater than 66 dBA, or
- The predicted Leqh with the project exceeds the existing Leqh by 12 dBA or more

Different criteria are specified for different land use types, in accordance with their sensitivity to annoyance from traffic noise.

The Federal Transit Administration (FTA) and Federal Aviation Administration (FAA) assess noise effects using different metrics, effect criteria, and procedures than the FHWA. FTA assesses operational noise effects on residential uses based on Ldn (24-hour Leq with 10 dB penalty on noise occurring at night). There is no single Ldn level that determines a noise effect under FTA

procedures; effects are determined through an equation/chart that takes into account both the existing noise level and the increase in noise levels due to the project (FTA, 2006). FAA also assesses noise effects using the Ldn metric (referring to it as day-night average sound level), but uses a predicted noise level above 65 Ldn as the basis for determining effects and land use compatibility (FAA, 2007).

The transportation noise criteria discussed above are all applicable to long-term operational noise exposure. For construction noise exposure, higher noise levels may be acceptable because of their temporary nature. The FHWA and the FAA have not established construction noise effect criteria in policy or regulations. The FTA's procedures suggest the following criteria as a reasonable basis for assessing construction noise effects:

- 8-hour daytime Leq – 80 dBA
- 8-hour nighttime Leq – 70 dBA
- 30-day Ldn – 75 dBA

The FTA and the FHWA recommend that the construction noise criteria for each project should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use.

3.8.2 Existing Conditions - Noise

The existing noise environment at MOTCO does not include major noise sources such as airfield operations or live-fire training. Noise sources include motor vehicle, heavy equipment, and railroad use and maintenance in support of mission activities. Commercial railroad use along Union Pacific and BNSF rail lines also contributes to noise at MOTCO (U.S. Army, 2013a).

3.9 UTILITIES, ENERGY, AND SUSTAINABILITY

This section describes existing utilities and public services within MOTCO, including wastewater, solid waste, energy, natural gas, electricity, and communications. Water services are described in Section 3.1. Sustainability, or the potential for renewable energy and recycling projects at MOTCO, is also discussed. The study area consists of the boundaries of MOTCO.

3.9.1 Regulatory Setting

The following section describes the federal and state rules and regulations applicable to utilities, energy, and sustainability at the proposed project.

3.9.1.1 Federal

Wastewater

The federal Water Pollution Control Act (Public Law 92-500), commonly known as the CWA, was promulgated in 1972 following a series of previous legislative efforts to establish water pollution control laws in the United States. The CWA, Section 402, NPDES Permit Program authorizes the issuance of individual or general permits to control municipal and industrial point source discharges, including those from wastewater and stormwater. The federal government has full authority to issue NPDES permits but may delegate the permit program to the state, and California has the authority to issue NPDES permits.

Solid Waste

The USEPA regulates the management of non-hazardous solid waste according to the Resource Conservation and Recovery Act (RCRA), Subtitle D. Under RCRA, the USEPA is also in charge of regulating the handling and disposal of hazardous wastes.

Energy

MOTCO is required to follow several executive orders and other documents pertaining to energy use by the federal government:

- EO 13423 (January 26, 2007) is intended to improve energy efficiency and reduce GHG emissions of the agency, through reduction of energy intensity by 3% annually through the end of Fiscal Year (FY) 15, or 30% by the end of FY15, relative to the baseline of the agency's energy use in FY03. EO 13423 also describes requirements for renewable energy use, sustainable environmental practices, and requirements for new construction in accordance with *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings set forth in the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding* (2006).
- EO 13514 (Federal Leadership in Environmental, Energy, and Economic Performance) sets sustainability goals for federal agencies and focuses on making improvements in their environmental and energy performance. EO 13514 also requires federal agencies to set a 2020 GHG emissions reduction target, increase energy efficiency, and reduce petroleum consumption.
- Energy Policy Act of 2005 addresses energy production in the U.S. and describes energy management requirements for federal agencies, procurement of energy efficient products, federal building performance standards, and enhancing energy efficiency in management of federal lands.

- The Energy Independence and Security Act of 2007 is intended to move the U.S. towards greater energy independence and security and includes requirements for improving the energy performance of the federal government. This Act contains requirements for energy efficiency in federal vehicle fleets and sets energy reduction goals for federal buildings.

Executive Order 13693 – Planning for Federal Sustainability

The goal of EO 13693 of 2015 is to maintain Federal leadership in sustainability and GHG emission reductions. Federal agencies shall, where life-cycle cost-effective, beginning in FY16, unless otherwise specified, promote building energy conservation, efficiency, and management by reducing agency building energy intensity by 2.5 percent annually through the end of FY25, relative to the baseline of the agency's building energy use in FY15 and taking into account agency progress to date.

3.9.1.2 State

Wastewater

The California Water Code, Sections 13575–13583, contains the Water Recycling Act of 1991, which establishes a statewide goal of recycling one million acre-feet of water annually by the year 2010 and encourages retail water suppliers to increase the use of recycled water. The Health and Safety Code, the Water Code, and Title 22 and Title 17 of the California Code of Regulations (CCR) contain regulations for the treatment, use, and distribution of reclaimed water. The Porter Cologne Water Quality Control Act (California Water Code) regulates discharges of wastewater to surface and groundwater.

Solid Waste

Under the jurisdiction of the California EPA, the California Integrated Waste Management Board is charged with managing solid waste. Title 14, Chapter 3, of the CCR addresses minimum standards for solid waste handling and disposal.

The California Integrated Waste Management Act (AB 939) requires each county or incorporated city to prepare a Source Reduction and Recycling Element that shows how they will divert 25 percent of all solid waste from landfill or transformation facilities by January 1, 1995, and divert 50 percent of all solid waste by January 1, 2000.

3.9.2 Existing Conditions – Utilities, Energy and Sustainability

Wastewater and Solid Waste

A sanitary sewer system serves the Inland Area and the majority of the Tidal Area, with the exception of the eastern end. Much of the sewer piping at MOTCO is more than 50 years old and

targeted repair and replacement projects are ongoing. The Delta Diablo Sanitation District receives discharge from the Tidal Area and the Central Contra Costa Sanitation District receives discharge from the Inland Area. Treatment systems in both sanitation districts have adequate capacity to meet projected growth (U.S. Army, 2013a). Solid waste and recyclable materials generated at MOTCO are disposed of by Concord Disposal Services (U.S. Army, 2013a).

Energy

Pacific Gas & Electric Company provides natural gas to MOTCO. All major facilities at MOTCO are connected to the natural gas lines (U.S. Army, 2013a, 2020b). MOTCO receives electrical power from the Western Area Power Administration. Electricity is delivered to the Mission and Administrative Districts via 12 kilovolt transmission lines. The electrical system at MOTCO requires upgrades to meet current standards U.S. Army 2020b).

Renewable energy projects at MOTCO include installation of solar panels on select buildings and in Renewable Energy zone (U.S. Army 2020b). The potential for other projects is under evaluation.

3.10 HAZARDOUS AND TOXIC MATERIALS/WASTES

This section describes the methods and systems used to identify and manage hazardous, toxic, and radioactive substances/wastes (HTRW) associated with MOTCO and known hazardous waste disposal sites within the project area. The study area consists of the physical site boundaries of MOTCO.

3.10.1 Regulatory Setting

The USACE policy regarding hazardous waste disposal sites is presented in Engineering Regulation (ER) 1165-2-132 and was developed in response to the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended. The term HTRW includes any material listed as a “hazardous substance” under the CERCLA, “hazardous wastes” under the RCRA, “hazardous substances” identified under the CAA, “toxic pollutants” designated under the CWA, “hazardous air pollutants” designated under the CAA, and “imminently hazardous chemical substances or mixtures” under the Toxic Substances Control Act (USACE, 1992).

The objective of the Army guidance is to outline procedures to facilitate early identification and appropriate consideration of HTRW problems. When problems are identified, response actions must be acceptable to the USEPA and applicable state regulatory agencies. The USACE policy also requires that each civil works project must include a phased and documented review to provide early identification of known and potential HTRW sites that may be affected by a proposed federal project. The lead state regulatory agency in the environmental restoration program for

MOTCO is the SFBRWQCB, and the Department of Toxic Substances Control (DTSC), agencies within the California EPA. Expiration of HSC 25150.7 and regulation 22 CCR 67386.1 et seq. on December 31, 2020 resulted in changes to handling and disposal of treated wood waste. Locally, the lead regulatory agency for hazardous waste management is the Contra Costa County Health Services Department.

3.10.1.1 Hazardous Materials Releases

The CERCLA of 1980 (42 USC 9601 et seq.) regulates hazardous materials releases into the environment that occurred before 1986. Along with the Superfund Amendments and Reauthorization Act of 1986, it established the Superfund Program to clean up hazardous waste sites. The DOD's implementing program for Superfund is the Installation Restoration (IR) Program and is limited to clean-ups in the U.S.

3.10.1.2 Toxic Substances

The Toxic Substances Control Act of 1976 (15 USC 2601 et seq.) implements restrictions on certain chemical substances, including chlorofluorocarbons, PCBs, and asbestos. The law imposes restrictions to protect human health and environmental exposure to these highly toxic substances, requires chemical testing, and regulates the release of these chemicals into the environment.

3.10.1.3 Hazardous Waste

The RCRA of 1976, with amendments, establishes regulations to characterize hazardous waste and requirements for transporting, storing, and disposing of hazardous waste. RCRA places "cradle to grave" responsibility for hazardous waste on the generator of the waste. RCRA also covers universal wastes, which are hazardous wastes that are more common and pose a lower risk to people and the environment than other hazardous wastes. Railroad ties and wharf piers are treated wood waste are fully regulated California DTSC hazardous waste. Examples of common hazardous wastes are florescent lighting tubes that may contain mercury and potential PCBs found in florescent light fixture ballasts. Federal and state regulations identify universal wastes and provide rules for handling, recycling, and disposing of them (40 CFR Part 273; 22 CCR 66273.1 et seq.). All universal wastes are hazardous wastes but are managed under less stringent standards than other hazardous wastes.

3.10.1.4 Hazardous Materials Transportation

The Federal Hazardous Materials Transportation Law of 1988 (49 U.S. Code 100 et seq.), as amended, authorizes the USDOT to issue interstate and intrastate regulations regarding the transportation of hazardous material and waste on public roads, including packaging, handling, labeling, marking, placarding, and transporting.

3.10.1.5 Petroleum Storage Tanks

Federal and state regulations concerning underground storage of hazardous substances govern the management, operation, removal, and remedial action of underground storage tanks (USTs) (40 CFR Part 280; 23 CCR 2610 et seq.). Regulated USTs must include automated monitoring devices for leak detection, annual third-party testing, cathodic protection (i.e., a technique used to control the corrosion of metal surfaces), and overfill warning devices. Releases from USTs require following a protocol of remedial investigation, environmental sampling, and preparation of a feasibility study to implement a remedial action plan to remedy the environmental release.

The California Aboveground Petroleum Storage Act requires the owner or operator of a tank facility, with an aggregate storage capacity greater than or equal to 1,320 gallons of petroleum, to prepare and implement a spill prevention control and countermeasure plan in accordance with federal law.

3.10.1.6 Lead-Based Paint

Federal, state, and local regulations regulate the management of lead-based paint (LBP), LBP additives, and LBP hazards. The Army policy is to manage LBP in place, unless it presents an imminent health threat as determined by the Installation medical officer or unless operational, economic, or regulatory requirements dictate its removal. Army policy also imposes requirements to reduce the release of lead, lead dust, or LBP into the environment from deteriorating paint surfaces, building maintenance, or other sources on Army installations or on Army-controlled property.

3.10.1.7 Asbestos

The federal National Emissions Standards for Hazardous Air Pollutants regulations establish performance standards for the demolition and renovation of buildings with asbestos-containing material (ACM) (40 CFR Part 61). Federal and state rules and policies address not disturbing potentially friable ACM (which, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure) and provide removal standards for renovation and demolition projects. During demolition, maintenance, repair, remediation, or renovation of buildings, friable asbestos in ACM can be released into the air. Asbestos fibers can be released from various building materials, such as pipe and boiler wrap and other insulating materials and acoustic ceiling tiles.

3.10.1.8 Radon

No federal regulations require radon testing. California law requires radon testing and mitigation plans for new construction. Building permits are not issued until compliance is met (California Health and Safety Code 105430). The effects of human exposure to radon are uncertain primarily because it is difficult to isolate the effects from particular radiation sources. The effects of radiation

can occur at any dose, no matter how small; this widely accepted theory is called the linear no-threshold hypothesis. According to this theory, there is no level of exposure below which no adverse effect occurs. If the theory is correct, all exposure to radiation presents some health risk. The risk of lung cancer caused by exposure to radon through its inhalation is currently a topic of concern.

Army policy provides for ongoing radon management efforts. In accordance with AR 200-1, the Army maintains and updates records of completed radon assessments and includes radon testing results with real property and housing data to notify tenants and transferees of elevated radon levels. Army policy provides that indoor radon levels in newly constructed units and units converted to housing or continuously occupied structures (such as hospitals) located in high-radon level areas are to be tested prior to occupancy. Where elevated levels of radon are encountered, Army facilities managers are to adhere to abatement measures. In addition, AR 200-1 requires that radon be measured in newly constructed Army facilities.

3.10.2 Existing Conditions – Hazardous Materials/Wastes

MOTCO is a Small Quantity Generator of hazardous waste as defined under RCRA. Common hazardous wastes generated at MOTCO include hydrocarbon solvents, waste oil, latex waste, surplus, aged, and off-specification organics, and other organic solids. The Oil, Hazardous Substance, and Hazardous Waste Spill Contingency Plan identifies Army requirements for responding to unintentional releases of oil or hazardous substances (U.S. Army, 2013a). The transport and disposal of treated wood railroad ties and wharf piers is regulated by DTSC.

3.10.2.1 Installation Restoration Sites

Historic waste disposal practices deemed appropriate at the time and accidental spills of hazardous substances during daily operations led to the contamination of soils and groundwater in several locations throughout the Installation. The Navy implemented a CERCLA IR program in 1983 in order to collect and evaluate information in response to speculation that certain areas of the Installation had contamination above acceptable levels. Responsibility for the continuation of the IR program was transferred from the Navy to the Army with the transfer of MOTCO in 2008 (USACE, 2011).

The IR program is a series of eight steps that follow CERCLA beginning with a site investigation and, if necessary, ending in the remediation/clean-up of the site. The eight steps are:

- Preliminary Assessment/Site Inspection
- Remedial Investigation/Feasibility Study
- Record of Decision
- Remedial Design

- Remedial Action
- Remedy in Place/Response Complete
- Long-term Management
- Site Closeout

Eighteen current sites are identified as IR sites under MOTCO's IR program, as shown in Table 3-2. Additional original IR sites at MOTCO are located outside the current MOTCO boundaries, on former Navy property, as shown on Figure 3-6. Remaining sites from an initial 40 have been cleaned up and therefore removed from the current IR list. The status of remedial activities at most of these sites was summarized in the *Fourth Five-Year Review Report for MOTCO* (Dawson Technical, LLC, 25 September 2020).

3.10.2.2 Munitions Response Sites

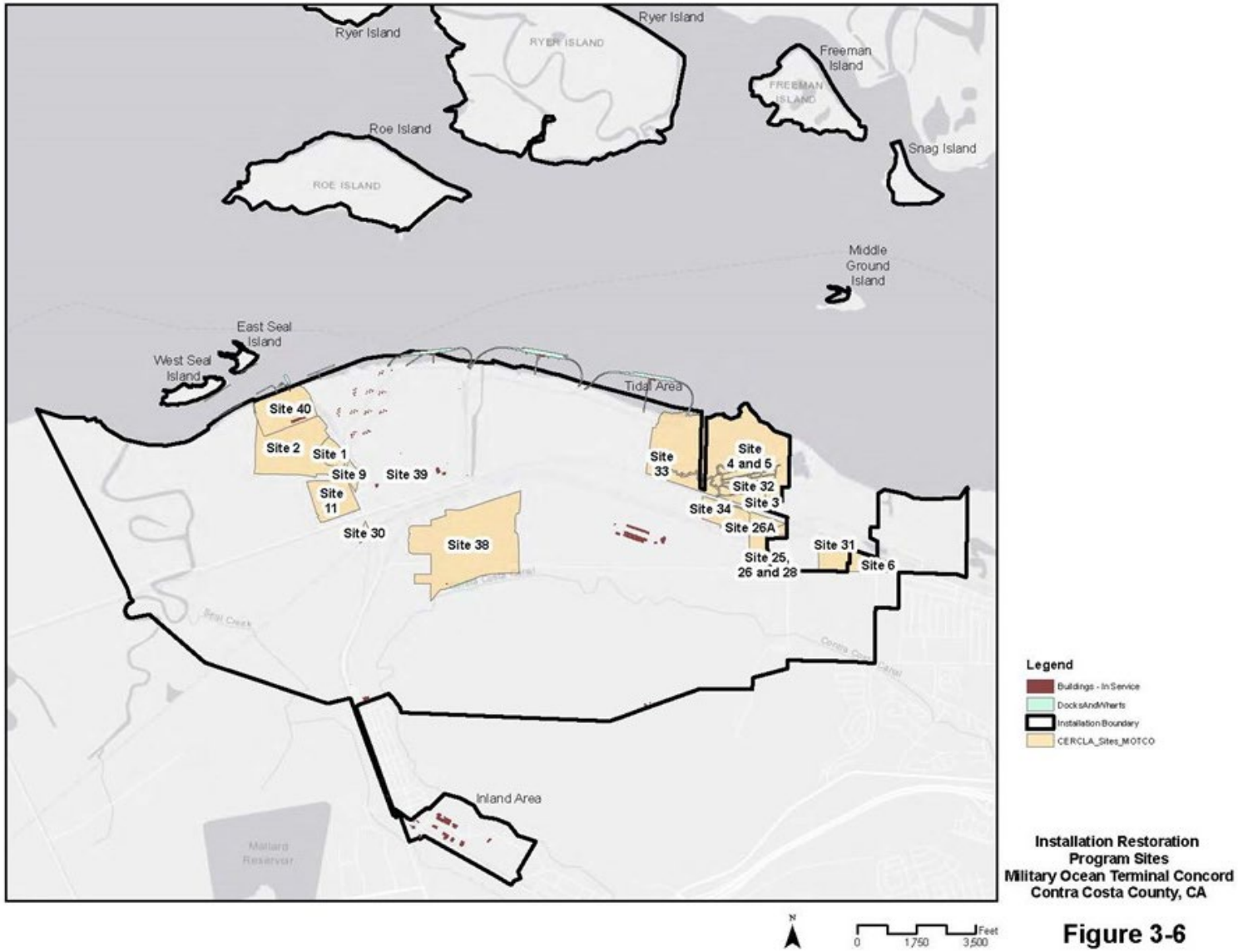
There are three Munitions Response Sites (MRSs) at MOTCO (see Figure 4-3). MRS 7 was formally used for open detonation of munitions between the early 1970s and 1974. It encompasses approximately 0.37 acre, and probable munitions detonated/destroyed at this site include bulk propellants and explosives, pyrotechnics, and small arms. MRS 8 and MRS 10 represent the 1944 Port Chicago explosion blast radius. MRS 8 encompasses approximately 4,945 acres including the main Tidal Area and Roe and Ryer islands. MRS 10 is approximately 4,830 acres (USACE, 2011). The Preliminary Assessment for the three sites was completed in 2007, and the Site Investigations concluded in 2011. Per Section 22 of the Federal Facility Agreement, the USEPA invoked informal dispute resolution on the draft final Military Munitions Response Program (MMRP) Remedial Investigation (RI) on Dec. 30, 2015. The Army and the regulatory agencies have met on a number of occasions to resolve the dispute and are close to resolution. The date of the final RI is to be established based on the informal dispute resolution. A more detailed cleanup exit strategy will be developed pending the results of the final RI/FS.

3.10.2.3 Storage Tanks

The Installation contains eight aboveground storage tanks (ASTs) containing diesel fuel and permitted with the BAAQMD. The ASTs are located as follows:

- Building 542, one 400-gallon diesel fuel for backup generator;
- Building IA-2, one 200-gallon diesel fuel for backup generator;
- Building 607, one 275-gallon diesel fuel for backup generator;
- Building E-105, one 79-gallon diesel fuel for backup generator;
- Building 544 and 545, Two 1,000-gallon diesel fuel for backup generators at cranes on Wharves 2 and 3;

- Building 546 (Radio Tower), one 275-gallon diesel fuel for backup generators;
- Building 608, one 101-gallon diesel fuel for backup generator;
- Building 245, one 275-gallon diesel fuel for backup generator.



Installation Restoration Program Sites
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 3-6

Installation Restoration Program Sites

Table 3-2. Installation Restoration Sites List and Status

Site No.	Name	Waste Types	Status
1	Tidal Area Landfill	Petroleum, paints, pesticides, metals, PCBs	Remedial Action (RA) Stage Start Date: 27 June 2003 Quarterly groundwater monitoring is conducted for this site. Reports are submitted to agencies for their review and concurrence. Well Installation and Abandonment Work was initiated in December 2018. All new wells were installed, and the 1st sampling event was conducted in March 2019. 2 wells remain to be removed but must wait for an open species work window in Sept 2019. An Explanation of Significant Differences will be prepared to move groundwater monitoring under this site. ESD is not required, a memo to the file to move the groundwater under site 1 will be generated once contract mod is approved.
1A	Tidal Area Landfill (Groundwater)	Metals	Remedial Investigation (RI) / Feasibility Study (FS) Stage. Start Date: 15 March 2004. MOTCO and agencies have come to an agreement to draft Proposed Plan (PP) and ROD to close site 1A and move the groundwater monitoring under site 1. In addition, sites 2, 9, 11 will be included in the site 1a Record of Decision (ROD) to close out all sites for groundwater.
2	R Area	Metals, VOCs, SVOCs, pesticides, PCBs	FS Stage Start Date: 30 January 2002. The Land Use Control (LUC) inspections for Sites 1, 1a, 2, 9, 11, 31, and 31A are completed annually and submitted to agencies for concurrence. A PP and ROD for sites 2, 9, and 11 will be developed in FY19-FY20 to close out sites for soil.
3	RASS 2, Litigation Area	Metals	Long-Term Maintenance (LTM) Stage Start Date: 31 March 2003. RA implemented from 1992 to 1995. LTM in progress. Sites 3, 4, 5, 6, 25, 26, & 28 - Litigation Area LTM. Year 13 sampling was completed in Sept 2019. Year 14 sampling was completed in Sept 2020. Year 15 sampling is planned for Sept 2021.
4, 5	RASS 1, Litigation Area	Metals	LTM Stage Start Date: 31 March 2003. RA implemented from 1992 to 1995. LTM in progress. See information re: LTM under Site 3.
6	RASS 4, Litigation Area	Metals	LTM Stage Start Date: 31 March 2003 RA implemented from 1992 to 1995. LTM in progress. See information re: LTM under Site 3.
9	Froid and Taylor Roads	Metals, pesticides, ordnance items, VOCs, SVOCs	FS Stage Start Date: 30 January 2002 See information identified under Site 2.
11	Wood Hogger	VOCs, SVOCs, metals, dioxin, pesticides	FS Stage Start Date: 30 January 2002. See information identified under Site 2.
25, 26, 28	RASS 3, Litigation Area	Metals	LTM Stage Start Date: 31 March 2003 RA implemented from 1992 to 1995. LTM in progress. See information re: LTM under Site 3.
30	Taylor Boulevard Bridge	Metals, PCBs	Site Closeout Stage Start Date: 31 January 2002 RA implemented in October 2009, Completion Report issued October 2010
31	Fertilizer Plant	Metals	RI / FS Stage. Start Date: 10 December 2002 Proposed End Date: 20 February 2015. Site 31 – RA work initiated in May 2018 and is ongoing. See information on the Land use control (LUC) inspection under Site 2. The Army is responding to agency comments on the Draft Site 31 (Soil) LUC Remedial Design (RD). The final LUC RD was issued in July 2019.
31A	Fertilizer Plant (Groundwater)		A treatability study field investigation is in progress. A hydraulic profiling tool (HPT) investigation was completed in May 2017. A draft FS was prepared Oct 2018. RD with LUC is being prepared draft expected July 2019. Quarterly groundwater sampling is being conducted on this area and is submitted for agencies for their review. **See information on the Land use control (LUC) inspection under Site 2**

Site No.	Name	Waste Types	Status
32	Mosquito Ditches, Litigation Area	Metals	ROD Stage Start Date: 27 February 2006. Site 32 and 33 – LTM already in progress. Litigation Area Ditches and Slough The final inspection of the cap was conducted July 7, 2016. The post- remedial action baseline survey and sampling was completed in March 2017. **Final remedial action completion report is complete.** Annual monitoring of the cap is conducted in July/August each year.
33	Lost Slough, Litigation Area	Metals	ROD Stage Start Date: 27 February 2006 **See information on LTM under Site 32.**
38	Port Chicago Dump	Hazardous Substances	Site Inspection Stage Start Date: 1 August 2002. The Army completed the Phase II and III investigations in mid- December. A Draft Final RI report was submitted to Agencies in Oct 2018. RTCs have been addressed and the Final is scheduled July 2019. **MOTCO and Agencies are expanding the RI to cover the entire area of the former town of Port Chicago another 247 acres.**
39	Dry Cleaning Facility	Hazardous Substances	Site Inspection Stage Start Date: 1 August 2002 **Site closed with NFA required.**
40	Copper Smelter	Hazardous Substances	Site Inspection Stage Start Date: 1 August 2002 The Army completed the Phase II and III investigations in mid- December. A Draft Final RI report was submitted to Agencies in Oct 2018. RTCs have been addressed and the Final is scheduled July 2019. **A FS is scheduled for May 2019 with a draft FS report due by December 2019. Draft FS reviewed by agencies and RTCs are being generated.** TCRA for AOCs 1 and 2 was started in 2020, work to be completed in Feb 2021.

Sources: USACE, 2011, Army 2013, Cabrera Services and Tetra Tech, 2016, Correspondence from MOTCO Environmental Specialist, 2017.
Notes: DTSC = California Department of Toxic Substances Control; HPT = hydraulic profiling tool; LUC =land-use control; NFA = No Further Action; PCBs = polychlorinated biphenyls, PP = proposed plan; SVOCs =semi-volatile organic compounds; USEPA = U.S. Environmental Protection Agency; VOCs = volatile organic compounds; LTM = long-term maintenance; RI = remedial investigation; ROD= record of decision; FS = feasibility study.

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3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section describes existing socioeconomic conditions in the region. The study area includes Contra Costa County and the communities of Concord, Bay Point, and Clyde, because these areas have the potential to be directly and indirectly affected by the proposed project.

Environmental Justice addresses the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. In particular, minority and low-income populations should not be disproportionately affected by implementation of a project. This section examines the potential effects on these populations from the proposed project.

3.11.1 Regulatory Setting

There are no specific regulations that are applicable to socioeconomics. Regulations pertaining to environmental justice are summarized below.

3.11.1.1 Federal

Executive Order 12898 – Environmental Justice in Minority and Low-Income Populations

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs all federal agencies to meet environmental justice by identifying and addressing disproportionately high and adverse human health or environmental effects of their federal action(s) on minority and low-income populations. Each federal agency must analyze the environmental effects, including human health, economic, and social effects of their action(s).

Executive Order 13045 – Protection of Children from Environmental Health and Safety Risks

EO 13045 applies to economically significant rules under EO 12866 (Regulatory Planning and Review) that concern an environmental health or safety risk that USEPA has reason to believe may disproportionately affect children. Environmental health risks or safety risks refer to risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest. When promulgating a rule or regulation of this description, USEPA must evaluate the effects of the planned regulation on children and explain why the regulation is preferable to potentially effective and reasonably feasible alternatives.

3.11.1.2 State

California law defines environmental justice as the “fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of

environmental laws, regulations, and policies" (California Government Code 65040.12(e)). The State law designates the Governor's Office of Planning and Research as the coordinating agency in State government for environmental justice programs. The State law also requires the Office of Planning and Research to develop guidelines for incorporating environmental justice into general plans (California Government Code 65040.12).

3.11.2 Existing Conditions – Socioeconomics

MOTCO employs about 160 people, including military, civilian, and contractor personnel. There are approximately an additional 50 base operating support contractors and tenants. Further, during mission events, there are about 75 additional personnel present for contracted terminal operations and as stevedore personnel. These personnel totals are less than 0.1 percent of the total employment for Contra Costa County, which was 344,558 in 2019 (U.S. Census Bureau 2021).

Based on 2019 population data (U.S. Census Bureau 2021), Contra Costa has 1,153,526 people, a 9.9 percent increase from the 2010 Census. The distribution of race and ethnicity for the County was: White 65.1 percent, Black / African-American 9.5 percent, American Indian/Alaskan Native 1.0 percent, Asian 18.3 percent, Native Hawaiian/Other Pacific Islander 0.6 percent, Hispanic/Latino 26.0 percent, and Two or More Races 5.4 percent.

Based on the 2019 population data there are 394,769 total housing units in Contra Costa County of which 93.8 percent are occupied. Of the occupied units, 65.9 percent are Owner-occupied and 34.1 percent are Renter-occupied (U.S. Census Bureau, 2021).

The 2019 poverty level in Contra Costa County was 7.9 percent. In California overall the 2019 poverty rate was 11.8 percent and, in the U.S. overall, it was 10.5 percent (U.S. Census Bureau, 2021).

3.11.3 Existing Conditions – Environmental Justice

Neighborhoods adjacent to MOTCO have greater proportions of minority and low-income populations than Contra Costa County as a whole (U.S. Army, 2013a). Therefore, adverse project impacts that extend beyond the boundaries of MOTCO must be evaluated for potential disproportionate impacts to these populations. The adjacent community of Bay Point received an USEPA environmental justice grant in 2007 due to its residents' exposure to disproportionately high exposures to toxic chemicals from nearby vehicle and industrial sources (U.S. Army, 2015a).

3.12 AESTHETICS / VISUAL RESOURCES

This section describes the existing visual, scenic, and aesthetic resources within the Project Study Area. Generally defined, visual resources are natural resources, landforms, vegetation, and

human-made structures in the environment that generate one or more sensory reactions and evaluations for the observer. The Study Area consists of all portions of MOTCO, including adjacent land and water areas (e.g., Suisun Bay).

3.12.1 Regulatory Setting

Installation Planning Standards

MOTCO's Installation Planning Standards (IPS) establishes standards for the visual, scenic, and aesthetic quality of development in the project study area (U.S. Army 2016, 2021a). The IPS include criteria for buildings, streets, and landscaping. The IPS guidance for buildings includes exterior building materials and colors. At a minimum, the landscape standards provide the appropriate type and placement of landscape elements, including natural landscape features and landscape-related force protection standards. Landscape standards identify the Installation's landscape themes, while addressing both design intent and appropriate plant materials.

3.12.2 Existing Conditions – Visual, Scenic, and Aesthetic Resources

There are two distinct and relatively rare viewsheds at MOTCO: 1) the marshland/waterfront views at Suisun Bay and marshlands of the Wetland Preserve; and 2) the Los Medanos Hills that provide rolling grassland background views at MOTCO. Both viewsheds are minimally disturbed by current MOTCO operations. MOTCO personnel and visitors to the PCNMNM are the primary observers of these viewsheds (U.S. Army, 2013a).

Since the implementation of the IPS and the IDG, common design elements have been incorporated into development at MOTCO resulting in uniformity in visual elements. Future development will be conducted in accordance with these standards.

3.13 CULTURAL RESOURCES

This section presents information on cultural resources that exist within the Project Study Area, which consists of the Installation boundaries. Cultural resources addressed by the NHPA include buildings, sites, structures, districts, and objects eligible for or listed in the NRHP. Cultural resources are also regulated under the ARPA of 1979, which protects archaeological resources; the NAGPRA of 1990, which provides for the protection of Native American graves and to return Native American cultural items to lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations; and the AIRFA of 1978, which protects and preserves the traditional religious rights and cultural practices of American Indians. Although these laws and regulations have general applicability, not all are directly relevant to the routine infrastructure maintenance actions outlined herein. Therefore, this section will primarily address those resources known or likely to be found within the project study area, which consists of all portions

of MOTCO, as well as adjacent land known to contain historic properties eligible for, or listed in, the NRHP.

3.13.1 Regulatory Setting

The following section describes the federal and state rules and regulations applicable to cultural resources the proposed project.

3.13.1.1 Federal

National Historic Preservation Act

The NHPA of 1966, as amended, is the principal federal law that governs federal agencies, including the Army, in the treatment of historic properties and is closely linked with the evaluation of effects on cultural resources under NEPA.

Section 106 of the NHPA, as implemented in 36 CFR Part 800, requires federal agencies to consider the effects of Federally funded, regulated, or licensed undertakings on cultural resources listed on or eligible for inclusion in the NRHP; moreover, the federal agency must afford the Advisory Council on Historic Preservation (ACHP) the opportunity to comment in the event that an undertaking will have an adverse effect on a cultural resource that is eligible for or listed in the NRHP. Under current regulations, the federal agency consults with the cognizant SHPO or the Tribal Preservation Officer under the oversight of the ACHP.

For the purposes of this PEA, cultural resources include historic archaeological sites, prehistoric sites, and standing architectural structures, historic districts, cultural landscapes, and memorials. The identification of significant cultural resources depends on professional cultural resource surveys carried out by qualified professionals and with reference to established contexts and regulatory protocols.

Archeological Resources Protection Act and Antiquities Act

The ARPA defines archaeological resources as any material remains of past human life or activities that are of archaeological interest. The ARPA requires that federal permits be obtained before cultural resource investigations are initiated on federal land and that the investigators consult with the appropriate Federally-recognized Native American tribes prior to initiating archaeological studies on sites of Native American origin.

The Antiquities Act of 1906 established a system of permits for conducting archaeological and paleontological investigations on federal land and specified penalties for non-compliance. Some antiquities permits issued under this law remain in effect. New permits are now issued under the ARPA and its implementing regulations (43 CFR Part 7).

Native American Graves Protection and Repatriation Act of 1990

The NAGPRA mandates that federal agencies consult with Federally-recognized Native American tribes regarding planned excavation on federal lands, which may result in the excavation of Native American human remains and other cultural items. NAGPRA also establishes procedures agencies must follow in the event of an inadvertent discovery of Native American remains and/or cultural items. Cultural items include Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony.

American Indian Religious Freedom Act of 1978

The AIRFA was enacted to protect and preserve the traditional religious rights and cultural practices of American Indians (Native Americans), Eskimos, Aleuts, and Native Hawaiians. These rights include, but are not limited to, access to sacred sites, freedom to worship through ceremonial and traditional rights, and use and possession of objects considered sacred. The AIRFA requires governmental agencies to eliminate interference with the free exercise of Native religion and to accommodate access to and use of religious sites to the extent that the use is practicable and is not inconsistent with an agency's essential functions.

DOD Instruction 4715.16 and Integrated Cultural Resources Management Plans

DOD Instruction 4715.16 requires Installations to develop an ICRMP as an internal compliance and management tool to integrate cultural resources management with ongoing mission activities. MOTCO's latest ICRMP, which was completed in 2018, provides guidance on the management of cultural resources and ensures MOTCO is in compliance with existing laws, including the NHPA.

3.13.2 Existing Conditions – Cultural Resources

MOTCO includes the PCNMNM, which was designated by Congress in 1992 and became part the 392nd Unit of the National Park System in October 2009. The memorial commemorates an explosion and resulting fire that occurred at the site on July 17, 1944, killed 320 men, injured 390 more people, and accounted for 15 percent of all African American casualties during World War II. The 0.5-acre memorial is located at the shoreline in the former location of Pier 1 and consists of paved walking paths, several historical interpretive panels, and a flagpole. Although the PCNMNM l is located within MOTCO, it is operated and maintained by the NPS (U.S. Army, 2018).

Multiple cultural resources investigations have been conducted at MOTCO. Only one land-based resource at MOTCO has been determined eligible for listing in the NRHP. This eligible resource is the Contra Costa Canal, which is managed by the USBOR. Although no other National Register-eligible sites have been identified within MOTCO, four Areas of Historic Interest have been identified within the Installation. The standing pilings associated with the former location of Pier 1 is an Area of Historical Interest as the site of the July 17, 1944, ammunition explosion. The other

three Areas of Historical Interest are the locations of former settlements, homesteads, and mines. The 1944 explosion may have also resulted in underwater cultural resources, the extent of which is unknown.

Only two sites with archaeological components have been discovered and recorded within MOTCO (U.S. Army, 2018). Both sites are historical archaeological sites located within the Tidal Area and both have been determined not eligible for listing in the NRHP. The sites are the Nichols School and the Getty Oil Site. The Nichols School site consists of a concrete walkway and other building remnants from the former school, which was built in 1913. The Getty Oil site is a mixed deposit of building debris from the Getty Oil Company that operated between 1930 and 1970. No archaeological sites have been discovered in the Inland Area or on the seven islands.

In addition to these two sites, magnetic and side scan sonar surveys were completed in 2012 of the offshore areas past Wharves 2 and 3. The results of those surveys indicated there is metal debris located near the wharves some of which is likely munitions and fragments of the ships from the Port Chicago explosion. A submerged cultural resources survey was conducted of this area in 2013 and the findings indicated the underwater resources and unidentified objects found may be eligible for listing in the NRHP. These findings have been coordinated with SHPO and NPS (U.S. Army, 2015a).

No Native American sacred sites have been identified at MOTCO (U.S. Army, 2018). No items subject to NAGPRA have been recovered from, or identified at, MOTCO through cultural resources studies conducted to date. Four Federally-recognized American Indian groups have been identified with potential interest in MOTCO: the Bay Miwok, Ohlone/Constanoan, Plains Miwok, and Patwin/Wintun.

The ACHP 2006 *Program Comment for World War II and Cold War Era (1939-1974) Ammunition Storage Facilities* applies to all DOD ammunition storage facilities built before 1975 (ACHP 2006). This document includes 53 Railroad Ammunition facilities at MOTCO. Undertakings including maintenance and repair actions at these facilities are covered under the ACHP document and therefore standard Section 106 procedures do not apply to these pre-1975 ammunition facilities. The ICRMP document also contains relevant SOPs for Maintenance and Care for Historic Buildings and Structures (SOP-1), Inadvertent Discovery of Archaeological Deposits/Cultural Material (SOP-5), and DPW Activities (SOP-7).

The ICRMP identifies areas with high or moderate archaeological potential at MOTCO, which have been defined according to soil type, topography, and the area's proximity to a freshwater source, which is where most of the major prehistoric habitation sites in Contra Costa County occur (U.S. Army, 2000b). These areas consist of the historic marsh boundaries in the Tidal Area, and near the current and former path of Mt. Diablo Creek.

Areas previously surveyed for archaeology and that have produced negative results are considered to have low potential for archaeological sites. Moreover, most of the steep slopes of the hills at the southeast area of the Tidal Area are considered to have low archaeological potential.

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4.0 ENVIRONMENTAL CONSEQUENCES

This section describes the potential direct, indirect, and cumulative effects of implementing the Proposed Action or the No Action Alternative, as well as BMPs that would further reduce the severity of identified adverse impacts BMPs are considered integral to project implementation, and they are not considered separate from the proposed project.

Implementation of the Proposed Action includes continuation of routine maintenance and repairs conducted at MOTCO. As described in Section 1.5, this PEA identifies, documents, and evaluates the potential direct, indirect, and cumulative environmental effects of the maintenance and repair projects proposed over a 10-year planning horizon, using 2021 as the base year. The intent of this PEA is to analyze of impacts of the routine maintenance and repairs and take steps to prevent to the extent possible these impacts, likely via a Record of Environmental Consideration (REC) and Checklist for specific tasks listed in Table 2-1.

Impact determinations were made in accordance with the Army NEPA Guidance Manual. The following terms are used throughout analysis of the various environmental impact categories as a convention to indicate the relative degree of severity of predicted impacts:

- Negligible – No impact or minimal impacts are anticipated
- Minor Adverse – Minor impact anticipated
- Moderate Adverse – Moderate impact anticipated (less than significant)
- Significant Adverse – Significant impact anticipated (may be mitigated to less than significant)
- Beneficial – Beneficial impacts resulting from the action

4.1 WATER RESOURCES

4.1.1 Approach to Analysis

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. Significant impacts to water resources would occur if Federal or State water quality regulations or standards for surface water or groundwater are violated, if existing water resources are directly or indirectly impacted from water extraction activities due to increased demand, if activities were located in a regulatory floodplain without an appropriate flood study, if activities fail to adequately address upstream drainage as it is conveyed through the project area or into downstream surface water or wetland areas, or if activities change drainage flows and/or patterns, impacting downstream areas beyond design capacities.

4.1.2 Environmental Impacts

4.1.2.1 No Action Alternative

Under the No Action Alternative, maintenance and repair activities would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. On an individual project basis, potential effects could result from the following:

Routine maintenance and repair operations at MOTCO requires some use of water in cleaning of structures, etc. Vehicles used during these operations in unpaved areas would have a minor effect on surface water quality from increased erosion in these areas and subsequent stormwater runoff.

In addition, potential water quality impacts can result from releases into groundwater, wetlands, and surface waterways from leaking or spilled vehicle fluids (e.g., gasoline, diesel fuel, motor oil). In the event of a spill, Installation personnel are trained to isolate and clean-up spills in accordance with established contingency plans and spill response procedures (i.e., Installation-specific Spill Prevention, Control, and Countermeasures Plan [SPCCP]). Implementation of SOPs and BMPs would further limit potential adverse effects to water resources during maintenance and repair operations. Roadway paving projects that are greater than one-acre would require construction permitting under NPDES.

In- and out-of-water infrastructure maintenance and repair at waterfront facilities has the potential for significant impacts to water resources including from oil and chemical spills during in-water work and work on wharves / piers and shoreline facilities. Following the Installation SWPPP and SPCCP during maintenance and repair activities in these areas would mitigate potential impacts. Pile driving and pile removing activity for piling replacement can result in increased turbidity from disturbance of bottom sediments. During in-water work, debris and damaged pile sections will be slowly lifted from the water and placed on the work surface within a containment basin designed to contain all sediment. The removed materials will then be properly disposed of offsite.

Some replacement pilings on the wharves / piers may consist of wood treated with ammoniacal copper zinc arsenate (ACZA). The ACZA preserves the wood pilings from termites, fungi, and marine borers (mollusks and crustaceans) but can produce short-term adverse effects when leached into the marine environment. Other timber pilings may be wrapped before or during installation to limit impacts.

Maintenance and repair projects at railyard and rail lines has the potential to impact water resources from soil erosion caused by vehicles. Routine maintenance and repair actions would also include work on bridges over water crossings, where water resources could be impacted by spills and debris. Similar impacts could occur from maintenance and repair projects along the road transportation system, including work on water crossings.

Utility maintenance and repair projects can require excavation to access underground utilities, resulting in soil stockpiles that could runoff into waterways. Building maintenance includes cleaning of structures, which would slightly affect the Installation water supply. Runoff of this cleaning water may have particles, dust, and chemical residues that could affect quality of Installation waterways.

Use of herbicides and pesticides on landscaping maintenance and repair projects could affect water quality if not handled correctly (U.S. Army 2018c). Use of native plant species in landscaping would conserve water usage and diminish the use of fertilizers, pesticides, and herbicides since native plants typical require less watering and chemical use than non-native plants. Fencing and security projects have the potential to affect free-flowing waterways if not engineered to avoid these restrictions. Perimeter fencing at MOTCO is adjacent to tidal wetland areas (e.g., in the vicinity of Wharf 4) and repair activity could impinge on wetland areas where fencing construction had previously occurred. The overall impact to water resources from the No Action Alternative is minor adverse.

4.1.2.2 Proposed Action Alternative

Routine maintenance and repair operations conducted at MOTCO would be generally the same as those occurring currently and under the No Action Alternative. Water supply would be utilized in cleaning and landscaping, and project vehicle trips would have the potential to impact water quality. Similar standard procedures and BMPs would be implemented to reduce potential impacts. Potential parking lot and/or building expansions under the Proposed Action would only be in previously disturbed or inland areas. Allowable expansion of buildings, staging areas, parking and ammo lots may increase impervious area up about 1 acre per year. New paved roads and parking lots would be analyzed as separate projects. There would be little net increase in impervious surface as part of the Proposed Action as maintenance and repair would be primarily to existing paved areas and work would be limited to previously disturbed areas. There would be no increase in the quantity of stormwater runoff other than where expansion of staging areas with pavement has increased the impervious area. Roadway paving projects that are greater than one-acre would require construction permitting under NPDES.

Regulatory agency consultation is being performed to determine whether permitting is required under Section 10 of the Rivers and Harbor Act of 1899 and Section 404 of the CWA for pile replacement. A CWA Section 401 Water Quality Certification from the SFBRWQCB would include assurances that BMPs would be used to minimize potential impacts to water quality.

A difference under the Proposed Action would be in streamlining of the permit and approval process. The repair and maintenance tasks listed in Table 2-1 would be conducted by staff utilizing a checklist specifying environmental control equipment and environmental protection procedures, as well as the appropriate water resources BMPs for each task (Appendix A). This programmatic standard procedure would help reduce the potential for environmental impacts that

exist when performing these activities in the absence of a programmatic procedure. This benefit would be compounded over the 10-year period of the Program. The overall impact to water resources from the Proposed Action is minor adverse.

Conclusion of Effect

Ongoing maintenance and repair operations have minor adverse effects on water resources. These activities are currently ongoing and occur within established areas and conducted consistent with the Installation's SWPPP and SPCCP, which would limit potential impacts to water quality. Under the Proposed Action, adherence to current project controls and implementation of standardized procedures for all maintenance and repair tasks would result in long-term less-than-significant minor impacts to water resources.

4.1.3 Best Management Practices – Water Resources

If implementing the Proposed Action, implementation of sound watershed management practices, can allow for control of water quality in an ecologically appropriate manner during routine maintenance and repair activities. BMPs will include the following to minimize impacts:

- WR-1. Continue with routine maintenance of landscape irrigation system per the Installation SWPPP. Continue with quarterly inspections, sampling, and annual reporting, as described in the SWPPP.
- WR-2. Use of construction BMPs for erosion control in accordance with the MOTCO NPDES Permit and SWPPP.
- WR-3. Monitoring adjacent stormwater outfalls and conduits when conducting maintenance and repair activities and perform simultaneous maintenance on these features as needed to keep them operational.
- WR-4. No vehicles or equipment (except for small watercraft) will be fueled on wharves piers, over water or within 150 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.
- WR-5. For projects requiring water use, reduce the use of water in maintenance and repair activities by application of conservation measures. Examples would include using more drought-tolerate native plantings in landscaping to reduce irrigation requirements and recycling water used in power washing.
- WR-6. For in-water work (e.g., pile replacement, wrapping or concrete repair) floating booms will be in place in the work area to assist in capture of floating debris and potential fluid spills from project activities.

- WR-7. For selection of treated wood pilings, select products that have been certified through a third party (e.g. Western Wood preservers Institute) to be treated to proper retention standards that maximize fixation of ACZA and minimize leaching rates.

4.2 GEOLOGY, SOILS, AND MINERAL RESOURCES

4.2.1 Approach to Analysis

An impact would be considered significant to geology, soils, and mineral resources if there were unanticipated substantial adverse impacts to the environment, violations of the CWA or CAA (pertaining to dust control) due to the Proposed Action. Adverse impacts would also occur if activities were to decrease seismic safety of buildings and structures, or if mineral resources (e.g. natural gas) were impacted in a way that jeopardized use of these resources and/or depleted them in an unsustainable manner.

4.2.2 Environmental Impacts

4.2.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of maintenance and repair projects on a case-by-case scenario. Routine maintenance and repair operations at MOTCO require regular vehicle trips across the Installation. Vehicles used during these operations in unpaved areas have a minor adverse impact on soil erosion. Implementation of BMPs specified in the Installation SWPPP typically limit potential adverse effects to soil resources. Maintenance and repair projects greater than one-acre in area (e.g., potential rail yard expansion) would require coverage under the NPDES Construction Activity General Permit.

Routine maintenance and repair projects on the road transportation system will primarily be within previously disturbed and inland areas, although some projects may add additional impervious surface to the Installation. Building and parking lot expansions would only be onto previously disturbed and inland areas. Seismic safety of buildings would benefit from retrofit projects.

Maintenance and repair projects on railyard and rail lines or involving buildings and fencing and security would not have impacts outside the construction zone buffers on geology, soils, and mineral resources other than the off-road vehicle impacts. There may be limited impacts to the surface soil horizons within the construction zones. The proposed action would not affect on-site mineral resources, namely natural gas below the eastern end of the Installation.

Offshore work on waterfront facilities would have the potential to suspend sediments in the water column. This impact would be short-term and temporary,

4.2.2.2 Proposed Action Alternative

Routine maintenance and repair operations conducted at MOTCO would be generally the same as those occurring currently and under the No Action Alternative. Project vehicle trips would have the potential to increase soil erosion although most trips would occur on paved roads. Maintenance and repair activities would not include substantial excavations that could affect mineral resources in split estate areas. Any trees removed during landscaping projects would be replaced using native vegetation consistent with the IDG and IPS to limit soil erosion impacts. Similar SOPs and BMPs would be implemented to reduce potential impacts.

As described under water resources a difference under the Proposed Action would be in streamlining of the permit and approval process. The maintenance and repair tasks listed in Table 2-1 would be conducted by staff utilizing a checklist specifying environmental control equipment and environmental protection procedures as well as the appropriate soil/geology BMPs for each task. This programmatic standard procedure would help reduce the potential for environmental impacts that exist when performing these activities in the absence of a programmatic procedure. This benefit would be compounded over the 10-year period of the Program. Seismic safety of new buildings would be addressed under separate construction projects. The overall impact to soil, geology, and mineral resources from the Proposed Action is minor adverse.

Conclusion of Effect

Ongoing maintenance and repair operations have minor adverse effects on soil resources, specifically with respect to soil erosion. These activities are currently ongoing and occur within established areas and typically conducted consistent with the Installation's SWPPP, which would limit potential impacts to soil erosion. Under the Proposed Action, adherence to current project controls and implementation of standardized procedures for all maintenance and repair tasks would result in long-term less-than-significant minor impacts to soil resources. Maintenance and repair activity would have no impact on geology or mineral resources. Retrofitting of existing buildings would have a beneficial impact.

4.2.3 Best Management Practices – Geology, Soils, and Mineral Resources

If implementing the Proposed Action, implementation of sound soil erosion prevention practices, can allow for maintenance of soil resources during routine maintenance and repair activities. BMPs will include the following to minimize impacts:

- GEO-1. Use of construction BMPs in accordance with the MOTCO NPDES Permit and SWPPP. The BMPs would include but not be limited to the following:
    - Schedule excavations (e.g., utility work) to minimize land disturbance during rainy and dry seasons;
    - Provide soil stabilization to steep slope work areas;

- Provide sediment controls to intercept and slow down stormwater flows;
- Cover stockpiled soil;
- Use dust suppressants, such as watering soils and unpaved roadways;
- Preserve existing vegetation where no construction activities are planned; and
- Replant/revegetate all exposed disturbed areas immediately upon completion of construction.

4.3 AIR QUALITY

4.3.1 Approach to Analysis

Significant impacts to air quality would occur if Federal or state air quality regulations or standards for air quality are violated. The 1990 Amendments to the CAA require that Federal agency activities conform to the SIP with respect to achieving and maintaining attainment of NAAQS and to addressing air quality impacts. The USEPA General Conformity Rule requires that a conformity analysis be performed which demonstrates that a proposed action does not: 1) cause or contribute to any violation of any NAAQS in the area; 2) interfere with provisions in the SIP for maintenance or attainment of any NAAQS; 3) increase the frequency or severity of any existing violation of any NAAQS; or 4) delay timely attainment of any NAAQS, any interim emission reduction goals, or other milestones included in the SIP. Provisions in the General Conformity Rule allow for exemptions from performing a conformity determination only if total emissions of individual nonattainment area pollutants resulting from a proposed action fall below the *de minimis* threshold values. Significant impacts could also occur if new project activities were located in the shoreline area where sea level rise was forecasted to occur due to climate change.

4.3.2 Environmental Impacts

4.3.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. Impacts to air quality associated with the current conditions are short-term and orders of magnitude below the *de minimis* thresholds shown in Table 4-1. Impacts on air quality would primarily be a result of engine combustion emissions from vehicles and dust generation from vehicle maneuvers, heavy equipment (e.g. paving machines) on unpaved and unimproved roadways. Combustion emissions resulting from these activities are considered mobile sources and would produce localized short-term elevated air pollutant concentrations that should not result in any sustained significant impacts on regional air quality. The overall impact from the No Action Alternative would be a minor adverse impact.

4.3.2.2 Proposed Action Alternative

Routine maintenance and repair operations conducted at MOTCO would be generally the same as those occurring currently and under the No Action Alternative. Impacts to air quality associated with the Proposed Action would be short-term and orders of magnitude below the *de minimis* thresholds shown in Table 4-1. These emissions are already occurring as a result of routine maintenance and repairs. The Proposed Action is located within the BAAQMD and the general conformity requirements apply as described in Section 3.3.1.1. A proposed project is exempt from the conformity rule (presumed to conform) if the total net project-related emissions are less than the *de minimis* thresholds established by the conformity rule. In accordance with the air conformity requirements of 40 CFR 51.853/93.153(b)(1), the applicable *de minimis* thresholds are as follows:

Table 4-1. General Conformity Air Quality *de Minimis* Thresholds

	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Applicable Threshold (tons/year)	100	100	100	100	100	100

Source: 40 CFR 93.153
Notes: CO = carbon monoxide; NOx = nitrogen oxides; $PM_{2.5}$ = fine particulate matter, with diameters less than or equal to 2.5; PM_{10} = inhalable particles, with diameters less than or equal to 10 micrometers; SO2 = sulfur dioxide; VOC = volatile organic compounds

The air quality analysis for this PEA refers exclusively to regulatory requirements and air quality impacts within the BAAQMD as all project-related work would occur within the BAAQMD. The minimal amounts of vehicle trips around the Installation for the routine maintenance and repair projects do not currently come close to meeting or exceeding the conformity requirements for air emissions shown in Table 4-1 nor would they exceed these requirements under any reasonably foreseeable future scenario. Air emissions for larger scale demolition and construction repair projects were calculated in the Army's previous PEA for General Repair of Bridges, Roads, And Utilities (U.S. Army, 2017). That analysis indicated that all emissions would be below five percent of the applicable thresholds in Table 4-1, and most would be less than one percent. Emissions from the Proposed Action would be at a similar order of magnitude.

A difference under the Proposed Action would be in streamlining of the permit and approval process. The maintenance and repair tasks listed in Table 2-1 would be conducted by staff utilizing a checklist specifying environmental control equipment and environmental protection procedures as well as the appropriate air quality BMPs for each task. This programmatic standard procedure would help reduce the potential for environmental impacts that exist when performing these activities. This benefit would be compounded over the 10-year period of the Program.

Conclusion of Effect

Normal maintenance and repair operations under the No Action Alternative have minor adverse effects on air quality. These activities are currently ongoing and contributing to the existing air

quality. Under the Proposed Action, air emissions would be magnitudes of order below the thresholds for conformity with the SIP. Adherence to project controls and implementation of standardized procedures for all maintenance and repair tasks would result in minor adverse impacts to air resources.

4.3.3 Best Management Practices – Air Quality

Air emission effects from the Proposed Action could be reduced by the following BMPs:

- GEO-1. The measures intended to reduce soil erosion in GEO-1 (Section 4.2.3) would also reduce airborne dust particles.
- AIR-1. Reduce vehicle use by developing a trip management plan for maintenance and repair projects.
- AIR-2. Reduce unnecessary idling from project vehicles and heavy equipment, placing a time restriction of five minutes on vehicle idling.
- AIR-3. Ensure project vehicles are maintained to perform at CARB and USEPA certification levels. Lease new equipment and use USEPA “Tier 4” engines in off-road equipment where practicable.
- AIR-4. Perform periodic project inspections to ensure compliance with these mitigation measures.
- GHG-1. Increase acquisition and use of electric fleet vehicles.

4.4 CLIMATE CHANGE

The San Francisco Bay Plan's Climate Change Policy (2017) 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. The Proposed Action will not affect use of waterfront facilities, but will consist of response actions/repairs when shoreline flooding damage does occur. The Bay Plan's Climate Change Policy further states that repairs of existing facilities, are exempt from the design criteria of resilience to a mid-century sea level rise projection.

4.4.1 Approach to Analysis

Factors considered in determining the potential for significant impact to climate include any long-term impacts that would result in additional GHG emissions. Significant impacts to climate would occur if Federal or state climate regulations or standards for GHG emissions are violated. This PEA uses the same methodology, thresholds or no impact findings as described in the San Francisco Bay to Stockton, California Navigation Improvement Study IGRR-EIS (USACE 2020).

Significant impacts could also occur if new project activities were located in the shoreline area where sea level rise was forecasted to occur due to climate change.

