

Final

ENVIRONMENTAL ASSESSMENT

Joint Logistics Over The Shore, Maritime
Prepositioning Force, and Field Exercise Training
Marine Corps Base Camp Pendleton
San Diego County, California



United States Department of the Navy

May 2015



FINAL
ENVIRONMENTAL ASSESSMENT
JOINT LOGISTICS OVER THE SHORE, MARITIME PREPOSITIONING FORCE,
AND FIELD EXERCISE TRAINING AT MARINE CORPS BASE CAMP PENDLETON
SAN DIEGO COUNTY, CALIFORNIA

ABSTRACT

Lead Agency for the EA: United States Department of the Navy

Title of Proposed Action: Joint Logistics Over the Shore, Maritime Prepositioning Force, and Field Exercise Training

Affected Region: San Diego County

Designation: Environmental Assessment

The Commander, United States Pacific Fleet has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code §§ 4321-4370h); the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500-1508); Department of the Navy Procedures for Implementing NEPA (Title 32 CFR Part 775); Chief of Naval Operations Instruction 5090.1D (January 10, 2014); and Marine Corps Order P5090.2A, Change 3, Chapter 12, dated August 26, 2013, *Environmental Protection and Compliance Manual*. The Proposed Action consists of an increase in amphibious training exercises at Marine Corps Base (MCB) Camp Pendleton, situated approximately 40 miles (64 kilometers) north of the City of San Diego, California. Proposed amphibious training exercises would be similar to existing amphibious training, but at an increased annual tempo and covering a larger area.

This EA analyzes two action alternatives (i.e., Alternatives 1 and 2), and the No Action Alternative. Under Alternative 1, existing amphibious training exercises would continue to occur on Red and Gold beaches and associated inland training areas, and within and adjacent to the Del Mar Boat Basin, but at a higher annual tempo (an increase of approximately 25 percent) as compared to existing conditions. Alternative 2 would be the same as Alternative 1, except Alternative 2 would also include the use of White Beach for amphibious training exercises. The No Action Alternative assumes the continuation of existing amphibious training exercises with no increase in annual tempo or training area. This EA includes a detailed analysis of the Proposed Action's potential environmental effects on the following resources: geological resources, water resources, biological resources, cultural resources, air quality, transportation and circulation, and hazardous materials and waste.

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code §§ 4321-4370h); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500-1508); U.S. Department of the Navy (Navy) Procedures for Implementing NEPA (32 CFR Part 775); Chief of Naval Operations Instruction 5090.1D (January 10, 2014) *Environmental Readiness Program Manual*, and Marine Corps Order P5090.2A, Change 3, Chapter 12, dated August 26, 2013, *Environmental Protection and Compliance Manual*.

This EA has been prepared to analyze the potential environmental impacts resulting from the proposed increase in amphibious training exercises at Marine Corps Base (MCB) Camp Pendleton, California. Proposed amphibious training exercises (Joint Logistics Over the Shore [JLOTS], Maritime Prepositioning Force [MPF], and Field Exercise [FEX] Training) would be similar to existing amphibious training, but at an increased annual tempo and covering a larger area. This EA addresses the potential environmental impacts of the No Action Alternative, Alternative 1, and Alternative 2.

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of executing amphibious training exercises is to provide an opportunity for Navy, Marine Corps, and Army personnel to gain and improve amphibious warfighting competencies at a west coast location that allows for the focused assemblage and execution of logistics movement from the offload to locations inland. These exercises would also provide the Navy and the Marine Corps an opportunity to integrate as an amphibious warfare team to move Marines from ships afloat to inland areas to support the Range of Military Operations associated with amphibious warfare training.

The Proposed Action is needed for Navy, Marine Corps, and Army units to conduct repetitive and realistic routine amphibious training exercises to ensure continued combat readiness. Amphibious training exercises would allow military commands to practice their individual skills as well as prepare for joint operations, where multiple units, multiple commands, and multiple services work together under a single commander in a realistic setting. The training aims to validate, enhance, and refine military tactics, techniques, procedures, and doctrine for these operations, which ultimately provides the U.S. military the capability to move combat power across the surf zone, on to land, and to inland areas.

Training in robust exercise scenarios is vital to hone warfighting skills, and maintain and improve personnel proficiency. Because amphibious operations are inherently dangerous (conducted in potentially high sea states and across the surf zone onto potentially hostile territory), training in a realistic setting is critical to maximizing the safety of personnel conducting amphibious training exercises. Furthermore, Navy, Marine Corps, and Army units need to conduct these repetitive and realistic training exercises at a west coast location that can accommodate proposed amphibious training exercises and projection of forces inland across the Marine Corps Installations West region.

The Hawaii-Southern California Testing and Training Activities (HSTT) Environmental Impact Statement (EIS)/Overseas EIS [OEIS] (Navy 2013a) analyzed those portions of amphibious warfare training that occur at sea (up to the mean high tide mark), to include pile driving and vessel movement as covered in the associated Letter of Authorization and Biological Opinion (National Marine Fisheries Service 2014, 2015). As no land-based activities were analyzed in the HSTT EIS/OEIS, this JLOTS EA also analyzes the potential impacts associated with the land-based portions of amphibious training at MCB Camp Pendleton.

CHANGES FROM DRAFT EA TO FINAL EA

The alternatives as described and analyzed in this Final EA have changed from those included in the Draft EA, which was circulated for public review in May 2014. Specifically, since the publication of the Draft EA, the alternatives have been revised to eliminate proposed Marine Corps Large-Scale Exercises at Red, Gold, and White beaches, and JLOTS, MPF, and FEX amphibious training activities at Green Beach. The Marine Corps is currently preparing separate NEPA documentation to analyze their unrelated and independent (with respect to this Proposed Action) Large Scale-Exercise amphibious training at Red, Gold, Green, and White beaches. All other elements as described and analyzed in the Draft EA remain in this Final EA.

NO ACTION ALTERNATIVE

The No Action Alternative (i.e., the continuation of existing conditions) would allow for the continuation of amphibious logistic training exercises (JLOTS, MPF, and FEX) as analyzed in previous NEPA documentation (e.g., Army 2001; Navy 2008, 2009; MCB Camp Pendleton 2009, 2011a), without change in the nature or scope of military activities, centered on Red and Gold beaches and including the Del Mar Boat Basin and existing inland training areas. Continuation of the No Action Alternative may result in a reduction in the operational readiness of joint U.S. military forces related to amphibious training and logistical support. The No Action Alternative is required by CEQ regulations as a baseline against which the impacts of the action alternatives are compared.

ALTERNATIVE 1

Under Alternative 1, amphibious training exercises would continue to occur on Red and Gold beaches and associated inland training areas, and within and adjacent to the Del Mar Boat Basin, but at a higher annual tempo (an increase of approximately 25 percent) as compared to existing conditions. As part of Alternative 1, emerging platforms and new technologies would be integrated into future exercises. In addition, ship-to-ship refueling operations would occur more than 3 nautical miles (5.6 kilometers) offshore.

ALTERNATIVE 2

Implementation of Alternative 2 would be the same as described under Alternative 1, except Alternative 2 would also include the use of White Beach for amphibious training exercises.

PUBLIC/AGENCY PARTICIPATION

The Navy initiated the public participation process with the publication of a Notice of Availability of the Draft EA in three local newspapers: the San Clemente Times on May 15, 2014 (a weekly publication); the Orange County Register from May 16 – 18, 2014; and the San Diego Union Tribune (North County Edition) from May 16 – 18, 2014. The Draft EA was made available for public review at the Oceanside Public Library, the San Clemente Library, and Friends of the Fallbrook Library. In addition, the Draft EA was made available via the Navy Region Southwest and MCB Camp Pendleton websites. The 15-day public review period was from May 15 to May 30, 2014. The Navy did not receive any comments during the public review period. The Navy coordinated with the California Coastal Commission, the California State Historic Preservation Office, and the National Marine Fisheries Service for the Proposed Action.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Potential environmental impacts have been analyzed in detail for the following resource areas: geological resources, water resources, biological resources, cultural resources, air quality, transportation and circulation, and hazardous materials and waste. Table ES-1 summarizes the environmental consequences, permits, and impact avoidance/minimization measures for the No Action Alternative, Alternative 1, and Alternative 2, for each resource area. The impact avoidance/minimization measures presented under the No Action Alternative have been, and will continue to be integrated into each amphibious training exercise. Notably, all training activities would continue to be consistent with the Programmatic Riparian Biological Opinion (U.S. Fish and Wildlife Service 1995). Chapter 3 provides a detailed discussion of the environmental consequences for those resources analyzed in detail. As summarized in Table ES-1, with the application of the impact avoidance/minimization measures for activities at land and in marine waters, continuation of the No Action Alternative, or implementation of Alternative 1 or Alternative 2 would not result in significant impacts to any resource area.

Table ES-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
<p>Geological Resources</p>	<p>Temporary and minor impacts to marine sediments from anchors and surf zone/beach activities. Temporary, localized changes in beach contours and topography. Temporary, minor increase in erosion potential from limited grading and foot/vehicle disturbance.</p> <p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Any area excavated on the beach would be filled in at the conclusion of the exercise. 2. Vehicles, personnel, and equipment would be limited to existing roads and previously compacted and developed areas. 3. If amphibious training exercises disturb more than 1.0 acre (0.4 ha), a Construction General Permit would be obtained and the provisions of the permit would be implemented. 4. All erosion and sediment control measures would be inspected and maintained to ensure proper integrity and function during the entire training activity period. All stabilization and structural controls would be inspected after any major storm. Any damage would be repaired, and the controls would be maintained for optimum performance. 5. Disturbed slopes or other graded features would be properly stabilized. Disturbed areas would be protected with certified weed-free straw wattles or geotextile fabric. Whenever possible, grading would be phased to limit disturbed ground, soil exposure, and sediment runoff/fugitive dust potential. Drain inlets would be protected using gravel bags or straw wattles. No plastic monofilament materials would be used. Check dams would be used to reduce runoff velocities where necessary. 6. The exercise proponent would employ dust abatement measures (e.g., wetting of soils) within the Base Camps to minimize fugitive dust emissions during training exercises. Spraying would be done lightly to avoid the accumulation of surface water. 7. Tent Camps, Life Support Areas, and vehicle laydown area entrances and equipment laydown areas would be stabilized with aggregate. Steel ribbed plates may be used in addition to aggregate. 	<p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>	<p>Impacts would be similar to those presented for Alternative 1. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to geological resources in this area.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>

Table ES-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>8. Any straw wattles, straw or hay bales used would be certified weed-free. All erosion control seed mixes would consist of native plant species. No plastic monofilament materials would be used.</p> <p>9. Any dirt piles would be covered with tarps, plastic, or geotextile fabric with the edges sealed with sandbags, bricks, lumber, etc. to minimize erosion. No plastic monofilament materials would be used.</p> <p>10. Site-specific BMPs would be implemented to minimize erosion and sedimentation impacts. These BMPs would be implemented to ensure that any stockpiled soil would not flow into nearby surface waters as a result of a high intensity rain event.</p> <p>11. Elements utilized as part of erosion control BMPs would be evaluated before, during, and after rain events. Appropriate actions would be taken if BMPs are found to be inadequate or ineffective. Damaged or worn silt fences, wattles, gravel bags, etc. would be replaced.</p> <p>12. All ground transport of vehicles and personnel would be restricted to existing ranges, roads, and off-road areas as authorized in Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures (MCIWEST-MCB CAMPENO 3500.1).</p>		
<p>Water Resources</p>	<p>Suspended sediment and localized increases in turbidity generated from surf zone activities. Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would have the potential to enter marine waters; however, spill potential would be reduced/eliminated through the impact avoidance/minimization measures. No permanent increase in impervious surfaces. Potential for erosion to impact water quality.</p> <p>Permits: The following agency permits or documentation and their associated conditions have been and would continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. CWA Section 401 Water Quality Certification (via the San Diego RWQCB) 2. CWA Section 404 & Rivers and Harbors Act Section 10 (via the USACE) 3. CCND from the CCC 	<p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. At-sea refueling would result in potential for fuel spills; however, spill potential would be reduced/eliminated through the impact avoidance/minimization measures.</p> <p>Permits: Permit requirements would be the same as identified for the No Action Alternative.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative and as</p>	<p>Impacts would be similar to those presented for Alternative 1. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to water resources in the White Beach area.</p> <p>Permits: Permit requirements would be the same as identified for the No Action Alternative, but expanded to include White Beach.</p> <p>Measures: Measures would be the same as identified for Alternative 1.</p>

Table ES-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. In-water construction activities would abide by Section 401, 404, and 10 permit provisions. 2. Areas for staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants would be located above the ordinary high water mark. Materials that could potentially impact stormwater runoff would be stored in lockers, on pallets, inside rubber berms, indoors, or under a cover. Material storage areas would be located away from storm drains and surface waters. 3. The exercise proponent would be responsible for spill prevention and proper hazardous material storage and handling (secondary containment), and must comply with the Spill Prevention Control and Countermeasure Plan (Navy 2013b). The unit would keep a Petroleum Oil Lubricants spill kit on site. If a hazardous material spill were to occur, the unit would be responsible for their own hazardous material accidents in accordance with applicable federal, military, state, and local laws and regulations including clean up, and associated costs. For response and reporting, they would follow the MCB Camp Pendleton Integrated Contingency Plan guidance, available by contacting MCB Camp Pendleton Environmental Security Spill Prevention and Planning Branch at 760-725-9743/9768. All spills would be reported immediately to the Spill Prevention and Planning Branch, and only this Branch would make the appropriate regulatory reporting notifications for spill incidents. 4. The exercise proponent would obtain a Graywater Permit from MCB Camp Pendleton Environmental Security if a graywater disposal (percolation pit) is warranted for the exercise. The following measures would be adhered to: <ol style="list-style-type: none"> A. The requesting unit would submit a completed graywater application to MCB Camp Pendleton Environmental Security to initiate the environmental review process. B. The unit would contact the MCB Camp Pendleton Environmental Security Wastewater Branch at 760-725-0141 to arrange for percolation testing and to obtain a Graywater Permit and provisions (e.g., percolation pit 	<p>follows:</p> <ol style="list-style-type: none"> 7. To minimize the potential for spills during at-sea refueling operations, personnel would follow Chapter 39 of OPNAVINST 5090.1D, <i>Oil and Hazardous Substance Spill Preparedness and Response</i> and planning procedures and instructions such as those outlined in the Navy's Spill Prevention Control and Countermeasure Plan and applicable oil spill regulations. 	

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Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>dimensions).</p> <p>C. The exercise proponent would follow the conditions outlined in the approved Graywater Permit.</p> <p>D. During the exercise, if the percolation pit fails to drain, or overfills, the unit would contact the Facilities Maintenance Department at 760-725-1732 for assistance.</p> <p>5. Fueling and maintenance of equipment would not take place closer than 100 ft (30 m) to surface water drainages.</p> <p>6. The exercise proponent would ensure that all trash and debris resulting from the exercises would be properly disposed of and would not be discarded onsite.</p>		
<p>Biological Resources</p>	<p>Impacts to marine flora and fauna resulting from movement or anchoring of vessels and surf zone activities would be temporary and minor. Small fish and invertebrates would be subject to mortality from the pumps used for the Offshore Petroleum Discharge System and Amphibious Bulk Liquid Transfer System. Potential for injury or mortality to fish in the immediate area (< 328 ft [100 m]) from pile driving. Potential for harassment to marine mammals. Potential for direct and indirect impacts to kelp and eelgrass by vessels, amphibious vehicles, and turbidity. Direct impacts to special status species and their habitat would be avoided.</p> <p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> All training activities would continue to be consistent with the Programmatic Riparian BO (U.S. Fish and Wildlife Service 1995). Consistent with consultations between Navy and NMFS, a standing watch for marine mammals and sea turtles would continue to be present during all Elevated Causeway pile driving and removal activities. During pile driving and removal, the Navy would have one lookout positioned on the platform (which could include the shore, an elevated causeway, or on a ship or boat) that would maximize the potential for sightings. The watch would include visual observation from a support vessel or from shore starting 30 minutes before and during the exercise within a mitigation zone of 60 yards (55 meters) around the pile driver. Pile 	<p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. The higher annual training tempo would result in a greater potential for impacts to habitats, communities, wildlife, and special status species; however, spill potential would be reduced/eliminated through the impact avoidance/minimization measures. At-sea refueling would result in the potential for temporary impacts to marine biological resources.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>	<p>Impacts would be similar to those presented for Alternative 1. The additional activities and the inclusion of White Beach in amphibious training exercises would not have a significant impact on marine or terrestrial biological resources in the White Beach area.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative, and would also include these White Beach-specific measures:</p> <ol style="list-style-type: none"> Consistent with current range regulations, military vehicle operations transiting parallel to White Beach during tern and plover breeding season would keep one wheel in the water to minimize potential impacts to these species. To the maximum extent possible, vehicles and personnel accessing the beach at White Beach during the period of March 1 to September 15 shall follow a route along the base of the northerly bluff to maintain the maximum distance from the tern colony.

Table ES-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

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	<p>driving would cease if a marine mammal is visually detected within the mitigation zone. Pile driving would re-commence if any one of the following conditions are met: (1) the animal is observed exiting the mitigation zone, (2) the animal is thought to have exited the mitigation zone based on its course and speed, or (3) the mitigation zone has been clear from any additional sightings for a period of 30 minutes. The sighting and corresponding information would be logged per the requirements of the HSTT BO (NMFS 2015).</p> <ol style="list-style-type: none"> 3. Consistent with consultations between Navy and NMFS, measures to protect against physical disturbance and strike by surface vessels as follows: (1) surface vessels will avoid approaching marine mammals head-on and will maneuver to maintain a 500 yard (457 m) mitigation zone around any observed whales, and a 200 yard (183 m) mitigation zone around all other marine mammals (except bow riding dolphins), providing it is safe to do so; and (3) all surface vessels use extreme caution and proceed at “safe speed” so they can take proper and effective action to avoid a collision with any sighted object or disturbance, and can be stopped within a distance appropriate to the prevailing circumstances and conditions. 4. Data collected during the Nearshore Habitat Assessment (NAVFAC Atlantic 2010a) and Baseline Study (NAVFAC Atlantic 2010b) would be used in the exercise planning process to avoid and minimize impacts to sensitive habitats (e.g., rocky reef, understory algal communities, surfgrass, kelp, sea fans or sea palms) to the greatest extent practicable. 5. Visual reconnaissance would be used to avoid kelp. 6. Pre- and post-exercise eelgrass surveys would be conducted in the Del Mar Boat Basin before and after every JLOTS and MPF exercise. 7. Before large-scale amphibious training exercises that are scheduled to occur during the peak grunion spawning period (as specified annually by the California Department of Fish and Wildlife, currently April through May), a qualified biologist would perform a survey of the project site. Beach areas where sand would be excavated, graded, or traversed with heavy equipment would be surveyed to determine the suitability of the beach for grunion spawning. If suitable grunion spawning habitat is identified, a biologist would 		<ol style="list-style-type: none"> 19. Vehicle operations, inside fenced areas on the edge of the bluff between Aliso and French Creeks (White Beach), are not authorized between March 1 and September 15. 20. Upon entering the beach from Camp Del Mar vehicles shall transit in a direct line along a marked corridor bordering the southern edge of the Santa Margarita Endangered Species Management Zone before heading up-coast. During returns, vehicles shall proceed along the same marked corridor. During the breeding season, amphibious tracked vehicles shall not traverse the Santa Margarita Endangered Species Management Zone in excess of a monthly average of 20 traverses per day (one traverse equals one round trip to and from Camp Del Mar).

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	<p>observe the beach during the spawning time before the proposed beach impacting activity to determine if grunion have spawned in the area. If grunion have spawned, impacts to those areas would be avoided and minimized to the greatest extent practicable until the eggs are hatched at the following two spring-tide series and no subsequent spawning activities have occurred.</p> <p>8. Use of any petroleum, cleansers, substrate, or debris that could spill into riparian areas or the Pacific Ocean would be avoided.</p> <p>9. Vehicle access and movement would occur in compliance with MCIWEST-MCB CAMPENO 3500.1.</p> <p>10. All project-related activities would avoid the destruction, and minimize the disturbance of active nests (i.e., nests with eggs or chicks).</p> <p>11. Training activity and disturbances to vegetation would be avoided to the greatest extent practical. Removal of native vegetation (e.g., riparian or coastal sage scrub vegetation) is not permitted due to the potential presence of federally protected species.</p> <p>12. Riparian Habitat:</p> <p>A. Dust production would be minimized in or adjacent to riparian areas.</p> <p>B. Excessive noise (above 60 dB [A-weighted] equivalent continuous sound over one hour) in or adjacent to riparian areas would be avoided to the maximum extent practical.</p> <p>C. Amphibious tracked vehicles shall traverse the management zones while maintaining both tracks in the water at all times.</p> <p>13. Wildfires would be prevented by exercising care when driving and by not parking vehicles in grass where catalytic converters could ignite the vegetation. No smoking or disposal of cigarette butts would take place within vegetated areas.</p> <p>14. Environmental Procedures in MCIWEST-MCB CAMPENO 3500.1: The following Environmental Considerations and Restrictions would be implemented:</p> <p>A. Estuarine/Beach Endangered Species Management Zones. In accordance with the Estuarine and Beach Ecosystem Conservation Plan (MCB Camp Pendleton</p>		

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	<p>2012a) and to protect the California least tern, western snowy plover, light-footed clapper rail, and tidewater goby, the restrictions listed below apply when operating within the following areas: all coastal lagoons and estuaries; marshes and salt flats associated with San Mateo Creek, San Onofre Creek, Las Flores Creek, “Hidden Creek” Grid Coordinates 580818, Aliso Creek, French Creek, and Cockleburr Creek watersheds; and the Santa Margarita Endangered Species Management Zone:</p> <ul style="list-style-type: none"> <li>i. Obtain authorization from Environmental Security before entering any lagoon or estuary, marsh, mud/salt flat, or posted nesting area. If any creek and/or lagoon is flowing to the ocean, vehicles may cross the creek only at the ocean’s edge. Bivouacking and digging of fighting positions are prohibited in the vicinity of the Estuarine/Beach Endangered Species Management Zones during the period of March 1 to September 15. <li>ii. Between March 1 to September 15, all activities involving smoke, pyrotechnics, loud noises, blowing sand, and large groupings of personnel (14 or more) would remain at least 984 ft (300 m) away from fenced or posted nesting areas. All other activities would be kept at least 16 ft (5 m) from these areas. <li>iii. Foot traffic involving less than 14 personnel would be kept as far away as possible, and approach no closer than 16 ft (5 m) to posted nesting areas. Unit hikes would remain on the hard packed sand, as close to the ocean water edge as possible. When passing posted nesting areas, to the maximum extent practicable, noise would be minimized. <li>iv. Vehicle and equipment operations in the management zones would be kept to a minimum between March 1 to September 15. All vehicles would travel on hard packed sand and would not approach posted nesting areas or lagoons closer than 16 ft (5 m). Speeds 		

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	<p>would not exceed 25 mph (40 kph). Tracked vehicles would travel as close to the water (upper few inches of water) as possible, year round, in the Santa Margarita Endangered Species Management Zone. Vehicle operations, inside fenced areas on the edge of the bluff between Alison and French Creeks (White Beach), are not authorized.</p> <p>v. Boat operations, (including Landing Craft Air Cushions) are not authorized in lagoons and estuaries. Landing Craft Air Cushions shall not enter the management zones between March 1 to September 15, except when entering or exiting seaward; and on return, shall exit the ocean heading directly up to the facility access ramp.</p> <p>B. Coastal California gnatcatcher, least Bell’s vireo, and southwestern willow flycatcher avoidance measures. For the conservation of these species, the following measures would be followed for training activities in coastal sage scrub and riparian habitats:</p> <p>i. Extreme caution beyond that required by the Fire Danger Rating is necessary when using pyrotechnics and when conducting other activities likely to cause a fire.</p> <p>ii. Foot traffic is authorized year round on existing roads, trails, and creek crossings. Consult with Environmental Security before cutting/removing vegetation.</p> <p>iii. Vehicles operating in the vicinity of creeks, rivers, or drainages would use existing roads, trails, and established creek/river crossings.</p> <p>iv. Consult with Environmental Security before bivouacking, cutting/removing vegetation, trenching, grading, filling, or conducting engineering operations in or adjacent to creek/river bottom areas.</p> <p>v. Dust produced in or adjacent to creeks and rivers would be minimized to the maximum extent practicable.</p>		

Table ES-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>C. Vernal Pool Avoidance Measures. For the conservation of vernal pools, the following measures would be followed for training exercises in identified vernal pool habitat:</p> <ul style="list-style-type: none"> i. Foot traffic is authorized year round. Digging, including construction of fighting positions is prohibited in vernal pools. ii. Vehicle/equipment operations near known vernal pool areas would be kept on existing roads, year round. Contact Environmental Security before conducting activities involving soil excavation, filling, or grading. iii. Bivouac/Command Post/Field support (e.g., showers, messing, fueling, water purification) activities would be kept to at least 164 ft (50 m) from identified vernal pools. <p>15. Per the Aviation Operations section of MCIWEST-MCB CAMPENO 3500.1, the following Environmental Considerations and Restrictions would apply:</p> <p>A. Endangered Species Nesting Areas. During the period from March 1 through September 15, certain airspace within R-2503A is off-limits to all aircraft to protect the nesting and feeding habitat of endangered bird species (least tern/snowy plover nesting areas). This off-limits airspace has been identified from the surface to 300 ft (91 m) above ground level and 984 ft (300 m) laterally from the following areas:</p> <ul style="list-style-type: none"> i. Beach Section G. Margarita of Blue Beach, inland to the Interstate 5 freeway, and from the bluffs north of the Santa Margarita River to the bluffs south of the river near the 21 Area. ii. Aircraft would not fly below 300 ft (91 m) above ground level over river mouths, riverbeds and streams, estuaries and lagoons other than established landing sites and terrain flight routes. 		

Table ES-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
<p>Cultural Resources</p>	<p>Cultural sites would be avoided. If potential cultural resources are uncovered, all training would stop immediately and the MCB Camp Pendleton Environmental Security Cultural Resources Management Branch would be notified.</p> <p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. The locations of all proposed exercise elements would avoid impacting known cultural resources, and would be identified and used in compliance with MCIWEST-MCB CAMPENO 3500.1. 2. All personnel would stay on established dirt roads, paths, and routes; no activities or personnel would be allowed within the brush areas adjacent to dirt roads. No ground disturbing activities would be permitted inland near vegetation or along dirt roads that would be used as ingress routes or paths. 3. Exercise planners and all participants shall be briefed on access to range and training areas before the exercise taking place. This includes using existing dirt roads per MCIWEST-MCB CAMPENO 3500.1 and in accordance with the Environmental Operations Map. MCIWEST-MCB CAMPENO 3500.1 shall remain in effect. 4. In the event that archaeological materials (e.g., shell, wood, bone, or stone artifacts) are found or suspected during training, or if the training footprint is altered, training would be halted in the area of discovery and the MCB Camp Pendleton Environmental Security Cultural Resources Management Section would be notified at 760-725-9738 as soon as practicable (but no longer than 24 hours after the discovery). Training at the discovery site would not proceed until the MCB Camp Pendleton Archaeologist has the opportunity to evaluate the find and gives permission to resume training exercises. 	<p>Impacts would be the same as those presented under the No Action Alternative as cultural sites would continue to be avoided.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>	<p>Impacts would be the same as those presented under the No Action Alternative as cultural sites, to include the one cultural resource site at White Beach (CA-SDI-10724 – shell midden with groundstone), would continue to be avoided.</p> <p>Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p>

Table ES-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
<p>Air Quality</p>	<p>No net increase in emissions.</p> <p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Visible Emissions and Nuisance: <ol style="list-style-type: none"> A. Exercise participants shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period aggregating more than three minutes in any period of 60 consecutive minutes, which is darker in shade than Number 1 on the Ringelmann Chart (i.e., dark smoke). B. Exercise participants shall not discharge any quantity of air contaminant that may cause injury, detriment, or nuisance pursuant to San Diego Air Pollution Control District Rules 50 and 51; and for the 64 Area (South Coast Air Quality Management District Rules 401 and 402) mainly over the Base's property line (e.g., freeways, public roads, adjacent neighborhoods, ocean). 2. Temporary Power Supply Equipment: <ol style="list-style-type: none"> A. The unit would report all generators (regardless of size) to the MCB Camp Pendleton Environmental Security Air Quality Section at 760-725-9756 for inclusion into MCB Camp Pendleton's Annual Tactical Support Equipment Inventory or into the South Coast Air Quality Management District's Annual Emission Inventory Report. B. The unit shall provide power generation equipment (i.e., generators) for supplemental or back-up power requirements. Base-owned, permitted generators shall not be utilized to provide supplemental/back-up power during amphibious training exercises. 	<p>Under Alternative 1, emissions of criteria pollutants would increase by approximately 35%, as compared to the No Action Alternative. The increase in emissions would be below <i>de minimis</i> levels.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>	<p>Impacts would be the same as presented for Alternative 1.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>
<p>Transportation and Circulation</p>	<p>No effect on local or regional traffic circulation</p> <p>Measures: No measures have been identified.</p>	<p>Approximately 20 vehicles would use major regional transportation corridors up to four times per year.</p> <p>Measures: The following would be integrated into each amphibious training exercise: To minimize potential traffic congestion resulting from the</p>	<p>Impacts would be similar to those presented for Alternative 1.</p> <p>Measures: Measure would be the same as identified for Alternative 1.</p>

Table ES-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
		transport of personnel and materiel between Silver Strand Training Complex and MCB Camp Pendleton, road convoys would be broken into smaller elements, consisting of 3-5 vehicles. Convoy elements would depart at 15 to 30 minute intervals to minimize potential effects on traffic flow. Subject to operational requirements, convoy elements would be scheduled to avoid travel during peak commuting hours (i.e., 6:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M.).	
Hazardous Materials and Waste	Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would have the potential to enter soil and surface waters. Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise: 1. To minimize the potential for spills during at-sea refueling operations, personnel would follow Chapter 39 of OPNAVINST 5090.1D, <i>Oil and Hazardous Substance Spill Preparedness and Response</i> , and planning procedures and instructions such as those outlined in the Navy's Spill Prevention Control and Countermeasure Plan and applicable oil spill regulations. 2. Installation Restoration sites would be avoided during training exercises.	The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. Measures: Measures would be the same as identified for the No Action Alternative.	Impacts would be similar to those presented for Alternative 1. In addition, increased geographic scope of amphibious training would expand the probability for spills over a larger area. Measures: Measures would be the same as identified for the No Action Alternative.

Notes: % = percent; BMP = Best Management Practice; BO = Biological Opinion; CCC = California Coastal Commission; CCND = Coastal Consistency Negative Determination; CWA = Clean Water Act; dB = decibels; EIS = Environmental Impact Statement; ft = foot/feet; ha = hectare(s); HSTT = Hawaii-Southern California Training and Testing Activities; kph = kilometers per hour; LOA = Letter of Authorization; m = meter(s); MCIWEST-MCB CAMPENO = Marine Corps Installations West-Marine Corps Base Camp Pendleton Order; mph = miles per hour; NMFS = National Marine Fisheries Service; OPNAVINST = Chief of Naval Operations Instruction; RWQCB = Regional Water Quality Control Board; SHPO = State Historic Preservation Officer; USACE = U.S. Army Corps of Engineers.

LIST OF ACRONYMS AND ABBREVIATIONS

APE	area of potential effects	m	meter(s)
Army	U.S. Department of the Army	MCB	Marine Corps Base
BMP	Best Management Practice	MCIWEST-MCB CAMPENO	Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures
BO	Biological Opinion	MPF	Maritime Prepositioning Force
B.P.	Before Present		
CAA	Clean Air Act	N ₂ O	nitrous oxide
CAAQS	California Ambient Air Quality Standards	NAAQS	National Ambient Air Quality Standards
CARB	California Air Resources Board	NAVFAC	Naval Facilities Engineering Command
CEQ	Council on Environmental Quality	Navy	U. S. Department of the Navy
CFR	Code of Federal Regulations	NBG 1	Naval Beach Group ONE
CH ₄	methane	NEPA	National Environmental Policy Act
CO	carbon monoxide	NHPA	National Historic Preservation Act
CO ₂	carbon dioxide	NMFS	National Marine Fisheries Service
CO _{2e}	CO ₂ equivalent	NO ₂	nitrogen dioxide
CPF	Commander, United States Pacific Fleet	NO _x	nitrogen oxides
CWA	Clean Water Act	NOAA	National Oceanic and Atmospheric Administration
DoD	Department of Defense	NRHP	National Register of Historic Places
EA	Environmental Assessment	O ₃	ozone
EFH	Essential Fish Habitat	OEIS	Overseas EIS
EIS	Environmental Impact Statement	OPNAVINST	Chief of Naval Operations Instruction
EO	Executive Order	PM _{2.5}	particulate matter less than or equal to 2.5 microns in diameter
ESA	Endangered Species Act	PM ₁₀	particulate matter less than 10 microns in diameter but greater than 2.5 microns in diameter
FEX	Field Exercise		
ft	foot/feet		
GHG	greenhouse gas		
ha	hectare(s)	RWQCB	Regional Water Quality Control Board
HSTT	Hawaii-Southern California Testing and Training Activities	SHPO	State Historic Preservation Officer
I MEF	I Marine Expeditionary Force	SO _x	sulfur oxide
INRMP	Integrated Natural Resources Management Plan	UAV	Unmanned Aerial Vehicle
IR	Installation Restoration	U.S.	United States
JLOTS	Joint Logistics Over the Shore	USACE	U.S. Army Corps of Engineers
km	kilometer(s)	USC	United States Code
		USEPA	U.S. Environmental Protection Agency
		USFWS	U.S. Fish and Wildlife Service
		USMC	United States Marine Corps
		VOCs	volatile organic compounds

FINAL
ENVIRONMENTAL ASSESSMENT
PROPOSED JOINT LOGISTICS OVER THE SHORE,
MARITIME PREPOSITIONING FORCE, AND FIELD EXERCISE TRAINING
MARINE CORPS BASE CAMP PENDLETON
SAN DIEGO COUNTY, CALIFORNIA

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CHAPTER 1

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The Commander, United States (U.S.) Pacific Fleet (CPF) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §§ 4321-4370h); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500-1508); U.S. Department of the Navy (Navy) Procedures for Implementing NEPA (32 CFR Part 775); Chief of Naval Operations Instruction (OPNAVINST) 5090.1D (January 10, 2014) *Environmental Readiness Program Manual*, and Marine Corps Order P5090.2A, Change 3, Chapter 12, dated August 26, 2013, *Environmental Protection and Compliance Manual*.

This EA has been prepared to analyze the potential environmental impacts resulting from conducting proposed amphibious training exercises at Marine Corps Base (MCB) Camp Pendleton. For the purposes of this EA, the term “amphibious” is generally defined to describe the projection of combat power ashore, followed by the ship-to-shore movement of supplies and personnel to sustain further operations. Proposed amphibious training would consist primarily of Joint Logistics Over the Shore (JLOTS), Maritime Prepositioning Force (MPF), and other smaller scale exercises known as Field Exercises (FEXs), as explained later in this chapter. Throughout the balance of this EA, the all-encompassing phrase “amphibious training exercises” is used, when applicable, to describe all types of amphibious training exercises analyzed in this EA.

By using the best information currently available regarding training frequency, components, and duration, this EA analyzes the impacts of amphibious training exercises at MCB Camp Pendleton. This analysis will streamline NEPA documentation for future amphibious training exercises, which will facilitate regulatory compliance. In addition, this EA will increase operational flexibility by eliminating repetitive and redundant environmental analyses for each individual amphibious training exercise conducted at MCB Camp Pendleton.

1.2 PROJECT LOCATION

The proposed project area is located at MCB Camp Pendleton, the U.S. Marine Corps’ (USMC) major amphibious training center for the west coast. MCB Camp Pendleton encompasses over 125,000 acres (50,585 hectares [ha]) within the northern portion of San Diego County, approximately 40 miles (64 kilometers [km]) north of the City of San Diego (MCB Camp Pendleton 2012a). MCB Camp Pendleton is bordered to the northwest by Orange County, to the north and east by the City of San Clemente and the Cleveland National Forest, to the east by the community of Fallbrook and the Naval Weapons Station Seal Beach Detachment Fallbrook, to the south by the City of Oceanside, and to the west by the Pacific Ocean.

The project would occur at MCB Camp Pendleton in the following existing training areas: offshore of and adjacent to as many as three training beaches (Red, Gold, and White), from training beaches to inland range and training areas, and within and adjacent to the Del Mar Boat Basin (Figure 1-1). As shown in Figure 1-1, marine activities would occur within the existing Camp Pendleton Amphibious Assault Area and the Camp Pendleton Amphibious Vehicle Training Area.

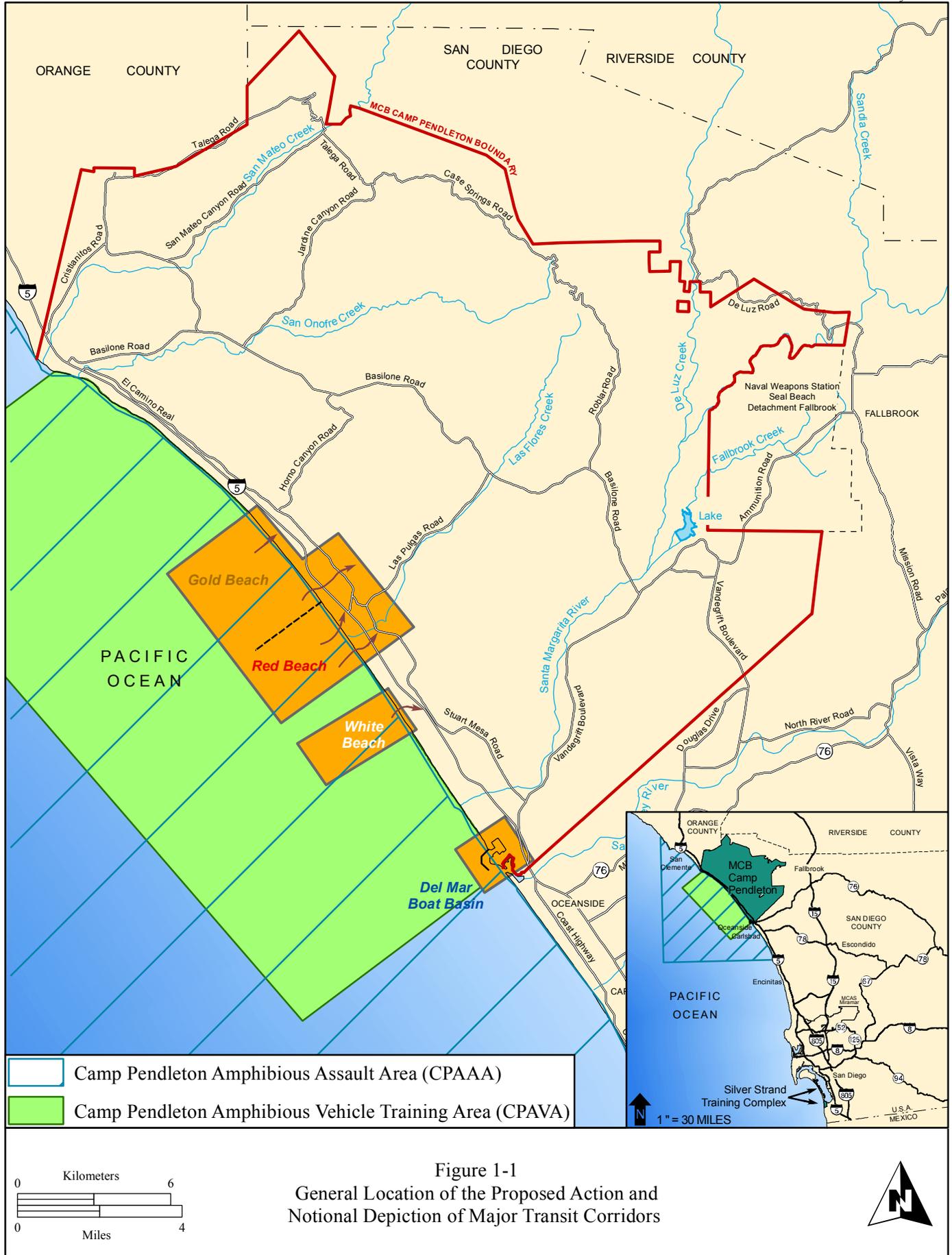


Figure 1-1
 General Location of the Proposed Action and
 Notional Depiction of Major Transit Corridors

1.3 PROJECT BACKGROUND

1.3.1 MCB CAMP PENDLETON AMPHIBIOUS EXERCISES

The mission of MCB Camp Pendleton is to operate an amphibious training base that promotes the combat readiness of operating forces by providing facilities, services, and support responsive to the needs of Marines, Sailors, and their families. MCB Camp Pendleton is the only west coast installation that has the unique and complete combination of space that can support multi-organizational, multi-dimensional amphibious training exercises. Proposed amphibious training would consist primarily of JLOTS, MPF, as well as smaller scale FEXs, as described in the following sections.

1.3.2 SHIP-TO-SHORE MOVEMENT OF SUPPLIES

CPF supports littoral logistical training exercises such as U.S. Transportation Command's scheduled and coordinated JLOTS exercises and USMC MPF training. The primary supporting command in these exercises is Naval Beach Group ONE (NBG 1). In addition to their support of JLOTS and MPF amphibious training exercises, NBG 1 conducts FEXs to meet their own annual training requirements.

The movement of supplies and personnel from ship to shore to support military forces in or near combat areas has historically been difficult and time consuming. In areas that do not contain deep-draft fixed port facilities such as piers and docks, large ships cannot easily load/unload necessary supplies and personnel onto land. Logistics Over the Shore is the process of transporting cargo and equipment from ships to shore. The Navy, Marine Corps, and U.S. Department of the Army (Army) have developed their unique as well as cooperative systems for satisfying their logistical needs in accordance with guidance publications and doctrine (USMC 2004 and Chairman of the Joint Chiefs of Staff 2005). The Navy, Marine Corps, and Army often work together in joint exercises (i.e., JLOTS exercises).

Proficiency in JLOTS is required under Joint Publication 4.0, *Joint Logistics*, and Joint Publication 4.01-6, *Joint Logistics Over-the-Shore*, which detail the required capability to execute this complex mission. Navy and Marine Corps leadership developed the MPF doctrine based on Navy Tactics, Techniques, and Procedures 3-02-3M, *Maritime Prepositioning Force Operations*, which discusses the methodology for conducting MPF operations. The USMC primarily uses the MPF process to offload equipment and supplies from MPF ships to establish a Marine Expeditionary Brigade ashore. USMC MPF operations are preferred in areas where deep draft ports are available; however, they also need to be able to operate in areas where deep draft ports are not available. Furthermore, the Navy conducts FEXs (smaller versions of JLOTS and MPF exercises) which include some but not all components of a full-scale JLOTS and/or MPF exercise. Regardless of the offload method used, the efficient delivery of containerized cargo and equipment is critical to the establishment of forces ashore.

The U.S. Transportation Command, located at Scott Air Force Base in St. Clair County, Illinois, schedules the JLOTS exercises. The U.S. Transportation Command is one of 10 unified commands of the Department of Defense (DoD), and this Command's mission is to provide air, land, and sea transportation for the DoD, in times of both peace and war. The location and timing of JLOTS exercises is variable and subject to last-minute changes due to real-world events (e.g., Operation Enduring Freedom, Operation Iraqi Freedom, and natural disasters [e.g., Haiti earthquake]), making it difficult to predict accurately where and when the next JLOTS exercise will occur.

1.3.3 CURRENT AMPHIBIOUS TRAINING EXERCISE FREQUENCY AT MCB CAMP PENDLETON

JLOTS exercises typically occur once every 3 to 5 years and last up to 90 days. On average, approximately 2,000 – 3,500 personnel take part in JLOTS training exercises. MPF exercises typically occur once every 2 years and last around 30 days, and include an average of approximately 600 – 1,500

personnel. On average, between 6 and 8 FEXs are conducted on an annual basis and last 7 to 14 days and typically involve 30 – 800 personnel. The last JLOTS occurred in 2008 (JLOTS 08; June 25 to August 20), the last stand-alone MPF exercise occurred in 2011 (Pacific Horizon 11; March 2-14), and at least 18 FEXs have occurred since 2005.

Table 1-1 summarizes existing amphibious exercises at MCB Camp Pendleton. Section 2.2 provides a comprehensive description of the training elements associated with amphibious training exercises. Amphibious training exercises regularly occur each year at MCB Camp Pendleton.

Table 1-1. Current Amphibious Training Exercise Frequency at MCB Camp Pendleton

Exercise Type	Average Frequency	Average Duration	Average Personnel
JLOTS	Once every 3–5 years	90 days	2,000–3,500
MPF	Once every 2 years	30 days	600–1,500
FEX	6–8 times a year	7–14 days	30–800

Notes: JLOTS = Joint Logistics Over the Shore; MPF = Maritime Prepositioning Force; FEX = Field Exercise.

As an example of an MPF exercise, the I Marine Expeditionary Force (I MEF) conducts routine amphibious training at MCB Camp Pendleton with the Navy providing offload support for at least two exercises a year. These two offload exercises, designated as Pacific Horizon, are designed to exercise the USMC's, specifically I MEF's, littoral command, control and logistical support capabilities across the Range of Military Operations supported with Navy lighterage². This operation includes one or two MPF vessels to offload a specific inventory of military equipment onto a beachhead at MCB Camp Pendleton to support the mission of a Marine Air Ground Task Force that can respond to a wide variety of operations globally.

The Hawaii-Southern California Testing and Training Activities (HSTT) Environmental Impact Statement (EIS)/Overseas EIS (OEIS) (Navy 2013a) analyzed those portions of amphibious warfare training that occur at sea (up to the mean high tide mark), to include pile driving and vessel movement as covered in the associated Letter of Authorization and Biological Opinion (BO) (National Marine Fisheries Service [NMFS] 2014, 2015). As no land-based activities were analyzed in the HSTT EIS/OEIS, this JLOTS EA also analyzes the potential impacts associated with the land-based portions of amphibious training at MCB Camp Pendleton.

1.4 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of executing amphibious training exercises is to provide an opportunity for Navy, Marine Corps, and Army personnel to gain and improve amphibious warfighting competencies at a west coast location that allows for the focused assemblage and execution of logistics movement from the offload to locations inland. These exercises would also provide the Navy and the Marine Corps an opportunity to integrate as an amphibious warfare team to move Marines from ships afloat to inland areas to support the Range of Military Operations associated with amphibious warfare training.

The Proposed Action is needed for Navy, Marine Corps, and Army units to conduct repetitive and realistic routine amphibious training exercises to ensure continued combat readiness. Amphibious training exercises would allow military commands to practice their individual skills as well as prepare for joint operations, where multiple units, multiple commands, and multiple services work together under a single

² a typically flat-bottomed boat used in unloading or loading ships.

commander in a realistic setting. The training aims to validate, enhance, and refine military tactics, techniques, procedures, and doctrine for these operations, which ultimately provides the U.S. military the capability to move combat power across the surf zone, on to land, and to inland areas.

Training in robust exercise scenarios is vital to hone warfighting skills, and maintain and improve personnel proficiency. Because amphibious operations are inherently dangerous (conducted in potentially high sea states and across the surf zone onto potentially hostile territory), training in a realistic setting is critical to maximizing the safety of personnel conducting amphibious training exercises. Furthermore, proposed amphibious training exercises would be consistent with the designation of MCB Camp Pendleton as the Marine Corps' premiere west coast location to support amphibious training.

1.5 ENVIRONMENTAL REVIEW PROCESS

The NEPA process helps the Navy arrive at the most informed decision. Informed decisions are based on a candid and factual presentation of potential environmental impacts. These facts come from collecting information on a variety of resource areas, which are potentially affected by the proposal, and by identifying the type and extent of potential impacts resulting from the proposal. This information has been compiled into this EA.

1.6 RESOURCE AREAS ANALYZED

In compliance with NEPA, CEQ regulations, and Navy and USMC procedures for implementing NEPA, the description of the affected environment and environmental consequences focuses only on those resources potentially subject to impacts. Accordingly, the discussion of the affected environment (and associated environmental analyses in this EA) focuses on the following resource areas: geological resources, water resources, biological resources, cultural resources, air quality, transportation and circulation, and hazardous materials and waste. Conversely, the resource areas described below were not carried forward for analysis in this EA, as potential impacts were determined to be negligible or non-existent.

Utilities. Implementation of the alternatives would not involve site improvements, construction of facilities, or a permanent increase in personnel that would place an additional demand on electricity, potable water, sanitary sewer, phone, or information technology at MCB Camp Pendleton. Therefore, impacts to utilities from implementation of the alternatives would be negligible.

Visual Resources. Elements of amphibious training exercises would be visible to civilians driving on Interstate 5 through MCB Camp Pendleton; however, the exercises would be consistent with training exercises that have been occurring at MCB Camp Pendleton for decades. The alternatives would not result in a change to the visual environment, as the visual environment is already characteristic of a military training installation with amphibious training. Furthermore, under this effort no new permanent structures would be constructed that might alter the existing visual environment. Therefore, impacts to visual resources from implementation of the alternatives would be negligible.

Noise. Implementation of the alternatives would not involve permanent site improvements, construction of permanent facilities, or a long-term increase in personnel, and would thus not create any new permanent sources of noise. Amphibious training exercises would temporarily increase local noise levels; however, the activity period would be limited and the training areas are located in remote locations on MCB Camp Pendleton away from sensitive noise receptors, and noise levels would be consistent with noise levels associated with a military training installation. Potential noise impacts to species from amphibious training exercises are analyzed in the biological resources section of this EA; refer to Section

3.3.3. Therefore, impacts to the noise environment from implementation of the alternatives would be negligible.

Safety and Environmental Health. Implementation of the alternatives would occur within the boundaries of MCB Camp Pendleton, predominantly at beaches and existing inland training areas that are not publically accessible. All rules and regulations governing range safety, range access, hazardous materials, and hazardous wastes would continue to be followed, to include measures to minimize safety and environmental health risks. No explosions and underwater demolitions would occur, and live-fire would continue to be limited to existing designated inland training areas. Therefore, impacts to safety and environmental health from implementation of the alternatives would be negligible.

Land Use. Implementation of the alternatives would occur in areas currently identified as training areas; there would be no change to existing land use designations. Furthermore, amphibious training exercises would be consistent with the designation of MCB Camp Pendleton as an installation that supports amphibious training. Publically accessible areas used for public recreation (e.g., surfing, camping, and hiking) would not be affected. Implementation of the alternatives would not result in any changes to existing land use designations. Therefore, impacts to land use from implementation of the alternatives would be non-existent.

Socioeconomics. Implementation of the alternatives would have a minimal positive effect on the local economy due to the hiring of civilian contractors for exercise support services (e.g., waste disposal). The San Mateo Campground and other publically accessible areas aboard MCB Camp Pendleton would not be subject to closure and as such, there would be no impact to the State of California or local business revenue. Therefore, impacts to socioeconomics from implementation of the alternatives would be negligible.

Environmental Justice. Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider human health and environmental conditions in minority and low-income communities. The demographics of MCB Camp Pendleton are generally representative of U.S. population demographics and do not constitute disproportionately high minority or low-income populations. Amphibious training exercises would not result in a permanent change to population ethnicities or age distributions. Therefore, there would be no disproportionately high environmental or health impacts on minority or low-income populations from implementation of the alternatives.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, helps ensure that federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children. Amphibious training exercises would occur within existing range and training areas at MCB Camp Pendleton and would be similar to existing training activities that currently occur throughout MCB Camp Pendleton. In addition, no permanent military family housing or civilian housing areas are located at or in the vicinity of the existing training areas. Therefore, there would be no disproportionate impact to the environmental health and safety of children from implementation of the alternatives.

1.7 REGULATORY SETTING

CPF has prepared this EA based on the following environmental guidance documents:

- NEPA (42 USC §§ 4321-4370h)
- CEQ Regulations (Title 40 CFR 1500-1508)
- Navy Procedures for Implementing NEPA (32 CFR 775)
- OPNAVINST 5090.1D (January 10, 2014), *Environmental Readiness Program Manual*

- Marine Corps Order P5090.2A, Change 3, Chapter 12, dated August 26, 2013, *Environmental Protection and Compliance Manual*

This EA has also been prepared to address the following regulatory requirements determined to be applicable to the Proposed Action:

- 16 USC §§ 1801-1891d as amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (Public Law 109-479)
- Clean Air Act (CAA), as amended, 42 USC §§ 7401-7671q
- Clean Water Act (CWA), 33 USC §§ 1251-1387
- Coastal Zone Management Act, 16 CFR §§ 1451-1466
- Endangered Species Act (ESA), 16 USC §§ 1531-1599
- EO 11990 – *Protection of Wetlands*
- EO 12898 – *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*
- EO 13045 – *Protection of Children from Environmental Health Risks and Safety Risks*
- EO 13112 – *Invasive Species*
- EO 13186 – *Responsibilities of Federal Agencies to Protect Migratory Birds*
- Marine Mammal Protection Act, 16 USC §§ 1431-1445c-1
- Migratory Bird Treaty Act, 16 USC §§ 703-712
- National Historic Preservation Act, 16 USC §§ 470-470x-6
- Section 10 of the Rivers and Harbors Act, 33 USC § 403
- Sikes Improvement Act, 16 USC §§ 670-670f

Table 1-2 presents the anticipated agency permits and consultation potentially needed for the Proposed Action. Appendix A contains relevant agency correspondence.

Table 1-2. Anticipated Permits and Consultation for the Proposed Action

Agency	Permit or Approval	Current Status
San Diego RWQCB	Section 401 of the CWA	CPF will apply for a Section 401 permit after the decision document is signed
USACE	Section 404 of the CWA Section 10 of the Rivers and Harbors Act	CPF will apply for Section 404 permit and a Section 10 Letter of Permission after the decision document is signed
CCC	CCND	CPF has received CCC concurrence on a CCND
NMFS	Letter of Authorization under MMPA for marine mammal take	Completed; see NMFS (2014)
	Section 7 of the ESA	Completed; see NMFS (2015)
	EFH	CPF has completed informal consultation with NMFS for EFH
USFWS	Section 7 of the ESA	Completed via programmatic avoidance measures identified in Biological Opinions from previous USFWS consultation (e.g., USFWS 1995, 2011a; Marine Corps Installations West 2013)
California SHPO	Section 106 of the NHPA	CPF has received a No Adverse Effects determination from the California SHPO (Appendix A)

Notes: CCC = California Coastal Commission; CCND = Coastal Consistency Negative Determination; CPF = Commander Pacific Fleet; CWA = Clean Water Act; EFH = Essential Fish Habitat; ESA = Endangered Species Act; MMPA = Marine Mammal Protection Act; NHPA = National Historic Preservation Act; NMFS = National Marine Fisheries Service; RWQCB = Regional Water Quality Control Board; SHPO = State Historic Preservation Officer; USACE = U.S. Army Corps of Engineers; USFWS = U.S. Fish and Wildlife Service.

1.8 ORGANIZATION OF THE EA

Chapter 1 of this EA describes the background and purpose of and need for the Proposed Action. Chapter 2 describes the Proposed Action and alternatives. Chapter 3 provides a description of the affected environment and the environmental consequences with the implementation of each alternative for each environmental resource area. Chapter 4 addresses the cumulative impacts of the Proposed Action and other projects in the area. Chapter 5 provides other analyses required by NEPA. Chapter 6 presents the agencies and persons contacted in the development of this EA. Chapter 7 presents the list of preparers and their qualifications, and Chapter 8 presents the references. The appendices contain additional information and technical analyses prepared in support of this EA.

1.9 PUBLIC/AGENCY PARTICIPATION

The Navy initiated the public participation process with the publication of a Notice of Availability of the Draft EA in three local newspapers: the San Clemente Times on May 15, 2014 (a weekly publication); the Orange County Register from May 16 – 18, 2014; and the San Diego Union Tribune (North County Edition) from May 16 – 18, 2014 (see Appendix A for the notices). The Draft EA was made available for public review at the Oceanside Public Library, the San Clemente Library, and Friends of the Fallbrook Library. In addition, the Draft EA was made available via the Navy Region Southwest and MCB Camp Pendleton websites. The 15-day public review period was from May 15 to May 30, 2014. The Navy did not receive any comments during the public review period. The Navy coordinated with the California Coastal Commission, the California State Historic Preservation Officer (SHPO), and the NMFS, as summarized in Chapter 6 and documented in Appendix A.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

2.1.1 OVERVIEW

The Proposed Action consists of an increase in amphibious training exercises at MCB Camp Pendleton. Proposed amphibious training exercises would be similar to existing amphibious training (as analyzed in previous NEPA documentation [e.g., Army 2001; Navy 2008, 2009; MCB Camp Pendleton 2009, 2011a]), but at an increased annual tempo and covering a larger area. In addition, new platforms and technologies would be integrated into training under the Proposed Action. Implementation of the Proposed Action would provide an opportunity for Navy, Marine Corps, and Army personnel the ability to gain and improve their amphibious warfighting capabilities. Implementation of the Proposed Action would facilitate the timely planning and execution of amphibious training exercises at MCB Camp Pendleton.

Amphibious training exercises specifically described in Section 2.2 currently occur at Red and Gold beaches. This EA includes an analysis of expanding amphibious training exercises to include conducting JLOTS, MPF, and FEXs at White Beach (under Alternative 2 only). The proposed amphibious training activities described in this document are consistent with previous training activities that have occurred on MCB Camp Pendleton since the 1940s.

2.1.2 CHANGES FROM DRAFT TO FINAL EA

The alternatives as described and analyzed in this Final EA have changed from those included in the Draft EA, which was circulated for public review in May 2014. Specifically, since the publication of the Draft EA, the alternatives have been revised to eliminate proposed Marine Corps Large-Scale Exercises at Red, Gold, and White beaches, and JLOTS, MPF, and FEX amphibious training activities at Green Beach. The Marine Corps is currently preparing separate NEPA documentation to analyze their unrelated and independent (with respect to this Proposed Action) Large Scale-Exercise amphibious training at Red, Gold, Green, and White beaches. All other elements as described and analyzed in the Draft EA remain in this Final EA.

2.2 DESCRIPTION OF EXISTING AMPHIBIOUS EXERCISE TRAINING AT MCB CAMP PENDLETON

The HSTT EIS/OEIS (Navy 2013a) analyzed those portions of amphibious warfare training that occur at sea (up to the mean high tide mark), to include pile driving and vessel movement as covered in the associated Letter of Authorization and Biological Opinion (NMFS 2014, 2015). As no land-based activities were analyzed in the HSTT EIS/OEIS, this JLOTS EA also analyzes the potential impacts associated with the land-based portions of amphibious training at MCB Camp Pendleton. As shown in Figure 1-1, amphibious training would occur within the existing Camp Pendleton Amphibious Assault Area and the Camp Pendleton Amphibious Vehicle Training Area.

2.2.1 JLOTS AND MPF TRAINING

For more than 70 years, various military units have conducted amphibious training exercises at MCB Camp Pendleton. Since 2001, over 20 exercises of similar size and scope of JLOTS and MPF have occurred at MCB Camp Pendleton. These exercises have occurred in five general geographic areas at MCB Camp Pendleton: offshore, in the littoral zone (including the Del Mar Boat Basin), on the beaches, in inland training areas, and in the air. Figure 2-1 presents a notional depiction of exercise features and their approximate locations during an amphibious training exercise at MCB Camp Pendleton. Figure 2-2 presents a notional depiction of amphibious training exercise elements in and adjacent to the Del Mar Boat Basin. The following sections provide descriptions of current training exercises.

2.2.1.1 Offshore Activities

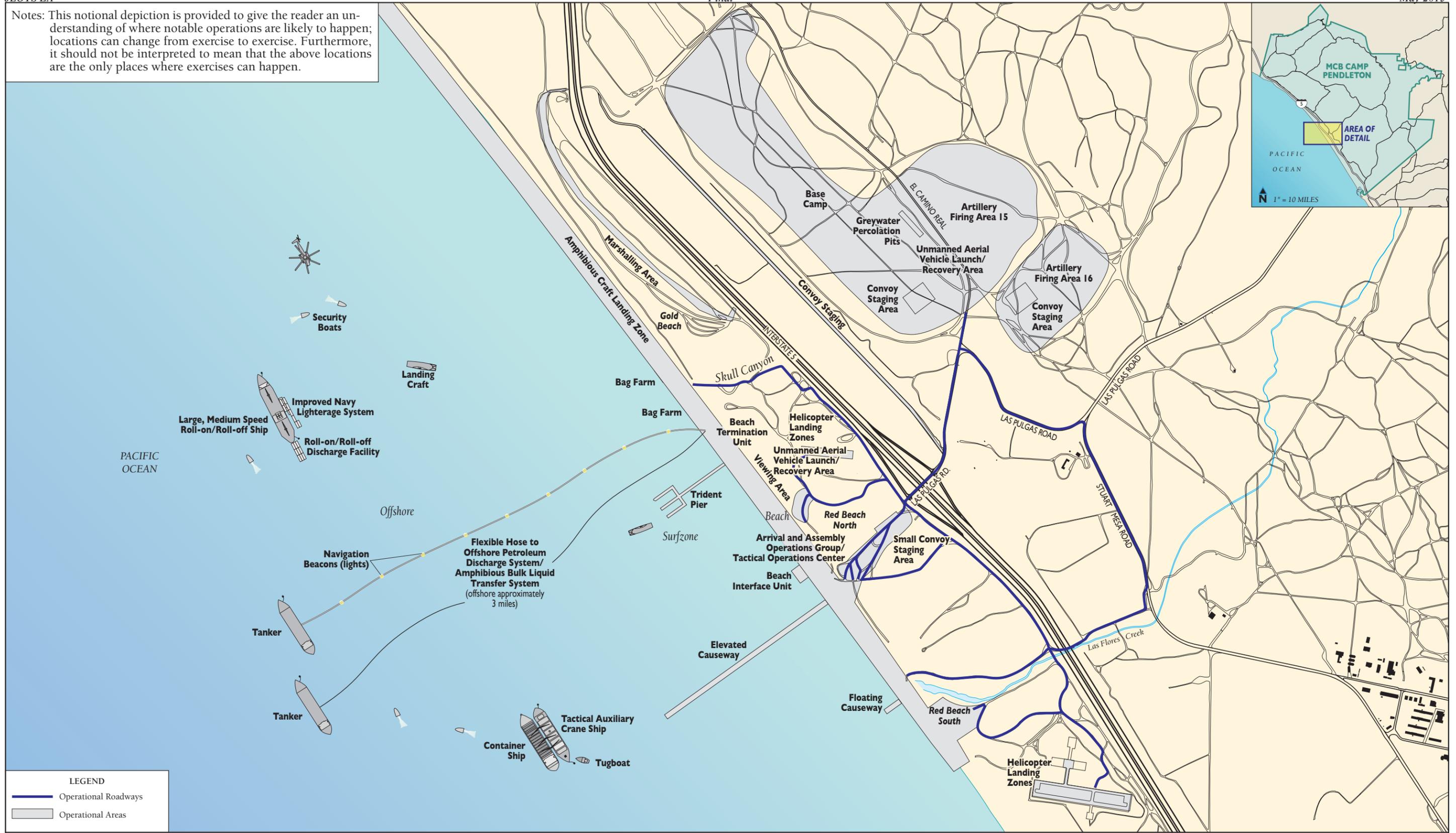
Cargo Offload

During JLOTS and MPF amphibious training exercises, MPF ships or chartered vessels containing cargo, supplies, and equipment are anchored approximately 3 nautical miles (5.6 km) offshore of Red or Gold beaches. The cargo consists of rolling stock, tracked vehicles, and Twenty-foot Equivalent Units. During the exercise, personnel transfer cargo, supplies, and equipment to the beach using a variety of systems/platforms, including the Improved Navy Lighterage System, Modular Causeway System, Logistics Support Vessels, Landing Craft Utility boats, Landing Craft Mechanized boats, and Utility boats. For an average number of systems/platforms used during proposed amphibious training exercises, refer to Table 2.2.

The Improved Navy Lighterage System and Modular Causeway System consist of interchangeable powered and non-powered floating platforms that are assembled offshore. Bulk and containerized cargo, rolling stock, and tracked vehicles are transferred from a ship to the floating platforms via the ship's crane or ramp. The Improved Navy Lighterage System provides MPF and JLOTS cargo throughput capacity in weather conditions up to sea state 3 (the sea state is based on the Beaufort Scale; sea state 3 corresponds to 1.6 feet (ft) to 4.1 ft [0.5 meters (m) to 1.2 m] waves, or "slight" conditions), whereas the Modular Causeway System provides cargo throughput capacity in weather conditions up to sea state 2 (0.3 ft to 1.6 ft [0.1 m to 0.5 m] or "smooth" conditions).

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Notes: This notional depiction is provided to give the reader an understanding of where notable operations are likely to happen; locations can change from exercise to exercise. Furthermore, it should not be interpreted to mean that the above locations are the only places where exercises can happen.



LEGEND

- Operational Roadways
- Operational Areas

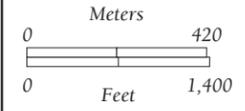


Figure 2-1
Notional Depiction of Major Amphibious Training Exercise Elements at MCB Camp Pendleton



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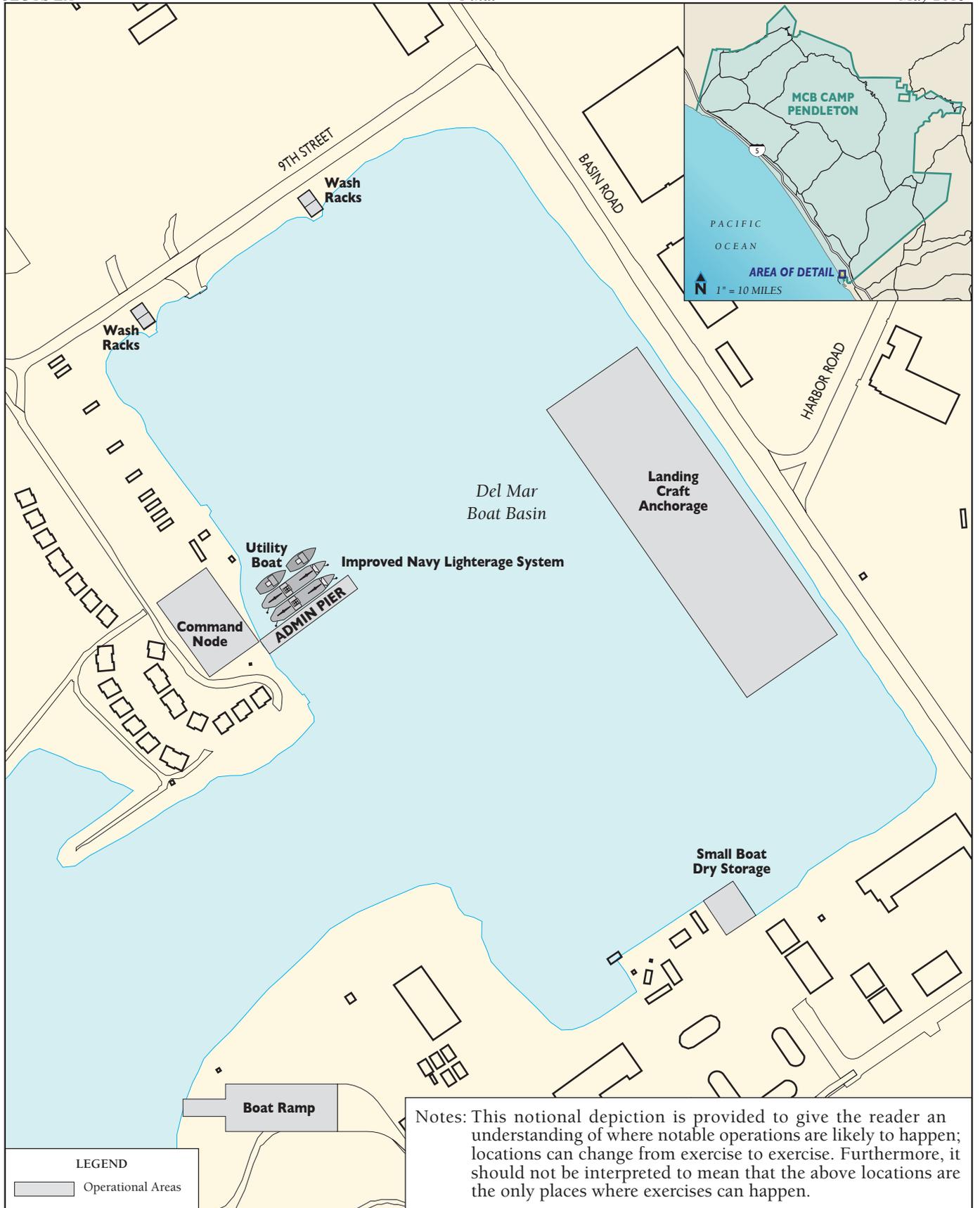


Figure 2-2
 Notional Depiction of Major Amphibious Training Exercise Elements at the Del Mar Boat Basin



Non-powered Improved Navy Lighterage Systems and Modular Causeway Systems are assembled into a Roll-On/Roll-Off Discharge Facility that is towed into place by tugs. The Roll-On/Roll-Off Discharge Facility is moored to the ship and used as a roadway between the ship (for example, a Large, Medium-Speed Roll-On/Roll-Off Ship – a class of MPF ship) and an Improved Navy Lighterage System or Modular Causeway System. The ramp of the ship is lowered onto the Roll-On/Roll-Off Discharge Facility so that vehicles and equipment can be driven from the ship onto other Improved Navy Lighterage System or Modular Causeway System rather than transferred via crane. The Navy's Improved Navy Lighterage System Roll-On/Roll-Off Discharge Facility is attached to the ship's stern ramp and the Army's Roll-On/Roll-Off Discharge Facility is tied alongside the port or starboard side of the ship. Figure 2-3 presents an image of a Large, Medium-Speed Roll-On/Roll-Off Ship with the Roll-On/Roll-Off Discharge Facility off the stern of the ship. Figure 2-4 shows an image of a crane transferring cargo off the starboard side of a Large, Medium-Speed Roll-On/Roll-Off Ship. Figure 2-5 presents all of these activities along with an Improved Navy Lighterage System in the foreground.



Figure 2-3. Stern Roll-On/Roll-Off Discharge Facility and Large, Medium-Speed Roll-On/Roll-Off Ship



Figure 2-4. Starboard Roll-On/Roll-Off Discharge Facility and Large, Medium-speed Roll-On/Roll-Off Ship



Figure 2-5. Example of Proposed Offshore Vessel Activities

Liquid Transfer

The Offshore Petroleum Discharge System, Amphibious Bulk Liquid Transfer System, and Inland Petroleum Discharge System are used to simulate the transfer of petroleum products from ships to forces on the shore, and inland areas. The simulated transfer uses seawater; no petroleum products have ever been transferred during exercises. Approximately 100,000 to 200,000 gallons (378,500 to 757,000 liters) of seawater are used during any single exercise. The Offshore Petroleum Discharge System/Amphibious Bulk Liquid Transfer System process consists of pumping seawater from a tanker ship through a flexible conduit that runs along the ocean floor and then up to a beachside receptor known as a Beach Termination Unit or a Beach Interface Unit (Figure 2-6). Collectively, the aforementioned component features constitute an Offshore Bulk Fuel System.

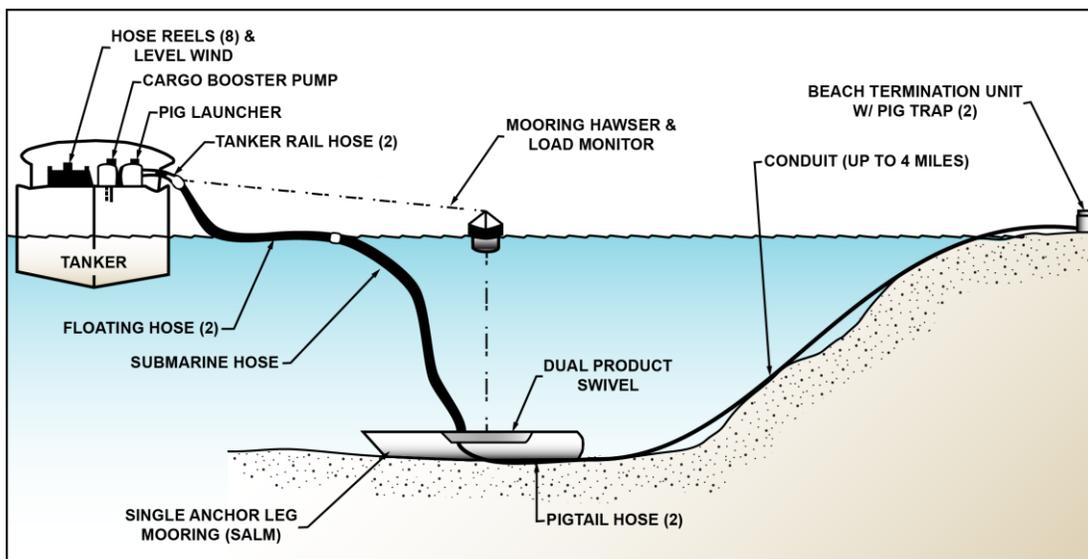


Figure 2-6. Notional Offshore Petroleum Discharge System

The Offshore Petroleum Discharge System has a flexible hose system that can extend from the beach inland for up to 4 miles (6.4 km), although the Offshore Petroleum Discharge System typically only extends approximately 1-2 miles (2-3 km) inland during training events. The system includes a Single Anchor Leg Mooring that is anchored on the ocean floor and used as a mooring buoy for the flexible hose system. The Offshore Petroleum Discharge System hose is anchored to the sea floor at various locations along the hose. The Offshore Petroleum Discharge System hose extends onshore to a Beach Termination Unit that connects with the Inland Petroleum Discharge System that pumps the liquid further inland. The Inland Petroleum Discharge System hose can extend up to 5 miles (8 km) to a simulated petroleum bag farm.

The Amphibious Bulk Liquid Transfer System is a floating hose system that is deployed at up to 1.9 miles (3 km) from the Beach Interface Unit to the tanker ship. The Amphibious Bulk Liquid Transfer System has a floating hose that is marked with affixed lights. The water used in the Offshore Petroleum Discharge System or Amphibious Bulk Liquid Transfer System is gradually discharged into the Pacific Ocean away from the shoreline at the completion of the exercise.

Tactical Water Purification Systems, formerly known as “Reverse Osmosis Water Purification Units,” are also used during training, although infrequently. Tactical Water Purification System desalinate and purify seawater to create potable water. The Tactical Water Purification System process uses reverse osmosis and chlorination to treat seawater, which is usually extracted from the ocean offshore of Red Beach. A Tactical Water Purification System produces approximately 20,000 gallons (75,700 liters) of potable water per average use. At the end of the Tactical Water Purification System evolution, a percolation pit is excavated in the sand above the high tide line of sufficient size to contain all product water and brine solution. The product water and brine solution are then discharged into the pit to remix and percolate into the underlying sand. The pit is then filled with the excavated sand.

Landing Craft Air Cushion

The Landing Craft Air Cushion is a high-speed, over-the-beach fully amphibious landing craft, capable of carrying a 60-75 ton (54-68 metric ton) payload. Landing Craft Air Cushions are used to transport the weapons systems, equipment, cargo, and personnel of the assault elements of a Marine Air Ground Task Force from ship to shore and across the beach. The Landing Craft Air Cushion can carry heavy payloads, such as an M-1 tank, at high speeds. The Landing Craft Air Cushion’s payload capability and speed combine to greatly increase the ability of the Marine Ground Element to reach the shore. Air cushion technology allows this vehicle to reach more than 70 percent of the world's coastline, while only about 15 percent of that coastline is accessible by conventional landing craft (Navy 2010). Figure 2-7 depicts a Landing Craft Air Cushion coming ashore at MCB Camp Pendleton.



Figure 2-7. Landing Craft Air Cushion Coming Ashore at MCB Camp Pendleton

2.2.1.2 Littoral Activities

Cargo Offload

Personnel accomplish cargo offload using several methods, including piers and beach landings. The Elevated Causeway is a temporary pier that extends from the beach into the water through the surf zone to a distance of approximately 3,000 ft (914 m) offshore. The Elevated Causeway allows vessels with deeper draft (that are unable to land on the beach) to dock and offload their cargo/equipment safely outside the surf zone. Once all of the Elevated Causeway components are assembled onshore (within an approximately 4-acre [1.6-ha] area), two bulldozers grade a ramp in the beach to facilitate construction from the beach seaward. The area graded is approximately 100-ft wide by 200-ft long (30-m by 61-m) and the ramp is filled in to match the existing beach contour after removal of the Elevated Causeway. Using a diesel impact hammer, personnel drive approximately one hundred, 24-inch (60-centimeter) diameter steel piles into the sand below the water before hoisting the causeway platform pieces into place where they are installed using hydraulic jacks. Consistent with the HSTT permit (NMFS 2014), no more than four pile driving events may occur per year. An Elevated Causeway is typically constructed in 10 days.

The temporary pier extends from shore to a depth of 20 ft (6 m) Mean Lower Low Water; which at Red Beach typically corresponds to distance of approximately 1,200 ft (366 m) (as a point of reference, 11 days were needed to assemble a 1,020-ft [311-m] long temporary pier for the 2008 JLOTS). Once constructed, offloading operations are similar to those of a conventional pier. Two cranes and a vehicle turnstile (at the end of the Elevated Causeway) are used for container offload. The temporary Elevated Causeway pier and all component pieces, including associated piles, are removed at the conclusion of training, a process that takes approximately two weeks to complete. Personnel use a vibratory extractor to remove all of the piles. Figure 2-8 presents images of an Elevated Causeway. On average, an Elevated Causeway is either being assembled, used, or removed over a period of approximately 30 continuous days.

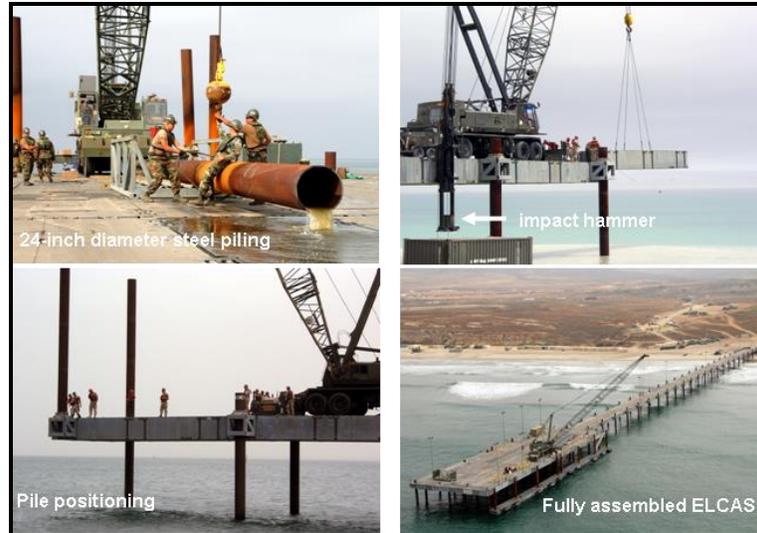


Figure 2-8. Construction of Elevated Causeway Elements

The TRIDENT Pier is an assembled floating platform typically 60-90 ft (18-27 m) wide that extends from the beach through the surf zone out to distances of approximately 1,200 ft (366 m). While the TRIDENT Pier is typically held in place with anchors to the beach, the TRIDENT Pier can also be positioned via anchors on the ocean floor. Construction of the pier involves digging a pit in the wet sand (generally 25-ft [8-m] wide by 30-ft [9-m] long by 8-ft [2-m] deep). Multiple craft with deeper draft can be moored to any of the up to three pier heads on a TRIDENT Pier to offload their cargo (refer to Figure 2-1). Rolling stock constitutes the bulk of the equipment offloaded via the TRIDENT Pier.

Landing Craft Utility boats, Logistics Support Vessels, and Landing Craft Mechanized boats move rolling stock and containerized cargo to shore. Cargo and vehicles are transferred from the ship onto the Landing Craft Utility boats and Logistics Support Vessels utilizing the Roll-On/Roll-Off Discharge Facility or via the ship's crane, and the vessels motor to the shore, lower their ramps, and the vehicles and cargo are driven onto the beach (Figure 2-9).



Figure 2-9. Typical Vehicle Offload from Landing Craft Utility Boat

Safe Harbor

Amphibious training exercises use the Del Mar Boat Basin as a safe harbor during inclement weather, as well as an anchorage location for the Landing Craft Utility boats at all times. In addition, the area is used to swap ship crews, perform minor maintenance, and refuel lighterage craft. A pier or other floating causeway (approximately 270-ft [82-m] long) is typically anchored onto the beach in the Del Mar Boat Basin and/or in the water to serve as a mooring platform for the vessels. Some parts of the TRIDENT Pier can be assembled in the Del Mar Boat Basin and be towed offshore before the complete structure is assembled on or offshore of the beach. On average, 55 personnel are present at the Del Mar Boat Basin during an exercise and operations are active on a 24-hour basis. A small command node in the form of a few tents and antennas is established near the ramp to facilitate communication with other locations/units. Refer to Figure 2-2 for a notional depiction of these and other supporting elements in the Del Mar Boat Basin.

Force Protection/Security

Amphibious training exercises also provide training for landward and seaward Force Protection and security. Seaward security is performed using small, 34-ft (10-m) long security boats that patrol around supply ships to protect them from maritime threats. The boats are towed on a trailer via truck to the Del Mar Boat Basin where they are placed into the water. Figure 2-10 depicts a security boat on patrol behind a stern Roll-On/Roll-Off Discharge Facility.



Figure 2-10. Force Protection Boat Patrolling behind Stern Roll-On/Roll-Off Discharge Facility

2.2.1.3 Beach Activities

Cargo Offload

Traffic control personnel direct all activities on the beach to ensure the efficient and safe offload of personnel and materiel. Lighter Amphibious Resupply Cargos, bulldozers, and tactical vehicles are stationed on the beach during offload operations to facilitate 24-hour beach offloading activities. Lighter Amphibious Resupply Cargos are amphibious vehicles that can operate both on the beach and in the nearshore to assist with the shuttling of supplies and personnel to and from shore. Bulldozers are often used to assist vessels that are stuck in the sand (by pushing them back into the water). Tactical vehicles are typically used for personnel and supply transport between the beach and inland areas.

Causeway platforms containing the cargo are motored through the surf onto the beach. Bulldozers excavate temporary notches in the beach to make an anchor point for the platform, which is beached using a barge ferry. Once the materiel are assembled onshore (within an approximate 4-acre [1.6-ha] area), two bulldozers grade the beach (i.e., level the sand) into the surf zone to create an excavated area that is approximately 150 ft by 150 ft (45 m by 45 m) that serves as the beachhead for the platform or pier. Vehicles and cargo are then driven off the floating causeway onto the beach (Figure 2-11). Any beach areas excavated during the exercise are filled in at the conclusion of the exercise. To facilitate the movement of vehicles up and along the beach, mobility matting is used from the high-water mark up and throughout the beach area. Mobility matting is a lightweight, durable, and rapidly deployable polyester matting/soil stabilization system that enables wheeled military traffic to traverse sand and soft soil.



Figure 2-11. Typical Floating Causeway Offload Operations

During offload operations, there is a small potential that the Improved Navy Lighterage System, Modular Causeway System, Landing Craft Utility boats, or Logistics Support Vessels might need assistance if wave action shifts the alignment of the watercraft such that a watercraft becomes parallel with the shore. To respond to these rare occurrences, Improved Navy Lighterage System warping tugs, Army Side Loadable Warping Tugs, and Army and/or commercial tugs are ready to pull the craft back to sea.

Amphibious Assault Vehicles, which are tracked vehicles similar to tanks, may also move from the ship to shore during MPF and JLOTS exercises. The Amphibious Assault Vehicles drive off the ship ramp into the water, float, motor to the surf zone, and drive up onto the beach and into inland areas. The Amphibious Assault Vehicles typically have crew-served M2 .50 caliber machine guns or MK 19 grenade launchers mounted for use in training exercises on established inland range areas on MCB Camp Pendleton. No live-fire activity occurs in the ocean or on the beach. Live-fire only occurs within designated inland live-fire ranges at MCB Camp Pendleton.