4.4.2 Environmental Impacts

4.4.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. There would be no temporary effects or cumulative impacts compared to the NEPA baseline, and it would not result in additional GHG emissions. Impacts on GHG emissions would primarily be a result of engine combustion emissions from mobile sources like vehicles. The overall impact from the No Action Alternative would be a minor adverse impact. Therefore, the No Action Alternative would not conflict with any applicable plans, policies, or regulations adopted to reduce GHG emissions and there would be no impact as compared to the NEPA baseline.

4.4.2.2 Proposed Action Alternative

Routine maintenance and repair operations conducted at MOTCO would be generally the same as those occurring currently and under the No Action Alternative. Impacts to GHG emissions associated with the Proposed Action would be short-term and are already occurring as a result of routine maintenance and repairs.

A difference under the Proposed Action would be in streamlining of the permit and approval process. The maintenance and repair tasks listed in Table 2-1 would be conducted by staff utilizing a checklist specifying environmental control equipment and protection procedures for each task. This programmatic standard procedure would help reduce the potential for environmental impacts that exist when performing these activities. This benefit would be compounded over the 10-year period of the Program.

Conclusion of Effect

Normal maintenance and repair operations under the No Action Alternative have minor adverse effects on GHG emissions. These activities are currently ongoing and contributing to the existing air quality. Under the Proposed Action, GHG emissions would be below the thresholds for conformity with the SIP. Adherence to project controls and implementation of standardized procedures for all maintenance and repair tasks would result in minor adverse impacts to air resources. Project effects would be negligible with respect to sea level rise from both alternatives since no new development would occur in the shoreline area.

4.4.3 Best Management Practices – Climate Change

GHG emission effects from the Proposed Action could be reduced by the following BMPs:

- GHG-1. Increase acquisition and use of electric fleet vehicles.
- AIR-1. Reduce vehicle use by developing a trip management plan for maintenance and repair projects.
- AIR-2. Reduce unnecessary idling from project vehicles and heavy equipment, placing a time restriction of five minutes on vehicle idling.
- AIR-3. Ensure project vehicles are maintained to perform at CARB and USEPA certification levels. Lease new equipment and use USEPA "Tier 4" engines in off-road equipment where practicable.
- AIR-4. Perform periodic project inspections to ensure compliance with these mitigation measures.

4.5 BIOLOGICAL RESOURCES

4.5.1 Approach to Analysis

Determination of the significance of potential impacts to biological resources is based on 1) the importance (i.e., legal, commercial, recreation, ecological, or scientific) of the resource; 2) the proportion of the resource that would be affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and 4) the duration of ecological ramifications.

Impacts to biological resources are significant if species or habitats of concern are adversely affected over relatively large areas, or if disturbances cause reductions in population size or distribution. Potential physical impacts such as habitat loss, noise, and impacts to water quality were evaluated to assess potential impacts to biological resources resulting from the proposed alternatives.

4.5.2 Environmental Impacts

4.5.2.1 No Action Alternative

Under the No Action Alternative, there would be no change in the approval process for maintenance and repair activities conducted at MOTCO. Each project would be evaluated and permitted individually. No change in the level or significance resulting from the implementation of individual projects would occur. Maintenance and repair projects would result in minor adverse effects on biological resources due to increased vehicle use on roads, increased noise generated during construction activities, increased turbidity or sedimentation generated during and post construction activities, and/or use of chemical applications. However, many of these potential effects are temporary in nature and with implementation of BMPs will be minor and less than significant.

4.5.2.2 Proposed Action Alternative

Plants, Wildlife, and Aquatic Species

Elements of the Proposed Action have the potential to affect habitat and/or species due to the following:

1. Vehicle use: Vehicle and heavy equipment use can directly impact amphibians, small mammals, or reptiles by crushing. Further if vehicles and/or equipment are not maintained and cleaned potential spills could cause direct and indirect affects to species and nearby habitat.

2. Increased noise: Increased noise generated primarily during pile driving activities could affect the behavior of birds, marine mammals, and fish species that occur in the Action Area. Further, increased sound pressure levels can lead to lethal and sub-lethal impacts to fish.

3. Increased turbidity or sedimentation: Increased turbidity will result from implementation of in-water activities such as pile wrapping. Increased turbidity during pile driving/removal activities can have direct effects on nearby fish including decreased foraging efficiency, gill abrasion, and larval mortality. Turbidity is also associated with the suspension of fine-grained sediments near the piles that may contain contaminants. Release of these contaminants may reduce water quality to which fish are exposed, and the quantity and quality of benthic invertebrate prey resources. Increased sedimentation generated during earthwork (e.g., removal of vegetation, grading of bare soil, etc.) and culvert replacement activities has the potential to affect nearby and downgradient surface water bodies by increasing the sediment load.

4. Chemical application use: The potential use of chemical applications during nuisance plant control can degrade habitats and affect nearby species. Invasive species treatment at MOTCO was addressed in the INRMP (2017) and IPMP (U.S. Army 2018c).

5. Some replacement pilings on the wharves / piers may consist of wood treated with ACZA. The ACZA preserves the wood pilings from termites, fungi, and marine borers (mollusks and crustaceans) but can produce adverse effects when leached into the marine environment.

These potential effects are temporary in nature. All expansion activities would be limited to disturbed and inland areas. Lighting upgrades are not expected to increase lighting to any sensitive bird or other habitat areas.

Minimal, if any, anticipated temporary loss of vegetation or habitat for species due to the proposed action would be limited to the construction buffer areas. Any permanent loss of vegetation or

habitat would be limited to the areas adjacent to existing facilities. There is no anticipated irrevocable loss of habitat or significant direct mortality of species would occur as a result of this alternative.

Federally-Listed Species Effects Determination

The actions proposed by the Army are not anticipated to adversely affect any Federally-listed species or their habitats. However, any activity that involves work in an area with Federally-listed species has the potential to negatively affect those resources without careful planning. The proposed actions may affect, not likely to adversely affect, Federally-listed species by disturbing the feeding, breeding, spawning, and/or sheltering of these species. Evaluation of the existing environment, species and habitat occurrences, proposed actions, and avoidance and minimization measures, and determined that elements of the proposed action have the potential to affect some listed species due to increased noise, increased turbidity or sedimentation, increased lighting, and/or use of chemical applications during invasive species removal as described under *Plants, Wildlife and Aquatic Species* above. Based on the analysis, effects to listed species and their habitat will be less than significant. A Biological Assessment to the USFWS was prepared for the Proposed Action and is included as Appendix B along with associated correspondence. Consultation with NMFS for fish species of concern will occur on a case-by-case basis as appropriate.

Conclusion of Effect

Normal maintenance and repair operations under the No Action Alternative have minor adverse effects on biological resources. These activities are currently ongoing and there would be no change in the level of impact to biological resources. Under the Proposed Action, minor adverse effects on biological resources would result. Adherence to project controls and implementation of standardized procedures for all maintenance and repair tasks would result in minor adverse impacts to biological resources. Under the Proposed Action, there would be no reduction in Federally-listed species population size or their habitat, and no change to occurrence of species or critical habitat in the region. Implementation of proposed actions would result in less than significant impacts to biological resources.

4.5.3 Approach to Analysis

A significant transportation impact would be considered one that resulted in a substantial increase in traffic generation, a substantial increase in the use of connecting street systems or mass transit, or if on-site parking demand would not be met by projected parking space supply.

4.5.4 Best Management Practices – Vegetation and Wildlife

The following BMPs will be implemented to reduce the potential effect to species and their habitats. Additional species-specific BMPs may required as appropriate.

- BIO-1. Pollution and erosion control: Similar to GEO-1, construction BMPs would be used in accordance with the MOTCO NPDES Permit and SWPPP for proposed actions that involve earthwork. Site-specific spill pollution prevention and erosion control measures will be put in place to minimize or eliminate impacts to habitat from soil erosion, runoff, and spills. Protective measures would include:
    - Practices to minimize erosion and sedimentation associated with the action (including staging areas, stockpiles, grading, etc.);
    - Measures to prevent construction debris from entering wetlands and/or other waters (e.g., installation of silt fencing, preparation of airborne nuisance plan, keeping the site trash-free);
    - Measures to prevent and control spills of hazardous materials including following the Installation Hazardous Waste Management Plan (HWMP; U.S. Army 2020a);
    - Quantification of sediment or pollution loading (if required by State or Federal permits); and
    - Monitoring, repair, and maintenance procedures for implemented measures (such as silt fencing), and reporting.
- BIO-2. Stormwater management: For proposed actions that involve temporary actions such as the reconditioning, reconstructing, or replacement of pavement, replacement of a stream crossing, or permanent actions that may otherwise increase the contributing impervious surface area within the vicinity of the project, the Installation SWPPP will be followed with a site-specific Stormwater Management Plan. The SWPPP/Stormwater Management Plan would be implanted in a manner to protect habitat from changing volumes of stormwater runoff.
- BIO-3. Site restoration: For proposed actions that would have the potential to result in the disturbance of riparian vegetation, soils, or streambanks, a site restoration plan would be developed prior to construction, and restoration would be commensurate with the scale of the action. To minimize or avoid sensitive habitats, the following measures will be implemented to facilitate site restoration:
    - Before construction, the boundaries of clearing limits and site access would be flagged to minimize unnecessary soil and vegetation disturbance.
    - Prior to construction, all temporary erosion control measures specified for the project will be inspected to ensure that they are in place and functional.
    - During site preparation, native materials displaced by construction will be conserved whenever possible for use during restoration. Native materials include large wood, native vegetation, topsoil, and channel materials (e.g., gravel, cobble, and boulders).

- Proposed actions that include expansion would not be performed in areas of riparian, wetland, aquatic, or other areas of sensitive habitat. In areas to be cleared, native vegetation would be clipped at ground level to retain root mass and encourage the reestablishment of native vegetation.

- BIO-4. Heavy equipment and vehicle use: Heavy equipment necessary to implement proposed actions will be selected and operated as necessary to minimize adverse effects on the environment (e.g., minimally sized, low pressure tires). Measures include:
  - Minimal hard turn paths will be used for tracked vehicles.
  - Temporary mats or plates will be placed within wet areas or areas containing sensitive soils.
  - Heavy equipment and vehicles will be stored, fueled, and maintained in a vehicle staging area located at least 150 feet from any waterbody/wetland, or in an isolated hard zone such as a paved parking lot.
  - Heavy equipment would be inspected daily for fluid leaks before leaving vehicle staging areas for operation within 50 feet of any waterbody.
  - Equipment would be steam-cleaned before operational use below ordinary high water, and as often as necessary during operation to remain free of all external oil, grease, mud, seeds, organisms, and other visible contaminants.
  - Generators, cranes, and any other stationary equipment operated within 150 feet of any waterbody will be maintained and protected as necessary to prevent leaks and spills from entering the water.
  - Vehicular traffic will be confined to existing roads and the proposed access routes.
  - 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.
  - Vehicle speeds will be reduced to 15 mph during rain events.

- BIO-5. 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.

- BIO-6. Approved work windows are adopted from other compliance for maintenance near sensitive habitat:
  - Daily construction will occur during daylight hours. In-water work will be completed in the approved delta smelt work window between August 1 and November 30, or as otherwise specified during consultation with NMFS.
  - 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.

- Work conducted adjacent to tidal marsh habitat will be avoided during the Ridgway's Rail breeding season from February 1 through August 31, unless survey has been completed to document absence.

- BIO-7. Piling installation: Replacement pilings would involve the replacement of similar-size piles with either concrete, steel, or treated wood piles. When practical, a vibratory hammer will be used for piling installation. If an impact hammer is needed to install concrete piles or proof piles, noise attenuation measures would be implemented, to include use of cushion pads or blocks. For selection of treated wood pilings, select products that have been certified through a third party (e.g. Western Wood preservers Institute) to be treated to proper retention standards that maximize fixation of ACZA and minimize leaching rates. Coordinate with RWQCB and BCDC for permits.

- BIO-8. Piling removal requires coordination with RWQCB and BCDC for permits. The following practices would be followed to minimize chemical release from treated piles and/or sediment disturbance and resuspension:

  - Install a floating surface boom to capture floating surface debris. If treated wood / debris falls into the water, it would be removed immediately.
  - Remove the pile using a vibratory hammer when possible. Never intentionally twist or break the pile; rather, slowly lift the pile from the sediment through the water column.
  - After removal, place the pile in a containment basin on a barge deck, pier, or shoreline without attempting to clean or remove any adhering sediment. Ensure staging area is designed / modified to contain all sediment and return flow which may otherwise be directed back to the waterway.
  - Dispose of all removed piles, floating surface debris, any sediment spilled on work surfaces, and all containment supplies at a permitted inland disposal site.
  - If timber breakage occurs or the pile becomes intractable during removal, make every attempt short of excavation to remove each pile; if a pile in uncontaminated sediment is intractable, breaks above the surface, or breaks below the surface, cut the pile or stump off at least 2 feet below the surface of the sediment.
  - For pile wrapping/jacketing during activities such as washing screen mesh openings shall not exceed 3/32 inch (2.38 mm) for woven wire for perforated plate screens or 0.0689 inch (1.75 mm) for profile wire screens, with a minimum 27% open area. Screen mesh openings shall not exceed ¼ inch (6.35 mm) for woven wire, perforated plate screens, or profile wire screens, with a minimum of 40% open area. The U.S. Department of the Army (DOA) proposes to repair up to 20 timber piles per year for up to 10 years by installing non-reactive, high-density polyethylene (HOPE) jackets on approximately 200 timber piles located under the main pier platform. Wrapping the pilings will result in a total of approximately 3064 linear feet of 0.06-inch-thick pile wrapping material in the Bay, totaling approximately 1.8 cubic yards..

- BIO-9. Deck replacement: For proposed actions that involve the removal and replacement of existing decking, the following practices will be used:
    - Floats and/or tarps will be placed below the active construction area to minimize the potential for debris to enter the water.
- BIO-10. Biological Monitoring for In-Water Projects:
    - For in-water actions, water quality monitoring would be completed in accordance with project specific Section 401 Water Quality Certification conditions.
    - Biological Monitoring will be conducted during in-water work activities and when project work is conducted adjacent to marsh areas. MOTCO environmental staff will conduct pre-activity inspections and progress inspections during and after the work.
    - USFWS-approved biologist will conduct mandatory contractor/worker awareness training for construction personnel on in-water projects or those conducted adjacent to marsh areas. 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 the USFWS prior to the initiation of any demolition or construction activity.
- BIO-11. Reporting and/or Notification:
    - Notification will be sent to the USFWS and NMFS prior to initiation of in-water project activities.
    - Annual reports will be submitted to USFWS and NMFS by January 15th of each year summarizing maintenance activities that were conducted including implementation of BMPs and any corrective measures taken.

4.6 LAND USE AND RECREATION

4.6.1 Approach to Analysis

Significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action. In general, land use impacts would be significant if they would: 1) be inconsistent or noncompliant with applicable land use plans or policies; 2) preclude the viability of existing land use; 3) preclude continued use or occupation of an area; or 4) be incompatible with adjacent or vicinity land use to the extent that public health or safety is threatened.

Potential significant impacts to recreational resources would occur if there were 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.

4.6.2 Environmental Impacts

4.6.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. The No Action Alternative would not result in changes in overall land use at MOTCO and the Army could continue to use MOTCO for its critical primary mission of munitions transport. There would be only short-term, temporary, and/or small changes to land use during maintenance and repair activities, and the overall impact would be negligible. Recreation at MOTCO is very limited. The PCNMNM would continue to be operated and maintained by the NPS. There would be no impact to recreation from the No Action Alternative.

4.6.2.2 Proposed Action Alternative

Implementation of the Proposed Action would not result in changes in overall land use at MOTCO and would allow for the continued mission operations. There would be only short-term, temporary, and/or small changes to land use during maintenance and repair activities, and the overall impact would be negligible. Implementation of the Proposed Action would have no impact to recreation at MOTCO.

The Proposed Action would be consistent with the BCDC Coastal Management Program. No changes to land use in the coastal zone and no new development in the coastal zone would occur as a result of the Proposed Action. The BCDC coastal consistency determination will be provided as Appendix C following PEA review.

Conclusion of Effect

There will be no impact to land use from the No Action Alternative. The Proposed Action would allow for continued operations of MOTCO and completion of its primary mission; the impact to land use would be negligible. There would be no impact to recreation at MOTCO from either project alternative. The Proposed Action would be consistent with the BCDC Coastal Management Program.

4.6.3 Best Management Practices – Land Use and Recreation

- LU-1. To the extent possible, the Army will work with the NPS to attempt to avoid disruptive project activities during times that conditions of quiet and reverence are important for ceremonial events at the PCNMNM.

4.7 TRAFFIC AND TRANSPORTATION

4.7.1 Environmental Impacts

4.7.1.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. There would not be significant impacts on traffic, only slight changes in traffic patterns as needed during some project activities (e.g., road repairs or work adjacent to a road/right-of-way). There would be some beneficial impact from maintenance and repairs to the road transportation system. The overall impact of the No Action Alternative would be negligible.

4.7.1.2 Proposed Action Alternative

Implementation of the Proposed Action would not result in changes in traffic at MOTCO and would be generally the same as those occurring currently and under the No Action Alternative. Vehicles trips for conducting maintenance and repair actions would continue at current levels. There would be minor temporary impacts to traffic flow in various locations where road maintenance and repairs were occurring. Traffic impacts would be short-term and likely distributed evenly in space across the Installation and temporally. The volume of traffic at MOTCO is not large enough to incur substantial traffic backups from temporary detours. Maintenance and repairs to the road transportation system would have a beneficial effect. The overall effect to traffic and transportation would be negligible.

Conclusion of Effect

There would be a minor adverse impact to traffic and transportation from the No Action Alternative, and a beneficial effect from the Proposed Action.

4.7.2 Best Management Practices – Traffic and Transportation

Traffic effects from the Proposed Action could be reduced by the following BMPs:

- AIR-1. Implementation of the trip reduction program listed in Section 4.3.3.
- TR-1. Develop traffic control plans for project actions that describe traffic detours away from applicable project activities, particularly road maintenance and repairs. Distribute traffic control plans to Installation employees.

4.8 NOISE

4.8.1 Approach to Analysis

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from the implementation of a proposed action. These potential changes may be beneficial if they reduce the number of sensitive receptors exposed to unacceptable noise levels. Conversely, impacts may be significant if they result in an introduction to unacceptable noise levels or increased exposure to unacceptable noise levels. Noise associated with an action is compared with existing noise conditions to determine the magnitude of potential impacts.

4.8.2 Environmental Impacts

4.8.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. Maintenance and repair events occur on a periodic basis and for a limited duration, often in conjunction with the operation of a variety of vehicles, trains, and heavy equipment during normal Installation operations. Normal maintenance and repair operations have minor adverse effects on noise at MOTCO and negligible effects on off-Installation receptors.

4.8.2.2 Proposed Action Alternative

Maintenance and repair operations already currently occur within the existing boundaries of MOTCO and the Proposed Action would not result in significant noise traveling off-base. Project noise would occur only during the short-term time of the maintenance and repair activity. Project noise would be audible to on-Installation receptors in the immediate vicinity of project work. Noise impacts would be negligible to off-site receptors. Normal maintenance and repair operations would have overall minor adverse impacts.

A difference under the Proposed Action would be in streamlining of the permit and approval process. The maintenance and repair tasks listed in Table 2-1 would be conducted by staff utilizing a checklist specifying environmental control equipment and environmental protection procedures, as well as the appropriate noise BMPs for each task. This programmatic standard procedure would help reduce the potential for environmental impacts that exist when performing these activities in the absence of a programmatic procedure. This benefit would be compounded over the 10-year period of the Program. The overall impact from noise due to the Proposed Action is minor adverse. Therefore, noise-related impacts associated with the Proposed Action would result in periodic short-term and less-than significant noise impacts.

Conclusion of Effect

There would be a minor adverse impact to the noise environment from the Proposed Action.

4.8.3 Best Management Practices – Noise

Noise effects from the Proposed Action could be reduced by the following BMPs:

- NS-1. Project workers should wear appropriate protection to limit hearing damage during maintenance and repair activities. USOSHA regulations, DOD Instruction 6055.12, *Hearing Conservation Program* and Army Pamphlet 40-501, *Hearing Conservation Program*.
- NS-2. A potential sound measure that could be considered on a project action basis is temporary sound barriers near a high project-related noise source.
- NS-3. Construction would take place during weekday, daytime hours (Monday through Friday from 7:00 am to 5:00 pm).

4.9 UTILITIES, ENERGY, AND SUSTAINABILITY

4.9.1 Approach to Analysis

Potential impacts (beneficial or adverse) to utilities and infrastructure are assessed with respect to anticipated new services, improvements to existing infrastructure, and/or capacity improvements needed. Impacts would be substantial if the Proposed Action were to exceed the capacity of the existing utility system such that significant expansion of facilities would be required.

4.9.2 Environmental Impacts

4.9.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. This process could cause a delay in making needed improvements to existing utility infrastructure. Maintenance and repair activities have a generally beneficial impact with respect to utilities, energy, and sustainability.

4.9.2.2 Proposed Action Alternative

The Proposed Action would have a beneficial effect on utility services as maintenance and repair actions would allow utilities to remain in service at current or improved levels. Some potential short-term, minor impacts to soil erosion and water resources would occur during temporary excavations for utility work as discussed in Sections 4.1 and 4.2. There would be no increased demand for utility services under the Proposed Action. Maintenance and repairs of the road

transportation system would provide a benefit for efficient solid waste removal services with roadways adequate to accommodate waste and recycling trucks.

During project activities, solid waste in varying quantities would be generated. The disposal of project-derived wastes would be in accordance with local and state requirements and is not anticipated to affect adversely solid waste collection and disposal services currently provided in the region. Waste that is considered hazardous waste cannot be recycled and must be disposed as discussed in Section 4.9. Creosote-treated wood from wharf / pier pile replacement will be recycled or disposed of as hazardous waste if the wood contains greater than 50 ppm creosote.

The Army's *Sustainable Design and Development Policy Update* (U.S. Army, 2013b), sets goals and requirements for renewable energy and water use. The Proposed Action would assist in meeting these sustainability requirements. For example, water utility maintenance and repair could include replacement of leaking pipes or installation of infrastructure for collection of recycled "gray water." The Proposed Action would also include occasional solar power installations on/over existing buildings or structures. These installations would typically involve a series of solar photovoltaic panels and associated storage and distribution components.

Conclusion of Effect

There would be a beneficial impact to utilities, energy, and sustainability from either of the project alternatives.

4.9.3 Best Management Practices – Utilities, Energy, and Sustainability

None identified.

4.10 HAZARDOUS AND TOXIC MATERIALS

4.10.1 Approach to Analysis

Federal, state, and local laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect human health and the environment. The significance of potential impacts associated with hazardous substances is based on their toxicity, reactivity, ignitability, and corrosivity. Impacts associated with hazardous materials and wastes would be significant if the storage, use, transportation, or disposal of hazardous substances substantially increased the human health risk or environmental exposure.

4.10.2 Environmental Impacts

4.10.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. This process could result in inefficiencies in hazardous materials use and management. Without a streamlined procedure for conducting maintenance and repair actions, the potential exists to improperly use, store, and/or dispose of hazardous materials. Inefficiencies in processes would likely result in the use of larger volumes of hazardous materials. The No Action Alternative would have a minor adverse impact with respect to HTRW.

4.10.2.2 Proposed Action Alternative

Hazardous materials utilized associated with routine maintenance and repair operations include motor oil, gasoline, diesel fuel, paints, asphalts, cleaning agents, pesticides, herbicides, and hazardous building materials (ACM, LBP, and PCBs). No new hazardous substances would be used on the Installation as part of the Proposed Action. In the event of a spill, Installation personnel are trained to isolate and clean up releases in accordance with contingency plans and spill response procedures (i.e., the Installation's SPCCP). Any spill of hazardous materials on MOTCO property would be immediately reported to the MOTCO Fire Department, DPW, and Environmental Compliance Office. It is anticipated that only small amounts of hazardous wastes would be generated in project activities. These wastes would be disposed in accordance with manufacturer's specifications and hazardous waste regulatory standards.

Certified contractors are used in all renovation projects at MOTCO where hazardous building materials (e.g., ACM) are present. Under the Proposed Action, LBP encountered during maintenance and repair of existing buildings would follow the DOD LBP guidance and the LBP Hazard Management Plan.

The Proposed Action would result in occasional temporary disturbance into IR sites when repairs to roads, utilities, etc. are required in these areas. Where access to these locations is required, proper precautions will be taken to avoid contact with hazardous materials/wastes and to not impair remedial measures. Work within IR sites will be conducted in accordance with the Land Use Control and Implementation Plan, part of MOTCO's RPMP (U.S. Army, 2011b). That document includes laboratory analytical data for soil that indicates soil excavated from shallow depths across MOTCO can be reused as fill in other areas of the Installation with the exception of soil excavated at the intersection of White and Johnson roads. Soil in that area has shown elevated concentrations of metals and would not be reused in other areas under the Proposed Action.

Conclusion of Effect

Routine maintenance and repair operations would continue the current rate of hazardous materials use and hazardous waste generated. Implementation of existing hazardous waste management procedures such as those outlined in the Installation HWMP would reduce the impacts associated with generation of additional waste. Therefore, routine maintenance and repair operations would result in minor adverse effects from the storage, transport, and use of hazardous and toxic materials and wastes.

4.10.3 Best Management Practices – Hazardous and Toxic Materials

- HM-1. The Installation HWMP and SPCCP will be followed during project activities with regard to the proper storage, use, and disposal of HTRW and the response to any potential released of hazardous substances as a result of project activities.
- HM-2. Where ACM and/or LBP is present on project actions (e.g., building exterior renovations) develop and adhere to a debris containment and collection plan for protection of worker safety and the environment. A containment system would be placed around applicable work areas to collect all dust and debris where ACM/LBP is disturbed. These waste building materials would be segregated and disposed of properly.
- HM-3. Coordinate any work within IR site boundaries with Installation Environmental Coordinator to ensure no impacts to remedial measures.

4.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.11.1 Approach to Analysis

Significance of population and economic activity are assessed in terms of their direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts varies depending on the location of a proposed action; for example, an action that creates 20 employment positions may be unnoticed in an urban area, but may have significant impacts in a more rural region. If potential socioeconomic impacts would result in substantial shifts in population trends, or adversely affect regional spending and earning patterns, they would be significant.

In order to comply with EO 12898, and ethnicity and poverty status in the vicinity of the Proposed Action area have been examined and compared to county, state, and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action or alternatives. Data have been collected from previously published documents issued by Federal, state, and local agencies and from state and national databases (e.g., U.S. Bureau of Economic Analysis Regional Economic Information System).

The CEQ guidance states that “minority populations should be identified” where either: a) the minority population of the affected area exceeds 50 percent; or b) the population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.” (CEQ, 1997).

4.11.2 Environmental Impacts

4.11.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. Maintenance and repair activities would occur at current levels, maintaining current employment. There would be no impacts to socioeconomics and environmental justice.

4.11.2.2 Proposed Action Alternative

Under the Proposed Action, maintenance and repair activities would occur at current levels, maintaining current employment. There would be no impact to socioeconomics from the Proposed Action. Project impacts described in this PEA would not extend beyond the boundaries of MOTCO. As discussed in previous sections, noise and air emissions impacts on the Installation would be short-term, less than significant and it is not anticipated that these impacts would travel off-base in any substantial amount. Therefore, impact of the Proposed Action would not disproportionately affect minority or low-income communities including the adjacent community of Bay Point, or adversely affect children’s health and safety.

4.11.3 Best Management Practices – Socioeconomics and Environmental Justice

None identified.

Conclusion of Effect

There would be no impact to socioeconomics and environmental justice from either of the project alternatives.

4.12 AESTHETICS/VISUAL RESOURCES

4.12.1 Approach to Analysis

Determination of the significance of impacts to visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact to a visual resource is significant if implementation of a proposed action would result in substantial alterations to an existing sensitive visual setting.

4.12.2 Environmental Impacts

4.12.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. The current visual features of the Installation would not change. Maintenance and repair activities would prevent existing facilities from deteriorating and would have a generally beneficial impact with respect to aesthetics/visual resources.

4.12.2.2 Proposed Action Alternative

Routine maintenance and repairs, including building upkeep and landscaping will improve the visual character of the Installation and have an overall beneficial impact. The Proposed Action would include occasional solar power installations on/over existing buildings or structures. These installations would typically involve a series of solar photovoltaic panels and associated storage and distribution components. Solar panels would be installed in a manner that would prevent annoying glare from affecting viewsheds on the Installation.

Conclusion of Effect

There would be a beneficial impact to aesthetics/visual resources from either of the project alternatives.

4.12.3 Best Management Practices – Aesthetics/Visual Resources

None identified.

4.13 CULTURAL RESOURCES

4.13.1 Approach to Analysis

Cultural resources are subject to review under both Federal and state laws and regulations. Section 106 of the NHPA empowers the ACHP to comment on Federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the NRHP.

Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the NHPA.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by 1) physically altering, damaging, or destroying all or part of a

resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or 4) neglecting the resource to the extent that it is deteriorated or destroyed.

Identifying the locations of proposed actions and determining the exact locations of cultural resources that could be affected can assess direct impacts. Both direct and indirect impacts can result from project-induced land clearing from the expansion of pavements and buildings, and land disturbance from changes to linear infrastructure. Visual changes in and around World War II era facilities have potential to change the characteristics and feel of the surrounding area. Duration and method of construction can have temporary impacts to the visual and atmospheric elements on the Installation's cultural resources.

4.13.2 Environmental Impacts

4.13.2.1 No Action Alternative

Under the No Action Alternative, MOTCO would continue its current practice of environmental review and permitting of projects on a case-by-case scenario. The NPS is responsible for the PCNMNM. The Nichols School and Getty Oil archaeological sites are not covered under routine maintenance and repair projects. There are no archaeological sites that are covered by maintenance and repair projects; however, each project must be evaluated for impact on the PCNMNM, any eligible sites and potential cultural resources.

4.13.2.2 Proposed Action Alternative

Under the Proposed Action, the Army would continue to manage cultural resources on MOTCO in accordance with the ICRMP and all applicable laws, regulations, and policies. Work offshore at waterfront facilities would be conducted in a manner protective of potential offshore cultural resources, including the potentially NRHP-eligible offshore site associated with the Port Chicago explosion. Since that site is located past Wharves 2 and 3 it is not anticipated that maintenance and repair activities associated with the piers will impact the potentially NRHP-eligible resources. Should underwater resources be encountered, the MOTCO Environmental Coordinator should be contacted.

Routine maintenance and repair actions for utilities would include repair of, or replacement of water, gas, storm, and sewer lines within the original trench. None of these actions would affect identified cultural resources at MOTCO.

The Proposed Action would not affect the Contra Costa Canal. MOTCO does not perform maintenance and repair of the Canal. Currently there are no historic buildings identified within

MOTCO. However, MOTCO is currently considering the designation of an historic district near the PCNMNM. Any future historic buildings would benefit from regular maintenance and repairs.

Routine landscaping maintenance and repair actions would include minor land grading, lawn mowing, and planting. None of these actions would include substantial excavation and none affect identified cultural resources at MOTCO.

As noted in Section 3.12, no Native American sacred sites have been identified at MOTCO and four Federally-recognized American Indian groups have been identified with potential interest in MOTCO. It is not anticipated that the Proposed Action will have any impact on Native American sites or resources.

Conclusion of Effect

Normal maintenance and repair operations would have no adverse effects on cultural resources at MOTCO. Training would occur for construction crews working in sensitive areas. Adherence to the ICRMP and implementation of site-specific measures, as necessary, would ensure maintenance and repair operations would result in no adverse effect to cultural resources.

4.13.3 Best Management Practices – Cultural Resources

- CR-1. Follow ICRMP procedures (U.S. Army, 2018). The ICRMP includes 18 SOPs for cultural resources compliance procedures. ICRMP SOPs applicable to the Proposed Action include the following:
    - SOP-1: Maintenance and Care for Historic Buildings and Structures
    - SOP-2: Disposal or Demolition of Excess Property
    - SOP-3: Mission Training of Military and Tenant Personnel
    - SOP-4: Emergency Actions
    - SOP-5: Inadvertent Discovery of Archaeological Deposits/Cultural Materials
    - SOP-7: Department of Public Works Activities
    - SOP-10: Section 106 Process
    - SOP-11: Tribal Consultation Process
    - SOP-12: Compliance with Executive Order 13007: Indian Sacred Sites
    - SOP-13: Government to Government Relations
    - SOP-14: Properties of Traditional Religious and Cultural Importance
    - SOP-15: Native American Graves Protection and Repatriation Act
    - SOP-16: Archaeological Resources Protection Act of 1979
    - SOP-17: Antiquities Act of 1906
    - SOP-18: National Park Service Consultation Process

- CR-2. Although substantial excavation work is not a typical part of routine maintenance and repair operations, potential excavation in areas with high or moderate archaeological

potential at MOTCO should have an archaeological survey done prior to construction or be conducted in the presence of an archaeological monitor. In the event that archaeological deposits are encountered during any excavation activities, the activity must stop and the MOTCO Environmental Coordinator must be notified. If bone is present within the deposit, a qualified professional will determine if the materials represent human remains.

4.14 SUMMARY OF BEST MANAGEMENT PRACTICES

Table 4-2 lists the maintenance and repair project types for each infrastructure category and the applicable BMPs for each under the Proposed Action. The BMPs listed minimize the overall effects associated with the Proposed Action. These are management actions that the Army implements on an ongoing basis to provide environmental protection. Additional mitigation measures related directly to the Proposed Action are not proposed at this time but may be added pending the results of regulatory consultation.

Table 4-2. Best Management Practices Summary

Infrastructure Category	Programmatic Project Type	AIR				BIO											CR		GEO	GHG	HM			LU	NS			TR	WR						
		1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	1	2	1	1	1	2	3	1	1	2	3	1	1	2	3	4	5	6	7
Waterfront Facilities	Berthing/Mooring Systems and Signage	Y	Y	Y	Y				Y	Y	Y				Y	Y	Y			Y	Y			Y	Y		Y			Y	Y	Y		Y	
	Pile Repair	Y	Y	Y	Y				Y	Y	Y				Y	Y	Y			Y	Y			Y	Y		Y			Y	Y	Y		Y	Y
	Pile and Pile Cap Replacement	Y	Y	Y	Y				Y	Y	Y	Y	Y		Y	Y	Y			Y	Y			Y	Y					Y	Y	Y		Y	Y
	Pier and Trestle Decking	Y	Y	Y	Y				Y	Y	Y			Y	Y	Y	Y			Y	Y			Y	Y		Y			Y	Y	Y		Y	
	Gantry Cranes & Rails	Y	Y	Y	Y				Y	Y	Y				Y	Y	Y			Y	Y			Y	Y		Y			Y	Y	Y		Y	
	Anti-Terrorism and Force Protection	Y	Y	Y	Y				Y	Y	Y				Y	Y	Y			Y	Y			Y	Y		Y			Y	Y	Y			
	Shoreline Erosion Control	Y	Y	Y	Y				Y	Y	Y				Y	Y	Y			Y	Y			Y	Y		Y			Y	Y	Y			
Railyard and Rail Lines	Rail Yard Expansion	Y	Y	Y	Y	Y	Y	Y	Y		Y						Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		
	Track / Rail, Siding and Cross-Tie Replacement	Y	Y	Y	Y	Y	Y		Y		Y						Y		Y	Y	Y		Y		Y	Y	Y	Y		Y	Y	Y	Y		
	Ballast Replacement	Y	Y	Y	Y	Y	Y		Y		Y						Y		Y	Y	Y		Y		Y	Y	Y	Y		Y	Y	Y	Y		
	Crossing, Switching System and Signal Upgrades	Y	Y	Y	Y	Y	Y				Y						Y		Y	Y	Y		Y		Y	Y	Y	Y		Y	Y	Y	Y		
	Crossing, Abutment, and Transfer Pad Extensions and Upgrades	Y	Y	Y	Y	Y	Y	Y	Y		Y						Y		Y	Y	Y	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y		
Road Transportation System	Road Resurfacing	Y	Y	Y	Y	Y	Y		Y		Y						Y		Y	Y	Y		Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		
	Road Grading and Base Replacement	Y	Y	Y	Y	Y	Y		Y		Y						Y		Y	Y	Y		Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		
	Culverts and Stormwater Drainage	Y	Y	Y	Y	Y	Y		Y		Y						Y		Y	Y			Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		
	Bridge Strengthening and Elevated Road Crossings	Y	Y	Y	Y	Y			Y		Y								Y	Y		Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		
	Geometry Improvements	Y	Y	Y	Y	Y	Y		Y		Y						Y		Y	Y			Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		
	Holding Pad/Transfer Pad Maintenance, Repair, and Improvements	Y	Y	Y	Y	Y	Y		Y		Y						Y		Y	Y			Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		
	Parking Lots/Ammo Lots, Staging Areas, Other Miscellaneous Pavements Expansion, Maintenance, and Repair	Y	Y	Y	Y	Y	Y	Y	Y		Y						Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y		Y	Y	Y	Y		
	Lighting, Traffic Safety, Signage and Pavement Markings	Y	Y	Y	Y												Y		Y	Y	Y		Y	Y	Y		Y	Y		Y	Y	Y	Y		

Infrastructure Category	Programmatic Project Type	AIR				BIO											CR		GEO	GHG	HM			LU	NS			TR	WR						
		1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	1	2	1	1	1	2	3	1	1	2	3	1	1	2	3	4	5	6	7
Utilities	Aboveground and Underground Utility Systems(electrical, fiber optic, phone, potable water, sanitary and storm sewer, and gas)	Y	Y	Y	Y	Y	Y	Y	Y		Y						Y	Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	Y	Y			
	Storm Water System Upgrade	Y	Y	Y	Y	Y	Y		Y		Y						Y		Y	Y			Y	Y		Y	Y	Y		Y	Y	Y			
	Lightning Protection Systems	Y	Y	Y	Y	Y	Y	Y	Y		Y						Y	Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	Y	Y			
	Solar Installation(s) (<5 MW)	Y	Y	Y	Y	Y	Y				Y						Y		Y	Y	Y	Y			Y		Y	Y		Y	Y	Y			
Buildings	Minor Building/Structure Expansions	Y	Y	Y	Y	Y	Y	Y	Y		Y						Y	Y	Y	Y	Y	Y	Y		Y	Y	Y			Y	Y	Y			
	Interior Maintenance and Repairs	Y			Y		Y		Y		Y						Y			Y	Y	Y			Y	Y	Y			Y	Y	Y			
	Exterior Maintenance, and Repairs	Y	Y	Y	Y		Y		Y		Y						Y		Y	Y	Y				Y	Y	Y			Y	Y	Y			
	Anti-Terrorism/Force Protection and Seismic Retrofits	Y	Y	Y	Y	Y	Y	Y	Y		Y						Y		Y	Y	Y				Y	Y	Y			Y	Y	Y			
	Berms, Barricades and Accessory Safety/Security Structures	Y	Y	Y	Y	Y	Y	Y	Y		Y						Y		Y	Y	Y	Y	Y		Y	Y	Y			Y	Y	Y			
Landscaping	Maintenance and Beautification of Inland Cantonment Common Areas	Y	Y	Y	Y	Y				Y	Y								Y	Y	Y		Y		Y		Y		Y	Y	Y	Y			
	Maintenance of Tidal Operational Areas	Y	Y	Y	Y	Y				Y	Y								Y	Y	Y		Y		Y		Y			Y	Y	Y			
Fencing & Security	Fence Installation and Repair	Y	Y	Y	Y	Y	Y			Y	Y								Y	Y			Y		Y		Y	Y		Y	Y	Y			
	Anti-Terrorism and Force Protection Measures	Y	Y	Y	Y						Y								Y	Y			Y		Y		Y	Y		Y	Y	Y			

AIR – Air quality; BIO – Biological Resources; CR – Cultural Resources; GEO – Geology; GHG – Green House Gas; HM – Hazardous materials; LU – Land use; NS - Noise; TR - Traffic; WR – Water resources

4.15 CUMULATIVE EFFECTS

4.15.1 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?

NEPA requires analysis of cumulative environmental effects of a Proposed Action, or set of actions, on resources that may often be manifested only at the cumulative level, such as impacts on air quality, noise, biological resources, cultural resources, utility system capacities, and others.

This qualitative cumulative impacts-analysis is based on the potential effects of the Proposed Action when added to similar impacts from other projects in the region.

4.15.2 Cumulative Effects of the Proposed Action

The Army uses a process for cumulative effects analysis that follows the nine steps identified by CEQ (U.S. Army 2015a). The Preferred Action Alternative would result in the impacts identified throughout Section 4.0. These include potential less-than-significant adverse impacts to water resources, soils, air quality, biological resources, noise, and HTRW. Implementation of the Proposed Action would not be anticipated to result in significant impacts and would therefore not be anticipated to contribute to adverse cumulative impacts within the region. The Proposed Action would not contribute significantly to cumulative increases in air pollutant emissions or nuisance noise levels in the vicinity of MOTCO. The Project would not contribute to a cumulatively significant increase in the storage, transport, use, or generation of HTRW. These impacts would be further reduced through implementation of BMPs as identified in Section 4.0.

The Proposed Action would not increase the frequency and intensity of activities. Noise from the Installation is already a component of the local noise environment. These activities would result in only negligible cumulative impacts.

Similarly, no significant cumulative impacts would be anticipated as no maintenance and repair tasks would be required that would result in permanent loss or conversion of sensitive or threatened and endangered species habitat. Adherence to established permit conditions and implementation of BMPs addressing water resources, soil erosion, sedimentation, and management of hazardous materials would protect local and regional water resources. Maintenance and repair activities would be consistent with the Installation's INRMP, where applicable, which establishes management and restorative programs that minimize or offset impacts to biological resources. Measures to protect threatened and endangered species and their habitat would continue to be implemented.

The Army's 2013 PEA for Implementation of the RPMP (U.S. Army, 2011b), IDP (U.S. Army 2016a), and IPS (U.S. Army 2021a) for MOTCO analyzed a complex suite of master planning actions at MOTCO. Its cumulative effects analysis provided a summary of the numerous additional activities at MOTCO and within the region, including then-present and reasonably foreseeable actions. The ACP 5 project (U.S. Army 2017a) was a recent project showing potential for cumulative impacts. Since that time, the Installation INRMP and ICRMP have been updated and new projects have been initiated at MOTCO. An updated summary of related projects and cumulative effects is provided in Table 4-3.

Cumulative effects analysis for the RPMP PEA showed potential for minor cumulative effects for water resources, soils, air quality, noise when combined with past, present, and reasonably foreseeable future actions. For other resources categories evaluated, there would be either

minimal or no potential for cumulative effects, or a beneficial cumulative effect. By comparison, the Proposed Action would consist of much smaller-scale activities than the construction work of the RPMP projects, and the potential for cumulative effects in all resource categories would be similar, but less.

Table 4-3. Cumulative Action Evaluation

Action	Level of Analysis Completed or Planned	Decision Document (Date)	Lead Agency	Status
Past Actions				
Pier 4 Structural Repair Project	CX	REC (March 2009)	Army	Complete
Pier Wharf 3 Pile Wrapping	EIS	ROD (April 2015)	Army	Complete
Barge Pier Repair	CX	REC (Summer 2015)	Army	Complete
Repair Damaged Pilings at Piers 3 and 4	CX	REC (January 2011)	Army	Complete”
Facility Reduction Program Demolition	Programmatic EAs and CXs	FNSIs and RECs (February 2014) (August 2014)	Army	Demolition complete
Investigative Borings for Gate 5 Road Repair and Other Road Repair Geotechnical Investigations	CX	REC (August 2014)	Army	Borings complete
Repair and Modernization of Piers 2 and 3	EIS	ROD (April 2015)	Army	Pier 3 (now Wharf 3) piles installed
Repair and Modernization of Piers 2 and 3 Supplemental	EA	FNSI (January 2017)	Army	Pile Wrapping
Building 245 Renovations	CX	REC (June 2016)	Army	Complete
Construction and Operation of a U.S. Army Reserve Center at MOTCO Inland Area	EA	FNSI (August 2012)	Army	Construction Complete Operation On-going
Present and Reasonably Foreseeable Actions				
IRP Remedial Actions	Regulatory Consultations	NA	Army	On-going
Military Munitions Response Program	Regulatory Consultations	NA	Army	On-going
Real Property Master Plan Projects	EA	FNSI (June 2013)	Army	On-going
Barge Pier Repair	CX	REC (summer 2015)	Army	New
Floating Dock	CX	REC	Army	New
Facility Reduction Program Demolition	Programmatic EA and CXs	FNSIs and RECs (2014-2018)	Army	On-going
Repair of Bridges, Roads and Utilities at MOTCO	EA	FNSI (Summer 2017)	Army	On-going
Community Transportation Projects	NA	NA	Various	New
Lot 2 Lightning Protection System Modification	CX	REC[1] (TBD)	Army	On-going
ACP 5 Upgrades	EA	FNSI[1] (Early 2017)	Army	Updated
ACP 1 Upgrades	CX	REC[1] (TBD)	Army	Updated
Periodic Dredging of Piers	EA	FNSI[1] (Winter 2021)	Army	New
Mission Activities and Facility Reinvestment	Programmatic EA	ROD[1] (Spring 2019)	Army	On-going

Notes: [1]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

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5.0 PUBLIC INVOLVEMENT

5.1 GENERAL

The Army promotes public participation as required under the NEPA process. Consideration of the perspectives and involvement of interested persons supports open communication and enables better decision making. All agencies, organizations, and members of the public having a potential interest in the Proposed Action are encouraged to participate in the public involvement process. Throughout this process, information may be obtained through the MOTCO Environmental Manager via email at usarmy.scott.sddc.mbx.hqsddc-environmental@mail.mil. Public participation opportunities with respect to this PEA and decision making on the Proposed Action are guided by 32 CFR Part 651, which describes stakeholder involvement throughout the PEA process. In accordance with this regulation, environmental agencies and the public will be involved, to the extent practicable, in the preparation of a PEA. If the proponent elects to involve the public in the development of a PEA, 32 CFR 651.47 and Appendix C of this regulation may be used as guidance.

5.2 PUBLIC INVOLVEMENT

The Draft PEA and Draft FNSI were made available to the general public and applicable government agencies for review and comment during the 30-day period that commenced with publication of the Notice of Availability in the *Contra Costa Times* on September 21, 2021. Copies of these documents were available at the Concord Public Library and Bay Point Library. The public did not provide any comments on the Draft PEA.

In addition, in accordance with Section 7 of the ESA the Army communicates regularly with USFWS and NMFS on the Proposed Action with respect to biological resources impacts. MOTCO will consult with these Agencies as appropriate.

Letters regarding intent to prepare the Draft PEA were sent to agencies listed in the distribution list in the Table 5-1. Letters with the Notice of Availability were sent directly to interested agencies and organizations (Table 5-2) with information about the review and the availability of the Draft PEA on the SDDC website. The PEA was posted to the California State Clearinghouse (ceqanet.opr.ca.gov/; SCH Number 2021090377) on September 21, 2021 for state agencies to review. Comments on the Draft PEA were received from California Geologic Energy Management Division (CalGEM) reminding MOTCO of existing gas and oil wells on the installation. These comments are incorporated into and addressed in this Final PEA (Appendix C).

The Army prepared this PEA and FNSI concurrently with related studies and analysis required by the ESA of 1973, the Clean Water Act, the Coastal Zone Management Act, the Clean Air Act, other applicable environmental review laws and Executive Orders. In addition to the completed

PEA and associated Finding of No Significant Impact, additional environmental review/permitting requirements expected with respect to the proposed project are listed in Section 1.1.

Adherence to the current ICRMP and implementation of site-specific measures, as necessary, would ensure maintenance and repair operations would result in no adverse effect to cultural resources.

5.3 DISTRIBUTION LISTS

Table 5-1. Agencies Notified of Intent to Prepare the Programmatic Environmental Assessment

California Department of Fish and Wildlife
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558

California Department of Toxic Substances Control
Berkeley Regional Office
700 Heinz Avenue
Berkeley, CA 94710

California Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

California State Clearinghouse
1400 Tenth Street
Sacramento, CA 95812

Concord Public Library
2900 Salvio Street
Concord, CA 94519

San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 95404

San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94111

U.S. Fish and Wildlife Service
Bay-Delta Fish and Wildlife Office
650 Capitol Mall, 8th Floor
Sacramento, CA 95814

U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way
Sacramento, CA 95825

National Marine Fisheries Service
The San Francisco Bay Branch
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404

National Park Service
Golden Gate National Recreation Area
Building 201, Fort Mason
San Francisco, CA 94123-0022

Table 5-2. Agencies receiving the Notice of Availability for the Programmatic Environmental Assessment Review

Bay Point Library
205 Pacifica Avenue
Bay Point, CA 94565

California Department of Fish and Wildlife
Bay Delta Region (Region 3)
2825 Cordelia Road, Suite 100
Fairfield, CA 94534

California Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

California State Assembly, District 14
2151 Salvio Street, Suite P
Concord, CA 94520

Mayor of Concord
1950 Parkside Drive, MS/01
Concord, CA 94519

Concord Public Library
2900 Salvio Street
Concord, CA 94519

Contra Costa County Board of Supervisors
190 E. 4th Street
Pittsburg, CA 94565

Eugene O'Neill NHS, John Muir NHS,
Port Chicago Naval Magazine,
Rosie the Riveter/
World War II Home Front NHP
440 Civic Center Plaza, Suite 300
Richmond, CA 94804

National Marine Fisheries Service
The San Francisco Bay Branch
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404

National Park Service
Golden Gate National Recreation Area
Building 201, Fort Mason
San Francisco, CA 94123-0022

U.S. Environmental Protection Agency
Region 9, Pacific Southwest
75 Hawthorne Street
San Francisco, CA 94105

U.S. Fish and Wildlife Service
Bay-Delta Fish and Wildlife Office
650 Capitol Mall, 8th Floor
Sacramento, CA 95814

U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way
Sacramento, CA 95825

Amah Mutsun Tribal Band
Galt, CA 94632

Indian Canyon Mutsun Band of Costanoan
Hollister, CA 95024

Kletsel Dehe Wintun Nation
Williams, CA 95987

Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
Milpitas, CA 95036

North Valley Yokuts Tribe
Linden, CA 95236

Tachi Yokut Tribe, Santa Rosa Rancheria
Lemoore, CA 93245

Wilton Rancheria
Elk Grove, CA 95624

San Francisco Bay Conservation
and Development Commission
375 Beale Street, Suite 510
San Francisco, CA 94105

U.S. Army Corps of Engineers
San Francisco District, Regulatory Division
450 Golden Gate Avenue, 4th Floor
San Francisco, California 94102-3406

Yocha Dehe Wintun Nation
Brooks, CA 95606

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6.0 COMPARISON OF ALTERNATIVES AND CONCLUSIONS

This PEA has evaluated the potential environmental impacts associated with ongoing routine maintenance and repair activities at MOTCO, as summarized in Section 4. Two alternatives were evaluated: the Preferred Action Alternative and No Action Alternative.

6.1 COMPARISON OF THE ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

As summarized in Table 6-1, the Preferred Action Alternative would result in generally minor impacts to MOTCO and the surrounding area. As identified throughout Section 4, adverse impacts would be minimized by adhering to regulatory requirements and implementing site- and resource-specific BMPs.

The No Action Alternative was not found to satisfy the purpose of and need for the Proposed Action. This alternative would not enable MOTCO to maintain its vital infrastructure in a streamlined manner.

6.2 CONCLUSIONS

As described in Section 1.1, the intent of this PEA is to streamline future analyses of impacts related to routine maintenance and repair operations at MOTCO, presenting a representative analysis of anticipated regulatory requirements and environmental impacts. A REC Checklist for maintenance and repair tasks utilizing the infrastructure categories, programmatic project types and BMPs in Table 4-2 would facilitate individual tasks in a manner that ensures compliance with applicable regulations and optimizes environmental protection.

As maintenance projects are developed during the 10-year planning horizon, they would be screened via the PEA for NEPA compliance and to determine if they qualify for the preparation of a REC checklist or if they require additional site-specific environmental impact assessment and/or permitting. If future individual/site-specific projects require additional NEPA-compliant documentation or permits, MOTCO would prepare tiered NEPA-compliant documentation incorporating the findings of this PEA and would apply for appropriate permits.

Based upon the programmatic evaluation performed in this PEA, there would be no significant adverse impact, either individually or cumulatively, to the local environment or quality of life as a result of implementing the Preferred Action Alternative. Therefore, this PEA's analysis determines an EIS is unnecessary for implementing the Proposed Action, and that a FNSI is appropriate.

Table 6-1. Summary of Potential Environmental Impacts on Environmental Resources

Environmental Consequence	No Action Alternative	Alternative 1 - Programmatic Maintenance and Repair Actions
Water Resources	Moderate Adverse Impact. BMPs typically implemented and operations are consistent with Installation SWPPP, SPCCP, resource protection and regulatory requirements to offset impacts.	Minor Adverse Impact. Similar impacts as No Action although impacts would be reduced by standardizing operating procedures and environmental controls by task.
Geology, Soils, and Mineral Resources	Minor Adverse Impact. BMPs typically implemented consistent with Installation SWPPP to offset soil erosion impacts.	Minor Adverse Impact. Similar impacts as No Action although impacts would be reduced by standardizing operating procedures and environmental controls by task.
Air Quality	Minor Adverse Impact. Impacts due to the potential for dust generation from activities on unpaved roads and vehicle operation. Long-term, less-than-significant impact from ongoing air emissions. Air emissions would be magnitudes of order below the thresholds for conformity with the SIP	Minor Adverse Impact. Air emissions would be magnitudes of order below the thresholds for conformity with the SIP
Biological Resources	Minor Adverse Impact. Adherence to project controls and implementation of standardized procedures for all maintenance and repair tasks would result in moderate adverse impacts to biological resources.	Minor Adverse Impact. Similar impacts as No Action although impacts would be reduced by standardizing operating procedures and environmental controls by task.
Land Use and Recreation	No Impact.	No Impact.
Traffic and Transportation	Negligible Impact. Minor adverse impacts to traffic flow would be offset by improvements to the road transportation system.	Negligible Impact. Minor adverse impacts to traffic flow would be offset by improvements to the road transportation system.
Noise	Minor Adverse Impact. Short-term, localized noise associated with maintenance and repair activities.	Minor Adverse Impact Short-term, localized noise associated with maintenance and repair activities.
Utilities, Energy, and Sustainability	Beneficial Impact. Utility lines would be upgraded and repaired and services would be retained/improved.	Beneficial Impact. Utility lines would be upgraded and repaired and services would be retained/improved.
Hazardous and Toxic Materials	Minor Adverse Impact. Potential impacts due to HTRW use/generation from project activities. Impacts would be controlled through ongoing regulatory compliance.	Minor Adverse Impact. Potential impacts due to HTRW use/generation from project activities. Impacts would be controlled through ongoing regulatory compliance.
Socioeconomics and Environmental Justice	No Impact.	No Impact.
Aesthetics/Visual Resources	No Impact.	No Impact.
Cultural Resources	No Impact.	No Impact.
Cumulative Effects	No Impact.	No Impact.

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8.0 GLOSSARY

100-year Flood – A flood event of such magnitude that it occurs, on average, every 100 years; this equates to a one percent chance of its occurring in a given year.

Ambient - The environment as it exists around people, plants, and structures.

Ambient Air Quality Standards - Those standards established according to the CAA to protect health and welfare (AR 200-1).

Archaeological Resource – Any material of human life or activities that is at least 100 years of age and is of archaeological interest (32 CFR 229.3(a)).

Asbestos - Incombustible, chemical-resistant, fibrous mineral forms of impure magnesium silicate used for fireproofing, electrical insulation, building materials, brake linings, and chemical filters. Asbestos is a carcinogenic substance.

Attainment Area - Region that meets the National Ambient Air Quality Standard (NAAQS) for a criteria pollutant under the CAA.

Best Management Practices (BMPs) - Methods, measures, or practices to prevent or reduce the contributions of pollutants to United States waters. Best management practices may be imposed in addition to, or in the absence of, effluent limitations, standards, or prohibitions (AR 200-1).

Collections - Material remains that are excavated or removed during a survey, excavation or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation or other study. §79.4 provides detailed definitions of the kinds of material remains that fall under the regulation.

Construction – A project that includes construction, development, conversion or extension of any kind.

Contaminants - Any physical, chemical, biological or radiological substances that have an adverse effect on air, water or soil.

Council on Environmental Quality (CEQ) - An Executive Office of the President composed of three members appointed by the President, subject to approval by the Senate. Each member shall be exceptionally qualified to analyze and interpret environmental trends; to appraise programs and activities of the federal government. Members are to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

(SO_2), lead (Pb), nitrogen dioxide (NO_2), and particulate matter.

Cultural Items – As defined by NAGPRA, human remains and associated funerary objects, unassociated funerary objects (at one time associated with human remains as part of a death rite or ceremony, but no longer in possession or control of the federal agency or museum), sacred objects (ceremonial objects needed by traditional Native American religious leaders for practicing traditional Native American religions), or objects of cultural patrimony (having ongoing historical, traditional, or cultural importance central to a Federally-recognized tribe or Native Hawaiian organization, rather than property owned by an individual Native American, and which, therefore, cannot be alienated, appropriated, or conveyed by any individual of the tribe or group).