Onshore Arrival and Assembly

Many vehicles and equipment are partly unassembled for tight storage on the ship and have to be reassembled when they are delivered to the shore so that they can be driven/transferred further inland. This “vehicle marshalling” activity typically occurs along El Camino Real and in the Skull Beach/Canyon area (refer to Figure 2-1). After equipment, materiel, and cargo are offloaded, they are staged, typically along the beach and/or the bluffs above the beach. From the beach or other marshalling area, the equipment and cargo are transferred inland to an area where personnel mount armor, communications gear, and weapons. Equipment and cargo are then moved to the Base Camp area (as described in Section 2.2.1.4) for distribution to personnel, or further inland via existing access roads to conduct routine training on existing ranges.

Vehicles are driven to their destination and cargo is transferred via forklift onto trucks. As many as 40 large cargo transport vehicles are used to transfer the equipment to any one of several destinations including but not limited to the beachside pier or Del Mar Boat Basin for return transfer to ship, to inland training areas, to rail cars, or over roads to other regional DoD installations. Transportation from shore to inland areas occurs via any of the established roads on the existing access road network, depending on the type of vehicles and their destination area and mission objectives (e.g., tracked vehicles would use dirt access roads, whereas wheeled vehicles would typically use asphalt access roads).

Force Protection/Security

As part of the exercises, up to two trailer sensor platforms and a single Maritime Operations Center are established on either end of the beach operations up on a bluff. The trailer sensor platform is a radar system that searches for movement on the water’s surface. The Maritime Operations Center is a tent with consoles to support the trailer sensor platforms and facilitate integrated communication with maritime security operations. In addition, small tent camps (for example, a Navy and Army Joint Operations Center, Tactical Operations Center, and/or communications, and security squadron support tents) are often located at Red Beach (on Red Beach North and/or Red Beach South bluffs). Figure 2-12 presents an image of a typical Tactical Operations Center adjacent to an antenna farm. The area also includes portable toilets and generators. A long-range acoustical device (which is similar to a loudspeaker system and can produce loud continuous noise) is used on rare occasions around the perimeter of the Base Camp to simulate efforts to deter unauthorized personnel from entering the area.



Figure 2-12. Typical Tactical Operations Center and Adjacent Antenna Farm

2.2.1.4 Upland Activities

Railheads

Existing MCB Camp Pendleton railheads are used during JLOTS and MPF exercises. Two locations are typically used: one by the South Gate by the Oceanside Harbor (Oceanside Railroad Yard) and the other by the main entrance across from the commissary (Fallbrook Junction). The railheads are used for the loading and shipment of rolling stock, equipment, and containerized cargo. Typically, the Fallbrook Junction Railhead is used for rolling stock, and the Oceanside Railroad Yard Railhead is used for containerized cargo. Vehicles drive off the railhead and to their destination, and non-rolling equipment and cargo are transferred onto a flatbed truck or a Medium Tactical Vehicle Replacement via a Rough Terrain Cargo Handling forklift or other forklifts and transported to their destination.

Tent Camps

Personnel are temporarily billeted in a tent camp located on Artillery Firing Area 15 and/or Artillery Firing Area 16 (refer to Figure 2-1). This area, also referred to as the “Life Support Area,” serves as the Base Camp and can cover up to 50 acres (20 ha). The Base Camp consists of personnel billeting tents; command, communications and operations tents; maintenance facilities; medical tents; portable galley facilities; portable latrine and shower facilities; and laundry facilities (Figure 2-13). The Base Camp also contains morale, welfare, and recreation facilities that may include a gym, movie tent, barber tent, and a chapel. The tents have an average dimension of 18-ft wide by 24-ft long (7-m wide by 5-m long).

Site preparation activities at the Base Camp site include mowing grass, performing minor grading where necessary, and spraying for insect control. Communication and electrical cables may be laid through the encampment, which requires minimal trenching (i.e., up to several inches). The cables are removed at the end of each exercise. A watering truck is often used to minimize dust from grading activities and vehicular travel. All power is self-generated by the Base Camp.



Figure 2-13. Previous Base Camp at Artillery Firing Area 15 with Red Beach in Background

Up to 20 generators of various size run 24 hours per day to support the onsite electricity demand. In addition, light units (with additional integrated generators) are used to illuminate the area during hours of darkness. Razor wire line barriers and/or yellow caution tape is used to delineate portions of the Base Camp and other encampments. Barrier wire is also used at vehicle checkpoints. Most vehicles are parked in Artillery Firing Area 15 and/or Artillery Firing Area 16 when not in use.

Portable latrine facilities are located in the area of the personnel tents (in Figure 2-13, the portable latrine facilities are the small, blue rectangular structures); no leach fields are constructed. A contractor regularly services the portable latrine facilities. Some of the graywater that is generated from the shower and clothes washing facilities is collected, stored, and disposed of via percolation pits and/or commercial tanker. After being excavated and used to collect shower and clothes washing graywater, percolation pits are then refilled and leveled at the end of the exercise. The construction of these pits involves digging up to two shallow pits (generally 70-ft [21-m] wide by 100-ft [30-m] long by 8-ft [2-m] deep) using bulldozers. Figure 2-14 depicts two percolation pits constructed during Pacific Horizon 11. Solid waste is collected in dumpsters and disposal is accomplished via contractor pickup using the existing MCB Camp Pendleton solid waste disposal contract.



Figure 2-14. Percolation Pits

Force Protection/Security Training

Land Force Protection/security includes the construction and/or placement of temporary security barriers and the protection of personnel and supplies at each of the operational sites used during exercises. Land training consists of convoys on El Camino Real, and/or at the Tango or Oscar Ranges (as dictated and approved by the MCB Camp Pendleton Range Operations Division). Foot and vehicle patrols also occur around the perimeter of the Base Camp and other training areas.

Vehicle Maintenance and Refueling

Vehicle and equipment maintenance or repair is typically conducted at the Base Camp; however, maintenance can occur at other locations if the vehicle or equipment cannot be easily transported to the Base Camp for maintenance/repair (for example, at the Del Mar Boat Basin). Hazardous materials used in vehicle maintenance include antifreeze, brake fluid, solvent cleaning compound, grease, hydraulic fluid, lubricating oil, detergent, isopropyl alcohol, corrosion preventative compound, penetrating oil, sealing compound, and silicone compound. All hazardous materials and wastes are managed in accordance with applicable USMC, federal, and state regulations. Maintenance activities do not occur near the percolation pits. The distance as well as the implementation of spill minimization and containment measures all but eliminates the potential for hazardous materials or wastes to reach the percolation pits.

As the potential exists for vehicles being transported on to the beach to get wet at the axle level or higher, post-operation salt-water checks for vehicles typically occur at vehicle marshalling areas and or railhead transport areas. Any equipment or cargo in need of a wash down goes through the wash rack at the Del Mar Boat Basin. A wash rack is a covered facility where vehicles drive in and are “washed down” with water and the runoff is collected and treated before disposal.

The refueling of rolling stock and generators is typically conducted by fuel trucks. The fuel trucks drive to the generators and refuel the generators. All maintenance and refueling activities are conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b) prepared in support of amphibious exercise training exercises. Vehicles are refueled in established and designated refueling areas at MCB Camp Pendleton; vehicles are not refueled on the beach. Refueling and maintenance of equipment occurs at least 100 ft (30 m) away from surface water drainages.

Cargo Reload

Typically, cargo is reloaded onto ships at the conclusion of the exercise. This usually occurs in the Del Mar Boat Basin using the same systems/platforms used to bring the materiel to shore, back out to the

larger craft outside of the Del Mar Boat Basin, but can also occur on the beach in the opposite manner with which the cargo came ashore, using the same equipment and procedures, albeit in reverse.

2.2.1.5 Air Activities

Cargo, equipment, and personnel can be transferred from ship to shore via CH-46s, CH-53s, and MV-22s. The MV-22 is replacing the current USMC assault helicopters in the medium lift category (CH-46 and CH-53), contributing to the dominant maneuver of the Marine landing force, as well as supporting focused logistics in the days following commencement of an amphibious operation. MV-22s are able to operate and land just like any other legacy aircraft that operate at MCB Camp Pendleton (Marine Corps Installations West 2013). Helicopters and rotary wing aircraft land at the existing designated landing areas (refer to Figure 2-1), which are affixed with interlocking aluminum matting. Helicopters and rotary wing aircraft can also be used for air medical evacuation as needed. Existing Special Use Airspace at MCB Camp Pendleton is depicted on Figure 2-18 in Section 2.4.1.

Unmanned aerial vehicles (UAVs) may be used as part of amphibious exercises and perform similar missions as legacy rotary wing and fixed wing aircraft participating in these types of exercises. UAVs are typically launched and recovered from the bluffs adjacent to Red Beach and old Highway 101, adjacent to Artillery Firing Area 15. UAV operations are conducted within existing Special Use Airspace and in accordance with Federal Aviation Administration and USMC requirements pertaining to the use of UAVs. Flight times over public areas (i.e., Interstate 5) are minimized.

2.2.1.6 Exercise Duration

Table 2-1 presents the main components and associated durations of a typical JLOTS exercise at MCB Camp Pendleton. Pre-deployment activities generally consist of an advance party of approximately 200 personnel to establish the Base Camp and the Joint Operations Center. During this period, beach and hydrographic surveys are conducted to map existing oceanographic conditions. Before deployment and the start of the exercise, all personnel receive a pre-exercise environmental brief. In addition, the exercise proponent releases a Notice to Mariners via the U.S. Coast Guard (District 11) alerting local marine users of the training exercises and the duration and location of the exercises.

Table 2-1. Example Training Activity Duration for a JLOTS Exercise at MCB Camp Pendleton

Activity	Average Duration (days) ¹
Initial equipment offload at Artillery Firing Area 15/16 and ELCAS equipment arrival at the Del Mar Boat Basin	3
Construction of Base Camp and Red Beach command and communications encampment	11
Ligherage operations, LSV and LCU operations training, force protection and security training	49
Construction, operation, and removal of ELCAS and floating piers ²	32
Installation, operation, and removal of OPDS and IPDS systems	15
Teardown of the Base Camp and Red Beach command and communications encampment	6
Final truck re-load of equipment at Artillery Firing Area 15/16 and ELCAS equipment departure from the Del Mar Boat Basin	2

Notes: ¹ The duration could shift if there are operational delays or challenges getting the necessary assets for training. Activities may overlap in time. The tempo for amphibious training exercises would be 24-hour a day “phased” operations. Generally, the onward movement timeline is constrained; therefore, operations may be conducted 24 hours a day to maximize the throughput of cargo above the high water mark and moved inland to an assembly area. During the operations period, most operations (80%) are conducted during daylight hours with ELCAS construction conducted on a 24-hour basis.

² Consistent with the HSTT permit (NMFS 2014), no more than four pile driving events may occur per year. ELCAS = Elevated Causeway; LSV = Logistics Support Vessel; LCU = Landing Craft Utility; OPDS = Offshore Petroleum Discharge System; IPDS = Inland Petroleum Discharge System.

The main body of the exercise arrives after the advance party to establish the Base Camp and support facilities. Using a STRATEGIC Sealift or via line haul, the majority of the equipment for the deployment of the advance party and main body is moved from the units' homeport or garrison. Some equipment is also transported via Improved Navy Lighterage System and Landing Craft Utility boats from the units' homeport (e.g., Naval Base Coronado) to the MCB Camp Pendleton operating areas.

2.2.2 FEX TRAINING

FEX training at MCB Camp Pendleton include some but not all components of a full JLOTS and/or MPF exercise. In a typical year, approximately six to eight FEXs occur at MCB Camp Pendleton on Red and/or Gold beaches. These exercises consist of Unit Level Training and Readiness Assessments, Final Evaluation Problems, or Integrated Exercises and can occur as part of a larger exercise (i.e., a JLOTS or MPF).

Each exercise can involve a wide range of personnel (from as few as 30 to as many as 800) and generally last for 7-14 days. Training evolutions typically include small boat operations (offshore), communication tents on the beach, convoy operations, campsite setup/security, entry control point operations, and command and control facilities/operations, as generally described for JLOTS and MPF exercises, though at a much smaller scale.

2.2.3 SUMMARY OF EXISTING AMPHIBIOUS TRAINING EXERCISES AT MCB CAMP PENDLETON

As previously described, several vessels, systems, and equipment types may be used during amphibious training exercises. Table 2-2 presents a summary of the equipment, personnel, and durations that are typically used during amphibious training exercises at MCB Camp Pendleton.

2.3 ALTERNATIVES DEVELOPMENT

CPF used the following process to identify alternatives for analysis in this EA. First, the project team identified screening criteria that captured the range of elements each alternative must have to meet the purpose of and need for the Proposed Action. The project team then identified possible reasonable alternatives that met as many of the screening criteria as possible and then compared the alternatives based on their ability to fulfill all of the screening criteria. The outcome of this analysis was the identification of those alternatives considered but eliminated from analysis (as they failed to meet all of the screening criteria) and those alternatives that met the screening criteria. This process ensured that this EA identified those alternatives that are considered technically practical or feasible, and would meet the purpose of and need for the Proposed Action.

The following sections present the screening criteria, the possible alternatives considered, a comparison of the screening criteria and possible alternatives, the alternatives considered but eliminated, and those alternatives carried forward for analysis in this EA.

2.3.1 SCREENING CRITERIA

CPF developed the following 17 screening criteria specifically for this EA to assess whether a possible alternative would meet the purpose of and need for the Proposed Action. For an alternative to be considered viable, a potential alternative would need to satisfy each of the 17 screening criteria. These comprehensive screening criteria were developed to reflect the needs of on-going and anticipated future amphibious training in the west coast. If a potential alternative would fail to meet any of the screening criteria, then training requirements would not be achieved, and therefore the alternative was not carried forward for analysis in this EA.

Table 2-2. Summary of Average Component Features of Amphibious Training Exercises

Component Feature	Average Number for Each Logistic Exercise		
	JLOTS	MPF	FEX
Offshore Activities			
MPF Ships (or equivalent)	3	1	-
Utility Boats	3	2	2
LCU	4	2	2
INLS Causeway Ferries	4	4	4
INLS Warping Tugs	4	4	4
MCS	1	-	-
LSV	1	-	-
LCM	4	2	2
RRDF	2	1	-
Tugs	2	-	-
OPDS	1	1	-
ABLTS	1	1	1
IPDS	1	-	-
Tactical Craft	3	1	-
LCAC	-	-	2
Littoral Activities¹			
ELCAS	1	-	-
TRIDENT Pier	1	-	-
Floating Causeway	1	-	-
Security Boats	12	3	-
Side Loadable Warping Tug	6	-	-
Beach Activities			
Lighter Amphibious Resupply Cargos	4	2	2
Bulldozers	5	3	1
Tactical Vehicles	10	5	2
AAVs	10	10	-
Large Cargo Transport Vehicles	40	20	-
Trailer Sensor Platforms	2	1	-
Maritime Operations Center	1	1	-
Joint Operations Center	1	-	-
Support Tents	8	6	4
UAV	11	-	5
Upland Activities			
Base Camp Tents (all types)	315	75	40
Tactical Water Purification System	6	3	1
Light Units	17	6	6
Miscellaneous Trucks	55	21	15
Miscellaneous Vehicles	119	47	25
Generators	36	15	10
Vans/Buses	16	10	5
Portable Toilets (all areas)	35	13	15
Air Activities			
CH-46/MV-22 ²	2	1	-
CH-53/MV-22 ²	2	1	-
Personnel	2,000-3,500	600-1,500	30-800
Duration	90 days	30 days	7-14 days

Notes: ¹ Consistent with the HSTT permit (NMFS 2014), no more than four pile driving events would occur per year.

² The MV-22 is replacing the current USMC assault helicopters in the medium lift category (CH-46 and CH-53).

LCU = Landing Craft Utility; INLS = Improved Navy Lighterage System; MCS = Modular Causeway System;
 LSV = Logistics Support Vessel; LCM = Landing Craft Mechanized; RRDF = Roll-on/Roll-off Discharge Facility;
 OPDS = Offshore Petroleum Discharge System; ABLTS = Amphibious Bulk Liquid Transfer System;
 IPDS = Inland Petroleum Discharge System; LCAC = Landing Craft Air Cushion; ELCAS = Elevated Causeway;
 AAV = Amphibious Assault Vehicle; UAV = Unmanned Aerial Vehicle.

Screening Criteria:

1. Selected area must be on the west coast of the U.S.
2. Selected area must provide co-location with commands, equipment, facilities, and infrastructure that support existing and future training and personnel tempo requirements as described in Sections 2.2 and 2.4.1.2.
3. Selected area must have sufficient available and suitable training space to simultaneously accommodate the training needs of all of the operational users described in Section 2.2 so that they can achieve training tempo requirements based on deployment schedules.
4. Selected location must have available and suitable training space and infrastructure to host and support all amphibious exercise types.
5. Selected area must allow for the anchorage of as many as 15 vessels offshore and the placement of an Elevated Causeway and TRIDENT Pier system on a bare beach environment to facilitate the transfer of vehicles, personnel, and cargo from ship to shore.
6. Selected area must allow for a TRIDENT Pier system to be constructed offshore or at an offsite staging area with adequate shore facilities and stable environmental conditions, and be floated to the designated beaching area.
7. Selected area must facilitate the use of temporary Offshore Petroleum Discharge System / Inland Petroleum Discharge System and the placement of a Single Anchor Leg Mooring on the ocean floor to secure a length of flexible conduit (for the pumping of saltwater) between a ship and the shore.
8. Selected area must contain at least one safe haven/harbor area for lighterage shelter and materiel onload/offload in the event of unfavorable sea conditions at the shore location.
9. Selected area must provide for at least 5 acres (2 ha) on the beach for the staging of offloaded equipment and materiel.
10. Selected area must provide for at least 50 acres (20 ha) inland for the establishment of a temporary Base Camp and vehicle marshalling and staging areas with access to shoreline onload/offload facilities and major interstate transportation routes (highway and rail).
11. Selected area must allow for watercraft operations in the surf zone.
12. Selected area must allow for the onward movement of personnel and materiel to other installations/locations.
13. Selected area must have a beach that has sufficient width and length and the right gradient to facilitate beach operations (at least 1,000-ft [305-m] wide).
14. Selected area must have bathymetry³ with a slope ranging from 1:50 to 1:200.
15. Selected area must support emerging lighterage vessels.
16. Selected area must be compatible with adjacent land uses.
17. Selected area must allow for expansion of operations to train on future platforms.

2.3.2 ALTERNATIVES CONSIDERED

The project team identified the following potential alternative locations to measure against the screening criteria to determine if they would serve as feasible alternatives and thus merit detailed analysis in this EA. Figure 2-15 depicts the locations of the considered alternative locations.

³ The measurement of the depths of oceans, seas, or other large bodies of water.



Figure 2-15
 West Coast Military Installations Initially Considered as
 Potential Alternative Locations for the Proposed Action

2.3.2.1 San Clemente Island Alternative

Under this alternative, the Proposed Action would occur at San Clemente Island, located approximately 60 miles (97 km) offshore of San Diego (refer to Figure 2-15).

2.3.2.2 Silver Strand Training Complex Alternative

Under this alternative, the Proposed Action would occur at the Silver Strand Training Complex, located on Coronado Island in southern San Diego County (refer to Figure 2-15).

2.3.2.3 MCB Camp Pendleton Alternative 1 (Red and Gold Beaches)

Under this alternative, the Proposed Action would occur on and offshore of Red and Gold beaches, in the Del Mar Boat Basin, and on associated inland training areas at MCB Camp Pendleton. In addition, activities would occur at a higher tempo (approximately 25 percent) than existing amphibious training exercises, representing an increase over the recent historical baseline in terms of the number, frequency, and scope of training.

Based on the purpose of and need for this Proposed Action, no other MCB Camp Pendleton beaches, named or otherwise, have been identified as potential amphibious training areas. For example, the area north of Gold Beach (San Onofre State Beach) and the area south of White Beach (the Marine Corps Tactical Systems Support Activity) are not currently used for amphibious training. Furthermore, operators have not currently identified these areas as potential training areas for this Proposed Action as no inland access exists to facilitate the inland movement of large numbers of personnel and materiel in these locations.

2.3.2.4 MCB Camp Pendleton Alternative 2 (Red, Gold, and White Beaches)

Under this alternative, the Proposed Action would occur on and offshore of Red, Gold, and White beaches, in the Del Mar Boat Basin, and on associated inland training areas at MCB Camp Pendleton. Though very similar to Alternative 1, Alternative 2 would provide additional flexibility and enhanced geographic diversity for amphibious training exercises, as compared to Alternative 1 with the inclusion of White Beach. In addition, like Alternative 1, activities would occur at a higher tempo (approximately 25 percent) than existing amphibious training exercises, representing an increase over the recent historical baseline in terms of the number, frequency, and scope of training. Based on the purpose of and need for this Proposed Action, no other MCB Camp Pendleton beaches, named or otherwise, have been identified as potential amphibious training areas for the same reason as presented in Section 2.3.2.3.

2.3.2.5 Other West Coast Military Installation Alternative

Under this alternative, the Proposed Action would be conducted at a west coast installation other than MCB Camp Pendleton, San Clemente Island, or the Silver Strand Training Complex. Other west coast installations include Vandenberg Air Force Base, Naval Air Station North Island, and Naval Base Ventura County (refer to Figure 2-15).

2.3.2.6 No Action Alternative

Under the No Action Alternative, MCB Camp Pendleton would continue to serve as the USMC's west coast amphibious training facility and activities similar to those previously described would continue to occur as described in Section 2.2, without an increase in annual exercise tempo, geographic expansion, or use of emerging platforms and technology.

2.3.3 SCREENING CRITERIA AND ALTERNATIVES CONSIDERED

Table 2-3 presents a comparison of the identified screening criteria against the possible alternatives considered.

Table 2-3. Comparison of Screening Criteria and Alternatives Initially Considered

Criteria		San Clemente Island	Silver Strand Training Complex	MCB Camp Pendleton Alternative 1	MCB Camp Pendleton Alternative 2	Other West Coast Military Installation ¹	No Action Alternative
1	Location on West Coast	X	X	X	X	X	X
2	Co-Location of Training Elements			X	X		X
3	Simultaneous Training			X	X		X
4	Support All Exercise Types			X	X		X
5	15 Vessels, ELCAS, & TRIDENT Pier	X	X	X	X		X
6	TRIDENT Pier Construction	X	X	X	X		X
7	OPDS/IPDS and Single Anchor Leg Mooring	X	X	X	X		X
8	Safe Haven	X	X	X	X		X
9	5 Beach Acres			X	X		X
10	50 Upland Acres			X	X		X
11	Surf Zone Watercraft Operations	X	X	X	X	X	X
12	Onward Movement		X	X	X	X	X
13	Beach Characteristics			X	X		X
14	Bathymetry and Slope			X	X		X
15	Emerging Lighterage	X	X	X	X	X	
16	Land Use Compatibility	X	X	X	X	X	X
17	Future Platforms	X	X	X	X	X	
Meets Purpose and Need?		No	No	Yes	Yes	No	No

Notes: An "X" indicates the potential alternative meets the associated selection criteria.

¹ Other west coast military installations considered were Vandenberg Air Force Base, Naval Air Station North Island, and Naval Base Ventura County; elements of Dawn Blitz 2013 did occur at Naval Base Ventura County.

ELCAS = Elevated Causeway; OPDS = Offshore Petroleum Disposal System; IPDS = Inland Petroleum Disposal System.

2.3.4 ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER ANALYSIS

As noted in Table 2-3, four of the six possible alternatives failed to meet all of the screening criteria: the San Clemente Island Alternative, the Silver Strand Training Complex Alternative, the Other West Coast Installation Alternative, and the No Action Alternative. The following paragraphs highlight the main reasons why the first three possible action alternatives were eliminated and not carried forward for further analysis in this EA; as described in later paragraphs, the No Action Alternative is carried forward as a baseline against which the impacts of the Proposed Action are compared.

2.3.4.1 San Clemente Island Alternative

As noted in Table 2-3, the San Clemente Island Alternative fails to meet several of the screening criteria and thus fails to meet the purpose of and need for the Proposed Action. Notably, San Clemente Island does not have sufficient available and suitable training space to simultaneously accommodate the training needs of all of the operational users. Furthermore, San Clemente Island does not have the right beach conditions or adjacent bathymetry to support JLOTS exercises and there are no regional transport capabilities as the island is isolated from the mainland. Therefore, CPF has eliminated the San Clemente Island Alternative from further analysis.

2.3.4.2 Silver Strand Training Complex Alternative

As noted in Table 2-3, the Silver Strand Training Complex fails to meet several of the screening criteria and thus fails to meet the purpose of and need for the Proposed Action. Notably, the Silver Strand Training Complex is not able to provide for the co-location of commands, equipment, facilities, and infrastructure to support existing and future training and personnel tempo requirements. The Silver Strand Training Complex also does not have the necessary geographic area (i.e., 5 beach acres or 50 upland acres), or beach characteristics to support the focused assemblage and execution of the Range of Military Operations associated with the amphibious training analyzed in this EA. The Silver Strand Training Complex does have the ability to support small unit training exercises in support of larger exercises (e.g., JLOTS), which are focused on MCB Camp Pendleton; however, the Silver Strand Training Complex does not have the features required to support the full breadth of amphibious training analyzed in this EA. In addition, the Silver Strand Training Complex already sustains its own training activity schedules and priorities; thus, the Silver Strand Training Complex would be unable to meet the tempo requirements of screening criteria #3 (“Simultaneous Training”). Therefore, CPF has eliminated the Silver Strand Training Complex Alternative from further analysis as a location that allows for the focused assemblage and execution of the Range of Military Operations associated with amphibious training.

2.3.4.3 Other West Coast Military Installation Alternative

As noted in Table 2-3, the Other West Coast Military Installation Alternative fails to meet several of the screening criteria and thus fails to meet the purpose of and need for the Proposed Action. The proximity of MCB Camp Pendleton to the equipment, personnel, facilities, and organizational services needed for the full range of amphibious training exercises is vital to the efficient execution of military training. The other identified west coast military installations (i.e., Vandenberg Air Force Base, Naval Air Station North Island, and Naval Base Ventura County) do not provide the comprehensive all-inclusive amphibious training elements necessary for hosting the full range of proposed amphibious training exercises. Therefore, CPF has eliminated the Other West Coast Military Installation Alternative from further analysis.

While the aforementioned west coast military installations cannot accommodate the Proposed Action, Naval Base Ventura County can accommodate certain elements of amphibious training exercises focused at other installations (e.g., portions of Dawn Blitz 2013 did occur at Naval Base Ventura County). However, any future amphibious training activity that might occur at Naval Base Ventura County is outside the scope of this EA.

2.3.5 ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

As presented in Table 2-3, two action alternatives meet all of the screening criteria: MCB Camp Pendleton Alternative 1 (Red and Gold beaches) and MCB Camp Pendleton Alternative 2 (Red, Gold, and White beaches). In addition, while not satisfying the screening criteria, per CEQ regulations, this EA

also analyzes the No Action Alternative, which serves as a baseline against which the impacts of the Proposed Action are compared.

2.4 ALTERNATIVES

The Proposed Action consists of an increase in amphibious training exercises at MCB Camp Pendleton. Proposed amphibious training would be similar to existing amphibious training, but at an increased annual tempo and covering a larger area at MCB Camp Pendleton. In addition, new platforms and technologies would be integrated into training under the Proposed Action. CPF has identified two action alternatives for implementing the Proposed Action: Alternatives 1 and 2. In addition, the continuation of existing amphibious training exercises is presented under the No Action Alternative. The following sections describe each of these alternatives.

2.4.1 ALTERNATIVE 1: MCB CAMP PENDLETON – RED AND GOLD BEACHES

2.4.1.1 Location and Frequency

Under Alternative 1, amphibious training exercises (JLOTS, MPF, and FEXs) would occur on Red and Gold beaches, similar to those described under Section 2.2 and within the operational areas presented on Figure 2-16, and within and adjacent to the Del Mar Boat Basin as presented on Figure 2-17. The operational areas were developed based on input from operators and known environmental constraints at MCB Camp Pendleton. The locations of all proposed exercise elements would avoid impacting known resources, and would be identified and used in compliance with Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures (MCIWEST-MCB CAMPENO 3500.1). As part of Alternative 1, emerging platforms and new technologies would be integrated into future exercises. In addition, ship-to-ship refueling operations would occur more than 3 nautical miles (5.6 km) offshore.

The average annual amphibious training exercise tempo would increase by approximately 25 percent (as compared to existing conditions). On average, amphibious training exercises would occur as follows: one JLOTS exercise every three years, one MPF exercise every year, and up to 10 FEX activities every year. Depending on scheduling and training needs, some years would experience a lower or higher number of total amphibious training exercises. Thus, this EA has analyzed an estimated maximum annual training frequency of 12 exercises per year. This estimated annual percent increase in training was developed by CPF in response to anticipated future training needs, as provided by each operational organization, based on their respective training requirements.

Under Alternative 1, amphibious training exercises would occur in the following areas:

- Offshore of Red and Gold beaches
- Shoreline areas of Red and Gold beaches (including vehicle crossing of Las Flores Creek if the creek is open to the sea during the exercise)
- Viewing area between Red and Gold beaches
- Small Convoy Staging Area at Red Beach on Las Pulgas Road
- Arrival and Assembly Operations Group/Tactical Operations Center at Red Beach
- Vehicle marshaling area at Skull Beach and Training Area Uniform
- Convoy staging areas on El Camino Real and Artillery Firing Areas 15 and 16
- Portions of Artillery Firing Areas 15 and 16 for Base Camp/Life Support Area
- Del Mar Boat Basin
- Fallbrook Junction and Oceanside Railroad Yard

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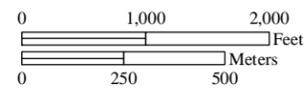


Figure 2-16
Amphibious Training Exercise Areas at Red and Gold Beaches and Inland Training Areas



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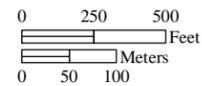


Figure 2-17
Amphibious Training Exercise Areas at the Del Mar Boat Basin



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- Various existing paved and dirt access roads on MCB Camp Pendleton
- Existing helicopter landing zones, UAV launch/recovery areas, and confined area landing sites
- Airspace above the aforementioned areas (Figure 2-18, shown on the following page)

As noted in Section 2.3.4.2, related small unit training exercises occur at the Silver Strand Training Complex. Screening criteria #12 (“Onward Movement,” refer to Section 2.3.1) identifies the need for a selected area to allow for the onward movements of personnel and materiel to other installations/locations. Thus, Alternative 1 would include the ability for small units to transport their personnel and materiel between the Silver Strand Training Complex and MCB Camp Pendleton as part of the breadth of exercises analyzed in this EA. Such transportation would generally consist of approximately 20 vehicles using major regional transportation corridors (round-trip) and would occur up to four times per year.

Under Alternative 1, an approximately 25 percent increase in the number of annual amphibious training exercises at MCB Camp Pendleton is expected. The expected increase is attributable to training plans developed as part of the National Military Strategy. With the drawdown of combat operations in Iraq and Afghanistan, more forces will be conducting home-base training. Littoral logistics capability has been identified as a core competency required for future military readiness. By analyzing the environmental effects in a comprehensive fashion, operational planners will have greater flexibility in designing amphibious training exercises that are consistent with the breadth of the analysis in this EA.

2.4.1.2 Emerging Platforms and Technology

Under Alternative 1, new platforms and equipment would be incorporated into amphibious training exercises. Likely additions include, but are not limited to, the Joint High Speed Vessel. The Joint High Speed Vessel program is procuring high-speed transport vessels for use by the Navy and the Army. These vessels will be increasingly used for the fast transportation of personnel, military vehicles, and equipment. The Joint High Speed Vessel is capable of transporting 600 tons (544 metric tons) more than 1,200 nautical miles (2,220 km) at an average speed of 35 knots (65 km/hour). The ships are capable of operating in shallow-draft ports and waterways, interfacing with roll-on/roll-off discharge facilities, and on/offloading a combat-loaded Abrams Main Battle Tank. Other features include an aviation flight deck to support day and night air vehicle launch and recovery operations. The first ship (USNS Spearhead) was delivered to the Navy in 2012 (Navy 2012a). Figure 2-19 presents a design drawing of a Joint High Speed Vessel (GlobalSecurity.org 2002).

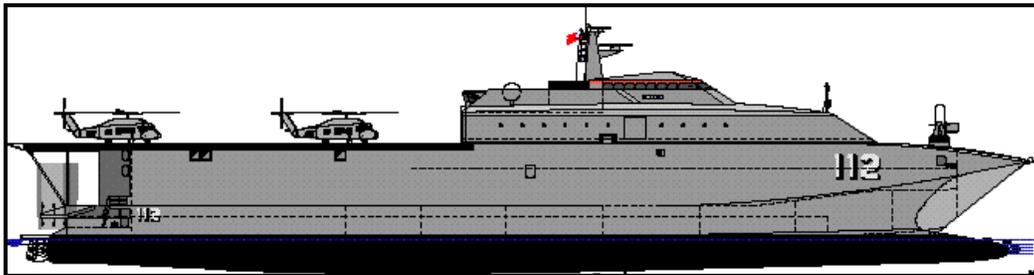


Figure 2-19. Design Drawing of a Joint High Speed Vessel

Should additional emerging platforms and technology beyond the Joint High Speed Vessel be proposed for inclusion in future amphibious training exercises, the platform and/or technology would be reviewed for NEPA compliance with this EA. If the future emerging platforms and/or technology are determined to be outside of the analysis of this EA, then additional analysis would be conducted as required.

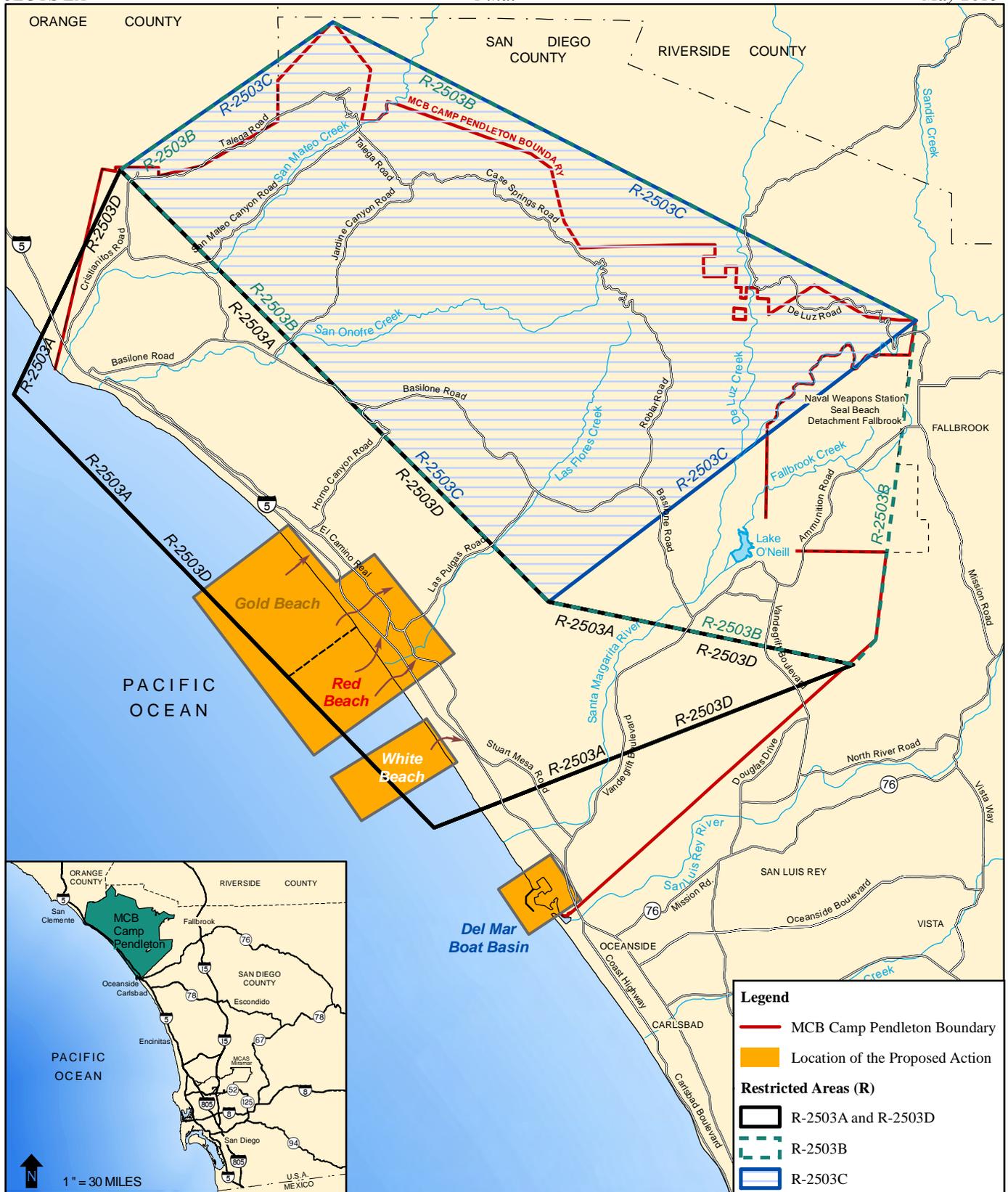
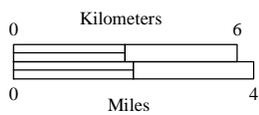


Figure 2-18
Special Use Airspace at
MCB Camp Pendleton



2.4.1.3 Ship-to-Ship Refueling

Ships involved in amphibious exercises have the means to transfer fuel to other ships at sea; however, during Pacific Horizon 11 (an MPF exercise), lightering craft had to return to the Del Mar Boat Basin to refuel, a process that took time (an hour each way), used additional fuel, and complicated the efficient execution of the exercise. Under Alternative 1, lightering craft would be able to be refueled at sea from a Large, Medium-Speed Roll-On/Roll-Off Ship, more than 3 nautical miles (5.6 km) offshore. Refueling activities would be conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b) and Navy spill prevention protocols. The Navy uses special care to minimize the potential for spills during at-sea refueling operations. To minimize the potential for spills of JP-5 (the fuel used at sea) during at-sea refueling operations, personnel would follow Chapter 39 of OPNAVINST 5090.1D, *Oil and Hazardous Substance Spill Preparedness and Response*, and planning procedures and instructions such as those outlined in the Navy's Spill Prevention Control and Countermeasure Plan and applicable oil spill regulations.

2.4.2 ALTERNATIVE 2: MCB CAMP PENDLETON – RED, GOLD, AND WHITE BEACHES

Under Alternative 2, amphibious training exercises (JLOTS, MPF, and FEXs) would occur on Red and Gold beaches and the Del Mar Boat Basin, identical to those described under Alternative 1 (see Section 2.4.1 and Figures 2-16 and 2-17), but would also include amphibious training at White Beach and offshore approximately 3 nautical miles (5.6 km) (Figure 2-20). The majority of annual amphibious training exercises would continue to be centered on Red and Gold beaches; however, exercises would also occur on White Beach. Under Alternative 2, the average annual amphibious training exercise tempo would also increase by approximately 25 percent (as compared to existing conditions).

Alternative 2 would allow exercise planners to utilize additional beach and training areas at MCB Camp Pendleton, as compared to Alternative 1. Currently, White Beach is not used for amphibious training exercises but is used for on-going Landing Craft Air Cushion training. With the increased anticipated amphibious training requirements, having the ability to use White Beach and offshore of White Beach to approximately 3 nautical miles (5.6 km) would provide additional flexibility and enhanced geographic diversity for amphibious training exercises, as compared to Alternative 1. Specifically, the ability to use White Beach as part of amphibious training exercises would enhance training value by providing an additional beach when planning exercises, thus providing greater flexibility across three beaches, not two. In addition, the use of White Beach would also insert setting variability to the exercise, enhancing the training environment through beach diversity.

Activities at White Beach would include amphibious activities starting approximately 3 nautical miles (5.6 km) offshore and then proceeding through the surf zone and up onto the beach. From the beach, equipment would be transferred to inland training ranges. Vehicles would not be staged at White Beach except for short periods when they are waiting to be transported or driven to inland staging areas.

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Figure 2-20
 Alternative 2: Proposed Amphibious Training Exercise Areas at White Beach

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2.4.3 NO ACTION ALTERNATIVE

Though the No Action Alternative is not considered a reasonable alternative because the No Action Alternative does not meet all of the screening criteria or satisfy the purpose of and need for the Proposed Action, the No Action Alternative is required by CEQ regulations (40 CFR 1502.14[d]) as a baseline against which the impacts of the Proposed Action are compared. In this EA, the No Action Alternative represents the continuation of existing training exercises as described in Section 2.2.

Under the No Action Alternative, MCB Camp Pendleton would continue to be the USMC's west coast amphibious training facility. Amphibious training activities similar to those described in Section 2.2 would continue to occur, consistent with previous NEPA documentation (e.g., Army 2001; Navy 2008, 2009; MCB Camp Pendleton 2009, 2011a), without change in the nature or scope of military activities, centered on Red and Gold beaches and including the Del Mar Boat Basin and existing inland training areas. Continuation of the No Action Alternative may result in a reduction in the operational readiness of joint U.S. military forces related to amphibious training and logistical support.

2.4.4 COMPARISON OF ALTERNATIVES

In summary, the No Action Alternative (i.e., existing conditions) would allow for the continuation of amphibious logistic training exercises of the same types, without change in the nature or scope of military activities, centered on Red and Gold beaches and including the Del Mar Boat Basin and inland training areas. Implementation of Alternative 1 would allow for the full suite of amphibious training exercises at a higher average annual tempo (approximately 25 percent) at Red and Gold beaches, to include introducing future emerging technologies and at-sea refueling into training. Alternative 2 is identical to Alternative 1 except that Alternative 2 also includes White Beach, thus providing additional flexibility and enhanced geographic diversity for amphibious training exercises. Table 2-4 summarizes the beaches to be used under each of the alternatives. Table 2-5 provides a summary comparison of the generally anticipated exercise component features under all alternatives.