Cultural Resources - Historic properties as defined by the NHPA; cultural items as defined by NAGPRA; archaeological resources as defined by ARPA; sites and sacred objects to which access is afforded under AIRFA; and collections and associated records as defined in 36 CFR 79. Included are: traditional cultural properties and objects; archaeological sites; historic buildings, structures, and districts; and localities with social significance to the human community.

Cumulative Impact - The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually over a period of time (40 CFR 1508.7).

dBA – "A-weighted" non-impulse noise measurement in decibels, weighted to match human hearing frequency response.

Decibel (dB) - A unit of measurement of sound pressure level.

Direct Impact - A direct impact is caused by a Proposed Action, and occurs at the same time and place.

Elevation - Raising a building and placing it on a higher foundation so the first or lowest floor is above flood levels.

Emission - A release of a pollutant.

Endangered Species - Any species which is in danger of extinction throughout all or a significant portion of its range.

Environmental Assessment (PEA) - An PEA is a publication that provides sufficient evidence and analysis to show whether a proposed system would adversely affect the environment or be environmentally controversial.

Erosion - The wearing away of the land surface by detachment and movement of soil and rock fragments through the action of moving water and other geological agents.

Facility - A building, structure, linear structure or other improvement to real property.

Fauna - Animal life, especially the animal characteristics of a region, period, or special environment.

Flora - Vegetation; plant life characteristic of a region, period, or special environment.

Floodplain - The relatively flat area or lowlands adjoining a river, stream, ocean, lake, or other body of water that is susceptible to being inundated by floodwaters.

FNSI - Finding of No Significant Impact, a NEPA document.

Geology - Science which deals with the physical history of the earth, the rocks of which it is composed, and physical changes in the earth.

Groundwater - Water found below the ground surface. Groundwater may be geologic in origin and as pristine as it was when it was entrapped by the surrounding rock or it may be subject to daily or seasonal effects depending on the local hydrologic cycle. Groundwater may be pumped from wells and used for drinking water, irrigation and other purposes. It is recharged by precipitation or irrigation water soaking into the ground. Thus, any contaminant in precipitation or irrigation water may be carried into groundwater.

Hazardous Substance - Hazardous materials are defined within several laws and regulations to have certain meanings. For this document, a hazardous material is any one of the following:

Any substance designated pursuant to section 311 (b)(2) (A) of the Clean Water Act.

Any element, compound, mixture, solution or substance designated pursuant to Section 102 of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

Any hazardous as defined under the Resource Conservation and Recovery Act (RCRA).

Any toxic pollutant listed under Toxic Substances Control Act.

Any hazardous air pollutant listed under Section 112 of CAA.

Any imminently hazardous chemical substance or mixture with respect to which the EPA Administrator has taken action pursuant to Subsection 7 of Toxic Substances Control Act.

The term does not include: 1) Petroleum, including crude oil or any thereof, which is not otherwise specifically listed or designated as a hazardous substance in a above. 2) Natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas). c. A list of hazardous substances is found in 40 CFR 302.4.

Hazardous Waste - A solid waste, which when improperly treated, stored, transported or disposed of poses a substantial hazard to human health or the environment. Hazardous wastes are identified in 40 CFR 261.3 or applicable foreign law, rule, or regulation (see also solid waste).

Hazardous Waste Storage - As defined in 40 CFR 260.10, ". . . the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere".

Historic Property – Any material or human life or activities that is at least 50 years of age and is of cultural interest.

Historic resources – Any real or personal property, record, or lifeway. Includes: historic real property such as archaeological and architectural places, monuments, designed landscapes, works of engineering or other property that may meet the criteria for inclusion in the NRHP; historic personal property such as any artifact or relic; historic records to include any historical, oral- historical, ethnographic, architectural, or other document that provides a record of the past; and community resources/lifeways to include any resource that a community or interested group ascribes cultural value (references to historic real or personal property such as natural landscapes and cemeteries; references to real property such as vistas or viewsheds; or, references to the nonmaterial such as certain aspects of folklife, cultural or religious practices, languages, or traditions).

Indirect Impact - An indirect impact is caused by a Proposed Action, but occurs later in time or farther removed in distance, but is still reasonably foreseeable. Indirect impacts may include induced changes in the pattern of land use, population density or growth rate, and related effects on air, water, and other natural and social systems. For example, referring to the possible direct impacts described above, the clearing of trees for new development may have an indirect impact on area wildlife by decreasing available habitat.

Industrial Land Use – Land uses of a relatively higher intensity that are generally not compatible with residential development. Examples include light and heavy manufacturing, mining, and chemical refining.

Installation - The entire area within the perimeter of the Military Ocean Terminal Concord administered by the Army including facilities, utilities, lands, cultural and natural resources.

Jurisdictional wetland – Areas that meet the wetland hydrology, vegetation, and hydric soil characteristics, and have a direct connection to the Waters of the United States. These wetlands are regulated by the USACE.

Listed Species - Any plant or animal designated as a state or federal threatened, endangered, special concern, or candidate species.

Maintenance – A subcategory of repair for work that is required to preserve and maintain a facility for its designated functional purpose includes cyclic work to sustain components.

Major Impact - An impact which would be particularly large in magnitude, considering both context and intensity.

Minor Impact - An impact which would be of a smaller scale or would be more readily mitigated than impacts categorized as major.

Mitigation - Measures taken to reduce adverse impacts on the environment.

Mobile Sources - Vehicles, aircraft, watercraft, construction equipment, and other equipment that use internal combustion engines for energy sources.

Modernization - the alteration or replacement of facilities solely to implement new or higher standards, to accommodate new functions, or to replace building components that typically last more than 50 years (such as, the framework or foundation).

Monitoring – A process of inspecting and recording the progress of mitigation measures implemented.

National Ambient Air Quality Standards (NAAQS) - Nationwide standards set up by the USEPA for widespread air pollutants, as required by Section 109 of the Clean Air Act (CAA). Currently, six pollutants are regulated by primary and secondary NAAQS: carbon monoxide (CO), lead, (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter, and sulfur dioxide (SO_2).

National Environmental Policy Act (NEPA) – United States statute that requires all federal agencies to consider the potential effects of Proposed Actions on the human and natural environment.

Nonattainment Area - An area that has been designated by the EPA or the appropriate state air quality agency as exceeding one or more national or state ambient air quality standards.

Parcel - A plot of land, usually a division of a larger area.

Particulates or Particulate Matter - Fine liquid or solid particles such as dust, smoke, mist, fumes or smog found in air.

Physiographic Region - A portion of the Earth's surface with a basically common topography and common morphology.

Pollutant - A substance introduced into the environment that adversely affects the usefulness of a resource.

Potable Water - Water which is suitable for drinking.

Real Property – A building, the land on which it sits, and any permanent improvements or fixtures made to the property (for example, addition of built-in bookshelves).

Recapitalization - Major renovation or reconstruction activities (including facility replacements) needed to keep existing facilities modern and relevant in an environment of changing standards and missions. Recapitalization extends the service life of facilities or restores lost service life. It includes restoration and modernization of existing facilities. Recapitalization encompasses both renovation and replacement of existing facilities and essentially resets the Army's sixty-five year life-cycle period for the facility.

Remediation - A long-term action that reduces or eliminates a threat to the environment.

Repair – To restore a facility, system or component to such a condition that it may be used for its designated functional purpose.

Restoration - Restoration of real property to such a condition that it may be used for its designated purpose. Restoration includes repair or replacement work to restore facilities damaged by inadequate sustainment, excessive age, natural disaster, fire, accident, or other causes.

Riparian Areas - Areas adjacent to rivers and streams that have a high density, diversity and productivity of plant and animal species relative to nearby uplands.

River Basin - The land area drained by a river and its tributaries.

Sacred Site – Any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion, provided that the tribe or appropriately authorized representative of an Indian religion has informed the agency of the existence of such a site. Further, EO 13007 directs each executive branch to (1) accommodate access to and ceremonial use of Indian sacred sites by Indian practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites. Agency heads also are directed to report actions and activities related to sacred sites on their property.

Sensitive Receptors - Include, but are not limited to, asthmatics, children, and the elderly, as well as specific facilities, such as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, and childcare centers.

Significant Impact - According to 40 CFR 1508.27, "significance" as used in NEPA requires consideration of both context and intensity.

Context. The significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the Proposed Action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action.

Soil - The mixture of altered mineral and organic material at the earth's surface that supports plant life.

Solid Waste - Any discarded material that is not excluded by section 261.4(a) or that is not excluded by variance granted under sections 260.30 and 260.3 1.

Sustainment - maintenance and repair activities necessary to keep an inventory of facilities in good working order. It includes regularly scheduled adjustments and inspections, preventive maintenance tasks, and emergency response and service calls for minor repairs. It also includes major repairs or replacement of facility components that are expected to occur periodically throughout the life-cycle of facilities. This work includes regular roof replacement, refinishing of wall surfaces, repairing and replacement of heating and cooling systems, replacing tile and carpeting, and similar types of work. **Threatened species** - Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Topography - The relief features or surface configuration of an area.

Toxic Substance - A harmful substance which includes elements, compounds, mixtures, and materials of complex composition.

Traditional Cultural Property – A property that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. In order for a traditional cultural property to be found eligible for the NRHP, it must meet the existing criteria for eligibility as a building, site, structure, object, or district.

Undertaking – "An undertaking is a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency" (36 CFR 800.16{y]).

Waters of the United States include the following: (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. (2) All interstate waters including interstate wetlands. (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce.

Watershed - The region draining into a particular stream, river, or entire river system.

Wetlands - Areas that are regularly saturated by surface or groundwater and, thus, are characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions. Examples include swamps, bogs, fens, marshes and estuaries.

Wildlife Habitat - Set of living communities in which a wildlife population lives.

9.0 LIST OF PREPARERS

U.S. Army Corps of Engineers, Sacramento District

Military Ocean Terminal Concord

Clover Leaf Solutions

Wood Environment & Infrastructure Solutions

Ganey Science

APPENDIX A

SAMPLE PROJECT CHECKLIST

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Record of Environmental Consideration (REC)

To (Environmental Officer): _____
From (Proponent): _____
Project title: _____

Brief description:

Anticipated date and/or duration of proposed action: .

Reason for using a REC as defined in 32 CFR 651.19 (choose one):

a. Adequately covered in the *Final Environmental Assessment for Implementation of an Integrated Natural Resources Management Plan at Military Ocean Terminal Concord, CA*, dated _ .
b. Categorically excluded under the provisions of CX ( )( ), 32 CFR Part 651, Appendix B (and no extraordinary circumstances, as defined in 32 CFR 651.29(b)(1)–(14), exist) because:

Date	Project Proponent
Date	Installation Environmental Coordinator

Military Ocean Terminal Concord

RECORD OF ENVIRONMENTAL CONSIDERATION
For

1. **Proponent(s).**

2. **Project Title.**

3. **Background and Location.**

4. **Proposed Action:**

5. **Anticipated Date of Proposed Action.**

6. **Reason for Using Record of Environmental Consideration.**
Pursuant to NEPA, the proposed action would be categorically excluded from further environmental review. In accordance with 32 CFR 65l.4, the following Categorical Exclusion applies:

This review is based upon current environmental laws, regulations, and requirements. If the project is not initiated within 180 days, there is a change in scope of work, or new environmental regulations are issued, this review becomes null and void and the

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project must be resubmitted to the NEPA coordinator to determine changes in requirements or level of NEPA analysis.

Since the Proposed Action is not considered to be a significant change in personnel or property use and the screening criteria were met the preparation of this REC is the appropriate NEPA documentation for the proposed action.

7. Screening Criteria.

No Extraordinary Circumstances exist per 32 CFR 651.29 and screening criteria (attached) have been reviewed.

By signing below, I acknowledge that I have read and understand the Record of Environmental Consideration.

8. Signatures.

Environmental Branch Chief	**Date**
Director of Public Works	**Date**

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Military Ocean Terminal Concord

Figure 1 Project Location

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Figure 2 Project Map

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HQ AMC Screening Criteria Part I

Requirement	Y or N	Action(s) to Take	
Emergency Action Required	Y/N	1. If (Y), then take immediate action and 2. Notify: HQ AMC, ASA (IE&E) DASA (ESOH), ACSIM Env Div, and CEQ 3. If (N), continue to next requirement	
Classified Action (follow AR 380-5 requirements)	Y/N	1. If (Y), then consult HQDA thru AMC on public participation, 2. Prepare REC, EA, or EIS as applicable 3. If (N), continue to next requirement	
Exempt by Law	Y/N	1. If (Y), obtain TJAG approval through HQ AMC, 2. Prepare REC, 3. If (N) or is denied by TJAG, continue to next requirement	
Categorically Excluded	Y/N	1. If (N) or extraordinary circumstances exist, continue to next requirement 2. If (Y), prepare and attach REC if required and list CX in (Y) box at left.	
Normally requires an EA	Y/N	Covered by existing EA/EIS	1. If (Y) prepare REC 2. If (N) continue to next level
	Y/N	Requires additional information	1. If (Y), prepare supplemental EA/EIS 2. Prepare FNSI or EIS 3. If (N), continue to next level
	Y/N	Requires new EA	1. If (Y), prepare EA, avoid duplication 2. Prepare FNSI or NOI, EIS and ROD 3. If (N) continue to next level
Normally requires an EIS	Y/N	Covered in an existing EIS	1. If (Y), prepare REC 2. If (N), continue to next level
	Y/N	Existing EIS requires supplementation	1. If (Y), prepare NOI, scoping not required. 2. Supplement existing EIS 3. Prepare ROD 4. If (N), continue to next level
	Y/N	Requires new EIS	1. If (Y), prepare NOI, initiate scoping 2. Prepare EIS 3. Prepare ROD

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HQAMC Screening Criteria Part II

To use a CX, the proponent must meet the following three screening conditions	**Y or N**
1. The action has not been segmented. Determine that the action has not been segmented to meet the definition of a CX. Segmentation can occur when an action is broken down into small parts in order to avoid the appearance of significance of the total action. An action can be too narrowly denied, minimizing potential impacts in an effort to avoid a higher level of NEPA documentation. The scope of an action must include the consideration of connected, cumulative and similar actions. If (Y), complete EA/EIS.	Y/N
2. **No exceptional circumstances exist**. Determine if the action involves extraordinary circumstances that would preclude the use of a CX. Answer 1-14 of the next section and 1-4 of the section after that before proceeding. If (Y) to any, complete EA/EIS	Y/N
3. **One (or more) CX encompasses the proposed action**. Identify a CX (or multiple CXs) that potentially encompasses the proposed action (See Appendix B of 32 CFR Part 651). If no CX is appropriate, and the project is not exempted by statute or emergency provisions, an EA or an EIS must be prepared, before a proposed action may proceed. If (Y), complete and attach REC. If (N), complete EA/EIS. If a CX is appropriate and no REC is required, complete screening criteria only.	Y/N
Extraordinary circumstances that preclude the use of a CX If (Y) to any complete an EA or EIS	**Y or N**
1. Reasonable likelihood of significant effects on public health, safety, or the environment.	Y/N
2. Reasonable likelihood of significant environmental effects (direct, indirect, and cumulative)	Y/N
3. Imposition of uncertain or unique environmental risks.	Y/N
4. Greater scope or size than is normal for this category of action.	Y/N
5. Reportable releases of hazardous or toxic substances as specified in 40 CFR Part 302, Designation, reportable Quantities, and Notification.	Y/N
6. Releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, or where the proposed action results in the requirement to develop or amend a Spill Prevention, Control, or Countermeasures Plan.	Y/N
7. When a review of an action that might otherwise qualify for a Record of Non-applicability (RONA) reveals that air emissions exceed de minimus levels or otherwise that a formal Clean Air Act conformity determination is required.	Y/N

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Military Ocean Terminal Concord

HQAMC Screening Criteria Part II (continued)

Extraordinary circumstances that preclude the use of a CX If (Y) to any complete an EA or EIS	**Y or N**
8. Reasonable likelihood of violating any federal, state, or local law or requirements imposed for the protection of the environment.	Y/N
9. Unresolved effect on environmentally sensitive resources, as defined in the next section	Y/N
10. Involving effects on the quality of the environment that are likely to be highly controversial.	Y/N
11. Involving effects on the environment that are highly uncertain, involve unique or unknown risks, or are scientifically controversial.	Y/N
12. Establishes a precedent (or makes decisions in principle) for future or subsequent actions that are reasonably likely to have a future significant effect.	Y/N
13. Potential for degradation of already existing poor environmental conditions. Also, initiation of a degrading influence, activity, or effect in areas not already significantly modified from their natural condition.	Y/N
14. Introduction/employment of unproven technology	Y/N
If a proposed action would adversely affect "environmentally sensitive resources, unless the impact has been resolved through another environmental process (e.g. CZMA, NHPA, CWA, etc.) a CX cannot be used. Environmentally sensitive resources include 1-4 below. If (Y) to any of the below, complete an EA or EIS.	**Y or N**
1. Proposed Federally listed, threatened, or endangered species or their designated critical habitats.	Y/N
2. Properties listed or eligible for listing on the National register of Historic Places (AR 200-1, formerly AR-200-4)	
3. Areas having special designation or recognition such as prime or unique agricultural lands; coastal zones, designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks (designated by the Secretary of the interior); 100-year floodplains; wetlands; sole source aquifers (potential sources of drinking water); National Wildlife Refuges; National Parks; areas of critical environmental concern; or other areas of high environmental sensitivity.	Y/N
4. Cultural Resources as defined in AR 200-1 (formerly AR 200-4)	Y/N

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Best Management Practices for Routine Maintenance	
AIR-1	Reduce vehicle use by developing a trip management plan for maintenance and repair projects.
AIR-2	Reduce unnecessary idling from project vehicles and heavy equipment, placing a time restriction of five minutes on vehicle idling.
AIR-3	Ensure project vehicles are maintained to perform at CARB and USEPA certification levels. Lease new equipment and use USEPA “Tier 4” engines in off-road equipment where practicable.
AIR-4	Perform periodic project inspections to ensure compliance with these mitigation measures.
BIO-1	Pollution and erosion control: Similar to GEO-1 construction BMPs would be used in accordance with the MOTCO NPDES Permit and SWPPP for proposed actions that involve earthwork. Site-specific spill pollution prevention and erosion control measures will be put in place to minimize or eliminate impacts to habitat from soil erosion, runoff, and spills. Protective measures would include:
BIO-1a	Practices to minimize erosion and sedimentation associated with the action (including staging areas, stockpiles, grading, etc.);
BIO-1b	Measures to prevent construction debris from entering wetlands and/or other waters (e.g., installation of silt fencing, preparation of airborne nuisance plan, keeping the site trash-free);
BIO-1c	Measures to prevent and control spills of hazardous materials including following the Installation Hazardous Waste Management Plan (HWMP);
BIO-1d	Quantification of sediment or pollution loading (if required by State or Federal permits); and
BIO-1e	Monitoring, repair, and maintenance procedures for implemented measures (such as silt fencing), and reporting.
BIO-2	Stormwater management: For proposed actions that involve temporary actions such as the reconditioning, reconstructing, or replacement of pavement, replacement of a stream crossing, or permanent actions that may otherwise increase the contributing impervious surface area within the vicinity of the project, the Installation SWPPP will be followed with a site-specific Stormwater Management Plan. The SWPPP/Stormwater Management Plan would be implanted in a manner to protect habitat from changing volumes of stormwater runoff.
BIO-3	Site restoration: For proposed actions that would have the potential to result in the disturbance of riparian vegetation, soils, or streambanks, a site restoration plan would be developed prior to construction, and restoration would be commensurate with the scale of the action. To minimize or avoid sensitive habitats, the following measures will be implemented to facilitate site restoration:
BIO-3a	Before construction, the boundaries of clearing limits and site access would be flagged to minimize unnecessary soil and vegetation disturbance.
BIO-3b	Prior to construction, all temporary erosion control measures specified for the project will be inspected to ensure that they are in place and functional.
BIO-3c	During site preparation, native materials displaced by construction will be conserved whenever possible for use during restoration. Native materials include large wood, native vegetation, topsoil, and channel materials (e.g., gravel, cobble, and boulders).

BIO-4	Heavy equipment and vehicle use: Heavy equipment necessary to implement proposed actions will be selected and operated as necessary to minimize adverse effects on the environment (e.g., minimally sized, low pressure tires). Measures include BIO-4a-i.
BIO-4a	Minimal hard turn paths will be used for tracked vehicles.
BIO-4b	Temporary mats or plates will be placed within wet areas or areas containing sensitive soils.
BIO-4c	Heavy equipment and vehicles will be stored, fueled, and maintained in a vehicle staging area located at least 150 feet from any waterbody/wetland, or in an isolated hard zone such as a paved parking lot.
BIO-4d	Heavy equipment would be inspected daily for fluid leaks before leaving vehicle staging areas for operation within 50 feet of any waterbody.
BIO-4e	Equipment would be steam-cleaned before operational use below ordinary high water, and as often as necessary during operation to remain free of all external oil, grease, mud, seeds, organisms, and other visible contaminants.
BIO-4f	Generators, cranes, and any other stationary equipment operated within 150 feet of any waterbody will be maintained and protected as necessary to prevent leaks and spills from entering the water.
BIO-4g	Vehicular traffic will be confined to existing roads and the proposed access routes.
BIO-4h	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.
BIO-4i	Vehicle speeds will be reduced to 15 mph during rain events.
BIO-5	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.
BIO-6	Approved work windows from Biological Opinions:
BIO-6a	Daily construction will occur during daylight hours. In-water work will be completed in the approved delta smelt work window between August 1 and November 30 or as otherwise specified during consultation with NMFS.
BIO-6b	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.
BIO-6c	Work conducted adjacent to tidal marsh habitat will be avoided during the Ridgway's Rail breeding season from February 1 through August 31 unless survey has been completed to document absence.
BIO-7	Piling installation: Replacement pilings would involve the replacement of similar-size piles with either concrete, steel, or treated wood piles. When practical, a vibratory hammer will be used for piling installation. If an impact hammer is needed to install concrete piles or proof piles, noise attenuation measures would be implemented, to include use of cushion pads or blocks. For selection of treated wood pilings, select products that have been certified through a third party (e.g. Western Wood preservers Institute) to be treated to proper retention standards that maximize fixation of ACZA and minimize leaching rates.

BIO-8	Piling removal: The following practices would be followed to minimize chemical release from treated piles and/or sediment disturbance and resuspension:
BIO-8a	Install a floating surface boom to capture floating surface debris. If treated wood / debris falls into the water, it would be removed immediately.
BIO-8b	Remove the pile using a vibratory hammer when possible. Never intentionally twist or break the pile; rather, slowly lift the pile from the sediment through the water column.
BIO-8c	After removal, place the pile in a containment basin on a barge deck, pier, or shoreline without attempting to clean or remove any adhering sediment. Ensure staging area is designed / modified to contain all sediment and return flow which may otherwise be directed back to the waterway.
BIO-8d	Dispose of all removed piles, floating surface debris, any sediment spilled on work surfaces, and all containment supplies at a permitted upland disposal site.
BIO-8e	If timber breakage occurs or the pile becomes intractable during removal, make every attempt short of excavation to remove each pile; if a pile in uncontaminated sediment is intractable, breaks above the surface, or breaks below the surface, cut the pile or stump off at least 2 feet below the surface of the sediment.
BIO-8f	For pile wrapping/jacketing during activities such as washing screen mesh openings shall not exceed 3/32 inch (2.38 mm) for woven wire for perforated plate screens or 0.0689 inch (1.75 mm) for profile wire screens, with a minimum 27% open area. Screen mesh openings shall not exceed ¼ inch (6.35 mm) for woven wire, perforated plate screens, or profile wire screens, with a minimum of 40% open area.
BIO-9	Deck replacement: For proposed actions that involve the removal and replacement of existing decking, the following practices will be used:
BIO-9a	Floats and/or tarps will be placed below the active construction area to minimize the potential for debris to enter the water.
BIO-10	Biological Monitoring for In-Water Projects.
BIO-10a	For in-water actions, water quality monitoring would be completed in accordance with project specific Section 401 Water Quality Certification conditions.
BIO-10b	Biological Monitoring will be conducted during project activities in-water, or adjacent to marsh, shoreline and other sensitive habitats. MOTCO environmental staff will conduct pre-activity inspections and progress inspections during and after the work.
BIO-10c	USFS-approved biologist will conduct mandatory contractor/worker awareness training for construction personnel on in-water projects or those conducted adjacent to marsh areas. 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 the Service prior to the initiation of any demolition or construction activity.

BIO-11	Reporting and/or Notification.
BIO-11a	Notification will be sent to the Services prior to initiation of project activities in-water, or adjacent to marsh, shoreline and other sensitive habitats.
BIO-11b	Annual reports will be submitted to USFWS and NMFS by January 15th of each year summarizing maintenance activities that were conducted including implementation of BMPs and any corrective measures taken.
BIO-11c	Add document to PW references
CR-1h	SOP-11: Tribal Consultation Process
CR-1i	SOP-12: Compliance with Executive Order 13007: Indian Sacred Sites
CR-1j	SOP-13: Government to Government Relations
CR-1k	SOP-14: Properties of Traditional Religious and Cultural Importance
CR-1l	SOP-15: Native American Graves Protection and Repatriation Act
CR-1m	SOP-16: Archaeological Resources Protection Act of 1979
CR-1n	SOP-17: Antiquities Act of 1906
CR-1o	SOP-18: National Park Service Consultation Process
CR-2	Although substantial excavation work is not a typical part of routine maintenance and repair operations, potential excavation in areas with high or moderate archaeological potential at MOTCO should be conducted in the presence of an archaeological monitor. In the event that archaeological deposits are encountered during any excavation activities, the activity must stop and the MOTCO Environmental Coordinator must be notified. If bone is present within the deposit, a qualified professional will determine if the materials represent human remains.
GHG-1	Increase acquisition and use of electric fleet vehicles.
HM-1	The Installation HWMP and SPCCP will be followed during project activities with regard to the proper storage, use, and disposal of HTRW and the response to any potential released of hazardous substances as a result of project activities.
HM-2	Where ACM and/or LBP is present on project actions (e.g., building exterior renovations) develop and adhere to a debris containment and collection plan for protection of worker safety and the environment. A containment system would be placed around applicable work areas to collect all dust and debris where ACM/LBP is disturbed. These waste building materials would be segregated and disposed of properly.
HM-3	Coordinate any work within IR site boundaries with Installation Environmental Coordinator to ensure no impacts to remedial measures.
LU-1	To the extent possible the Army will work with the National Park Service to attempt to avoid disruptive project activities during times that conditions of quiet and reverence are important for ceremonial events at the Port Chicago Naval Magazine National Memorial Site.

NS-1	Project workers should wear appropriate protection to limit hearing damage during maintenance and repair activities. U.S. Occupational Health and Safety Administration regulations, DOD Instruction 6055.12, Hearing Conservation Program and Army Pamphlet 40-501, Hearing Conservation Program.
NS-2	potential sound measure that could be considered on a project action basis is temporary sound barriers near a high project-related noise source.
NS-3	Construction would take place during weekday, daytime hours (Monday through Friday from 7:00 am to 5:00 pm).
TR-1	Develop traffic control plans for project actions that describe traffic detours away from applicable project activities, particularly road maintenance and repairs. Distribute traffic control plans to Installation employees.
WR-2	Use of construction BMPs for erosion control in accordance with the MOTCO NPDES Permit and SWPPP.
WR-2	Use of construction BMPs for erosion control in accordance with the MOTCO NPDES Permit and SWPPP.
WR-3	Monitoring adjacent stormwater outfalls and conduits when conducting maintenance and repair activities and perform simultaneous maintenance on these features as needed to keep them operational.
WR-4	No vehicles or equipment (except for small watercraft) will be refueled over water or within 150 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. No vehicles will be fueled on wharves or piers or over water (except for small watercraft).
WR-6	For in-water work (e.g., pile replacement, wrapping or concrete repair) floating booms will be in place in the work area to assist in capture of floating debris and potential fluid spills from project activities.
WR-7	For selection of treated wood pilings, select products that have been certified through a third party (e.g. Western Wood preservers Institute) to be treated to proper retention standards that maximize fixation of ACZA and minimize leaching rates.

APPENDIX B

ENDANGERED SPECIES CONSULTATION

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FINAL
PROGRAMMATIC BIOLOGICAL ASSESSMENT
FOR ROUTINE MAINTENANCE AND REPAIR ACTIONS

Submitted to:
UNITED STATES ARMY
Military Ocean Terminal Concord
5110 Port Chicago Highway
Concord, CA

Submitted by:
Clover Leaf Solutions
and
Wood Environment & Infrastructure Solutions, Inc.

July 2019

Printed on 30% Post-Consumer Recycled Paper

EXECUTIVE SUMMARY

The United States Army (Army) has prepared this Programmatic Biological Assessment (PBA) in accordance with legal requirements set forth under regulations implementing Section 7 of the Endangered Species Act (ESA) (Title 50 Code of Federal Regulations [CFR] Part 402; Title 16 United States Code [USC] Section 1536 [c]). This PBA assesses the potential effects of the proposed maintenance and repair actions at Military Ocean Terminal Concord (MOTCO) on federally listed threatened or endangered species and designated critical habitat.

This report also includes an assessment of Essential Fish Habitat (EFH) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act ([MSA] in Section 305(b)), which directs federal agencies to consult with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) to address activities that may adversely affect EFH.

The actions proposed by the Army are not anticipated to adversely affect any federally listed species or designated critical habitat (critical habitat). However, any activity that involves work in an area with federally listed species has the potential to negatively affect those resources unless appropriate mitigation measures. The proposed actions discussed in Chapter 1 may affect federally listed species by disturbing the feeding, breeding, spawning, and/or sheltering of these species. We have evaluated the existing environment, species and habitat occurrences, proposed actions, and avoidance and minimization measures, and determined that elements of the proposed action have the potential to affect some listed species due to increased noise, increased turbidity or sedimentation, increased lighting, and/or use of chemical applications. Implementation of the mitigation measures described herein is expected to result in no adverse impact to listed species or critical habitat.

Table ES-1 summarizes our conclusions regarding the potential effects of the proposed action on federally listed species.

Critical habitat occurs in the vicinity of the proposed action. Under Section 4(a)(3)(B) of the ESA, critical habitat for a species can be requested for removal if the critical habitat is on DoD lands that are covered by an INRMP that provides management practices and a conservation benefit to the species. Further, Federal Register Volume 74, number 195 (October 9, 2009) acknowledges the INRMP and removal of the critical habitat designation for the southern distinct population segments (DPS) of the green sturgeon at the installation.

The aquatic portions of the Action Area (areas surrounding the piers) are not considered part of the Installation. Critical habitat for the Delta smelt, Sacramento winter-run Chinook salmon, and the southern DPS of the green sturgeon have been identified as occurring within the aquatic portions of the Action Area. Our evaluation includes a discussion of potential effects to critical habitat for the Delta smelt and Sacramento winter-run Chinook salmon (see Chapter 3).

1 **Table ES-1. Effects Determination Summary**

Species	Status	Effects Determination	Rationale for Elimination
Fish			
North American Green Sturgeon (*Acipenser medirostris*)	Threatened	May Affect but Not Likely to Adversely Affect	NA
Central Valley Steelhead (*Onchorhynchus mykiss*)	Threatened	No Effect	Outside of known range
Central California Coast Steelhead (*Onchorhynchus mykiss*)	Threatened	No Effect	Outside of known range
Steelhead (*Onchorhynchus*)	Threatened	No Effect	Outside of known range
Central Valley Spring-run Chinook Salmon (*Onchorhynog chus tshawytscha*)	Threatened	No Effect	Outside of known range
Sacramento River Winter-run Chinook Salmon (*Onchorhynchus tshawytscha*)	Endangered	Not Likely to Adversely Affect	--
Delta Smelt (*Hypomesus transpacificus*)	Threatened	Not Likely to Adversely Affect	--
Mammals			
Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*)	Endangered	May Affect but Not Likely to Adversely Affect	--
Plants			
Soft Bird's-beak (*Chloropyron mollis* spp. *mollis*)	Endangered	Not likely to Adversely Affect	--
Birds			
Ridgway's Rail (*Rallus obsoletus*)	Endangered	Not Likely to Adversely Affect	--
California Least Tern (*Sternula antillarum browni*)	Endangered	Not Likely to Adversely Affect	--
Amphibians			
California Red-legged Frog (*Rana draytonii*)	Threatened	No Effect	2015-2016 protocol surveys, in conjunction with past surveys, indicate a negative finding on MOTCO. Nearest known sightings 4-6 miles from Installation. California Highway 4 provides barrier to migration to MOTCO

Table ES-1. Effects Determination Summary(Continued)

Species	Status	Effects Determination	Rationale for Elimination
Amphibians (continued)			
California Tiger Salamander (*Ambystoma californiense*)	Threatened	No Effect	2015-2016 protocol surveys, in conjunction with past surveys, indicate a negative finding on MOTCO. Nearest known sightings 4-6 miles from Installation. California Highway 4 provides barrier to migration to MOTCO

Notes:
-- not applicable

In addition, the EFH including Pacific Coast Groundfish (PCG), Coastal Pelagic Species (CPS), and Pacific Coast Salmon (PCS) may be affected due to:

- Temporary disturbance and displacement of fish species from construction noise
- Increased sediment loads and turbidity in the water column
- Increased sediment loads and turbidity to nearby submerged aquatic vegetation (SAV) populations

With implementation of mitigation measures, including silt curtains, effects from turbidity to the water column are expected to be localized and short-term in nature. Fish species may be affected during pile-driving activities from both noise and turbidity; however, AMMs such as use of cushion pads will reduce noise levels and silt curtains will reduce turbidity and conditions are expected to return to normal once pile driving ceases. The project **may affect** but is **not likely to adversely affect EFH**.

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
AMM	Avoidance and Minimization Measures
Army	United States Army
AT/FP	Anti-Terrorism and Force Protection
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CPS	Coastal Pacific Salmon
cSEL	cumulative sound exposure level
CTS	California Tiger Salamander
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DOD	Department of Defense
DPS	Distinct Population Segments
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EMCS	electronic monitoring and control systems
ESA	Endangered Species Act
ESU	evolutionary significant units
FEMA	Federal Emergency Management Agency
FMP	Fishery Management Plan
HAPC	Habitat Area of Particular Concern
HVAC	heating, ventilation, and air conditioning
INRMP	Integrated Natural Resources Management Plan
MOTCO	Military Ocean Terminal Concord
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MTL	Mean Tide Level
MW	megawatt
nd	no date
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PAH	polynuclear aromatic hydrocarbon
PBA	Programmatic Biological Assessment
PCB	polychlorinated biphenyl

ACRONYMS AND ABBREVIATIONS (Continued)

PCE	perchloroethene
PCG	Pacific Coast Groundfish
PCS	Pelagic Coastal Species
ppt	parts per trillion
ppt	parts per trillion
RMS	root mean square
SAV	submerged aquatic vegetation
SCCWRP	Southern California Coastal Water Research Project
sf	square foot
sy	square yard
TEF	temporary exclusion fencing
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
WSDOT	Washington State Department of Transportation

CHAPTER 1 INTRODUCTION

The United States Army (Army) is proposing a program of maintenance and repairs at the Military Ocean Terminal Concord (MOTCO). The projects in the program would be implemented over the next ten years. This Programmatic Biological Assessment (PBA) assesses potential effects of the proposed action (i.e., maintenance and repairs) on federally listed threatened or endangered species and designated critical habitat. MOTCO is located in Contra Costa County, California in the east San Francisco Bay region, along the Carquinez Strait, which connects Suisun Bay to San Pablo Bay.

The MOTCO installation accounts for the majority of the Army's West Coast ammunition handling and a large portion of the nation's total ammunition throughput capacity. The Army currently implements maintenance and repair actions on a project-specific review basis, which has led to deferred/delayed actions, duplicative and/or missed environmental reviews, cost and schedule overruns, and a degradation in MOTCO's infrastructure. This has impacted mission capabilities at MOTCO.

1.1 PURPOSE AND SCOPE OF THE BIOLOGICAL ASSESSMENT

The purpose of this PBA is to review the Army's proposed maintenance and repair actions in sufficient detail to determine to what extent the proposed actions may affect species listed as threatened, endangered, or candidate species or designated critical habitat under the Endangered Species Act (ESA). This PBA does not include new construction activities. Any proposed maintenance activities that have the potential to expand into sensitive habitat areas such as tidal marshes, wetlands, waterways, or threatened & endangered species habitat are not evaluated in this assessment. The proposed maintenance and repair actions are necessary to sustain, enhance, and modernize existing facility infrastructure to meet the Army and United States Department of Defense's (DOD) missions at MOTCO.

This PBA is prepared in accordance with legal requirements set forth under regulations implementing Section 7 of the ESA (Title 50 Code of Federal Regulations [CFR] Part 402; Title 16 United States Code [USC] Section 1536 [c]) as part of consultation with both National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS). The following information is provided in accordance with statutory requirements to use the best available commercial and scientific information when assessing risk posed to federally listed species by proposed federal actions. A list of threatened, endangered, and proposed species is provided in Section 1.4 below and in Appendix A.

This document also contains an Essential Fish Habitat (EFH) Assessment prepared in accordance with the Magnuson-Stevens Fishery Conservation and Management Act ([MSA] in Section 305(b)), which directs federal agencies to consult with NMFS to address activities that may adversely affect EFH.

1.2 PREVIOUS PROJECTS/HISTORY

Activities as proposed have been conducted at MOTCO on an individual project level in the past. Recently, the Army has conducted improvements to Wharves 2 and 3 (Wharves 2, 3, 4, have been referred to in previous documents as "Piers 2, 3, and 4") which involved formal ESA consultation completed in February 2015 (NMFS 2014; USFWS 2015, Army. 2017) and road and bridge improvements which involved informal consultation completed in 2017. National Oceanic and Atmospheric Administration (NOAA) NMFS concluded in their Biological Opinion that the wharf modernization and repair projectswere not likely to jeopardize the continued existence or result in the destruction or adverse modification of critical habitat for the North American Green Sturgeon (*Acipenser medirostris*) Southern distinct population segment (DPS), Central Valley Steelhead (*Onchorhynchus mykiss*), Central California Coast Steelhead (*Onchorhynchus mykiss*), Central Valley Spring-run Chinook Salmon (*Onchorhynchus tshawytscha*), Sacramento River Winter-run Chinook Salmon (*Onchorhynchus tshawytscha*), and/or Sacramento River Winter-run Chinook Salmon (*Onchorhynchus tshawytscha*).

NOAA NMFS also determined that the proposed project would adversely affect EFH for federally managed fish under the Pacific salmon Fishery Management Plan (FMP), the Pacific groundfish FMP, and the coastal pelagic FMP.

USFWS concluded in their biological opinion that the pier maintenance project is not likely to jeopardize the continued existence of the Delta smelt *(Hypomesus transpacificus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), Soft bird's-beak (*Chloropyron mollis spp. mollis*), Ridgway's rail / Ridgway's rail (*Rallus obsoletus obsoletus*), California least tern (*Sternula antillarum browni*). Further USFWS concluded the implementation of the project will not result in the destruction or adverse modification of critical habitat for the Delta smelt.

The Army is currently preparing or has recently completed multiple Environmental Assessments (EAs) and one Environmental Impact Statement (EIS) compliant with the National Environmental Policy Act (NEPA) evaluating both infrastructure improvements and management plan implementation. These analyses – by their nature – included an evaluation of natural resources at MOTCO and some level of interaction with the regulatory community (e.g., USFWS, NOAA, California Department of Fish and Wildlife (CDFW)). The following is a list of some recent NEPA documents and relevant management plans prepared for MOTCO:

- Final PEA and Finding of No Significant Impact for Implementation of a Real Property Master Plan, Integrated Natural Resources Management Plan, and Integrated Cultural Resources Management Plan at Military Ocean Terminal Concord (2013);
- Final Military Ocean Terminal Concord Integrated Cultural Resources Management Plan Update 2017-2022

- Final Military Ocean Terminal Concord Integrated Natural Resources Management Plan (2018);
- Final EIS for the Modernization and Repair of Piers 2 and 3 at Military Ocean Terminal Concord, CA (2015); and
- Environmental Assessment for General Repair of Bridges, Roads, and Utilities at Military Ocean Terminal Concord, CA (2016).
-

These documents provide useful background information regarding MOTCO's history, physical setting, and operations and are referenced in this PBA, as applicable.

1.3 PROJECT AREA, ACTION AREA, AND PROPOSED ACTION

1.3.1 Project and Action Areas

Project Area:

MOTCO is located north of the City of Concord in north-central Contra Costa County along Suisun Bay, as shown in the regional map (Figure 1) and the facility map (Figure 2). Figure 2 presents the layout of MOTCO and shows the basic layout and location of different infrastructure areas. MOTCO is located at a strategic site along Suisun Bay. The installation includes an approximately 115-acre Inland Area and an approximately 5,733-acre Tidal Area, which includes 2,045 acres of islands located in Suisun Bay (USACE 2011). The two Areas are connected by a road aligned parallel to and west of Port Chicago Highway.

MOTCO's Real Property inventory includes 141 general buildings/structures, numerous magazines, barricaded magazines, berms, and bridges/trestles, as well as 38 paved areas, (e.g., parking lots), 4 piers/wharves, 27 miles of road, and 42 miles of railroad track. All of these facilities require regular maintenance and repairs.

Action Areas:

The Action Area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (ESA; 50 CFR 17.11). The Action Area includes the geographic extent of physical, biological, and chemical impacts of the project. Consequently, the action area is usually larger than the project area and sometimes larger than the project vicinity. For the purposes of this PBA and EFH Assessment, the Action Area includes immediate work areas identified on Figure 3, the bay / in-water areas as depicted on Figure 4, and upland areas within the facility. The proposed action could potentially generate impacts due to:

- increased ambient sound levels;
- increased underwater sound levels; and

- degradation of water quality due to:
    - increased turbidity or erosion,
    - unanticipated spills, and
    - application of chemicals during nuisance plant removal consistent with the Integrated Pest Management Plan (IPMP).
- increased lighting and glare.

Other than the proposed increased lighting, no change in facility use is expected to result from implementation of the proposed action since it involves maintenance and repair of existing facilities and no changes to operations are proposed.

1.3.2 Components of the Proposed Action

The Proposed Action is to implement a program of minor maintenance and repair projects at MOTCO over the next 10 years. This program would be implemented in a manner that would support the mission of MOTCO, improve the efficiency of the environmental review process, and ensure that adequate environmental protection occurs. The maintenance and repair program would not include new construction. Any construction of new roads or buildings, extensive renovations, or any other projects outside of the parameters listed in Table 1-1, would be covered under separate NEPA environmental review and ESA Section 7 consultation with USFWS and NMFS as appropriate.

1.3.3 Mitigation Measures

Mitigation measures include best management practices and measures to avoid and minimize the effects of the proposed action on natural resources including federally listed species, designated critical habitat, and EFH. The conservation measures identified in this section are an integral part of the proposed action. To facilitate easy cross referencing with Table 1-1, each measure is identified with a unique abbreviation which is shown at the beginning of the measure description.

The Army's contractors will be required to produce an Environmental Protection Plan (EPP) that will address the known or potential environmental issues at the project site. The following general mitigation measures will be implemented to reduce the potential effect to species and their habitats. Appropriate mitigation measures for the project infrastructure categories are shown in Table 1-1. In addition, species specific mitigation measures have been identified and are included in Chapter 3.8.

1 **Table 1-1. Programmatic and Routine Actions**

Infrastructure Category	Programmatic Project Type	Action Description	Avoidance and Mitigation Measures[1]
Waterfront Facilities	Berthing/Mooring Systems and Signage	Removal/replacement of berthing and mooring system components including: marine hardware, fixtures, fittings, fasteners, and fenders. Replacement parts will be engineered according to current industry standards. Placement of individual signs or markers required to improve safety and security of the installation and or mariner safety. Replacement of floating docks or other mooring apparatus to aid in berthing fire and emergency services berthing.	BIO-1,BIO-4, BIO-6, BIO-10, BIO-11
	Pile Repair	Existing piles consist of wood or concrete piles. The proposed action would include wooden pile repairs such as partial replacement or application of a structural pile jacket or polypropylene wrap. Concrete piles may be wrapped or repaired using industry standard concrete repair techniques.	BIO-1, BIO-4, BIO-6, BIO-6, BIO-7, BIO-8 BIO-10, BIO-11
	Pile and Pile Cap Replacement	Individual wooden piles that cannot be repaired as described above due to structural integrity concerns, piles would be replaced with the same size, diameter, and material as the existing piles. Up to 20 per year. In cases it is structurally feasible, wooden pile clusters will be replaced with concrete or composite material. Fender system or mooring dolphin piles are examples. Pile caps are an above water repair that would be replaced in-kind according to industry standards.	BIO-1, BIO-4, BIO-6, BIO-6, BIO-7, BIO-8, BIO-10, BIO-11
	Pier and Trestle Decking	Degraded or damaged decking would be replaced with wood, concrete, or asphalt. Stringers, bracing and accessory components would be replaced with marine-grade hardware, fixtures, fittings, fasteners including any federal or state required improvements.	BIO-1, 1, BIO-4, BIO-6, BIO-6, BIO-9, BIO-10, BIO-11

Table 1-1. Programmatic and Routine Actions (Continued)

Infrastructure Category	Programmatic Project Type	Action Description	Avoidance and Mitigation Measures[1]
	Gantry Cranes & Rails	Routine maintenance may include replacement of rails, cables, or physical or mechanical components of the installation's cranes. Routine maintenance would include preventative maintenance including replacement of filters and fluids, electrical improvements, minor corrosion abatement, and spot painting. Projects would be limited to 10 feet from footprint of existing facilities.	BIO-1, BIO-4, BIO-6, BIO-6, BIO-10, BIO-11
	Anti-Terrorism and Force Protection (AT/FP)	Measures identified necessary to provide safety and security including installation of fire suppression systems may include installation of cameras, high-intensity lighting features, etc. Installation would occur on existing facilities (e.g., piers).	BIO-1, BIO-4, BIO-6, BIO-6, BIO-10, BIO-11
	Shoreline Erosion Control	Reinforcement and repair of the existing shoreline riprap would be accomplished using similar materials matching those currently associated with this feature. Working limits would be within 20' of the existing area and accessed from the shore-side only.	BIO-1, BIO-4, BIO-6, BIO-6, BIO-10, BIO-11
Railyard and Rail Lines	Rail Expansion	Rail expansion projects would be limited to no more than 3 miles of linear track or 15,000 square yards (sy) (3.1 acres) of total yard expansion over the 10 year period.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Track / Rail, Siding, Turnout and Cross-Tie Replacement	Routine maintenance, repair, and replacement of track segments to include replacement of worn or undersized rail track, treated wooden cross-ties, components such as anchors, wheel stops, grounding rods, bump posts etc. would be limited to less than 0.5 mile of consecutive linear trackage and no more than 6 miles total in over the 10-year project period. Work will be concentrated within the rail bed, with an area of disturbance limited	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10

Table 1-1. Programmatic and Routine Actions (Continued)

Infrastructure Category	Programmatic Project Type	Action Description	Avoidance and Mitigation Measures[1]
		to 50 feet either side of the ballast to allow for equipment access. Minor adjustments to rail footprint may be necessary to correct deficiencies in track geometry within this area of disturbance.	
	Ballast Replacement	Replacement / replenishment of ballast rocks along any part of the rail network. Projects would be limited to a 50-foot buffer from existing edge of ballast.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Crossing, Switching System and Signal Upgrades	Includes at-grade crossing installation and modification, routine repair and maintenance of mechanical, electrical and other switching and signalization systems components necessary to support the controlled flow of rail traffic throughout MOTCO. Projects meet current Federal Railroad Administration standards. Projects would be limited to 50-foot buffer from existing switching and signal systems	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Crossing, Abutment, and Transfer Pad Extensions and Upgrades	Another feature that is critical to the movement of railcars and cargo through the installation, these routine actions would address safety concerns at at-grade crossings and where existing transfer pads require additional surface area to accomplish site-specific tasks. Maintenance and upgrades of rail abutments are included. Projects would be limited to a 10-foot buffer from existing crossings and transfer pads.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
Road Transportation System	Road Resurfacing	Pavement repairs, would include actions such as sealing, milling, patching, and resurfacing not to exceed 5,000 SY (3.1 acres) of pavement area to be replaced per year installation-wide. Projects would be limited to no more than 0.5 mile per year.	BIO-1, BIO-2, BIO-3, BIO-6, BIO-10
	Road Grading and Base Replacement	Minor grading, re-profiling, and resurfacing of unimproved aggregate roadways and fire	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10

Table 1-1. Programmatic and Routine Actions (Continued)

Infrastructure Category	Programmatic Project Type	Action Description	Avoidance and Mitigation Measures[1]
		breaks. Road base may be replaced or upgraded to facilitate longer-term solutions to maintenance issues. Projects would be limited to no more than 10 miles of unimproved road per calendar year. Working limits would be within 20 feet of the existing area.	
	Culverts and Stormwater Drainage	Maintain positive drainage away from roadways and pavement by keeping drainage swales and conveyance system free of debris and vegetation and excavation to return ditches to their original design levels when needed. Replace damaged or undersized culverts and components in conjunction with roadway repairs or failure of conveyance system elements. Minor grading and alteration of flow patterns to address storm water flow issues (e.g., ponding / localized flooding of pavements). Overall system issues and maintenance needs discussed further under Utilities. Stormwater drainage and culvert projects will be conducted within a 50-foot project buffer.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Bridge Strengthening and Elevated Road Crossings	Minor corrosion abatement, spot painting. Include, footing and foundation patching and repairs such as: wood, metal or concrete replacement, and minor seismic upgrades such as the addition of stiffeners or re-enforcement of columns etc. Projects limited to 50-foot buffer from existing features.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Geometry Improvements	Shoulder widening, curb installation, repair replacement, minor adjustments to profile or slope.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Holding Pad/Transfer Pad Maintenance, Repair and Improvements	Pavement repairs, would include sealing, milling, patching, and resurfacing not to exceed 9,000 sy (1.9 acres) of pavement	BIO-1, BIO-2, BIO-3, BIO-6, BIO-10

Table 1-1. Programmatic and Routine Actions (Continued)

Infrastructure Category	Programmatic Project Type	Action Description	Avoidance and Mitigation Measures[1]
		replacement per year installation-wide. Enlargement of existing ammunition pads, to enhance use such as addition of curbing, turning aprons etc. This activity may occur in conjunction with rail system improvements.	
	Parking Lots/ Ammo Lots, Staging Areas, Other Miscellaneous Pavements Expansion, Maintenance and Repair	Parking lot expansion limited to less than 25 percent of current size for any lot located in previously disturbed or upland areas. Repairs, would include sealing, milling, patching, and resurfacing limited to less than one acre of pavement area per year installation-wide.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, WW-2, WW-4, BIO-10
	Lighting, Traffic Safety, Signage and Pavement Markings	Repair and replacement of traffic safety features and signage. Limited to 20 feet from the edge of existing road surface.	BIO-1, BIO-2, BIO-3, BIO-4 through BIO-40, BIO-6, BIO-10
Utilities	Above-ground and Underground Utility Systems – (electrical, fiber optic, phone, potable water, sanitary and storm sewer, and gas)	Projects would include actions such as: removal of old, inactive lines; component upgrades and replacements --(e.g. poles, lines, transformers, backflow preventers, and stand-alone elements such as leach fields, generators, fuel tanks etc.) excavation and directional boring. Disturbance limited to within 20 feet of existing utility right-of-ways for project work.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Storm Water System Upgrade	Maintenance and repair of existing retention basins and expansion/construction of new basins not to exceed 0.25 times existing retention basins per year. Removal, rerouting and replacement of existing storm water piping plus additional piping needed to meet regulatory requirements.	BIO-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Lightning Protection Systems	Installation, maintenance repair or replacement or lighting protection systems to including building mounted components or stand-alone catenary structures. Installation would be accessory to existing facilities. Area of	BIO-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10

Table 1-1. Programmatic and Routine Actions (Continued)

Infrastructure Category	Programmatic Project Type	Action Description	Avoidance and Mitigation Measures[1]
		disturbance would be will be limited to within 100 feet of the existing facility footprint as a wider buffer is required for the tall, expansive lightning protection infrastructure.	
	Solar Installation(s) (<5 megawatts [MW])	Installation of solar photovoltaic panels and associated storage and distribution components in previously disturbed areas. Up to 1 MW.	BIO-1, BIO-1, BIO-1, BIO-1[2], BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
Buildings	Minor Building/Structure Expansions	Such expansions would be limited to an addition of up to 2,000 square foot (sf) or 25 percent of existing building square footage, whichever is less for any facility located in previously disturbed or upland areas.	BIO-1, BIO-2, BIO-3, BIO-4 through BIO-40, BIO-6, BIO-10
	Interior Maintenance, and Repairs	Interior renovations limited to less than 25 percent of building internal layout change. Stay within existing building footprint. Examples include installation or repair of insulation, painting, lighting, fire alarms, fire protection, phone, gas, plumbing. Interior maintenance activities include: annual preventative maintenance of interior systems such as heating, ventilation, and air conditioning (HVAC) systems, security, fire and energy-saving electronic monitoring and control systems. Changes to floorplans may be conducted within the existing footprint. Interior renovations limited to 100,000 square feet.	BIO-1, BIO-6
	Exterior Maintenance, and Repairs	Examples of routine exterior repairs would include lighting, HVAC, electrical communication management systems (fiber optics), electrical, plumbing, gas, sidewalks, new siding, stucco repair, painting, window/door replacement, and roofing.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Anti-Terrorism/Force Protection (AT/FP)	Seismic and AT/FP retrofit activities may be triggered for modernization projects as dictated	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10

Table 1-1. Programmatic and Routine Actions (Continued)

Infrastructure Category	Programmatic Project Type	Action Description	Avoidance and Mitigation Measures[1]
	and Seismic Retrofits	by mission critical decisions or as a result of security recommendations. May include both interior and exterior features such as installation of isolation bearings and structural re-engineering of frame and or foundation elements for building hardening to meet DOD minimum anti-terrorism standards for buildings. Work area would be confined to within 30 feet of building footprint. When feasible, and frequently in conjunction with other routine maintenance activities, small-scale building retrofits to address earthquake preparedness and resiliency would be accomplished.	
	Berms. Barricades and Accessory Safety/Security Structures	Earthen/earth-filled berms and physical barriers are part of the explosive safety and AT/FP programs. Action may include: removal, grading to repair damage from subsidence, erosion, rodent burrows etc., and revegetation to stabilize slopes. Accessory structures such as, guard booths, security towers etc. may be installed, repaired relocated, or replaced, as necessary.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6
Landscaping	Maintenance and Beautification of Inland Cantonment Common Areas	Routine landscaping activities would include installation or upgrade of irrigation systems for the establishment of plantings, implementation of new planting programs, tree pruning, mowing, etc. consistent with the MOTCO Installation Design Guide. Application of herbicides and pesticides would be in accordance with the MOTCO Integrated Pest Management Plan (IPMP).	BIO-1, BIO-6, BIO-10
	Maintenance of Tidal Operational Areas	Manual brush clearing and removal of debris within 10 feet of rail lines and operational buildings. Tree pruning to maintain clear line of site and fire safety. Chemical treatment for	BIO-1, BIO-6, BIO-10

Table 1-1. Programmatic and Routine Actions (Continued)

Infrastructure Category	Programmatic Project Type	Action Description	Avoidance and Mitigation Measures[1]
		invasive species removal as specified in the INRMP and IPMP.	
Fencing & Security	Fence Installation and Repair	Installation, repair, and replacement of the perimeter fence and interior areas requiring fencings for safety and/or security.	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10
	Anti-Terrorism and Force Protection Measures	AT/FP measures covered would include the installation of mechanical and electronic security measures (e.g., cameras, intrusion detection systems, vehicle barriers, bollards, etc.).	BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-10

[1] See Section 1.3.3 for a full description of each of the conservation measures.