Table 2-4. Comparison of Alternatives

Condition	Location of Annual Amphibious Training Exercises, by Beach		
	Red	Gold	White
No Action Alternative	✓	✓	
Alternative 1	✓	✓	
Alternative 2	✓	✓	✓

2.5 PREFERRED ALTERNATIVE

CPF has identified Alternative 2 as the Preferred Alternative.

Table 2-5. Summary Comparison of Estimated Average Exercise Component Features under All Alternatives

Component Feature	No Action (Existing)			Alternative 1			Alternative 2		
	JLOTS	MPF	FEX	JLOTS	MPF	FEX	JLOTS	MPF	FEX
Beaches									
Red	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gold	✓	✓	✓	✓	✓	✓	✓	✓	✓
White	-	-	-	-	-	-	✓	✓	✓
Offshore Components									
MPF Ships (or equivalent)	3	1	-	3	1	-	3	1	-
Utility Boats	3	2	2	3	2	2	3	2	2
LCU	4	2	2	4	2	2	4	2	2
INLS Causeway Ferries	4	4	4	4	4	4	4	4	4
INLS Warping Tugs	4	4	4	4	4	4	4	4	4
MCS	1	-	-	1	-	-	1	-	-
LSV	1	-	-	1	-	-	1	-	-
LCM 8s	4	2	2	4	2	2	4	2	2
RRDF	2	1	-	2	1	-	2	1	-
Tugs	2	-	-	2	-	-	2	-	-
OPDS	1	1	1	1	1	-	1	1	-
ABLTS	1	1	1	1	1	1	1	1	1
IPDS	1	-	-	1	-	-	1	-	-
Tactical Craft	3	1	-	3	1	-	3	1	-
LCAC	-	-	2	-	-	2	-	-	2
Joint High Speed Vessel	-	-	-	1	1	-	1	1	-
Littoral Components¹									
ELCAS	1	-	-	1	-	-	1	-	-
TRIDENT Pier	1	-	-	1	-	-	1	-	-
Floating Causeway	1	-	-	1	-	-	1	-	-
Security Boats	12	3	-	12	3	-	12	3	-
Side Loadable Warping Tug	6	-	-	6	-	-	6	-	-
Beach Components									
Lighter Amphibious Resupply Cargos	4	2	2	4	2	2	4	2	2
Bulldozers	5	3	1	5	3	1	5	3	1
Tactical Vehicles	10	5	2	10	5	2	10	5	2
AAVs	10	10	-	10	10	-	10	10	-
Large Cargo Transport Vehicles	40	20	-	40	20	-	40	20	-
Trailer sensor platforms	2	1	-	2	1	-	2	1	-
Maritime Operations Center	1	1	-	1	1	-	1	1	-
Joint Operations Center	1	-	-	1	-	-	1	-	-
Support Tents	8	6	4	8	6	4	8	6	4
UAV	11	-	5	11	-	5	11	-	5

Table 2-5. Summary Comparison of Estimated Average Exercise Component Features under All Alternatives

Component Feature	No Action (Existing)			Alternative 1			Alternative 2		
	JLOTS	MPF	FEX	JLOTS	MPF	FEX	JLOTS	MPF	FEX
Upland Components									
Base Camp Tents (all types)	315	75	40	315	75	40	315	75	40
Tactical Water Purification System	6	3	1	6	3	1	6	3	1
Light Plants	17	6	6	17	6	6	17	6	6
Miscellaneous Trucks ²	55	21	15	55	21	15	55	21	15
Miscellaneous Vehicles ³	119	47	25	119	47	25	119	47	25
Generators	36	15	10	36	15	10	36	15	10
Vans/Buses	16	10	5	16	10	5	16	10	5
Portable Toilets (all areas)	35	13	15	35	13	15	35	13	15
Air Components									
CH-46s/MV-22s	2	1	-	4	2	-	4	2	-
CH-53s/MV-22s	2	1	-	4	2	-	4	2	-
Personnel	2,000-3,500	600-1,500	30-800	2,000-3,500	600-1,500	30-800	2,000-3,500	600-1,500	30-800
Duration (days)	90	30	7-14	90	30	7-14	90	30	7-14

Notes: ¹ Consistent with the HSTT permit (NMFS 2014), no more than four pile driving events would occur per year.

² Miscellaneous trucks consist of: flatbed trucks, Medium Tactical Vehicle Replacement vehicles, Rough Terrain Cargo Handling vehicles, High Mobility Multipurpose Wheeled Vehicles, maintenance trucks, fuel trucks, Medium Tactical Vehicle Replacement dump trucks, Medium Tactical Vehicle Replacement wreckers, light service support vehicles, water trucks, skip loaders, and lube trucks.

³ Miscellaneous vehicles consist of: tractors, trailers, ambulances, forklifts, telehandlers, water bulls, field kitchens, graders, and refrigerators.

LCU = Landing Craft Utility; INLS = Improved Navy Lighterage System; MCS = Modular Causeway System; LSV = Logistics Support Vessel;

LCM = Landing Craft Mechanized; RRDF = Roll-on/Roll-off Discharge Facility; OPDS = Offshore Petroleum Discharge System; ABLTS = Amphibious Bulk Liquid Transfer System;

IPDS = Inland Petroleum Discharge System; LCAC = Landing Craft Air Cushion; ELCAS = Elevated Causeway; AAV = Amphibious Assault Vehicle; UAV = Unmanned Aerial Vehicle.

CHAPTER 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the existing environmental conditions and potential environmental consequences for the following resource areas analyzed in detail: geological resources, water resources, biological resources, cultural resources, air quality, transportation and circulation, and hazardous materials and waste. For those resource areas analyzed in detail, sections are organized into marine and terrestrial subsections. The dividing mark between marine and terrestrial resources is the high tide line. Section 1.6 presents a summary of those resources areas not carried forward for detailed analysis.

Proposed amphibious training exercises are similar in scope and size to other previously analyzed, approved, and on-going amphibious training exercises at MCB Camp Pendleton within previously disturbed existing training areas. The impacts associated with activities described under the Proposed Action would be consistent with the impacts associated with training activities of similar scope and size that have and continue to occur at MCB Camp Pendleton since its establishment. These past and present similar training activities have not resulted in significant impacts to resources.

All ground transport of vehicles and personnel would be restricted to existing ranges, roads, and off-road areas as authorized in the Range and Training Area regulations. All participants in all exercises would comply with MCIWEST-MCB CAMPENO 3500.1 and all applicable established impact avoidance/minimization measures. For activities not covered under previous NEPA actions, the Proposed Action would comply with the BO for Programmatic Activities and Conservation Plans in Riparian and Estuarine/Beach Ecosystems on MCB Camp Pendleton (U.S. Fish and Wildlife Service [USFWS] 1995).

Table 3.0-1 provides a summary of environmental consequences and impact avoidance/minimization measures for the No Action Alternative, Alternative 1, and Alternative 2 for each resource area analyzed in detail. The environmental impact analysis presented for each resource area reflect the application of the identified impact avoidance/minimization measures for activities at land and in marine waters, as presented in Table 3.0-1. The measures presented under the No Action Alternative have been, and will continue to be integrated into each amphibious training exercise.

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
<p>Geological Resources</p>	<p>Temporary and minor impacts to marine sediments from anchors and surf zone/beach activities. Temporary, localized changes in beach contours and topography. Temporary, minor increase in erosion potential from limited grading and foot/vehicle disturbance.</p> <p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Any area excavated on the beach would be filled in at the conclusion of the exercise. 2. Vehicles, personnel, and equipment would be limited to existing roads and previously compacted and developed areas. 3. If amphibious training exercises disturb more than 1.0 acre (0.4 ha), a Construction General Permit would be obtained and the provisions of the permit would be implemented. 4. All erosion and sediment control measures would be inspected and maintained to ensure proper integrity and function during the entire training activity period. All stabilization and structural controls would be inspected after any major storm. Any damage would be repaired, and the controls would be maintained for optimum performance. 5. Disturbed slopes or other graded features would be properly stabilized. Disturbed areas would be protected with certified weed-free straw wattles or geotextile fabric. Whenever possible, grading would be phased to limit disturbed ground, soil exposure, and sediment runoff/fugitive dust potential. Drain inlets would be protected using gravel bags or straw wattles. No plastic monofilament materials would be used. Check dams would be used to reduce runoff velocities where necessary. 6. The exercise proponent would employ dust abatement measures (e.g., wetting of soils) within the Base Camps to minimize fugitive dust emissions during training exercises. Spraying would be done lightly to avoid the accumulation of surface water. 7. Tent Camps, Life Support Areas, and vehicle laydown area entrances and equipment laydown areas would be stabilized with aggregate. Steel ribbed plates may be used in addition to aggregate. 	<p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>	<p>Impacts would be similar to those presented for Alternative 1. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to geological resources in this area.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>8. Any straw wattles, straw or hay bales used would be certified weed-free. All erosion control seed mixes would consist of native plant species. No plastic monofilament materials would be used.</p> <p>9. Any dirt piles would be covered with tarps, plastic, or geotextile fabric with the edges sealed with sandbags, bricks, lumber, etc. to minimize erosion. No plastic monofilament materials would be used.</p> <p>10. Site-specific BMPs would be implemented to minimize erosion and sedimentation impacts. These BMPs would be implemented to ensure that any stockpiled soil would not flow into nearby surface waters as a result of a high intensity rain event.</p> <p>11. Elements utilized as part of erosion control BMPs would be evaluated before, during, and after rain events. Appropriate actions would be taken if BMPs are found to be inadequate or ineffective. Damaged or worn silt fences, wattles, gravel bags, etc. would be replaced.</p> <p>12. All ground transport of vehicles and personnel would be restricted to existing ranges, roads, and off-road areas as authorized in Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures (MCIWEST-MCB CAMPENO 3500.1).</p>		
<p>Water Resources</p>	<p>Suspended sediment and localized increases in turbidity generated from surf zone activities. Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would have the potential to enter marine waters; however, spill potential would be reduced/eliminated through the impact avoidance/minimization measures. No permanent increase in impervious surfaces. Potential for erosion to impact water quality.</p> <p>Permits: The following agency permits or documentation and their associated conditions have been and would continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. CWA Section 401 Water Quality Certification (via the San Diego RWQCB) 2. CWA Section 404 & Rivers and Harbors Act Section 10 (via the USACE) 3. CCND from the CCC 	<p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. At-sea refueling would result in potential for fuel spills; however, spill potential would be reduced/eliminated through the impact avoidance/minimization measures.</p> <p>Permits: Permit requirements would be the same as identified for the No Action Alternative.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative and as</p>	<p>Impacts would be similar to those presented for Alternative 1. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to water resources in the White Beach area.</p> <p>Permits: Permit requirements would be the same as identified for the No Action Alternative, but expanded to include White Beach.</p> <p>Measures: Measures would be the same as identified for Alternative 1.</p>

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. In-water construction activities would abide by Section 401, 404, and 10 permit provisions. 2. Areas for staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants would be located above the ordinary high water mark. Materials that could potentially impact stormwater runoff would be stored in lockers, on pallets, inside rubber berms, indoors, or under a cover. Material storage areas would be located away from storm drains and surface waters. 3. The exercise proponent would be responsible for spill prevention and proper hazardous material storage and handling (secondary containment), and must comply with the Spill Prevention Control and Countermeasure Plan (Navy 2013b). The unit would keep a Petroleum Oil Lubricants spill kit on site. If a hazardous material spill were to occur, the unit would be responsible for their own hazardous material accidents in accordance with applicable federal, military, state, and local laws and regulations including clean up, and associated costs. For response and reporting, they would follow the MCB Camp Pendleton Integrated Contingency Plan guidance, available by contacting MCB Camp Pendleton Environmental Security Spill Prevention and Planning Branch at 760-725-9743/9768. All spills would be reported immediately to the Spill Prevention and Planning Branch, and only this Branch would make the appropriate regulatory reporting notifications for spill incidents. 4. The exercise proponent would obtain a Graywater Permit from MCB Camp Pendleton Environmental Security if a graywater disposal (percolation pit) is warranted for the exercise. The following measures would be adhered to: <ol style="list-style-type: none"> A. The requesting unit would submit a completed graywater application to MCB Camp Pendleton Environmental Security to initiate the environmental review process. B. The unit would contact the MCB Camp Pendleton Environmental Security Wastewater Branch at 760-725-0141 to arrange for percolation testing and to obtain a Graywater Permit and provisions (e.g., percolation pit 	<p>follows:</p> <ol style="list-style-type: none"> 7. To minimize the potential for spills during at-sea refueling operations, personnel would follow Chapter 39 of OPNAVINST 5090.1D, <i>Oil and Hazardous Substance Spill Preparedness and Response</i> and planning procedures and instructions such as those outlined in the Navy's Spill Prevention Control and Countermeasure Plan and applicable oil spill regulations. 	

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>dimensions).</p> <p>C. The exercise proponent would follow the conditions outlined in the approved Graywater Permit.</p> <p>D. During the exercise, if the percolation pit fails to drain, or overfills, the unit would contact the Facilities Maintenance Department at 760-725-1732 for assistance.</p> <p>5. Fueling and maintenance of equipment would not take place closer than 100 ft (30 m) to surface water drainages.</p> <p>6. The exercise proponent would ensure that all trash and debris resulting from the exercises would be properly disposed of and would not be discarded onsite.</p>		
<p>Biological Resources</p>	<p>Impacts to marine flora and fauna resulting from movement or anchoring of vessels and surf zone activities would be temporary and minor. Small fish and invertebrates would be subject to mortality from the pumps used for the Offshore Petroleum Discharge System and Amphibious Bulk Liquid Transfer System. Potential for injury or mortality to fish in the immediate area (< 328 ft [100 m]) from pile driving. Potential for harassment to marine mammals. Potential for direct and indirect impacts to kelp and eelgrass by vessels, amphibious vehicles, and turbidity. Direct impacts to special status species and their habitat would be avoided.</p> <p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> All training activities would continue to be consistent with the Programmatic Riparian BO (U.S. Fish and Wildlife Service 1995). Consistent with consultations between Navy and NMFS, a standing watch for marine mammals and sea turtles would continue to be present during all Elevated Causeway pile driving and removal activities. During pile driving and removal, the Navy would have one lookout positioned on the platform (which could include the shore, an elevated causeway, or on a ship or boat) that would maximize the potential for sightings. The watch would include visual observation from a support vessel or from shore starting 30 minutes before and during the exercise within a mitigation zone of 60 yards (55 meters) around the pile driver. Pile 	<p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. The higher annual training tempo would result in a greater potential for impacts to habitats, communities, wildlife, and special status species; however, spill potential would be reduced/eliminated through the impact avoidance/minimization measures. At-sea refueling would result in the potential for temporary impacts to marine biological resources.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>	<p>Impacts would be similar to those presented for Alternative 1. The additional activities and the inclusion of White Beach in amphibious training exercises would not have a significant impact on marine or terrestrial biological resources in the White Beach area.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative, and would also include these White Beach-specific measures:</p> <ol style="list-style-type: none"> Consistent with current range regulations, military vehicle operations transiting parallel to White Beach during tern and plover breeding season would keep one wheel in the water to minimize potential impacts to these species. To the maximum extent possible, vehicles and personnel accessing the beach at White Beach during the period of March 1 to September 15 shall follow a route along the base of the northerly bluff to maintain the maximum distance from the tern colony.

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>driving would cease if a marine mammal is visually detected within the mitigation zone. Pile driving would re-commence if any one of the following conditions are met: (1) the animal is observed exiting the mitigation zone, (2) the animal is thought to have exited the mitigation zone based on its course and speed, or (3) the mitigation zone has been clear from any additional sightings for a period of 30 minutes. The sighting and corresponding information would be logged per the requirements of the HSTT BO (NMFS 2015).</p> <ol style="list-style-type: none"> 3. Consistent with consultations between Navy and NMFS, measures to protect against physical disturbance and strike by surface vessels as follows: (1) surface vessels will avoid approaching marine mammals head-on and will maneuver to maintain a 500 yard (457 m) mitigation zone around any observed whales, and a 200 yard (183 m) mitigation zone around all other marine mammals (except bow riding dolphins), providing it is safe to do so; and (3) all surface vessels use extreme caution and proceed at “safe speed” so they can take proper and effective action to avoid a collision with any sighted object or disturbance, and can be stopped within a distance appropriate to the prevailing circumstances and conditions. 4. Data collected during the Nearshore Habitat Assessment (NAVFAC Atlantic 2010a) and Baseline Study (NAVFAC Atlantic 2010b) would be used in the exercise planning process to avoid and minimize impacts to sensitive habitats (e.g., rocky reef, understory algal communities, surfgrass, kelp, sea fans or sea palms) to the greatest extent practicable. 5. Visual reconnaissance would be used to avoid kelp. 6. Pre- and post-exercise eelgrass surveys would be conducted in the Del Mar Boat Basin before and after every JLOTS and MPF exercise. 7. Before large-scale amphibious training exercises that are scheduled to occur during the peak grunion spawning period (as specified annually by the California Department of Fish and Wildlife, currently April through May), a qualified biologist would perform a survey of the project site. Beach areas where sand would be excavated, graded, or traversed with heavy equipment would be surveyed to determine the suitability of the beach for grunion spawning. If suitable grunion spawning habitat is identified, a biologist would 		<ol style="list-style-type: none"> 19. Vehicle operations, inside fenced areas on the edge of the bluff between Aliso and French Creeks (White Beach), are not authorized between March 1 and September 15. 20. Upon entering the beach from Camp Del Mar vehicles shall transit in a direct line along a marked corridor bordering the southern edge of the Santa Margarita Endangered Species Management Zone before heading up-coast. During returns, vehicles shall proceed along the same marked corridor. During the breeding season, amphibious tracked vehicles shall not traverse the Santa Margarita Endangered Species Management Zone in excess of a monthly average of 20 traverses per day (one traverse equals one round trip to and from Camp Del Mar).

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>observe the beach during the spawning time before the proposed beach impacting activity to determine if grunion have spawned in the area. If grunion have spawned, impacts to those areas would be avoided and minimized to the greatest extent practicable until the eggs are hatched at the following two spring-tide series and no subsequent spawning activities have occurred.</p> <p>8. Use of any petroleum, cleansers, substrate, or debris that could spill into riparian areas or the Pacific Ocean would be avoided.</p> <p>9. Vehicle access and movement would occur in compliance with MCIWEST-MCB CAMPENO 3500.1.</p> <p>10. All project-related activities would avoid the destruction, and minimize the disturbance of active nests (i.e., nests with eggs or chicks).</p> <p>11. Training activity and disturbances to vegetation would be avoided to the greatest extent practical. Removal of native vegetation (e.g., riparian or coastal sage scrub vegetation) is not permitted due to the potential presence of federally protected species.</p> <p>12. Riparian Habitat:</p> <ul style="list-style-type: none"> A. Dust production would be minimized in or adjacent to riparian areas. B. Excessive noise (above 60 dB [A-weighted] equivalent continuous sound over one hour) in or adjacent to riparian areas would be avoided to the maximum extent practical. C. Amphibious tracked vehicles shall traverse the management zones while maintaining both tracks in the water at all times. <p>13. Wildfires would be prevented by exercising care when driving and by not parking vehicles in grass where catalytic converters could ignite the vegetation. No smoking or disposal of cigarette butts would take place within vegetated areas.</p> <p>14. Environmental Procedures in MCIWEST-MCB CAMPENO 3500.1: The following Environmental Considerations and Restrictions would be implemented:</p> <ul style="list-style-type: none"> A. Estuarine/Beach Endangered Species Management Zones. In accordance with the Estuarine and Beach Ecosystem Conservation Plan (MCB Camp Pendleton 		

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>2012a) and to protect the California least tern, western snowy plover, light-footed clapper rail, and tidewater goby, the restrictions listed below apply when operating within the following areas: all coastal lagoons and estuaries; marshes and salt flats associated with San Mateo Creek, San Onofre Creek, Las Flores Creek, “Hidden Creek” Grid Coordinates 580818, Aliso Creek, French Creek, and Cockleburr Creek watersheds; and the Santa Margarita Endangered Species Management Zone:</p> <ul style="list-style-type: none"> i. Obtain authorization from Environmental Security before entering any lagoon or estuary, marsh, mud/salt flat, or posted nesting area. If any creek and/or lagoon is flowing to the ocean, vehicles may cross the creek only at the ocean’s edge. Bivouacking and digging of fighting positions are prohibited in the vicinity of the Estuarine/Beach Endangered Species Management Zones during the period of March 1 to September 15. ii. Between March 1 to September 15, all activities involving smoke, pyrotechnics, loud noises, blowing sand, and large groupings of personnel (14 or more) would remain at least 984 ft (300 m) away from fenced or posted nesting areas. All other activities would be kept at least 16 ft (5 m) from these areas. iii. Foot traffic involving less than 14 personnel would be kept as far away as possible, and approach no closer than 16 ft (5 m) to posted nesting areas. Unit hikes would remain on the hard packed sand, as close to the ocean water edge as possible. When passing posted nesting areas, to the maximum extent practicable, noise would be minimized. iv. Vehicle and equipment operations in the management zones would be kept to a minimum between March 1 to September 15. All vehicles would travel on hard packed sand and would not approach posted nesting areas or lagoons closer than 16 ft (5 m). Speeds 		

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>would not exceed 25 mph (40 kph). Tracked vehicles would travel as close to the water (upper few inches of water) as possible, year round, in the Santa Margarita Endangered Species Management Zone. Vehicle operations, inside fenced areas on the edge of the bluff between Alison and French Creeks (White Beach), are not authorized.</p> <p>v. Boat operations, (including Landing Craft Air Cushions) are not authorized in lagoons and estuaries. Landing Craft Air Cushions shall not enter the management zones between March 1 to September 15, except when entering or exiting seaward; and on return, shall exit the ocean heading directly up to the facility access ramp.</p> <p>B. Coastal California gnatcatcher, least Bell’s vireo, and southwestern willow flycatcher avoidance measures. For the conservation of these species, the following measures would be followed for training activities in coastal sage scrub and riparian habitats:</p> <ul style="list-style-type: none"> i. Extreme caution beyond that required by the Fire Danger Rating is necessary when using pyrotechnics and when conducting other activities likely to cause a fire. ii. Foot traffic is authorized year round on existing roads, trails, and creek crossings. Consult with Environmental Security before cutting/removing vegetation. iii. Vehicles operating in the vicinity of creeks, rivers, or drainages would use existing roads, trails, and established creek/river crossings. iv. Consult with Environmental Security before bivouacking, cutting/removing vegetation, trenching, grading, filling, or conducting engineering operations in or adjacent to creek/river bottom areas. v. Dust produced in or adjacent to creeks and rivers would be minimized to the maximum extent practicable. 		

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
	<p>C. Vernal Pool Avoidance Measures. For the conservation of vernal pools, the following measures would be followed for training exercises in identified vernal pool habitat:</p> <ul style="list-style-type: none"> i. Foot traffic is authorized year round. Digging, including construction of fighting positions is prohibited in vernal pools. ii. Vehicle/equipment operations near known vernal pool areas would be kept on existing roads, year round. Contact Environmental Security before conducting activities involving soil excavation, filling, or grading. iii. Bivouac/Command Post/Field support (e.g., showers, messing, fueling, water purification) activities would be kept to at least 164 ft (50 m) from identified vernal pools. <p>15. Per the Aviation Operations section of MCIWEST-MCB CAMPENO 3500.1, the following Environmental Considerations and Restrictions would apply:</p> <p>B. Endangered Species Nesting Areas. During the period from March 1 through September 15, certain airspace within R-2503A is off-limits to all aircraft to protect the nesting and feeding habitat of endangered bird species (least tern/snowy plover nesting areas). This off-limits airspace has been identified from the surface to 300 ft (91 m) above ground level and 984 ft (300 m) laterally from the following areas:</p> <ul style="list-style-type: none"> i. Beach Section G. Margarita of Blue Beach, inland to the Interstate 5 freeway, and from the bluffs north of the Santa Margarita River to the bluffs south of the river near the 21 Area. ii. Aircraft would not fly below 300 ft (91 m) above ground level over river mouths, riverbeds and streams, estuaries and lagoons other than established landing sites and terrain flight routes. 		

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
<p>Cultural Resources</p>	<p>Cultural sites would be avoided. If potential cultural resources are uncovered, all training would stop immediately and the MCB Camp Pendleton Environmental Security Cultural Resources Management Branch would be notified.</p> <p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. The locations of all proposed exercise elements would avoid impacting known cultural resources, and would be identified and used in compliance with MCIWEST-MCB CAMPENO 3500.1. 2. All personnel would stay on established dirt roads, paths, and routes; no activities or personnel would be allowed within the brush areas adjacent to dirt roads. No ground disturbing activities would be permitted inland near vegetation or along dirt roads that would be used as ingress routes or paths. 3. Exercise planners and all participants shall be briefed on access to range and training areas before the exercise taking place. This includes using existing dirt roads per MCIWEST-MCB CAMPENO 3500.1 and in accordance with the Environmental Operations Map. MCIWEST-MCB CAMPENO 3500.1 shall remain in effect. 4. In the event that archaeological materials (e.g., shell, wood, bone, or stone artifacts) are found or suspected during training, or if the training footprint is altered, training would be halted in the area of discovery and the MCB Camp Pendleton Environmental Security Cultural Resources Management Section would be notified at 760-725-9738 as soon as practicable (but no longer than 24 hours after the discovery). Training at the discovery site would not proceed until the MCB Camp Pendleton Archaeologist has the opportunity to evaluate the find and gives permission to resume training exercises. 	<p>Impacts would be the same as those presented under the No Action Alternative as cultural sites would continue to be avoided.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>	<p>Impacts would be the same as those presented under the No Action Alternative as cultural sites, to include the one cultural resource site at White Beach (CA-SDI-10724 – shell midden with groundstone), would continue to be avoided.</p> <p>Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p>

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
<p style="text-align: center;">Air Quality</p>	<p>No net increase in emissions.</p> <p>Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Visible Emissions and Nuisance: <ol style="list-style-type: none"> A. Exercise participants shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period aggregating more than three minutes in any period of 60 consecutive minutes, which is darker in shade than Number 1 on the Ringelmann Chart (i.e., dark smoke). B. Exercise participants shall not discharge any quantity of air contaminant that may cause injury, detriment, or nuisance pursuant to San Diego Air Pollution Control District Rules 50 and 51; and for the 64 Area (South Coast Air Quality Management District Rules 401 and 402) mainly over the Base's property line (e.g., freeways, public roads, adjacent neighborhoods, ocean). 2. Temporary Power Supply Equipment: <ol style="list-style-type: none"> A. The unit would report all generators (regardless of size) to the MCB Camp Pendleton Environmental Security Air Quality Section at 760-725-9756 for inclusion into MCB Camp Pendleton's Annual Tactical Support Equipment Inventory or into the South Coast Air Quality Management District's Annual Emission Inventory Report. B. The unit shall provide power generation equipment (i.e., generators) for supplemental or back-up power requirements. Base-owned, permitted generators shall not be utilized to provide supplemental/back-up power during amphibious training exercises. 	<p>Under Alternative 1, emissions of criteria pollutants would increase by approximately 35%, as compared to the No Action Alternative. The increase in emissions would be below <i>de minimis</i> levels.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>	<p>Impacts would be the same as presented for Alternative 1.</p> <p>Measures: Measures would be the same as identified for the No Action Alternative.</p>
<p style="text-align: center;">Transportation and Circulation</p>	<p>No effect on local or regional traffic circulation</p> <p>Measures: No measures have been identified.</p>	<p>Approximately 20 vehicles would use major regional transportation corridors up to four times per year.</p> <p>Measures: The following would be integrated into each amphibious training exercise: To minimize potential traffic congestion resulting from the</p>	<p>Impacts would be similar to those presented for Alternative 1.</p> <p>Measures: Measure would be the same as identified for Alternative 1.</p>

Table 3.0-1. Summary of Environmental Consequences, Permits, and Impact Avoidance/Minimization Measures

Resource Area	No Action Alternative	Alternative 1	Alternative 2 (Preferred Alternative)
		transport of personnel and materiel between Silver Strand Training Complex and MCB Camp Pendleton, road convoys would be broken into smaller elements, consisting of 3-5 vehicles. Convoy elements would depart at 15 to 30 minute intervals to minimize potential effects on traffic flow. Subject to operational requirements, convoy elements would be scheduled to avoid travel during peak commuting hours (i.e., 6:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M.).	
Hazardous Materials and Waste	Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would have the potential to enter soil and surface waters. Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise: 1. To minimize the potential for spills during at-sea refueling operations, personnel would follow Chapter 39 of OPNAVINST 5090.1D, <i>Oil and Hazardous Substance Spill Preparedness and Response</i> , and planning procedures and instructions such as those outlined in the Navy's Spill Prevention Control and Countermeasure Plan and applicable oil spill regulations. 2. Installation Restoration sites would be avoided during training exercises.	The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. Measures: Measures would be the same as identified for the No Action Alternative.	Impacts would be similar to those presented for Alternative 1. In addition, increased geographic scope of amphibious training would expand the probability for spills over a larger area. Measures: Measures would be the same as identified for the No Action Alternative.

Notes: % = percent; BMP = Best Management Practice; BO = Biological Opinion; CCC = California Coastal Commission; CCND = Coastal Consistency Negative Determination; CWA = Clean Water Act; dB = decibels; EIS = Environmental Impact Statement; ft = foot/feet; ha = hectare(s); HSTT = Hawaii-Southern California Training and Testing Activities; kph = kilometers per hour; LOA = Letter of Authorization; m = meter(s); MCIWEST-MCB CAMPENO = Marine Corps Installations West-Marine Corps Base Camp Pendleton Order; mph = miles per hour; NMFS = National Marine Fisheries Service; OPNAVINST = Chief of Naval Operations Instruction; RWQCB = Regional Water Quality Control Board; SHPO = State Historic Preservation Officer; USACE = U.S. Army Corps of Engineers.

3.1 GEOLOGICAL RESOURCES

3.1.1 DEFINITION OF RESOURCE

Geological resources are generally defined as the topography, geology, and soils within a given area. Topography refers to elevation, slope, aspect, and surface features. Geology includes bedrock materials, mineral deposits, and fossils. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. This geological resources section also addresses marine sediments. For the purposes of this analysis, marine sediments are generally defined as any deposit of insoluble material, primarily rock and soil particles, transported from the land to the ocean by wind and surface water.

3.1.2 AFFECTED ENVIRONMENT

3.1.2.1 Marine Environment

Red, Gold, and White Beaches

The MCB Camp Pendleton shoreline consists of coastal beaches, stony land, terrace escarpments, and riverwash soil types (Table 3.1-1). While these soil types lack an erodibility designation as defined by the U.S. Department of Agriculture (1973), given that they are predominantly beach sand, they are susceptible to wind and water/wave erosion processes.

Table 3.1-1. Project Area Soil Types by Training Location

Soil Description	Erodibility	Training Location			
		Red Beach	Gold Beach	White Beach	Del Mar Boat Basin
Carlsbad gravelly loamy sand	Slight–Moderate				X
Coastal Beaches	N/A	X	X	X	X
Diablo Clay	Moderate–High	X			
Elder shaly fine sandy loam	Slight–Moderate	X			
Gaviota fine sandy loam	Moderate–High				X
Grangeville fine sandy loam	Slight				
Hambright gravelly clay loam	High–Very High	X			
Huerhuero loam	Slight–Moderate	X	X		
Las Flores loamy fine sand, 15 to 30% slopes	Moderate				
Loamy alluvial land	Severe	X			
Marina loamy coarse sand	Slight–Moderate				X
Riverwash	N/A				
Salinas clay	Slight	X	X		
Steep gullied land	Very High	X			
Stony land	N/A				
Terrace escarpments	N/A	X	X		
Tidal flats	N/A	X			X
Tujunga sand	Slight				X
Visalia sandy loam	Slight	X			X

Note: N/A = The U.S. Department of Agriculture has not assigned an erodibility measure to the soil type.

Source: U.S. Department of Agriculture 1973.

The project area beaches are in a dynamic system, often exposed to high surf and winds. The high-energy environment results in the temporary suspension of sediment (sand) and the longshore and offshore movement of sand. The beach size, or width, varies in response to seasonal conditions (i.e., the beach width is typically narrower in the winter and wider in the summer). The beaches in the project area are part of the Oceanside Littoral Cell, which extends from Dana Point to La Jolla. Coastal sand movement within this cell includes both longshore and offshore seasonal migration and longshore transport. Major fluvial inputs of sand in this littoral cell include the Santa Margarita River and the San Luis Rey River. Sand transport into the cell by rivers is intermittent, depending on rain amounts and duration. Sediment contributions by these rivers have been reduced from pre-development levels by upstream damming (San Diego County Water Authority 2009).

Red and Gold beaches are sandy throughout the intertidal and shallow subtidal zones. White Beach is sandy throughout the intertidal and shallow subtidal (Naval Facilities Engineering Command [NAVFAC] NAVFAC Atlantic 2010a). The beaches grade to a soft-bottomed sea floor that gently slopes with increasing distance offshore to a depth of approximately 60 ft (18.3 m) at 10,000 ft (3,048 m) offshore. The sea floor is incised with basins and ridges. The continental shelf, which extends approximately 4.5 miles (7.2 km) offshore, is cut by numerous submarine canyons, which facilitate the transport of water between deep, offshore areas and the shallow nearshore environment. Offshore portions of MCB Camp Pendleton have been mapped as mostly unconsolidated and poorly consolidated Pleistocene sand, silt, and clay deposits (San Diego County Water Authority 2009).

Del Mar Boat Basin

The Del Mar Boat Basin is a shallow, steep-sided, and relatively flat basin with depths ranging from 16 to 28 ft (5 to 8 m). The channel connecting the Del Mar Boat Basin to the ocean is generally 16 to 20 ft (5 to 6 m) deep and protected by a stone breakwater (NAVFAC Atlantic 2010a).

3.1.2.2 Terrestrial Environment

Red, Gold, and White Beaches

Areas immediately along the shoreline contain low, wave-cut terraces that have distinct cliffs or escarpments along the seaward edge. Elevation ranges from sea level to approximately 145 ft (44 m) near Pulgas Canyon. The marine terraces slope uniformly to the southwest at inclinations of 5 percent or less. MCB Camp Pendleton contains diverse geological units, ranging from the oldest metavolcanic rocks and granite of the southern California batholith, to the stream- or ocean-cut terrace sequences and recent alluvium (MCB Camp Pendleton 2012a). The coastal marine terraces are composed mostly of poorly consolidated marine sediments. Consequently, several soil types within the terrestrial portions of the project area have high to severe erodibility (refer to Table 3.1-1) (U.S. Department of Agriculture 1973). There are no unique geological features within the project area.

Del Mar Boat Basin

The area upland of the Del Mar Boat Basin is primarily flat with a slight elevation rise heading east towards the Oceanside Rail Yard. Most of the area surrounding the Del Mar Boat Basin is composed of developed land that has been disturbed and modified, to include imported fill. Areas of native soils are found around the Oceanside Rail Yard and east of Basin Road. Many of these soils have slight erodibility, with the exception of Gaviota fine sand and loam, and Marina loamy coarse sand at the Oceanside Rail Yard, which have moderate to high erodibility (refer to Table 3.1-1).

3.1.3 ENVIRONMENTAL CONSEQUENCES

3.1.3.1 No Action Alternative

Marine Environment

Under the No Action Alternative, the construction of the Elevated Causeway and TRIDENT piers, and vehicle/cargo offloading would continue to cause localized sand suspension in the surf zone. The suspensions would be temporary and would be consistent with sediment suspension generated by regular wave and wind energy in the surf zone. Ocean sediment transport systems would deposit sediment in disturbed areas; thus, no long-term or broad impacts to bathymetry or sediment movement would occur.

Anchors associated with static surface vessels would continue to cause temporary and minor disturbances to marine sediments. For liquid transfer, a Single Anchor Leg Mooring would be used to secure the Offshore Petroleum Discharge System conduit to the ocean floor. Because divers would select the Single Anchor Leg Mooring resting site to avoid rocks, kelp beds, and other obstructions or environmentally sensitive areas, limited disturbance to the sea floor would occur. The Single Anchor Leg Mooring hose would lie upon the sea floor sediments, temporarily impacting sediments in a localized area; however, these impacts would be minor to marine sediments due to the relatively small diameter (approximately 6 inches [15 cm]) of the hose. Depressions in the sea floor formed from anchors or the Single Anchor Leg Mooring hose would continue to be filled in by sediments transported by currents or from the settling of sediments through the water column. The salt water used in the Offshore Petroleum Discharge System or Amphibious Bulk Liquid Transfer System would continue to be gradually discharged into the Pacific Ocean away from the shoreline, resulting in negligible impacts to marine sediments.

Tracked vehicles and equipment would continue to be used to move sand and build logistic systems (e.g., the Beach Termination Unit of the Offshore Petroleum Discharge System) on the beach. Where training exercises temporarily alter natural beach contours, sand would continue to be replaced to fill in the holes at the conclusion of the activity. Mobility matting would be utilized on the beach to stabilize soils and facilitate vehicles moving over sand and soft soil. Through implementation in accordance with anticipated U.S. Army corps of Engineers (USACE) and San Diego Regional Water Quality Control Board (RWQCB) permits, use of the Tactical Water Purification System would continue to result in minor, focused, and temporary impacts to beach sediments where the discharge is pumped into beach percolation pits. Any changes to the beach/surf zone topography would be smoothed out by on-going coastal processes such as wave and current activity. Coastal sand movement processes would not be impacted.

The anchoring of vessels and placement of the pier would continue to cause temporary and minor disturbances of the Del Mar Boat Basin sediments. These disturbances would be consistent with on-going impacts to sediments in the Del Mar Boat Basin, which, by its function as a boat basin, is subject to frequent disturbance. At the conclusion of the exercise, these localized impacts (i.e., depressions from anchors) within the Del Mar Boat Basin and ocean floor would be filled in by currents and tidal activity over time.

Therefore, implementation of the No Action Alternative would not have a significant impact to marine sediments.

Terrestrial Environment

Under the No Action Alternative, terrestrial components of amphibious training exercises would continue to use established training areas. Surface soils within the established training areas are regularly disturbed but are managed to support these activities and minimize the potential for the offsite transport of soils.

Foot and vehicle traffic on these surfaces would continue to increase the potential for wind and water erosion of soils by reducing vegetative cover and breaking up the soil crust. Training activities could loosen and displace moderate-severe erodibility soil/sediments on unpaved portions of the training exercise areas making them more susceptible to erosion; however, the continued implementation of the impact avoidance/minimization measures would reduce the potential for these temporary activities to increase erosion. For example, a watering truck would continue to be utilized to minimize dust from grading activities and vehicular travel and percolation pits would be refilled and leveled at the end of each exercise. No permanent alteration of topographic features would result from the continuation of training exercises.

If amphibious training exercises result in the grading of more than 1 acre (0.4 ha), coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ) would apply. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan, which includes site-specific Best Management Practices (BMPs) to minimize erosion, sedimentation, and stormwater runoff. Potential BMPs include placing silt fencing or straw wattles.

Under the No Action Alternative, vehicle staging areas on upland portions of the Del Mar Boat Basin would continue to be located on paved areas, with the exception of the beach area at the end of Basin Road, just inside the harbor entrance, and sections of the Oceanside Rail Yard.

Therefore, implementation of the No Action Alternative would not have a significant impact to terrestrial geological resources.

3.1.3.2 Alternative 1

Under Alternative 1, the proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. While the activities would generally be the same as presented for the No Action Alternative, the frequency of some activities would increase. As a result, there would be an incremental increase in beach and marine sediment disturbance. While there would be an impact greater than presented for the No Action Alternative, because the activity types would be of the same nature, and existing oceanographic processes would continue to occur, the impacts would not result in long-term or broad impacts to bathymetry or sediment movement. On a broader scale, the existing littoral cell coastal sand movement processes would not be impacted.

Under Alternative 1, the increase in upland activities would result in greater disturbance of surface soils, and could accelerate erosion and offsite movement of soils, as compared to the No Action Alternative. However, this impact would continue to be minor and be limited to the designated, existing training areas. The implementation of impact avoidance/minimization measures would reduce the potential for these temporary activities to increase erosion or result in the offsite movement of soils.

Therefore, implementation of Alternative 1 would not have a significant impact to marine sediments and terrestrial geological resources.

3.1.3.3 Alternative 2

Under Alternative 2, the increased geographic scope of amphibious training would increase the potential for marine sediment disturbance and erosion over a larger area. However, with the use of White Beach, impacts to geological resources at other beaches could be reduced, as there would be the potential for the exercise to occur over a larger area (i.e., more beaches used would result in overall lower density impacts across the project area). These potential impacts would be similar to those presented for Alternative 1 and

would be temporary and minor. Vehicle ingress from the White Beach landing area would use existing roads. The increase in amphibious training activity off of and on White Beach would result in impacts consistent with existing activities at Red and Gold beaches, as analyzed under the No Action Alternative. The use of White Beach would not result in long-term or broad impacts to bathymetry or sediment movement.

Therefore, implementation of Alternative 2 would not have a significant impact to marine sediments and terrestrial geological resources.

3.2 WATER RESOURCES

3.2.1 DEFINITION OF RESOURCE

Water resources discussed in this section include oceanography, hydrology, water quality, and groundwater. For this analysis, oceanography is defined as the physical properties of the sea. Hydrology is the science that deals with global water, its properties, circulation, and distribution, on and under the surface of the earth and in the atmosphere, from the moment of precipitation until water returns to the atmosphere through evapotranspiration or flows to the ocean. Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities. For the purposes of this analysis, freshwater quality is evaluated with respect to possible releases of hazardous materials and erosion-induced sedimentation. Groundwater refers to water held underground in the soil or in pores and crevices in rock.

3.2.2 AFFECTED ENVIRONMENT

3.2.2.1 Marine Environment

Amphibious training exercises at MCB Camp Pendleton occur in the Southern California Bight portion of the Pacific Ocean. Currents in the nearshore Southern California Bight area are driven by many factors, including wind, weather, tides, local topography, water density, and offshore oceanic currents. Tides along the coast are mixed semi-diurnal, with two unequal highs and two unequal lows during an approximately 25-hour period (San Diego County Water Authority 2009).