- BIO-1. Pollution and erosion control: Similar to GEO-1 construction BMPs would be used in accordance with the MOTCO NPDES Permit and SWPPP for proposed actions that involve earthwork. Site-specific spill pollution prevention and erosion control measures will be put in place to minimize or eliminate impacts to habitat from soil erosion, runoff, and spills. Protective measures would include:
  - Practices to minimize erosion and sedimentation associated with the action (including staging areas, stockpiles, grading, etc.);
  - Measures to prevent construction debris from entering wetlands and/or other waters (e.g., installation of silt fencing, preparation of airborne nuisance plan, keeping the site trash-free);
  - Measures to prevent and control spills of hazardous materials including following the Installation Hazardous Waste Management Plan (HWMP);
  - Quantification of sediment or pollution loading (if required by State or Federal permits); and
    - Monitoring, repair, and maintenance procedures for implemented measures (such as silt fencing), and reporting.
- BIO-2. Stormwater management: For proposed actions that involve temporary actions such as the reconditioning, reconstructing, or replacement of pavement, replacement of a stream crossing, or permanent actions that may otherwise increase the contributing impervious surface area within the vicinity of the project, the Installation SWPPP will be followed with a site-specific Stormwater Management Plan. The SWPPP/Stormwater Management Plan would be implanted in a manner to protect habitat from changing volumes of stormwater runoff.
- BIO-3. Site restoration: For proposed actions that would have the potential to result in the disturbance of riparian vegetation, soils, or streambanks, a site restoration plan would be developed prior to construction, and restoration would be commensurate with the scale of

the action. To minimize or avoid sensitive habitats, the following measures will be implemented to facilitate site restoration:

- Before construction, the boundaries of clearing limits and site access would be flagged to minimize unnecessary soil and vegetation disturbance.
- Prior to construction, all temporary erosion control measures specified for the project will be inspected to ensure that they are in place and functional.
- During site preparation, native materials displaced by construction will be conserved whenever possible for use during restoration. Native materials include large wood, native vegetation, topsoil, and channel materials (e.g., gravel, cobble, and boulders).
- Proposed actions that include expansion would not be performed in areas of riparian, wetland, aquatic, or other areas of sensitive habitat. In areas to be cleared, native vegetation would be clipped at ground level to retain root mass and encourage the reestablishment of native vegetation.

- BIO-4. Heavy equipment and vehicle use: Heavy equipment necessary to implement proposed actions will be selected and operated as necessary to minimize adverse effects on the environment (e.g., minimally sized, low pressure tires). Measures include:
  - Minimal hard turn paths will be used for tracked vehicles.
  - Temporary mats or plates will be placed within wet areas or areas containing sensitive soils.
  - Heavy equipment and vehicles will be stored, fueled, and maintained in a vehicle staging area located at least 150 feet from any waterbody/wetland, or in an isolated hard zone such as a paved parking lot.
  - Heavy equipment would be inspected daily for fluid leaks before leaving vehicle staging areas for operation within 50 feet of any waterbody.
  - Equipment would be steam-cleaned before operational use below ordinary high water, and as often as necessary during operation to remain free of all external oil, grease, mud, seeds, organisms, and other visible contaminants.
  - Generators, cranes, and any other stationary equipment operated within 150 feet of any waterbody will be maintained and protected as necessary to prevent leaks and spills from entering the water.
  - Vehicular traffic will be confined to existing roads and the proposed access routes.
  - 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.
  - Vehicle speeds will be reduced to 15 mph during rain events.
- BIO-5. 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.

- BIO-6. Work windows:
  - Daily construction will occur during daylight hours. In-water work will be completed in the approved delta smelt work window between August 1 and November 30 or as otherwise specified during consultation with NMFS.
  - 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.
  - Work conducted adjacent to tidal marsh habitat will be avoided during the Ridgway's Rail breeding season from February 1 through August 31 unless survey has been completed to document absence.
- BIO-7. Piling installation: Replacement pilings would involve the replacement of similar-size piles with either concrete, steel, or treated wood piles. When practical, a vibratory hammer will be used for piling installation. If an impact hammer is needed to install concrete piles or proof piles, noise attenuation measures would be implemented, to include use of cushion pads or blocks. For selection of treated wood pilings, select products that have been certified through a third party (e.g. Western Wood preservers Institute) to be treated to proper retention standards that maximize fixation of ACZA and minimize leaching rates.
- BIO-8. Piling Removal/Repair: The following practices would be followed to minimize chemical release from treated piles and/or sediment disturbance and resuspension:
  - Install a floating surface boom to capture floating surface debris. If treated wood / debris falls into the water, it would be removed immediately.
  - Remove the pile using a vibratory hammer when possible. Never intentionally twist or break the pile; rather, slowly lift the pile from the sediment through the water column.
  - After removal, place the pile in a containment basin on a barge deck, pier, or shoreline without attempting to clean or remove any adhering sediment. Ensure staging area is designed / modified to contain all sediment and return flow which may otherwise be directed back to the waterway.
  - Dispose of all removed piles, floating surface debris, any sediment spilled on work surfaces, and all containment supplies at a permitted upland disposal site.
  - If timber breakage occurs or the pile becomes intractable during removal, make every attempt short of excavation to remove each pile; if a pile in uncontaminated sediment is intractable, breaks above the surface, or breaks below the surface, cut the pile or stump off at least 2 feet below the surface of the sediment.
  - For pile wrapping/jacketing during activities such as washing screen mesh openings shall not exceed 3/32 inch (2.38 mm) for woven wire for perforated plate screens or 0.0689 inch (1.75 mm) for profile wire screens, with a minimum 27% open area.

Screen mesh openings shall not exceed ¼ inch (6.35 mm) for woven wire, perforated plate screens, or profile wire screens, with a minimum of 40% open area.

- BIO-9. Deck replacement: For proposed actions that involve the removal and replacement of existing decking, the following practices will be used:
    - Floats and/or tarps will be placed below the active construction area to minimize the potential for debris to enter the water.
- BIO-10. Biological Monitoring for In-Water Projects.
    - For in-water actions, water quality monitoring would be completed in accordance with project specific Section 401 Water Quality Certification conditions.
    - Environmental Monitoring will be conducted during in-water work activities and when project work is conducted adjacent to marsh areas. MOTCO environmental staff will conduct pre-activity inspections and progress inspections during and after the work.
    - USFS-approved biologist will conduct mandatory contractor/worker awareness training for construction personnel on in-water projects or those conducted adjacent to marsh areas. 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 the Service prior to the initiation of any demolition or construction activity.
- BIO-11. Reporting and/or Notification.
    - Notification will be sent to the Services prior to initiation of in-water project activities.
    - Annual reports will be submitted to USFWS and NMFS by January 15th of each year summarizing maintenance activities that were conducted including implementation of BMPs and any corrective measures taken.

1.4 LISTED SPECIES, PROPOSED SPECIES, AND CRITICAL HABITAT

Listed species that may occur in the project area and that are addressed in this PBA are summarized in Table 1-2. This list is based on information obtained online from the NOAA NMFS listed species website (NMFS, 2018) and from the USFWS Sacramento/Bay-Delta office (USFWS, 2018). The site-specific/official species lists are included in Appendix A. A total of 12 listed taxa were determined to have a potential to occur within and in the vicinity of the Action Area. Recorded sightings of some of these species have been made as shown on Figure 5. This

includes species and taxa defined as Distinct Population Segments (DPS) and evolutionary significant units (ESU).

Critical habitat occurs in the vicinity of the proposed action. Under Section 4(a)(3)(B) of the ESA, critical habitat for a species can be requested for removal if the critical habitat is on DoD lands that are covered by an INRMP that provides management practices and a conservation benefit to the species. Further, Federal Register Volume 74, number 195 (October 9, 2009) acknowledges the INRMP and removal of the critical habitat designation for the southern distinct population segments (DPS) of the green sturgeon at the installation.

The aquatic portions of the Action Area (areas surrounding the piers) are not considered part of the Installation. Critical habitat for the Delta smelt, Sacramento winter-run Chinook salmon, and the southern DPS of the green sturgeon have been identified as occurring within the aquatic portions of the Action Area. Our evaluation includes a discussion of potential effects to critical habitat for the Delta smelt and Sacramento winter-run Chinook salmon (see Chapter 3).

For additional information regarding these species and use of the Action Area see Chapter 3. In addition to the species included in Table 1-2, other listed species that occur in the general vicinity but are not expected to occur in the Action Area are provided in Table 1-3. It is very unlikely that any of the ESA-listed species identified in Table 1-3 use the project area or would occur in the Action Area during active construction as they do not occur in this area and/or habitat to support the species does not occur in this area. Therefore, the proposed action will have no effect on these species. These species will not be addressed further in the PBA.

Table 1-2. Listed Species, Proposed Species, and Designated Critical Habitat Evaluated in the Action Area

Species	Population	Status	Critical Habitat Within or Adjacent to the Action Area
Fish			
North American Green Sturgeon	Southern DPS	Threatened	Final Designated; within Action Area
Central Valley Steelhead	Central Valley ESU	Threatened	Not designated in Action Area
Central California Coast Steelhead	Central California Coast ESU	Threatened	Not designated in Action Area
Central Valley Spring-run Chinook Salmon	Central Valley Spring-run ESU	Threatened	Final Designated within the Action Area
Sacramento River Winter-run Chinook Salmon	Sacramento River Winter-run ESU	Endangered	Final Designated within the Action Area
Delta Smelt	Entire	Threatened	Final Designated within the Action Area
Mammal			
Salt Marsh Harvest Mouse	Entire	Endangered	Not Designated
Plants			
Soft Bird's-beak	Entire	Endangered	Not within the Action Area
Birds			
Ridgway's Rail	Entire	Endangered	Not Designated
California Least Tern	Entire	Endangered	Not Designated
Amphibians			
California Red-legged Frog (*Rana draytonii*)	Entire	Threatened	Not within the Action Area
California Tiger Salamander (*Ambystoma californiense*)	Entire	Threatened	Not within the Action Area

Table 1-3. Listed Species, Proposed Species, and Critical Habitat that are Unlikely to occur in the Action Area

Species	Status	Probability of Occurrence in the Action Area?	Critical Habitat	Rationale for Elimination
Giant Garter Snake (*Thamnophis gigas*)	Threatened	Low	Not designated	Although habitat to support this species exists within the Action Area, the MOTCO site is on the edge of its known range and previous surveys conducted have found no occurrence of this species.
Alameda Whipsnake (*Masticophis lateralis euryxanthus*)	Threatened	Low	Not designated within the Action Area	The Alameda whipsnake relies on chaparral scrub habitat which is not available within the Action Area.
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus)*	Threatened	Low	Not designated within the Action Area	The Valley Elderberry Longhorn beetle is primarily found in riparian forests. Riparian forests are not present in the Action Area and the Valley Elderberry Longhorn beetle has not been observed at MOTCO
California Freshwater Shrimp (*Syncaris pacifica*)	Endangered	Low	Not Designated	One slough and one canal feature are located within the Action Area; however these systems lack the structural diversity required to support this species.
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	Threatened	Low	Not designated within the Action Area	Vernal pools do not exist within the Action Area.
Vernal Pool Tadpole Shrimp *(Lepidurus packardi*)	Endangered	Low	Not designated within the Action Area	Vernal pools do not exist within the Action Area.
Antioch Dunes Evening-Primrose (*Oenothera deltoides ssp. howellii*)	Endangered	Low	Not designated within the Action Area	The Action Area is outside of the known range of this species.

Table 1-3. Listed Species, Proposed Species, and Critical Habitat that are Unlikely to occur in the Action Area (Continued)

Species	Status	Probability of Occurrence in the Action Area?	Critical Habitat	Additional Notes
Callippe Silverspot Butterfly (*Speyeria callippe callippe*)	Endangered	Low	Not Designated	No native grassland exists within the Action Area; further, the two known populations (i.e. Cordelia hills and San Bruno Mountain) are located outside of the Action Area.
Delta Green Ground Beetle (*Elaphrus viridis*)	Threatened	Low	Not designated within the Action Area	This species is primarily found along the margins of vernal pools which do not occur within the Action Area.
San Bruno Elfin Butterfly (*Callophyrys mossii bayensis*)	Endangered	Low	Not Designated	Populations of this species can be found on San Bruno Mountain, Whiting Ridge, Montara Mountain, and Milagra Ridge. This species prefers the hilly chaparral habitat which is not present within the Action Area.

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CHAPTER 2 EXISTING ENVIRONMENTAL BASELINE CONDITIONS

2.1 GENERAL

MOTCO occupies approximately 115 acres of uplands and 5,733 acres of tidal area and off-shore islands, including 5 miles of shoreline (U.S. Army Corps of Engineers [USACE], 2011). These areas have been altered historically with various development activities in the Inland Area and diking, dumping, and filling of the Tidal Area.

Twelve different habitat types have been defined at MOTCO including non-native annual grassland (1,706 acres), canals (7 acres), sloughs (32 acres), unimpaired tidal marshes (1,172 acres), muted tidal marshes (1,647 acres), diked marshes (12 acres), deep bay (5 acres), shallow bay (211 acres), tidal flats (4 acres), saline depressions (2 acres), and transitional brackish marsh (46 acres) (Army, 2017). In addition, a large portion (930 acres) of the inland area has been defined as Developed/Disturbed" (Army, 2017).

The following sections summarize information from the INRMP and describe existing environmental conditions at MOTCO as they might relate to habitat use by protected species.

2.2 WATER QUALITY

Sources of freshwater at MOTCO include precipitation, groundwater springs, and surface water flow from the Salt Creek watershed; all of which drain northward toward Suisun Bay. Nichols Creek feeds freshwater wetland areas on the site, and six sloughs (Hastings, Otter, Belloma, Anderson, Pier 4, and East) all connect to Suisun Bay. Engineering controls, including culverts and tide gates, are used at various locations to restrict flow. Most of the existing facilities are not believed to be within the 100-year floodplain, although the Tidal Area floodplain has not been mapped by the Federal Emergency Management Agency (FEMA) (FEMA, 2017).

Suisun Bay is an estuary, linking freshwater from the Sacramento-San Joaquin Delta (Delta) with saltwater from the Pacific Ocean via San Francisco and San Pablo Bays. Thus, the tidal marshes at MOTCO (up to approximately 9 feet above mean sea level) are flooded regularly with brackish water. In several locations, the development of roads, rail lines, and man-made drainage features have altered the natural drainage pattern in the tidal marshes, creating a muted tidal signal. National Wetland Inventory data indicate 3,175 acres of potential wetlands occur at MOTCO, including 404 acres of estuarine subtidal wetlands, 2,687 acres of estuarine intertidal wetlands, and 84 acres of estuarine wetlands (Army, 2017).

Suisan Bay is a 303(d) listed Category 5 waterbody, per the list of impaired and threatened waters maintained by the State Water Resources Control Board (Waterboard). Primary constituents of concern include Chlordane, Dichloro diphenyl trichloroethane, Dieldrin, Dioxin compounds, furan compounds, invasive species, polychlorinated biphenyls, selenium, mercury (Waterboard, 2012)..

2.3 SEDIMENT, SUBSTRATE, AND BATHYMETRY

In the Tidal Area, soils consist of silty clay and saline muck – soils that are very deep and poorly drained. In the deep-water, subtidal habitat, substrate is mostly comprised of unconsolidated bottom sediments, with some areas of sand where tidal currents are stronger.

Within the MOTCO footprint, approximately 211 acres have been mapped as shallow bay (<18 feet deep), and 5 acres have been mapped as deep bay/channel (>18 feet deep) (Army, 2017). The John F. Baldwin Ship Channel averages 35 feet deep and is maintained by regular dredging.

Results from the Southern California Coastal Water Research Project (SCCWRP) indicate that Suisan Bay contains contaminated sediments (SCCWRP, 2013). Sediments adjacent to Piers (now Wharves) 2 and 3 were tested in 2014 by the U.S. Department of the Army and found to contain metals, ammonia, organochlorine pesticides, polychlorinated biphenyls (PCBs), and polynuclear aromatic hydrocarbons (PAHs) (NMFS, 2014). The Supplemental Environmental Assessment (Army, 2017) and Biological Opinion for modernization of Piers 2 and 3 (USFWS, 2015) state that contamination is present at low to background levels in sediments adjacent to Wharf 2, but does not pose a significant risk to ESA-listed species. For this assessment, we have assumed there is contamination present in sediments adjacent to all MOTCO wharves, but not at levels that would cause long term adverse impacts.

2.4 SLOPE, SHORELINE, AND HABITAT DIVERSITY

MOTCO contains a mosaic of intertidal marsh and aquatic habitats that are used by a variety of protected species (Army, 2017). These include:

- **Low Intertidal shores and flats** – un-vegetated areas below Mean Tide Level (MTL) that host a high density of invertebrates that provide a food source for shorebirds and fish;
- **Tidal sloughs and channels, ditches, and ponds** – a network of waterways that provide for the transport of water, sediment, and nutrients, as well as nursery, foraging, and nesting areas for fish and wildlife. The natural function of some of these areas has been impaired at MOTCO by the past construction of ditches and dikes;
- **Brackish tidal marsh communities** – a spectrum of vegetation communities that are determined by a combination of elevation (relative to the tide), salinity, and any human-caused constriction or impediment to natural tidal processes.

2.4.1 Flow, Current Patterns, Fresh-water Saltwater Mixing

As is typical of an estuary, Suisun Bay exhibits a wide range of salinities dictated by annual and seasonal variation in freshwater inputs from the Delta and Denverton Creek (NMFS, 2007). Salinity ranges from 0.5 parts per trillion (ppt) to 20 ppt, and at times up to 30 ppt over the course of the year (Army, 2017). The shallow depths of the bay (10 feet deep on average) combined with

frequent strong winds leads to a well-mixed water column (Army, 2017). Predominant current patterns are driven by the ebb and flood of the tides.

2.4.2 Seagrass

Submerged aquatic vegetation (SAV) is not common in Suisun Bay, and prior to 2009, it was believed that the typical low salinity levels and high turbidity were not conducive to the growth of eelgrass (*Zostera marina*) (Wyllie-Echeverria and Fonseca, 2003). However, shoreline surveys in 2009 found patches of eelgrass along the MOTCO shoreline (TEC Inc., 2009), and more recently, 22 acres of eelgrass were surveyed in the vicinity of Wharves 2 and 3 (NMFS, 2014). Eelgrass beds support a high density of invertebrates and function as important nursery habitat for juvenile fish as well as foraging and refuge areas for adults. The natural establishment of eelgrass in this area is likely be possible due to an increase in average salinity resulting from drought conditions and reduced freshwater inputs from the Sacramento and San Joaquin rivers.

2.4.3 Benthic Fauna

The extensive intertidal mudflats and marshes at MOTCO are highly productive habitats for benthic invertebrates. Invertebrates provide an important link between the primary and secondary producers and higher trophic level fish and shore birds.

In Suisun Bay, a wide diversity of invertebrate organisms (including bivalves, polychaetes, isopods, crustaceans, and amphipods) is distributed among different habitat types (NMFS, 2007). The Bay-Delta region has also been invaded by numerous non-native species such as the exotic oriental shrimp (Army, 2017).

2.4.4 Forage Fish

The Suisun Bay watershed is inhabited by several species of small fish that can tolerate a wide range of salinities. These species also provide an important trophic link in the aquatic food web. A complete list of common fish species is available in the INRMP (Army, 2017) document (Table 2-5 of the INRMP). Species that might be considered forage fish include various minnows, perch, smelt, gobies and flatfish. Pacific herring (*Clupea pallasii*), an important forage fish managed by CDFW, is known to spawn on eelgrass beds.

2.4.5 Ambient Sound Level

The existing environment at MOTCO does not include major noise sources such as airfields or live-fire training. Noise sources include motor vehicles, heavy equipment, vessel traffic, and railroad use, as well as commercial rail transport. The affected areas, with respect to construction and operations noise, are those on MOTCO where proposed maintenance and repair actions will take place, plus the immediately surrounding areas.

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CHAPTER 3 EFFECTS OF THE ACTION ON LISTED SPECIES

3.1 EXISTING CONDITIONS

3.1.1 Fish

Green Sturgeon

Status

Insufficient data, including abundance estimates, on the green sturgeon has confounded attempts to quantify long term trends in population productivity for the North American Green Sturgeon Southern DPS. The primary threat and main cause of decline for the Southern DPS is the dramatic loss of spawning habitat from the Sacramento River, which is the only known spawning area of the Southern DPS (NMFS 2006b); however, green sturgeon throughout their range are affected by activities such as dredging and disposal, dams and water diversions, and in-water construction or alteration activities.

The most recent status review update concluded that the Southern DPS green sturgeon is likely to become endangered in the foreseeable future due to the substantial loss of spawning habitat, the concentration of a single spawning population in one section of the Sacramento River, and multiple other risks to the species such as stream flow management, degraded water quality, and introduced species. Based on this information, the Southern DPS green sturgeon was listed as threatened on April 7, 2006 (NOAA 2015).

Life History

Green sturgeon is an anadromous, long-lived, and bottom-oriented fish species found in nearshore waters from Baja California to Canada (NMFS, 2008b). Currently, the only known spawning area of the Southern DPS of North American Green Sturgeon is in the Sacramento River (NMFS 2006b). Green sturgeon spend the majority of their lives in the nearshore marine environment such as bays and estuaries only returning to freshwater systems to spawn. Juveniles rear in fresh water and estuarine environments for 1-4 years before migrating to the ocean and dispersing widely throughout west coast marine habitat (Moyle et al., 1992). They are believed to be present in these habitats all months of the year. Spawning adults migrate into freshwater beginning in late February and spawn from March-July (Moyle et al., 1995). Green sturgeon are known to utilize coastal habitat from San Francisco Bay up to British Columbia at depths ranging from 1 to 110 m in shallow nearshore areas such as estuaries, bays, mudflats, and sand flats for foraging and rearing activities (Moyle et al., 1995; 74 FR 52300; October 9, 2009). Green sturgeon feed on benthic invertebrates and fish.

Two distinct population segments (DPS) have been defined for green sturgeon: a northern DPS spawning in the Klamath and Rogue Rivers and a southern DPS spawning in the Sacramento

River (NMFS, 2008a). The southern DPS has been found to occur in Suisan Bay. Large adults may exceed 2 meters in length and 100 kilograms in weight (NOAA 2015).

Occurrence in the Action Area:

The Southern DPS of green sturgeon is expected to occur within the Action Area. According to the Biological Opinion for modernization of Piers 2 and 3 (USFWS, 2015) green sturgeon are expected to occur in the Action Area (based on habitat and population data). No information on known observations was available.

Steelhead Trout

Status

The Central Valley DPS of steelhead occurring in the region is federally listed as *threatened*. This DPS includes all naturally spawned populations of steelhead in the Sacramento River beginning in Siskiyou County and the San Joaquin River in Madera County and their tributaries, and also includes the Coleman National Fish Hatchery and the Feather River Fish Hatchery populations.

The Central California Coast DPS for steelhead includes all naturally spawned populations of steelhead in coastal streams from the Russian River in Sonoma County south to Soquel Creek in Santa Cruz County (CDFW, 2016). NMFS listed the Central California Coast steelhead as federally *threatened* in 1998, and reaffirmed its *threatened* status in 2006. Historically, this subspecies of steelhead migrated upstream into the high gradient upper reaches of Central Valley streams and rivers to spawn and rear juveniles, but the construction of dams and impoundments on most Central Valley rivers reduced the geographic distribution of the steelhead by creating impassable barriers. This Central California Coast steelhead DPS is comprised of naturally spawning steelhead and steelhead produced in hatcheries.

Life History

Steelhead trout are anadromous fish, which means adult migrate from the ocean to spawn in freshwater lakes and streams where their offspring hatch and grow before migrating back to the ocean to forage until reaching maturity several years later. Steelhead trout are native to Pacific coast streams from southern Alaska to Baja California. This species is the most widely distributed native trout and are found on the western slopes of the Sierra Nevada in waters that serve as tributaries to the Pacific Ocean. Steelhead that do not migrate to the ocean, and instead spend their entire life in freshwater are known as *resident rainbow trout*.

Adult steelhead migrate upstream in the fall and winter, with peak spawning from December through April in small streams and tributaries (CDFW, 2016). Steelhead spawn in areas characterized by clean (silt-free), coarse gravel and cold temperature waters with moderately high

velocity. Unlike Chinook salmon, steelhead trout do not die after spawning and will continue to migrate back downstream and then may return to spawn in subsequent years.

Female steelhead create depressions in the gravel with their tails where they will lay their eggs in wait for males to fertilize (redd) them. The eggs will incubate in the red for a (variable) period of time, depending on the temperature of the water. After hatching, the fry emerge and forage on insects for 1 -2 years in the freshwater streams and rivers until migrating to the ocean to continue growing. The process by which the juvenile steelhead undergo physiological transformation to be able to pass from fresh water into coastal marine waters is called *smolting*. These smolts will migrate during the late winter and early spring. The smolt will rear within the coastal marine waters for a number of years before returning to their natal stream to spawn as adults (NOAA, 2016a).

Occurrence in the Action Area:

The Central Valley Steelhead DPS and Central California Coast DPS could occur but are not expected to occur within the Action Area. Both Adults and juveniles prefer deeper areas of the bay-delta during migration.

CHINOOK SALMON

Central Valley Spring-run Chinook Salmon:

Status

Central Valley spring-run Chinook salmon, occurring within the Project area are considered part of the Central Valley Spring-run ESU, and was listed by NOAA as federally *threatened* in 1999 and reaffirmed as *threatened* in 2014. The federal listing applies to naturally spawning populations in streams between Butte Sink Wildlife Management Area, North Central Valley Wildlife Management Area, Sacramento River National Wildlife Refuge, and Sutter National Wildlife Refuge. This includes north from Shasta County south to Sacramento and Solano Counties (NOAA, 2014a). Historically, spring-run Chinook salmon were widely distributed within the Sacramento and San Joaquin River systems, until the construction of dams and reservoirs within the Central Valley. After that time, spring-run Chinook salmon abundance and distribution declined substantially. Currently, spring-run spawning and juvenile rearing occurs in Deer, Mill and Butte creeks, the main-stem Sacramento River, the lower Feather River, and several other local tributaries on an intermittent basis.

Life History

Like steelhead trout, spring-run Chinook salmon are anadromous fish that require cool streams and rivers with silt-free coarse gravel for spawning, and migrate to the Pacific Ocean to continue maturing. Sexually immature adult spring-run Chinook salmon will migrate upstream into the Sacramento River system during the spring months. Prior to spawning, they will spend the summer in deep cold pools in rivers and tributaries maturing. Spawning then occurs in the late

summer and early fall time period in areas characterized by the necessary water temperatures, velocities and suitable gravel substrate. Eggs will then be laid to incubate in redd and emerge as fry in the late fall and early winter. Some of these juveniles will migrate immediately to the Central delta during winter and spring months. Those juvenile spring-run Chinook salmon that did not migrate immediately, spend about a year within the freshwater systems, migrating as yearlings to the ocean during the late fall, winter and early spring will then migrate from these streams and tributaries as yearlings (Hill and Weber, 1999). They will then spend the next one to six years at sea, with the exception of jack salmon (yearling males) that will mature in freshwater (NOAA, 2016b). Unlike steelhead trout, spring-run Chinook salmon will die after spawning.

Occurrence in the Action Area:

The Central Valley spring-run Chinook salmon is not expected to occur within the Action Area. Adults prefer deeper areas of the bay-delta during migration and juveniles do not typically rear in this part of the estuary.

Sacramento River Winter-run Chinook Salmon:

Status

Sacramento River winter-run Chinook salmon are considered a part of the Sacramento River Winter-run Chinook Salmon ESU and were federally listed as *endangered* by NOAA in 1990 and reaffirmed in 2005 (NOAA, 2016b). This population is known to occur in streams between the North Central Valley Wildlife Management Area, the Sacramento River National Wildlife Refuge and the San Joaquin River National Wildlife Refuge. This includes north from Shasta and Tehama counties and south to Marin and Contra Costa counties. winter-run Chinook salmon historically migrated into the upper tributaries of the Sacramento River for spawning and juvenile rearing until the Shasta and Keswick dams were constructed. The construction of these dams eliminated the fish's ability to reach historic spawning habitat within the upper watersheds, and as a result, spawning and juvenile rearing habitat for winter-run Chinook salmon is now limited to the main-stem Sacramento River downstream of Keswick Dam (Yoshiama et al., 1998).

Life History

Sacramento River winter-run Chinook salmon are anadromous fish that spend between one and three years in the Pacific Ocean coast before migrating upstream to spawn in the Sacramento River. Adults between the ages of two and four years migrate upstream through San Francisco Bay, Suisun Bay, and the Delta during the winter and early spring months with the peak of migration occurring in March. Winter-run Chinook salmon will then spawn within the mainstream of the Sacramento River where there is suitable water temperature and velocity, and gravel substrate. Spawning occurs from April through August with egg incubation in the fall months. Juveniles chinook then spend anywhere from 3 months to 2 years in freshwater before migrating to estuarine areas as smolts, and then later into the ocean to feed and continue maturation. They

will then spend the next one to six years at sea, with the exception of jack salmon (yearling males) that will mature in freshwater. Unlike steelhead trout, Sacramento River winter-run Chinook salmon will then die after spawning.

Occurrence in the Action Area:

The Sacramento River winter-run Chinook salmon is not expected to occur within the Action Area. Adults prefer deeper areas of the bay-delta during migration and juveniles do not typically rear in this part of the estuary.

Delta Smelt

Status

Delta smelt is listed by the USFWS under the ESA as a *threatened* species and is endemic to the Sacramento–San Joaquin Delta estuary. This species inhabits the Sacramento and San Joaquin rivers, the freshwater portions of the Delta and areas of the Suisun Bay that are slightly brackish. Although they can tolerate a wide range of salinity, they spend most of their time in water with low-to-no salinity. Delta smelt have a one-year life cycle, and will spend the entire year within the Sacramento-San Joaquin Delta. There are several threats to this species: reduced water flow within the Delta, getting trapped in water pumps and power plant intakes, changes in food supply, water contamination, and competition and predation from non-native species. Delta smelt are indicator species, and their abundance reflects the health of the Delta as an aquatic environment overall. The current population of Delta smelt is estimated to be 113,000 fish as compared to the 2016 population estimate of 112,000 fish (USFWS, 2017)

Life History

The Delta smelt is a small, slender pelagic fish that lives its short life in the open waters of the central Delta and Suisun Bay. It typically inhabits shallow-water areas that are less than 9 feet deep but it can be found in deeper channels. During fall and winter months, adult Delta smelt migrate upstream into freshwater channels and sloughs of the central Delta and lower reaches of the Sacramento and San Joaquin rivers to prepare for spawning. Spawning usually occurs from January through July, with peak months from April through mid-May, and takes places in shallow edge waters (Moyle, 2002). This species broadcasts its eggs within the shallow waters, and the eggs have adhesive qualities, attaching to substrate during incubation. After they hatch, the larval Delta smelt will drift downstream with the current. Adult Delta smelt feed on zooplankton during the spring and early summer months.

Occurrence in the Action Area:

The Delta smelt may occur within the Action Area; however, no Delta smelt have been identified in the area during recent annual surveys.

3.2 MAMMALS

Salt Marsh Harvest Mouse

Status

The salt-marsh harvest mouse is listed by the USFWS as a federally endangered species. The northern subspecies occurs within the range of the base. This species is endemic to the diked, non-tidal edges of San Pablo and Suisun Bays, living in close association with pickleweed. Salt-marsh harvest mice are physiologically and behaviorally adapted to these salt marsh habitats. The salt-marsh harvest mouse is nearly extinct due to a 95 percent decrease in available habitat from urban development. Only 30,000 acres are left out of the historical 193,000 acres of tidal marsh in the San Francisco, San Pablo and Suisun Bays. Diking the marshes for salt production and landfills have fragmented and destroyed the salt marshes. Predators including hawks, snakes, owls, shorebirds, larger mammals and house/feral cats.

Life History

Salt-marsh harvest mouse distribution and abundance is critically dependent on the availability of dense pickleweed salt marshes. Salt marsh harvest mice are seldom found in cordgrass or alkali bulrush (Galavanova, no date [nd]). Marshes with upper zones containing dense halophytes are an area of escape during higher tides, and some mice even move into adjoining grasslands when available during highest tides. This mouse is very resourceful, utilizing pickleweed and other plants as ramps and exhibits climbing agility as well as the capability to swim and float. (Galavanova, nd). Salt-marsh harvest mice have a high tolerance for salt intake, allowing them to drink saltwater indefinitely and eat pickleweed, which has very salty sap (USFWS, 2013). Other food sources for this species includes grasses, forbs, arachnids and various other insects. The salt-marsh harvest mouse is a nocturnal rodent that is 2 to 3 inches long and has a tail length of .06 to .08 inches long. Each mouse lives for approximately six month, and begin reproducing at less than 2 months of age. Breeding occurs from spring through fall. They will produce up to two litters with an average of 3-4 baby mice per litter. Protective cover includes plants and other debris, as this species cannot burrow into the salt marsh (USFWS, 2013).

Occurrence in the Action Area:

The salt-marsh harvest mouse has been observed within the tidal marsh areas of the Action Area as shown on Figure 5. This figure is based on site-specific surveys conducted at MOTCO.

3.3 PLANTS

Soft Bird's-beak

Status

Soft bird's-beak is a USFWS federally listed endangered species and is an annual herbaceous plant that grows in the upper reaches of salt grass and pickleweed marshes at or near the limits of tidal action. It is endemic to California, growing in Contra Costa, Marin, Napa, Sacramento, Solano, and Sonoma counties. Specifically, the range of this plant includes the San Pablo Bay, Suisun Bay, and the Point Pinole and Fagan Slough marsh through the Carquinez Strait to Suisun Bay. This species is impacted by non-native and invasive plant species, erosion, feral pigs, trampling by foot traffic, habitat fragmentation, urbanization and marsh drainage (California Native Plant Society [CNPS], 2012). As the Suisun Marsh becomes saltier from increased human use upstream, soft bird's beak is in danger of being extirpated. Before 1850, the region sustained 1,400 square kilometers of freshwater wetlands and 800 square kilometers of salt marshes; today, only 125 square kilometers of undiked marshes remain of the original 2,200 square kilometers, representing a 95 percent loss of marsh habitat (U.S. Geological Survey, 2018). Many of the tidal marshes in San Pablo Bay are diked and managed for human agricultural use. Suisun Bay tidal marshes are diked as well, but for waterfowl and other wildlife management. As a result, many native salt-tolerant plants have become rare in the tidal marsh plant communities.

Life History

Soft bird's-beak seedlings grow rapidly in March when coastal marsh and swamp tides are low. Its blooming period runs from July to November. It grows approximately 4 to 16 inches tall and has grayish-green foliage that is tinged deep reddish-purple. It has spike-shaped clusters of white or yellowish-white flowers that are thought to resemble birds' beaks. This plant species is hemi-parasitic to other plants, meaning that it uses the roots of other plants as hosts. Soft bird's-beak plants get their water and nutrients through the roots of their host plants, yet they make their own food through photosynthesis (USFWS, 2016a). Soft bird's-beak does not have a preferred host plant, but can be found parasitizing pickleweed, salt grass, and marsh jaumea. Soft bird's-beak also prefers upper reaches of salt grass and pickleweed marshes at the limits of tidal action, and will tolerate somewhat saline soil. Too much salt will kill the plant.

Occurrence in the Action Area

The Action area is located within the Suisun Bay Area Recovery Unit for the Soft bird's-beak described in the Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California (USFWS, 2013). This species has been observed within the high-tide brackish marsh and tidal marsh areas of MOTCO as shown on Figure 5. Specifically, sightings have occurred in Middle Point Marsh and in a few isolated clusters south of White Road during rare plant surveys conducted by MOTCO (Vernadero, 2018).

3.4 BIRDS

Ridgway's Rail

Status

The California Ridgway's rail (formerly known as the California clapper rail) is federally listed as endangered by the USFWS. This species is endemic to tidal marsh habitat in the San Francisco Bay Estuary, and also occurs down to Baja California and some western portions of Arizona. Populations of Ridgway's rails are found in remnant salt marshes such as Bair and Greco Islands, along Coyote Creek, and within the Don Edwards San Francisco Bay National Wildlife Refuge. Some smaller populations of the rail can be found in eastern Marin, western Contra Costa and northern Alameda Counties; northern San Pablo Bay, along major creeks and marshes in Sonoma and Napa Counties, and along the Petaluma River. Ridgway's rail was previously found in California coastal estuaries from Humboldt Bay to Morrow Bay, but due to hunting in the early 20th century, populations crashed and were limited to the Estuary. Tidal marsh habitat in the Estuary has decreased by 79 percent from its historical extent due to urban development, diking, and salt-production. Predation by introduced red foxes in the further placed pressure on this species in the 1980s, until red fox control efforts began in the 1990s. Other predators will find the nests besides red foxes, including Norway rats, native raccoons, and feral cats which consume (in some studies) almost half of the total eggs produced by the Estuary population of Ridgway's rails in a year (USFWS, 2014). Pollution, human disturbance and non-native predators still negatively impact this species despite efforts to manage Ridgway's rails. Invasive and non-native species of smooth cordgrass (*Spartina* sp.) possibly have contributed positively to the Ridgway's rail populations by providing nest substrate and increased cover from predators (Liu, et al., 2012). High tides are also responsible for destroying nests and killing eggs.

Life History

Ridgway's rail/Ridgway's rails are a large, hen-like bird with a long, and slightly down-curved bill that lives most of its life concealed in dense vegetation. It forages by probing its long bill into muddy tidal wetlands in search of invertebrate prey. Ridgway's rail/Ridgway's rails can be found in saltwater and freshwater marshes, and mangrove swamps. In the San Francisco Bay Estuary, habitat suitability for Ridgway's rail/Ridgway's rails increases with respect to increasing salinity, increasing percentages of the invasive cordgrass Spartina, compactness of marsh shape, increasing marsh size and the length of time beyond initial restoration (Liu, et al., 2012). Ridgway's rail/Ridgway's rails utilize pickleweed, gumplant, cordgrass and other marsh plants to build their nests which they conceal by placing them very low on the marsh floor underneath the vegetative canopy. The nests are therefore hard to see, and protects the 6-10 eggs females will lay in the nest. After the eggs hatch, adults will build "brood nests" that are floating platforms of stems and stalks to keep the hatchlings above water during high tide episodes. Juvenile rails that have left the nest and adult rails utilize the sloughs to forage for prey items. The channels of thick pickleweed within the sloughs themselves become important avenues of escape from predators

for younger, flightless rails. Food items for Ridgway's rail/Ridgway's rails include small fish, mussels, clams, crabs, and other marine invertebrates.

Occurrence in the Action Area:

Surveys to detect the presence of species and/or habitat for the Ridgway's rail/Ridgway's rail were completed in 2010, 2013 through 2018(Harvey 2015, representative). This species has been occasionally observed resting within the Action Area in the past, but not since 1999 and habitat has been determined to be low quality (Morrison, 1999). The nearest observed species occurrence is shown on Figure 5.

California Least Tern

Status

The California least tern is an USFWS designated *endangered* species. At the time of listing in 1970, there were approximately 600 least terns in the state of California. There are three subspecies of terns, and the California least tern is endemic to the state of California. Breeding occurs in San Francisco Bay, in San Luis Obispo, and in San Diego County southward to extreme northern Baja California. There are other nesting sites including California's Seal Beach, San Pedro Bay, Ballona Creek, and Camp Pendleton. This species winters in Mexico or Central America. The species population has since increased exponentially, nearly doubling since the time of listing. However, this species still continues to struggle due to loss of nesting habitat and predation. The main loss of nesting habitat occurred during the construction of the Pacific Coast Highway in the early 20th century and has been on the decline ever since due to loss of habitat for urban development. This has driven California least terns to other less suitable nesting sites closer to human inhabitation, where they are vulnerable to predation by domestic and feral cats and also wild land mammals and birds of prey. The U.S. Navy, U.S. Marine Corps, and USFWS provide managed breeding sites for the California least tern on military lands, which are off limits to the public for the most part.

Life History

As its name suggests, the least tern is the smallest of North American tern species at about 8-9 inches long with a wingspan of 19-21 inches. This species has a distinctive black cap and also has black stripes running from the cap across the eyes to its bill. The California least tern forages primarily on small fishes including sardines, smelt, small crustaceans and anchovies. California least terns are opportunistic feeders, hovering until they find prey and then plunging shallowly into the water. They inhabit the California coastline and nest on open, vegetation free beaches that are scoured by the incoming tide. They can also be found nesting on mudflats and sand dunes near shallow estuaries and lagoons with access to the near open ocean California least terns migrate, roost and nest in colonies. There are typically no less than 20-25 pairs per nesting site. Most terns begin breeding during their third year, starting in April and May. Males will perform a

"fish flight" mating ritual where after doing some aerial displays they will find a fish, place it in their bill and move their head back and forth to impress females. The male will then make several "scrapes" in the sand lined with shell fragments. The female chooses which nest to lay her eggs in. Eggs are usually laid in pairs. The California least tern chicks are semi-precocial, and are able to move around within the first few hours after hatching. Although the chicks have camouflaged down, they are extremely vulnerable to predation by both ground and aerial predators, both natural and introduced.

Occurrence in the Action Area:

The California least tern has been observed foraging and resting within the Action Area. No known nesting sites are located within or in close proximity to the MOTCO facility. The nearest observed species is shown on Figure 5.

3.5 AMPHIBIANS

California Red-legged Frog

Status

The California red-legged frog, is listed as *threatened* under the ESA and is recognized as a California Species of Special Concern by CDFW. Optimal habitats for this species includes ponds, stream courses, permanent pools and small intermittent streams fed by drainages. However, this species will use a wide variety of habitats including concrete-lined pools, ponds, isolated wells, stock ponds with bare shorelines, refuse piles near ponds, permanent watercourses, and temporary pools and streams. Habitat requirements vary depending on the frog's life-cycle stage and also the presence or absence of predators, both native and non-native. Primary threats to this species include predation and competition by non-native species including bullfrogs (*Rana catesbeiana*) and largemouth bass (*Micropterus salmoides*).

Life History

California red-legged frogs utilize aquatic, riparian, and upland habitats seasonally and at different stages of development. Breeding and larval development occurs within ponds, slow-flowing streams, or deep pools with vegetation or other material to which egg masses can be attached. These aquatic sources must hold water for the duration of the larvae to juvenile phase, which is 14 to 23 weeks. Adults are highly aquatic and are most active at nighttime, while juveniles are both diurnal and nocturnal. California red-legged frogs will disperse from breeding habitat to upland habitat for foraging if aquatic habitat is not available. They may also utilize small mammal burrows and moist leaf litter for refuge in riparian areas. Breeding season occurs in February and March, and in coastal/moist environments they are known to travel anywhere from 0.25 miles to over 1 mile regardless of topography or vegetation type. Potential barriers to movement include fast-flowing streams or rivers, large lakes, and heavily traveled roads that do not have

underpasses or culverts. During periods of above-average rainfall, this species will inhabit an even wider range of habitat, not just breeding ponds and streams.

Occurrence in the Action Area:

Surveys were completed within the Action Area in 2013 and monitoring was conducted in 2016. No individuals were identified during the 2013 or 2016 events for this species. Although the California red-legged frog has the potential to occur in the Tidal Area of MOTCO the negative finding, concurred on by USFWS, is valid from 2017-2021 (USFWS 2016c).

California Tiger Salamander

Status

The California tiger salamander is a USFWS federally listed threatened species. California tiger salamanders are large, stocky terrestrial salamanders that inhabit oak savannas and grasslands in the valleys and foothills of northern and central California (Stebbins, 2003). They are found at low-elevation sites that are below 1,500 feet (USFWS, 2004). They require ponds (natural or manmade, ponds, or other sources of long-term ponded water for breeding and aestivation. Adjacent upland areas near these ponded areas are also required for dispersal and protection from predators (burrows). California tiger salamanders are found mostly in the Central Valley but also have populations in the Coastal region. Beginning in Sonoma County, down to Santa Barbara County, and also in the Central Valley and Sierra Nevada foothills. The Sonoma County population is geographically isolated from the other California tiger salamander populations (USFWS 2016b). California tiger salamander populations are on the decline mainly due to loss and fragmentation of habitat from urban development and farming. The introduction of nonnative predators like bullfrogs are also affecting the success of California tiger salamander populations (USFWS, 2016b).

Life History

California tiger salamanders are a black and yellow or white spotted salamander with a white or pale yellow underside. They are large, stocky salamanders with broad, rounded snouts and small eyes that protrude from their heads (Stebbins, 2003; USFWS, 2016b). California tiger salamanders spend most of their life in underground burrows made by fossorial mammals such are ground squirrels, as they are poor burrowers themselves (USFWS, 2016b). Adults will emerge from their underground refugia to forage, find mates, and breed during the winter rainy season (November through March) - but otherwise hibernate for the rest of the year. Adults can migrate up to 1,000 meters to find breeding ponds, where they deposit eggs attached to vegetation under water or the bottom of the pool (USFWS, 2004). Larvae will emerge in approximately two weeks and will stay in the pools for several months until they metamorphose into juveniles. Juveniles leave the breeding ponds and seek upland areas for refuge in mammal burrows. They have been known to travel 2,200 feet, depending on the upland habitat features surrounding their breeding

ponds (USFWS, 2004). California tiger salamander populations are not only influenced by nonnative predators and urbanization, but also seasonal rainfall levels. Without heavy rainfall throughout the winter months, ponds are incapable of sustaining water levels necessary to hold breeding California tiger salamander populations.

Occurrence in the Action Area:

Surveys were completed within the Action Area in 2013 and monitoring was conducted in 2016. No individuals were identified during the 2013 or 2016 events for this species. Although the California tiger salamander has the potential to occur in the Tidal Area of MOTCO the negative finding, concurred on by USFWS, is valid from 2017-2021 (USFWS 2016c).

3.6 CRITICAL HABITAT

Critical habitat occurs in the vicinity of the Action. Under Section 4(a)(3)(B) of the ESA, critical habitat for a species can be requested for removal if the critical habitat is on DoD lands that are covered by an INRMP that provides management practices and a conservation benefit to the species. Further, Federal Register Volume 74, number 195 (October 9, 2009) acknowledges the INRMP and removal of the critical habitat designation for the southern DPS of the green sturgeon at the installation.

The aquatic portions of the Action Area (areas surrounding the piers) are not considered part of the Installation. Critical habitat for the Delta smelt, Sacramento winter-run Chinook salmon, and the southern DPS of the green sturgeon have been identified as occurring within the aquatic portions of the Action Area. Our evaluation includes a discussion of potential effects to critical habitat for the Delta smelt and Sacramento winter-run Chinook salmon..

3.7 EFFECTS OF THE ACTION

The actions proposed by the Army are not anticipated to adversely affect any federally listed species or their habitats. However, any activity that involves work in an area with federally listed species has the potential to negatively affect those resources without use of AMMs.

The proposed action (i.e., implementation of a program of routine maintenance and repair actions) discussed in Chapter 1 may affect federally listed species by disturbing the feeding, breeding, spawning, and/or sheltering of these species. These effects would be temporary and intermittent in nature and may be direct or indirect. We have evaluated the existing environment, species and habitat occurrences, proposed actions, and AMMs, and have identified two categories of effect that may occur as a result of implementation of proposed routine maintenance and repair actions. These categories are described below:

- No Effect: Proposed actions having no measurable or discernable effect on the listed species or their habitat.

- May Effect-Not likely to adversely affect: Included those proposed actions that have an effect that is characterized as insignificant, discountable, or wholly beneficial.

The types of actions included in the proposed action are maintenance actions, where the activity itself is proposed to occur within the existing footprint. Minor adjustments may be made to project areas; however, no permanent encroachment into sensitive wetland, tidal, or critical habitat areas is proposed with these activities.

No Effect

In general, the following maintenance and repair actions are anticipated to have no effect on any federally listed species because there are no known federally listed species and/or habitat occurring in the immediate footprint of the proposed action, noise levels associated with the activities are consistent with background noise levels, and/or implementation of AMMs will reduce the potential for indirect or direct impacts to occur to listed species and/or associated habitats.

1. Routine maintenance to gantry cranes & rails
2. Track/rail, siding, and cross-tie replacement
3. Ballast replacement
4. Crossing, switching system and signal upgrades
5. Crossing, abutment, and transfer pad upgrades
6. Bridge strengthening and elevated road crossings
7. Geometry improvements
8. Holding pad/transfer pad maintenance, repair and improvements
9. Parking lots/Ammo lots, staging areas, other miscellaneous pavements expansion, maintenance and repair
10. Lighting, traffic safety/signage and pavement markings
11. Exterior maintenance and repairs
12. Interior maintenance and repairs
13. Seismic retrofits
14. Berms, barricades and accessory safety/security structures

15. Landscaping

16. Fence installation and repair

May Effect, Not likely to Adversely Affect

The following actions are "not likely to adversely affect" federally listed species or their habitats provided that they are implemented in a manner that meets the guidelines, criteria, assumptions, and intent as described throughout this PBA. In addition to the AMMs presented in Section 1, conditions specified in other permits obtained to implement activities (e.g. Clean Water Act [CWA] Section 404, Rivers and Harbors Act Section 10, etc.) would also be followed accordingly.

1. Berthing/mooring system and signage
2. Pile repair
3. Pile and pile cap replacement
4. Pier and trestle decking
5. Anti-terrorism and force protection
6. Shoreline erosion control
7. Road grinding and resurfacing
8. Road grading and base replacement
9. Rail expansion
10. Culvert and stormwater drainage
11. Solar installation
12. Minor building/structure expansions
13. Parking lot expansion

These elements of the proposed action have the potential to affect some listed species due to increased noise, increased turbidity or sedimentation, increased lighting, land clearing, use of ACZA-treated piles, and/or use of chemical applications during nuisance plant control. A description of potential effects is provided below:

3.7.1 Underwater Noise and Water Quality

The following maintenance activities would occur either in-water or over-water and have the potential to affect the aquatic environment: fender system repair and/or maintenance; pile repair; pile and pile cap replacement; pier and trestle decking replacement; breakwater repair; and culvert replacement. Maintenance activities would occur within the footprint of existing facilities and would not permanently reduce the amount of habitat available in the action area. Work conducted over the water (i.e., fender system repair/maintenance and pier/trestle decking replacement) would be performed with appropriate AMMs in place to ensure no materials or contaminants spill into the water. In-water work would be limited to repairing piles, replacing piles, repairing the breakwater, and culvert replacement. Impacts to species and habitats in the sub-tidal and inter-tidal areas would be limited to temporary increases in noise and turbidity.

3.7.1.1 Fender System Repair and Decking Replacement

Both fender system repairs and decking replacement are expected to occur above water. Neither of these activities will generate noise above background, and with implementation of AMMs no increased turbidity is expected.

3.7.1.2 Pile Repair

Pile repair would consist of applying a wrap around the pile in areas of structural weakness. This work includes pile splinting, concrete chipping and shotcrete repairs. No additional effects from noise or turbidity are anticipated to species during pile repair due to minimal noise and lack of contact with bottom sediments that occur during repair procedures. These pile repairs are conducted with baskets or other containment devices in place to prevent material from entering the water. Cleaning in advance of wrapping may result in increased turbidity.

3.7.1.3 Pile Removal and Replacement

If a vibratory or impact hammer is used for removing or installing piles, then underwater noise could be elevated above ambient conditions and cause injury or even mortality to fish nearby. While quantitative methods are available for estimating underwater noise generated by pile driving, a detailed analysis is not possible at this time because specifics of the maintenance work (e.g., number, type and size of pile) are not known. However, a similar analysis was performed in 2013 for modernization and repair of Pier 2 and 3 at MOTCO (NMFS, 2014; USFWS, 2015). That work involved a much more intensive pile driving effort, and while similar source levels of noise and impact radii could be expected for this maintenance work, the number of piles, number of strikes, and duration of activity would be much less. The prior analysis predicted an injury effect threshold radius of 7 meters (representing 187 decibels [dB] cumulative sound exposure level [cSEL] after six continuous hours of pile driving) and a behavioral effect threshold radius of 117 meters (representing 150 dB root mean square [RMS]) outward from the pile. For fish less than 2 grams, such as Delta smelt larvae and juveniles, the injury radius was slightly greater at 14

meters. Thus, the area of behavioral effects is small in comparison to the amount of similar habitat adjacent to the action area, and the most likely response to disturbance would be for the fish to move temporarily to nearby location.

In-water work for maintenance will only occur between August 1 and November 30. This will reduce potential impacts to delta smelt and avoid peak migration times for adult and juvenile steelhead, Chinook salmon, and green sturgeon. Furthermore, the deeper channel areas of the Bay-Delta are preferred by migrating adult and juvenile steelhead, by adult Chinook salmon, and adult green sturgeon. These areas are away from the pier where this work would take place. Juvenile Chinook salmon seek shallow nearshore areas with slow current as nursery areas, and juvenile and sub-adult green sturgeon forage in shallow mudflat areas. These two species/life-stages would be most likely to be impacted by the project if individuals are in the action area while work is being conducted.

The removal of piles has the potential to temporarily increase turbidity as the surrounding sediments are re-suspended in the water column. Turbidity has the potential to reduce feeding success of visual predators such as salmon and smelt. The size and intensity of turbidity plumes will depend on wind and current conditions at the time of the activity, but are expected to be minimal and localized because of the swift currents at the site and the limited amount of disturbance caused by each individual pile.

Sediments and timber fragments that enter the water column during pile replacement have the potential to release contaminants that are toxic to fish. These include: nickel, PCBs, PAHs, and tributyltin (NMFS, 2014). Sediment testing by USACE found arsenic, copper, mercury, zinc, and sulfide concentrations at greater levels in Suisan Bay than found in reference areas (U.S. Department of the Army, 2014). The likelihood of exposure and risk to species in the vicinity of Wharves 2 and 3 was qualitatively assessed by NMFS (2014) for a prior project using site-specific chemistry data and found to be very low (USFWS, 2015).

Some replacement pilings on the piers may consist of wood treated with ACZA. The ACZA preserves the wood pilings from termites, fungi, and marine borers (mollusks and crustaceans) but can produce adverse effects when leached into the marine environment. For selection of treated wood pilings, select products that have been certified through a third party (e.g. Western Wood preservers Institute) to be treated to proper retention standards that maximize fixation of ACZA and minimize leaching rates.

3.7.1.4 Breakwater repair

Placement of riprap on the existing breakwater may be needed to ensure the breakwater is functioning as intended. Overtime, riprap can sink, break, or be moved (slightly) in the aquatic environment. Although care would be taken to place replacement riprap in the same location as existing riprap, there is the potential for the riprap to be placed in areas that have not been

impacted. Should this occur, a very small area of benthos and epifauna and infauna would be lost, leading to a slight reduction of food resources for fish. Over time, this small area would transition to a hard-bottom benthic community.

3.7.2 In-Air Noise

In the terrestrial environment, potential impacts to species and habitats could occur due to elevated in-air noise levels. Maintenance activities with the greatest potential to generate noise include pile driving and pavement grinding, which have been shown to generate noise as high as 110 A-weighted decibels (dBA) (impact pile driver), 101 dBA (vibratory pile driver) and 90 dBA (grinder) at 50 feet from the source (Washington Department of Transportation [WSDOT], 2017). The attenuation of in-air noise over distance can be modeled as a logarithmic function. This relationship can be estimated using a simple linear reduction of decibels for every doubling of distance from the source. For point-source noise and undeveloped, vegetated site conditions, a typical reduction factor is 7.5 dBA per doubling of distance (WSDOT, 2017). Ambient or background noise can vary considerably depending on the surrounding land uses and other activities. In rural areas daytime ambient noise is 35-40 dBA, and near MOTCO would likely be higher. Using these values, the noise from pavement grinding could be heard approximately a mile away, vibratory pile driving could be heard over two miles away, and impact pile driving noise would carry for approximately nine miles.

The sensitivity of the receptor to elevated noise also plays a role in determining the radius of noise impacts. For birds such as the Ridgway's rail, elevated noise particularly during the breeding season can disturb mating, nesting, mask calls, and lead to decreased breeding success. Therefore, any of the proposed maintenance activities that may cause significant elevated noise levels, such as pile driving or pavement grinding, would be restricted during Ridgway's rail breeding season (February 1 to August 31), unless appropriate USFWS-protocol surveys are conducted to demonstrate the absence of nests and/or additional AMMs are available to reduce noise levels.

3.7.3 Erosion/Sedimentation

Expansion activities and/or stormwater-related repairs have the potential to increase erosion and/or sedimentation due to the removal of existing vegetation and heavy equipment operation over bare soils. However, this risk will be adequately managed with implementation of appropriate AMMs. No rail yard, building, or parking lot expansion would be conducted in wetland areas, tidal areas, critical habitat areas, or in areas where sensitive species exist.

3.7.3.1 Culvert Repair and/or Replacement

Several culverts exist within channels and ditches at MOTCO. Removal and replacement of culverts could increase turbidity and sedimentation temporarily to the immediate vicinity of the

pipe as well as nearby locations downstream from the culvert repair/replacement. AMMs will be used to minimize sediment loss.

3.7.4 Increased Lighting and/or Glare

Increased lighting is expected to occur as a result of the installation of high intensity lighting features associated with anti-terrorism and force protection. Increased lighting may deter bird species from foraging in the area and could disrupt nesting patterns. Further, lighting stands could encourage raptor perching. Lighting used during maintenance and repair activities will not be directed at water to reduce potential for reflection/glare, and will have avian deterrent devices installed as appropriate.

No glare is expected to occur from installation of solar panels. Solar panels will be installed in discrete locations and are not expected to be large enough to cause a "lake effect". With implementation of AMMs along with the INRMP management guidelines for migratory bird species no significant effect from light installation or solar panel installation is anticipated.

3.7.5 Invasive Species Removal

The MOTCO INRMP specifies management techniques to be implemented at the installation in both upland and wetland/tidal areas. Management techniques include grazing, mowing, burning, cultivation, targeted chemical application including the use of glyphosate. These methods could have a direct impact on sensitive plant populations including the soft-bird's beak. However, care would be taken in areas of known soft-bird's beak populations to avoid invasive species management in the direct area and in adjacent areas of the species.

3.8 EFFECTS DETERMINATIONS

Fish

In-water maintenance and repair work would be limited in duration and impact. The number of piles per year will be limited to 20 meaning the water quality impacts would be short-term and near negligible,

North American Green Sturgeon, Southern DPS – Effects to green sturgeon may occur due to maintenance activities, particularly if juvenile and sub-adult life-stages are present within a 117 meter radius while pile removal or installation is taking place. The proposed action **may affect but is not likely to adversely affect** green sturgeon for the following reasons:

- Green sturgeon are unlikely to remain within 7 meters of pile driving activity for a continuous time period that is long enough to become susceptible to the 187 dB cSEL that is considered a threshold for injury;

- Adult green sturgeon are large bodied fish, which presumably makes them more tolerant to high levels of sound; juvenile green sturgeon are also relatively large during estuarine residency (600 millimeter, NMFS 2014);
- The action area represents only a small fraction of the suitable foraging habitat in Suisun Bay, and any sturgeon within the injury/disturbance radius during pile driving would be able to move outside of the area of effect.
- AMMs for pile installation and removal in Chapter 1 are intended to reduce noise and/or turbidity that may affect this species.

North American Green Sturgeon Critical Habitat – Effects to green sturgeon designated critical habitat may occur due to maintenance activities such as pile replacement that may re-suspend contaminated sediments and lead to a depletion prey resources. These activities **may affect but is not likely to adversely affect designated critical habitat** because the perchloroethene (PCEs) within the action area are already in a degraded condition, and the effects would be temporary and limited to a small area in relation to the available habitat in Suisun Bay.

Central California Coast Steelhead DPS – Maintenance activities **will not affect** the Central California Coast steelhead because the in-water work window would avoid adult and juvenile migration periods, and both juveniles and adults prefer deeper areas of the bay-delta during migration.

Central Valley Steelhead DPS – Maintenance activities **will not affect** the Central Valley steelhead because the in-water work window would avoid adult and juvenile migration periods, and both juveniles and adults prefer deeper areas of the bay-delta during migration.

Sacramento River Winter-run Chinook Salmon ESU – Maintenance activities **will not affect** the winter-run Chinook because the in-water work window would avoid adult and juvenile migration periods, adults prefer deeper areas of the bay-delta during migration, and juveniles do not typically rear in this part of the estuary.

Sacramento River Winter-Run Chinook salmon critical habitat – Maintenance activities such as pile replacement may re-suspend contaminated sediments and lead to a depletion of prey resources. These activities **may affect but is not likely to adversely affect designated critical habitat** because the area near MOTCO facilities is already degraded, they would be limited to only small areas within the existing footprint, and use of the action area is primarily as a migration corridor rather than a foraging area.

Central Valley Spring-run Chinook Salmon ESU – Maintenance activities **will not affect** the spring-run Chinook because the in-water work window would avoid adult and juvenile migration periods, adults prefer deeper areas of the bay-delta during migration, and juveniles do not typically rear in this part of the estuary.

Delta Smelt – Effects to Delta smelt may occur due to elevated noise levels, increases in turbidity, and resuspension of contaminated sediments associated with pile replacement. These activities **may affect but are not likely to adversely affect** delta smelt for the following reasons:

- In-water work timing restrictions will avoid critical development periods.
- Underwater noise associated with pile driving will not exceed the 206 dB peak injury threshold, and 187 dB cSEL injury threshold would be limited to a 7 meter radius around the active pile; the disturbance threshold of 150 dB RMS would extend 117 meters around the active pile.
- AMMs for pile installation and removal in Chapter 1 are intended to reduce noise and/or turbidity that may affect this species.

Delta Smelt Critical Habitat – Maintenance activities of pile replacement may lead to temporary, localized increases in turbidity and the potential resuspension of contaminant-laden sediments. The project **may affect but is not likely to adversely affect designated critical habitat** because the area of impact will be very small in relation to the overall habitat available, and AMMs will be implemented to minimize potential impacts associated with noise and turbidity.

Mammals

Salt Marsh Harvest Mouse – Maintenance activities **may affect, not likely to adversely affect** the salt marsh harvest mouse. Proposed actions and staging areas are located outside of the tidal marsh areas where this species is expected to occur. No vegetation or ground disturbance is proposed in marsh areas. In addition, the following measures would be implemented:

- Prior to the start of construction, the biological monitor will inspect exclusion fencing to ensure that it is neither ripped nor has holes and that the base is still buried. Any repairs identified as necessary will be made immediately. Further the fence will 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 visitor who inadvertently kills or injures a mouse will immediately report the incident to the USFWS approved biologist. The approved biologist will contact the USFWS to report the dead or injured individual within one working day.

- Lighting will be directed toward the working areas and security areas where it is needed, and will be designed to prevent/deter raptors from perching.

Plants

Soft Bird's-beak – Maintenance activities may lead to indirect impacts associated with increased erosion/sedimentation and/or use of chemicals and other management techniques during invasive plant control. The Project **may affect but is not likely to adversely affect** the soft bird's-beak because implementation of AMMs will eliminate the potential for increased

erosion/sedimentation. No direct impacts are anticipated as no work would be conducted in tidal marsh areas/ areas of known habitat. AMM's to be implemented include those related to pollution and erosion control, stormwater management, site restoration, and heavy equipment. Further, prior to construction conducted adjacent to tidal marsh habitats, temporary exclusion fencing would be installed between the work area and any adjacent marsh vegetation to prevent encroachment by construction vehicles and personnel. In addition, AMMs within the INRMP specify targeted removal of invasive plant species and will avoid known populations of this species.

Project actions associated with the railyard, parking lot, and building expansion would be limited to upland areas and outside of known populations of soft bird's-beak.

Birds

California Least Tern – Maintenance activities from increased noise levels and lighting that could disrupt foraging behavior. Increased noise is expected to be short-term in nature and will cease when construction ends. The Project **may affect but is not likely to adversely affect** the California least tern.

Ridgway's Rail – Activities that generate high levels of noise, such as pile driving and pavement grinding, as wells as the installation of high intensity lighting may affect the Ridgway's rail. However, they are not likely to adversely affect the Ridgway's rail because:

- Noisy activities would not occur during breeding season (February 1 through August 31) unless protocol surveys demonstrate nests are not within the affected area or within 700 feet of a calling center;
- If surveys detect Ridgway's rail presence, activities adjacent to salt marsh wetland habitat not occur within two hours before or after extreme high tides (when the marsh plain is inundated); and
- Lighting will be directed toward the working areas and security areas where it is needed, and will be designed to prevent/deter raptors from perching.
- Pre-construction surveys will be completed up to 72-hours prior to construction by a qualified biologist who holds a 10(a)1(A) permit and has previous species specific survey experience. If nest sites are located in areas that would be disturbed by construction, the Army will consult with the USFWS to determine what additional protective measures could be implemented to avoid or reduce mortality, injury or harm to the Ridgway's rail.

No permanent alteration of modification of salt marsh wetlands is proposed.

Amphibians

California Red-Legged Frog – Maintenance activities **will not affect** the California red-legged frog. Proposed actions are located well outside of areas where this species has been observed.

Further, no encroachment into habitat that could support this species is proposed. However, because habitat to support this species occurs within the Action Area, pre-construction environmental awareness training would be conducted for construction staff. Further, vehicle speeds will be reduced to 15 mph during rain events.

California Tiger Salamander – Maintenance activities **will not affect** the CTS. Proposed actions are located outside of known habitat locations and outside of areas where this species has been observed. Further, no encroachment into habitat that could support this species is proposed.

CHAPTER 4 CUMULATIVE EFFECTS

Cumulative effects are defined as the "effects of future state or private activities, not involving Federal activities that are reasonably certain to occur within the action area…" (50 CFR 402.02). Because the action area is almost entirely contained within MOTCO, any future activity would be managed by the Army and thus subject to federal review. Future federal actions that are unrelated (i.e., not interrelated or interdependent) to the Proposed Action are not considered in this PBA because they will be subject to separate consultation pursuant to Section 7 of the ESA. Therefore, no cumulative effects are anticipated beyond those that are already occurring as a result of MOTCO operations, or resulting from long-term changes in temperature and precipitation due to climate change.

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CHAPTER 5 SUMMARY

This PEA is based on the best scientific and commercial information available. The proposed action (implementing a program of maintenance and repairs at MOTCO) includes measures to avoid adverse effects and conserve federally listed species and designated critical habitat (see section 1.3.3). Our effects determinations are detailed in Section 3.8 and summarized in Table 5-1.

Table 5-1. Effects Determination Summary

Species	Status	Effects Determination
Fish		
North American Green Sturgeon	Threatened	May Affect but is Not Likely to Adversely Affect
Central Valley Steelhead	Threatened	No Effect
Central California Coast Steelhead	Threatened	No Effect
Central Valley Spring-run Chinook Salmon	Threatened	No Effect
Sacramento River Winter-run Chinook Salmon	Endangered	Not Likely to Adversely Affect
Delta Smelt	Threatened	Not Likely to Adversely Affect
Mammals		
Salt Marsh Harvest Mouse	Endangered	May Affect but is Not Likely to Adversely Affect
Plants		
Soft bird's- beak	Endangered	Not likely to Adversely Affect
Birds		
Ridgway's Rail	Endangered	Not Likely to Adversely Affect
California Least Tern	Endangered	Not Likely to Adversely Affect
Amphibians		
California Red-legged Frog	Threatened	No Effect
California Tiger Salamander	Threatened	No Effect
Critical Habitat		
Delta Smelt Habitat		May Affect but is Not Likely to Adversely Affect designated critical habitat
Sacramento Winter-run Chinook Salmon Habitat		May Affect but is Not Likely to Adversely Affect designated critical habitat

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CHAPTER 6 ESSENTIAL FISH HABITAT ASSESSMENT

The MSA in Section 305(b) directs federal agencies to consult with the NMFS to address activities that may adversely affect EFH, which is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Such "waters" include "aquatic areas and their associated physical, chemical, and biological properties that are used by fish" and may include aquatic areas historically used by fish. "Substrate" includes "sediment, hard bottom, structures underlying the waters, and associated biological communities" (NOAA, 2005).

The subtidal waters and substrates of Suisun Bay help to sustain a number of commercially important fisheries, and as a result have been designated as EFH (Figure 4) under three Fishery Management Plans, including pelagic coastal species PCS, pacific coast groundfish (PCG), and coastal pelagic species (CPS). In addition the estuary is considered a Habitat Area of Particular Concern (HAPC) for several species within the PCG assemblage. Within the Action Area, fish species use benthic habitat, open water, and intertidal areas associated with the existing riprap, pier structures, eelgrass habitat, and tidal sloughs.

The PCG Fishery Management Plan (FMP) includes over 90 species, with some that spawn and/or rear in estuaries. The PCS FMP includes Chinook salmon and Coho salmon, both of which have the potential to occur in the Action Area. PCS EFH extends from the extreme high tide line out to the full extent of the exclusive economic zone. The EFH for CPS includes all waters from the shoreline along the coasts of California, Oregon, and Washington offshore to the limits of the Exclusive Economic Zone and above the thermocline where sea surface temperatures range between 10 degrees Celsius (°C) to 26°C.

6.1 POTENTIAL ADVERSE EFFECTS OF THE ACTION ON ESSENTIAL FISH HABITAT

The proposed action, including mitigation measures listed in section 1.3.3, and the environmental baseline conditions are described above. This section discusses potential effects of the proposed action specifically on EFH. For comparison, impacts are expected to be similar in nature to, but less severe than, the impacts assessed for the modernization and repair of Wharves 2 and 3 (NMFS, 2014)..

Potential adverse effects to EFH could occur through four main pathways: increased turbidity resulting from pile driving or stormwater improvements; release of contaminants associated with sediments surrounding removed piles; disturbance of the benthos due to breakwater repair; and temporary increased sound pressure levels during pile driving.

Pile driving activities have the potential to result in minor, localized, and short-term effects to the benthos and the water column. Removing piles from the fine grained sediments around the MOTCO piers is likely to increase turbidity, which can have direct effects on nearby fish including decreased foraging efficiency, gill abrasion, and larval mortality (NMFS, 2014). Turbidity is also

associated with the suspension of fine-grained sediments near the piles that is likely to contain contaminants. Release of these contaminants may reduce water quality to which fish are exposed, and the quantity and quality of benthic invertebrate prey resources.

Pile driving also has the potential to reduce habitat quality of the water column through increase sound pressure levels that can lead to lethal and sub-lethal impacts to fish. With implementation of AMMs during construction (i.e., conducting work in the approved in-water work window, use of a silt / turbidity curtain, soft starting pile driving, installation of cushion pads) the potential for adverse effects are reduced.

Placement of riprap on the breakwater is intended to occur within the existing footprint; however, if riprap is misplaced it could permanently affect benthic species and SAV that may be located within or in close proximity to the breakwater. The expected placement of riprap would encompass a relatively small area in areas that are likely composed of broken riprap and devoid of vegetation. Further, with implementation of AMMs such as a turbidity curtain, effects are expected to be minor.

No increased shading is expected to occur as a result of the Proposed Action as no expansion of in-water or over-water structures is proposed.

The proposed action may adversely affect EFH, but with implementation of AMMs described below, these effects will be minimal.

6.2 Summary of Essential Fish Habitat

The EFH including Pacific Coast Groundfish, CPS, and PCS may be effected due to the following:

- Temporary disturbance and displacement of fish species from construction noise
- Increased sediment loads and turbidity in the water column
- Increased sediment loads and turbidity to nearby SAV populations

With implementation of AMMs including silt curtains, effects from turbidity to the water column are expected to be localized and short-term in nature. Fish species may be affected during pile driving activities from both noise and turbidity; however, AMMs such as cushion pads will reduce noise levels and silt curtains will reduce turbidity and conditions are expected to return to normal once pile driving ceases. The project **may affect** but is **not likely to adversely affect EFH**:

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FIGURES

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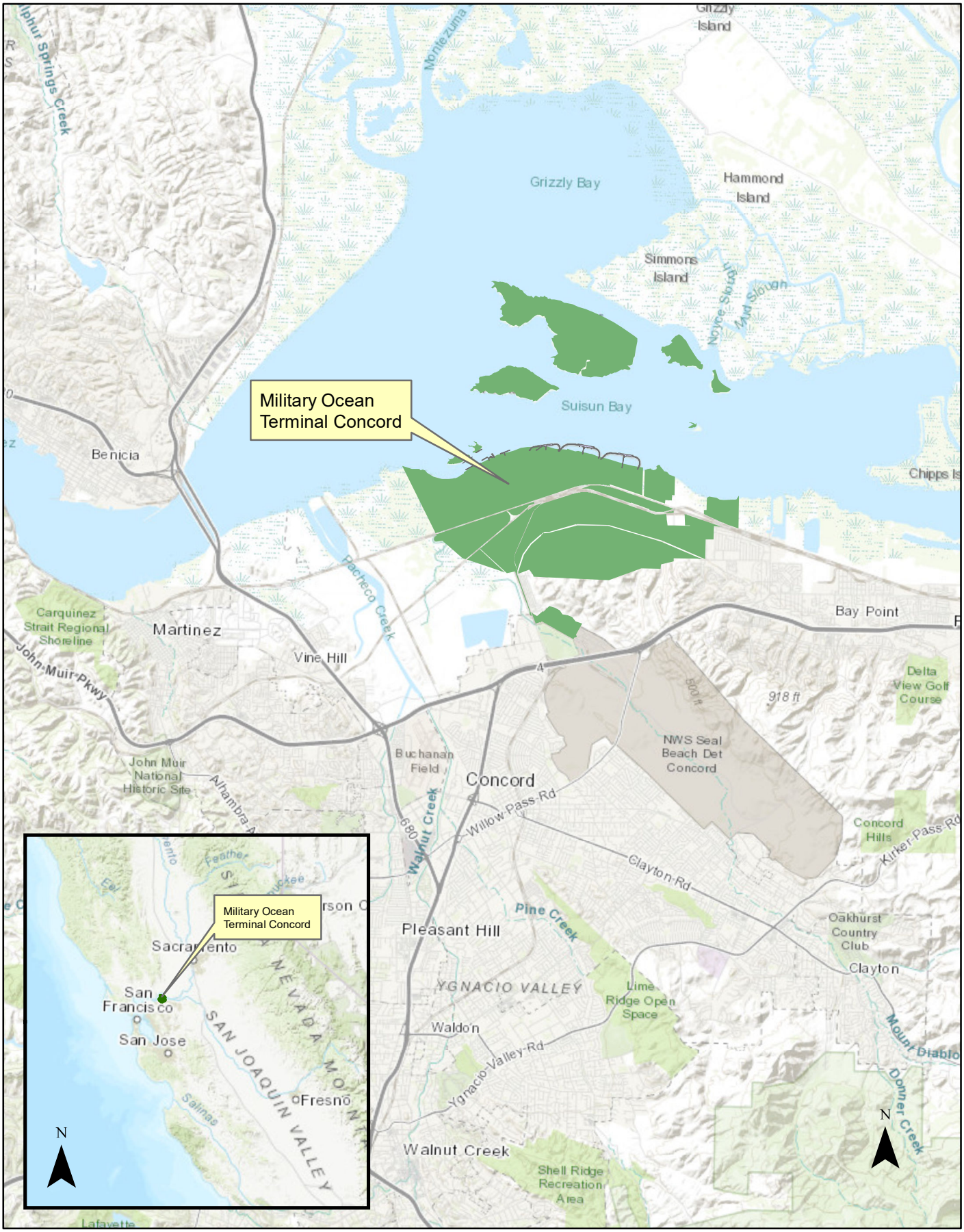

BIOLOGICAL ASSESSMENT

Regional Map
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 1

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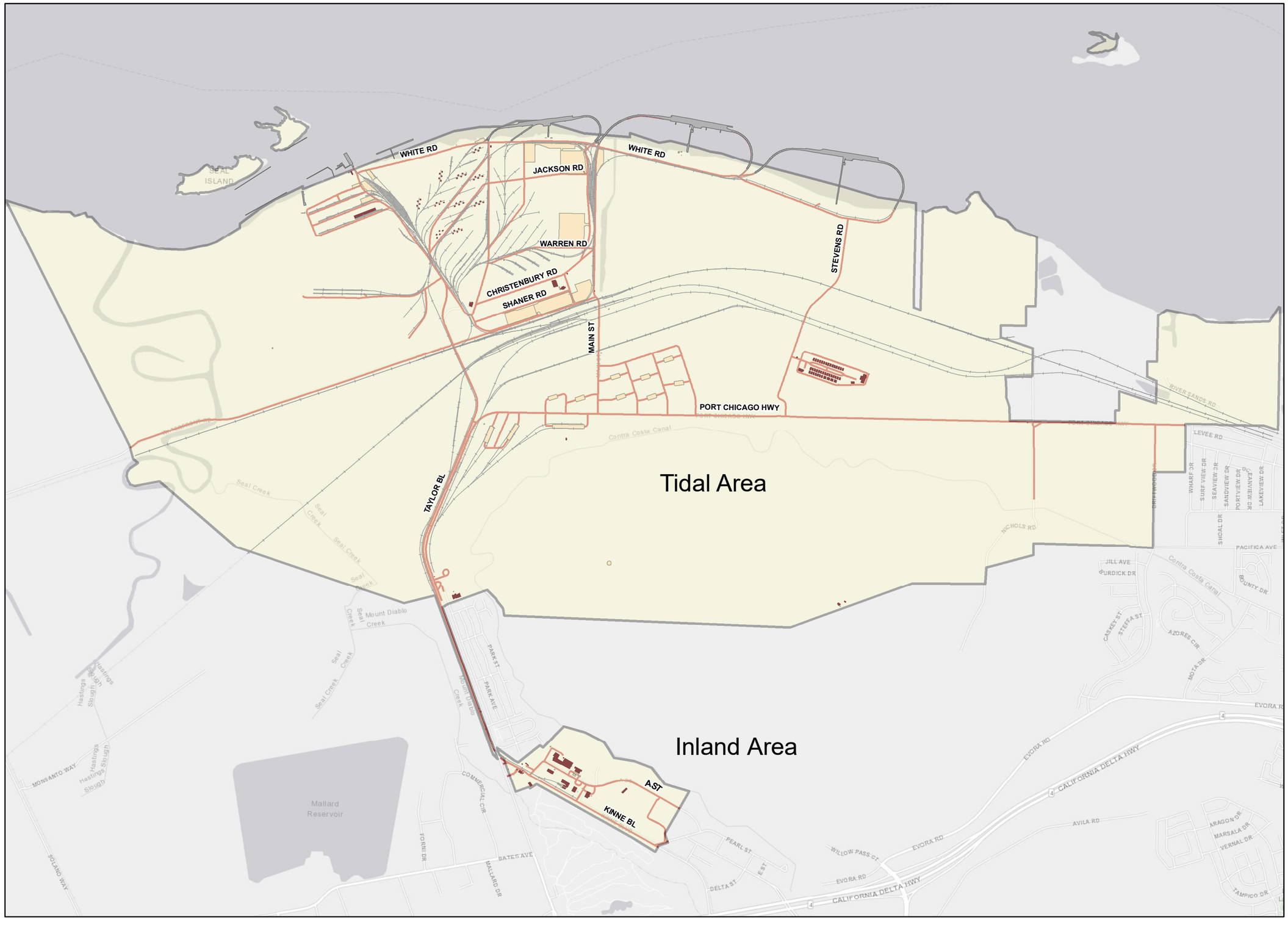

Legend

- Rail Segments

Roads

- Yes, Active
- DocksAndWharfs
- Buildings - In Service
- Lots/Pads
- Installation Boundary

Biological Assessment
Facilities Map
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 2

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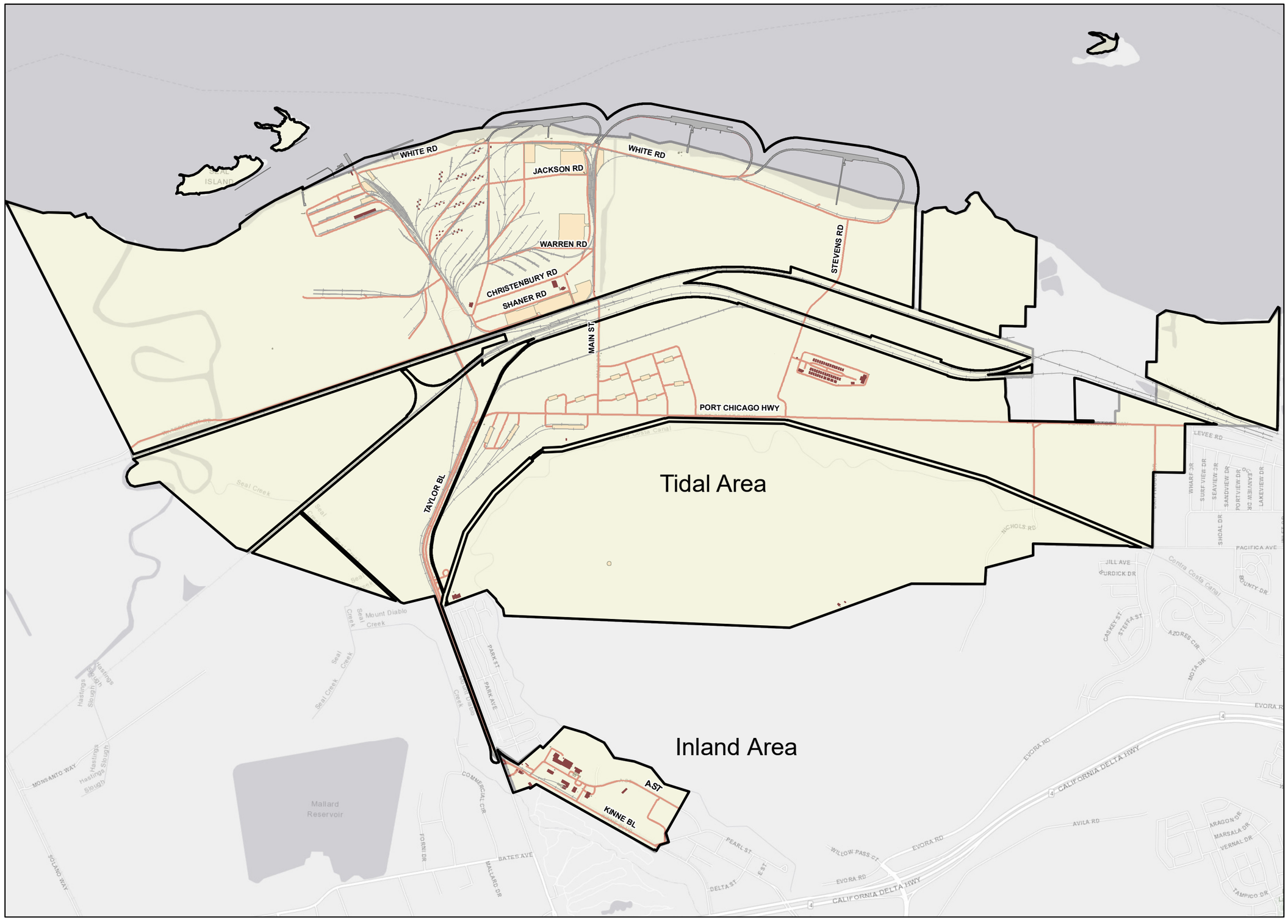

Legend

- Rail Segments
- Action Area

Roads

- Yes, Active
- DocksAndWharfs
- Buildings - In Service
- Lots/Pads
- Installation Boundary

N

0 1,000 2,000 4,000 Feet

Biological Assessment
Action Area Map
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 3

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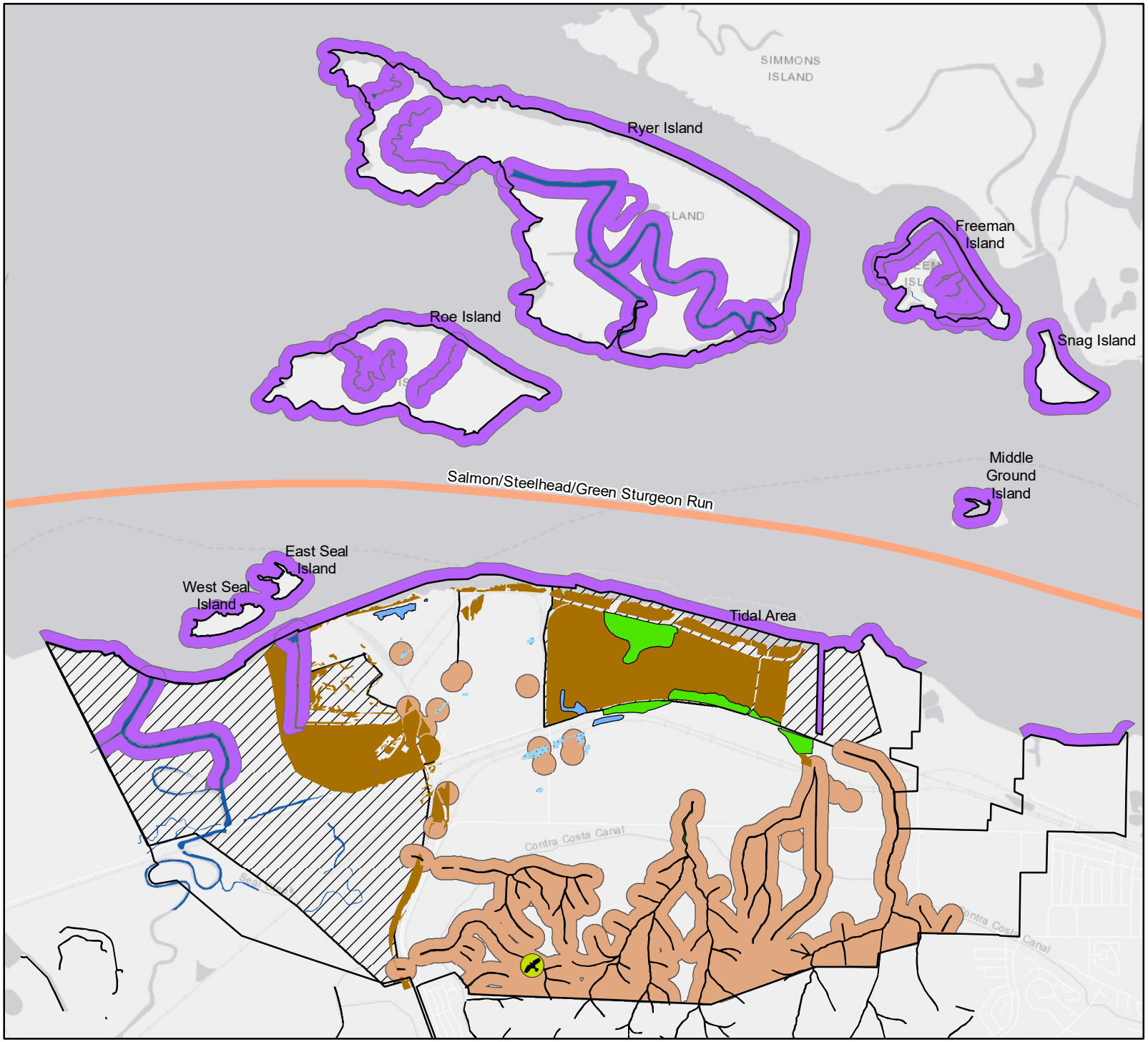

Biological Assessment

Fauna Special Species
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 4

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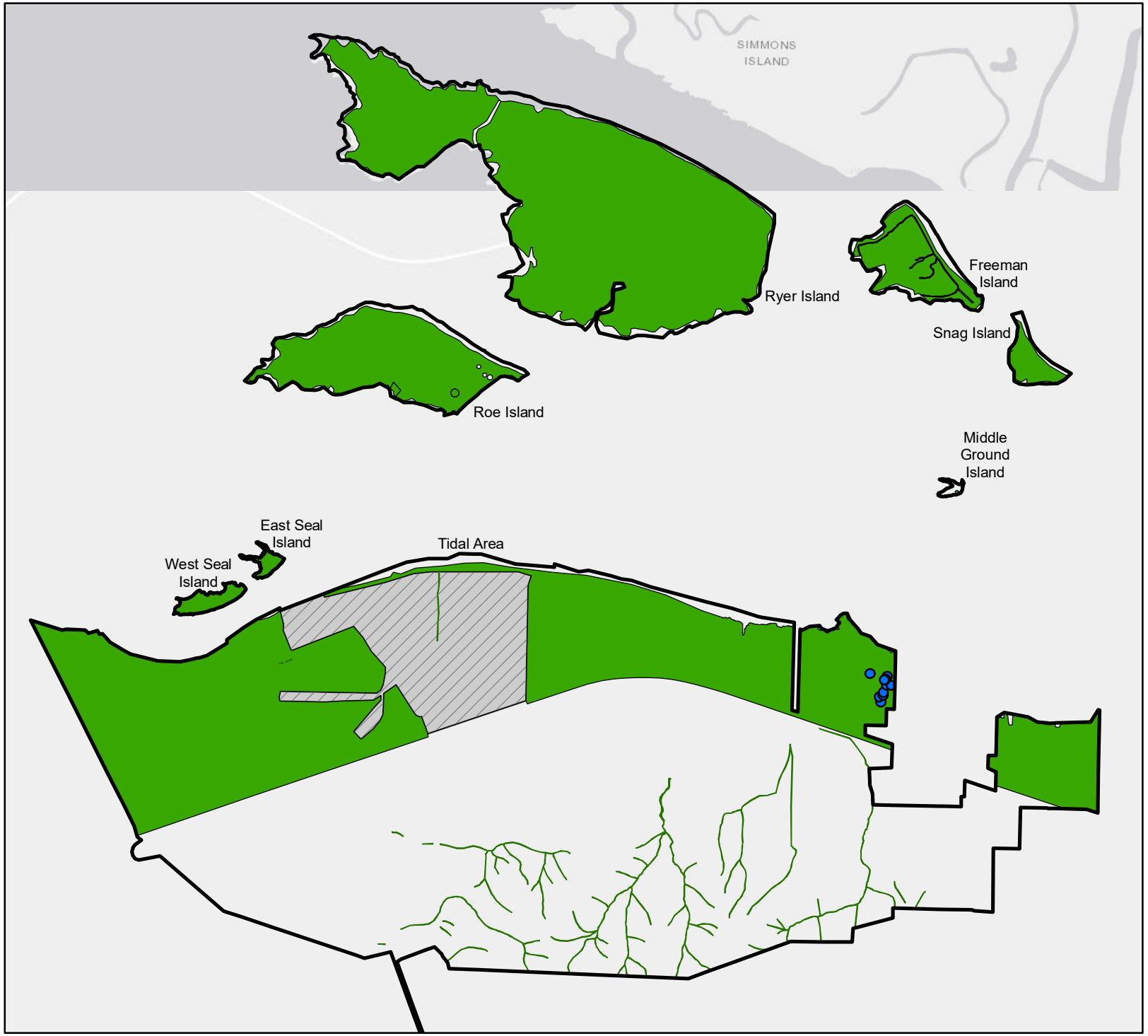

Legend

Installation Boundary

Endangered Plants
Species

Soft bird's beak- 10% of habitat surveyed

Potential Bird's Beak habitat- 10% surveyed

Sensitive Habitat

Riverine Habitat

N

0 1,750 3,500 Feet

Biological Assessment

Sensitive Habitat Map
Military Ocean Terminal Concord
Contra Costa County, CA

Figure 5

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APPENDIX A

SITE SPECIFIC/OFFICIAL SPECIES LISTS

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay-Delta Fish and Wildlife Office
650 Capitol Mall, Suite 8-300
Sacramento, California 95814

In Reply Refer To:
08FBDT00-2020-F-0018

June 22, 2020

Mr. Guy Romine
Environmental Branch Chief
Military Ocean Terminal Concord
Department of the Army
Military Surface Deployment and Distribution Command
834th Transportation Battalion
410 Norman Ave
Concord, CA 94520-1142

Subject: Formal Consultation for Routine Maintenance and Repair Activities on Military Ocean Terminal Concord, Contra Costa County, California

Dear Mr. Romine:

This letter is in response to the Department of the Army's (Army) October 21, 2019, request to initiate informal consultation with the U.S. Fish and Wildlife Service (Service) for Routine Maintenance and Repair Activities (RM&RA) on Military Ocean Terminal Concord (MOTCO) located in Contra Costa County, California. The Army's consultation initiation letter was received by the Service's San Francisco Bay-Delta Fish and Wildlife Office (BDFWO) on October 22, 2019. The Army also sent an electronic mail (email) on February 4, 2020 which changed their determinations from the October 21, 2019 letter and initiated formal consultation. The Army has determined that the RM&RA on MOTCO may affect and are likely to adversely affect the federally threatened delta smelt (*Hypomesus transpacificus*) and the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*) (SMHM). The Army also determined that RM&RA on MOTCO may affect, but are not likely to affect the endangered soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*), the endangered California clapper rail (*Rallus longirostris obsoletus*) (CCR), the endangered California least tern (*Sterna antillarum browni*) (CLT), and the delta smelt's designated critical habitat. This response is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.) (Act).

In reviewing this project, the Service has relied upon: (1) the Army's October 21, 2019, letter requesting consultation; (2) the Army's February 4, 2020 electronic mail (email) correspondence changing their effect determinations for the delta smelt and the SMHM; (3) the October 2019, *Final Programmatic Biological Assessment for Routine Maintenance and Repair Actions* (BA) prepared by Wood Environment & Infrastructure Solutions; Inc.; (4) other email and telephone conversations between the Service and the Army; and (5) other information available to the Service.

Soft bird's-beak occurs within the tidal marsh habitats in the Action Area on MOTCO. RM&RA may lead to indirect impacts associated with increased erosion/sedimentation and/or use of chemicals and other management techniques; however, the Army proposes the following measures to minimize and avoid these potential effects. The Army proposes to avoid the soft bird's-beak and its habitat. No work is proposed to occur in tidal marsh or areas of known habitat for the soft bird's-beak. Further, temporary exclusion fencing will be installed prior to any construction conducted adjacent to tidal marsh. The Army also proposes to implement conservation measures that include pollution and erosion/sedimentation controls, stormwater management, and site restoration. Based on these conservation measures, the Service concurs with the determination that the RM&RA on MOTCO may affect, but are not likely to adversely affect the soft bird's-beak.

Recent genetic analyses of rail species resulted in a change in the common name and taxonomy of the large, "clapper-type" rails (*Rallus longirostris*) of the west coast of North America to Ridgway's rail (*Rallus obsoletus*) (Maley and Brumfield 2013; Chesser *et al*. 2014). Thus, the California clapper rail (*Rallus longirostris obsoletus*) is now referred to in the scientific community as the California Ridgway's rail (*Rallus obsoletus obsoletus*). The change in the common name and taxonomy of the California clapper rail, however, does not change the listing status of the species under the Act and will be referred to by the original name in this document.

Although extensive habitat for CCR occurs on MOTCO, detection surveys of the CCR completed in 2010 and 2013 through 2018 were unable to locate CCR within the Action Area. The CCR has been observed nesting within the tidal marsh habitats in the Action Area in the past; however, no detections have been observed since 1999. The Army is assuming that CCR still has the opportunity to reside in the tidal marsh habitats on MOTCO and is therefore proposing conservation measures to avoid and minimize the probability of adversely affecting the CCR. The Army will continue to monitor for the presence of CCR through annual breeding and pre-construction surveys. The Army proposes to avoid construction in tidal marsh habitats and avoid activities that produce significant noise during the breeding season (February 1 through August 31) within 700 feet of a detected calling center if CCR eventually return to the Action Area to breed. The Army also proposes to implement measures to reduce night-lighting effects at night. The Service has reviewed the proposed actions and concurs that the RM&RA on MOTCO may affect, but are not likely to adversely affect the CCR due to the current lack of presence and the additional conservation measures proposed by the Army that do not preclude the CCR from returning to the Action Area.

Foraging habitat for the CLT occurs within the open water of Suisun Bay adjacent to MOTCO and CLT have been observed foraging and resting within the Action Area. No nesting has been observed or nesting habitat identified on MOTCO. The Service anticipates that RM&RA on MOTCO are discrete actions and limited to existing structures. MOTCO and the surrounding Suisun Bay has experienced continuous ship traffic and human activity for several decades. This has created a baseline background environment of sound and disturbance that CLT and other wildlife species have likely been habituated to. The RM&RA are not expected to elevate noise and disturbance above baseline levels that would otherwise prevent or discourage CLT from their normal foraging or resting behaviors. The Service concurs with the determination that RM&RA on MOTCO may affect, but are not likely to adversely affect the CLT.

The Service has reviewed the proposed project and its effects to the delta smelt's designated critical habitat. In designating critical habitat for the delta smelt, the Service identified the following Primary Constituent Elements (PCEs) essential to the conservation of the species:

PCE #1 is physical habitat for spawning. Reduction in overall spawning substrate is not expected to occur. The reduction is not expected because RM&RA are discrete and limited to existing structures.

PCE #2 is suitable water quality for all life stages. Water quality in the Action Area will be temporarily affected by pile-driving activities. Pile driving may affect water quality surrounding the area through the creation of the sediment plumes. The sediment plumes are temporary in nature and typically dissipate within the same day of activity. Sediment plumes are also discountable in size in relation to the Delta and would not be expected to affect the overall water quality of the Delta ecosystem.

PCE #3 is river flow. RM&RA are discrete and limited to existing structures. They do not permanently divert water out of or away from the surrounding aquatic environment and therefore is not expected to diminish river flow.

PCE #4 is salinity for rearing. RM&RA are not expected to have any significant effect on salinity, since the river flows will not be affected, thus not affecting the position of X2.

After reviewing the potential effects to the PCEs for the delta smelt critical habitat, the Service concurs that the RM&RA on MOTCO may affect, but are not likely to adversely affect the delta smelt critical habitat.

The remainder of this document represents the Service's biological opinion on the effects of the proposed project on the delta smelt and SMHM.

CONSULTATION HISTORY

October 22, 2019	The Service received the Army's consultation request.
February 4, 2020	The Service and the Army held a telephone call to discuss the potential effects of the proposed activities. The Army subsequently sent an email changing their determinations for the delta smelt and the SMHM.

BIOLOGICAL OPINION

Description of the Proposed Action

The Army proposes to implement a program of various RM&RA on MOTCO over the next 10 years. The RM&RA will not include new construction and any construction of new roads, new buildings, or extensive renovations would be reviewed under a separate consultation.

RM&RA Elements

Waterfront facilities

- Removal and replacement of marine fixtures, marine hardware, fasteners and fenders. Replacement of floating docks or other mooring apparatus to aid in berthing fire and emergency services berthing.

- Pile repair/replacement. Partial wooden pile replacement or application of a structural pile jacket or polypropylene wrap. Concrete piles may be wrapped or repaired using standard concrete repair techniques. Individual wooden piles that cannot be repaired due to structural integrity will be replaced with the same size diameter, and material as the existing piles (up to 20 per year). In cases where it is structurally feasible, wooden pile clusters will be replaced with concrete or composite material. Pile caps are an above water repair that will be replaced in-kind. The Army does not anticipate a need for pile replacement work at Pier 4 or the two lighter berths. These are planned for demolition and are no longer structurally able to support mission activity or heavy vehicle traffic.

- Damaged or degraded decking. Decking will be replaced with wood, concrete, or asphalt. Stringers, bracing, and accessory components will be replaced with marine-grade hardware, fixtures, fittings, and fasteners.

- Routine maintenance of gantry cranes and rails. Work may include replacement of rails, cables, or physical or mechanical components. It will also include the replacement of filters and fluids, electrical improvements, minor corrosion abatement, and spot painting.

- Anti-terrorism and force protection. Work may include the installation of security cameras and high intensity lighting.

- Reinforcement and repair of the existing shoreline riprap. Work will be accomplished in the same manner using similar materials matching those currently associated with this feature. Working limits will be within 20 feet of the existing area and accessed from the shore side only.

Railyard and rail lines

- Rail expansion. Projects will be limited to no more than 3 miles of linear track or 15,000 square yards (3.1 acres) of total yard expansion over the 10-year period.

- Routine maintenance, repair, and replacement of track segments. Projects include replacement of worn or undersized rail track, treated wood cross-ties, components such as anchors, wheel stops, ground rods, and bump posts and will be limited to less than 0.5 mile of consecutive linear trackage and no more than 6 miles total over the 10-year period. Work will be contained within the rail bed with disturbance areas limited to 50 feet on either side of the ballast to allow for equipment access.

- Replacement or replenishment of ballast rocks along any part of the rail network.

- Upgrading or the mechanical or electrical repair/replacement of crossing, switching, and signal equipment.

- Upgrading or the repair/replacement of the crossing, abutment, and transfer pad extensions.

Road transportation system

- Pavement repairs. Work includes sealing, milling, patching and resurfacing. Road repairs will not exceed 15,000 square feet (3.1 acres) and be limited to no more than 0.5 mile per year.

- Minor grading, re-profiling and resurfacing of unimproved aggregate roadways and fire breaks. Road bases may be replaced or upgraded to facilitate longer-term solutions to maintenance issues. Work will be limited to no more than 10 miles of unimproved road per year and working limits will be within 20 feet of the existing area.

- Repairs to culverts and stormwater drainage to maintain positive drainage away from roadways and pavement. Work includes keeping swales and conveyance free from debris and vegetation, excavation of ditches to original design if needed, repair/replace damaged or undersized culverts, and minor grading to address storm water flow and flooding issues.

- Bridge strengthening and elevated road crossings. Work includes minor corrosion abatement, spot painting, footing and foundation patching and repairs, and minor seismic upgrades such as stiffeners or reinforcement of columns. Projects will be limited to 50 feet from existing features.

- Geometry improvements. Work includes shoulder widening, curb installation, and minor adjustments to profile or slope.

- Holding pad/transfer pad. Work includes pavement repairs such as sealing, milling, patching and resurfacing. Projects will not exceed 9,000 square feet (1.9 acres) of pavement replacement per year. Enlargement of existing ammunition pads to enhance use may occur in conjunction with rail system improvements.

- Parking lots, ammo lots, staging areas, and other miscellaneous pavements. Lot expansions will be limited less than 25 percent of current size for any lot located in previously disturbed or upland areas and also limited to one acre of pavement area per year.

- Lighting, traffic, safety, signage and pavement markings. Work includes repair and replacement of traffic safety features and is limited to 20 feet from the edge of the existing road surfaces.

Utilities

- Above-ground and underground electrical, fiber-optic, phone, potable water, sanitary and storm water, and gas systems. Projects include the removal of inactive lines, component upgrades and replacements, excavation and directional boring. Work and ground disturbance will be limited to within 20 feet of existing utility right-of-ways.

- Storm water system upgrade. Work includes the removal, rerouting, and replacement of existing storm water piping, the maintenance and repair of existing retention basins, plus any additional piping needed to meet regulatory requirements. Any expansion/construction of new retention basins will not exceed 25 percent of the existing basins per year.

- Lighting protection systems. Installation, maintenance repair or replacement include building mounted components or stand-alone catenary structures. Installation would be accessory to existing facilities. The area of disturbance will be limited to within 100 feet of the existing facility footprint as a wider buffer is required for the tall, expansive lighting infrastructure.

- Installation of solar photovoltaic panels and associated energy storage and distribution components up to 1 megawatt.

Buildings

- Minor building structure expansions. Expansions will be limited to an addition of up to 2,000 square feet or 25 percent of existing building square footage, whichever is less.

- Interior and exterior maintenance and repairs. Interior and exterior renovations will stay within existing building footprint. Work may include installation, repair or replacement of various building infrastructure.

- Anti-terrorism/force protection and seismic retrofits. These may be prompted for modernization as dictated by mission critical decisions or as a result of security recommendations. Work may include installation of interior and exterior features and/or reengineering of frame and/or foundation elements. Work will be confined to within 30 feet of the building footprint.

- Berms, barricades and accessory safety/security features. Earthen/earth-filled berms and physical barriers are part of the explosive safety and anti-terrorism/force protection programs. Work may include removal, grading to repair subsidence, erosion, rodent burrows, and revegetation to stabilize slopes. Accessory structures, such as guard booths and security towers, may be installed, repaired, relocated, or replaced as necessary.

Landscaping

- Maintenance and beautification of inland cantonment common areas. Routine landscaping activities includes the installation or upgrade of irrigation systems for the establishment of plantings, tree pruning, mowing, etc. Application of herbicides and pesticides will be in accordance with the MOTCO Integrated Pest Management Plan.

- Maintenance of tidal operational areas. Work includes manual brush clearing and removal of debris within 10 feet of rail lines and operational buildings, tree pruning, chemical treatment of invasive species removal as specified in the Integrated Natural Resource Management Plan for MOTCO.

Fencing and Security

- Fence installation and repair. Work includes the installation, repair, and replacement of the perimeter fence and interior areas requiring fencing for safety and/or security.

- Anti-terrorism/force protection measures. Work includes the installation of mechanical and electronic security measures such as cameras, intrusion detection systems, vehicle barriers, bollards, etc.

Conservation Measures

Please refer to the project BA for standard best management practices, spill prevention plans, storm water pollution prevention plans, and other general conservation measures. The following conservation measures are with regard to delta smelt and SMHM.

Delta Smelt

- Construction will occur during daylight hours. In-water work will be completed in the Service's recommended work window from August 1 to November 30.

- When practical, a vibratory hammer will be used for piling installation or removal. If an impact hammer is needed to install concrete or proof piles, noise attenuation measures would be implemented to include the use of cushion pads or blocks.

Salt Marsh Harvest Mouse

- Currently, no work is proposed to occur within the tidal marsh habitats. However, if an unforeseen action is to occur in upland habitats near known or potential tidal marsh habitat, the Army will conduct a pre-construction survey using a Service-approved biologists to assess for the potential presence of SMHM. The Army will use the 2019 and 2020 Sensitive Species Surveys to guide the biologist survey work. The Army will provide preliminary results to the Service if a SMHM or other listed species are found in the work area.

- If vegetation clearance is required in upland habitats near known or potential tidal marsh habitat, all vegetation clearance will be overseen by a Service-approved biologist. Vegetation will be removed using hand-tools, to include string or bladed trimmers, to an approximate height of one foot above the ground surface. The Service-approved biologist will then inspect the area for the potential presence of SMHM. If no SMHM are found, the vegetation will be cleared to a height of 6 inches using a mower or masticator.

- SMHM will be excluded from the work area by installing a temporary exclusion fence along margins of the work area under the oversight of a biological monitor. The exclusion fence will be buried to a depth of 2 inches so that SMHM cannot crawl under the fence. The fence height will be at least 12 inches higher than the highest adjacent vegetation, with a maximum height of 4 feet. Prior to the start of daily construction activities, the biological monitor will inspect the exclusion fencing to ensure that it is not ripped or has holes and that the base is still buried. Any necessary repairs will be made immediately. The fenced area will also be inspected to ensure that no mice are trapped in it. Since SMHM are

difficult to identify from distance, any mice found along and outside the fence will be closely monitored until they move away from the construction area. The exclusion fencing will be removed after all construction is complete.

- Lighting will be directed toward the working and security areas where it is needed and designed to prevent or deter raptors from perching.

Action Area

The Action Area is defined in 50 CFR §402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The MOTCO installation is located approximately 30 miles northeast of San Francisco, in the counties of Contra Costa and Solano. The entire installation includes an approximately 115-acre inland area and an approximately 5,733-acre open water tidal area, which includes 2,045 acres of islands located in Suisun Bay. MOTCO's Real Property inventory includes 141 general building/structures, numerous ammunition and explosives magazines, barricaded magazines, berms, bridges, trestles, 38 paved areas, 4 piers, 27 miles of road, and 42 miles of rail track. For the purposes of the effects analysis for this proposed project, the Action Area encompasses all the upland areas at MOTCO and all associated structures identified for RM&RA and an area of in-water physical and audible disturbances surrounding the small craft berthing facility (SCBF) that is anticipated to occur from in-water work activities. The Action Area is approximately 220 acres (17-acre in-water footprint plus approximately 88 acres of hydroacoustic effects from pile driving activities and 115-acre landside footprint).

ANALYTICAL FRAMEWORK for the JEOPARDY DETERMINATION

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed Federal action, and any cumulative effects, on the range wide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current range wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the Action Area without the consequences to the listed species caused by the proposed action, the factors responsible for that condition, and the relationship of the Action Area to the survival and recovery of the species; (3) the *Effects of the Action*, which includes all effects that are caused by the proposed Federal action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the Action Area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of listed species.

Status of the Species for Delta Smelt

The Service conducted a recent review of the status of the delta smelt beyond what was analyzed in the last 5-year review for the species, and therefore, the current status of the species for delta smelt is replicated here for this biological opinion.

Species Legal Status and Life Cycle Summary

The Service proposed to list the delta smelt as threatened with proposed critical habitat on October 3, 1991 (Service 1991). The Service listed the delta smelt as threatened on March 5, 1993 (Service 1993), and designated critical habitat for the species on December 19, 1994 (Service 1994). The delta smelt was one of eight fish species addressed in the *Recovery Plan for the Sacramento–San Joaquin Delta Native Fishes* (Service 1996). A 5-year status review of the delta smelt was completed on March 31, 2004 (Service 2004). The review concluded that delta smelt remained a threatened species. A subsequent 5-year status review recommended uplisting delta smelt from threatened to endangered (Service 2010a). A 12-month finding on a petition to reclassify the delta smelt as an endangered species was completed on April 7, 2010 (Service 2010b). After reviewing all available scientific and commercial information, the Service determined that re-classifying the delta smelt from a threatened to an endangered species was warranted but precluded by other higher priority listing actions (Service 2010c). The Service reviews the status and uplisting recommendation for delta smelt during its Candidate Notice of Review (CNOR) process. Each year it has been published, the CNOR has recommended the uplisting from threatened to endangered. Electronic copies of these documents are available at https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=321.

The delta smelt is a small fish of the family Osmeridae. In the wild, very few individuals reach lengths over 3.5 inches (90 mm; Damon *et al.* 2016). At the time of its listing, only the basics of the species' life history were known (Moyle *et al.* 1992). In the intervening 26 years, it has become one of the most studied fishes in the United States. Enough has been learned about the delta smelt to support its propagation in captivity over multiple generations (Lindberg *et al.* 2013), to support the development of complex conceptual models of the species life history (Interagency Ecological Program (IEP) 2015), and mathematical simulation models of its life cycle (Rose *et al.* 2013a). Any synthesis of the now extensive literature on the delta smelt requires drawing conclusions across studies that had disparate objectives, but several syntheses have been compiled from existing information (Moyle *et al.* 1992; Bennett 2005; IEP 2015; Moyle *et al.* 2016). In this biological opinion, the Service relied on these previous syntheses where it remains appropriate to do so. We also relied on source study results and analyses of our own to synthesize across a rapidly growing body of scientific information.

The delta smelt has a fairly simple life history because a large majority of individuals live only one year (Bennett 2005; Moyle *et al.* 2016) and because it is an endemic species (Moyle 2002), comprising only one genetic population (Fisch *et al.* 2011), that completes its full life cycle in the northern reaches of the San Francisco Bay-Delta (Merz *et al.* 2011; Figure 1). The schematic of this simple life cycle developed by Moyle *et al.* (2016) and published again by Moyle *et al.* (2018) is shown in Figure 2. Most spawning occurs from February through May in various places from the Napa River and locations to the east including much of the Sacramento-San Joaquin Delta. Larvae hatch and enter the plankton primarily from March through May, and most individuals have metamorphosed into the juvenile life stage by June or early July. Most of the juvenile fish continue to rear in habitats from Suisun Bay and marsh and locations east

principally along the Sacramento River-Cache Slough corridor (recently dubbed the 'North Delta Arc'; Moyle *et al.* 2010). The juvenile fish (or 'sub-adults') begin to develop into maturing adults in the late fall. Thereafter, the population spatial distribution expands with the onset of early winter storms and the first individuals begin to reach sexual maturity by January in some years, but most often in February (Damon *et al.* 2016; Kurobe *et al.* 2016). Delta smelt do not reach sexual maturity until they grow to at least 55 mm in length (~ 2 inches) and 50% of individuals are sexually mature at 60 to 65 mm in length (Rose *et al.* 2013b). In captivity delta smelt can survive to spawn at two years of age (Lindberg *et al.* 2013), but this appears to be rare in the wild (Bennett 2005; Damon *et al.* 2016; Figure 2). The spawning microhabitats of the delta smelt are unknown, but based on adult distribution data (Damon *et al.* 2016; Polansky *et al.* 2018) and the evaluation of otolith microchemistry (Hobbs *et al.* 2007a; Bush 2017), most delta smelt spawn in freshwater to slightly brackish-water habitats under tidal influence. Most individuals die after spawning, but as is typical for annual fishes, when conditions allow, some individuals can spawn more than once during their single spawning season (Damon *et al.* 2016). In a recent study spanning 2 to 3 months, captive males held at a constant water temperature of 12°C (54°F) spawned an average of 2.8 times and females spawned an average of 1.7 times (LaCava *et al.* 2015).

Figure 1. Delta smelt range map. Waterways colored in purple depict the delta smelt distribution described by Merz *et al.* (2011). The Service has used newer information to expand the transient range of delta smelt further up the Napa and Sacramento rivers than indicated by Merz *et al.* (2011). The red polygon depicts the boundary of delta smelt's designated critical habitat. The inset map shows the region known as the North Delta Arc shaded light green.