Overall, marine water quality along the San Diego County coastline is considered excellent, with 99 percent of monitored locations receiving a good to excellent water quality rating (Heal the Bay 2013). The relatively low level of development in the MCB Camp Pendleton watersheds is believed to contribute to relatively high marine water quality off of MCB Camp Pendleton.

All ship-to-shore simulated fuel transfers/discharges are currently regulated under the Navy's existing San Diego RWQCB Order Number R9-2010-0003 (National Pollutant Discharge Elimination System Permit Number CAG679001), Hydrostatic/Potable Water Discharge Permit. Amphibious training exercises are obligated to comply with the waste discharge disposal requirements in this permit.

Prior amphibious training activities on the beaches that resulted in the fill or discharge to waters of the U.S. were permitted by the USACE under a permit which expired on August 31, 2013. As part of this EA, CPF is applying for a new USACE permit for future amphibious training exercises analyzed in this EA.

3.2.2.2 Terrestrial Environment

MCB Camp Pendleton has seven distinct watersheds (Figure 3.2-1), consisting of coastal plains, coastal valleys, and mountainous areas. Proposed amphibious training exercises would occur within four watersheds: Coastal Drainage, Las Flores, Aliso, and the Santa Margarita. Most of the surface water drainages within the project area are ephemeral and only flow following successive, major rain events. However, the Santa Margarita River typically has semi-permanent segments of open water, particularly in the lower reaches. As project area streams reach the sea, sloughs or estuarine lagoons form due to sand bars or narrow tidal barriers. These barriers impound low stream flows, but can be breached during high-flows caused by storm events and normal tidal fluctuation (MCB Camp Pendleton 2012a).

Upstream users greatly affect the water quality of surface waters, as MCB Camp Pendleton is the last water user on the extensive Santa Margarita River system. Santa Margarita River nutrient levels, particularly nitrogen, have increased in recent years due to intensive agricultural use of fertilizers in the upper watersheds. In addition, dramatic expansion of residential, commercial, and industrial development during the past decade in the upper part of this drainage has produced more urban runoff and wastewater discharge (MCB Camp Pendleton 2012a).

MCB Camp Pendleton has four groundwater basins that correspond to, and are connected with, the four major surface drainage basins (Santa Margarita, San Onofre, Las Flores and San Mateo). Overall, localized water tables can be expected at similar elevations to those of observed nearby flowing streams, or below the elevations of dry stream channels. The alluvial valleys formed by the downstream portions of all four major creeks contain the principal source of water for MCB Camp Pendleton (MCB Camp Pendleton 2012a).

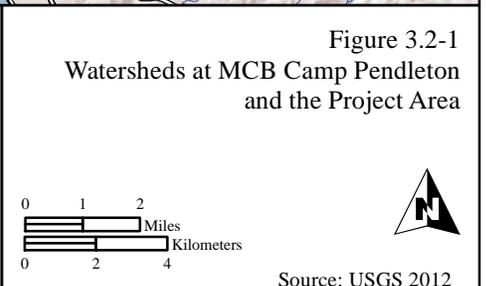
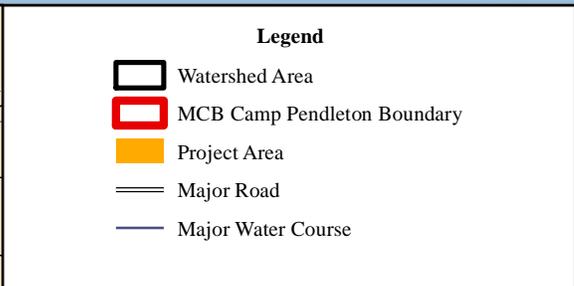
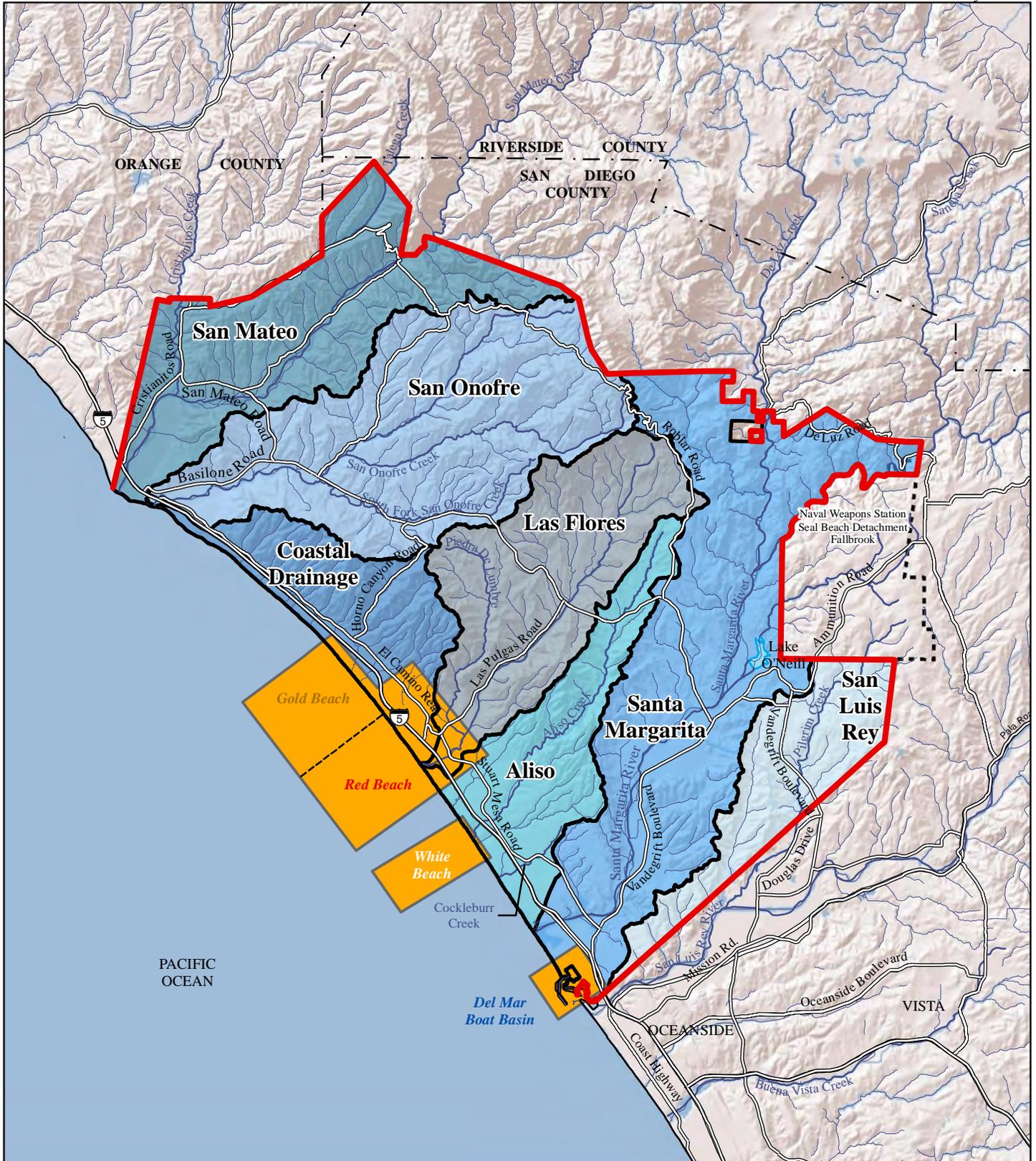
3.2.3 ENVIRONMENTAL CONSEQUENCES

3.2.3.1 No Action Alternative

Marine Environment

Under the No Action Alternative, suspended sediment and localized increases in turbidity generated from Elevated Causeway/TRIDENT pier construction/removal, beach activities, and ship anchors would continue to be temporary and minor, and would be consistent with suspension created from normal wind and wave action. Impacts to marine water quality would be localized and temporary.

Under the No Action Alternative, Tactical Water Purification System activities would continue to intake salt water and then discharge the resulting brine into a percolation pit excavated in the sand above the high tide line. The brine would then percolate into the underlying sand and be diluted upon contact with ocean water. The salt water used in the Offshore Petroleum Discharge System or Amphibious Bulk Liquid Transfer System would continue to be gradually discharged into the Pacific Ocean away from the shoreline.



Amphibious training activities on the beaches that would continue to result in the fill or discharge to waters of the U.S. would be permitted under the new Section 10 permit and Section 404 permit CPF will obtain from the USACE (refer to Table 1-2). In addition, in compliance with Section 401 of the CWA, CPF will obtain a Water Quality Certification from the San Diego RWQCB (refer to Table 1-2). The exercise proponents would be responsible for ensuring that the exercises are carried out in accordance with the provisions of these permits.

The Navy strives to minimize the potential for spills. However, because of the number of potential sources and the stresses placed on equipment during training, small leaks or spills may occasionally occur due to equipment failure (e.g., burst hydraulic line) or human error. Thus, under the No Action Alternative, minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would continue to have the potential to enter marine waters during amphibious training exercises. Personnel would immediately contain and clean-up any hazardous material spill using spill control equipment and supplies readily available on vessel and military equipment. In spite of best spill prevention measures and if necessary, clean-up activities, should small quantities of these substances still be released into the environment, they are not believed to impact water marine quality.

Therefore, implementation of the No Action Alternative would not have a significant impact to marine water resources.

Terrestrial Environment

Under the No Action Alternative, graywater generated from shower and laundry facilities would continue to be collected, stored, and disposed of via percolation pits and/or commercial tanker (refer to Figure 2-14). Personnel would avoid digging graywater percolation pits in locations that are known to contain contaminated soils. Graywater percolation pit discharge would not come into contact with any work materials that could cause the migration of potential contaminants to surface or ground waters. There would be no permanent increase in impervious surfaces; temporary increases in stormwater associated with the temporary increase in impervious surfaces during training exercises would be moderated through the implementation of the impact avoidance/minimization measures.

Under the No Action Alternative, all maintenance and refueling activities would continue to be conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b). Any hazardous material spill associated with vehicle maintenance would be immediately cleaned up in accordance with all applicable federal, military, state, and local laws and regulations to limit the possibility of surface or groundwater contamination. Any equipment or cargo in need of a wash down would continue to use the wash racks adjacent to the Del Mar Boat Basin where runoff would continue to be collected and treated before appropriate disposal. Vehicles would continue to be refueled in established and designated refueling areas at MCB Camp Pendleton; vehicles would continue to not be refueled on the beach. In addition, the refueling and maintenance of equipment would continue to occur at least 100 ft (30 m) away from surface water drainages.

Under the No Action Alternative, the continued implementation of BMPs as identified in the impact avoidance/minimization measures and if applicable, the provisions of the Construction General Permit, would continue to limit impacts to water resources from erosion of soil associated with vehicular and foot traffic along portions of the existing inland training areas. Training exercises would be limited to the near surface region and would not reach existing groundwater basins; thus, continuation of the No Action Alternative would not affect the quantity or quality of groundwater resources.

Therefore, implementation of the No Action Alternative would not have a significant impact to terrestrial water resources.

3.2.3.2 Alternative 1

Under Alternative 1, lighterage craft refueling activities would be conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b) and Navy spill prevention protocols. The Navy uses special care to minimize the potential for spills during at-sea refueling operations. The Navy has a system in place with checks to ensure at-sea refueling operations are conducted in a proper manner. To minimize the potential for spills of JP-5 (the fuel used at sea) during at-sea refueling operations, personnel would follow Chapter 39 of OPNAVINST 5090.1D, *Oil and Hazardous Substance Spill Preparedness and Response*, and planning procedures and instructions in the Navy's Spill Prevention Control and Countermeasure Plan and applicable oil spill regulations.

The proposed increase in annual training tempo would result in an incremental increase in suspended sediments affecting marine water quality. Impacts to marine water quality, namely turbidity, would continue to be localized and temporary as existing wave action, currents, and sediment deposition activity would continue to eliminate these impacts over time. The increase in amphibious training activity would result in an increase in potential for fuel, oil, lubricants to be released into the marine environment. Existing procedures and instructions would be followed, thus reducing the potential for a spill to occur. If a spill were to occur, the spill would be immediately cleaned up by onsite personnel using readily available supplies and equipment.

The increase in annual exercise tempo would result in an increased potential for impacts to terrestrial water resources. Training activities would continue to occur in established training areas with existing measures in place to minimize impacts to water resources; the increase would not result in new activity or new impacts, just an increase in the impacts as presented under the No Action Alternative. The impacts would continue to be minimized through the implementation of BMPs as identified in the impact avoidance/minimization measures and if applicable, the provisions of the Construction General Permit. Training exercises would be limited to the near surface region and would not reach existing groundwater basins.

Therefore, implementation of Alternative 1 would not have a significant impact to water resources.

3.2.3.3 Alternative 2

Under Alternative 2, the increased geographic scope of amphibious training would increase the potential for sediment suspension, turbidity, sedimentation, and spills. These potential impacts would be similar to those presented for Alternative 1. Although JLOTS, MPF, and FEX amphibious training exercises currently do not occur at White Beach, Landing Craft Air Cushion training currently takes place in this area. The on-going Landing Craft Air Cushion training is similar to the Proposed Action in that multiple amphibious craft cross through the surf zone and up on to the beach. Alternative 2 would result in incremental and localized increases in sediment suspension, turbidity, sedimentation, and spills at White Beach, as presented for Red and Gold beaches under the No Action Alternative. However, from a regional perspective, Alternative 2 impacts would be dispersed over a larger area, resulting in overall lower density impacts to water resources. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to water resources in this area. The increase in amphibious training activity off of and on White Beach would result in impacts consistent with existing activities at Red and Gold beaches, as analyzed under the No Action Alternative.

Therefore, implementation of Alternative 2 would not have a significant impact to water resources.

3.3 BIOLOGICAL RESOURCES

3.3.1 DEFINITION OF RESOURCE

Biological resources include plants and animals and the habitats in which they occur. A distinction is drawn between marine biological resources, which occur for the most part below the high tide line, and terrestrial biological resources, which occur for the most part above the high tide line. Species and habitats of the riparian, estuarine ecosystems, and all birds are discussed in the terrestrial subsection. Biological resources are further subdivided into “Habitats, Communities, and Wildlife” and “Special Status Species.” Special consideration is given to bird species protected under the Migratory Bird Treaty Act and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special Status Species include federally listed threatened and endangered species and marine mammals. Marine mammals are discussed under special status species as all marine mammals are protected under the Marine Mammal Protection Act. Essential Fish Habitat (EFH) is discussed below.

3.3.2 AFFECTED ENVIRONMENT

3.3.2.1 Marine Environment

The information in this section references two recently completed surveys of the marine biological resources of MCB Camp Pendleton: a Nearshore Habitat Assessment (NAVFAC Atlantic 2010a) and Baseline Study (NAVFAC Atlantic 2010b). These studies characterized the nearshore marine environment along MCB Camp Pendleton’s coastline from the high tide line to approximately the midpoint of the middle shelf, 215-ft (65-m) depth contour, approximately 3.1 miles (5 km) offshore. The Nearshore Habitat Assessment provided detailed mapping of nearshore bathymetry and substrate, along with the characterization of kelp bed habitats. The Baseline Study provided a comprehensive assessment of the biological resources and species communities using otter trawl and beach seines surveys along the coast and the Del Mar Boat Basin, scuba diver surveys of riprap and eelgrass (*Zostera marina*) beds in the Del Mar Boat Basin, phytoplankton sampling, and a parasitology study of fishes in the Del Mar Boat Basin.

The nearshore marine waters of MCB Camp Pendleton constitute EFH for managed fisheries that include Pacific Groundfish, Coastal Pelagics, and Highly Migratory Species. In compliance with the Magnuson-Stevens Fisheries Conservation and Management Act, an EFH Assessment has been prepared. The EFH Assessment provides the basis for consultation between CPF and the NMFS concerning potential effects to EFH.

Red, Gold, and White Beaches: Habitats, Communities, and Wildlife

The waters off MCB Camp Pendleton’s coastline are part of the Southern California Bight, which is part of the Warm Temperate Northeast Pacific province and Temperate Northern Pacific realm (Spalding et al. 2007). The underwater environment of the project area contains a variety of habitat types, including kelp and eelgrass beds, sandy substrates, and rocky bottom (NAVFAC Atlantic 2010a, 2010b). Bathymetric contours show a seafloor with a steep initial drop to approximately 23 ft (7 m) near the shoreline followed by a gradual slope extending between 1.7 and 2.3 miles (2.7 and 3.7 km) from shore to a depth of approximately 65 ft (20 m), beyond which the descending slope increases sharply (NAVFAC Atlantic 2010a).

Coastal beaches have unique bottom substrate features that determine in part where kelp canopy develops. Substrate, nutrient availability, water temperature, grazing, and wave action, which vary spatially and temporally, affect the growth and persistence of kelp beds. Locations of kelp beds within and adjacent to the project area are presented on Figure 3.3-1. The intertidal substrate varies among the beach zones, as

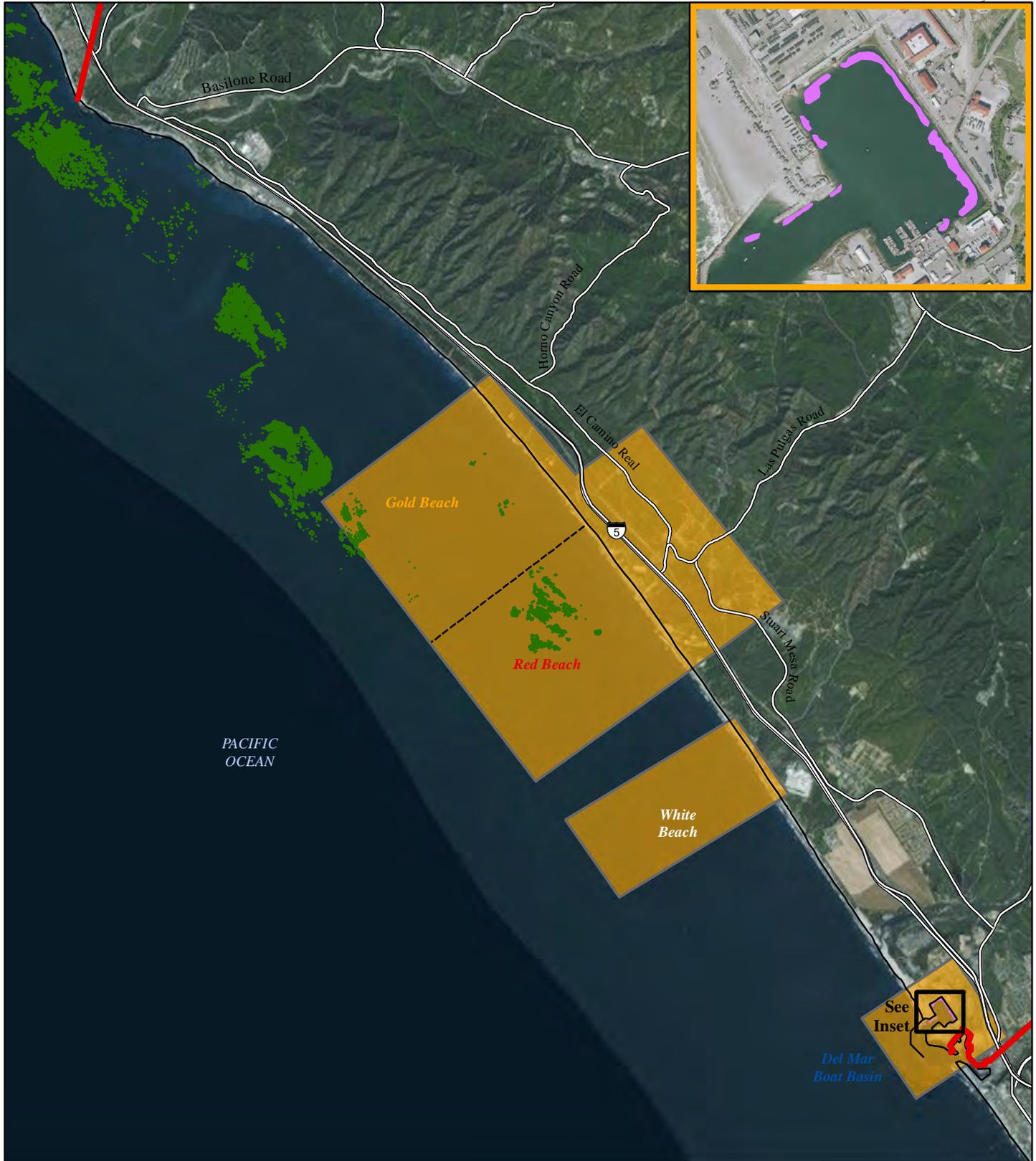
does the type of benthic substrate and associated habitat offshore. Sand and mixed sediments characterize the shallow waters of Gold, Red, and White beaches. Sea grasses do not occur in the surf zone of the sandy beach where amphibious landings would occur (NAVFAC Atlantic 2010a, 2010b).

In the northern portion of Gold Beach, offshore of Horno Canyon, rocky substrate and scattered kelp occur between the depths of 33 and 50 ft (10 and 15 m). A rocky reef and cobble-boulder bed, including some areas of high relief (3 ft [0.9 m] above the surrounding seabed), supports the extensive Barn Kelp bed, which covers several square km in depths of 33 to 50 ft (10 to 15 m), roughly 0.6 to 1.2 miles (1 to 2 km) from shore (Figure 3.3-1). There is no kelp off of White Beach (Figure 3.3-1).

A 1,312-foot (400-m) wide band of cobble extends along the (33-ft) 10-m bottom contour across the southern half of White Beach (NAVFAC Atlantic 2010a, 2010b). While there is presently no kelp off of White Beach (Figure 3.3-1), a kelp bed was mapped in the area in 1911, but the accuracy of the map was uncertain. After an apparent absence of 80 years, a “thinly dispersed” kelp population reappeared in the same general area for two years (1991-1992), but subsequently disappeared (North and MBC Applied Environmental Sciences 2001). Hence, the possibility exists that kelp could re-occur in this area in the future.

In general, beach seining appeared to efficiently capture fish throughout the intertidal zone and the upper subtidal habitat to about 8.2 ft (2.5 m) in depth. Thirty-nine different species (36 species of fishes and 3 species of invertebrate) were collected during the beach seine sampling effort conducted along the coastline. The most abundant species collected were topsmelt (*Atherinops affinis*), California corbina (*Menticirrhus undulatus*), and dwarf perch (*Micrometrus minimus*). Walleye surfperch (*Hyperprosopon argenteum*), queenfish (*Seriphus politus*), barred surfperch (*Amphistichus argenteus*), spotfin croaker (*Roncador stearnsii*), bat ray (*Myliobatis californica*), and round stingray (*Urobatis halleri*) were also either spatially or temporally abundant with individual species totals exceeding 100 individuals. Only three species of megabenthic invertebrate were collected during the beach seining effort; single occurrences of the Ochre star (*Pisaster ochraceus*) and California spiny lobster (*Panulirus interruptus*), and two hermit crabs (*Pagurus* spp.) were observed. Large amounts of drift kelp and other macroalgae were sometimes present during beach seining efforts, often associated with a distinct group of fish species (NAVFAC Atlantic 2010b).

Sixty-five species of fishes and 22 species of megabenthic invertebrates were collected in the nearshore waters off the coastal beaches. The most abundant fish species captured was California lizardfish (*Synodus lucioceps*). Queenfish and northern anchovy (*Engraulis mordax*), when combined, accounted for 46 percent of the total catch and 22 percent of the total biomass. The most abundant megabenthic invertebrates collected were black spotted shrimp (*Crangon nigromaculata*), ridgeback prawns (*Sicyonia ingentis*) and brittle stars (*Ophiopsila californica*) (NAVFAC Atlantic 2010b). California grunion (*Leuresthes tenuis*) are known to spawn on Gold, Red and White beaches (MCB Camp Pendleton 2011c).



- Legend**
- MCB Camp Pendleton Boundary
 - Project Area
 - Eelgrass
 - Kelp Beds
 - Major Road

Figure 3.3-1
Eelgrass and Kelp Beds in the Project Area and Vicinity

0 0.5 1
Miles

0 0.5 1
Kilometers

Sources: CDFW 2002;
MCB Camp Pendleton 2012b

Del Mar Boat Basin: Habitats, Communities, and Wildlife

Thirty-seven species of demersal fish (fish that live and feed on or near the bottom) and megabenthic invertebrates were collected in the Del Mar Boat Basin (NAVFAC Atlantic 2010a). Slough anchovy was the most abundant fish species comprising 52.9 percent of the total catch and Xantus' swimming crab (*Portunus xantusii*) was the most abundant megabenthic invertebrate but comprised only 0.3 percent of the total catch. Beach seine sampling in the Del Mar Boat Basin yielded 42 species of fishes and megabenthic invertebrates dominated by northern anchovy, which comprised 72.1 percent of the total catch. Species diversity was highest during the spring.

Subtidal dive surveys identified 1,075 fishes comprising 37 species; 8,521 megabenthic invertebrates comprising 53 species; and 17 species of algae. The most abundant fish, invertebrate, and algae species were topsmelt (*Atherinops affinis*), serpulid worms (*Serpula spp.*), and wireweed (*Sargassum muticum*), respectively (NAVFAC Atlantic 2010b).

Soft bottom/eelgrass transects revealed 17 fish species, 25 megabenthic invertebrates species, and four species of algae. The most abundant fish and megabenthic invertebrate species on the eelgrass transects were cheekspot goby (*Ilypnus gilberti*), and Gould's bubble snail (*Bulla gouldiana*), respectively. These results are similar to those from recent studies at the Port of Long Beach and Port of Los Angeles (NAVFAC Atlantic 2010b). On rare occasions, California grunion have spawned near the Del Mar Boat Basin jetty (MCB Camp Pendleton 2011c).

Within the Del Mar Boat Basin, eelgrass is located in shallower (less than 13 ft [4 m]) sheltered areas with a muddy or sandy substrate on opposite sides of the channel (NAVFAC Atlantic 2010a). Eelgrass surveys were conducted before and after JLOTS 2008 and Pacific Horizons 2009 (Merkel and Associates 2008, 2009). In the 2009 post-exercise survey, approximately 159,500 square ft (14,816 square m) of eelgrass were mapped within the Del Mar Boat Basin (refer to Figure 3.3-1). In both surveys, similar changes between pre- and post-construction eelgrass cover were observed between the project and control areas, suggesting no effect of project activities on eelgrass (Merkel and Associates 2008, 2009). Juvenile halibut (*Paralichthys californicus*) were common in the Del Mar Boat Basin, indicating that the Del Mar Boat Basin — its eelgrass beds in particular — provides important nursery habitat for this commercially and ecologically important species. The parasitology study revealed a high abundance and diversity of parasites in fishes of the Del Mar Boat Basin, a preponderance of which are trophically transmitted, i.e., through predation. This is indicative of diverse and functioning trophic links within the Del Mar Boat Basin (NAVFAC Atlantic 2010b).

Special Status Species

Marine Mammals

Table 3.3-1 summarizes information on the five species of marine mammals that have a high likelihood of occurrence in the nearshore waters of the project area. Other marine mammals that have a lower likelihood of occurrence in the project area are discussed in the text following Table 3.3-1.

Table 3.3-1. Summary of the Occurrence of Marine Mammal Species with the Highest Frequency of Occurrence in the Project Area

Common Name Species Name Stock	Stock Abundance ¹ (coefficient of variation)	Annual Population Trend	Occurrence	Warm Season (May-Oct) Presence and Density ² (#/km ²)	Cold Season (Nov-Apr) Presence and Density (#/km ²)
Pinnipeds					
California sea lion <i>Zalophus californianus</i> U.S. stock	296,750 ³	Increasing; Possibly stabilizing	Most common pinniped, Channel Islands breeding sites in the summer	YES 0.01	YES 0.02
Harbor seal <i>Phoca vitulina richardii</i> California stock	All California 30,196 (0.16) Estimated Southern California only abundance 5,271 ⁴	Slight growth; Stabilizing	Common; Channel Islands haul outs including San Clemente Island; mainland haul outs north of Point Mugu and La Jolla, CA	YES 0.06	YES 0.19
Odontocetes					
Bottlenose dolphin <i>Tursiops truncatus</i> California coastal stock	323 (0.13) But likely 450-500	Stable	Limited, small population within one km of shore	YES 0.20	YES 0.20
Long-beaked common dolphin <i>Delphinus capensis</i> California stock	27,046 (0.59)	Unknown	Common nearshore species; occurrence may be variable due oceanographic conditions	YES 0.10	YES 0.04
Mysticetes					
Gray whale <i>Eschrichtius robustus</i> Eastern North Pacific stock	19,126 (0.07) Migratory	Increasing >3.2%	Transient seasonal migrants	NO 0	YES 0.01

Notes: ¹ All abundance estimates from NMFS Stock Assessment Reports (Carretta et al 2012; Allen and Angliss 2012) and reflect estimation of abundance for the entire stock.

² Densities used for pinnipeds were obtained from Carretta et al. (2000) using the offshore warm and cold season pinniped densities. This publication represents one of the few NMFS at-sea pinniped surveys within Southern California. While reflective of the more populous offshore numbers of pinnipeds, these values are likely over-predictive of actual at-sea pinniped density within the much smaller spatial extent of the coastal Silver Strand Training Complex area (shore to 4,000 yards from shore). Densities for the coastal stock of bottlenose dolphins was obtained from the National Centers for Coastal Ocean Science 2005 which presents NMFS data for various coastal segments along the California coast, including one adjacent to the Silver Strand Training Complex. Densities for gray whales was modified from Carretta et al. (2000) by scientists at the NMFS' Southwest Fisheries Science Center to reflect the limited nature of transitory gray whale presence within the very nearshore habitat of the Silver Strand Training Complex. Gray whales migrate through Southern California twice a year. Individual marine mammals likely only present on the order of minutes to hours in transit past the Silver Strand Training Complex (3 nautical miles/hour travel rate). Because the HSTT covers such a large area, the Silver Strand Training Complex is more comparable to the Camp Pendleton Amphibious Vehicle Training Area and has been used.

³ All pupping occurs in southern California.

⁴ Derived by NMFS from the aerial counts of all age classes within southern California only.

Threatened and Endangered Species

The potential occurrence of two ESA-listed endangered fish species, southern California steelhead (*Oncorhynchus mykiss*) and tidewater goby (*Eucyclogobius newberryi*), in the littoral zone is considered remote and discountable. Neither species has ever been detected in the nearshore waters, although rare transit through the littoral zone is inferred on the basis of their occurrence in streams (steelhead) and lagoons (goby) on MCB Camp Pendleton. No southern California steelhead habitat would be impacted under the Proposed Action; therefore, the species is not analyzed further in this EA. The tidewater goby is discussed further in the terrestrial section.

The black abalone (*Haliotis cracherodii*) is federally listed as endangered and occurred historically in rocky intertidal to shallow subtidal habitats throughout southern California. The white abalone (*H. sorenseni*) is also federally listed as endangered. There is no known historic occurrence of black or white abalone offshore MCB Camp Pendleton.

Four federally listed threatened or endangered sea turtles species occur very infrequently in the waters offshore of MCB Camp Pendleton. The species are:

- Pacific loggerhead turtle (*Caretta caretta*) – federally threatened;
- green sea turtle (*Chelonia mydas agassizii*) – federally threatened;
- leatherback sea turtle (*Dermochelys coriacea*) – federally endangered; and
- olive ridley sea turtle (*Lepidochelys olivacea*) – federally threatened.

There is a resident foraging population of green sea turtles in the San Diego Bay area that breeds in Mexico; no breeding sites are along the coast of California (MCB Camp Pendleton 2012a). None of the listed turtles are known to breed or come ashore on base, and any such occurrence would be rare and appropriately addressed on an individual basis if encountered (MCB Camp Pendleton 2012a; NMFS 2015).

Six federally endangered whale species potentially occur in the oceanic waters off the coast of MCB Camp Pendleton:

- sei whale (*Balaenoptera borealis*);
- blue whale (*B. musculus*);
- fin whale (*B. physalus*);
- humpback whale (*Megaptera novaeangliae*);
- western North Pacific gray whale (*Eschrichtius robustus*); and
- sperm whale (*Physeter macrocephalus*).

In general, these species rarely occur near shore, but migrate seasonally offshore between primary mating, feeding, and wintering locations (MCB Camp Pendleton 2012a). Because there are rare occurrences of individuals associated with the endangered western subpopulation of gray whales occurring off California (Mate et al. 2011; International Whaling Commission 2012), the HSTT BO (NMFS 2015) included the western subpopulation in the analysis of the eastern subpopulation, which is not an ESA-listed species. Any occurrences of the ESA-listed whale species would be rare and appropriately addressed on an individual basis if encountered (MCB Camp Pendleton 2012a; NMFS 2014, 2015).

On July 3, 2014, NMFS issued the final determination to list the Eastern Pacific Distinct Population Segment of scalloped hammerhead sharks (*Sphyrna lewini*) as an endangered species under the ESA. In the eastern Pacific, the scalloped hammerhead can be found from southern California to Peru, including the Gulf of California. The Camp Pendleton Amphibious Assault Area overlaps the extreme northern-most extent of the Eastern Pacific Distinct Population Segment of the scalloped hammerhead shark's range. Only 23 specimens have been verifiably recorded from southern California and 19 of those specimens were juveniles collected during a single extremely warm El Niño event in 1997 when sea water temperatures were above normal (NMFS 2015).

3.3.2.2 Terrestrial Environment

Habitats, Communities, and Wildlife

The majority of the terrestrial project area consists of beach, developed areas, disturbed habitat, and pre-existing paved and dirt roads. Although MCB Camp Pendleton has numerous jurisdictional waters of the

U.S. (e.g., streams or wetlands), amphibious training exercises would not involve any construction or permanent impacts to such habitats. Jurisdictional waters of the U.S. are not analyzed further in this EA; however, jurisdictional aquatic habitat avoidance measures have been identified.

A diverse assemblage of terrestrial wildlife occurs on MCB Camp Pendleton. In addition to hundreds of invertebrates, MCB Camp Pendleton has documented the presence of more than 50 mammalian, 30 reptilian, 10 amphibian, 300 avian, and 60 fish species (MCB Camp Pendleton 2012a). Many wildlife species are permanent residents on MCB Camp Pendleton. Other wildlife species, such as migratory birds, visit MCB Camp Pendleton seasonally. Most (96 percent) of the avian species on MCB Camp Pendleton are included on the list of migratory birds and are protected by the Migratory Bird Treaty Act and EO 13186 (MCB Camp Pendleton 2012a). The wildlife species most likely to occur within or in the vicinity of the project area are common species that are adapted to noise and other human disturbance association with on-going military training at MCB Camp Pendleton.

Special Status Species

Based on review of MCB Camp Pendleton's provided geographic information system information (MCB Camp Pendleton 2012b) and current site conditions, 10 federally listed species (or suitable habitat for these species) are known to occur within or in the vicinity of the project area. Federally listed species known to occur or potentially occurring in the vicinity of the project area are presented in Table 3.3-2 and on Figures 3.3-2 through 3.3-4, and are described in the following sections. MCB Camp Pendleton is exempt from all critical habitat designations because of the protection to listed species provided under the Integrated Natural Resources Management Plan (INRMP) (MCB Camp Pendleton 2012a). Therefore, critical habitat is not discussed further in this document.

Table 3.3-2. Federally Listed or Candidate Species Known to Occur or Potentially Occurring in the Vicinity of the Proposed Action

Common Name	Scientific Name	Federal Status	Habitat	Occurrence in Project Area		
				Red & Gold Beaches	White Beach	Del Mar Boat Basin
Plants						
thread-leaved brodiaea	<i>Brodiaea filifolia</i>	Threatened	Grasslands	✓	✓	-
Invertebrates						
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	Endangered	Vernal pools	✓	✓	-
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	Endangered	Vernal pools	✓	✓	-
Birds						
California least tern	<i>Sterna antillarum browni</i>	Endangered	Sandy beaches and coastal dunes	scattered nests	nesting area	-
coastal California gnatcatcher	<i>Poliptila californica californica</i>	Threatened	Coastal sage scrub	✓	✓	-
least Bell's vireo	<i>Vireo bellii pusillus</i>	Endangered	Riparian	✓	✓	-
light-footed clapper rail	<i>Rallus longirostris levipes</i>	Endangered	Coastal fresh and salt water marshes	potential habitat	potential habitat	-
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Willow dominated riparian	✓	✓	-
western snowy plover	<i>Charadrius alexandrinus nivosus</i>	Threatened	Sandy beaches	scattered nests	nesting area	scattered nests
Fish						
tidewater goby	<i>Eucyclogobius newberryi</i>	Endangered	Estuaries/coastal brackish lagoons	✓	✓	-

Notes: ✓ = occurs in project area at this location

- = does not occur in project area at this location

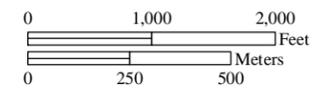


Figure 3.3-2
Special Status Species within and adjacent to Red and Gold Beaches



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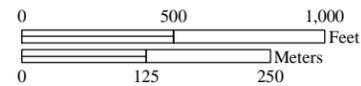
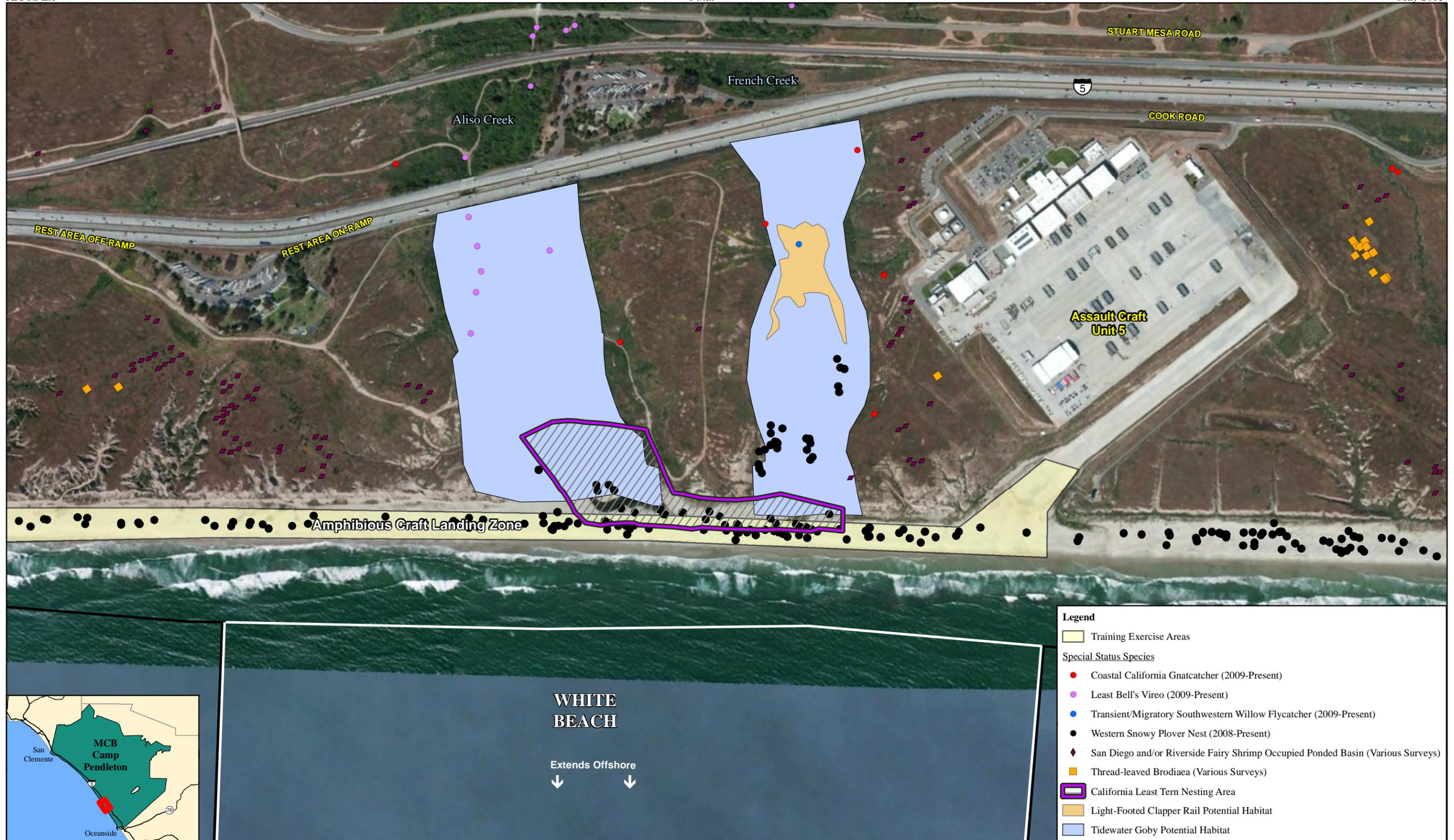


Figure 3.3-3
Special Status Species within and adjacent to White Beach



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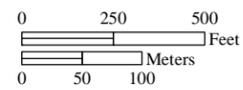


Figure 3.3-4
Special Status Species within and adjacent to the Del Mar Boat Basin



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Thread-leaved Brodiaea

The federally threatened thread-leaved brodiaea is a bulbiferous, perennial plant that occurs at elevations between 30 ft (9 m) and 2,500 ft (765 m) (USFWS 2009; MCB Camp Pendleton 2012a). In San Diego County, thread-leaved brodiaea typically occurs in clay soils associated with open native or non-native grassland, open coastal sage scrub, or open coastal sage scrub-chaparral communities (USFWS 2011b). Figures 3.3-2 and 3.3-3 present known locations of thread-leaved brodiaea in the vicinity of the project area.

Riverside Fairy Shrimp and San Diego Fairy Shrimp

Fairy shrimp are small, translucent crustaceans found in naturally occurring ephemeral (vernal) pools and occasionally in non-naturally occurring depressions, road ruts, and ditches (ponded basins) that seasonally hold water. When water begins to pond during the wet season (roughly November to April), fairy shrimp begin to hatch from encysted embryos (cysts).