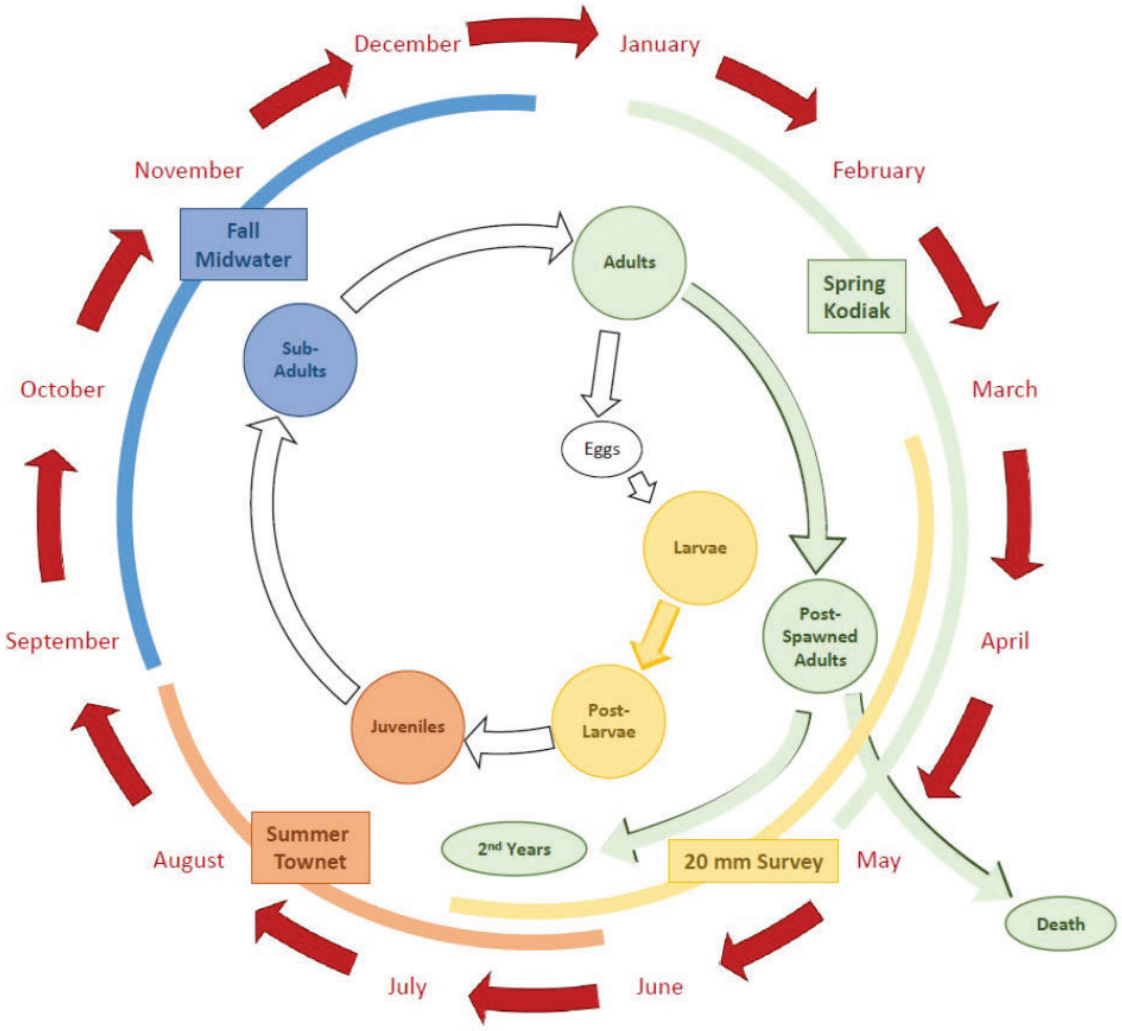

Figure 2. Schematic representation of the delta smelt life cycle. This conceptual model crosswalks delta smelt life stages with calendar months and current monitoring programs (prior to Enhanced Delta Smelt Monitoring) used to evaluate the species' status. Source: Moyle *et al.* 2016

Detailed Review of the Reproductive Biology of Delta Smelt

Delta smelt spawn in the estuary and have one spawning season for each generation, which makes the timing and duration of the spawning season important every year. Delta smelt are believed to spawn in fresh and low-salinity water (Hobbs *et al.* 2007a; Bush 2017). Therefore, freshwater flow affects how much of the estuary is available for delta smelt to spawn (Hobbs *et al.* 2007a). This is one mechanism in which interannual variation in Delta outflow could play a role in the population dynamics of delta smelt. Given the timing of delta smelt reproduction, Delta outflow during February through May would be most important for this mechanism. During this time of year, variation in Delta outflow is largely driven by weather variation and regulated by the California State Water Resources Control Board (SWRCB) Decision-1641 (D-1641).

The locations of delta smelt spawning are thought to be influenced by salinity (Hobbs *et al.* 2007a), but the duration of the spawning season is thought to be driven mainly by water temperature (Bennett 2005; Damon *et al.* 2016), which is largely a function of regional air

temperature (Wagner *et al.* 2011). Thus, the spawning season duration does not appear to be a freshwater flow mechanism, but rather, a climate-driven mechanism (Brown *et al.* 2016a). Delta smelt can start spawning when water temperatures reach about 10°C (50°F) and can continue until temperatures reach about 20°C (68°F; Bennett 2005; Damon *et al.* 2016). The ideal spawning condition occurs when water temperatures remain between 10°C and 20°C throughout February through May. Few delta smelt ≤ 55 mm in length are sexually mature and 50% of delta smelt reach sexual maturity at 60 to 65 mm in length (Rose *et al.* 2013b). During January and February, many delta smelt are still smaller than these size thresholds (Damon *et al.* 2016). Thus, if water temperatures rise much above 10°C in January, the "spawning season" can start before many individuals are mature enough to actually spawn. If temperatures continue to warm rapidly toward 20°C in early spring, that can end the spawning season with only a small fraction of 'adult' fish having had an opportunity to spawn, and perhaps only one opportunity to do so. Delta smelt were initially believed to spawn only once before dying (Moyle *et al.* 1992). It has since been confirmed that delta smelt can spawn more than once if water temperatures remain suitable for a long enough time, and if the adults find enough food to support the production of another batch of eggs (Lindberg *et al.* 2013; Damon *et al.* 2016; Kurobe *et al.* 2016). In a recent study spanning 2 to 3 months, captive males held at a constant water temperature of 12°C (54°F) spawned an average of 2.8 times and females spawned an average of 1.7 times (LaCava *et al.* 2015). As a result, the longer water temperatures remain cool, the more fish have time to mature and the more times individual fish can spawn. Most adults disappear from monitoring programs by May, suggesting they have died (Damon *et al.* 2016; Polansky *et al.* 2018).

The reproductive behavior of delta smelt is only known from captive specimens spawned in artificial environments and most of the information has never been published, but is currently being revisited in new research. Spawning likely occurs mainly at night with several males attending a female that broadcasts her eggs onto bottom substrate (Bennett 2005). Although preferred spawning substrate is unknown, spawning habits of delta smelt's closest relative, the Surf smelt (*Hypomesus pretiosus*), are sand or small gravel (Hirose and Kawaguchi 1998; Quinn *et al.* 2012).

The duration of the egg stage is temperature-dependent and averages about 10 days before the embryos hatch into larvae (Bennett 2005). It takes the fish about 30-70 days to reach 20-mm in length (Bennett 2005; Hobbs *et al.* 2007b). Similarly, Rose *et al.* (2013b) estimated that it takes delta smelt an average of slightly over 60 days to reach the juvenile life stage. Metamorphosing "post-larvae" appear in monitoring surveys from April into July of most years. By July, most delta smelt have reached the juvenile life stage. Thus, subtracting 60 days from April and July indicates that most spawning occurs from February-May.

Hatching success is highest at temperatures of 15-16°C (59-61°F) and lower at cooler and warmer temperatures and hatching success nears zero percent as water temperatures exceed 20°C (Bennett 2005). Water temperatures suitable for spawning occur most frequently during the months of February-May, but ripe female delta smelt have been observed as early as January and larvae have been collected as late as July, suggesting that spawning itself may extend into June in years with exceptionally cool spring weather.

Detailed Review of the Habitat Use and Distribution of Delta Smelt

Because the delta smelt only lives in one part of one comprehensively monitored estuary, its general distribution and habitat use are well understood (Moyle *et al.* 1992; Bennett 2005; Hobbs

et al. 2006; 2007b; Feyrer *et al.* 2007; Nobriga *et al.* 2008; Kimmerer *et al.* 2009; Merz *et al.* 2011; Murphy and Hamilton 2013; Sommer and Mejia 2013; Mahardja *et al.* 2017a; Simonis and Merz 2019). The delta smelt has been characterized as a semi-anadromous species (Bennett 2005; Hammock *et al.* 2017) and Sommer *et al.* (2011) characterized the species as a partial diadromous migrant, recognizing individual variation in its life-history. However, both terms emphasize a life cycle in which delta smelt spawn in freshwater and volitionally move 'downstream' into brackish water habitat, which is only one endpoint among several individual life cycle strategies that have recently been confirmed through the use of otolith microchemical analyses (Bush 2017). In addition, semi-anadromy and partial diadromy are scale-dependent terms which have caused confusion among researchers and managers alike. For instance, some individual delta smelt clearly migrate between fresh and brackish water during their lives (Bush 2017). Other individuals could appear to have done so based on otolith microchemistry but in reality have moved very little and simply experienced annual salinity variation, which can be very high in much of the range of delta smelt (see Hammock *et al.* 2019). Other individual delta smelt are clearly freshwater and brackish-water resident throughout their lives (Bush 2017). As a result, there are both location-based (*e.g.*, Sacramento River around Decker Island) and conditions-based (low-salinity zone) habitats that delta smelt permanently occupy. There are habitats that some delta smelt occupy seasonally (*e.g.*, for spawning), and there are habitats that a few delta smelt occupy transiently, which we define here as occasional use. Transient habitats include distribution extremes from which delta smelt have occasionally been collected, but were not historically collected every year or even in most years. Thus, the Service suggests the delta smelt may be best characterized as an upper estuary resident species with a population-scale distribution that expands and contracts as freshwater flow seasonally (and interannually) decreases and increases, respectively. This influence of freshwater flow inputs on delta smelt distribution could in turn influence mechanisms that affect the species' population dynamics when those mechanisms are linked to where the fish reside or how they are distributed in the estuary. We note that water temperature, turbidity, water diversion rates, prey availability, and possibly other factors would also affect these spatial recruitment and survival mechanisms.

Delta smelt have been observed as far west as San Francisco Bay near the City of Berkeley, as far north as Knight's Landing on the Sacramento River, as far east as Woodbridge on the Mokelumne River and Stockton on the Calaveras River, and as far south as Mossdale on the San Joaquin River (Merz *et al.* 2011; Figure 1). These extremes of the species' distribution extend beyond the geographic boundaries specified in the critical habitat rule. However, most delta smelt have been collected from locations within the critical habitat boundaries. In other words, observations of delta smelt outside of the critical habitat boundaries reflect transient habitat use rather than permanent or seasonal habitat use. The Napa River is the only location outside of the critical habitat boundaries that may be used often enough to be considered a seasonal habitat rather than a transient one.

The fixed-location habitats that delta smelt permanently occupy span from the Cache Slough complex down into Suisun Bay and Suisun Marsh (Figure 3). The reasons delta smelt are believed to permanently occupy this part of the estuary are the presence of fresh- to low-salinity water year round that is comparatively turbid and of a tolerable water temperature. These appropriate water quality conditions overlap an underwater landscape featuring variation in depth, tidal current velocities, edge habitats, and food production (Nobriga *et al.* 2008; Feyrer *et al.* 2011; Murphy and Hamilton 2013; Sommer and Mejia 2013; Hammock *et al.* 2015; 2017; 2019; Bever *et al.* 2016; Mahardja *et al.* 2019; Simonis and Merz 2019). Field observations are increasingly being supported by laboratory research that explains how delta smelt respond

physiologically and behaviorally to variation in water quality that can vary with changes in climate, freshwater flow and estuarine bathymetry (e.g., Hasenbein *et al.* 2013; 2016b; Komoroske *et al.* 2014; 2016).

The principal variable-location habitat that delta smelt permanently occupy is the low-salinity zone (LSZ) (Moyle *et al.* 1992; Bennett 2005). The LSZ is a dynamic habitat with size and location that respond to changes in tidal and river flows (Jassby *et al.* 1995; Kimmerer *et al.* 2013; MacWilliams *et al.* 2015; 2016; Bever *et al.* 2016). The LSZ generally expands and moves downstream as river flows into the estuary increase, placing low-salinity water over a larger and more diverse set of nominal habitat types than occurs under lower flow conditions. As river flows decrease, the LSZ contracts and moves upstream. This is perhaps the most frequently assumed freshwater flow mechanism in discussions about X2 regulations, but as shown by Kimmerer *et al.* (2009; 2013), it does not appear to be a major explanatory mechanism for most fishes including the delta smelt.

The LSZ often encompasses many of the permanently occupied fixed locations discussed above. It is treated separately here because delta smelt distribution tracks the movement of the LSZ somewhat (Moyle *et al.* 1992; Dege and Brown 2004; Feyrer *et al.* 2007; 2011; Nobriga *et al.* 2008; Sommer *et al.* 2011; Bever *et al.* 2016; Manly *et al.* 2015; Polansky *et al.* 2018; Simonis and Merz 2019). Due to its historical importance as a fish nursery habitat, there is a long research history into the physics and biology of the LSZ. The LSZ is frequently defined as waters with a salinity range of about 0.5 to 6 ppt (Kimmerer 2004). This and similar salinity ranges reported by different authors were chosen based on analyses of historical peaks in chlorophyll concentration and zooplankton abundance. Most delta smelt collected in California Department of Fish and Wildlife's (CDFW) 20-mm Survey and Summer Townet Survey (TNS) have been collected at salinities of near 0 ppt to 2 ppt and most of the (older) delta smelt in the Fall Midwater Trawl (FMWT) have been collected from a salinity range of about 1 to 5 ppt (Kimmerer *et al.* 2013). These fish of different life stages do not tend to be in dramatically different places (Murphy and Hamilton 2013; Figure 3), suggesting that some of the change in occupied salinity with age is due to the seasonal increases in salinity that accompany lower outflow in the summer and fall.

Each year, the distribution of delta smelt seasonally expands when adults disperse in response to winter flow increases that also coincide with seasonal increases in turbidity and decreases in water temperature (Sommer *et al.* 2011; Figure 3). The annual range expansion of adult delta smelt extends up the Sacramento River to about Garcia Bend in the Pocket neighborhood of Sacramento, up the San Joaquin River from Antioch to areas near Stockton, up the lower Mokelumne River system, and west throughout Suisun Bay and the larger sloughs of Suisun Marsh. Some delta smelt seasonally and transiently occupy Old and Middle rivers in the south Delta each year, but face a high risk of entrainment when they do (Kimmerer 2008; Grimaldo *et al.* 2009). The expanded adult distribution initially affects the distribution of the next generation because delta smelt eggs are adhesive and not believed to be highly mobile once they are spawned (Mager *et al.* 2004). Thus, the distribution of larvae reflects a combination of where spawning occurred and freshwater flow when the eggs hatch.

In summary, the delta smelt population spreads out in the winter and then retracts by summer into what is presently a bi-modal spatial distribution with a peak in the LSZ and a separate peak in the Cache Slough complex. Most individuals occur in the LSZ at some point in their life cycle and the use of the Cache Slough complex diminishes in years with warm summers (Bush 2017).

Microhabitat Use: The delta smelt has been historically characterized as a pelagic fish, meaning one with a spatial distribution that is skewed away from shorelines (Moyle *et al.* 1992; Sommer *et al.* 2007). This has led to some confusion among researchers and managers alike – usually perpetuating a strawman argument that delta smelt either occupy deep-water habitats or shallow-water habitats. Then, catch data from shallow habitats get used to refute the pelagic characterization, but catches in shallow-water say nothing more about a pelagic tendency than catches in deep water would say about a nearshore habitat tendency. The long-term monitoring programs used to characterize delta smelt status and trend are offshore sampling programs – meaning pelagic sampling programs, and surface-trawling appears to be particularly effective at capturing delta smelt away from shorelines (Mitchell *et al.* 2017). However, numerous studies have reported collecting delta smelt from nearshore environments using fishing gear like beach seines and fyke nets from locations that often had a water depth less than or equal to 1 meter (just over three feet) (e.g., Matern *et al.* 2002; Nobriga *et al.* 2005; Gewant and Bollens 2012; Mahardja *et al.* 2017b). Further, it has been established that onshore-offshore movements are one behavior option delta smelt and other fishes can use to maintain position or move upstream in a tidal-flow influenced estuary (Bennett *et al.* 2002; Feyrer *et al.* 2013; Bennett and Burau 2015). Captive delta smelt have been shown to avoid in-water structure like submerged aquatic vegetation (SAV) (Ferrari *et al.* 2014). SAV tends to grow where tidal current velocities are low, which is a habitat attribute that has also been associated with wild delta smelt (Hobbs *et al.* 2006; Bever *et al.* 2016). Thus, the proliferation of SAV in areas that might otherwise be attractive to delta smelt represents a significant habitat degradation, not only because it creates structure in the water column, but also because it is associated with higher water transparency (Hestir *et al.* 2016), and a fish fauna that delta smelt does not seem to be able to coexist with (Nobriga *et al.* 2005; Conrad *et al.* 2016). Based on our review, the Service suggests that the characterization of delta smelt as an open-water fish appears to be accurate and does not imply occupation of a particular water column depth. The species does appear to have some affinity for surface waters (Bennett and Burau 2015; Mitchell *et al.* 2017), but like any microhabitat descriptor, this is not intended to reflect the location of all individuals because delta smelt are not limited to surface waters (Feyrer *et al.* 2013).

Although the delta smelt is generally an open-water fish, depth variation of open-water habitats is an important habitat attribute (Moyle *et al.* 1992; Hobbs *et al.* 2006; Bever *et al.* 2016). In the wild, delta smelt are most frequently collected in water that is somewhat shallow (4-15 ft deep) where turbidity is often elevated and tidal currents exist, but are not excessive (Moyle *et al.* 1992; Bever *et al.* 2016). For instance, in Suisun Bay, the deep shipping channels are poor quality habitat because tidal velocity is very high (Hobbs *et al*. 2006; Bever *et al.* 2016), but in the Delta where tidal velocity is slower, offshore habitat in Cache Slough and the Sacramento Deepwater Shipping Channel is used to a greater extent (Feyrer *et al.* 2013; CDFW unpublished data).

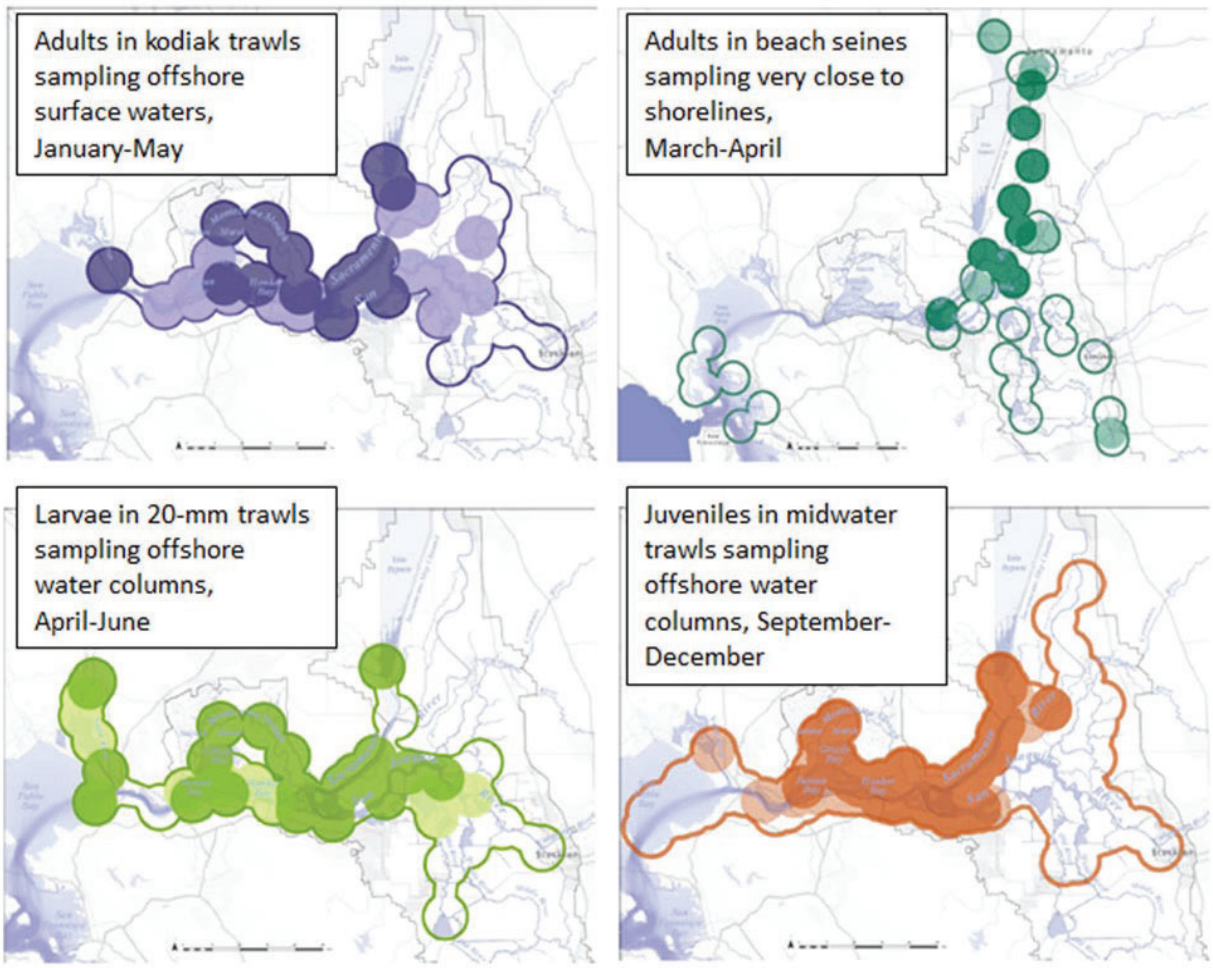

Figure 3. Maps of multi-year average distributions of delta smelt collected in four monitoring programs. The sampling regions covered by each survey are outlined. The areas with dark shading surround sampling stations in which 90 percent of the delta smelt collections occurred, the areas with light shading surround sampling stations in which the next 9 percent of delta smelt collections occurred. Note the lack of sampling sites in Suisun Bay and marsh for the beach seine (upper right panel). Source: Murphy and Hamilton (2013).

Environmental Setting and History of Ecological Change in the Bay-Delta

This section briefly reviews environmental changes that have occurred since 1850; i.e., the California Gold Rush to the present. This section is subdivided into three parts. The first describes the condition that is believed to have existed in 1850. The second covers a period from about 1920 to 1967, which is the year prior to the initiation of State Water Project (SWP) water exports from the Delta. The third sub-section covers 1968, the first year of Central Valley Project (CVP) and SWP dual operations, to the present.

Over the past few years, the scientific information developed to understand pre- and post-water project changes to the estuary's landscape and flow regime has grown substantially. However, as with most scientific endeavors, there are some discrepancies that may affect some conclusions. For instance, Whipple *et al.* (2012) showed the difference between contemporary estimates of unimpaired Delta outflow that were used in the modeling studies reviewed below and measured data from the latter 19th century. These discrepancies can affect the conclusions about the natural hydrograph of the Bay-Delta ecosystem and should be kept in mind when reviewing what

follows. The information on ecosystem changes that have accrued through time provides context for the current status of the delta smelt.

The 1850 Bay-Delta estuary: The historical Delta ecosystem was a large tidal marsh at the confluence of two floodplain river systems (Whipple *et al.* 2012; Andrews *et al.* 2017; Gross *et al.* 2018; Figure 4). The Delta itself experienced flooding over spring-neap tidal time scales and seasonal river runoff time scales. This variability in freshwater input to the estuary was likely important to seasonal and interannual variability in the productivity of the ecosystem for the same reasons that smaller-scale tidal marsh plain and floodplain inundation are today. Specifically, these flood cycles deliver organic carbon, but also increase the production of lower trophic levels due to lengthened water residence times and greater shallow, wetted surface areas (Sommer *et al*. 2004; Grosholz and Gallo 2006; Howe and Simenstad 2011; Enright *et al*. 2013). When freshwater flows out of the Delta and into the estuary, it can generate currents that aggregate particulate matter like sediment and phytoplankton (Monismith *et al*. 1996; 2002; MacWilliams *et al*. 2015) – and presumably also did so in the pre-development ecosystem. Prior to the invasion of the overbite clam, these sediment and phytoplankton aggregations, which occurred near the 2 ppt isohaline, demarcated an important fish nursery region (Turner and Chadwick 1972; Jassby *et al*. 1995; Bennett *et al*. 2002).

The estuary's natural hydrograph reached its annual base flows (annual minimum inputs of fresh water) in August or September toward the end of California's dry summers (Figure 5). Freshwater inputs would generally increase during the fall as precipitation in the watershed resumed. Delta outflow reached a broad winter through spring peak fueled first by precipitation followed by additional contributions from melting snow. The annual peak of Delta outflow often spanned January through May before declining back to base flow conditions by the late summer. The year-to-year variation in Delta outflow was considerable, often varying by about an order of magnitude during each month of the year. Water flowing from the Delta mixed into larger open-water habitats in Suisun and San Pablo bays, which themselves were fringed with marshes and tidal creeks. This pre-development ecosystem was shallower than the modern system. As a result, salinity responded more rapidly to changes in freshwater flow than it does now and less freshwater flow was needed to move salinity isohalines than is presently the case (Andrews *et al.* 2017; Gross *et al.* 2018). Like most native fish, the delta smelt evolved its life history to take advantage of this flow regime (Moyle 2002). In particular, its spawning period and early life stages overlap the months in which historical marsh-floodplain inundation and freshwater inputs to the estuary were highest, and water temperatures were cool, but not as cold as they are in the winter before spawning commences (see above for details of what is known about spawning and early life stages of delta smelt).

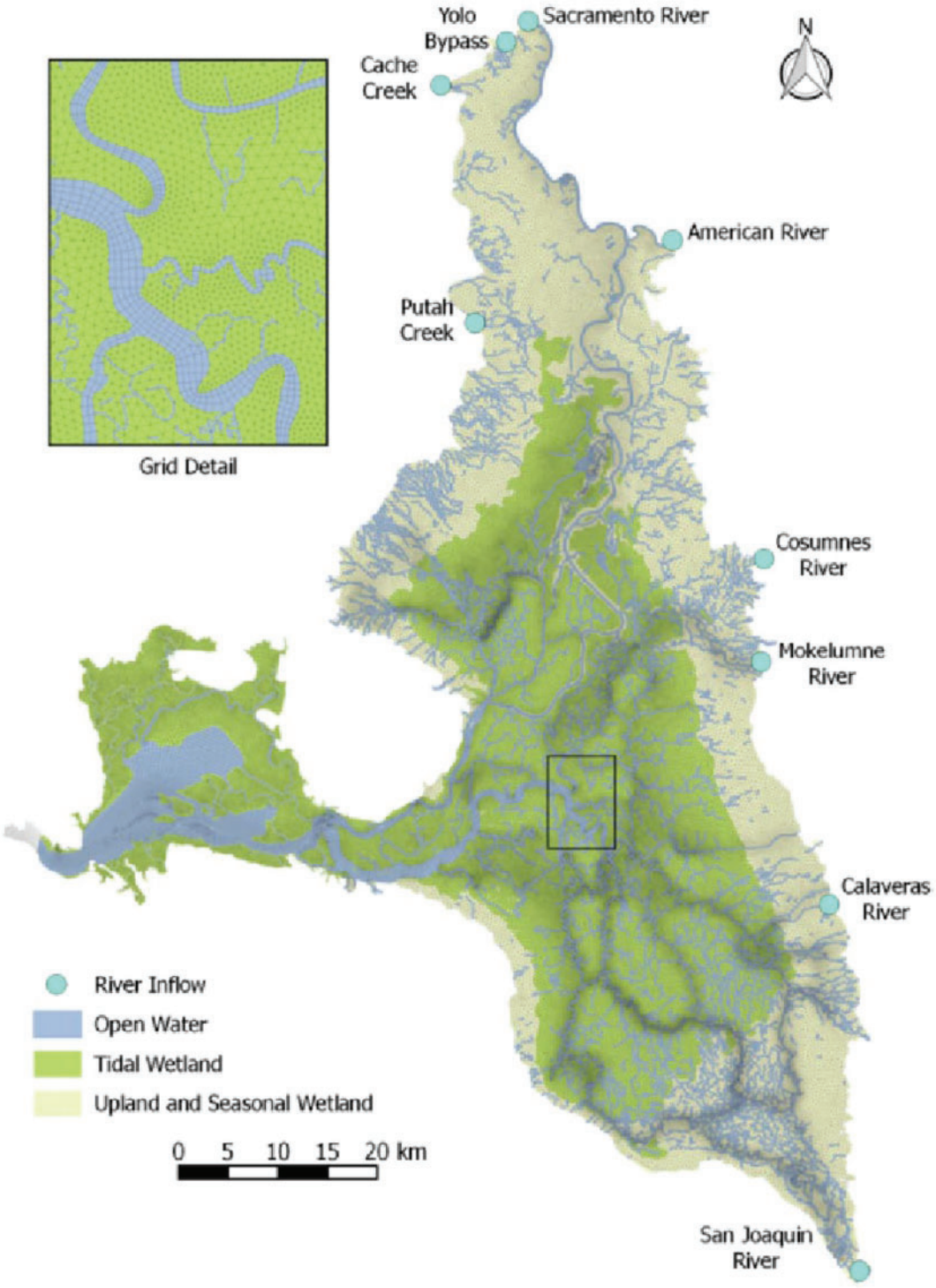

Figure 4. The circa 1850 Delta as depicted in the version of the UnTRIM 3-D hydrodynamic model described by Andrews *et al.* (2017). The model depicts an expansive tidal marsh area of approximately 2,200 square kilometers (km) or 850 square miles. Source: Andrews *et al.* (2017).

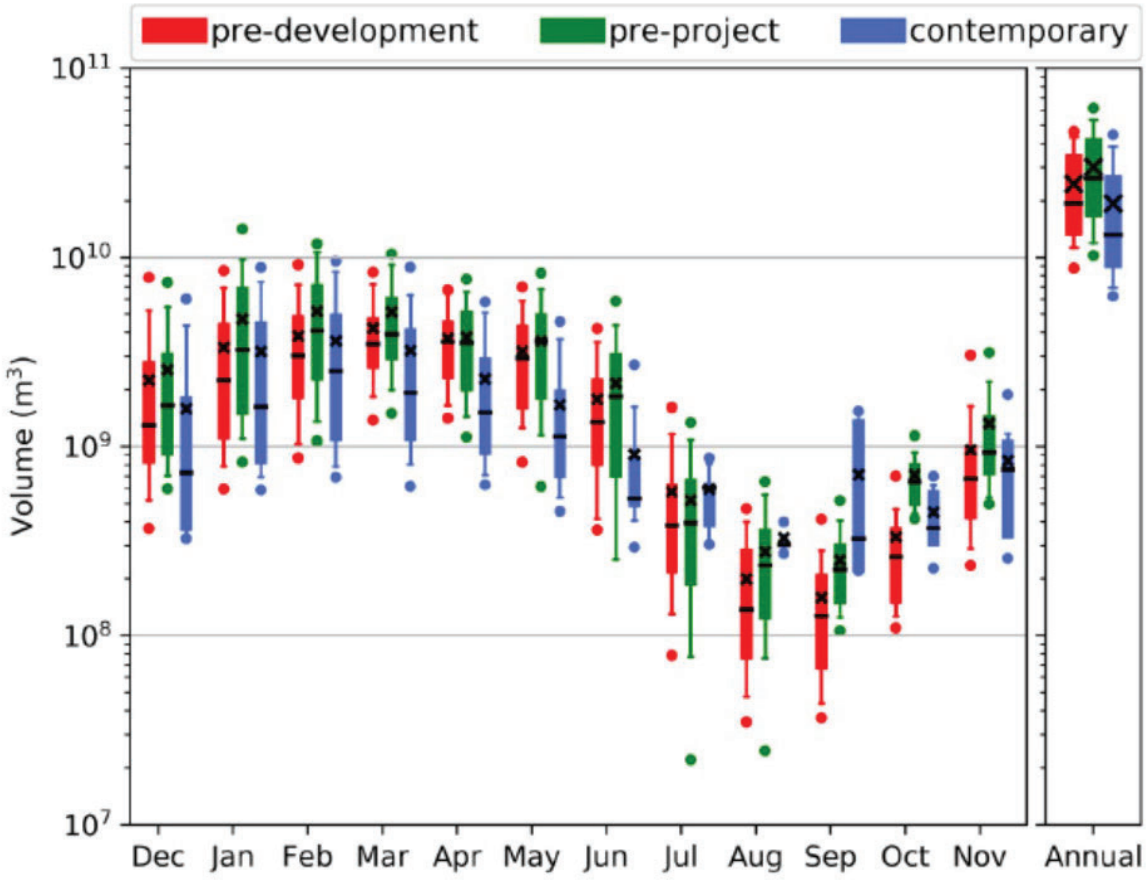

Figure 5. Boxplots of estimated Delta outflow by month for a pre-development Bay-Delta (circa 1850; red boxes), a pre-CVP and SWP Bay-Delta (circa 1920; green boxes), and a contemporary Bay-Delta (blue boxes; precise year not stated by the authors). Source: Gross *et al.* (2018). The inset labeled "Annual" on the x-axis is the boxplot summary of the sum of monthly outflows. Gross *et al.* (2018) attributed the higher outflow in the pre-project era relative to the pre-development era to the levees that had been constructed in the system by 1920.

Many tidal river estuaries form frontal zones where inflowing fresh water begins mixing with seawater (Peterson 2003). In the Bay-Delta, a frontal zone of biological importance is the LSZ (Jassby *et al.* 1995). The LSZ is a mobile and variable habitat region that frequently overlaps the parts of the estuary where many delta smelt reside (as described above). In the Bay-Delta the location and associated function of the LSZ have historically been indexed using a statistic called X2, which is the geographic location of 2 ppt salinity near the bottom of the water column measured as a distance from the Golden Gate Bridge (Jassby *et al.* 1995; MacWilliams *et al.* 2015; Figure 6). When Delta outflow is high, saline water is pushed closer to the Golden Gate, resulting in a smaller distance from the Golden Gate Bridge to X2. Conversely, when Delta outflow is low, salinity intrudes further into the estuary resulting in a larger distance from the Golden Gate Bridge to X2. These changes in how salinity is distributed affect numerous physical and biological processes in the estuary (Jassby *et al.* 1995; Kimmerer 2002a,b; Kimmerer 2004; MacWilliams *et al.* 2015).

X2, rather than another salinity isohaline, was chosen as the low-salinity zone habitat metric because it is a frontal zone or boundary upstream of which, salinity tends to be the same from the surface of the water to the bottom, and downstream of which, salinity varies from top to bottom

(Jassby *et al.* 1995). That variability in the vertical distribution of salinity is indicative of currents that help to aggregate sinking particles like sediment and phytoplankton, and as recently modeled, zooplankton (Kimmerer *et al.* 2014), near X2.

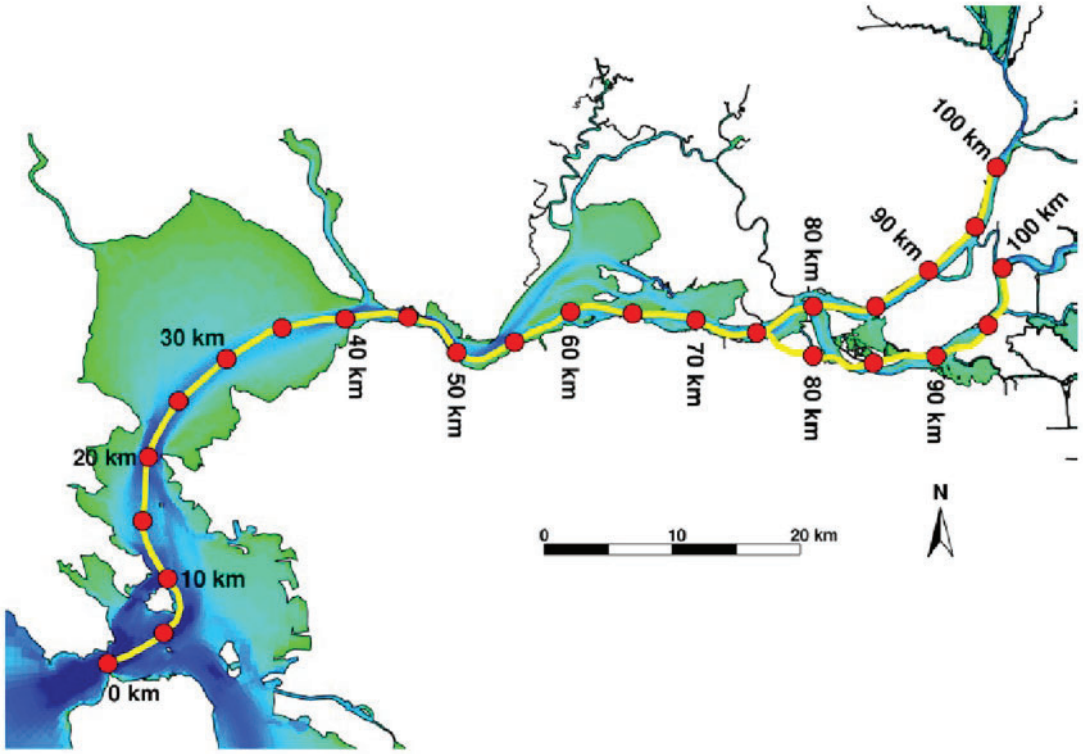

Figure 6. The northern reach of the Bay-Delta as depicted in the UnTRIM 3-D contemporary Bay-Delta model; greener colors represent shallower water and bluer colors represent deeper areas. The yellow lines depict the transect along which the location of X2 is estimated in the model and the associated red circles depict selected km distances from the Golden Gate Bridge along the northern axis of the estuary into the Sacramento and San Joaquin rivers for use in interpreting the variable locations of X2. Source: MacWilliams *et al.* (2015).

Pre-development outflows from the Delta were higher in the winter and spring than they are now while summer and fall outflows may have been lower (Andrews *et al.* 2017; Gross *et al.* 2018; Figure 5). Thus, X2 also varied more within years in the circa 1850 estuary than it now does. In the pre-development estuary, X2 would remain in San Pablo Bay for months at a time in the winter-spring of Above Normal and wetter water year types before retreating landward (upstream) in the summer-fall. In the contemporary estuary, X2 spends nearly all of its wet season time in Suisun Bay (landward or 'upstream' of historical) and dry season time between Collinsville and Rio Vista (~ 80 to 95 km; Figure 6). These contemporary dry season locations of X2 may be seaward or 'downstream' of historical locations (Gross *et al.* 2018).

There are no data on the timing and magnitude of biological productivity in the circa 1850 Bay-Delta, nor are we aware of any information on how delta smelt used the estuary at the time. However, inferences can be made based on general ecosystem function in the northern hemisphere temperate zone and contemporary information. The input of basal food web materials like nutrients and detritus likely co-varied with the timing, duration, and magnitude of freshwater flows (e.g., Delta inflow; Jassby and Cloern 2000), which would likewise have affected the timing, magnitude, and duration of inundation of the system's expansive floodplains

(e.g., Whipple *et al.* 2012; Figure 4). The production of planktonic and epibenthic invertebrates from floodplains, tidal wetlands, and open-water habitats that fuel the production of juvenile fishes that feed in open waters may have generally increased during the spring and peaked during the summer in concert with seasonal variation in water temperature (e.g., Heubach 1969; Orsi and Mecum 1986; Merz *et al.* 2016). The summer months are the warmest months in the Bay-Delta region and thus, they support the highest *average* metabolic rates of invertebrates and fish, which rely on water temperature to control their body temperature and metabolic rates. However, there was likely to have been considerable species-specificity to this generalization (e.g., Ambler *et al.* 1985; Gewant and Bollens 2005) because the Bay-Delta's native biotic community includes numerous cold-water adapted species.

The seasonal timing of delta smelt reproduction (February-May; detailed below) would have more broadly coincided with the general timing of peak freshwater flow into the Bay-Delta (Figure 5). The higher outflow and shallower average depth of the system resulted in frequent occurrence of the LSZ in San Pablo Bay during the wet season. Thus, it is likely that delta smelt reared in San Pablo Bay, taking advantage of its greatly expanded low-salinity habitat area (see MacWilliams *et al*. 2015), to much greater extent prior to development of the system than they are able to now. Lower flows in the summer-fall likely caused delta smelt distribution to seasonally retract back into Suisun Bay/marsh and the Delta; ecosystems which were likely much more productive at the time due to the expansive tidal marshes and greater connection between land and water (Whipple *et al*. 2012). Delta smelt's population-level demand for prey annually peaks at some combination of water temperature and growth of the population's biomass. This timing could be estimated from the model developed by Rose *et al.* (2013a), but we are not aware that such a calculation exists.

1920-1967: By 1920, most of the Delta's tidal wetlands had been reclaimed (Whipple *et al.* 2012; Figure 7). The data provided by Gross *et al.* (2018; Figure 4) suggest that Delta outflow may have been a little higher circa 1920 than it had been circa 1850 due to levee construction. However, this may (Hutton and Roy 2019) or may not be consistent with historical observations (Whipple *et al.* 2012). Regardless, Delta outflow and several other net flow metrics from within the Delta did begin to decline between the early 1920s and 1967 (Hutton *et al.* 2017a; 2019). These changes occurred because of four factors: (1) water storage in the Bay-Delta watershed increased from about 4 million acre feet (MAF) to about 40 MAF because of the construction of dams upstream of the Delta, (2) the CVP began exporting water from the Delta in 1951, (3) non-project water diversions within and upstream of the Delta increased, and (4) shipping channels were dredged through the estuary and into the Sacramento and San Joaquin rivers. These changes facilitated a general water management strategy in California to store water during the wet season and re-distribute it during the dry season to provide a more reliable supply than was available naturally. In addition, the CVP and SWP have had to offset a considerable summertime water deficit to protect the quality of their exported water and to protect water quality for senior water rights holders in the Delta. These uses would be highly impaired without water released from CVP and SWP reservoirs during the summer and fall (Hutton *et al.* 2017b).

During the 1930s to 1960s, the navigation channels were dredged deeper (~12 meters) to accommodate shipping traffic from the Pacific Ocean and San Francisco Bay to ports in Sacramento and Stockton and to increase the capacity of the Delta to convey floodwaters. Channel deepening interacted with the simultaneously increasing water storage to change the Bay-Delta ecosystem into one in which Suisun Bay and the Sacramento-San Joaquin River confluence region became the largest and most depth-varying places in the typical range of the

LSZ. Even with these changes, the LSZ remained a highly productive fish nursery habitat for many decades (Stevens and Miller 1983; Moyle *et al.* 1992; Jassby *et al.* 1995).

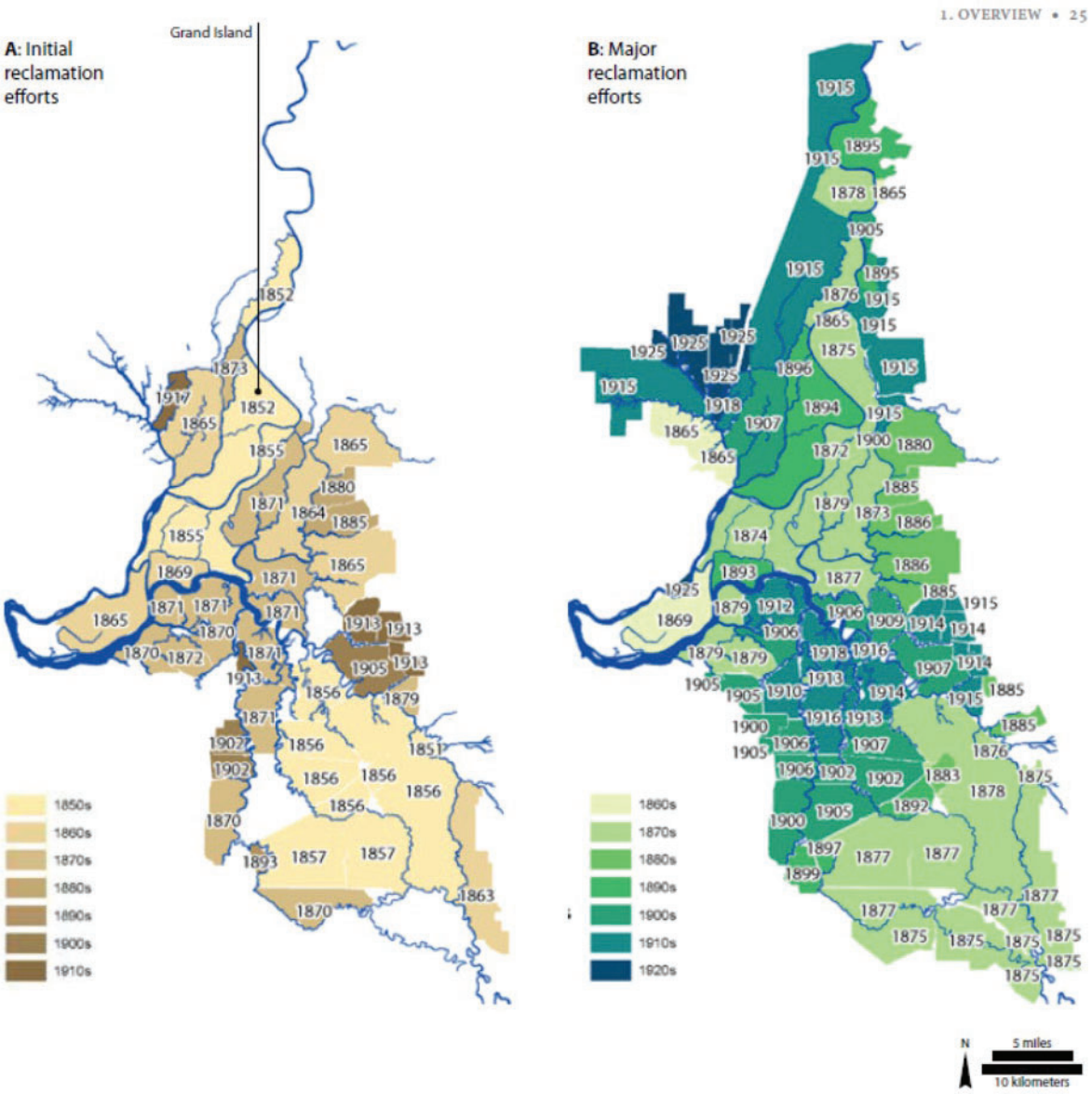

Figure 7. Maps of the Delta showing years of initial land reclamation attempts on the left and major land reclamation efforts on the right. Note that a large majority of the major reclamation efforts were underway by 1915 and the last efforts in the vicinity of Liberty Island began in 1925. Source: Whipple *et al.* (2012).

1968-present: The SWP began exporting water from the Delta in 1968 and its exports generally increased until about 1989 (Figure 8). CVP exports reached present-day levels by the end of the 1970s. During the 1980s water storage capacity in the Bay-Delta watershed reached its present-day level of a little over 50 MAF (Cloern and Jassby 2012; Hutton *et al.* 2017a). Thereafter, combined CVP-SWP exports began to increase in year-to-year variability, which increased the uncertainty about how much water would be supplied south of the Delta annually. This has combined with the increasing human demand for fresh water to result in a conflict between human water demand and environmental water uses, including the maintenance of the hydraulic salinity barrier needed to protect exported water and other in-Delta water users from salinity intrusion (Hutton *et al.* 2017b; Reis *et al.* 2019).

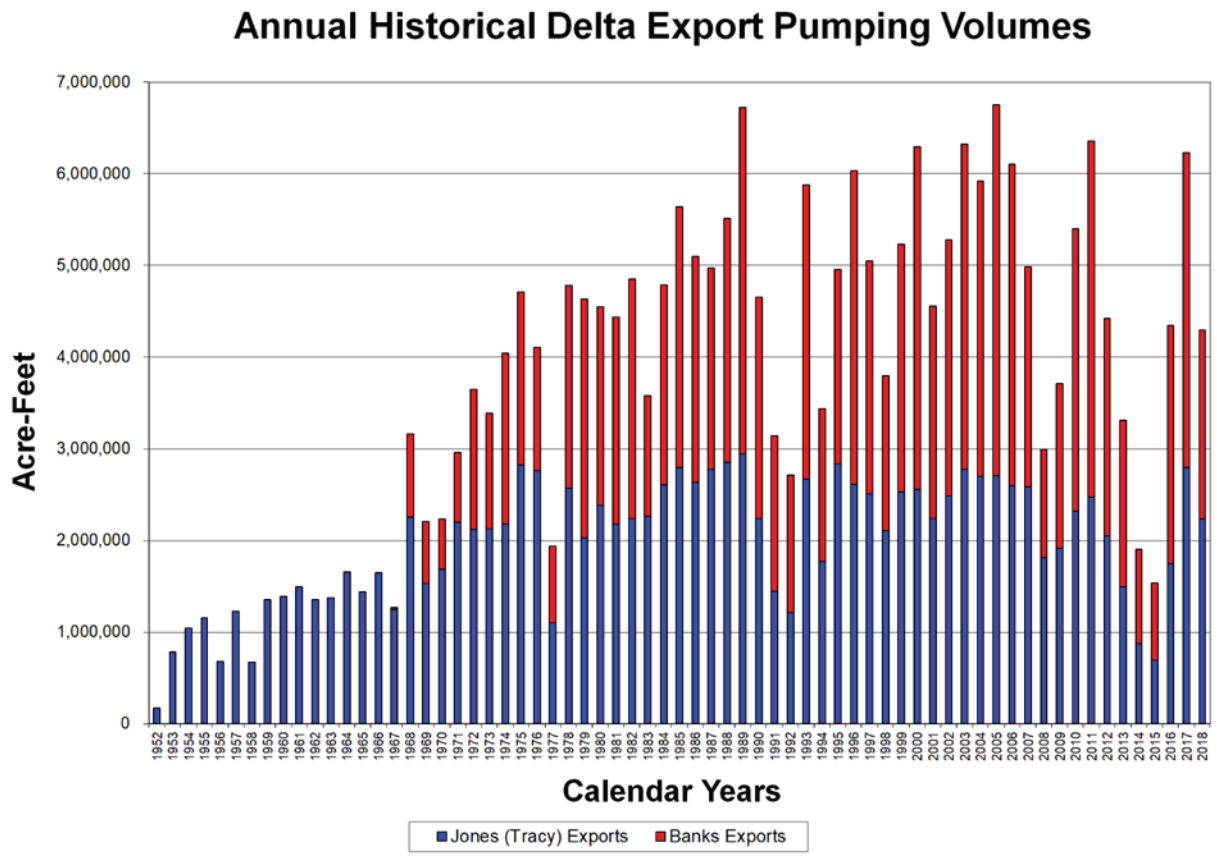

Figure 8. Time series of Central Valley Project and State Water Project exports from the Delta for 1952 through 2018. State Water Project exports began in water year 1968. Source: DAYFLOW data base.

The changes discussed above have continued to lower Delta outflow (Hutton *et al.* 2017a,b; Reis *et al.* 2019; Figures 9 and 10), though D-1641 appears to have halted the trend for years in which the eight river index is lower than 20 MAF (middle panel of Figure 9). In Figure 9, exports were modeled as depletions of water from the system, so the more negative the number on the y-axis of the middle panel, the higher the exports. Thus, the graphic shows that in years when the eight river index is more than 20 MAF, exports continue to increase, but in years when the eight river index is lower than 20 MAF, exports have been trending lower. Both of these trends cause the higher year-to-year variability in water exports shown in Figure 8.

In general, major changes to the flow regime of an aquatic ecosystem are expected to be accompanied by ecological change (Benson 1981; Bunn and Arthington 2002; Poff and Zimmerman 2010; Gillson 2011), and that is what has been observed over time in the Bay and Delta (e.g., Matern *et al.* 2002; Moyle and Bennett 2008; Winder *et al.* 2011; Feyrer *et al.* 2016; Conrad *et al.* 2016). Delta outflow is a driver of many ecological mechanisms in the Bay-Delta and an indicator of several others (Kimmerer 2002a). Thus, the changes to the estuary's freshwater flow regime have likely interacted with the changes to the estuary's landscape, specifically its deeper channels and greatly reduced land-water connections (Andrews *et al*. 2017), to lower the total biological productivity of the estuary. In addition, changes to the freshwater flow regime detailed above appear to have affected the reproductive success of fishes that use the Delta and Suisun Bay as rearing habitats. The evidence for this is that the native fish assemblage had reproductive seasons timed to winter-spring peak flows, whereas currently

dominant non-native species generally spawn later in the spring and into the summer when inflows to the Delta are generally high to support human water use, but outflow from the Delta is generally low (Moyle 2002; Moyle and Bennett 2008). Reis *et al.* (2019) recently described super-critical water years with respect to Delta outflow. Several studies have indicated that low flow years and droughts in particular result in low native fish production in the Bay-Delta (Meng *et al.* 1994; Jassby *et al.* 1995; Kimmerer 2002b; Feyrer *et al.* 2016). Droughts recur and may contribute to cumulative impacts to native fishes like delta smelt. For instance, recent droughts have been particularly problematic for delta smelt (Moyle *et al.* 2018). Thus, the frequency of these super-critical water years, which has been much higher since 1968 than it was from 1920-1967 (Figure 10), is a conservation challenge that the Service and its partners have to contend with.

There are several fish species in the Bay-Delta that have historically been shown to have demonstrable positive population responses to freshwater flows into or out of the Delta. These include the well-described relationships for the survival of emigrating Sacramento basin Chinook salmon (*Oncorhynchus tschawytscha)* smolts with Sacramento River inflows (Kjelson and Brandes 1989; Perry *et al.* 2010), the relationship of Sacramento splittail (*Pogonichthys macrolepidotus*) production to Yolo Bypass flow (Moyle *et al.* 2004; Feyrer *et al.* 2006), and the 'fish-X2' relationships for striped bass (*Morone saxatilis*), longfin smelt (*Spirinchus thaleichthys*), and starry flounder (*Platichthys stellatus*) (Turner and Chadwick 1972; Jassby *et al.* 1995; Kimmerer 2002b). The life-history of delta smelt with its affinity for fresh and low-salinity waters seems consistent with that of a fish one could expect to respond similarly to variation in Delta outflow or X2. Researchers searched for some form of analogous relationship for the delta smelt for several decades, but no persistent relationship was found (Stevens and Miller 1983; Moyle *et al.* 1992; Jassby *et al.* 1995; Kimmerer 2002b; Bennett 2005; Mac Nally *et al.* 2010; Thomson *et al.* 2010; Miller *et al.* 2012). Further, Rose *et al.* (2013a,b) did not find salinity variation *per se* to have much impact on predictions of delta smelt population growth rate. The larger predicted impact in their individual-based model related to flow was due to simulated entrainment in exported water (Rose *et al.* 2013b; Kimmerer and Rose 2018). Although entrainment was predicted to lower the population growth rate, in and of itself, it could not convert a strongly positive growing population into a declining one without at least one additional factor impacting survival at the same time.

The IEP (2015) reported a correlation between February-May X2 and ratios of the 20-mm Survey index for delta smelt and either the Spring Kodiak Trawl (SKT) or FMWT indices of the parental stock that produced the 20-mm fish. This relationship emerged in data beginning at the time of the pelagic organism decline (POD) in 2002. This relationship is stronger when considered in terms of salinity at Chipps Island (He and Nobriga 2018), possibly because salinity can be measured more accurately than Delta outflow when net freshwater flow is very low (Monismith 2016). Castillo *et al.* (2018) used a simulation based on SKT data to suggest a link between Delta outflow and adult delta smelt abundance. In addition, several teams have reported statistical associations of delta smelt spatial distribution and salinity that imply the population spatial distribution co-varies with Delta outflow, X2, or similar indices of freshwater input to the estuary (Feyrer *et al.* 2007; 2011; Nobriga *et al.* 2008; Kimmerer *et al.* 2009; 2013; Bever *et al.* 2016; Polanksy *et al.* 2018; Simonis and Merz 2019). The strength of this covariation and its management utility have been contested (e.g., Murphy and Hamilton 2013; Manly *et al.* 2015; Latour 2016; Polanksy *et al.* 2018) and supported (Sommer *et al.* 2011; Bever *et al.* 2016; Feyrer *et al.* 2016; Mahardja *et al.* 2017a) in several recently published papers.