The federally endangered Riverside fairy shrimp is a medium sized fairy shrimp, typically 0.5 to 1.0 inch (1.3 to 2.5 centimeters), that is generally restricted to vernal pools and other non-vegetated ponded basins greater than 12 inches (30.5 centimeters) deep (USFWS 2008b). The federally endangered San Diego fairy shrimp is a small fairy shrimp, typically growing to 0.6 inch (1.5 centimeters). They are generally found in shallow (2 to 12 inches [5.1 to 30.5 centimeters] deep) vernal pools and ponded basins (MCB Camp Pendleton 2012a; USFWS 2008a). Figures 3.3-2 and 3.3-3 present known locations of Riverside and San Diego fairy shrimp in the vicinity of the project area.

California Least Tern

The federally endangered California least tern is a small, migratory bird that nests and roosts in colonies on the beach. They typically arrive at MCB Camp Pendleton in April and depart by September. Approximately 25 percent of all California least tern nest locations occur at MCB Camp Pendleton (Marschalek 2012). On MCB Camp Pendleton, California least tern colonial nesting sites are located at the Santa Margarita River mouth (Blue Beach), North Beach (North), North Beach (South), French and Aliso creeks (White Beach), and the salt flats of the Santa Margarita Estuary (MCB Camp Pendleton 2012a). Figures 3.3-2 and 3.3-3 present known California least tern nesting sites and areas in the vicinity of the project area.

Coastal California Gnatcatcher

The federally threatened California gnatcatcher is a small, non-migratory songbird that is a permanent resident of coastal sage scrub vegetation, but will make limited use of adjacent habitats outside of the breeding season (February 15 through August 31). This species occurs throughout most of MCB Camp Pendleton in coastal sage scrub vegetation (MCB Camp Pendleton 2012a). Figures 3.3-2 and 3.3-3 present known coastal California gnatcatcher locations in the vicinity of the project area.

Least Bell's Vireo

The federally endangered least Bell's vireo is a small migratory songbird that typically inhabits riparian habitats. The species arrives at MCB Camp Pendleton as early as mid-March and leaves for its wintering grounds in August. The breeding season is from March 15 through August 31 (MCB Camp Pendleton 2012a). Approximately 33 percent of statewide least Bell's vireo nesting territories occur at MCB Camp Pendleton (Lynn and Kus 2012). Figures 3.3-2 and 3.3-3 present known locations of least Bell's vireo in the vicinity of the project area.

Light-footed Clapper Rail

The federally endangered light-footed clapper rail is a medium-sized marsh bird that lives and breeds in coastal and freshwater marshes. Potential habitat for this secretive species occurs in the project area at Las Flores Estuary (Red Beach) and French Estuary (White Beach). However, since the 1980s, the species has only been detected on MCB Camp Pendleton at the Santa Margarita River Estuary (MCB Camp Pendleton 2011d). Protection and management of light-footed clapper rail habitat is provided for in the Estuarine and Beach Conservation Plan as an attachment to the Programmatic Riparian BO (USFWS 1995). Figures 3.3-2 and 3.3-3 present potential light-footed clapper rail habitat in the vicinity of the project area.

Southwestern Willow Flycatcher

The federally endangered southwestern willow flycatcher is a migratory songbird that typically inhabits densely vegetated riparian habitats. The southwestern willow flycatcher arrives at MCB Camp Pendleton for the breeding season as early as March 15 and may be present through August 31. The only breeding populations of southwestern willow flycatcher on MCB Camp Pendleton occur along the Santa Margarita River (MCB Camp Pendleton 2012b). There are no known nesting locations in the vicinity of the project area; Figures 3.3-2 and 3.3-3 present known locations of migratory/transient southwestern willow flycatcher in the vicinity of the project area.

Western Snowy Plover

The federally threatened western snowy plover is a small shorebird that lives and nests on sandy, open beaches along the coast. On MCB Camp Pendleton, the breeding season occurs from about March 1 through September 15. Large nesting sites on MCB Camp Pendleton include: the Santa Margarita River mouth (Blue Beach), Cocklebur Beach, French and Aliso creeks (White Beach), and the salt flats of the Santa Margarita Estuary (MCB Camp Pendleton 2012b). Western snowy plovers are also known to nest in scattered beach locations throughout much of MCB Camp Pendleton, including in and around Red and Gold Beach and the Del Mar Boat Basin. During the non-breeding season, the species forages and roosts in more widely scattered locations and likely utilizes all of the beaches at MCB Camp Pendleton. Protection and management of the western snowy plover and its habitat is provided for in the Estuarine and Beach Conservation Plan as an attachment to the Programmatic Riparian BO (USFWS 1995). Figures 3.3-2 through 3.3-4 present known western snowy plover nesting locations in the vicinity of the project area.

Tidewater Goby

The federally endangered tidewater goby is a small fish that lives and reproduces in coastal lagoons. The tidewater goby inhabits shallow waters (less than 3 ft [0.9 m] deep) that are slow moving to still but not stagnant (Irwin and Soltz 1984). In southern California, San Mateo, San Onofre, and Las Flores creeks are considered by the USFWS the largest and most persistent populations of tidewater gobies in the region (Lafferty 2012). Protection and management of the tidewater goby and its habitat is provided for in the Estuarine and Beach Conservation Plan as an attachment to the Programmatic Riparian BO (USFWS 1995). Figures 3.3-2 and 3.3-3 present tidewater goby habitat in the vicinity of the project area.

3.3.3 ENVIRONMENTAL CONSEQUENCES

Amphibious training exercises would occur in five general geographic areas at MCB Camp Pendleton: offshore, in the Camp Pendleton Amphibious Assault Area (including the Del Mar Boat Basin), on the beach, in terrestrial areas, and in the air (R-2503; refer to Figure 2-18). The exercises described in Chapter

2 are similar in scope and size to other previously analyzed and approved operations at MCB Camp Pendleton. Amphibious training exercises would comply with programmatic avoidance measures and various BOs from previous USFWS and/or NMFS Section 7 of the ESA consultations as follows:

- MV-22 operations would comply with the EA for the Tactical Employment of MV-22 Osprey Tiltrotor Aircraft in Support of Marine Corps Training and Readiness Operations at MCB Camp Pendleton (Marine Corps Installations West 2013) and associated HSTT BO (NMFS 2015).
- Training in and near riparian, estuarine, and beach areas would comply with the Programmatic Riparian BO (USFWS 1995). Activities within the estuary/coastal zone areas would be conducted in accordance with the Estuarine/Beach Ecosystem Conservation Plan. The Estuarine/Beach Ecosystem Conservation Plan is designed to ensure that estuarine and beach communities on MCB Camp Pendleton are sufficiently resilient to withstand natural and human disturbances including military training activities. Any riparian habitat impacts would be mitigated in accordance with the Programmatic Riparian BO (MCB Camp Pendleton 2012a; USFWS 1995).
- Offshore and nearshore training would be consistent with previous consultations between Navy and NMFS and the HSTT BO (NMFS 2015). Training would comply with the 2013 HSTT EIS/OEIS (Navy 2013a) and associated Letter of Authorization (NMFS 2014) and HSTT BO (NMFS 2015). This covers a wide range of amphibious operations that occur in the area of the Pacific Ocean known as the Camp Pendleton Amphibious Assault Area, an ocean area adjacent to the shoreline of MCB Camp Pendleton used for nearshore amphibious vehicle and landing craft training.

Amphibious training exercises would not include any earth moving activities or removal of vegetation that would impact biological resources. All ground transport of vehicles and personnel would be restricted to existing ranges and roads. Therefore, this analysis focuses on the ship movement and pile driving stressors on endangered species as identified in the HSTT BO (NMFS 2015). All training associated with the Proposed Action would comply with MCIWEST-MCB CAMPENO 3500.1 and the identified impact avoidance/minimization measures (refer to Table 3.0-1).

3.3.3.1 No Action Alternative

Red and Gold Beaches: Marine Habitats, Communities, and Wildlife

Under the No Action Alternative, vessel activities would continue to be carried out in the nearshore waters of Red and Gold beaches. Cargo vessels would operate offshore of kelp beds and the surf zone. Lighterage vessels and beach landing craft would continue to avoid kelp beds as an operational practice. Anchoring sites and lighterage transit routes would continue to avoid kelp beds via visual reconnaissance.

Under the No Action Alternative, the potential impacts to vertebrates and invertebrate associated with surface vessels traveling through the water would continue to be limited to momentary disturbance as the vessels pass in proximity to the animal, direct mortality from a collision with a moving vessel or its propeller or anchor, or through changes in local water quality. Such impacts from surface vessels are unlikely for fauna that are closely associated with benthic habitat. Overall, beach vessel traffic is expected to have a very limited and less than significant impact on marine flora or fauna.

Under the No Action Alternative, consistent with consultations between Navy and NMFS, a standing watch for marine mammals and sea turtles would continue to be present during all Elevated Causeway pile driving and removal activities. During pile driving and removal, the Navy will have one lookout positioned on the platform (which could include the shore, an elevated causeway, or on a ship or boat) that would maximize the potential for sightings. The watch would include visual observation from a support vessel or from shore starting 30 minutes before and during the exercise within a mitigation zone of 60 yards (55 meters) around the pile driver. Pile driving would cease if a marine mammal is visually

detected within the mitigation zone. Pile driving would re-commence if any one of the following conditions are met: (1) the animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on its course and speed; or (3) the mitigation zone has been clear from any additional sightings for a period of 30 minutes. Consistent with the HSTT permit (NMFS 2014), no more than four pile driving events would occur per year.

California grunion are known to spawn on Gold and Red beaches (MCB Camp Pendleton 2011c). California grunion are not a state or federally protected species but, due to their unique spawning habits and a loss of suitable beaches for spawning, specific regulations by the California Department of Fish and Wildlife have been put in place to protect the species. Under the No Action Alternative, grunion surveys would be conducted if a large-scale training event is planned to occur during the peak grunion season. The survey data would be used to avoid and minimize impacts to grunion as practicable. Therefore, no significant impacts to grunion would occur.

Under the No Action Alternative, the Offshore Petroleum Discharge System and Amphibious Bulk Liquid Transfer System would continue to be deployed and used to simulate the transfer of petroleum products from ships to forces on the shore. Small fish and invertebrates may be subject to direct mortality from entrainment at the seawater intake as well as Tactical Water Purification System activities; however, fish may avoid entrainment by leaving or avoiding the temporary disturbance in the area. As divers would select the Offshore Petroleum Discharge System Single Anchor Leg Mooring resting site to avoid kelp beds or environmentally sensitive areas, no significant disturbance to the marine flora would occur.

Based on the Navy's analysis for the Silver Strand Training Complex (Navy 2012b), Elevated Causeway construction would continue to generate underwater sound sufficient to cause injury or mortality to fish in the immediate area (< 328 ft [100 m]) from pile driving, and result in potential disturbance to fish at distances of 0.6 – 1.2 miles (1 – 2 km). Given the temporary nature of this impact, no significant impact would occur.

Adherence to standard operating procedures for fuel handling and ballast water management (as contained in OPNAVINST 5090.1D [Chapter 35]) would continue to be followed to avoid potential impacts of the discharge of pollutants or release of invasive species into the marine environment.

Therefore, implementation of the No Action Alternative would not have a significant impact to marine habitats, communities, and wildlife.

Special Status Species

Federally listed marine species may occur in the nearshore waters of the project area. As documented in the HSTT BO (NMFS 2015), the Navy consulted with NMFS regarding the potential effects of amphibious training exercises in the nearshore waters of MCB Camp Pendleton. NMFS concluded that listed marine special status species are likely to be adversely affected, but that amphibious training exercises are not likely to jeopardize the continued existence of these species.

Therefore, implementation of the No Action Alternative would not have a significant impact to marine special status species.

Del Mar Boat Basin

Activities within the Del Mar Boat Basin would continue as they have historically, resulting in recurring, localized, and short-term increases in bottom habitat disturbance and turbidity. This represents a continuation of the baseline condition, and is not expected to alter the long-term abundance and diversity

of fish and invertebrate communities in the basin as a whole. Based on pre- and post-construction surveys conducted for the JLOTS 2008 and Pacific Horizon 2009 exercises (Merkel and Associates 2008, 2009), eelgrass abundance would not be affected, and the No Action Alternative would continue to have a less than significant impact on eelgrass in the Del Mar Boat Basin.

Therefore, implementation of the No Action Alternative would not have a significant impact to marine biological resources in the Del Mar Boat Basin.

Terrestrial Environment

Habitats, Communities, and Wildlife

Under the No Action Alternative, vehicles would continue to not drive through any intact native vegetation, nor would any sensitive habitats (e.g., coastal sage scrub, riparian, or natural vernal pools) be directly impacted. All ground transport of vehicles and personnel would continue to be restricted to existing ranges and roads. Terrestrial activities would include use of existing paved and dirt roads, establishment and use of tent camps at Artillery Firing Area 15 and/or Artillery Firing Area 16, placement of temporary security barriers, vehicle maintenance and refueling, vehicle staging, and cargo reloading at the Del Mar Boat Basin.

Therefore, implementation of the No Action Alternative would not have a significant impact to terrestrial habitats, communities, or wildlife.

Special Status Species

Under the No Action Alternative, impacts to thread-leaved brodiaea and light-footed clapper rail would continue to be negated because of lack of habitat in the project area, absence of the species from areas of environmental impact, and/or coverage under previously analyzed NEPA actions. Although these species occur, or have suitable habitat, in the general vicinity of the project area, the amphibious training exercises would continue to not impact these species or their habitats. Impacts to all other federally listed species under the No Action Alternative would not be significant due to the reasons presented in the following paragraphs.

The California least tern and western snowy plover both have established scattered nests, although rarely, on Red Beach between March 1 and September 15 (MCB Camp Pendleton 2012a). These nests are marked with carsonite stakes and avoided. The No Action Alternative may affect, but is not likely to adversely affect the California least tern and western snowy plover. However, beach training activities associated with the No Action Alternative that may affect terns and plovers would be covered under the Programmatic Riparian BO (USFWS 1995) as Class III activities and potential effects to the species and their habitats would be considered offset by the on-going implementation of the Riparian Ecosystem Conservation Plan (MCB Camp Pendleton 2012a). An annual report of Class III activities is sent to the USFWS at the end of each fiscal year.

Therefore, impacts to California least tern and western snowy plover would not be significant.

All terrestrial project components would continue to be restricted to beaches, paved and dirt roads, previously disturbed and dedicated training areas, and developed areas. No naturally occurring vernal pools would be impacted. Any fairy shrimp that occur in disturbed road ruts or other non-natural basins already exist in a disturbed environment and any impacts to them would be covered under previous NEPA documentation (e.g., MCB Camp Pendleton 2011b). In addition, vehicle operations on existing paved and dirt roads during all seasons are covered under the Programmatic Riparian BO (USFWS 1995) as Class IV activities, for which no Section 7 of the ESA consultation is required.

Therefore, impacts to listed fairy shrimp species would not be significant.

Although coastal California gnatcatcher and least Bell's vireo territories, as well as migratory/transient willow flycatchers have been located in and around portions of the project area, under the No Action Alternative, there would be no direct impacts to these species' habitats. Noise and visual disturbance associated with establishment and use of tent camps at Artillery Firing Area 15 and/or Artillery Firing Area 16 could temporarily displace coastal California gnatcatchers; however, these areas are already pre-existing training areas that experience heavy traffic and human disturbance. The No Action Alternative may affect, but is not likely to adversely affect the coastal California gnatcatcher and least Bell's vireo. However, training activities associated with the No Action Alternative that may affect these species would be covered under the Programmatic Riparian BO (USFWS 1995) as Class III activities and potential effects to the species and their habitats would be considered offset by the on-going implementation of the Riparian Ecosystem Conservation Plan (MCB Camp Pendleton 2012a). Any riparian habitat impacts would be mitigated in accordance with the Programmatic Riparian BO (MCB Camp Pendleton 2012a; USFWS 1995).

Therefore, impacts to these bird species would not be significant.

Coastal lagoons and estuaries would continue to not be directly impacted by beach activities. The impact avoidance/minimization measures provide guidance for vehicular traffic that must cross creeks/estuaries with an open connection to the ocean. In addition, vehicle operations on existing paved and dirt roads, including established creek crossings, during all seasons are covered under the Programmatic Riparian BO (USFWS 1995) as Class IV activities, for which no Section 7 of the ESA consultation is required.

Therefore, impacts to the tidewater goby would not be significant.

3.3.3.2 Alternative 1

Impacts under Alternative 1 would be similar to those presented under the No Action Alternative, but would occur more frequently. However, impacts to sensitive resources would be avoided, and, as a result, the approximately 25 percent increase in annual exercise tempo would not result in a significant impact to biological resources. The following additional impacts would occur under Alternative 1.

Marine Habitats, Communities, and Wildlife

Vessel activities associated with Alternative 1 would be carried out in the nearshore waters of Red and Gold beaches at a higher tempo than the No Action Alternative. The higher annual exercise tempo would result in a greater potential for impacts to habitats, communities, and wildlife under Alternative 1 to those compared to the No Action Alternative; however, impacts would be similar to those analyzed and presented for the No Action Alternative.

Alternative 1 is expected to result in the take of marine mammals. However, the potential for take is addressed in the HSTT BO (NMFS 2015) and minimized with the pile driving and ship movement measures as presented in Table 3.0-1. With implementation of the measures identified in Table 3.0-1, implementation of Alternative 1 would not have a significant impact to marine mammals.

Federally listed marine species may occur in the Camp Pendleton Amphibious Assault Area. The Navy consulted with NMFS regarding the potential effects of amphibious training exercises in the nearshore waters of MCB Camp Pendleton. NMFS concluded that listed species of marine mammals and sea turtles are likely to be adversely affected, but that amphibious training exercises are not likely to jeopardize the continued existence of these species. Under Alternative 1, with the continued implementation of the

proposed impact avoidance/minimization measures presented in Table 3.0-1, and consistent with the HSTT BO (NMFS 2015), Alternative 1 would not have a significant impact to these species. The Navy has completed consultation with the NMFS regarding the potential effects of amphibious training exercises on EFH (Appendix A).

Therefore, implementation of Alternative 1 would not have a significant impact to marine special status species.

Under Alternative 1, lighterage craft refueling activities would be conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b) and Navy spill prevention protocols. The Navy uses special care to minimize the potential for spills during at-sea refueling operations. The Navy has a system in place with checks to ensure at-sea refueling operations are conducted in a proper manner. To minimize the potential for spills of JP-5 (the fuel used at sea) during at-sea refueling operations, personnel would follow Chapter 39 of OPNAVINST 5090.1D, *Oil and Hazardous Substance Spill Preparedness and Response*, and planning procedures and instructions such as those outlined in the Navy's Spill Prevention Control and Countermeasure Plan and applicable oil spill regulations.

Anchoring sites and lighterage transit routes would avoid kelp beds. The Joint High Speed Vessel would not increase impacts to marine biological resources as the Joint High Speed Vessel would be operated in a manner consistent with existing vessels and subject to the same impact avoidance/minimization measures (e.g., posting of a standing watch for marine mammals and sea turtles) to protect against physical disturbance and strike by surface vessels (refer to Table 3.0-1).

California grunion are known to spawn near the Del Mar Boat Basin jetty, as well as on Gold and Red beaches (MCB Camp Pendleton 2011c). Under Alternative 1, grunion surveys would be conducted if a large-scale training event is planned to occur during the peak grunion season. The survey data would be used to avoid and minimize impacts to grunion as practicable.

Therefore, implementation of Alternative 1 would not have a significant impact to marine habitats, communities, wildlife, and special status species.

Terrestrial Habitats, Communities, and Wildlife

Under Alternative 1, the increased tempo of amphibious training would increase the potential for impacts to terrestrial biological resources. For activities not covered under previous NEPA actions, Alternative 1 would comply with the Programmatic Riparian BO (USFWS 1995) as described in Section 3.3.3.1 for the No Action Alternative.

Therefore, implementation of Alternative 1 would not have a significant impact to terrestrial habitats, communities, wildlife, and special status species.

3.3.3.3 Alternative 2

Alternative 2 would allow exercise planners to utilize additional beach and training areas at MCB Camp Pendleton, as compared to Alternative 1. Under Alternative 2, proposed amphibious training exercises would occur at a higher tempo as compared to existing conditions. As with Alternative 1, impacts to marine species would potentially occur, but these impacts would be minimized by the continued implementation of the impact avoidance/minimization measures (refer to Table 3.0-1).

The additional activities and the inclusion of White Beach would not result in a significant impact on marine or terrestrial biological resources because military vehicle operations transiting parallel to the

beach during breeding season would keep one wheel in the water to minimize potential impacts to terns and plovers. Further, vehicle operations, inside fenced areas on the edge of the bluff between Aliso and French creeks (White Beach), are not authorized between March 1 and September 15. While California grunion spawning occurs on White Beach (MCB Camp Pendleton 2011c), under Alternative 2, grunion surveys would be conducted if a large-scale training event is planned to occur during the peak grunion season. The survey data would be used to avoid and minimize impacts to grunion as practicable. The training exercises occurring at White Beach would be covered under the Programmatic Riparian BO (USFWS 1995) as Class III activities and potential effects to terns and plovers would be considered offset by the on-going implementation of the Riparian Ecosystem Conservation Plan (MCB Camp Pendleton 2012a).

Therefore, implementation of Alternative 2 would not have a significant impact to biological resources.

3.4 CULTURAL RESOURCES

3.4.1 DEFINITION OF RESOURCE

Cultural resources are defined as prehistoric and historic sites, structures, districts, landscapes, objects or other evidence of human activity or other places that are considered significant to a community, culture, or ethnic group. Significant cultural resources are those that meet one or more criteria for inclusion in the National Register of Historic Places (NRHP). The responsibilities of federal agencies with respect to these resources are identified in several regulations, including the National Historic Preservation Act (NHPA) of 1966, as amended, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act, as well as Marine Corps Order P5090.2A. The NHPA established guidelines for the protection, enhancement, and preservation of any property that possesses significant archeological, architectural, historical, or cultural characteristics. Because this EA relies on Section 106 of the NHPA in its analysis of potential impacts to cultural resources, certain terminology used in this section will be consistent with those used in Section 106 and will differ from other sections in this document.

Section 106 of the NHPA requires federal agencies to take into account the effect of any undertaking upon historic properties. A historic property is defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP. A building, structure, archaeological site, or other resource is considered a historic property if it meets at least one of the following NRHP eligibility criteria:

- A. Is associated with events that have made a significant contribution to the broad pattern of history, or
- B. Is associated with the lives of persons significant in the past, or
- C. Embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values or that represent a significant and distinguishable entity whose components may lack individual distinction, or
- D. Has yielded, or may be likely to yield, information important in prehistory or history.

Section 106 consultation for the Proposed Action with the California SHPO was initiated in February 2014 by MCB Camp Pendleton and completed in December 2014 (Appendix A).

3.4.2 AFFECTED ENVIRONMENT

The area of potential effects (APE) for cultural resources includes the adjacent offshore and beach areas at Red, Gold and White beaches, Artillery Firing Areas 15 and 16, access roads to these training areas, and the Del Mar Boat Basin. The locations where surface disturbing activities may occur (i.e., along paths,

roads, routes and within training areas) are referred to as the project area. To account for potential indirect effects, this EA also considers potential impacts to resources within an area of concern, a region that extends 100 ft (33 m) outward from the edge the project area. Previous surveys and studies of the APE were conducted by ASM (Reddy et al. 1994, 1997, 1998); Glenn and Crawford 1994; York 2008; York et al. 2010.

3.4.2.1 Prehistory and Ethnohistory

Current knowledge of the prehistory of MCB Camp Pendleton and its relationship to cultural developments throughout southern California is considered in detail elsewhere (Reddy and Byrd 1997) and will only be summarized here. The sequence begins in the Paleoindian period (11,500–8,500 years before present [B.P.]), a time in which adaptations were formerly believed to have been focused on the hunting of large game but are now recognized to represent more generalized hunting and gathering, with considerable emphasis on marine resources (Erlandson 1994; Jones 1991). The following period, the Archaic (8,500–1,300 B.P.), is traditionally seen as encompassing both a coastal and an inland focus, with the coastal Archaic represented by the shell middens of the La Jolla complex and the inland Archaic represented by the Pauma complex. Coastal settlement is also seen as having been significantly affected by the stabilization of sea levels around 4,000 years ago that led to a general decline in the productivity of coastal ecosystems. Nevertheless, recent research on MCB Camp Pendleton has documented continued occupation along the coast well after this decline was in progress (Byrd 1996, 1998).

The Late Prehistoric period (1,300–200 B.P.) is marked by the appearance of small projectile points indicating the use of the bow and arrow, the common use of ceramics, and the replacement of inhumations with cremations, all characteristic of the San Luis Rey complex as defined by Meighan (1954). The San Luis Rey complex is divided temporally into San Luis Rey I and San Luis Rey II, with the latter distinguished mainly by the addition of ceramics. Along the coast of northern San Diego County, deposits containing significant amounts of *Donax gouldii* shell are now often assigned to the Late Prehistoric, based on a well-documented increase in the use of this resource at this time (e.g., Byrd and Reddy 1999). The inception of the San Luis Rey complex is suggested by True (1966; True et al. 1974) to mark the arrival of Takic speakers from regions farther inland. Waugh (1986) is in general agreement with True, but suggests that the migration was probably sporadic and took place over a considerable period. When the Spanish arrived in southern California, the area now known as MCB Camp Pendleton was occupied by Takic-speaking Native Americans known to the Spanish as the Luiseño, whose territory is thought to have composed some 1,500 square miles of coastal and interior southern California (White 1963). The Luiseño speak a language that is placed within the Cupan group of the Takic family of the Uto-Aztecan stock also known as Southern California Shoshonean (Kroeber 1925:574). Kroeber (1925) estimated a population of only about 5,000 pre-contact Luiseño. White (1963) and Shipek (1977) estimated that, at the time of Spanish contact, there were on the order of 50 Luiseño rancherias with an average population of some 200 people, for a total Luiseño population of about 10,000.

3.4.2.2 History

Early History of MCB Camp Pendleton Area

The area that is now MCB Camp Pendleton was first entered by Europeans on July 20, 1769, as the members of the Portola expedition descended into the valley of the Santa Margarita River during their journey north to Monterey. Proceeding along an inland route, the expedition described native villages at Santa Margarita, Las Pulgas, and Cristianitos Canyon. The earliest permanent structures on MCB Camp Pendleton are described in an 1827 mission report as a small adobe at what is now the Santa Margarita Ranch House and a mission estancia at Las Flores (Reddy and Byrd 1997).

The original Mexican owners of the land that was to become MCB Camp Pendleton were Pio and Andres Pico, who acquired the Rancho San Onofre and Rancho Santa Margarita in 1841. Las Flores, which had been one of the few Indian pueblos established by the Mexican government, was acquired by the Pico brothers in 1844, thus creating the Rancho Santa Margarita y Las Flores. By 1862, the Picos had fallen into financial difficulties and sold part of the rancho to their brother-in-law, Juan Forster, to avoid losing it to creditors. Forster, after undertaking a number of improvements, died in 1882 and the ranch eventually was transferred to James C. Flood and Richard O'Neill. The O'Neill family held the property until it was acquired by the USMC in 1942.

Military Development at MCB Camp Pendleton

Since its establishment in 1942, major development at MCB Camp Pendleton has supported its mission as an amphibious training facility. The history of this development is described in a Basewide inventory and evaluation of structures reported by JRP Historical Consulting Services (JRP 2000), which provides both a historic context for the military period and NRHP evaluations of individual structures. The JRP study identifies six major periods of construction as a thematic structure for the evaluations: World War II (1942–1945); post-World War II (1946–1949); Korean War (1950–1953), post-Korean War (1954–1962), the Vietnam era (1963–1975), and the end of the Cold War (1976–1989). Major development activities on MCB Camp Pendleton during these periods as described by JRP (2000) are briefly summarized below.

World War II

Most initial activity in the early months of World War II involved the development of support facilities for planned construction. Placed mainly in the “Mainside” area (11–17 Areas [Headquarters] and 18 Area [Golf Course]), these included warehouses, a lumberyard, a mill, a steelyard, a quarry, and barracks for workers. Major military facilities constructed at this time included a rifle qualification range at the 25 Area (Vado Del Rio), tent camps at the Mainside area, and construction of the boat basin in the 21 Area (Del Mar). Major military operations included the arrival of the 9th, 4th, and 5th Marines, all quartered at Mainside.

Post-World War II

During this time, Major General Graves B. Erskine initiated a number of developments designed to create a more permanent facility at MCB Camp Pendleton. Major examples include the construction of the beach club at San Onofre, a commissary, a golf course, a library, and the Base rodeo grounds.

Korean War

A major build-up of personnel and facilities took place during this period. For example, the first permanent barracks with mess hall and administration building was constructed in the 22 Area (Chappo), and field training camps were established at the 62 Area (San Mateo), 43 Area (Las Pulgas), 53 Area (Horno), and 33 Area (Santa Margarita).

Post-Korean War

Due to legal disputes over water rights along the Santa Margarita River, relatively limited funding was available for construction on MCB Camp Pendleton during the post-Korean War years. Significant construction took place in 1961, however, with the construction of eight permanent bachelor enlisted quarters, two mess halls, a training school, two administration buildings, and 400 units of housing within and near the 21 Area (Del Mar). Development of the Edson rifle range and supporting facilities was also conducted at this time.

Vietnam

A variety of facilities were constructed during the Vietnam conflict. Training schools for jungle warfare were established near the 41 Area (Las Pulgas), 52 Area (School of Infantry), 27 Area (Naval Hospital), and Piedra de Lumbre Canyon (in the 43 Area [Las Pulgas]). A new Combat Town in the 52 Area (School of Infantry) was also built. Other facilities constructed at this time included an exchange complex in the 11 Area (Headquarters), regimental headquarters at the 62 Area (San Mateo) and 53 Area (Horno), bachelor officer's quarters, housing in the 17 Area near the San Luis Rey gate, a new brig, new housing at the 52 Area (San Onofre) and Wire Mountain section of the 20 Area, and the 31B Area (Marine Corps Tactical Systems Support Facility) at Stuart Mesa.

End of Cold War

Development at MCB Camp Pendleton during this period has largely involved a major upgrade of former World War II facilities. These included the construction of a variety of housing units in numerous areas and various improvements to water, sewer, and utility systems. Additional construction included a dining facility in the 14 Area (Headquarters), a dental clinic at the 52 Area (School of Infantry), a dispensary at the 31A Area (Edson Range), a new exchange warehouse in the 11 Area (Headquarters), refurbishing the Commissioned Officers' Mess in the 17 Area (Headquarters), a new chapel, a data processing center in the 11 Area (Headquarters), new vehicle maintenance facilities, a new flight simulator facility, an enlisted men's club in the 33 Area (Margarita), and conversion of the brig to a long-term confinement facility.

3.4.2.3 Existing Conditions

No NRHP-listed shipwrecks are located in or near the project area (National Park Service 2013). A review of shipwreck records (Army 2001) and databases (California State Lands Commission 2013) did not identify any shipwrecks within or adjacent to the project area.

Table 3.4-1 lists the terrestrial cultural resources located within the APE, and includes the site's eligibility for inclusion in the NRHP. As shown in Table 3.4-1, there are 22 documented cultural resources located within the APE. Of these, one site is listed on the NRHP, six are eligible for NRHP listing, seven are assumed eligible, two are determined eligible and six are ineligible. Twenty-one of the sites are situated near Red or Gold beaches. CA-SDI-10724 is located near White Beach, and is therefore part of the APE for Alternative 2 only.

The California SHPO consultation initiation letter (MCB Camp Pendleton 2014; Appendix A) provides a detailed description of each of the cultural resources listed in Table 3.4-1, including the key findings of field investigations and the basis of the eligibility determination.

Table 3.4-1. Documented Cultural Resources within and adjacent to the APE

No.	Site Identification Number	Type	Location	National Register of Historic Places Eligibility Status
1.	CA-SDI-811	Habitation	In APE (on dirt road)	Eligible
2.	CA-SDI-812/H	Habitation/Historic	In APE (on paved road)	Listed
3.	CA-SDI-4538A/B	Habitation	In APE (on paved road)	Eligible
4.	CA-SDI-10723	Habitation	In APE (on dirt road)	Determined Eligible (Hale and Becker 2006)
5.	CA-SDI-10724 ¹	Shell midden with groundstone	Adjacent	Not previously evaluated; assumed eligible
6.	CA-SDI-10726	Habitation	Adjacent	Determined Eligible (Byrd 2003)
7.	CA-SDI-10731	Habitation	In APE (on dirt road)	Eligible

Table 3.4-1. Documented Cultural Resources within and adjacent to the APE

No.	Site Identification Number	Type	Location	National Register of Historic Places Eligibility Status
8.	CA-SDI-14006H	Historic Road (El Camino Real)	In APE (on paved road)	Eligible
9.	CA-SDI-14433/14482/14514H (CA-SDI-14514)	Artifact and shell scatter	In APE (on paved road)	Ineligible (Reddy 2004)
10.	CA-SDI-14491	Shell scatter	In APE (on dirt road)	Not previously evaluated; assumed eligible
11.	CA-SDI-14495	Shellfish scatter	In APE (on dirt road)	Ineligible (Reddy 1999)
12.	CA-SDI-14504	Artifact scatter	In APE (on dirt road)	Eligible (York 2009)
13.	CA-SDI-14505	Shell scatter	In APE (on paved road)	Ineligible (Reddy 1999)
14.	CA-SDI-14506	Shell scatter	In APE (on paved road)	Ineligible (Reddy 1999)
15.	CA-SDI-14507H	Historic glass scatter	Adjacent	Not previously evaluated; assumed eligible
16.	CA-SDI-14508	Shell scatter	In APE (on paved road)	Ineligible (Reddy 1999)
17.	CA-SDI-14509	Shell scatter	Adjacent	Not previously evaluated; assumed eligible
18.	CA-SDI-14510	Shell scatter	Adjacent	Not previously evaluated; assumed eligible
19.	CA-SDI-14511	Shell scatter	Adjacent	Not previously evaluated; assumed eligible
20.	CA-SDI-14513	Shell scatter	In APE (on paved road)	Not previously evaluated; assumed eligible
21.	CA-SDI-14516	Shell scatter	In APE (on dirt road)	Ineligible (Reddy 1999)
22.	CA-SDI-15254	Shell and artifact scatter	In APE (on dirt road)	Eligible (Byrd 1996 and 1999)

Notes: APE = Area of Potential Effects.

¹ CA-SDI-10724 is located adjacent to White Beach. All other cultural resources listed in this table are situated near Red and Gold beaches, or along access roads.

Source: MCB Camp Pendleton 2014.

3.4.3 ENVIRONMENTAL CONSEQUENCES

MCB Camp Pendleton has received concurrence from the SHPO of a finding of No Adverse Effects with the implementation of the identified impact avoidance/minimization measures (refer to Table 3.0-1) (Appendix A).

3.4.3.1 No Action Alternative

Under the No Action Alternative, the continuation of amphibious training exercises in the marine environment would not affect cultural resources, as no such resources currently exist in the marine environment portion of the project area. With respect to the terrestrial environment, 21 of the 22 cultural resources listed in Table 3.4-1 are located either within or adjacent to the APE. The sole exception, CA-SDI-10724, is located near White Beach, and therefore outside the APE (and the 100 foot [33 m] area of concern) for the No Action Alternative.

Under the No Action Alternative, vehicular transport of equipment and cargo in terrestrial areas would continue to be restricted to existing roads, pathways, and routes, and previously approved training areas. All participants in amphibious training exercises would continue to comply with (MCIWEST-MCB CAMPENO 3500.1).

All exercise training sites, access routes, bivouacking, messing, laydown and construction activities requiring grading, grubbing, excavation, and other soil disturbing activity are restricted from locations that have been defined by Environmental Security as environmentally sensitive areas (including cultural resources) to ensure avoidance of cultural resource impacts. Under the No Action Alternative, amphibious training exercises would continue to abide by this general rule. Based upon the nature of the existing amphibious training exercises (specifically with regard to their short duration and limited amount of ground disturbance), and with implementation of impact avoidance/minimization measures (refer to Table 3.0-1), the No Action Alternative would have No Adverse Effect on cultural resources at MCB Camp Pendleton.

Therefore, implementation of the No Action Alternative would not have a significant impact to cultural resources.

3.4.3.2 Alternative 1

As is the case for the No Action Alternative, 21 cultural resources are located within or adjacent to the APE for Alternative 1. This alternative would be subject to the same measures that are described for the No Action Alternative; amphibious training exercises would continue to be restricted from environmentally sensitive areas.

Although Alternative 1 would increase the annual training tempo, no incremental increase in impacts would occur given that exercises would not be allowed in sensitive areas and would be subject to other impact avoidance/minimization measures, including compliance with MCIWEST-MCB CAMPENO 3500.1, as presented in Table 3.0-1. The introduction and use of future emerging platforms and technologies and the performing of at-sea refueling would not impact cultural resources, as no such resources are located in the marine environment. Based upon the nature of the proposed amphibious training exercises (specifically with regard to their short duration and limited amount of ground disturbance), and with implementation of the impact avoidance/minimization measures, Alternative 1 would have No Adverse Effect on cultural resources at MCB Camp Pendleton.

Therefore, implementation of Alternative 1 would not have a significant impact to cultural resources.

3.4.3.3 Alternative 2

Under Alternative 2, the increased geographic scope of amphibious training would result in one additional cultural resource (i.e., CA-SDI-10724) within the APE. Alternative 2 would be subject to the same measures as presented for the No Action Alternative and Alternative 1. As a result, proposed amphibious training exercises at White Beach would not disturb CA-SDI-10724 or other sites located within the APE.

MCB Camp Pendleton has received concurrence from the SHPO of a finding of No Adverse Effects (Appendix A).

Therefore, implementation of Alternative 2 would not have a significant impact to cultural resources.

3.5 AIR QUALITY

3.5.1 DEFINITION OF RESOURCE

Existing air quality at a given location can be described by the concentrations of various pollutants in the atmosphere. The main pollutants of concern considered in this air quality analysis include volatile organic compounds (VOCs), ozone (O₃), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxide (SO_x)

particulate matter less than 10 microns in diameter but greater than 2.5 microns in diameter (PM₁₀), and particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}). Although VOCs or NO_x (other than nitrogen dioxide [NO₂]) have no established ambient air quality standards, they are important as precursors to O₃ formation. These criteria pollutants have national and/or state ambient air quality standards. The U.S. Environmental Protection Agency (USEPA) establishes the National Ambient Air Quality Standards (NAAQS), while the California Air Resources Board (CARB) establishes the state standards, termed the California Ambient Air Quality Standards (CAAQS) (CARB 2013a). The San Diego Air Pollution Control District has been delegated the authority to enforce the federal and state standards in the project area. Table 3.5-1 provides the NAAQS and CAAQS as of 2013.

Table 3.5-1. California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards ¹	
			Primary ^{2,3}	Secondary ^{3,4}
O ₃	1-hour	0.09 ppm (180 µg/m ³)	—	Same as primary
	8-hour	0.070 ppm (137 µg/m ³)	0.075 ppm (147 µg/m ³)	Same as primary
CO	1-hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	—
	8-hour	9 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	—
NO ₂	1-hour	0.18 ppm (339 µg/m ³)	0.10 ppm (188 µg/m ³)	—
	Annual	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as primary
SO ₂	1-hour	0.25 ppm (655 µg/m ³)	0.075 ppm (105 µg/m ³)	—
	3-hour	—	—	0.5 ppm (1,300 µg/m ³)
PM ₁₀	24-hour	50 µg/m ³	150 µg/m ³	Same as primary
	Annual	20 µg/m ³	—	Same as primary
PM _{2.5}	24-hour	—	35 µg/m ³	Same as primary
	Annual	12 µg/m ³	15 µg/m ³	Same as primary
Lead	30-day average	1.5 µg/m ³	—	—
	Rolling 3-month average	—	0.15 µg/m ³	Same as primary
	Calendar Quarter	—	1.5 µg/m ³	Same as primary
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)	No National Standards	
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m ³)	No National Standards	
Visibility Reducing Particles	8-hour	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%. Measurement in accordance with CARB Method V.	No National Standards	

Notes: ¹ Standards other than 1-hour O₃, 24-hour PM₁₀, 24-hour PM_{2.5}, and those based on annual averages cannot be exceeded more than once a year.

² Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

³ Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.

⁴ Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse pollutant effects.

µg/m³ = micrograms per cubic meter; ppm = parts per million.

- = no established standard

Source: CARB 2013a.

Section 176(c) of the CAA, as articulated in the USEPA General Conformity Rule, states that a federal agency cannot issue a permit or support an activity unless the agency determines that the action would conform to the most recent USEPA-approved State Implementation Plan. This means that projects using federal funds or requiring federal approval in nonattainment or maintenance areas must not: (1) cause or contribute to any new violation of a NAAQS; (2) increase the frequency or severity of any existing violation; or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. Certain actions are exempt from conformity determinations if the projected emission rates would be less than specified emission rate thresholds, known as *de minimis* thresholds. The applicable *de minimis* levels for the project area are listed in Table 3.5-2.

Table 3.5-2. Applicable Criteria Pollutant *de minimis* Levels (tons/year)

VOCs ¹	NO _x ¹	CO ²	SO _x	PM ₁₀	PM _{2.5}
100	100	100	N/A	N/A	N/A

Notes: ¹ The San Diego Air Basin is a basic nonattainment area for the 8-hour federal and state O₃ standard; VOCs and NO_x are precursors to the formation of O₃.

² The San Diego Air Basin is a maintenance area for CO.

N/A = not applicable because the San Diego Air Basin is currently in attainment of the NAAQS for these criteria pollutants.

Sources: San Diego Air Pollution Control District 2013; USEPA 2013a.

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere by absorbing infrared radiation. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Each GHG is assigned a global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to CO₂, which has a value of one. For example, CH₄ has a global warming potential of 21, which means that CH₄ has a global warming effect 21 times greater than CO₂ on an equal-mass basis (Intergovernmental Panel on Climate Change 2007). To simplify GHG analyses, total GHG emissions from a source are often expressed as a CO₂ equivalent (CO₂e). The CO₂e is calculated by multiplying the emissions of each GHG by its global warming potential and adding the results together to produce a single, combined emission rate representing all GHGs. While CH₄ and N₂O have much higher global warming potentials than CO₂, CO₂ is emitted in such higher quantities that CO₂ is the overwhelming contributor to CO₂e from both natural processes and human activities.