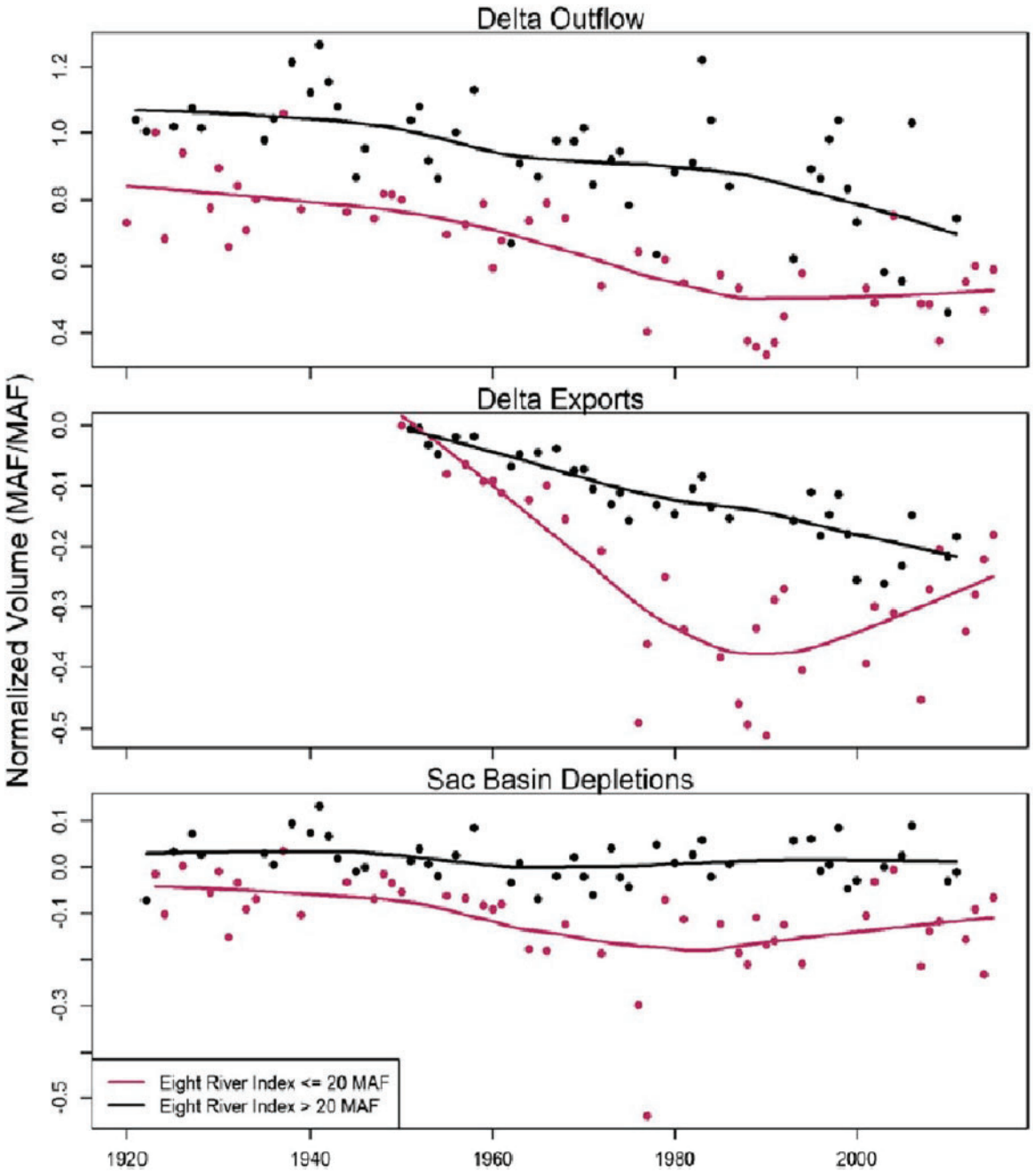

Figure 9. Time series (1922-2015) of statistical trend outputs of annual Delta outflow (top panel), Delta exports treated as depletions so increasing exports are represented by more negative values (middle panel), and water diversions from the Sacramento River basin upstream of the Delta (bottom panel). Black symbols and lines are for years in which the eight river index, a measure of water availability in the Bay-Delta watershed, was greater than 20 MAF. Red symbols and lines are for years in which the eight river index was less than or equal to 20 MAF. Source: Hutton *et al.* (2017b).

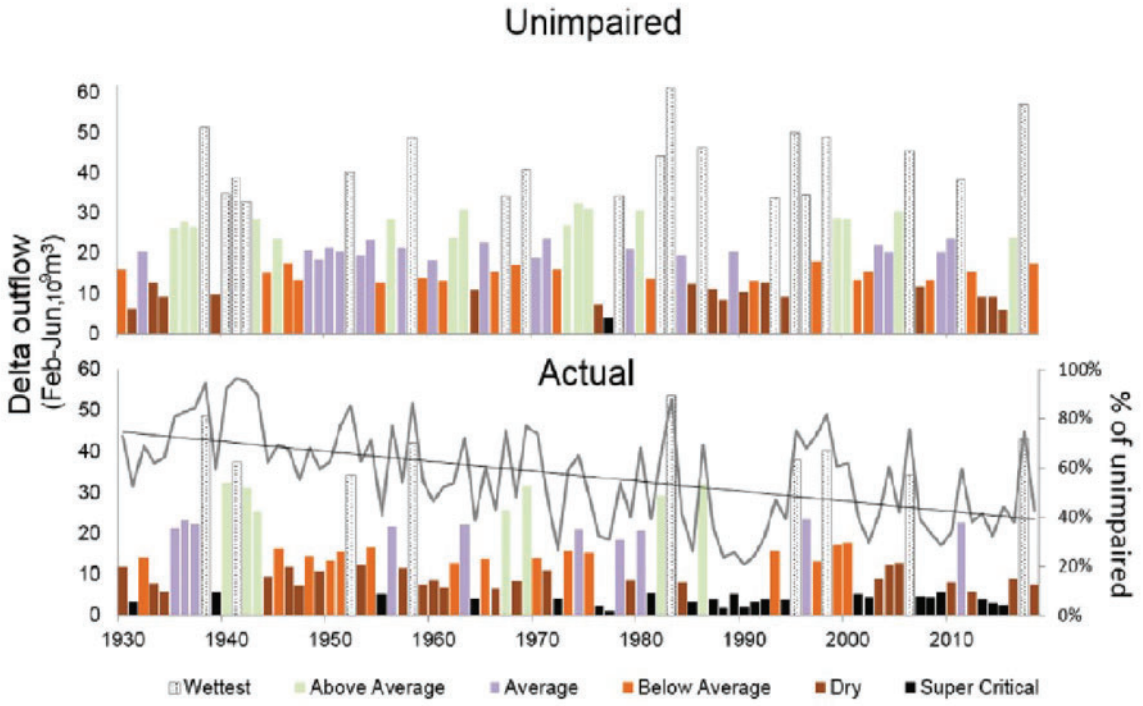

Figure 10. Time series of estimates of unimpaired (upper panel) and actual (lower panel) Delta outflow (February-June) color-coded according to six water year types, 1930-2018. The water year types based on basin precipitation are shown in the upper panel. In the lower panel, the water year types were re-assessed based on their fraction of the estimated unimpaired outflow. The long-term trend in this fraction as "% of unimpaired" is shown on the second y-axis of the bottom panel. Source: Reis *et al.* (2019).

Delta Smelt Population Trend

The CDFW's TNS (http://www.dfg.ca.gov/delta/data/townet/indices.asp?species=3) and FMWT Survey (http://www.dfg.ca.gov/delta/data/fmwt/indices.asp) are the two longest running indicators of the delta smelt's abundance trend. Indices of delta smelt relative abundance from these surveys date to 1959 and 1967, respectively (Figures 11 and 12). The FMWT index has traditionally been the primary indicator of delta smelt trend because it samples later in the life cycle, providing a better indicator of annual recruitment than the TNS (Service 1996). It has also sampled more consistently and more intensively than the TNS. The FMWT deploys more than 400 net tows per year over its four-month sampling season (September through December). The highest FMWT index for delta smelt (1,673) was recorded in 1970 and a comparably high index (1,654) was reported in 1980 (Figure 12). The last FMWT index exceeding 1,000 was reported in 1993. The last FMWT indices exceeding 100 were reported in 2003 and 2011. In 2018, the FMWT index was zero for the first time. The TNS index for delta smelt has been zero four times since 2015. Thus, the TNS and FMWT have recorded a 40-50 year decline in which delta smelt went from a minor (but common) species to essentially undetectable by these long-term surveys (Figures 11 and 12).

Following the listing of the delta smelt, the CDFW launched a 20-mm Survey (1995) and a SKT Survey (SKT; 2002) to monitor the distribution and relative abundance of late larval stage and adult delta smelt, respectively. These newer indices have generally corroborated the trends implied by the TNS and the FMWT (Figures 11 and 12). The CDFW methods generate abundance indices from each survey but each index is on a different numeric scale. This means

the index number generated by a given survey only has quantitative meaning relative to other indices generated by the same survey. Further, the CDFW indices lack estimates of uncertainty (variability) which limits interpretation of abundance changes from year to year even within each sampling program. The Service recently completed a new delta smelt abundance indexing procedure using data from all four of these surveys (Polansky *et al.* 2019). The Service method improves upon the CDFW method because it generates abundance indices in units of numbers of fish, including attempts to correct for different sampling efficiencies among surveys, and the method includes measures of uncertainty. Service indices of spawner abundance based on combined January and February SKT sampling are listed with their confidence intervals in Table 1. The estimates show the most recent 19 years of the delta smelt's longer-term decline in numbers of fish as best as they can be approximated with currently available information. The 2020 abundance estimate of 5,213 is the lowest on record, though the upper confidence limit for the 2020 estimate overlaps the lower confidence limits from 2016 and 2018. This indicates there is more than a five percent chance that the 2020 abundance index is not different from 2016 and 2018. Regardless of this recent year uncertainty, the 2020 abundance index is much lower than peak abundance estimates in Table 1 which themselves are all based on data streams that started after the species had already declined considerably (Figures 11 and 12).

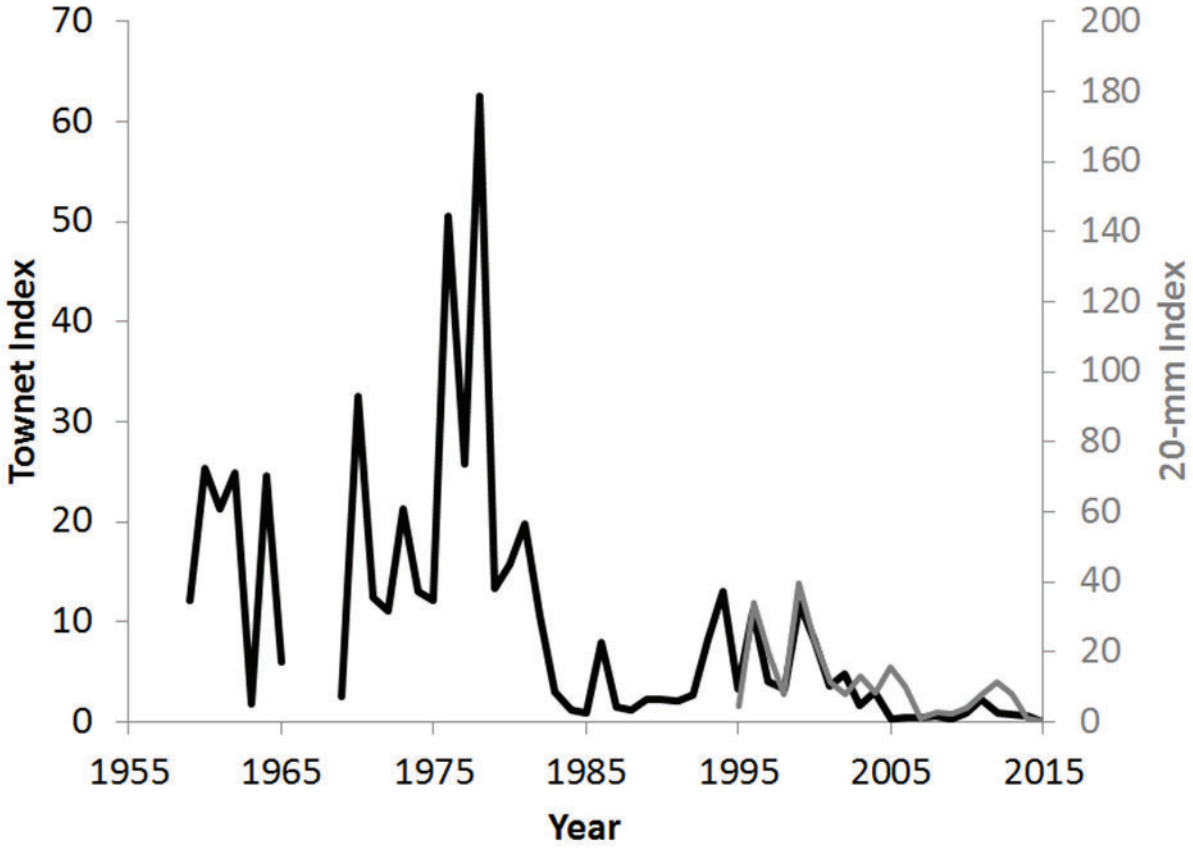

Figure 11. Time series of juvenile and larval delta smelt relative abundance as depicted by the California Department of Fish and Wildlife's TNS and 20-mm Survey, respectively. The TNS began in 1959 and the 20-mm Survey began in 1995. The second y-axis was scaled to better align the indices which are calculated on different numeric scales.

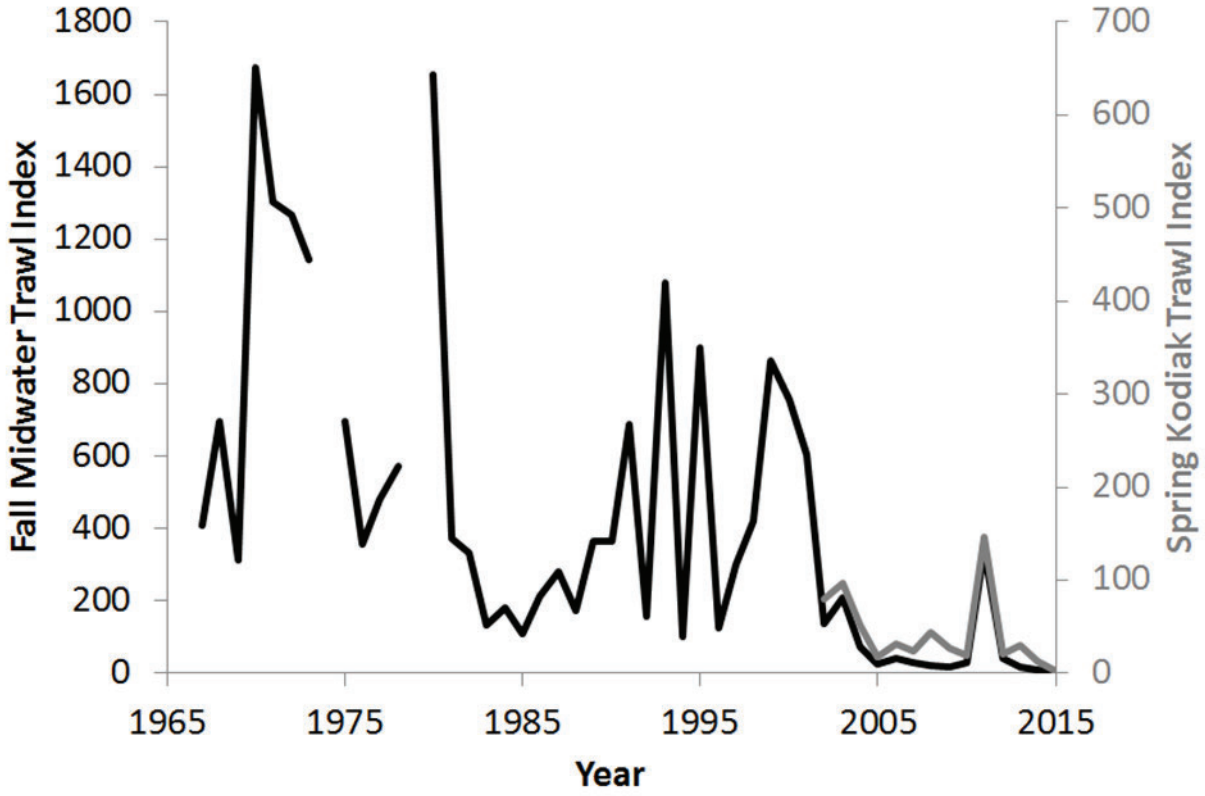

Figure 12. Time series of juvenile and larval delta smelt relative abundance as depicted by the California Department of Fish and Wildlife's FMWT and SKT Survey, respectively. The FMWT survey began in 1967 and the SKT trawl survey began in 2002. The second y-axis was scaled to better align the indices which are calculated on different numeric scales.

Table 1. Estimates of adult delta smelt population size during January-February of 2002 through 2020 with 95% confidence intervals.

			95% Confidence Interval			Number of Delta Smelt Caught in the SKT Survey		
Year	Abundance Estimate	Standard Error	Lower Bound	Upper Bound		January	February	Year-to-Year Ratio
2002	1,093,244	195,329	760,332	1,523,294		262	394	NA
2003	996,055	261,205	581,197	1,597,198		NA	232	0.91
2004	966,981	262,190	553,729	1,573,002		380	300	0.97
2005	715,858	147,190	470,572	1,044,828		220	218	0.74
2006	272,327	42,400	198,681	364,438		44	84	0.38
2007	449,466	128,731	249,216	749,168		109	107	1.65
2008	509,428	188,396	236,859	963,839		132	36	1.13
2009	1,166,145	523,856	459,083	2,464,804		579	61	2.29
2010	251,863	54,580	161,753	374,582		88	57	0.22
2011	461,599	202,547	185,712	962,088		177	128	1.83
2012	1,177,201	328,682	662,728	1,939,836		320	287	2.55
2013	333,682	89,809	191,886	541,064		100	125	0.28

2014	308,972	91,474	167,858	522,884		148	55	0.93
2015	213,345	76,639	101,434	397,439		21	68	0.69
2016	25,445	9,584	11,661	48,622		7	6	0.12
2017	73,331	23,342	38,010	128,459		18	8	2.88
2018	26,649	21,397	5,215	82,805		10	4	0.36
2019	5,610	4,395	1,138	17,135		1	1	0.21
2020	5,213	3,644	1,241	14,710		1	1	0.93

Climate Change

Climate projections for the San Francisco Bay-Delta and its watershed indicate that changes will be substantial by mid-century and considerable by the year 2100. Climate models broadly agree that average annual air temperatures will rise by about 2°C at mid-century and about 4°C by 2100 if current atmospheric carbon emissions accelerate as currently forecasted (Dettinger *et al.* 2016). It remains highly uncertain whether annual precipitation in the Bay-Delta watershed will trend wetter or drier (Dettinger 2005; Dettinger *et al.* 2016). The warmer air temperature projections suggest more precipitation will fall as rain rather than snow and that storms may increase in intensity, but will have more dry weather in between them (Knowles and Cayan 2002; Dettinger 2005; Dettinger *et al.* 2016). The expected consequences are less water stored in spring snowpacks, increased flooding and an associated decrease in runoff for the remainder of the year (Hayhoe *et al.* 2004). Changes in storm tracks may lead to increased frequency of flood and drought cycles during the 21st century (Dettinger *et al.* 2015).

As of 2009, sea level rise had not had much effect on X2 (Hutton *et al.* 2017b). However, additional sea level rise is another anticipated consequence of a warming global climate and if it is not mitigated, sea level rise will likely increase saltwater intrusion into the Bay-Delta (Rath *et al.* 2017). During the summer of 2015, variation in sea level interacted with very low Delta inflows to cause frequent recurrence of net negative Delta outflow (Monismith 2016).

Since the early 1980s, climate change is thought to have increased wind speed along the central California coast, resulting in a more frequent and longer lasting upwelling season (Garcia-Reyes and Largier 2010). Coastal upwelling causes colder deep water to rise to the ocean surface, bringing with it nutrients that stimulate the coastal food web. One effect of wind blowing over the estuary is that it resuspends sediment deposited in shallow areas like San Pablo Bay, Grizzly Bay, and Honker Bay (Ruhl *et al*. 2001). Thus, higher wind speeds blowing onto the coast might be expected to result in higher turbidity of the water in parts of the estuary. In contrast to this expectation, Bever *et al*. (2018) reported a recent reduction in wind speed over the Bay-Delta during 1995-2015, which these authors associated with lower turbidity in Suisun Bay. The Service notes these contrasting results for completeness but we cannot reconcile these opposing trends in wind speed at this time. We show below that Secchi disk depth (an indicator of water turbidity) have not increased since the mid-1980s near the (mobile) location of X2 even though suspended sediment concentrations in Suisun Bay have decreased since about 2000 (Schoellhamer 2011; Bever *et al*. 2018).

Central California's warm summers are already a source of energetic stress for delta smelt and warm springs can already severely compress the duration of their spawning season (Rose *et al.* 2013a,b). We expect warmer estuary temperatures to present a significant conservation challenge for delta smelt in the coming decades (Brown *et al.* 2013; 2016a; Figure 13). Feyrer *et al.* (2011)

and Brown *et al.* (2013; 2016a) have evaluated the anticipated effects of projected climate change on several delta smelt habitat metrics. Collectively, these studies indicate the future will bring chronically compressed fall habitat, fewer 'good' turbidity days (defined by the authors as a mean turbidity greater than or equal to 18 Nephelometric Turbidity Units (NTU)), a spawning window of similar duration but that is shifted 2 to 3 weeks earlier in the year, and a substantial increase in the number of days delta smelt will need to endure lethal or near lethal summer water temperatures.

The delta smelt lives at the southern limit of the inland distribution of the family Osmeridae along the Pacific coast of North America. The anticipated effects of a warming climate are expected to create increasing temperature related challenges for delta smelt at some future point. The amount of anticipated change to the regional climate expected in the near term is lower than it is for the latter half of the century (Figure 13). Therefore, it is less certain that any measurable change from current conditions will occur in the next approximately 10 years than by 2050 or 2100. For the time being, water temperatures are stressful to delta smelt, but not of themselves lethal in most of the upper estuary (Komoroske *et al.* 2015).

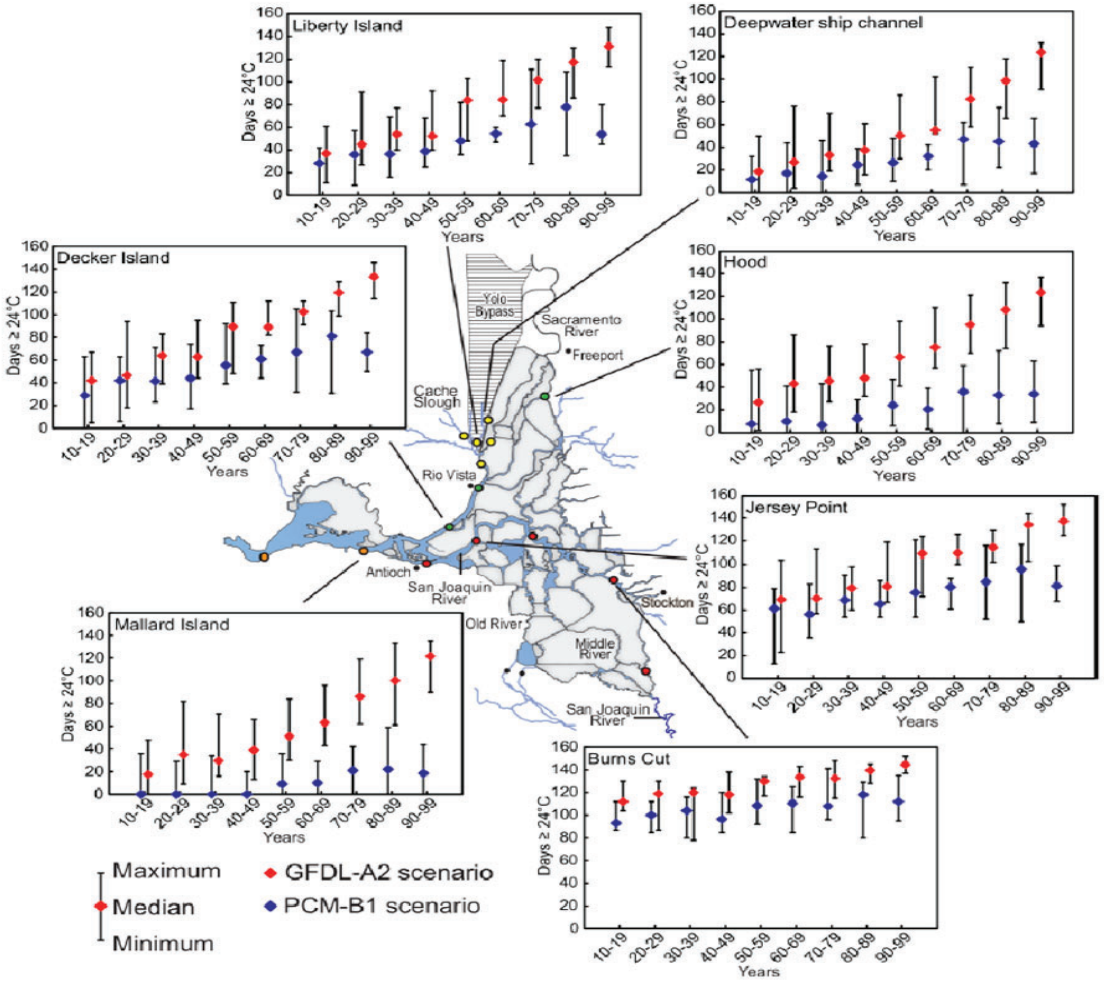

Figure 13. Plots of median, maximum, and minimum number of days each year with an estimated average daily water temperature greater than or equal to 24°C (75°F) at selected sites in the Delta by decade for the 21st century. The water temperature threshold reflects one chosen by the authors to represent near lethal conditions for delta smelt. Source: Brown *et al.* (2016a).

Recovery and Management

Following Moyle *et al.* (1992), the Service (1993) indicated that SWP and CVP exports were the primary factors contributing to the decline of delta smelt due to entrainment of larvae and juveniles and the effects of low flow on the location and function of the estuary mixing zone (now called the low-salinity zone). In addition, prolonged drought during 1987-1992, in-Delta water diversions, reduction in food supplies by nonindigenous aquatic species (specifically overbite clam and nonnative copepods), and toxicity due to agricultural and industrial chemicals were also factors considered to be threatening the delta smelt. In the Service's December 15, 2008 *Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP)* (2008 BO), the Reasonable and Prudent Alternative (RPA) required protection of all life stages from entrainment and augmentation of Delta outflow during the fall of Wet and Above-Normal years as classified by the State of California (Service 2008). The expansion of entrainment protection for delta smelt in the 2008 BO was in response to large increases in juvenile and adult salvage in the early 2000s (Kimmerer 2008; Brown *et al.* 2009). The fall X2 requirement in the 2008 RPA was in response to increased fall exports that had reduced variability in Delta outflow and lowered habitat suitability during the fall months and the 2008 proposed action was anticipated to reduce it further (Feyrer *et al.* 2011).

The Service's (2010c) recommendation to uplist delta smelt from threatened to endangered included a discussion of threats related to reservoir operations and water diversions upstream of the estuary as additional water operations mechanisms interacting with exports from the Delta to restrict the LSZ and concentrate delta smelt with competing and predatory fish species. In addition, Brazilian waterweed (*Egeria densa*) and increasing water transparency were considered new detrimental habitat changes. Predation was considered a low-level threat linked to increasing waterweed abundance and increasing water transparency. Additional threats considered potentially significant by the Service in 2010 were entrainment into power plant diversions, contaminants, and reproductive problems that can stem from small population sizes. Conservation recommendations included: establish Delta outflows proportionate to unimpaired flows to set outflow targets as fractions of runoff in the Central Valley watersheds; minimize reverse flows in Old and Middle rivers; and, establish a genetic management plan for captive-reared delta smelt with the goals of minimizing the loss of genetic diversity and limiting risk of extinction caused by unpredictable catastrophic events. The Service (2012) recently added climate change to the list of threats to the delta smelt.

Maintaining protection of the delta smelt from excessive entrainment, improving the estuary's flow regime, suppression of nonnative species, increasing zooplankton abundance, and improving water quality are among the actions the Service has previously indicated are needed to recover the delta smelt.

There have been several recent papers suggesting it is time to consider supplementation of the wild delta smelt population with captive-bred fish as part of a broad-based conservation strategy to avoid extinction in the wild, also known as extirpation (Moyle *et al.* 2016; 2018; Hobbs *et al.* 2017; Lessard *et al.* 2018). In 2019, pilot research conducted by the California Department of Water Resources (DWR) has demonstrated that captive-bred delta smelt held within steel enclosures can survive in the Delta for at least 30 days. This is long enough to show that the fish can feed themselves and did not die from acute water toxicity in either of two locations tested

thus far. The fish will be evaluated for chronic toxic exposure, but that work is not finished. These results are promising and similar research is planned this year.

The status of the delta smelt is poor. The current estimated delta smelt population sizes are so low that it seems unlikely the species can be habitat- or food-limited even though both physical and food web-related habitat attributes have degraded over time. It is more likely that delta smelt have been marginalized by non-native fishes and invertebrates that compete with and prey on them. When fish populations reach very low levels, they can fall victim to demographic problems (often termed Allee effects in the scientific literature). These include problems concentrating enough individuals in particular locations for successful spawning, successful feeding, or maintaining large enough egg supplies, or shoals and schools of juvenile and adult fish to provide effective protection from predators (Liermann and Hilborn 2001; Keith and Hutchings 2012).

Summary of the Status of Delta Smelt

The relative abundance of delta smelt has reached very low numbers for a small forage fish in an ecosystem the size of the Bay-Delta and the species is approaching extinction in the wild (Moyle *et al.* 2016; 2018; Hobbs *et al.* 2017). The extremely low 2018-2020 abundance indices reflect decades of habitat change and marginalization by non-native species that prey on and out-compete delta smelt. The anticipated effects of climate change on the Bay-Delta and its watershed such as warmer water temperatures, greater salinity intrusion, lower snowpack contribution to spring outflow, and the potential for frequent extreme drought, indicate challenges to delta smelt survival will increase.

Status of the Species for Salt Marsh Harvest Mouse

There are two subspecies of the SMHM: the northern subspecies (*R. r. halicoetes*) and the southern subspecies (*R. r. raviventris*). Both subspecies are listed as endangered. The status of the salt marsh harvest mouse and information about its biology, ecology, distribution, and current threats is available in the *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (Service 2013). This document can be found at: https://www.fws.gov/sfbaydelta/documents/tidal_marsh_recovery_plan_v1.pdf. Critical habitat has not been designated for this species.

Environmental Baseline in the Action Area

Environmental baseline refers to the condition of the listed species or its designated critical habitat in the Action Area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal projects in the Action Area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

MOTCO

MOTCO is located in Suisun Bay, 30 miles northeast of San Francisco, in the Contra Costa and Solano Counties. MOTCO's infrastructure was constructed by the U.S. Navy beginning in World War II and operated as a Navy installation - Naval Weapons Station Seal Beach Detachment Concord (NWSSBDC). The Army MOTCO began operations at NWSSBDC in 1997. Under a Base Realignment and Closure process, NWSSBDC installation transferred to the Army in 2008. MOTCO is an Army Surface Deployment and Distribution Command (SDDC) munitions and general cargo transshipment facility. This installation is the primary West Coast common-user ammunition terminal, home to the SDDC's 834th Transportation Battalion, and supports critical Department of Defense wartime and contingency operations throughout the Pacific Theater.

The MOTCO installation accounts for 72% of the Army's West Coast ammunition handling and approximately 25% of the nation's total ammunition throughput capability. The U.S. Navy dredged the areas around the piers, the pier navigation approach, and the South Seal Island Channel on average every two years from 1943 through 1981. More than 1.8 million cubic yards was dredged over this time period averaging 87,000 cubic yards per dredge event. Since 1981, additional dredging events are documented from 1986 and 1994. MOTCO does not have any documentation of dredge events between 1994 and 2008. Dredging has not occurred since the Army assumed the property in 2008 at the conclusion of the Base Realignment and Closure process. The Army initiated consultation for proposed dredging actions to maintain operational and mission capacity for Piers 2, 3, 4, and Barge Pier. The Service issued a biological opinion (Service File No. 08FBDT00-2020-F-0010) for these dredging actions on December 30, 2019.

Additionally, the Service has completed numerous consultations for various projects on MOTCO. Some of the more recent consultations include: (1) Modernization and Repair of Piers 2 and 3 (Service File No. 08FBDT00-2014-F-0002-5) issued on February 4, 2015; (2) General Repairs of Bridges, Roads and Utilities (Service File No. 08FBDT00-2016-I-0226) issued on May 5, 2017; and (3) Barge Pier Repairs and Small Craft Berthing Facility Upgrades (Service File No. 08FBDT00-2020-F-0084) on May 12, 2020. The May 12, 2020, biological opinion was limited to the installation of the wave attenuator and installation of new piles or replacement/repairs of piles for the individual one-time action for the SCBF. This biological opinion will cover maintenance replacements, as needed, for the SCBF over the course of the 10-year maintenance period. The Army also has a current Integrated Natural Resources Management Plan for MOTCO but has not requested consultation on that plan to date.

Delta Smelt

The proposed project occurs within Suisun Bay within the range of delta smelt. Delta smelt are located in the Suisun Bay year-round and are known to utilize the Action Area as habitat. The proposed project also occurs within the LSZ where smelt are known to rear, feed and breed. The Suisun Bay and the Confluence of the Sacramento and San Joaquin Rivers are considered critical areas within delta smelt habitat and the San Francisco Bay Estuary for the survival of this species. Delta smelt are often observed in the highest densities in these areas (Merz *et al*. 2011).

As detailed in the *Status of the Species* section of this biological opinion, the delta smelt abundance is at its historical low. The latest surveys to detect delta smelt within Suisun Bay were CDFW’s Smelt Larva Survey, which encountered delta smelt mid-March. Several studies

monitor the juvenile and adult delta smelt distribution and relative abundance throughout their historical spring range in the Sacramento-San Joaquin Delta and San Francisco Estuary. It can be anticipated that delta smelt will be in the juvenile and subadult lifestages and located in the Action Area during the duration of the proposed project.

Bever *et al*. (2016) combined long-term fish sampling data from the Suisun Bay and a detailed three-dimensional hydrodynamic modeling to investigate the relationship between historical fish catch and hydrodynamic complexity of the Suisun Bay. They concluded that delta smelt presence (i.e., delta smelt caught in the FMWT) during wetter years, in this area, overlaps with the regions of low salinity, low maximum velocity, and high turbidity. While Bever *et al*. (2016) concluded that the high maximum velocity of the navigation channels reduced the likelihood of delta smelt presence, it also demonstrated that delta smelt presence increases from west to east in the navigation channel. Thus, in low outflow years delta smelt are concentrated above the confluence of the Sacramento and San Joaquin rivers, whereas in higher outflow years the distribution extends through Suisun Bay (Sweetnam 1999).

Salt Marsh Harvest Mouse

The Action Area is located within the Recovery Plan's Suisun Bay Area Recovery Unit which includes suitable or restorable tideland habitats in the Suisun Bay area from Carquinez Strait to the edge of the Delta (legal Delta boundary), representing the eastern extent of the range of the SMHM. It is separated from the San Pablo Bay Recovery Unit by gaps in habitat in the Carquinez Strait and intervening hills. Moderate numbers of SMHM exist within the Suisun Bay Area Recovery Unit.

SMHM are assumed to occur within the boundaries of MOTCO. In 2010, the Army initiated a habitat assessment for the SMHM in association with a biological assessment for the Real Property Master Plan. One result of this effort is a map detailing potential salt marsh harvest mouse habitat in portions of the tidal portion of MOTCO. The habitat assessment resulted in identifying a mosaic of plant associations within a portion of the marsh on MOTCO. The habitat assessment concluded that the likelihood of SMHM presence in the area analyzed is low, but not uniformly distributed. Therefore, without specific information regarding the presence of the SMHM or plant associations within the Action Area, the Service and the Army assumes that habitat is present along with individuals of the species.

Effects of the Proposed Action

Effects of the proposed action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

Delta Smelt

Consequences of the proposed project on delta smelt include the potential for wounding, or killing of individuals and the temporary deprivation of suitable habitat during construction. The Army proposes to conduct construction during the Service's recommended work window for delta smelt (August 1 through November 30) to avoid the spawning period and larval stage of the species.

However, construction during the work window will likely have some adverse effect by discouraging subadult and juvenile delta smelt away from suitable habitat, reducing their ability to detect and capture prey, and exposing them to predation.

Subadult and juvenile delta smelt within the influence of pile driving activities may be adversely affected during construction actions. Fish may be stressed, exhibit alarm behaviors and/or increased swim speeds, compromising their physiological processes if they attempt to evade in-water construction equipment within the Action Area. In such situations, fish cannot optimally feed or shelter and may be susceptible to predation and/or reduced fitness.

Some delta smelt will avoid the Action Area once barges and construction equipment are present in the channel. Swimming away from the Action Area reduces direct fish mortality; however, fish fitness may be compromised if delta smelt that were previously occupying or moving through the Action Area are restricted from feeding or sheltering.

Underwater sound pressure waves can harass and harm fish species (Reyff 2003; Abbott and Bing-Sawyer 2002; California Department of Transportation 2001; Longmuir and Lively 2001; Stotz and Colby 2001). As the pressure wave passes through a fish, the swim bladder is rapidly squeezed due to the high pressure, and then rapidly expanded as the under-pressure component of the wave passes through the fish. This can cause adverse effects including: rupture of the swim bladder, rupture of capillaries, internal hemorrhage, neurological stress, and auditory damage. Extreme sound waves can cause instantaneous death, latent death within minutes after exposure, or can occur several days later.

Elevated noise levels can cause sub-lethal injuries affecting survival and fitness. Similarly, if injury does not occur, noise may modify fish behavior that may make them more susceptible to predation. Fish suffering damage to hearing organs may suffer equilibrium problems, and may have a reduced ability to detect predators and prey. Other types of sub-lethal injuries can place the fish at increased risk of predation and disease. Adverse effects on survival and fitness can occur even in the absence of overt injury. Exposure to elevated noise levels can cause a temporary shift in hearing sensitivity (referred to as a temporary threshold shift or TTS), decreasing sensory capability for periods lasting from hours to days (Turnpenny *et al.* 1994; Hastings *et al*. 1996).

The Fisheries Hydroacoustic Working Group, an interagency working group that includes the Service, has established interim criteria for evaluating underwater noise impacts from pile driving on fish. These criteria are defined in the document entitled “Agreement in Principal for Interim Criteria for Injury to Fish from Pile Driving Activities” dated June 12, 2008 (Fisheries Hydroacoustic Working Group 2008). This agreement identifies a peak sound pressure level of 206 decibels (dB) and an accumulated sound exposure level (ASEL)[1] of 187 dB as thresholds for injury to fish ≥ to 2 grams (g). For fish less than 2g, the ASEL threshold is reduced to 183 dB. Although there has been no formal agreement on a “behavioral” threshold, the National Marine Fisheries Service (NMFS) uses 150 dB-root mean square (RMS) as the threshold for adverse

1 SEL is defined as the constant sound level acting for one second, which has the same amount of acoustic energy as the original sound. Expressed another way, the sound exposure level is a measure of the sound energy in a single pile driver strike. Accumulated SEL ((ASEL) is the cumulative SEL resulting from successive pile strikes. ASEL is based on the number of pile strikes and the SEL per strike; the assumption is made that all pile strikes are of the same SEL. Peak sound pressure refers to the highest absolute value of a measured waveform (i.e., sound pressure pulse as a function of time).

behavioral effects. Pile driving with a vibratory hammer minimizes the amount of noise and turbidity generated by the activity and reduces traumas to fish. Compared to the standard impact driving method, vibratory driving reduces the distance that noise exceeds NMFS thresholds by almost 1,000 feet from the area of impact, substantially reducing or avoiding the potential to cause take of the listed species.

Pile driving noise modeling, using NMFS Underwater Noise Calculation Spreadsheet model (NMFS 2009a) was performed in 2013 for the modernization and repair of Pier 2 and 3 at MOTCO (Service File No. 08FBDT00-2014-F-0002-5). That work involved an intensive pile driving effort of over 800 piles. While similar source levels of noise and impact radius could be expected for the proposed project, the number of piles, number of strikes, size of piles, and duration of activities would be much less. The current analysis indicates that the installation of the piles would not result in peak sounds greater than 171 dB. NMFS recommends using an underwater attenuation rate of 4.5 dB per doubling of distance (NMFS 2009a). It also supports the notion that sound levels of less than 150 dB do not contribute the ASEL for the purposes of assessing injury (NMFS 2009a). Using this assumption and attenuation rate the calculated distance to each of the applicable thresholds is as follows:

- Distance to 206 dB-peak = less than 10 meters (m)
- Distance to 150 dB-RMS = 510 m
- Distance to 183 dB-ASEL = 25 m (for fish < 2 g)

An adult delta smelt would be injured if present for 1,000 pile strikes within a distance of 82 feet (25 meters). The behavioral effects threshold distances (using the NMFS calculation) are much larger (1673 feet (510 meters)). This is calculated for the largest proposed pipe diameter of 24-inch cast in concrete driven with an impact hammer attenuated with the cushion block. This calculation assumes an unimpeded open water propagation path which is the case for the Action Area.

Based on the assumptions above with an attenuated 150 dB RMS zone of influence, delta smelt found within approximately 105 aquatic habitat acres will be directly affected by pile construction noise. This area is limited to the radius from the SCBF footprint and adjusted by the proximity of the eastern island of the Seal Islands pair. Sound waves directed toward the Seal Islands would be significantly reduced once the waves reached the island and would not likely travel beyond. In order to minimize underwater noise and reduce the incidences of harm, injury and barotrauma to delta smelt, the Army proposes to utilize a vibratory hammer for pile installation, as often as possible and limit pile driving to 1-2 piles per day. If a vibratory hammer cannot be used, the Army proposes to use a cushion block on the impact hammer to minimize driving noise and the extent of sound pressure waves from the point of origin. Further, the Army will produce a hydroacoustic monitoring plan to ensure underwater pile-related construction noise does not exceed hydroacoustic thresholds that are detrimental to delta smelt. These effects will be temporary and in-water work is proposed to occur over one construction season within the delta smelt recommended work window (August 1 – November 30). The Action Area is within the southern shoreline of the larger Suisun Bay and delta smelt would be afforded a significant portion of aquatic habitat within the Suisun Bay in which to avoid the area during proposed project activities.

Salt Marsh Harvest Mouse

Although no work is currently proposed to occur within tidal marsh, MOTCO has a sizable amount of suitable tidal marsh habitats adjacent to work areas that could provide the refugia and shelter needed by the SMHM temporarily during the duration of RM&RA. Equipment noise, vibration, and increased human activity within the 115 inland acres of the Action Area may interfere with SMHM normal behaviors. These behaviors include feeding, sheltering, movement between refugia and foraging grounds, and other essential behaviors of SMHM. Intolerable levels of disturbance that may force individual SMHM to flush from cover or prevent them from seeking available cover could expose them to a predation risk that otherwise would not occur. The actual number of SMHM that may be adversely affected is unknown as the Army is approaching the RM&RA on an "as needed" basis and doesn't have a set project list. The Army has proposed conservation measures for actions that may occur in suitable upland habitats that are near suitable tidal marsh habitat. Conservation measures such as installing exclusion fencing, employing a Service-approved biologist, conducting pre-construction surveys, and implementing a vegetation clearing plan will likely minimize adverse effects by reducing the likelihood of SMHM from coming in contact with construction equipment or personnel.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the Action Area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the Action Area of the proposed project.

Conclusion

After reviewing the current *Status of the Species for Delta Smelt* and *Salt Marsh Harvest Mouse*, the *Environmental Baseline for the Action Area*, the effects of the proposed RM&RA, and the cumulative effects, it is the Service's biological opinion that the Routine Maintenance and Repair Activities on Military Ocean Terminal Concord, as proposed, is not likely to jeopardize the continued existence of the delta smelt or the SMHM. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the delta smelt or the SMHM. This is based on implementation of the *Conservation Measures* to minimize the adverse effects on individual delta smelt, SMHM, and their habitats during the construction. The RM&RA is proposed to occur over a 10-year period and not all elements are proposed to occur at the same time, so this conclusion is also based on the minimal size and scope of the individual elements described for the overall RM&RA, and the short duration of temporary impacts to a localized area from the individual elements.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined

as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Army so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Army has a continuing duty to regulate the activity covered by this incidental take statement. If the Army (1) fails to assume and implement the terms and conditions or (2) fails to require contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Army must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

The Service expects that incidental take of delta smelt will be difficult to detect or quantify for the following reasons: the small size of juveniles and subadults, their turbid aquatic habitat makes them difficult to detect, and the low likelihood of finding dead or impaired specimens. The Service anticipates that the extent of incidental take will be minimized due to the proposed conservation measures as described in this biological opinion, such as the use of vibratory hammers and/or cushioned blocks for the impact hammer. Due to the difficulty in quantifying the number of delta smelt that will be taken as a result of the proposed action, the number of acres of affected habitat becomes a surrogate for the species that will be taken. The Service anticipates that all individual juvenile and adult delta smelt in the 105 acres of aquatic habitat in the Action Area may be subject to incidental take in the form of harm, wound, and kill. However, the Service believes that actual take in these forms will be minimized with the use of noise attenuating equipment.

Upon implementation of the following reasonable and prudent measure, incidental take of the delta smelt resulting from the Routine Maintenance and Repair Activities on Military Ocean Terminal Concord in the form of harm, wound, or kill within the project area will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this opinion.

The Service anticipates incidental take of individual SMHM will be difficult to detect or quantify because of the variable, unknown size of any resident population over time, and their elusive and cryptic behavior. Due to the difficulty in quantifying the number of SMHM that will be taken as

a result of RM&RA, the Service is quantifying incidental take in the form of harm of all SMHM within the 115 inland acres of the Action Area by impairing essential behaviors such as foraging or predator evasion.

Upon implementation of the reasonable and prudent measures, incidental take in the form of harm associated with RM&RA will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this biological opinion.

Effect of the Take

The Service determines that the level of take is not likely to result in jeopardy to the delta smelt or the SMHM.

Reasonable and Prudent Measure

All necessary and appropriate measures to avoid or minimize effects on the delta smelt and SMHM resulting from implementation of the RM&RA have been incorporated into the proposed *Conservation Measures*. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the delta smelt and SMHM:

1. All *Conservation Measures*, as described in the biological assessment and restated here in the *Description of the Proposed Action* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the terms and conditions below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Army shall comply and ensure that its contractors comply with the following terms and conditions, which implement its respective reasonable and prudent measure described above. These terms and conditions are non-discretionary.

1. The Army shall require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.

2. The Army shall comply and ensure that its contractors comply with the *Reporting Requirements* below.

Reporting Requirements

In order to monitor whether the amount or extent of incidental take anticipated from implementation of the RM&RA is approached or exceeded, the Army shall adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, The Army must reinitiate formal consultation as per 50 CFR 402.16.

1. The Service must be notified within 24 hours of the finding of any injured or dead listed species or any unanticipated damage to its habitat associated with the proposed project. Injured listed species shall be cared by a licensed veterinarian or other qualified person. Notification will be made to Jana Affonso, the Assistant Field Supervisor of the

Endangered Species Division at: San Francisco Bay-Delta Fish and Wildlife Office, 650 Capitol Mall, Suite 8-300, Sacramento, California 95814 or by telephone at (916) 930-2664, and must include the date, time, and precise location of the individual/incident clearly indicated on a U.S. Geological Survey 7.5 minute quadrangle or other maps at a finer scale, as requested by the Service, and any other pertinent information. When an injured or dead individual of the listed species is found, the applicant through the Corps shall follow the steps outlined in the *Disposition of Individuals Taken* section below.

2. Sightings of any listed or sensitive animal species shall be reported to the Service and CNDDB (https://www.wildlife.ca.gov/Data/BIOS).

Disposition of Individuals Taken

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact persons are Jana Affonso, the Assistant Field Supervisor of the Endangered Species Division at: San Francisco Bay-Delta Fish and Wildlife Office, 650 Capitol Mall, Suite 8-300, Sacramento, California 95814 or by telephone at (916) 930-2664; and the Resident Agent-in-Charge of the Service's Office of Law Enforcement, 5622 Price Way, McClellan, California 95562, at (916) 569-8444.

REINITIATION – CLOSING STATEMENT

This concludes formal consultation for the Routine Maintenance and Repair Activities on Military Ocean Terminal Concord. As provided in 50 CFR §402.16,

(a) Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

(1) If the amount or extent of taking specified in the incidental take statement is exceeded;

(2) If 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;

(3) If 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 the biological opinion or written concurrence; or

(4) If a new species is listed or critical habitat designated that may be affected by the identified action.

(b) An agency shall not be required to reinitiate consultation after the approval of a land management plan prepared pursuant to 43 U.S.C. 1712 or 16 U.S.C. 1604 upon listing of a new species or designation of new critical habitat if the land management plan has been adopted by the

agency as of the date of listing or designation, provided that any authorized actions that may affect the newly listed species or designated critical habitat will be addressed through a separate action-specific consultation. This exception to reinitiation of consultation shall not apply to those land management plans prepared pursuant to 16 U.S.C. 1604 if:

(1) Fifteen years have passed since the date the agency adopted the land management plan prepared pursuant to 16 U.S.C. 1604; and

(2) Five years have passed since the enactment of Public Law 115-141 [March 23, 2018] or the date of the listing of a species or the designation of critical habitat, whichever is later.

Please address any questions or concerns regarding this response to Brian Hansen, Senior Fish and Wildlife Biologist, at Brian_Hansen@fws.gov or (916) 930-5653 or Kim Squires, Section 7 Division Chief, at Kim_Squires@fws.gov. Please refer to Service file number 08FBDT00-2020-F-0018 in any future correspondence regarding this project.

Sincerely,

KAYLEE ALLEN Digitally signed by KAYLEE ALLEN Date: 2020.06.22 11:17:54 -07'00'

Kaylee Allen
Field Supervisor

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APPENDIX C

PUBLIC INVOLVEMENT

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Agency Coordination Letters

The Notice of Availability (NOA) for the Draft Programmatic Environmental Assessment was published online in the Contra Costa Times to notify local residents of the proposed project. Letters with the NOA were sent to the agencies and tribes listed in **Table 5-2** in addition to posting on the California State Clearinghouse (SCH) at ceqanet.opr.ca.gov. The NOA is included below.

MOTCO acknowledges receipt of the letter on 19 October 2021 from the California Geologic Energy Management Division (CalGEM). The letter is a reminder of existing gas and oil wells on the MOTCO installation. MOTCO management is aware of the location of these wells and the responsibilities for managing them. None of the proposed maintenance activities occur at or near of these wells. Therefore, the proposed maintenance activities will have no effect on any of the wells. MOTCO will continue to monitor well locations in proximity to installation activities, and coordinate with CalGEM and the well owners as appropriate. Letter is included below.

MOTCO acknowledges receipt of the letter on 10 December 2021 from the San Francisco Bay Conservation and Development Commission (BCDC). MOTCO responded with additional information to BCDC on 15 December 2021 and requested a consistency determination for the project to complete NEPA / CEQA compliance. BCDC responded with another letter on 19 January 2022, and participated on a call on 4 February 2022 for clarifications on their comments. BCDC requested annual reports on maintenance activities. All letters between MOTCO and BCDC are included below.

BCDC provided a consistency determination for the routine maintenance projects on 25 April 2022. The consistency determination is included in Appendix D.

DRAFT NOTICE OF AVAILABILITY

DRAFT PROGAMMATIC ENVIRONMENTAL ASSESSMENT FOR DRAFT ENVIRONMENTAL ASSESSMENT FOR ROUTINE MAINTENANCE AND REPAIR AT MILITARY OCEAN TERMINAL CONCORD

CONCORD, CALIFORNIA

Description. Interested parties are hereby notified that the US Army's Military Ocean Terminal Concord (MOTCO) has prepared a draft Programmatic Environmental Assessment (PEA) and draft Finding of No Significant Impact (FNSI) regarding the proposed action described below.

Statutory Authority. This notice is being issued to all interested parties in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] 1500-1508), the Environmental Analysis of Army Actions (32 CFR 651), and other pertinent regulatory drivers.

Proposed Action. This draft PEA evaluates potential environmental effects of programmatic and routine maintenance and repair actions necessary to sustain, enhance, and modernize the existing utilities and infrastructure at MOTCO. This draft FNSI briefly states why the Proposed Action would not significantly affect the environment and that an Environmental Impact Statement (EIS) will not be prepared.

Public Review. The EA will undergo a 30-day public comment period from 21 September through 21 October 2021 in accordance with 32 CFR Part 651.14, Environmental Analysis of Army Actions. During this period the public may submit comments on the EA. The EA can be reviewed at the Concord Public Library and Bay Point Library and online at: https://www.sddc.army.mil/motco/Pages/MOTCO.aspx.

Comments. Comments on the Draft Programmatic EA should be submitted during the 30-day comment period to the MOTCO Environmental Manager: usarmy.scott.sddc.mbx.hqsddc-environmental@mail.mil

DRAFT NOTICE OF AVAILABILITY

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Comments. Comments on the Draft Programmatic EA should be submitted during the 30-day comment period to the MOTCO Environmental Manager: usarmy.scott.sddc.mbx.hqsddc-environmental@mail.mil

CCT 6607082; Sep. 10, 2021

California
Department of Conservation
Geologic Energy Management Division

Gavin Newsom, Governor
David Shabazian, Director
801 K Street, MS 18-05
Sacramento, CA 95814
T: (916) 445-9686

10/19/2021

US ARMY
5110 Port Chicago Hwy, Concord, CA 94520, USA
john.s.volk.civ@mail.mil

Construction Site Well Review (CSWR) ID: 1012337

Assessor Parcel Number(s): 099110001, 159290021, 100040002, 099100007, 100250003, 100280023, 099080008, 100270002, 0090010290, 0090010070

Property Owner(s): US ARMY

Project Location Address: 5110 Port Chicago Hwy Concord, California 94520

Project Title: SCH Number: 2021090377- MILITARY OCEAN TERMINAL CONCORD, CA

Public Resources Code (PRC) § 3208.1 establishes well reabandonment responsibility when a previously plugged and abandoned well will be impacted by planned property development or construction activities. Local permitting agencies, property owners, and/or developers should be aware of, and fully understand, that significant and potentially dangerous issues may be associated with development near oil, gas, and geothermal wells.

The California Geologic Energy Management Division (CalGEM) has received and reviewed the above referenced project dated 10/19/2021. To assist local permitting agencies, property owners, and developers in making wise land use decisions regarding potential development near oil, gas, or geothermal wells, the Division provides the following well evaluation.

The project is located in Contra Costa County, within the boundaries of the following fields:

Any Field, Los Medanos Gas, Ryer Island Gas

The information associated with this project was not specific enough to make comments on the possible impacts of the existing gas wells on any new construction or developments.

Our records indicate there are 16 known oil or gas wells located within the project boundary as identified in the application.

- Number of wells Not Abandoned to Current Division Requirements as Prescribed by Law and Projected to Be Built Over or Have Future Access Impeded by this project: 0

- Number of wells Not Abandoned to Current Division Requirements as Prescribed by Law and Not Projected to Be Built Over or Have Future Access Impeded by this project: 12

- Number of wells Abandoned to Current Division Requirements as Prescribed by Law and Projected to Be Built Over or Have Future Access Impeded by this project: 0

- Number of wells Abandoned to Current Division Requirements as Prescribed by Law and Not Projected to Be Built Over or Have Future Access Impeded by this project: 4

The Division categorically advises against building over, or in any way impeding access to, oil, gas, or geothermal wells. Impeding access to a well could result in the need to remove any structure or obstacle that prevents or impedes access including, but not limited to, buildings, housing, fencing, landscaping, trees, pools, patios, sidewalks, roadways, and decking. Maintaining sufficient access is considered the ability for a well servicing unit and associated necessary equipment to reach a well from a public street or access way, solely over the parcel on which the well is located. A well servicing unit, and any necessary equipment, should be able to pass unimpeded along and over the route, and should be able to access the well without disturbing the integrity of surrounding infrastructure.

There are no guarantees a well abandoned in compliance with current Division requirements as prescribed by law will not start leaking in the future. It always remains a possibility that any well may start to leak oil, gas, and/or water after abandonment, no matter how thoroughly the well was plugged and abandoned. The Division acknowledges wells plugged and abandoned to the most current Division requirements as prescribed by law have a lower probability of leaking in the future, however there is no guarantees that such abandonments will not leak.

The Division advises that all wells identified on the development parcel prior to, or during, development activities be tested for liquid and gas leakage. Surveyed locations should be provided to the Division in Latitude and Longitude, NAD 83 decimal format. The Division expects any wells found leaking to be reported to it immediately.

Failure to plug and reabandon the well may result in enforcement action, including an order to perform reabandonment well work, pursuant to PRC § 3208.1, and 3224.

PRC § 3208.1 give the Division the authority to order or permit the re-abandonment of any well where it

has reason to question the integrity of the previous abandonment, or if the well is not accessible or visible. Responsibility for re-abandonment costs may be affected by the choices made by the local permitting agency, property owner, and/or developer in considering the general advice set forth in this letter. The PRC continues to define the person or entity responsible for reabandonment as:

1. The property owner - If the well was plugged and abandoned in conformance with Division requirements at the time of abandonment, and in its current condition does not pose an immediate danger to life, health, and property, but requires additional work solely because the owner of the property on which the well is located proposes construction on the property that would prevent or impede access to the well for purposes of remedying a currently perceived future problem, then the owner of the property on which the well is located shall obtain all rights necessary to reabandon the well and be responsible for the reabandonment.

2. The person or entity causing construction over or near the well - If the well was plugged and abandoned in conformance with Division requirements at the time of plugging and abandonment, and the property owner, developer, or local agency permitting the construction failed either to obtain an opinion from the supervisor or district deputy as to whether the previously abandoned well is required to be reabandoned, or to follow the advice of the supervisor or district deputy not to undertake the construction, then the person or entity causing the construction over or near the well shall obtain all rights necessary to reabandon the well and be responsible for the reabandonment.

3. The party or parties responsible for disturbing the integrity of the abandonment - If the well was plugged and abandoned in conformance with Division requirements at the time of plugging and abandonment, and after that time someone other than the operator or an affiliate of the operator disturbed the integrity of the abandonment in the course of developing the property, then the party or parties responsible for disturbing the integrity of the abandonment shall be responsible for the reabandonment.

No well work may be performed on any oil, gas, or geothermal well without written approval from the Division. Well work requiring approval includes, but is not limited to, mitigating leaking gas or other fluids from abandoned wells, modifications to well casings, and/or any other re-abandonment work. The Division also regulates the top of a plugged and abandoned well's minimum and maximum depth below final grade. CCR §1723.5 states well casings shall be cut off at least 5 feet but no more than 10 feet below grade. If any well needs to be lowered or raised (i.e. casing cut down or casing riser added) to meet this regulation, a permit from the Division is required before work can start.

The Division makes the following additional recommendations to the local permitting agency, property owner, and developer:

1. To ensure that present and future property owners are aware of (a) the existence of all wells located on the property, and (b) potentially significant issues associated with any improvements near oil or gas wells, the Division recommends that information regarding the above identified well(s), and any other pertinent information obtained after the issuance of this letter, be communicated to the appropriate county recorder for inclusion in the title information of the subject real property.

2. The Division recommends that any soil containing hydrocarbons be disposed of in accordance with local, state, and federal laws. Please notify the appropriate authorities if soil containing significant amounts of hydrocarbons is discovered during development.

As indicated in PRC § 3106, the Division has statutory authority over the drilling, operation, maintenance, and abandonment of oil, gas, and geothermal wells, and attendant facilities, to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil, gas, and geothermal deposits; and damage to underground and surface waters suitable for irrigation or domestic purposes. In addition to the Division's authority to order work on wells pursuant to PRC §§ 3208.1 and 3224, it has authority to issue civil and criminal penalties under PRC §§ 3236, 3236.5, and 3359 for violations within the Division's jurisdictional authority. The Division does not regulate grading, excavations, or other land use issues.

If during development activities, any wells are encountered that were not part of this review, the property owner is expected to immediately notify the Division's construction site well review engineer in the Northern district office, and file for Division review an amended site plan with well casing diagrams. The District office will send a follow-up well evaluation letter to the property owner and local permitting agency.

Should you have any questions, please contact me at (916) 322-1110 or via email at Miguel.Cabrera@conservation.ca.gov.

Sincerely,

Miguel Cabrera
Northern District Deputy

cc: Brett Bonotto - Submitter
cc: US ARMY - Property Owner
cc: John Volk - Plan Checker

Wells Not Abandoned to Current Division Requirements as Prescribed by Law & Not Projected to be Built Over or Have Future Access Impeded

The wells listed below are not abandoned to current Division requirements as prescribed by law, and based upon information provided, are projected to be built over or have future access impeded.

API	Well Designation	Operator	Well Evaluations
0401300213	Baker et al 1	Chevron U.S.A. Inc.	Does not meet the requirements of § 1723.5. Surface Plugging
0401300144	Stoeckle 1	Western Petroleum Co.	Does not meet the requirements of § 1723.5. Surface Plugging. Does not meet the requirements of § 1723.3. Plugging at a Casing Shoe.
0401300130	Danno 1	Len Owens & J. Dewitt Expl. Co.	Does not meet the requirements of § 1723.2. Plugging for Freshwater Protection. Does not meet the requirements of § 1723.5. Surface Plugging
0401300143	Clyde Co. 1	Trico Industries Inc	Does not meet the requirements of § 1723.5. Surface Plugging Does not meet the requirements of § 1723.3. Plugging at a Casing Shoe.
0401320052	Caldeira 1	J. L. Davis	Does not meet the requirements of § 1723.5. Surface Plugging
0401300134	Ginochio 2-7	Pacific Gas and Electric Company	Does not meet the requirements of §

			1723.2. Plugging for Freshwater Protection.
0409520256	Ryer 5	California Resources Production Corporation	This well is not pugged and abandoned.
0409500282	Ryer 1	California Resources Production Corporation	This well is not pugged and abandoned.
0409520022	Ryer 2	California Resources Production Corporation	This well is not pugged and abandoned.
0409520030	Ryer 3	California Resources Production Corporation	This well is not pugged and abandoned.
0409520005	L. Nixon 1	Chevron U.S.A. Inc.	Does not meet the requirements of § 1723.5. Surface Plugging
0409520024	Grossi 1-33	Shell Western E&P Inc.	Does not meet the requirements of § 1723.5. Surface Plugging

Wells Abandoned to Current Division Requirements as Prescribed by Law & Not Projected to be Built Over or Have Future Access Impeded

The wells listed below are abandoned to current Division requirements as prescribed by law, and based upon information provided, are not projected to be built over or have future access impeded.

API	Well Designation	Operator	Well Evaluations
0401320101	Nichols Unit 1	Neaves Petro. Developments	Plugged & Abandoned to Current Division Reqs.
0401320078	Port Chicago 1	Towne Exploration Company, LP	Plugged & Abandoned to Current Division Reqs.
0401320166	Perry 1	Chevron U.S.A. Inc.	Plugged & Abandoned to Current Division Reqs.
0409520136	Roe 1	Shell Western E&P Inc.	Plugged & Abandoned to Current Division Reqs.

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600 fax 888 348 5190
State of California | Gavin Newsom – Governor | info@bcdc.ca.gov | www.bcdc.ca.gov

December 10, 2021

Via email only: john.s.volk.civ@mail.mil

J. STEPHEN VOLK
Environmental Division Chief
Military Ocean Terminal Concord (MOTCO)
Department of Public Works - Environmental
410 Norman Ave, Building 635
Concord, CA 94520-1142

Subject: MOTCO PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

Dear Mr. Volk,

Thank you for the opportunity for San Francisco Bay Conservation and Development Commission (Commission) to provide comments on the Programmatic Environmental Assessment (PEA) for routine maintenance and repair at the Military Ocean Terminal Concord (MOTCO). As you're aware, and as is further described below, the Commission would be reviewing the proposed work under our Federal Coastal Zone Management Act (CZMA) authority via consistency determination request from MOTCO. We appreciate the early coordination this review affords the Commission staff on its behalf.

I. PROJECT DESCRIPTION SUMMARY

Project Proponent. United States Military Ocean Terminal Concord (MOTCO)

Location. MOTCO is located at 410 Norman Avenue in the City of Concord, along Suisun Bay in north-central Contra Costa County, California.

Proposed Project. MOTCO proposes to implement routine maintenance and repair activities for a period of ten years (2021 through 2031). The installation facilities include an approximately 115-acre administrative complex (Inland Area/Administrative District) and an approximately 6,242-acre Tidal Area (Mission District) connected by a road running parallel to and west of Port of Chicago Highway. The Tidal Area includes approximately 2,045 acres of islands located in Suisun Bay, including Seal, Roe, Ryer, Freeman, and Snag Islands. MOTCO is a restricted area extending from the shore to the ship channel and includes the navigational approaches to the wharves. The types of facilities identified for routine maintenance and repair are waterfront facilities including, railyard and rail lines, road transportation and pavements systems, utilities, buildings, other structures, landscaping, fencing, and security equipment.

II. BCDC's ROLE

Summary. The San Francisco Bay Conservation and Development Commission's Coastal Zone Management Program for the San Francisco Bay Segment of the California Coastal Zone was approved by the U.S. Department of Commerce in 1977. The Commission's Coastal Zone Management Program is based on the policies of the McAteer-Petris Act, the Suisun Marsh Preservation Act, the San Francisco Bay Plan (Bay Plan) and the Suisun Marsh Protection Plan (SMPP) as well as the Commission's administrative regulations. In general, the Commission's objective is to restore, protect, and enhance the San Francisco Bay and shoreline for public enjoyment and natural resource conservation.

Pursuant to the Coastal Zone Management Act, MOTCO's Routine Maintenance and Repair program is a federal activity that has potential to directly affect land or water uses within the Coastal Zone and as such must be consistent to the maximum extent possible with the Commission's Coastal Zone Management Program. Federal consistency for this project would include review of the proposed activities that have potential to affect the San Francisco Bay Coastal Zone in comparison to the applicable Bay Plan policies and the McAteer Petris Act for consistency with them, where impacts would occur, provide measures to avoid or minimize such impacts.

Port and Water Related Industry. As described in the Bay Plan Maps, the area of MOTCO north the BNSF railway is classified as a "Port" and the area south of that railway is classified as a "Water Related Industry" (Map 3). Bay Plan Water Related Industry Policy 4 provides that "water-related industry and port sites should be planned and managed so as to avoid wasteful use of the limited supply of waterfront land." The proposed activities should be consistent with the designated priority use.

III. COMMENTS

The preparers of the PEA have characterized the routine maintenance and repair project as a "suite" of routine actions and have evaluated them installation-wide. Although it appears that much of this suite includes actions that are already routinely undertaken as separate small-scale projects. We note that some described actions have the potential for impacts on sensitive areas within BCDC jurisdiction. For this reason, the sections below identify and discuss BCDC's policies on such actions. Please note that the Bay Plan policies listed in this letter are not exhaustive. Our intention is to identify a selection of policies most relevant to the proposed actions at issue.

A. WATER AND BIOLOGICAL RESOURCES

Pile Repair, and Pile and Pile Cap Replacement. Pile repair and replacement projects require specific impact minimization methods due to the presence of contaminants such as creosote in older piles; the implementation of pile removal/placement methods least damaging to fish, aquatic species and habitats; and timing the pile work to minimize impacts to migrating and

spawning fish. The Commission coordinates its requirements with the recommendations of California Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service when authorizing in-water work such as pile repair, removal or placement. The Bay Plan policies on Water Quality, and Fish, Aquatic Organisms and Wildlife address the importance of minimization measures and best practices when conducting such activities, such as the use of: a vibratory hammer to replace piles; bubble curtains to discourage fish from coming into the work area; and silt curtains to minimize increased turbidity impacts, as well as reducing underwater noise and vibrations from construction activity. In addition, it is likely that in-water work would be required to adhere to the August 1 to November 30 environmental work windows to reduce impacts to special status fish species and other minimization measures. Please incorporate appropriate minimization measures in your proposed project for in water work.

Other Waterfront Facilities. As proposed MOTCO will maintain its docks and mooring equipment through the proposed period and should do so in a manner consistent with the Bay Plan's Water Quality; Fish, Aquatic Organisms and Wildlife, Tidal Marshes and Tidal Flats, and Subtidal Area policies to the greatest extent possible, providing protection of tidal and subtidal habitats, and marine species through the use of best practices, minimization measures, and consultations with resources agencies.

Specifically, the repair and maintenance of the berthing/mooring systems and signage, wharf and trestle decking, gantry cranes and rails, and anti-terrorism/force protection (AT/FP) facilities should use materials that would not pollute the Bay water or sediment, negatively impact sensitive habitats and species and provide safe means of navigation to vessels. For example, no creosote treated wood or other materials that could leach contaminates into the water or sediment should be used. Further, care should be taken to ensure hazardous liquids, construction materials, or debris, etc. do not end up in the Bay. If materials do in advertently end up in the Bay they should be properly contained and removed as quickly as possible.

Bay Plan Policies. Here we provide applicable Bay Plan policies for the proposed activities for your consideration.

Bay Plan Policies on Water Quality.

- **Policy 1**. 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. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.
- **Policy 2**. Water 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 San Francisco Bay Regional Water Quality Control Board's Water Quality Control Plan, San Francisco Bay Basin and should be protected from all harmful or potentially harmful pollutants.

The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Board, should be the basis for carrying out the Commission's water quality responsibilities.

- **Policy 3**. New projects should be sited, designed, constructed and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (a) controlling pollutant sources at the project site; (b) using construction materials that contain nonpolluting materials; and (c) applying appropriate, accepted and effective best management practices, especially where water dispersion is poor and near shellfish beds and other significant biotic resources.

Bay Plan Policies on Tidal Marshes and Tidal Flats.

- **Policy 1**. Tidal 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.
- **Policy 3**. Projects should be sited and designed to avoid, or if avoidance is infeasible, minimize adverse impacts on any transition zone present between tidal and upland habitats. Where a transition zone does not exist and it is feasible and ecologically appropriate, shoreline projects should be designed to provide a transition zone between tidal and upland habitats.

Bay Plan Policies on Fish, Aquatic Organisms, and Wildlife.

- **Policy 1**. To 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.
- **Policy 2**. […] specific habitats that are needed to conserve, increase, or prevent the extinction of these species, should be protected […].
- **Policy 4**. The Commission should: a) Consult with the California Department of Fish and Wildlife, 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 […] c) Give appropriate consideration to the recommendations of the California Department of Fish and Wildlife, the National Marine Fisheries Service or the U.S. Fish and Wildlife Service in order to avoid possible adverse effects of a proposed project on fish, other aquatic organisms and wildlife habitat.

B. RELATED MOTCO DREDGING AND DISPOSAL PROPOSAL

Although dredging and disposal of sediment are not mentioned in the PEA and do not appear to be part of the programmatic maintenance and repair plan, BCDC’s prior correspondence with MOTCO leads us to mention the related MOTCO dredging and disposal proposal in case there is any overlap of these two proposed projects.

MOTCO's location on Suisun Bay, the adjacent Baldwin Federal Ship Channel and the existing wharves allow for vessels to navigate to and from the site's berths. Most terminals located in the Bay accrete sediment over time and periodically need to dredge their facilities to allow vessels safe passage. Although MOTCO wharves do not appear to be in an area of high sediment accretion, there has been recent interest in dredging along MOTCO's wharves and shoreline. The U.S. Army Corps of Engineers (USACE) Sacramento and San Francisco Districts have been coordinating with the Long Term Management Strategy for the Placement of Dredged Material in the Bay Region (LTMS) agencies to develop the dredging plans for this area including the testing of the sediment, selection of an appropriate placement site, depth of dredging, and estimated volume of sediment to be dredged. As the in-water activities noted in the PEA (pile removal or driving, wharf repairs, etc.) may impact or be impacted by dredging on the site, please refer to the dredging and disposal program currently being developed in the PEA.

Once again, thank you for providing BCDC an opportunity to comment on the MOTCO PEA for routine maintenance and repair. We hope these comments aid you in preparing the final environmental assessment. If you have any questions regarding this letter or the Commission's policies and permitting process, please do not hesitate to contact me at (415) 352-3654 or via email shruti.sinha@bcdc.ca.gov. Please note that our offices were moved in 2019 to Beale Street in San Francisco and update your records accordingly.

Sincerely,

DocuSigned by:
DD5E3B0D1CA04EF...

SHRUTI SINHA
Shoreline Development Analyst

cc: CA State Clearinghouse: state.clearinghouse@opr.ca.gov

SS/rc

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

December 16, 2021

SHRUTI SINHA
Shoreline Development Analyst
San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510
San Francisco, CA 94105

RE: Programmatic Environmental Assessment for Routine Maintenance at Military Ocean Terminal Concord (MOTCO)

Dear MS. SINHA:

Thank you for your comments for the Programmatic Environmental Assessment (PEA) for Routine Maintenance and Repair at Military Ocean Terminal Concord (MOTCO), CA. These routine maintenance and repair actions are necessary to sustain, enhance, and modernize the Installation's existing utilities and infrastructure to meet the Army and U.S. Department of Defense (DOD) missions. The purpose of the PEA is streamlining environmental compliance for routine maintenance and repair projects for existing facilities to avoid impacts throughout the installation. MOTCO developed best management practices (BMPs) to address project impacts, including projects in or near environmentally sensitive areas. MOTCO is the primary west coast port for distribution of cargo to United States Armed Forces active in overseas theatres. Safe and reliable shipping operations at MOTCO support our national defense.

MOTCO submits the information below with the previously submitted PEA to the San Francisco Bay Conservation and Development Commission (Commission) for its federal consistency determination (CD) pursuant to Section 307 of the Coastal Zone Management Act (CZMA, 16 U.S.C. §1456), as implemented by the National Oceanic and Atmospheric Administration (NOAA) federal consistency regulations at 15 C.F.R. Part 930. The Army requests a CD for the routine maintenance and repair activities described in the PEA at MOTCO, CA.

A. WATER AND BIOLOGICAL RESOURCES

Pile Repair, and Pile and Pile Cap Replacement. The proposed operations and maintenance activities for pile repair, pile and pile cap replacement are consistent with Commission Policies for protecting water quality. The BMPs addressing pile repair impacts were developed from the Modernization and Repair of Piers 2 and 3 Project at MOTCO. The appropriate minimization measures for pile repair are described in the following BMPs:

- BIO-6 describes the approved work window for in-water work between August 1 and November 30 as specified by FWS and NMFS.
- BIO-7 specifies using a vibratory hammer for piling installation while
- BIO-8 focuses on practices to minimize creosote release from treated piles.

Analyses in the Piers 2 and 3 Repair Project discuss the limitations for the use of bubble and turbidity curtains to minimize impacts.

Other Waterfront Facilities. The proposed operations and maintenance activities for waterfront facilities are consistent with Commission Policies protecting water quality. BMPs for waterfront facility maintenance include:

- BIO-4 describes guidelines for operation of heavy equipment near water.
- BIO-5 use of all chemicals will comply with all local, State, and Federal regulations.
- BIO-6 describes the approved work window for in-water work between August 1 and November 30 as specified by USFWS and NMFS.
- BIO-10 describes biological monitoring for in-water projects.
- BIO-11 reporting requirements to USFWS and NMFS.
- WR-6 deploying floating booms to capture materials from project activities.

Based on the Commission's comments, the Final PEA will include BIO-5 for all waterfront facility maintenance in Table 4-2.

Bay Plan Policies on Water Quality.
The proposed operations and maintenance activities and associated BMPs described in the PEA are consistent with Commission Policies 1, 2 and 3. The proposed activities are restricted to maintenance of existing facilities, which is consistent with minimizing water quality impacts by avoiding sensitive areas. New facility projects will require individual NEPA compliance and Commission Review.

Bay Plan Policies on Tidal Marshes and Tidal Flats.
The proposed operations and maintenance activities and associated BMPs described in the PEA are consistent with Commission Policies 1 and 3. The proposed activities are restricted to maintenance of existing facilities, which is consistent with conserving tidal marshes and tidal flats by avoiding those sensitive areas. New facility projects will require individual NEPA compliance and Commission Review.

Bay Plan Policies on Fish, Aquatic Organisms, and Wildlife.
The proposed operations and maintenance activities and associated BMPs described in the PEA are consistent with Commission Policies 1, 2 and 4. The tidal Bay habitats and specific species habitat are avoided by activities described in the PEA. MOTCO is continually communicating with state and federal fish and wildlife agencies to address effects and protect fish and wildlife species.

B. RELATED MOTCO DREDGING AND DISPOSAL PROPOSAL

The Military Ocean Terminal Concord (MOTCO) Wharf Maintenance Dredging Project Contra Costa County, Concord, California Project is referenced on page 1-23 of the Draft PEA under previous studies. The proposed dredging is a separate project with its

own environmental compliance. A coastal consistency determination will be requested at the appropriate time in the permitting process.

Please send a CD for the routine operations and maintenance activities described in the PEA at your earliest opportunity. The PEA will be finalized upon receipt of the CD. Should you have any questions or wish additional information, please contact Mr. Stephen Volk, at 925-246-4182, or via email at John.S.Volk.civ@army.mil.

Sincerely,

J. Stephen Volk

J. Stephen Volk
Environmental Division Chief
Military Ocean Terminal Concord

cc: DR. JULIA KELLY, Environmental Scientist

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600 fax 888 348 5190
State of California | Gavin Newsom – Governor | info@bcdc.ca.gov | www.bcdc.ca.gov

January 18, 2022

Military Ocean Terminal Concord (MOTCO)
Department of Public Works - Environmental
410 Norman Ave, Building 635
Concord, CA 94520-1142
Via email: <john.s.volk.civ@mail.mil>

ATTN: J. Stephen Volk, Environmental Division Chief

SUBJECT: MOTCO Routine Maintenance and Repairs (BCDC Permit Application No. C2021.006.00)

Dear Mr. Volk:

Thank you for your request for Commission concurrence with the federal consistency determination received in this office on January 3, 2021, for the ten-year routine maintenance and repair program at Military Ocean Terminal Concord (MOTCO) as described in the Draft Final Programmatic Final Assessment for Routine Maintenance and Repair at Military Ocean Terminal Concord, CA (DFPEA).

As you are aware, the proposed project is either located within BCDC's segment of the coastal zone or, for those aspects of the project outside of the coastal zone, may potentially have impacts to resources within the coastal zone. As such, the project is being evaluated for consistency with the federal Coastal Zone Management Act (CZMA), as amended, and the Commission's federally approved Coastal Management Program for San Francisco Bay, which includes the enforceable policies of the McAteer-Petris Act, the Suisun Marsh Preservation Act, the Commission's *San Francisco Bay Plan* (Bay Plan), and the *Suisun Marsh Protection Plan* (SMPP).

The Commission staff intends to work with the MOTCO and its representatives to expeditiously evaluate the proposed project for consistency with the Commission's enforceable policies of its approved Coastal Management Program, but it is our understanding the project has yet to receive the San Francisco Bay Regional Water Quality Control Board's (RWQCB) 401 Water Quality Certification, and the California Department of Fish and Wildlife's (CDFW) Lake or Streambed Alteration Agreement as indicated by the DFPEA. Additionally, the DFPEA references a Section 7(a)(2) Concurrence Letter issued in 2020 by the National Marine Fisheries Service (NMFS) and a formal consultation letter issued in 2020 by the U.S. Fish and Wildlife Service (USFWS) for this project, which were not included in the Consistency Determination request, and that would provide important analysis of the effects of the project on federally listed species and appropriated minimization measures to reduce impacts to these species. Based on

Commission staff review of your submittal, we have determined that you have not submitted the comprehensive information sufficient to support the federal government's statement of consistency, as required in Code of Federal Regulations 15 CFR § 930.39(a) of the CZMA Regulations. As a result, pursuant to the requirements of 15 CFR 930.41(a), the Commission's 60-day consistency determination review period has not commenced.

We are requesting that MOTCO provide the itemized information listed below as well as the consultations or concurrences from USFWS, NMFS, RWQCB, CDFW in order for the 60-day review period to commence. Section 930.34(a)(2) of the CZMA Regulations encourages federal agencies to "coordinate and consult with State agencies through use of existing procedures in order to avoid waste, duplication of effort, and to reduce Federal and State agency administrative burdens." In addition, we request that you provide the report you are submitting to SHPO so that we can also evaluate any potential project impacts on historic structures, public access, and recreation within our coastal zone. Having this information has afforded the Commission the advice of agencies with more specific expertise in certain subject areas and has allowed the Commission and resource agencies to agree upon and coordinate appropriate conditions and mitigation requirements, if necessary. Further, pursuant to 15 CFR § 930.41(b) BCDC is invoking its right to a mandatory 15-day extension to the 60-day review period to allow staff more time to conduct a thorough evaluation of MOTCO's consistency determination submittal.

Our initial review of MOTCO's request for consistency determination review found that the following information is needed to file the consistency determination complete, consistent with 15 CFR §930.39(a). Therefore, please provide the following information:

1. **Total Project and Site Information**
   From reviewing your application, it appears that the proposed project would involve the following activities over a ten-year period:

   In the Bay and Coastal Zone:
   A. Waterfront Facilities:
      1. Removal and replacement of berthing and mooring system components, signs, floating markers, and floating docks;
      2. Repair of piles by applying jackets, wraps, or concrete, or replacing pile caps;
      3. Replacement of existing wooden piles with ACZA-treated wood, steel, or concrete piles of the same size;
      4. Replacement and maintenance of wharf and trestle decking and components;
      5. Replacement and maintenance of gantry cranes and rails;
      6. Installation of safety and security systems such as fire suppression systems, security cameras and lighting on existing facilities; and
      7. Repair of existing riprap.

B. Railyard and Rail lines:

1. Expansion of rail lines and rail yards;
2. Routine maintenance, repair, and replacement of track segments and ballast rocks;
3. Installation, modification, repair and maintenance of rail switching system components; and
4. Maintenance and upgrade of rail abutments.

C. Roads:

1. Minor resurfacing, regrading, re-profiling, repair and modification of roads;
2. Minor alterations and maintenance of culverts and stormwater drains;
3. In-kind repairs to bridges and elevated road crossings;
4. In-kind pavement repairs to holding pads and parking lots;
5. Minor enlargement, upgrades, and repairs to existing holding pads and parking lots; and
6. Repair and replacement of traffic safety lights and signs.

D. Utilities

1. Removal, upgrades, and in-kind replacement of utility lines and structures;
2. Maintenance and repair of stormwater retention basins;
3. Replacement, removal, and rerouting of storm water piping;
4. Installation, maintenance, repair, and replacement of lightning protection systems on existing buildings; and
5. Installation of solar panels.

E. Buildings

1. Minor expansion, renovation, and repair of buildings;
2. Upgrades and installation of building security systems;
3. Retrofit of buildings for seismic stability; and
4. Removal, repair, and maintenance of earthen berms and accessory security structures.

F. Landscaping and security

1. Maintenance and installation of irrigation systems;
2. Maintenance of landscaping by trimming, mowing, planting, manually removing brush and debris, and treating invasive plants with herbicides;
3. Installation, repair, and replacement of security systems such as fences, cameras, and vehicle barriers.

Please also clarify what, if any, of the above work is proposed on Ryer Island, Roe Island, Freeman Island, and Snag Island. Please verify whether the proposed project has been described in full; if not, please provide any missing details and any additional project information.

2. Project Plans

Please submit a vicinity map and plans showing the location of the shoreline (MHW or 5' above MHW in areas of tidal marsh vegetation), any marshes, wetlands or mudflats, property lines, scale, north arrow, date, the name of the person who prepared the

plans, roads, rail tracks, buildings, and all waterfront structures that will be maintained, repaired, replaced or removed as part of this maintenance program. Additionally, please send all figures shown in the DFPEA as high-resolution images.

3. **Riprap repairs**
   Please clarify whether new rip rap will be placed as part of repairs or riprap revetments will be expanded, and what materials are currently used or would be used.

4. **Piling replacements**
   Please describe the noise minimization measures that will be used to minimize environmental disturbance from pile driving if an impact hammer is used. BIO-7 specifies that replacement pilings may be steel, concrete, or treated wood which has "been certified through a third party (e.g. Western Wood Institute) to be treated to proper retention standards that maximize fixation of ACZA and minimize leaching rates." Please clarify whether the treated piles will be wrapped or coated (i.e. with polyurea) to prevent heavy metals from leaching into the Bay, or a discussion on why such measures are deemed unnecessary.

5. **Railroad and building expansions**
   Please describe where the anticipated railroad and building expansions will take place. BIO-3 states, in part, "[p]roposed actions that include expansion would not be performed in areas of riparian, wetland, aquatic, or other areas of sensitive habitat." Please clarify what expansion activities are included in this statement. Figure 3-1 shows the locations of wetlands, waterways, grasslands, and urban/development areas at MOTCO. Please explain whether these expansions would be limited to the areas marked as "urban/development." If any areas of wetlands or transition zone habitats will be impacted during this work, please quantify the amount of impacts within the Commission's Coastal Zone and any mitigation that is proposed for such impacts.

6. **Upland Alternative Locations for Utility Infrastructure.**
   Please indicate whether the maintenance activities related to utilities, solar panel installation, etc., would occur within upland areas that are out of wetland habitat to limit impacts to sensitive habitat areas and species. Given the size of the project area, it appears that much of this work could have an appropriate location in upland areas to reduce the fill and associated impacts on the Commission's Coastal Zone and the species within these areas.

7. **Other Government Approvals**
   As requested above, please provide a copy of all consultation letters and approvals from USFWS, NMFS, RWQCB, and CDFW.

8. **Environmental Work Windows**
   BIO-6 states that the in-water work window will be between August 1st and November 30th, and work conducted adjacent to tidal marshes will avoid the period from February 1st to August 31st, which is the Ridgway's rail breeding season. Please clarify whether overwater work will be restricted to the August 1st to November 30th work window. Please also describe the types of maintenance activities that would occur within tidal marsh areas and be restricted by the Ridgway's rail breeding season work window. Please also indicate if there are any additional environmental work window restrictions for work occurring within areas of shallow Delta smelt habitat (areas less than 10 feet in water depth) and if USFWS had additional recommendations to minimize impacts to this species.

9. **Interested Parties**
   It is necessary to have a complete list of interested parties prior to filing an application. Please provide a list of adjacent property owners and other parties known to be interested in your project, wherever possible, please include email addresses as all correspondence related to Commission meetings and permits is currently being sent electronically.

10. **Proof of Adequate Property Interest**
    Please submit documentation, such as a copy of a grant deed or lease which demonstrates that the applicant has adequate legal interest in the property, or a letter which authorizes the applicant to act on behalf of the property owner for all matters pertaining to this permit.

If we do not receive the information required by 15 CFR 930.39, as described in this letter, we will be forced to object to the consistency determination. Please feel free to contact me to discuss the outstanding information and agree upon an appropriate timeline for consideration of the proposed project.

Please do not hesitate to contact me at 415-352-3613 or rowan.yelton@bcdc.ca.gov.

Sincerely,

DocuSigned by:
Anniken Lydon
CA403961512F409...

ANNIKEN LYDON *for*

ROWAN YELTON
Coastal Program Analyst

RY/ra

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

February 16, 2022

ROWAN YELTON
Coastal Program Analyst
San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510
San Francisco, CA 94105

RE: Programmatic Environmental Assessment for Routine Maintenance at Military Ocean Terminal Concord (MOTCO)

Dear MR. YELTON:

Thank you for your comments for the Programmatic Environmental Assessment (PEA) for Routine Maintenance and Repair at Military Ocean Terminal Concord (MOTCO), CA. These routine maintenance and repair actions are necessary to sustain, enhance, and modernize the Installation's existing utilities and infrastructure to meet the Army and U.S. Department of Defense (DOD) missions. The purpose of the PEA is streamlining environmental compliance for routine maintenance and repair projects for existing facilities to avoid impacts throughout the installation. MOTCO developed best management practices (BMPs) to address project impacts, including projects near environmentally sensitive areas. MOTCO is the primary west coast port for distribution of cargo to United States Armed Forces active in overseas theatres. Safe and reliable shipping operations at MOTCO support our national defense.

Based on the discussion with BCDC staff on February 4, 2022, MOTCO submits the following information (below) with the previously submitted PEA to the San Francisco Bay Conservation and Development Commission (Commission) for its federal consistency determination (CD) pursuant to Section 307 of the Coastal Zone Management Act (CZMA, 16 U.S.C. §1456), as implemented by the National Oceanic and Atmospheric Administration (NOAA) federal consistency regulations at 15 C.F.R. Part 930. The Army requests a CD for the routine maintenance and repair activities described in the PEA at MOTCO, CA.

A. PROGRAMMATIC ENVIRONMENTAL ASSESSMENT REVISIONS

Following the discussion with BCDC, the PEA was revised to clearly state the NEPA compliance is only for:

- maintenance and repair of existing infrastructure described in PEA;
- maintenance of existing infrastructure that would not have significant impacts;
- maintenance and repair activities that occur in previously disturbed areas; and
- maintenance activities that occur outside of wetland or tidal marsh habitat.

Furthermore:

- No maintenance and repair activities are proposed on the islands in the PEA;
- MOTCO will coordinate with the RWQCB and BCDC for permits as appropriate;
- MOTCO will provide BCDC with annual reports on maintenance activities; and
- the PEA fully describes the proposed maintenance activities.

In addition, MOTCO will provide copies of the:

- US Fish and Wildlife Service Biological Assessment and the Biological Opinion;
- Integrated Cultural Resources Management Plan (ICRMP);
- Real Property documentation; and
- PEA maps as separate digital images.

B. PROPOSED PROJECT DESCRIPTION

Project Plans. The PEA has detailed maps showing the location of infrastructure in relation to shoreline, wetland, and terrestrial habitat.

- Figure 1-1 Regional map for Military Ocean Terminal Concord, Contra Costa County, California
- Figure 1-2 installation map describing tidal / inland areas
- Figure 1-3a-f Installation maps of electrical, water, wastewater, and roads.
- Figure 3-1 Installation map of infrastructure with water features, terrestrial and wetland habitat.
- Figure 3-2 Installation map of infrastructure with floodplain zones.
- Figure 3-3 Installation map of vegetation habitat.
- Figure 3-4 Installation map of faunal species of concern.
- Figure 3-5 Installation map of land use.
- Figure 3-6 Installation map of restoration program sites.

Riprap Repairs. Reinforcement and repair of the existing shoreline riprap would use materials similar to the existing riprap associated with these features. Expansion of the riprap revetment beyond the existing footprint shall require new environmental compliance (NEPA).

Piling Replacements. The description of wooden pile 'wrap' repairs has been revised to describe partial replacement or application of a structural pile jacket (fiberglass filled with cement grout) or polypropylene HDPE and EPDM wrap are described in Table 2-1. Pile replacement has been revised to require permits from RWQCB and BCDC for compliance.

The proposed operations and maintenance activities for pile repair, pile and pile cap replacement are consistent with Commission Policies for protecting water quality. The BMPs addressing pile repair impacts were developed from the Modernization and Repair of Piers 2 and 3 Project at MOTCO. The appropriate minimization measures for pile repair are described in the following BMPs:

- BIO-6 describes the approved work window for in-water work between August 1 and November 30 as specified by FWS and NMFS.

- BIO-7 specifies using a vibratory hammer for piling installation while
- BIO-8 focuses on practices to minimize creosote release from treated piles.

Analyses in the Piers 2 and 3 Repair Project discuss the limitations for the use of bubble and turbidity curtains to minimize impacts.

Railroad and building expansions. Railroad, road, building and utility expansion shall be limited to previously disturbed urban and development areas of the Installation. Maintenance and repair work on these types of infrastructure that may affect wetlands, waterways, grasslands, or transition zone habitat shall require separate NEPA compliance documents.

Upland Alternative Locations for Utility Infrastructure. The existing solar array located in the Renewable Energy Zone area is north of the US Army Reserve Center in the Inland Administrative District.

Other Governmental Approvals. The Biological Assessment and U.S. Fish and Wildlife Service Biological Opinion for routine maintenance activities are provided as attachments to this letter.

Environmental Work Windows. No maintenance activities would occur within tidal marshes. Work windows adopted from other infrastructure compliance for consistency.

Interested Parties. Table 5-2 and Appendix C in the PEA document the interested parties who received the Notice of Availability for the public review.

Proof of Adequate Property Interest. The attachments document the transfer of the Installation from the U.S. Navy to the U.S. Army, including the security area within Suisun Bay.

Please send a CD for the routine operations and maintenance activities described in the PEA at your earliest opportunity. The PEA will be finalized upon receipt of the CD. Should you have any questions or wish additional information, please contact Mr. Stephen Volk, at 925-246-4182, or via email at John.S.Volk.civ@army.mil.

Sincerely,

J. Stephen Volk

J. Stephen Volk
Environmental Division Chief
Military Ocean Terminal Concord

cc: ANNIKEN LYDON, Environmental Scientist

San Francisco Bay Conservation and Development Commission

375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600 fax 888 348 5190

State of California | Gavin Newsom – Governor | info@bcdc.ca.gov | www.bcdc.ca.gov

Transmitted Via Email

April 8, 2022

Military Ocean Terminal Concord (MOTCO)
Department of Public Works - Environmental
410 Norman Ave, Building 635
Concord, CA 94520-1142

ATTENTION: J. Stephen Volk, Environmental Division Chief
Via Email: john.s.volk.civ@army.mil

SUBJECT: BCDC Consistency Determination Application No. C2021.006.00

Dear Mr. Volk:

For your convenience, the consistency determination for the 10-year routine maintenance and repair program at Military Ocean Terminal Concord (MOTCO) has been listed with the Commission, as indicated on the attached Administrative Listing.

Unless the Commissioners vote to hold a public hearing on your permit application, which would be unusual, the Executive Director will be authorized to act on the matter. There is little need for you to attend the Commission meeting. The only reason for the list is to give Commissioners and the public an opportunity to review those matters determined by the staff to be administrative.

Should you have any questions, please contact me at 415-352-3613 or rowan.yelton@bcdc.ca.gov, project manager for this project.

Very truly yours,

DocuSigned by:
Rowan Yelton
A2880474B438488...

ROWAN YELTON
Coastal Program Analyst

RY/ra

Enclosure: Administrative Listing

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600 fax 888 348 5190
State of California | Gavin Newsom – Governor | info@bcdc.ca.gov | www.bcdc.ca.gov

Agenda Item #7

April 8, 2022

TO: Commissioners and Alternates

FROM: Lawrence J. Goldzband, Executive Director (415/352-3653; larry.goldzband@bcdc.ca.gov)
Steve Goldbeck, Deputy Executive Director (415/352-3611; steve.goldbeck@bcdc.ca.gov)

SUBJECT: **Listing of Pending Administrative Matters**
(For Commission consideration on April 21, 2022)

This report lists the administrative permit applications, federal consistency actions, and marsh development permits in the Secondary Management Area of the Suisun Marsh that are pending with the Commission. The Executive Director will take the action indicated on the matters unless the Commission determines that it is necessary to hold a public hearing. The staff members to whom the matters have been assigned are indicated at the end of the project descriptions. Inquiries should be directed to the assigned staff member prior to the Commission meeting.

Administrative Permit Applications and Federal Consistency Actions

Applicant: Military Ocean Terminal Concord (MOTCO)
Department of Public Works - Environmental
410 Norman Avenue, Building 635
Concord, California 94520-1142

BCDC Consistency Determination No. C2021.006.00
Filed: February 22, 2022
60th Day: April 25, 2022

Location: Within the Commission's Bay and 100-foot shoreline band jurisdictions, at Military Ocean Terminal Concord, in the City of Concord, Contra Costa County.

Description: To conduct routine maintenance, repair, replacement and removal activities over a 10-year period within the 100-foot shoreline band and Bay jurisdictions at MOTCO. The authorized activities in the Bay are repairing piles, repairing and replacing riprap, installing fire suppression systems and security cameras, maintaining gantry rails and cranes, repairing and replacing mooring and berthing systems and signs, and repairing and replacing wharf decking and other wharf components. The work in the 100-foot shoreline band includes repair and replacement and limited expansion in developed areas of rail lines, roads, utilities, buildings, and landscaping. There will be no work in tidal marshes or

wetlands, and any activities with the possibility of significant adverse environmental effects will require a separate BCDC Consistency Determination. There is no public access at this site, and none will be required by this consistency determination because of the military nature of the site.

Tentative Staff Position: *Recommend Approval with Conditions.*
(Rowan Yelton; 415/352-3613 or rowan.yelton@bcdc.ca.gov)

Permits in the Secondary Management Area of the Suisun Marsh

Solano County has issued the following marsh development permit since the last listing.

Applicant: FP Smith Equipment Company
3190 Ramsey Road
Fairfield, California 94534

Marsh Development Permit No. MD-79-04-MR4, MR (Minor Revision) No. 4
Received: March 29, 2022
20th Working Day: April 27, 2022

Project Description: The project involves leasing 8 acres of an 18-acre outdoor storage yard from the property owner (FP Smith) to Copart, Inc. to provide an outdoor storage yard in support of online agricultural vehicle and equipment sales, which would hold an anticipated maximum of 50 vehicles and/or equipment pieces at any given time. The project also covers improvements made in 2017 to the site without permits, including: placement of approximately 500 yards of aggregate base gravel within the storage yard to smooth out potholes, construction of a security fence and gate, and paving of a dirt road. A 480-square-foot commercial coach would be installed and used as an office.

Solano County found the proposed project to be consistent with the Suisun Marsh Preservation Act and its Local Protection Program (LPP) for the Marsh upon a finding that existing non-agricultural uses should be allowed to continue under the LPP if they are conducted so they will not cause adverse impacts on the marsh. Additionally, the County found that the facility qualifies for this non-agricultural use exemption due to its existence prior to the Act, and the fact that it supplies agricultural equipment that supports agricultural use.

On March 17, 2022, the Solano County Planning Commission approved the Resolution and staff report for the subject project located in the County's Suisun Marsh Secondary Management Area. Final Notice of County approval of the project was received at the Commission's office on March 29, 2022. Anyone who wishes to file an appeal with BCDC of the County decision must do so by 5:00 p.m. on April 27, 2022, with the Commission's office.

(Ethan Lavine; 415/352-3618 or ethan.lavine@bcdc.ca.gov)

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600 fax 888 348 5190
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April 25, 2022

TO: Military Ocean Terminal Concord (MOTCO)
Department of Public Works - Environmental
410 Norman Ave, Building 635
Concord, CA 94520-1142

FROM: Lawrence J. Goldzband, Executive Director (415/352-3653; larry.goldzband@bcdc.ca.gov)

SUBJECT: Instructions for Completing the Letter of Agreement

Dear BCDC Permit Holder:

Enclosed please find a BCDC Letter of Agreement, executed by the Executive Director.

This letter of agreement shall not take effect unless MOTCO executes the letter of agreement and returns it to the Commission within 10 days after the date of the issuance of the letter of agreement[1]. No work shall be done until the acknowledgment is duly executed and returned to the Commission (IV. A. Standard Conditions).

Special Condition II.A.2 requires MOTCO to submit annual pre-construction reports for review by the commission by January 31st of each year before those activities may commence. Since this Letter of Agreement is being issued in April, please send us the pre-construction report for the remainder of 2022 as soon as possible for review within 45 days. Until this report is reviewed, no work described in this letter of agreement may commence.

If you should have any questions regarding the Letter of Agreement or the procedure outlined above, please contact Rowan Yelton at 415-352-3613 or rowan.yelton@bcdc.ca.gov.

[1] For your convenience, you will receive an email copy of the amended letter of agreement via DocuSign for your acknowledgement and e-signature.

APPENDIX D

COASTAL CONSISTENCY DETERMINATION

SAN FRANCISCO BAY COASTAL DEVELOPMENT COMMISSION

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San Francisco Bay Conservation and Development Commission

375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600 fax 888 348 5190

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April 25, 2022

TO: Military Ocean Terminal Concord (MOTCO)
Department of Public Works - Environmental
410 Norman Ave, Building 635
Concord, CA 94520-1142

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[1] For your convenience, you will receive an email copy of the amended letter of agreement via DocuSign for your acknowledgement and e-signature.

San Francisco Bay Conservation and Development Commission
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State of California | Gavin Newsom – Governor | info@bcdc.ca.gov | www.bcdc.ca.gov

LETTER OF AGREEMENT FOR CONSISTENCY DETERMINATION NO. C2021.006.00

Issued on April 25, 2022

Military Ocean Terminal Concord
Department of Public Works - Environmental
410 Norman Ave, Building 635
Concord, CA 94520-1142

I. Agreement

A. The San Francisco Bay Conservation and Development Commission agrees with the determination of the Military Ocean Terminal Concord (MOTCO) that the following project is consistent with the Commission's Amended Management Program for San Francisco Bay:

Location: At MOTCO, in the City of Concord, Contra Costa County.

Description: In the Coastal Zone and upland areas, a ten-year maintenance program to:

In the Bay and along the shoreline:

1. Repair piles and replace pile caps;
2. Repair and replace in-kind rip rap, gantry rails and cranes, berthing systems, wharf decking and components, and signs;
3. Install, maintain, and replace fire suppression systems and security cameras;

In previously developed, upland areas:

4. Repair, replace in-kind, and upgrade rail tracks, ballasts, and switching and crossing systems, abutments, and transfer pads;
5. Expand rail tracks and abutments, stormwater retention basins, and buildings;
6. Maintain, repair, and replace in-kind paved roads and lots, traffic safety components and signs, bridges, bridge foundations, water gas and electrical utility systems, buildings, drainage swales, culverts, and stormwater drainage systems;

7. Regrade, reprofile, and resurface aggregate and unpaved roads;
8. Expand and alter geometry of roads and parking lots;
9. Install, maintain, repair, and replace lightning protection systems, solar installations, earthen berms, fences, and accessory security structures such as towers, booths, security cameras, lighting, bollards, and vehicle barriers;
10. Seismically upgrade buildings; and
11. Maintain landscaping and irrigation on land.

B. The agreement is given based on the information submitted by or on behalf of the MOTCO in the letter dated January 3, 2022, and subsequently submitted exhibits and correspondence.

C. The work described in this Letter of Agreement may commence April 25, 2022, and must be completed by April 25, 2032, unless an extension of time is granted by amendment of this Letter of Agreement.

II. Special Conditions

A. Plans and Plan Review

1. **Construction Document(s).** The activities described herein shall be built generally in conformance with the following documents:

   a. "Final Programmatic Environmental Assessment for Routine Maintenance and Repair at Military Ocean Terminal Concord, CA" dated February 2022 and prepared by MOTCO.

   MOTCO is responsible for assuring that all construction documents accurately and fully reflect the terms and conditions of this Letter of Agreement and the consistency determination submitted by MOTCO. No substantial changes shall be made to these documents without prior review and written approval by or on behalf of the Commission through plan review or an amendment to this Letter of Agreement.

2. **Annual Maintenance Reporting.**

   a. **Pre-construction Maintenance Reporting.** By January 31st of each year, MOTCO shall submit an annual report of all proposed work for the year to the Commission for review and approval. All documents are to be reviewed within 45 days of receipt. Approval or disapproval shall be based on whether the activities conform to the terms and conditions of this Letter of Agreement and the consistency determination. If work proposal review is not completed by or on behalf of the Commission within the 45-day period, MOTCO may carry out the proposed activities described herein in a manner consistent with the plans referred to in Special Condition II.A.1 of this Letter of Agreement. The report shall contain the following information:

i. A map or maps showing all proposed work areas, including the location of the shoreline (MHW or 5 feet above Mean Sea Level in areas of marsh vegetation), tidal marshes, property lines, and existing facilities and structures.

ii. Final construction documents for any activities that require engineer certification. All construction documents shall be labeled with: the Mean High Water line or the upland extent of marsh vegetation no higher than +5 feet above Mean Sea Level and the tidal datum reference (NAVD88 or, if appropriate, Mean Lower Low Water (MLLW)); property lines; the location, types, and dimensions of materials, structures, and project phases described herein; and grading limits. Documents for the construction must be dated and include the preparer's certification of project safety and contact information.

iii. Descriptions of all proposed work, including existing conditions, construction methods, materials, and environmental impact minimization measures to be implemented.

iv. Expected dates of work.

v. All required approvals and consultations with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and the Regional Water Quality Control Board.

b. **Post-construction Maintenance Reporting.** By January 31st of each year following maintenance activities, MOTCO shall submit an annual report of maintenance activities completed over the past year to the Commission for review and approval. The report will be reviewed within 60 days of receipt. The report shall contain the following information:

i. A map or maps showing all completed work, including the location of the shoreline (MHW or 5 feet above Mean Sea Level in areas of marsh vegetation), tidal marshes, property lines, and existing facilities and structures.

ii. Descriptions of all completed work, including any changes in size and design of pre-existing structures.

iii. Dates of construction and work completion.

3. **Individual Project Review and Approval.** Requests for the review of proposed activities that were not included in the annual pre-construction report and are located in or over the Bay, or that could result in reasonably foreseeable direct or indirect effects to any land or water use or natural resource in the Coastal Zone (such as modifications to stormwater drainage systems or the installation of lighting, etc.) shall be submitted to the Commission for review and approval. Proposals shall contain the information

specified in Special Condition II.A.2.a. Proposals will be reviewed within 45 days of receipt. If the review is not completed by or on behalf of the Commission within the 45-day period, MOTCO may carry out the proposed activities described herein in a manner consistent with the PEA referred to in Special Condition II.A.1 of this Letter of Agreement. Activities in upland areas that are not expected to cause direct or indirect effects on any land or water use, or natural resources may be undertaken without further approval, and shall be included in the annual post-construction report required in Special Condition II.A.2.b.

4. **Discrepancies between Approved Plans and Special Conditions.** In case of a discrepancy between final approved documents and the special conditions of this Letter of Agreement, the special condition shall prevail.

5. **Reconsideration of Plan Review.** The federal entity may request reconsideration of a plan review action taken pursuant to this special condition within 30 days of a plan review action by submitting a written request for reconsideration to the Commission's Executive Director. Following the Executive Director's receipt of such a request, the Executive Director shall respond to the federal entity with a determination on whether the plan review action in question shall remain unchanged or an additional review and/or action shall be performed by or on behalf of the Commission, including, but not limited to, an amendment to the Letter of Agreement.

B. **Riprap Material and Placement.** 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 Corp 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 and odd shaped pieces of concrete, and asphalt concrete as riprap is prohibited. Riprap may only be placed to repair existing revetments and shall not extend any further than the original revetment design.

C. **Natural Resources and Water Quality Protection.** MOTCO shall reduce impacts to natural resources and water quality at the site by implementing the following measures for work described in this Letter of Agreement. Minor modifications to the below requirements may be approved by the Executive Director upon a finding that they are no less protective of natural resources or water quality.

1. **In-Water Work Window**. All in-water work described by this Letter of Agreement shall only occur between August 1st and November 30th of each year. Any work that does not involve in-water work, such as above deck repair, may take place during the rainy season only with implementation of approved Best Management Practices mentioned below and specifications to work in inclement weather. Activity approvals may specify narrower work windows, if necessary and based on activity descriptions and locations.

2. **Creosote Treated Wood.** No pilings or other wood structures that have been pressure treated with creosote shall be used in any area subject to tidal action in the Commission's Coastal Zone as part of the project described herein.

3. **Best Management Practices.** MOTCO shall implement the water quality and wildlife protection measures described in the Consistency Determination "Final Programmatic Environmental Assessment for Routine Maintenance and Repair at Military Ocean Terminal Concord, CA" dated February 2022 for the project described by this Letter of Agreement, including implementing construction best management practices, adhering to environmental work windows, and taking measures to avoid disturbing contaminated soils.

4. **Expansion Activities.** All expansion activities shall be limited to previously developed, inland areas with no reasonably foreseeable direct or indirect effects to any land or water use or natural resource in the Coastal Zone, and no expansion activities shall occur in or over the Bay, tidal marshes, or sensitive habitats. Rail expansions shall be limited to no more than 3 miles of linear track or 135,000 square feet over the ten-year period from April 25, 2022, to April 25, 2032. Staging areas, and parking and ammo lot expansions shall be limited to less than 1 acre of pavement area per year in previously disturbed inland areas. Building expansions shall be limited to 2,000 square feet or 25% of the existing building square footage over the ten-year period, whichever is lesser.

III. Findings and Declarations

A. **Letter of Agreement**. On January 3, 2022, MOTCO submitted a consistency determination for a ten-year routine maintenance and repair program, and requested that the Commission concur that the program is consistent with its Amended Coastal Zone Management Program for San Francisco Bay. MOTCO is a military installation operated by the Army and originally built during World War II, which includes four wharves, railroads, roads, buildings, and utilities. The activities included in this program are restricted to maintenance, repairs, and replacement in the Bay, and expansions of facilities only in upland, developed areas. The program will not result in any significant changes to structures in or over the water, and will not result in any changes to Bay fill.

Based on the information contained in the consistency determination materials, the project was found to be consistent with the provisions of the McAteer-Petris Act and the policies of the San Francisco Bay. This consistency determination was processed administratively because the activities located in the Coastal Zone involve routine repairs, reconstruction, replacement, removal, and maintenance as defined in Regulation Section 10601(a)(6) and thus are "minor repairs and improvements", and the activities described in the PEA that take place in upland areas outside of the Coastal Zone are not expected to result in any adverse impacts to the Coastal Zone.

Special Condition II.A.2 requires MOTCO to submit annual reports of the activities of the past year and the activities planned for the upcoming year. The future work may not commence until BCDC reviews the activity proposals for applicability and compliance with the conditions of this Letter of Agreement. Special Condition II.A.3 is included to allow MOTCO to propose activities for BCDC review outside of the standard annual reporting timeframe. Only activities located in or

over the Bay, or activities that could result in reasonably foreseeable direct or indirect impacts to land or water use or natural resources in the Coastal Zone are required to be reviewed by BCDC. Special Condition II.B is included to protect the natural resources of the Coastal Zone and ensure the safety of bay fill by stipulating riprap material specifications and placement methods. Special Condition II.C is included to protect the natural resources of the Coastal Zone by restricting in-water work to a specific work window to avoid adverse impacts to delta smelt, Chinook salmon, and steelhead that may utilize the project area during certain times of year, prohibiting the use of creosote-treated wood, requiring MOTCO to implement the best management practices listed in the PEA, and limiting the area of expansion of rail lines, pavement and buildings to only upland, previously developed areas with annual size limits on the expansions.

On June 22, 2020, the U.S. Fish and Wildlife Service issued a letter titled “Formal Consultation for Routine Maintenance and Repair Activities on Military Ocean Terminal Concord, Contra Costa County, California”, in which they concluded that the routine maintenance and repair activities is not likely to jeopardize the continued existence of the delta smelt or salt marsh harvest mouse. MOTCO has attested that consultations with the National Marine Fisheries Service and the Regional Water Quality Control Board are not required for this maintenance and repair program, and MOTCO will conduct consultations with these agencies as well as with BCDC when individual activities that are not described in this Letter of Agreement are proposed. These individual activities will be evaluated for consistency with the Commission’s Amended Coastal Zone Management Program through separate consistency reviews.

B. **Environmental Assessment.** An environmental review was conducted by MOTCO for the maintenance and repair program, resulting in a Finding of No Significant Impact (FONSI), certified March 11, 2021. The FONSI stated that, with the implementation of mitigation measures, the proposed action would not have a significant effect on the environment. After comments from BCDC, MOTCO revised the PEA to clarify that certain in-water activities that would need additional BCDC approval would be removed from the maintenance and repair program, and that certain expansion activities would take place only in previously developed, upland areas. The Final PEA as revised in response to BCDC's comments, and as it exists as of the time of this letter, is expected to be certified after and in reliance on issuance of this Letter of Agreement.

C. **Consistent with the Commission's Amended Coastal Zone Management Program.** 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 with the Commission.** Pursuant to Regulation Section 10620, this project was listed with the Commission on April 21, 2022.

IV. **Standard Conditions**

A. **Concurrence**. This Letter of Agreement shall not take effect unless MOTCO executes this Letter of Agreement and returns it to the Commission within ten days after the date of the issuance of the Letter of Agreement. No work shall be done until the acknowledgment is duly executed and returned to the Commission.

B. **Other Government Approvals**. All required permissions from governmental bodies must be obtained before the commencement of work; "these bodies may include, but may not be limited to, the U. S. Army Corps of Engineers, the State Lands Commission, the Regional Water Quality Control Board, and the city or county in which the work is to be performed, whenever any of these may be required. This Letter of Agreement does not relieve MOTCO of any obligations imposed by State or Federal law, either statutory or otherwise.

C. **Built Project must be Consistent with Consistency Determination**. Work must be performed in the precise manner and at the precise locations indicated in your consistency determination as such may have been modified by the terms of the Letter of Agreement and any plans approved in writing by or on behalf of the Commission.

D. **Life of Authorization**. Unless otherwise provided in this Letter of Agreement, all its terms and conditions shall remain effective for so long as it remains in effect or for so long as any authorized use or constructed feature exists, whichever is longer.

E. **San Francisco Bay Coastal Zone**. Any area located at the time the Letter of Agreement is granted or thereafter in the Coastal Zone of the San Francisco Bay Conservation and Development Commission (BCDC) under the Coastal Zone Management Act (CZMA) and thus presumptively subject to the jurisdiction of the BCDC under the CZMA shall continue to be located within the Coastal Zone of the BCDC notwithstanding the placement of any fill or the implementation of any substantial change in use authorized by this Letter of Agreement. Any area not located within the Coastal Zone of the BCDC that becomes, as a result of any work or project authorized in this Letter of Agreement, subject to tidal action shall be considered to be located within the BCDC's Coastal Zone and thus presumptively subject to the Commission's CZMA jurisdiction.

F. **Changes to the Commission's Coastal Zone Under the CZMA as a Result of Natural Processes**. This Letter of Agreement reflects the location of the shoreline of San Francisco Bay when the Letter of Agreement 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 and location of the Commission's Coastal Zone for purposes of the CZMA. Therefore, the issuance of this Letter of Agreement does not guarantee that the extent and location of the BCDC's Coastal Zone will not change in the future.

G. **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 MOTCO, or its assignees or successors in interest, or by the owner of the improvements, within 60 days or such other reasonable time as the Commission, or the Executive Director on behalf of the Commission may direct.

Executed in San Francisco, California, on behalf of the San Francisco Bay Conservation and Development Commission on the date first above written.

Larry Goldzband

LAWRENCE J. GOLDZBAND
Executive Director
San Francisco Bay Conservation and
Development Commission

LJG/RY/ra

cc: U.S. Army Corps of Engineers, Attn: Katerina Galacatos
San Francisco Bay Regional Water Quality Control Board,
Attn: Katie Hart
Environmental Protection Agency

* *

Receipt acknowledged, contents understood and agreed to:

Executed at MOTCO

Military Ocean Terminal Concord
Permittee

On 26 April 2022

By: CLOVER.LUKE.RYLE.1162294306 Digitally signed by CLOVER.LUKE.RYLE.1162294306 Date: 2022.04.27 14:55:37 -07'00'

LTC Luke R. Clover
Print Name

Commander
Title