Federal agencies on a national scale address emissions of GHGs by reporting and meeting reductions mandated in federal laws, EOs, and agency policies. The most recent of these are EO 13693 (*Planning for Federal Sustainability in the Next Decade*) and the *USEPA Final Mandatory Reporting of Greenhouse Gases Rule*. Several states have promulgated laws as a means of reducing statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 (AB32) directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020. Groups of states also have formed regionally based collectives (such as the Western Climate Initiative) to jointly address GHG pollutants.

The potential effects of GHG emissions are by nature global and cumulative, as individual sources of GHG emissions are not large enough to have any appreciable effect on climate changes. Therefore, the potential impacts of GHG emissions are discussed in the context of cumulative impacts in Chapter 4.

3.5.2 AFFECTED ENVIRONMENT

3.5.2.1 Baseline Air Quality

Representative air quality data for MCB Camp Pendleton for the period 2010-2012 are shown in Table 3.5-3. The USEPA designates all areas of the U.S. as having air quality better than or equal to

(attainment) or worse than (nonattainment) the NAAQS. The criteria for nonattainment designation vary by pollutant. An area is in nonattainment for O₃ if its NAAQS has been exceeded more than three discontinuous times in three years and an area is generally in nonattainment for any other pollutant if its NAAQS have been exceeded more than once per year. Former nonattainment areas that have attained the NAAQS are designated as maintenance areas. The San Diego Air Basin is in nonattainment of the State O₃, PM₁₀ and PM_{2.5} standards (CARB 2013b; USEPA 2013a). The San Diego Air Basin is a maintenance area for CO, and is in attainment for SO_x and NO_x.

Emission sources associated with the existing use of MCB Camp Pendleton include civilian and military personal vehicles, commercial and military vehicles, aircraft engines, tactical support equipment, small stationary sources, and on-going construction and training exercises. Emissions associated with existing and on-going training exercises result from the use of marine vessels, ground vehicles, and aircraft used during training exercises, and vehicles driving on unpaved roads generating fugitive dust.

Table 3.5-3. Representative Air Quality Data for MCB Camp Pendleton (2010-2012)

Air Quality Indicator	2010	2011	2012
Ozone (O₃)⁽¹⁾			
Peak 8-hour value (ppm)	0.079	0.071	0.081
Days above federal standard (0.075 ppm) ^(2, 6)	1	0	1
Days above state standard (0.070 ppm)	1	2	1
Carbon monoxide (CO)⁽³⁾			
Peak 8-hour value (ppm)	2.17	2.44	1.81
Days above federal standard (9.0 ppm)	0	0	0
Days above state standard (9.0 ppm)	0	0	0
Particulate matter less than or equal to 10 microns in diameter (PM₁₀)⁽⁴⁾			
Peak 24-hour value (µg/m ³)	32.0	47.0	22.0
Days above federal standard (150 µg/m ³)	0	0	0
Days above state standard (50 µg/m ³)	0	0	0
Particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5})⁽⁴⁾			
Peak 24-hour value (µg/m ³)	18.7	29.9	20.0
Days above federal/state standard (35 µg/m ³) ⁽⁵⁾	0	0	0
Sulfur Dioxide (SO₂)⁽³⁾			
Peak 24-hour value (ppm)	0.002	0.003	N/A
Days above federal standard (0.14 ppm)	0	0	N/A
Days above state standard (0.04 ppm)	0	0	N/A
Nitrogen Dioxide (NO₂)⁽¹⁾			
Peak 1-hour value (ppm)	0.081	0.066	0.059
Days above state standard (0.18 ppm)	0	0	0

Notes: ¹ Data from the Camp Pendleton Monitoring Station.

² The federal O₃ standard was revised downward in 2008 from 0.08 to 0.075 ppm.

³ Data from the San Diego-1110 Beardsley Street Monitoring Station.

⁴ Data from the San Diego-Overland Avenue Monitoring Station.

⁵ The federal PM_{2.5} standard was revised downward in 2007 from 65 to 35 µg/m³.

⁶ The federal eight-hour ozone standard was previously defined as 0.08 ppm (1 significant digit). Measurements are rounded up or down to determine compliance with the standard; therefore a measurement of 0.084 ppm is rounded to 0.08 ppm.

The 8-hour ozone ambient air quality standards are met at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to the standard.

N/A = not available; ppm = parts per million; µg/m³ = micrograms per cubic meter.

Source: CARB 2013b.

3.5.3 ENVIRONMENTAL CONSEQUENCES

The air quality analysis estimated the magnitude of emissions that would occur from amphibious training exercises. There would be no permanent change in personnel at MCB Camp Pendleton, so the operations emissions associated with personnel would remain at existing levels. The methodology for estimating emissions involved quantifying the number and type of marine vessels, ground and tactical vehicles, and aircraft that would be used for the proposed amphibious training exercises (refer to Appendix B for calculations).

No construction activities are associated with amphibious training exercises. There would be some temporary erection of tents and other training logistical requirements, but these activities would be “expeditionary” in nature with little if any grading or soil disturbance. Therefore, construction emissions were not quantified in this analysis.

Air quality impacts from proposed amphibious training exercises would occur from combustive emissions due to the use of fossil fuel-powered equipment and fugitive dust emissions (PM₁₀ and PM_{2.5}) from the operation of equipment on exposed soil. Total emissions resulting from the training exercises have been estimated using data presented in Chapter 2, general air quality assumptions, and emission factors for the tactical and training equipment (CARB 2011; USEPA 2000). Emissions were estimated by multiplying the number of each type of equipment by the hours per day, days per year, and emission factor in pounds per day.

For the purposes of this air quality analysis, and for air pollutants designated as nonattainment or maintenance with the NAAQS (and therefore subject to general conformity requirements), if the estimated total of direct and indirect emissions caused by a proposed action exceeds a conformity *de minimis* threshold requiring a conformity determination in the San Diego Air Basin project region (100 tons per year of VOCs, NO_x, and CO), further analysis would be conducted to determine whether impacts were significant. In such cases, if emissions conform to the approved State Implementation Plan, then proposed impacts would be determined to be less than significant. For those air pollutants in the San Diego Air Basin that are in attainment of the NAAQS, the general conformity requirements and thresholds do not apply.

For the purposes of establishing baseline conditions against which the Proposed Action can be compared, emissions were estimated for the No Action Alternative (i.e., existing conditions). To demonstrate CAA conformity, the analysis considers the net change in emissions between the existing conditions and the Proposed Action emissions.

3.5.3.1 No Action Alternative

Air emissions that would continue to result from continuation of the No Action Alternative (i.e., the existing conditions) are presented in Table 3.5-4. Emissions have been estimated using the average operational data presented in Table 2-2.

Table 3.5-4. Total Estimated Annual Emissions Resulting from the No Action Alternative (Existing Conditions)

	Air Pollutant Emissions (tons per year)					
	VOCs	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}
Average Annual Baseline Annual Emissions	14.28	91.07	162.15	105.90	26.65	25.85

Emissions for the No Action Alternative reflect baseline levels that are currently occurring in the project area. As a result, no increase in emissions would result from continuation of the No Action Alternative.

Therefore, implementation of the No Action Alternative would not have a significant impact to air quality.

3.5.3.2 Alternative 1

Table 3.5-5 summarizes the estimated total annual emissions that would occur from an approximately 25 percent increase in annual amphibious training exercises as proposed under Alternative 1. The emissions estimates reflect the use of up to 20 vehicles for regional transportation purposes, up to four times per year. Emissions have been estimated using the average operational data presented in Table 2-5, Alternative 1. The data in Table 3.5-5 show that average annual emissions from proposed amphibious training exercises (to include the use of new platforms and technologies) under Alternative 1 would not exceed the applicable conformity *de minimis* thresholds.

Therefore, implementation of Alternative 1 would not have a significant impact to air quality.

Table 3.5-5. Total Emissions Resulting from Implementation of Alternative 1

	Air Pollutant Emissions (tons per year)					
	VOCs	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}
Baseline (No Action Alternative) Emissions	14.28	91.07	162.15	105.90	26.65	25.85
Alternative 1 Emissions	19.77	125.44	219.97	141.72	35.95	34.87
Net Increase in Emissions under Alternative 1	5.49	34.37	57.82	35.82	9.3	9.02
Conformity <i>de minimis</i> threshold	100	100	100	N/A	N/A	N/A
Exceeds Conformity <i>de minimis</i> threshold?	No	No	No	N/A	N/A	N/A

Note: N/A = not applicable because the San Diego Air Basin is currently in attainment of the NAAQS for these criteria pollutants.

3.5.3.3 Alternative 2

The total emissions from Alternative 2 would be the same as for Alternative 1, because the same equipment mix and quantities would be used, at the same training tempo.

Therefore, implementation of Alternative 2 would not have a significant impact to air quality.

3.6 TRANSPORTATION AND CIRCULATION

3.6.1 DEFINITION OF RESOURCE

For the purposes of this analysis, transportation and circulation refers to the movement of vehicles on public roadways.

3.6.2 AFFECTED ENVIRONMENT

The project area is crossed by two major transportation facilities: the Interstate 5 freeway and the Los Angeles-San Diego-San Luis Obispo rail corridor. Interstate 5 is a major north-south route that is used for inter-regional, interstate, and international travel and goods movement (Caltrans 2000). In the vicinity of the Proposed Action, freeway interchanges are provided at Las Pulgas Road, Basilone Road, and Cristianitos Road. Caltrans District 11 is responsible for the maintenance and operation of Interstate 5 within San Diego County. The Los Angeles-San Diego-San Luis Obispo rail corridor extends 351 miles from San Diego to San Luis Obispo, and accommodates both passenger rail service (i.e., COASTER, SPRINTER, Amtrak and Metrolink) and freight rail service (i.e., Union Pacific and Burlington Northern Santa Fe) (San Diego Association of Governments 2013). The Los Angeles-San Diego-San Luis Obispo

rail segment that passes through MCB Camp Pendleton is owned by the North County Transit District (MCB Camp Pendleton 2010a).

As discussed in Section 2.4.1.1, the Proposed Action would involve the transport of personnel and materiel between the Silver Strand Training Complex and MCB Camp Pendleton (refer to Figure 2-15 for the location of the Silver Strand Training Complex relative to MCB Camp Pendleton). This activity would likely involve travel on State Route 75 and Interstate 5.

3.6.3 ENVIRONMENTAL CONSEQUENCES

3.6.3.1 No Action Alternative

The No Action Alternative does not involve site improvements, the construction of new facilities, or any increase in personnel that places any additional permanent demand on the existing transportation network. Amphibious training exercises would continue to comply with MCIWEST-MCB CAMPENO 3500.1 and range clearance requirements (Base Order P3500.4F).

The majority of vehicles and equipment would continue to be brought ashore by amphibious operations and be re-loaded onto ships and landing craft after the completion of the exercises. In some instances, Army vehicles would continue to be brought in to MCB Camp Pendleton by rail. Road convoys would continue to be localized and limited to segments of El Camino Real and Old Highway 101, where public access is restricted, thus continuing to result in no effect on local or regional traffic circulation.

Therefore, implementation of the No Action Alternative would not have a significant impact to transportation and circulation.

3.6.3.2 Alternative 1

Impacts to transportation and circulation under Alternative 1 would be focused on the same areas as presented under the No Action Alternative. The proposed increase in amphibious training activity would increase the number of potential temporary impacts to local transportation segments; however, checkpoints would be established to ensure the safe and efficient passage of vehicles, thus minimizing impacts to a temporary and focused area. Training activities would comply with MCIWEST-MCB CAMPENO 3500.1 to minimize impacts to rail traffic.

Alternative 1 would involve the transport of personnel and materiel between the Silver Strand Training Complex and MCB Camp Pendleton by road (likely using State Route 75 and Interstate 5). As discussed in Section 2.4.1.1, transport would involve approximately 20 vehicles up to four times per year. The vehicles would travel in dispersed smaller groups, if necessary, to minimize the impact to traffic during peak transportation periods.

Therefore, implementation of Alternative 1 would not have a significant impact to transportation and circulation.

3.6.3.3 Alternative 2

Transportation and circulation impacts associated with Alternative 2 are expected to be consistent with those of Alternative 1. Although the geographic scope would be expanded under Alternative 2 to include White Beach, public vehicular access to this area is restricted. Proposed amphibious training exercises would not cause military vehicles or equipment to mix with traffic on public facilities, and no incremental impact would result.

Therefore, implementation of Alternative 2 would not have a significant impact to transportation and circulation.

3.7 HAZARDOUS MATERIALS AND WASTE

3.7.1 DEFINITION OF RESOURCE

For purposes of this EA, a hazardous material is defined as any item or agent (biological, chemical, physical) that has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. Hazardous materials are characterized by their ignitability, corrosiveness, reactivity, and toxicity. Hazardous materials and wastes are regulated by local, state, federal laws and regulations, and other requirements and agreements, including management plans that are specific to MCB Camp Pendleton.

3.7.2 AFFECTED ENVIRONMENT

Hazardous materials currently used at MCB Camp Pendleton during existing amphibious training activities include petroleum products, batteries, cleaning materials, and similar products. The use of equipment, vehicles, ships, boats, and planes does result in the potential for small amounts of hazardous materials to enter the environment; however, this potential is minimized through the adherence to existing regulations and standard operating procedures.

Hazardous materials and wastes used and generated during current amphibious training exercises are handled and disposed of in accordance with all applicable federal, military, state, and local laws and regulations (MCB Camp Pendleton 2008a). Wastes generated during amphibious training exercises are accommodated by the current MCB Camp Pendleton waste disposal system. MCB Camp Pendleton requires all hazardous waste to be removed from all hazardous waste accumulation sites within 60 days of the wastes being generated. This ensures that hazardous wastes do not stay onsite longer than regulations allow. All training and non-training activities aboard the Base follow MCB Camp Pendleton's Spill Prevention Control and Countermeasure Plan (MCB Camp Pendleton 2008a) and the MCB Camp Pendleton Hazardous Waste Management Plan (MCB Camp Pendleton 2011e). In accordance with MCB Camp Pendleton's Spill Prevention Control and Countermeasure Plan, personnel immediately contain and clean up any hazardous material spill using spill control equipment and supplies that are kept on-hand.

As defined in OPNAVINST 5090.1D (Chapter 35), environmental compliance policies and procedures applicable to shipboard operations reinforce CWA prohibitions against discharging harmful quantities of hazardous substances into or upon U.S. waters out to 200 nautical miles. Standard Navy protocol is to conduct operations in such a manner to eliminate or minimize any impacts to the marine environment from hazardous substances.

Installation Restoration (IR) Site 150 is located within 1,000 ft (305 m) of proposed terrestrial activities at the Del Mar Boat Basin. IR sites are mapped and as such are avoided during training activities.

The MCB Camp Pendleton IR program is designed to comply with procedural and substantive requirements of the Comprehensive Environmental Response, Compensation, and Liability Act and the Superfund Amendments and Reauthorization Act, and regulations promulgated under these Acts and other relevant and applicable federal and state laws including the ESA. IR personnel ensure that potential impacts from environmental contaminants remediation activities are fully considered when planning and implementing natural resource conservation measures on MCB Camp Pendleton (MCB Camp Pendleton 2012a).

Explosions and underwater demolitions do not currently occur as part of on-going amphibious training exercises. Live-fire is limited to existing designated inland training areas.

3.7.3 ENVIRONMENTAL CONSEQUENCES

3.7.3.1 No Action Alternative

Under the No Action Alternative, small leaks or spills may potentially continue to have the potential to occur on occasion due to equipment failure (e.g., a burst hydraulic line) and/or human error. Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would continue to have the potential to enter marine waters during amphibious training exercises. In accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b), personnel would continue to immediately contain and clean up any hazardous material spill using spill control equipment and supplies, which are readily available on vessels and vehicles.

Under the No Action Alternative, all upland maintenance and refueling activities would continue to be conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b) prepared in support of training exercises. Personnel would continue to not dig graywater percolation pits in areas that are known to contain contaminated soils. Graywater percolation pit discharge would continue to not come into contact with any materials or equipment that may cause the migration of potential contaminants to surface water or groundwater. No explosions and underwater demolitions would occur, and live-fire would continue to be limited to existing designated inland training areas.

Under the No Action Alternative, hazardous materials and wastes used and generated during current amphibious training exercises would continue to be handled and disposed of in accordance with all applicable federal, military, state, and local laws and regulations (e.g., MCB Camp Pendleton 2008a). Terrestrial training exercises would continue to not generate hazardous materials or wastes in quantities or of a type that could not be accommodated by the current MCB Camp Pendleton disposal system. In addition, IR Site 150, located within the Del Mar Boat Basin, would continue to be avoided, and therefore existing training exercises would continue to not impact (and not be impacted by) by this site, as it would be avoided.

Therefore, implementation of the No Action Alternative would not have a significant impact to hazardous materials and wastes.

3.7.3.2 Alternative 1

Under Alternative 1, the proposed increase in annual training tempo would result in an incremental increase in the transport, storage, use, and disposal of hazardous materials and wastes. Hazardous materials and wastes would continue to be managed in accordance with existing regulations, and be accommodated by the existing storage and disposal processes at MCB Camp Pendleton. The increase in amphibious training activity would result in an increase in potential for fuel, oil, hydraulic fluids, and lubricants to be released into the environment. Existing procedures and instructions would be followed, thus reducing the potential for a spill to occur. If a spill were to occur, the spill would be immediately cleaned up by onsite personnel using readily available supplies and equipment.

Under Alternative 1, lighterage craft refueling activities would be conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b) and Navy spill prevention protocols. To minimize the potential for spills of JP-5 (the fuel used at sea) during at-sea refueling operations, personnel would follow the Navy's Spill Prevention Control and Countermeasure Plan and applicable oil spill regulations.

IR Site 150 would continue to be avoided. No explosions and underwater demolitions would occur, and live-fire would continue to be limited to existing designated inland training areas.

Therefore, implementation of Alternative 1 would not have a significant impact to hazardous materials and wastes.

3.7.3.3 Alternative 2

Under Alternative 2, the increased geographic scope of amphibious training would result in similar impacts to those described under Alternative 1. The potential for an accidental spill would be expanded over a larger area than Alternative 1 (i.e., on and offshore of White Beach). No IR Sites are located within 1,000 ft (305 m) of the proposed expanded training areas at White Beach.

Therefore, implementation of Alternative 2 would not have a significant impact to hazardous materials and wastes.

CHAPTER 4

CUMULATIVE IMPACT ANALYSIS

4.1 REGULATORY SETTING

Cumulative impacts are those that result from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR § 1508.7 of the CEQ Regulations). Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time.

Cumulative impacts may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location. This relationship may or may not be obvious. Actions overlapping, or in close proximity to, a proposed action can have more potential for cumulative impacts on “shared resources” than actions that may be geographically separated. Similarly, actions that coincide temporally would tend to offer a higher potential for cumulative impacts. A definition of cumulative impacts, under NEPA, can be found in 40 CFR § 1508.7 of the CEQ Regulations.

4.2 GEOGRAPHIC SCOPE OF THE CUMULATIVE EFFECTS ANALYSIS

The region where cumulative impacts may occur includes the coastal corridor along MCB Camp Pendleton west of Interstate 5 to the ocean and existing inland training areas located immediately to the east of Interstate 5 (Figure 4-1). The cumulative projects summarized in Table 4-1 focus on other military actions and one non-federal action located within this region. The analysis presented in Section 4.4 considers additional impacts arising from the impacts of implementing Alternative 1 or Alternative 2 combined with the impacts of the other known past, present, and reasonably foreseeable future actions within this region.

4.3 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

Past, present, and reasonably foreseeable actions within the identified cumulative effects region are summarized in Table 4-1 and depicted on Figure 4-1.

Table 4-1. Past, Present, and Reasonably Foreseeable Projects in the Vicinity of Alternatives 1 and 2

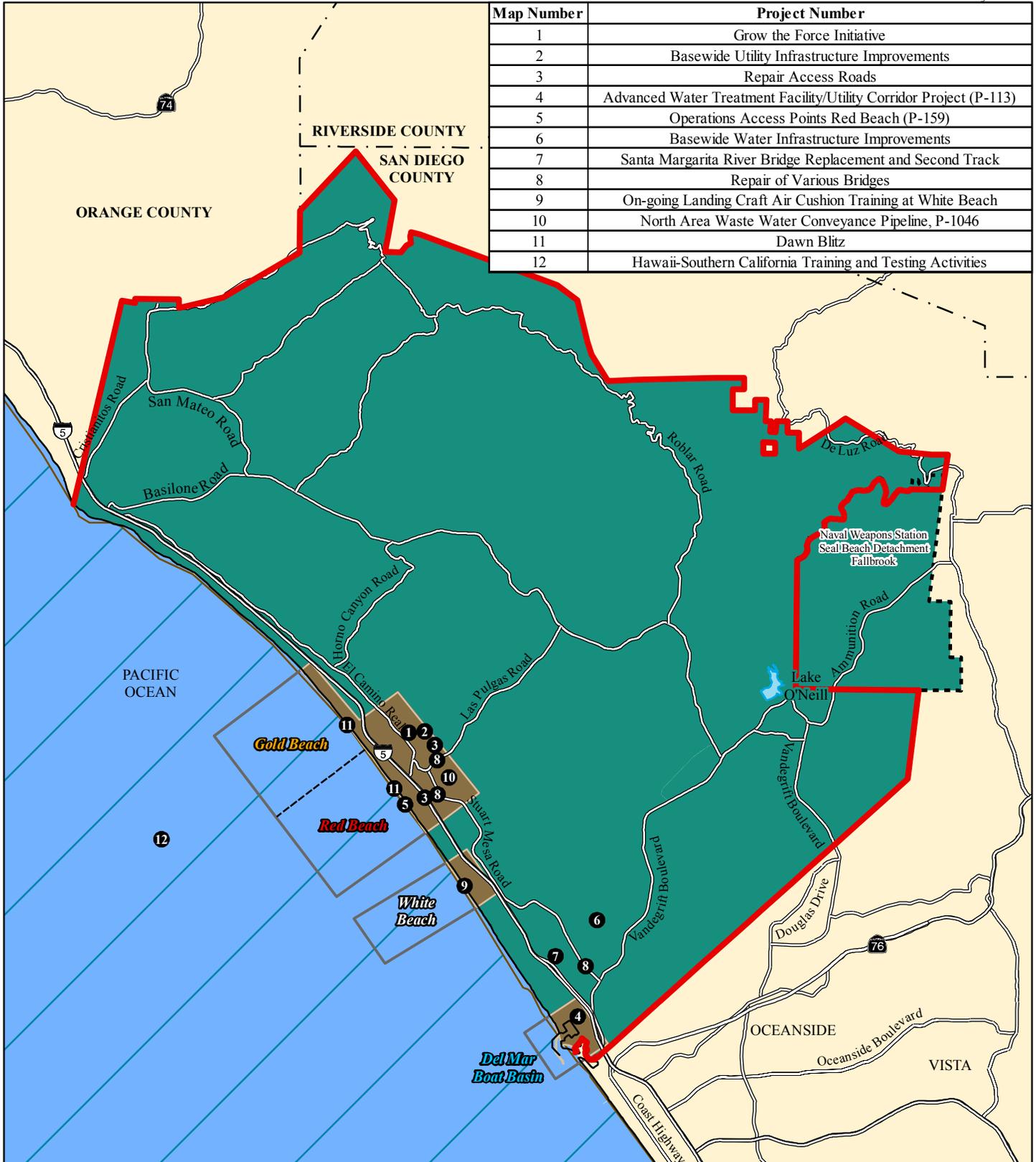
Project Title ¹	Project Description	Project Status
(1) Grow the Force Initiative	Construction of temporary and permanent facilities and infrastructure at MCB Camp Pendleton to support an increase in the number of personnel stationed at the installation.	Finding of No Significant Impact (FONSI) signed July 2010. Construction is on-going.
(2) Basewide Utility Infrastructure Improvements	Construction of new or upgrade of existing utility systems to provide reliable and compliant water, wastewater, natural gas, electrical, and communications systems to support military training and operations and delivery of life support and quality of life services.	A Final EIS and Record of Decision were completed in September 2010. Construction is on-going.
(3) Repair Access Roads	Repair and stabilize existing unpaved roads throughout MCB Camp Pendleton’s training ranges.	An EA is currently being developed.

Table 4-1. Past, Present, and Reasonably Foreseeable Projects in the Vicinity of Alternatives 1 and 2

Project Title ¹	Project Description	Project Status
(4) Advanced Water Treatment Facility/Utility Corridor Project (P-113)	Construct, operate, and maintain an Advanced Water Treatment facility and associated infrastructure. The project included adding treatment processes to the Haybarn Canyon Drinking Water Iron/Manganese Removal Treatment Facility and constructing a pipeline for disposal of brine that will be generated by the facility.	FONSI signed in December 2010. Construction began in 2011 and is on-going.
(5) Operations Access Points (P-159) Red Beach	Construct and modify new and existing transit and maneuver corridors to facilitate the transit of troops and tactical vehicles between Red Beach and existing inland training areas.	Final Supplemental EA completed and FONSI signed in April 2012. Construction began in Fall 2013.
(6) Basewide Water Infrastructure Improvements	Construction, operation, and maintenance of infrastructure upgrades, expansions, and improvements on the installation water system and replacement of a critical link in the installation roadway system. Projects include Northern Advanced Water Treatment plant and associated facilities (P-1044), connection of the installation's northern and southern water system (P-1045).	A Final EIS and Record of Decision were completed in September 2012. The project is currently in the design phase. Construction began in 2013.
(7) Santa Margarita River Bridge Replacement and Second Track	The San Diego Association of Governments is replacing the existing steel truss single-track railroad bridge and the approach structure with a new reinforced concrete double-track bridge and pre-cast box trestle approach structure.	Construction began in early 2010 and is on-going.
(8) Repair of Various Bridges	Perform repairs and maintenance on eight bridges to facilitate the efficient transport of personnel, equipment, and supplies. The bridges are located throughout MCB Camp Pendleton.	An EA is currently being prepared.
(9) On-going Landing Craft Air Cushion Training at White Beach	The Navy currently conducts Landing Craft Air Cushion training at White Beach.	Training is on-going.
(10) North Area Waste Water Conveyance Pipeline (P-1046)	This project involves the construction, operation, and maintenance of the North Area Waste Water Conveyance Pipeline and a pumping station to support increased wastewater flows. The project also includes demolition of the existing pumping station and associated force main pipelines, decommissioning of a Sewage Treatment Plant, and the construction of a Tributary Area Pumping Station.	NEPA coverage for P-1046 was provided via the Basewide Utilities Infrastructure EIS for which a Record of Decision was issued in September 2010. Construction of P-1046 is anticipated to begin in 2016.
(11) Dawn Blitz	This project consists of conducting joint and combined exercises on MCB Camp Pendleton; as this exercise has already occurred, this project is included in the baseline condition in this EA.	MCB Camp Pendleton prepared an EA in 2013 and the exercise occurred in 2013.
(12) Hawaii-Southern California Training and Testing Activities	This consists of supporting and conducting current, emerging, and future training and testing activities in the Hawaii-Southern California Study Area, which is made up of air and sea space off Southern California, around the Hawaiian Islands, and the air and sea space connecting them.	The Navy has prepared an EIS/OEIS (Navy 2013a).

Note: ¹ Numbers refer to project locations on Figure 4-1.

Sources: MCB Camp Pendleton 2010a, 2010c, and 2014a; NAVFAC SW 2010, 2011, 2012; Navy 2012c; San Diego Association of Governments 2010; USMC 2013a.



Map Number	Project Number
1	Grow the Force Initiative
2	Basewide Utility Infrastructure Improvements
3	Repair Access Roads
4	Advanced Water Treatment Facility/Utility Corridor Project (P-113)
5	Operations Access Points Red Beach (P-159)
6	Basewide Water Infrastructure Improvements
7	Santa Margarita River Bridge Replacement and Second Track
8	Repair of Various Bridges
9	On-going Landing Craft Air Cushion Training at White Beach
10	North Area Waste Water Conveyance Pipeline, P-1046
11	Dawn Blitz
12	Hawaii-Southern California Training and Testing Activities



Legend

- MCB Camp Pendleton Boundary
- Cumulative Projects Region
- Cumulative Project Locations
- Camp Pendleton Amphibious Assault Area (CPAAA)
- Major Road

Figure 4-1
Cumulative Effects Region and Identified Past, Present, and Reasonably Foreseeable Projects

0 1 2 Miles
0 2 4 Kilometers

The majority of the projects summarized in Table 4-1 are construction projects to support on-going military training or to improve existing infrastructure. While not explicitly identified, as would be expected within a military installation such as MCB Camp Pendleton, there is a variety of on-going training within the cumulative effects region. This training has been occurring since MCB Camp Pendleton’s establishment. However, this training has little overlap with the proposed activities identified in this EA, especially for the marine environment, except for recurring amphibious training activity (e.g., Projects 9 and 12).

4.4 CUMULATIVE IMPACT ANALYSIS BY ENVIRONMENTAL RESOURCE AREA

This section addresses the additive effects of Alternative 1 or Alternative 2 as evaluated in this EA, in combination with the relevant actions described above in Section 4.1. CEQ guidance states, “A cumulative effects analysis should ‘count what counts,’ not produce superficial analyses or a long laundry list of issues that have little relevance to the effect of the proposed action or the eventual decisions.” (CEQ 1997).

Military training activities have been occurring at MCB Camp Pendleton since its establishment. On-going military training at MCB Camp Pendleton is performed in accordance with existing regulations to minimize impacts to resources. Potential impacts are minimized not only for individual, discrete actions, but also at a cumulative level through on-going measures and activities. MCB Camp Pendleton takes great pride in its environmental stewardship role by protecting natural resources through proactive management strategies (NAVFAC Atlantic 2010a). Overarching applicable regulations and agreements, for example, the Programmatic Riparian BO (USFWS 1995), MCIWEST-MCB CAMPENO 3500.1 (Marine Corps Installations West-MCB Camp Pendleton 2013), and the INRMP (MCB Camp Pendleton 2012a) complement each other to minimize the potential cumulative impacts to resource areas from on-going military training, as well as other activities (e.g., new construction). As described in Chapter 3, implementation of Alternative 1 or Alternative 2 would not result in significant impacts to any resource area.

Table 4-2 presents the cumulative impact contributions of past, present, and reasonably foreseeable projects to environmental resources located within the cumulative effects region.

Table 4-2. Contribution of Past, Present and Reasonably Foreseeable Projects to Cumulative Effects

Cumulative Projects	Environmental Resource Areas							
	Geological Resources	Water Resources		Biological Resources	Cultural Resources	Air Quality	Transportation and Circulation	Hazardous Materials and Waste
		Marine	Terrestrial					
(1) Grow the Force Initiative	●	○	●	●	●	●	●	○
(2) Basewide Utility Infrastructure Improvements	●	○	●	●	●	●	○	○
(3) Repair 24 Access Roads	●	○	●	●	●	●	●	○
(4) Advanced Water Treatment Facility/Utility Corridor Project (P-113)	●	+	+	●	●	●	○	○
(5) Operations Access Points (P-159) Red Beach	●	○	●	●	●	●	○	○

Table 4-2. Contribution of Past, Present and Reasonably Foreseeable Projects to Cumulative Effects

Cumulative Projects	Environmental Resource Areas							
	Geological Resources	Water Resources		Biological Resources	Cultural Resources	Air Quality	Transportation and Circulation	Hazardous Materials and Waste
		Marine	Terrestrial					
(6) Basewide Water Infrastructure Improvements	●	○	+	●	●	●	○	○
(7) Santa Margarita River Bridge Replacement	●	○	●	●	●	●	●	○
(8) Repair of Various Bridges	●	○	●	●	●	●	●	○
(9) On-going Landing Craft Air Cushion Training at White Beach	●	●	●	●	●	●	○	○
(10) North Area Waste Water Conveyance Pipeline (P-1046)	●	○	●	●	●	●	○	○
(11) Dawn Blitz	●	●	●	●	●	●	○	○
(12) Hawaii-Southern California Training and Testing Activities	○	●	○	●	○	●	○	●

Notes: ● = Minor contribution; ○ = Negligible (or no) contribution; + = Beneficial contribution.

4.4.1 GEOLOGICAL RESOURCES

Implementation of Alternative 1 or Alternative 2 would have the potential to cause repetitive minor and temporary increases in sediment suspension, erosion, and localized sedimentation; however, BMPs would be implemented to reduce impacts to soils and receiving waters. Furthermore, exercises would be constrained to defined areas that have historically supported and currently support similar repetitive amphibious training activity with no appreciable impacts to geological resources. Personnel would fill in percolation pits at the conclusion of each exercise and measures would be taken to minimize the potential for offsite migration of soils and graywater. Unique geologic features would not be impacted. Temporarily excavated areas on the beach would be filled in at the conclusion of each exercise to match existing contours. There would be no impact to sand movement or permanent impact to beach contours.

The identified cumulative projects have the potential to result in minor, temporary impacts on erosion and sedimentation; however, these potential impacts would be moderated through the implementation of project-specific BMPs and erosion control measures as specified by Construction General Permits (as applicable). Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to geological resources.

4.4.2 WATER RESOURCES

4.4.2.1 Marine Water Quality

Proposed amphibious training exercises would temporarily suspend sediments/sand in the surf zone, resulting in focused, short-term areas of increased turbidity. The proposed beaches are areas of high-energy surf with a predominantly naturally high level of turbidity; therefore, the additive effects of short-term increases in turbidity would be minor and temporary. Beach sand deposited in the nearshore zone

from creation of the temporary excavated areas and similar activities would have the potential to be gradually reworked by the forces of wave action, longshore currents, and seasonal storms into offshore sandbars and the natural beach profile, depending on the location of the sand piles. Beach activities and operations within the Del Mar Boat Basin could increase turbidity in the water column and interfere with filter-feeding benthic organisms sensitive to turbidity. However, the level of increase in turbidity would be short-term, limited only to the time of activity. Refueling activities would be conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013b) and Navy spill prevention protocols.

Other than on-going Landing Craft Air Cushion training at White Beach and Dawn Blitz (which is incorporated into the baseline condition), the identified cumulative projects would not result in a potential for direct impacts to marine water quality as none of the projects are located within the ocean. On-going Landing Craft Air Cushion training complies with existing regulations that minimize the potential for direct impacts to water resources. Potential indirect impacts to marine water quality (e.g., by way of stormwater runoff, sedimentation, and pollution) from the identified cumulative projects would be minimized through the implementation of project-specific BMPs and permit requirements. Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to marine water quality.

4.4.2.2 Terrestrial Water Resources

Alternative 1 or Alternative 2 would occur in established areas and follow established protocols for minimizing the potential for impacts to water resources. Wetlands and surface water features would be avoided and temporary runoff control measures would minimize the potential for any exercise-related stormwater to flow into water features. Refueling activities would be conducted in compliance with USMC, federal, and state regulations that include measures to minimize the potential for impacts to water quality, as highlighted in the Spill Prevention Control and Countermeasure Plan prepared for this EA (Navy 2013b). Neither Alternative 1 nor Alternative 2 would directly affect groundwater quality or quantity.

Nine of the 11 identified cumulative projects are construction-related; these projects would implement project-specific BMPs and Construction General Permit conditions (as applicable) to minimize the impact to water resources, both during the construction and operational phases. Cumulative projects (9) and (11) would also incorporate the impact avoidance/minimization measures to minimize impacts to water resources. Two of the identified cumulative projects (4) and (6) would result in improvements to the water production, processing, and distribution system at MCB Camp Pendleton. Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to terrestrial water resources.

4.4.3 BIOLOGICAL RESOURCES

4.4.3.1 Marine Biological Resources

Impacts to marine biological resources from proposed amphibious training exercises could result in an incremental contribution to cumulative impacts on marine biological resources. However, the impact avoidance/minimization measures would be implemented to minimize potential adverse effects to marine biological resources. Potential indirect impacts to marine biological resources (e.g., by way of stormwater runoff, sedimentation, and pollution) from the identified cumulative projects would be minimized through the implementation of project-specific BMPs and permit requirements. Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to marine biological resources or their habitat.

4.4.3.2 Terrestrial Biological Resources

Implementation of Alternative 1 or Alternative 2 would result in localized, temporary disturbances in the project area. Alternative 1 or Alternative 2 would use areas already dedicated to training exercises, and as such, would not contribute to the cumulative loss of habitat. The affected area already experiences considerable use in support of on-going training exercises. The implementation of the identified impact avoidance/minimization measures would minimize the potential impacts to terrestrial special-status species.

The projects described in Section 4.3 have undergone or would undergo separate environmental reviews under NEPA and ESA, which would ensure that biological resource impacts are avoided, minimized, and/or compensated to the extent practicable. The full consideration of alternatives with lesser impacts and the implementation of the impact avoidance/minimization measures have been and would continue to be components of projects affecting special-status species within the cumulative effects region. Regional conservation plans, in particular the MCB Camp Pendleton INRMP (MCB Camp Pendleton 2012a), would continue to be followed to minimize potential cumulative impacts to the special-status species. While individual species may be affected by any particular project, the overall distribution or abundance of populations and habitats and ecosystem functions and values would not be significantly affected. Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to terrestrial special status species or their habitat.

4.4.4 CULTURAL RESOURCES

Implementation of Alternative 1 or Alternative 2 would result in No Adverse Effects to cultural resources. All cumulative projects with potential for impacting cultural resources would have undergone Section 106 review and any impacts would be mitigated as required. Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to cultural resources.

4.4.5 AIR QUALITY

Cumulative impacts resulting from implementation of Alternative 1 or Alternative 2, in conjunction with impacts from other present and reasonably foreseeable future projects could potentially occur during proposed training exercises. Emissions from past projects have had an impact on ambient air quality in the San Diego Air Basin.

Air quality impacts from proposed amphibious training exercises would occur from combustive emissions due to the use of fossil fuel-powered technical equipment (e.g., marine and ground vessels and aircraft) and fugitive dust (PM₁₀ and PM_{2.5}) emissions from the use of vehicles on bare soils. Proposed amphibious training exercises would produce emissions that would remain below applicable conformity significance thresholds. Any concurrent emissions-generating action that occurs in the vicinity of proposed amphibious training exercises would potentially contribute to the ambient impact of these emissions. However, since proposed amphibious training would produce minor amounts of emissions as compared to the baseline conditions (No Action Alternative), the combination of proposed training and future project air quality impacts would not contribute to an exceedance of an ambient air quality standard.

4.4.5.1 Greenhouse Gas Emissions

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate

change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global scale.

Federal agencies are addressing emissions of GHGs by mandating GHG reductions in federal laws and EOs, most recently in EO 13693 (*Planning for Federal Sustainability in the Next Decade*) released in March of 2015. EO 13693 establishes policies to maintain federal leadership in sustainability and GHG emission reductions, and it replaces EOs 13423 and 13514. According to the provisions of EO 13693, federal agencies will be required to develop a 2008 baseline for scope 1 and 2 GHG emissions, and to develop a percentage reduction target for agency-wide reductions of scope 1 and 2 GHG emissions by fiscal year 2020. As part of this effort, federal agencies will evaluate sources of GHG emissions, and develop, implement, and annually update an integrated Strategic Sustainability Performance Plan that will prioritize agency actions based on lifecycle return on investment. The intent is to evaluate GHG emissions on a lifecycle basis and to identify feasibility of sustainability strategies on that basis. The DoD is currently developing its Strategic Sustainability Performance Plan that will guide Navy and Marine Corps initiatives to reduce GHG emissions.

In 2009, the USEPA signed GHG Endangerment Findings under Section 202(a) of the CAA, stating that six “key” GHGs are a threat to public health and welfare (CO₂, CH₄, N₂O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). Since then, the USEPA has been creating standards and regulations for controlling GHG emissions from passenger vehicles. Additionally, since 2012 the USEPA has issued proposals and updated regulations to reduce carbon emissions from new and existing power plants, landfills, and oil and natural gas facilities. Despite these efforts, there are no promulgated federal regulations to date limiting GHG emissions. In December of 2014, the CEQ issued revised draft guidance for Federal agencies, to provide guidance on when and how to consider the effects of GHG emissions and climate change in their projects (CEQ 2014).

In the absence of a formally adopted threshold of significance for GHGs, this EA compares GHG emissions that would occur from implementation of Alternative 1 or Alternative 2 to the U.S. net GHG baseline inventory of 2011 (USEPA 2013b) to determine the relative increase in proposed GHG emissions. Table 4-3 summarizes the annual GHG emissions associated with the No Action Alternative, which are equivalent to existing conditions.

Table 4-3. Estimated GHG Emissions from the No Action Alternative

Scenario/Activity	Metric Tons per Year ⁽¹⁾			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
No Action Emissions	18,906.90	1.84	3.80	20,123.14
Draft NEPA Threshold				25,000
U.S. 2011 Baseline Emissions (10 ⁶ metric tons)	-	-	-	6,702.3
Proposed Emissions as a % of U.S. Emissions	-	-	-	0.00030%

Note: ¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310).

Sources: CEQ 2010; USEPA 2013b.

Table 4-4 summarizes the annual GHG emissions associated with Alternative 1 or Alternative 2 (emissions would be the same for either alternative). Appendix B presents an estimate of GHG emissions generated by Alternative 1 or Alternative 2. These data show that the additional CO₂e emissions associated with either alternative (after subtracting the baseline emissions) would amount to approximately 0.000105 percent of the total CO₂e emissions generated from all sources in the U.S. in 2011 (the most recent data available) (USEPA 2013b). Emissions under either Alternative 1 or Alternative 2 would be below the 25,000 metric tons of CO₂e level proposed in the revised draft NEPA guidance by the CEQ (CEQ 2014). Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to air quality.

Table 4-4. Estimated GHG Emissions from Implementation of Alternatives 1 or 2

Scenario/Activity	Metric Tons per Year ⁽¹⁾			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
Baseline (No Action Alternative) Emissions	18,906.90	1.84	3.80	20,123.14
Alternative 1 or 2 Emissions	25,525.26	2.58	5.09	27,157.38
Net Increase in GHG Emissions	6,618.70	0.74	1.29	7,034.24
Draft NEPA Threshold				25,000
U.S. 2011 Baseline Emissions (10 ⁶ metric tons)	-	-	-	6,702.3
Proposed Emissions as a % of U.S. Emissions	-	-	-	0.000105%

Note: ¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310).

Sources: CEQ 2010; USEPA 2013b.

Although implementation of Alternative 1 or Alternative 2 would result in a very small contribution to cumulative impacts associated with global climate change, this important topic warrants discussion of Marine Corps and Navy leadership in broad-based programs to reduce energy consumption and shift to renewable and alternative fuels, thereby reducing emissions of carbon dioxide and other GHGs.

The USMC Expeditionary Energy Strategy and Implementation Plan expanded on the previous USMC Facilities Energy and Water Management Program Campaign Plan to create a “bases to battlefield” plan intended to “decrease the Marine Corps’ dependence on fossil fuels in a deployed environment” (USMC 2011). The Expeditionary Energy Strategy and Implementation Plan identifies long-term goals to reduce energy intensity and increase the percentage of renewable electrical energy consumed. The plan’s missions are to “ensure a secure, reliable, and affordable energy and water supply reduce lifecycle operating costs of Marine Corps installations...and support our nation’s efforts to reduce greenhouse gas emissions and environmental impacts, reduce dependence on foreign oil, and promote conservation of water supplies.” At MCB Camp Pendleton, the implementation of the Expeditionary Energy Strategy and Implementation Plan on a project-by-project basis (as applicable) contributes to a reduction in GHG emissions, and thus a positive benefit to air quality.

4.4.5.2 Climate Change Adaptation

In addition to assessing the GHG emissions that would come from the action alternatives and the potential, albeit negligible, impact on climate change, the analysis must also assess how climate change might impact the Proposed Action and what adaptation strategies could be developed in response. This is a global issue for DoD. As is clearly outlined in the Quadrennial Defense Review Report of March 2014 (DoD 2014), the DoD would need to adjust to the impacts of climate change on facilities and military capabilities should such change occur. Although the U.S. has significant capacity to adapt to potential climate change, it would pose challenges for civil society and DoD alike, particularly in light of the nation’s extensive coastal infrastructure (Center for Naval Analyses 2007). DoD’s operational readiness hinges on continued access to land, air, and sea training and test space.

Within San Diego County, long-term negative environmental impacts due to global climate change include higher temperatures, decreased water supplies due to changes in the local water cycle, increased wildfire risk, and changes in local ecosystems (County of San Diego 2012). Using the Cal-Adapt online tool to visualize likely changes to the Camp Pendleton area, the Proposed Action project area would be subject to an increased risk of flooding within coastal areas and creeks, and an increased risk of wildfire (Cal-Adapt 2015). The potential increase in the local average temperature would range from 3.7°F to 6.2°F (the low GHG scenario and the high GHG scenario, respectively). Relative to 2010 levels, there would be approximately 1.2 percent more area burned by wildfire each year by the year 2020, due to changes in precipitation levels and drier vegetation from higher ambient air temperatures. In addition, the beaches and near coastal waterways would be at greater risk of inundation during a 100-year storm event due to a potential sea level rise of up to 55 inches. Training activities would have to be canceled,

rescheduled, or relocated during these potential climate-related events. Therefore, climate change has the potential to impact the Proposed Action.

As climate science advances, the DoD would regularly reevaluate climate change risks and opportunities in order to develop policies and plans to manage its effects on the operating environment, missions, and facilities. Managing the national security effects of climate change would require the Navy and USMC to work collaboratively with local, state, and federal agencies.

Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to air quality.

4.4.6 TRANSPORTATION AND CIRCULATION

Implementation of Alternative 1 and Alternative 2 may result in temporary and localized traffic impacts from the periodic transfer of personnel and materiel between the Silver Strand Training Complex and MCB Camp Pendleton. A temporary indirect impact may occur if passing motorists on Interstate 5 pause to observe exercise elements crossing over the freeway. Impacts to transportation and circulation would be temporary, localized, and minimized through the application of the impact avoidance/minimization measures. Although Alternative 1 and Alternative 2 would contribute toward a cumulative traffic effect, given the relatively minor impact of the action alternatives, and accounting for impact minimization, this contribution would not be significant. Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to transportation and circulation.

4.4.7 HAZARDOUS MATERIALS AND WASTE

Implementation of Alternative 1 and Alternative 2 would result in less than significant impacts to hazardous materials and waste. These impacts would result from the increased training tempo and at-sea refueling, which would involve the use, storage, and generation of small quantities of hazardous materials. The proposed training exercises would comply with applicable federal, military, state, and local laws and regulations. As with the Proposed Action, all cumulative projects with the potential to impact hazardous materials would comply with federal, military, state, and local laws and regulations regarding hazardous material use and disposal. Therefore, when added to the impacts from other potentially cumulative actions, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to hazardous materials and waste.

4.5 CUMULATIVE IMPACTS CONCLUSION

Cumulative impacts to the environmental resource areas evaluated herein from the No Action, Alternative 1, or Alternative 2, in conjunction with other past, present, and reasonably foreseeable cumulative actions, would not be significant.

CHAPTER 5 OTHER NEPA CONSIDERATIONS

5.1 POSSIBLE CONFLICTS BETWEEN THE ACTION AND THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL PLANS, POLICIES, AND CONTROLS

Implementation of Alternative 1 or Alternative 2 would be consistent with all applicable federal, regional, state and local plans, policies, and controls to the extent required by federal law and regulation. No potential conflicts have been identified. Table 5-1 provides a summary of environmental compliance with implementation of Alternative 1 or Alternative 2.

Table 5-1. Status of Compliance of Alternatives 1 and 2 with Relevant Land Use Plans, Policies, and Controls

Plans, Policies, and Controls	Regulatory/Oversight Authority	Status of Compliance
<ul style="list-style-type: none"> • NEPA (42 USC §§ 4321-4370h) • CEQ Regulations (Title 40 CFR 1500-1508) • Navy Procedures for Implementing NEPA (32 CFR 775) • OPNAVINST 5090.1D (January 10, 2014) • Marine Corps Order P5090.2A, Change 3, Chapter 12 (23 Aug 2013) 	CEQ, Navy, USMC	This EA has been prepared in accordance with the CEQ Regulations implementing NEPA and Navy and USMC NEPA procedures.
CAA, as amended (42 USC §§ 7401-7671q)	USEPA	Per CAA regulations, Alternative 1 or Alternative 2 would not compromise air quality attainment status or conflict with attainment status and maintenance goals established in the San Diego Air Pollution Control District State Implementation Plan. A formal CAA conformity determination is not required. Alternative 1 or Alternative 2 would be in compliance with the CAA and would comply with all applicable San Diego Air Pollution Control District Rules and Regulations.
CWA (33 USC §§ 1251-1387)	USEPA, USACE	Alternative 1 or Alternative 2 would involve in-water construction activities for which a CWA Section 404 multi-year permit from the USACE would be obtained, along with the related Section 401 Water Quality Certification from the San Diego RWQCB after the decision document is signed.
Coastal Zone Management Act (16 CFR §§ 1451-1466)	California Coastal Commission	The Coastal Zone Management Act of 1972 (16 USC Section 1451) encourages coastal states to be proactive in managing coastal zone uses and resources. Excluded from any coastal zone are lands the use of which by law is subject solely to the discretion of the federal government or which is held in trust by the federal government (16 USC 1453). Accordingly, although MCB Camp Pendleton is federal government property and therefore, excluded from the coastal zone, CPF nonetheless is conducting an effects analysis as part of its determination of the action's effects for purposes of federal consistency review under the Coastal Zone Management Act. Due to past similar activities and the infrequency of training with minimal effects to coastal resources, CPF has consulted with the California Coastal Commission (CCC). The CCC has concurred with the Navy's Coastal Consistency Negative Determination.

Table 5-1. Status of Compliance of Alternatives 1 and 2 with Relevant Land Use Plans, Policies, and Controls

Plans, Policies, and Controls	Regulatory/ Oversight Authority	Status of Compliance
ESA (16 USC §§ 1531-1599)	USFWS/NMFS	The Proposed Action would implement applicable measures identified in the HSTT BO (NMFS 2015) for federally listed marine species. Upland activities that would occur as part of the Proposed Action and that would potentially affect federally listed species are covered under BOs from previous USFWS consultation (e.g., USFWS 1995, 2011a; and Marine Corps Installations West 2013). All applicable programmatic avoidance measures identified in previous BOs would be implemented. Therefore, Alternative 1 or Alternative 2 would be in compliance with the ESA.
EO 11990, <i>Protection of Wetlands</i>	CEQ	Alternative 1 or Alternative 2 would avoid impacts to wetlands and would be in compliance with EO 11990.
EO 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations</i>	CEQ	There would be no disproportionately high and adverse human health or environmental effects on minority populations or low-income populations. Alternative 1 or Alternative 2 would be in compliance with EO 12898.
EO 13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i>	Task Force on Environmental Health Risks and Safety Risks to Children	Under Alternative 1 or Alternative 2, proposed amphibious training exercises would occur on MCB Camp Pendleton in areas that are always off-limits to the general public; thus, children would not be present during amphibious training activities. Therefore, Alternative 1 or Alternative 2 would not disproportionately expose children to environmental health risks or safety risks and would be in compliance with EO 13045.
EO 13112, <i>Invasive Species</i>	Invasive Species Council	Alternative 1 or Alternative 2 would be in compliance with Chapter 35 of OPNAVINST 5090.1D (Chapters 12 and 35), which contain guidelines for the control of ship ballast water to prevent the introduction of unwanted aquatic organisms and pathogens, in accordance with EO 13112.
EO 13186, <i>Responsibilities of Federal Agencies to Protect Migratory Birds</i>	USFWS	Alternative 1 or Alternative 2 are not likely to adversely affect migratory bird populations and would be in compliance with EO 13186.
Magnuson-Stevens Fishery Conservation and Management Act as amended by the Sustainable Fisheries Act of 1996 (16 USC §§ 1801-1891d)	NMFS	Alternative 1 or Alternative 2 would have relatively minor, temporary adverse effects on EFH for federally managed fish species within the Coastal Pelagic Species and Pacific Coast Groundfish Fishery Management Plans. These effects would be temporary and limited in scope. CPF has consulted with NMFS regarding EFH. The Proposed Action would implement applicable measures as identified through consultation with the NMFS.
Marine Mammal Protection Act (16 USC §§ 1431-1445c-1)	NMFS	The Proposed Action would implement applicable measures identified in the HSTT Letter of Authorization (NMFS 2014). Therefore, Alternative 1 or Alternative 2 would be in compliance with the Marine Mammal Protection Act.
Migratory Bird Treaty Act (16 USC §§ 703-712)	USFWS	Alternative 1 or Alternative 2 are not likely to adversely affect migratory bird populations and would be in compliance with the Migratory Bird Treaty Act.
National Historic Preservation Act (16 USC §§ 470-470x-6)	Advisory Council in Historic Preservation, California State Historic Preservation Officer	Amphibious training exercises associated with Alternative 1 or Alternative 2 would be planned and conducted to avoid impacts to National Register of Historic Places (NRHP) or NRHP-eligible properties. Therefore, Alternative 1 or Alternative 2 would be in compliance with the NHPA. CPF (via MCB Camp Pendleton Environmental Security) has consulted with the State SHPO and received a No Adverse Effects determination from the SHPO
Section 10 of the Rivers and Harbors Act (33 USC §§ 403)	USACE	Alternative 1 or Alternative 2 would involve in-water construction activities for which a Rivers and Harbors Act Section 10 Letter of Permission will be obtained after the decision document is signed.
Sikes Improvement Act (16 USC §§ 670-670f)	USFWS	Alternative 1 or Alternative 2 would be in compliance with the Sikes Act Improvement Act via the MCB Camp Pendleton INRMP.

5.2 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF VARIOUS ALTERNATIVES AND MITIGATION MEASURES CONSIDERED

Under Alternative 1 or Alternative 2, the consumption of energy for executing proposed amphibious training exercises would be minimal and short-term. No new construction or maintenance of existing facilities would occur. Where applicable and feasible, energy conserving measures would be integrated into amphibious training exercises. Any energy needed to implement Alternative 1 or Alternative 2 would be temporary, and would not increase or decrease the potential for energy conservation elsewhere.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and other natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of Alternative 1 or Alternative 2 would result in an irreversible loss of fossil fuel that would be used during military equipment and vehicle use, propulsion of and onboard power generation for at-sea vessels, and onshore power generation from temporary generators. Implementation of Alternative 1 or Alternative 2 would also result in an irretrievable commitment of human labor. These irreversible and irretrievable commitment of resources would not be considered significant as these resources are plentiful.

Implementation of Alternative 1 or Alternative 2 would not result in the destruction of environmental resources such that the range of potential uses of the environment would be limited, or affect the biodiversity of the region.

5.4 RELATIONSHIP BETWEEN SHORT-TERM ENVIRONMENTAL IMPACTS AND LONG-TERM PRODUCTIVITY

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing a single development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use often eliminates the possibility of other uses being performed at that site.

Alternative 1 or Alternative 2 would, reversibly, dedicate parcels of land, equipment, and other resources to a particular use during a limited period of time. These resources would not be available for other productive uses throughout the duration of the project. However, these impacts are considered negligible, as the facilities and geographic areas associated with Alternative 1 or Alternative 2 are designated for and have historically accommodated the types of uses proposed in support of amphibious training exercises. Furthermore, impacts would be short-term. Implementation of Alternative 1 or 2 would not result in any long-term effects on the biodiversity or environmental integrity of MCB Camp Pendleton, nor on the surrounding regional environment.

Therefore, Alternative 1 or Alternative 2 would not result in any impacts that would reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

5.5 ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION

With the impact avoidance/minimization measures (refer to Table 3.0-1) into exercise planning, pre-execution, execution, and post-exercise activities, implementation of Alternative 1 or Alternative 2 would not result in significant environmental impacts. Therefore, there are no probable adverse environmental effects that cannot be avoided or are not amenable to mitigation.

CHAPTER 6

LIST OF AGENCIES AND PERSONS CONTACTED

California Coastal Commission

California State Historic Preservation Office

National Marine Fisheries Service

CHAPTER 7

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Appendix A

Public Participation Documentation and Agency Correspondence

concerned about it being a fire hazard.

ASSIST OUTSIDE AGENCY *Avenida Pico, 600 Block (6:56 p.m.)* Dispatch received notice of a McDonald's cashier receiving a counterfeit \$100 bill from a man in his 30s, wearing a blue shirt and gray shorts. Officials requested Secret Service assistance.

Saturday, May 10

CITIZEN ASSIST *Via Cartama, 0 Block (9:40 p.m.)* A woman told authorities someone was throwing a ball at her front door.

DISTURBANCE *Puerta Del Sol, 1200 Block (2:33 p.m.)* A male patient, described as being under the influence, destroyed items in a medical office.

SUSPICIOUS PERSON/CIRCUMSTANCE *Camino De Estrella, 26900 Block (1:20 p.m.)* A man wearing a gray top kept trying to use a private bathroom.

Friday, May 9

CITIZEN ASSIST *Avenida Presidio, 100 Block (9:13 p.m.)* An employee of a smoke shop was giving out fake money to customers.

SUSPICIOUS PERSON/CIRCUMSTANCE *Avenida Del Mar, 100 Block (12:12 p.m.)* A customer urinated all over the clothes in a dressing room.

CITIZEN ASSIST *Calle Guadalajara/Calle Reata (9:59 a.m.)* A woman needed help with her 80-pound Doberman pinscher that had been bitten by a snake.

SAN JUAN CAPISTRANO

A 20-year-old San Juan Capistrano man accused of killing his parents and paralyzing his 8-year-old brother pleaded not guilty to murder and attempted-murder charges May 2. Ashton Colby Sachs pleaded not guilty to two counts each of murder and attempted murder during his arraignment in Orange County Superior Court, according to the Orange County District Attorney's Office. Sachs is accused of travelling from Seattle, where he was a student at North Seattle College, to San Juan Capistrano in February and shooting his parents, Bradford Hans Sachs, 57, and Andra Resa Sachs, 54, while they slept. He is also accused of shooting his 8-year-old brother, who was critically injured and is now paralyzed. The couple's two teenage daughters were also inside the home at the time. Sachs is accused of shooting at one of his sisters but missing. Sachs was arrested on March 6 in a family home in San Diego County. Sachs is scheduled to reappear in court for a pretrial hearing on July 25. He remains in jail without bail.

DECOMMISSIONING SAN ONOFRE NUCLEAR GENERATING STATION

*The San Onofre Nuclear Generating Station
Community Engagement Panel is holding its second regular meeting
on May 22nd. Come learn more about the process to decommission
the San Onofre Nuclear Generating Station.*

Thursday, May 22
6:00 to 9:00 p.m.
The Hills Hotel
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NOTICE OF AVAILABILITY Draft Environmental Assessment for Proposed Joint Logistics Over the Shore, Maritime Prepositioning Force, and Field Exercise Amphibious Training Exercises at Marine Corps Base Camp Pendleton San Diego County, California

Department of Defense
U.S. Department of the Navy

The Department of the Navy announces the availability of, and invites public comments on, the Draft Environmental Assessment (EA) prepared to analyze the potential environmental impacts resulting from the proposed increase in amphibious training exercises at Marine Corps Base Camp Pendleton. The Draft EA is available for on-line review at: <http://www.navyregionsouthwest.com/go/doc/4275/2105046> and at

<http://www.pendleton.marines.mil/StaffAgencies/EnvironmentalSecurity/EnvironmentalAssessmentsImpactStatements.aspx>. The Draft EA is also available for hardcopy review at the following public libraries: Oceanside Public Library, 330 North Coast Highway, Oceanside, CA; San Clemente Library, 242 Avenida Del Mar, San Clemente, CA; and Friends of the Fallbrook Library, 124 South Mission Road, Fallbrook, CA. Submit comments on the Draft EA to NAVFAC SW, Attn: Code RAE20.SR, 1220 Pacific Highway, Building 1, San Diego, CA 92132, or via email at sara.reed@navy.mil, no later than May 30, 2014.

AFFIDAVIT OF PUBLICATION

STATE OF CALIFORNIA,)
) ss.
County of Orange)

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of **The Orange County Register**, a newspaper of general circulation, published in the city of Santa Ana, County of Orange, and which news-paper has been adjudged to be a newspaper of general circulation by the Superior Court of the County of Orange, State of California, under the date of November 19, 1905, Case No. A-21046, that the notice, of which the annexed is a true printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

May 16, 17, 18, 2014.

“I certify (or declare) under the penalty of perjury under the laws of the State of California that the foregoing is true and correct”:

Executed at Santa Ana, Orange County, California, on

Date: May 18, 2014



Signature

**The Orange County Register
625 N. Grand Ave.
Santa Ana, CA 92701
(714) 796-2209**

PROOF OF PUBLICATION

**NOTICE OF AVAILABILITY
Draft Environmental Assessment
for Proposed Joint Logistics Over the Shore, Maritime Prepositioning
Force, and Field Exercise Amphibious Training Exercises at
Marine Corps Base Camp Pendleton
San Diego County, California
Department of Defense
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Published: Orange County Register May 16, 17, 18, 2014.
R-800 9894694

**PROOF OF PUBLICATION
(2010 & 2011 C.C.P.)**

**STATE OF CALIFORNIA
County of San Diego**

I am a citizen of the United States and a resident of the County aforesaid: I am over the age of eighteen years and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of

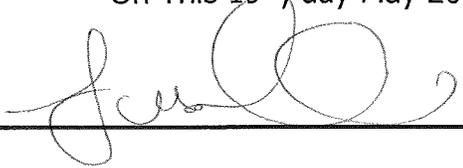
UT - North County

Formerly known as the North County Times and which newspaper has been adjudicated as a newspaper of general circulation by the Superior Court of the County of San Diego, State of California, for the City of Oceanside and the City of Escondido, Court Decree numbers 171349 & 172171, for the County of San Diego, that the notice of which the annexed is a printed copy (set in type not smaller than nonpariel), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

May 16th, 17th & 18th, 2014

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at **Oceanside**, California
On This 19th, day May 2014



Jane Allshouse
NORTH COUNTY TIMES
Legal Advertising

Proof of Publication of

**NOTICE OF AVAILABILITY
Draft Environmental Assessment
for Proposed Joint Logistics Over the Shore, Maritime
Prepositioning Force, and Field Exercise Amphibious
Training Exercises at Marine Corps Base Camp Pendleton
San Diego County, California
Department of Defense U.S. Department of the Navy**

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UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS WEST-MARINE CORPS BASE
BOX 555010
CAMP PENDLETON, CALIFORNIA 92055-5010

5090
ENV/CRS
November 3, 2014

Dr. Carol Roland-Nawi
State Historic Preservation Officer
Department of Parks and Recreation
1725 23rd Street, Suite 100
Sacramento, CA 95816-7100

Dear Dr. Roland-Nawi:

SUBJECT: CONTINUING CONSULTATION FOR JOINT LOGISTICS OVER THE SHORE (JLOTS), MARINE PREPOSITIONING FORCE (MPF) AND FIELD EXERCISE TRAINING (FEX) (20100070)

Marine Corps Base Camp Pendleton (MCB CamPen) is continuing consultation for the above-referenced amended undertaking in order to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended. The proposed undertaking is to provide amphibious training exercises for the Joint Logistics Over The Shore (JLOTS), Marine Prepositioning Force (MPF) and Field Exercise Training (FEX) for Navy, Marine Corps, and Army personnel operating on the west coast to gain and improve amphibious warfighting competencies at a west coast location that allows for the focused assemblage and execution of logistics movement from the offload to locations inland. These exercises also provide the Navy and the Marine Corps an opportunity to integrate as an amphibious warfare team to move Marines from ships afloat to areas inland to support the range of military operations associated with amphibious warfare training.

MCB CamPen initiated consultation for this undertaking in a letter dated February 13, 2014 and a continuing consultation in a letter dated March 27, 2014. MCB CamPen received replies from your office dated March 26, 2014 and June 11, 2014 (USMC_2014_0218_001). Due to tribal concerns and state lease

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land issues the amended undertaking removes the Sierra Training Area and lands leased to the state of California from undertaking and the area of potential effects (APE).

Undertaking and Area of Potential Effects

The amended undertaking, pursuant to 36 CFR S 800.16 (y), is the amphibious training which has been, and presently is conducted on MCB CamPen. The undertaking description was provided in detail in our February 13, 2014 letter. The amended undertaking removes the Sierra Training Area from consideration. The undertaking is now located in the Red, Gold, Green and White Beach areas, Artillery Firing Area (AFA) 16, AFA 18, and the Del Mar Boat Basin areas and includes access roads to these training areas in the west-central portion of MCB CamPen (Enclosures (1) and (2)).

The area of potential effects (APE) now includes the adjacent offshore areas and beach heads at Red, Gold and White beaches, Artillery Firing Area (AFA) 15, AFA 16, access roads to these training areas, and at the Del Mar Boat Basin. The APE includes all of these areas and within 100 feet (33 m) of the edge of the roads and training areas since there are potential indirect effects associated with this type of large-scale training activity.

The Sierra Training Area is removed from the training operations under JLOTS. MCB CamPen has previously consulted on use change from agricultural fields to Sierra Training Area in letters dated September 17, 2010 and for the amendment on October 26, 2013 for the Sierra Training Area. Your office concurred with our finding of no adverse effects with conditions in a letter dated January 23, 2014 (USMC070627A). Subsequently, Pechanga Band of Luiseño Indians commented on the amended Sierra Training Area in which Pechanga did not concur with the proposed undertaking activities due to direct impacts to National Register-eligible sites, a Traditional Cultural Property (TCP), potential for human remains, sacred and ceremonial items and areas, and impeding of sensitive tribal ceremonies. Due to Pechanga's comments, your office has indicated that additional consideration is required (email dated January 30, 2014). Due to the ongoing consultation of Sierra Training Area, this training area has been removed from the JLOTS undertaking.

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Historic Properties Present

Pursuant to 36 CFR 800.4(b) (1), MCB CamPen has made a reasonable and good faith effort to carry out appropriate identification efforts for historic properties within and adjacent to the APE for the proposed undertaking. A review of existing records and inventories were completed for the amended proposed APE. Previous surveys and studies of the amended APE were conducted by ASM (Reddy 1996; Reddy et al. 1994, 1997, and 1998; RECON 1997; Lauter 1991; York 2008, 2009; and York et al. 2010.

As a result of the previous surveys there are 22 documented cultural resource sites located within the amended proposed JLOTS-MPF-FEX undertaking APE including CA-SDI-811, CA-SDI-812/H, CA-SDI-4538, CA-SDI-10723, CA-SDI-10724, CA-SDI-10726, CA-SDI-10731, CA-SDI-14006H (El Camino Real), CA-SDI-14433/14482/14514H (CA-SDI-14514), CA-SDI-14491, CA-SDI-14495, CA-SDI-14504, CA-SDI-14505, CA-SDI-14506, CA-SDI-14507H, CA-SDI-14508, CA-SDI-14509, CA-SDI-14510, CA-SDI-14511, CA-SDI-14513, CA-SDI-14516, and CA-SDI-15254 (Enclosure (3)). Of these one site is listed on NRHP, six are eligible for NRHP listing, eight are assumed eligible, two are determined eligible and six are ineligible. Details for the sites were provided in our February 15, 2014 letter. MCB CamPen received a concurrence letter for our eligibility determinations in your letter dated June 11, 2014 (USMC_2014_0218_001). Table 1 indicates site type, location of site in respect to the APE, potential effects, NRHP status, and SHPO concurrence and is provided as enclosure (4).

MCB CamPen requested a "No Adverse Effects" with conditions. The conditions which applied to Sierra Training Area are no longer being applicable and have been removed from the conditions for the amended JLOTS undertaking. The conditions for the remaining portions and actions for the JLOTS/MPF/FEX amended undertaking still apply:

1. The locations of all proposed exercise elements would avoid impacting known cultural resources, and would be identified and used in compliance with MCIWEST-MCB Camp Pendleton Range and Training Area Standard Operating Procedures (MCIWEST-MCB CAMPENO 3500.1).

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5090
ENV/CRS
November 3, 2014

2. All personnel would stay on established dirt roads, paths, and routes; no activities or personnel would be allowed within the brush areas adjacent to dirt roads. No ground disturbing activities would be permitted inland near vegetation or along dirt roads that would be used as ingress routes or paths.

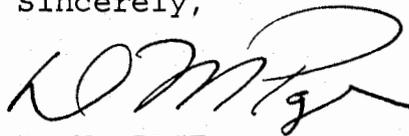
3. Exercise planners and all participants shall be briefed on access to range and training areas before the exercise taking place. This includes using existing dirt roads per MCIWEST-MCB CAMPENO 3500.1 and in accordance with the Environmental Operations Map. MCIWEST-MCB CAMPENO Range and Training Area Standard Operating Procedures (MCIWEST-MCB CAMPENO 3500.1) remain in effect.

4. In the event that archaeological materials (e.g., shell, wood, bone, or stone artifacts) are found or suspected during training, or if the project footprint is altered, training would be halted in the area of discovery and the MCB Camp Pendleton Environmental Security Cultural Resources Management Section would be notified as soon as practicable (but no longer than 24 hours after the discovery). Training at the discovery site would not proceed until the MCB Camp Pendleton Archaeologist has the

Request for Concurrence

Based on the results of the identification efforts and conditions imposed, MCB Camp Pendleton has found that the undertaking will have **"No Adverse Effect" with conditions** for the amended JLOTS undertaking. In accordance with 36 CFR 800.5(b), we are requesting your review and agreement with our finding of **"No Adverse Effect" with conditions** for this amended undertaking. If you have any questions, please contact the undersigned at (760) 725-9738.

Sincerely,



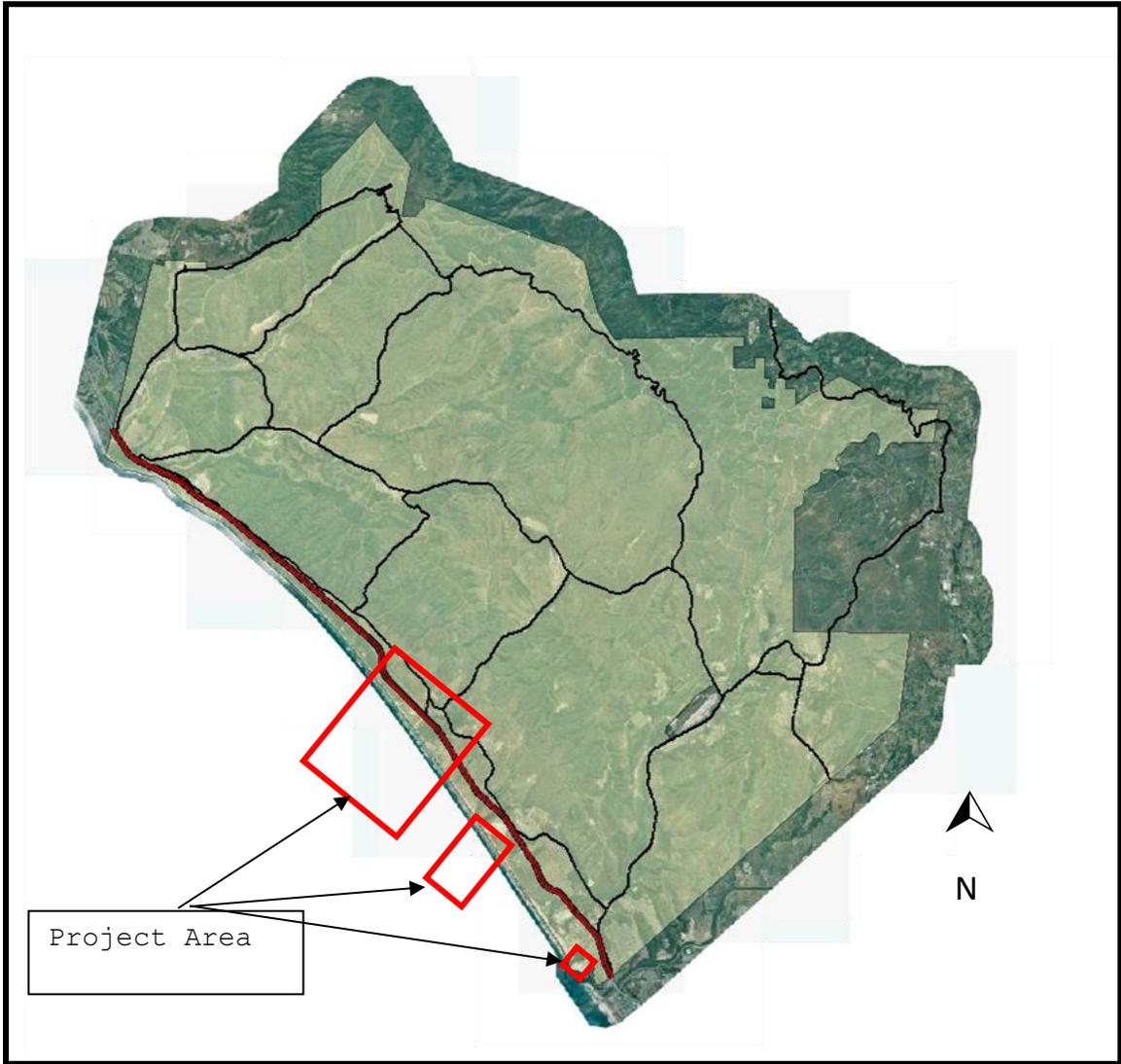
D. M. PAGE
Cultural Resources
Environmental Security
By direction of the
Commanding General

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November 3, 2014

- Enclosures:
1. Location Map
 2. Proposed APE
 3. APE and Archaeological Sites
 4. Table 1

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Map 1. Amended JLOTS Location MCB CamPen

Enclosure 2 and 3

Table 1. Sites Within and Adjacent to Amended APE

No.	Site Trinomial	Type	Location	Potential Effects	NRHP Status	SHPO Concurr
1	CA-SDI-811	Habitation	In APE/ on dirt road	Minimal/will stay within access roads per Range regulations	Eligible	USMC090209 USMC_2014_02 18_001A/
2	CA-SDI-812/H	Habitation / Historic	In APE /in paved road	Minimal/will stay within access roads per Range regulations	Listed	USMC100209B/ USMC959539A/ USMC_2014_02 18_001
3	CA-SDI-4538	Habitation	In APE/ on paved road	Minimal/will stay within access roads per Range regulations	Eligible	USMC100209B/ USMC_2014_02 18_001
4	CA-SDI-10,723	Habitation	In APE/ on dirt road	Minimal/will stay within access roads per Range regulations	Determined Eligible (Hale and Becker 2006)(request concurrence)	USMC_2014_02 18_001
5	CA-SDI-10,724*	Shell midden w/grounds tone	Adjacent	Minimal/will stay within access roads per Range regulations	Assumed eligible	USMC_2014_02 18_001
6	CA-SDI-10,726	Habitation	Adjacent	Minimal/will stay within access roads per Range regulations	Determined Eligible (Byrd 2003)(request concurrence)	USMC_2014_02 18_001
7	CA-SDI-10731	Habitation	In APE/ on dirt road	Minimal/will stay within access roads per Range regulations	Eligible	USMC1002 USMC_2014_02 18_00109B/
8	CA-SDI-14006H	Historic Road	In APE/ on paved road	Minimal/will stay within access roads per Range regulations	Eligible	USMC100209B/ USMC_2014_02 18_001
9	CA-SDI-14433/14482/14514H	Artifact and shell scatter	In APE/ on paved road	Minimal/will stay within access roads per Range regulations	Ineligible (Reddy 2004) (request concurrence)	USMC_2014_02 18_001
10	CA-SDI-14491*	Shell scatter	In APE/ on dirt road	Minimal/will stay within access roads per Range regulations	Assumed eligible	USMC_2014_02 18_001
11	CA-SDI-14495	Shellfish scatter	In APE /on dirt road	Minimal/will stay within access roads per Range regulations	Ineligible (Reddy 1999) (request concurrence)	USMC_2014_02 18_001

No.	Site Trinomial	Type	Location	Potential Effects	NRHP Status	SHPO Concurr
12	CA-SDI-14504	Artifact scatter	In APE/on dirt road	Minimal/will stay within access roads per Range regulations	Eligible (York 2009b) (request concurrence)	USMC_2014_02 18_001
13	CA-SDI-14505	Shell scatter	In APE /on paved road	Minimal/will stay within access roads per Range regulations	Ineligible (Reddy 1999)(request concurrence)	USMC_2014_02 18_001
14	CA-SDI-14506	Shell scatter	In APE/ on paved road	Minimal/will stay within access roads per Range regulations	Ineligible (Reddy 1999)(request concurrence)	USMC_2014_02 18_001
15	CA-SDI-14507H*	Historic glass scatter	Adjacent	Minimal/will stay within access roads per Range regulations	Assumed eligible	USMC_2014_02 18_001
16	CA-SDI-14508	Shell scatter	In APE /on paved	Minimal/will stay within access roads per Range regulations	Ineligible (Reddy 1999)(request concurrence)	USMC_2014_02 18_001
17	CA-SDI-14509*	Shell scatter	Adjacent	Minimal/will stay within access roads per Range regulations	Assumed eligible	USMC_2014_02 18_001
18	CA-SDI-14510*	Shell scatter	Adjacent	Minimal/will stay within access roads per Range regulations	Assumed eligible	USMC_2014_02 18_001
19	CA-SDI-14511*	Shell scatter	Adjacent	Minimal/will stay within access roads per Range regulations	Assumed eligible	USMC_2014_02 18_001
20	CA-SDI-14513*	Shell scatter	In APE /on paved road	Minimal/will stay within access roads per Range regulations	Assumed eligible	USMC_2014_02 18_001
21	CA-SDI-14516	Shell scatter	In APE/ on dirt road	Minimal/will stay within access roads per Range regulations	Ineligible (Reddy 1999)(request concurrence)	USMC_2014_02 18_001
22	CA-SDI-15254	Shell and artifact scatter	In APE /on dirt road	Minimal/will stay within access roads per Range regulations	Eligible (Byrd 1996 and 1999)(request concurrence)	USMC_2014_02 18_001

*= not Evaluated **=Evaluation in progress Adjacent = within 100 ft (#)=Response to SHPO

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov



December 18, 2014

Reply in Reference To: USMC_2014_0218_001

Ms. Danielle Page
Head, Cultural Resource Management Branch
Assistant Chief of Staff, Environmental Security
United States Marine Corps
Box 555010
Camp Pendleton, CA 92055-5010

Re Continuing Consultation for Joint Logistics Over the Shore (JLOTS), Marine Prepositioning Force (MPF), and Field Exercise Training (FEX) (20100070), (your 5090, ENV/CRS, November 3, 2014)

Dear Ms. Page:

Thank you for continuing consultation regarding the United States Marine Corps (USMC) efforts to comply with Section 106 of the *National Historic Preservation Act of 1966* (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800. Segments of this proposed undertaking are subject to the *Programmatic Agreement among the United States Marine Corps, the Arizona and California State Historic Preservation Officers, and the Advisory Council on Historic Preservation regarding the process for compliance with Section 106 of the National Historic Preservation Act for the West Coast basing and operation of the MV-22 Osprey*.

The proposed undertaking is to provide amphibious training exercises for the Joint Logistics Over the Shore (JLOTS), Marine Prepositioning Force (MPF), and Field Exercise Training (FEX) for Navy, Marine Corps, and Army personnel, operating on the West Coast, to gain and improve amphibious combat competencies at a location that allows focused assemblage and execution of logistics movement from the offload to locations inland. These exercises also provide Navy and Marine Corps personnel an opportunity to integrate as an amphibious warfare team to move Marines from ships afloat to areas inland to support the range of military operations associated with amphibious warfare. MCB Camp Pendleton initially consulted about this proposed undertaking in a letter dated February 13, 2014.

In both your initial consultation letter and a subsequent letter dated March 27, 2014, you said that you have been consulting with six federally recognized and two non-federally recognized tribal governments and the San Diego County Archaeological Society (SDCAS) about the proposed undertaking. You also stated that you had received a letter from the Pechanga Band of Luiseno Indians, who were concerned about potential impacts to the village of *Panque/Panxi*, which they believe was located in the area that contains the Sierra Training Area (STA). While they believe that the previous agricultural use of that area could have disturbed cultural resources located there, they believe intact cultural resources could lie beneath the disturbed area. They are concerned that the proposed undertaking could impede their use of the village area for ongoing traditional cultural ceremonies and possibly result in the desecration of human remains. Therefore, they do not concur with the proposed undertaking and requested that the undertaking be modified to reduce impacts and potentially move the undertaking to another location.

At a subsequent tribal consultation meeting held on February 25, 2014, several of the tribes expressed concerns about (a) the potential for continued deterioration of the value of a Traditional Cultural Property which they recognized as being located in the STA; (b) the lack of continued efforts to avoid sites; and (c) encroachment by ongoing training needs.

However, in both of your letters cited above, you stated that based on the results of your identification efforts and determination of conditions to be implemented, MCB Camp Pendleton had found that there will be no historic properties adversely affected with the conditions for the proposed undertakings described in those letters. Therefore, MCB Camp Pendleton requested my concurrence with your finding of No Adverse Effects with conditions for this proposed undertaking. In your letters, you also stated that you would continue to consult with me, the tribes, and other consulting parties for this undertaking in accordance with 36 CFR Part 800.

After reviewing your letters, I had the following comment in my response letter dated June 11, 2014:

Because there may be changes to either the proposed undertaking or the development of additional conditions to address the tribal concerns about their use of the village area or the mitigation of potential effects to tribal values, I believe that it would be premature for me to comment on your finding of No Adverse Effects with conditions for this proposed undertaking at this time. I believe it would be prudent for me to wait until you and the tribes have completed the Nation to Nation consultation process and you consult with my office before I comment.

In your current letter, you state that "Due to tribal concerns and state lease land issues, the amended undertaking removes the Sierra Training Area and lands leased to the State of California from the undertaking and the APE". The amended undertaking now only involves those lands for which I have already reviewed and commented upon in my letter of June 11, 2014.

Therefore, MCB Camp Pendleton is requesting my concurrence with your finding of No Adverse Effects with the conditions listed below for this proposed amended undertaking:

1. The locations of all proposed exercise elements would avoid impacting known cultural resources, and would be identified and used in compliance with MCIWEST-MCB Camp Pendleton Range and Training Area Standard Operating Procedures (MCIWEST-MCB CAMPENO 3500.1).
2. All personnel would stay on established dirt roads, paths, and routes; no activities or personnel would be allowed within the brush areas adjacent to dirt roads. No ground disturbing activities would be permitted inland near vegetation or along dirt roads that would be used as ingress routes or paths.
3. Exercise planners and all participants shall be briefed on access to range and training areas before the exercise taking place. This includes using existing dirt roads per MCIWEST-MCB CAMPENO 3500.1 and in accordance with the Environmental Operations Map. MCIWEST-MCB CAMPENO Range and Training Area Standard Operating Procedures (MCIWEST-MCB CAMPENO 3500.1) remain in effect.
4. In the event that archaeological materials (e.g., shell, wood, bone, or stone artifacts) are found or suspected during training, or if the project footprint is altered, training would be halted in the area of discovery and the MCB Camp Pendleton Environmental Security Cultural Resources Management Section would be notified as soon as practicable (but no longer than 24 hours after the discovery). Training at the discovery site would not proceed until the MCB Camp Pendleton Archaeologist has the opportunity to evaluate the find and gives permission to resume training exercises.

After reviewing your letter, I have the following comments:

1. I applaud the diligence that you demonstrated during your Nation to Nation consultations with the Pechanga Band of Luiseno Indians and the other tribes; and
2. I concur with your finding of No Adverse Effects with the conditions described above for the proposed amended undertaking.

Thank you for seeking my comments and considering historic properties as part of your project planning. I look forward to continuing consultation for this undertaking. If you have any questions or concerns, please contact the following members of my staff: Ed Carroll (916) 445-7006 or at email at ed.carroll@parks.ca.gov or Duane Marti at (916) 445-7030 or at email at duane.marti@parks.ca.gov.

Sincerely,



Jenan Saunders
(for) Carol Roland-Nawi, PhD
State Historic Preservation Officer



DEPARTMENT OF THE NAVY
UNITED STATES PACIFIC FLEET (96860-3131)
MARINE CORPS INSTALLATIONS WEST (92055-5010)

IN REPLY REFER TO:
5090
Ser N465/1103
October 20, 2014

Mark Delaplaine
State of California
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Mr. Delaplaine:

SUBJECT: GENERAL NEGATIVE DETERMINATION FOR JOINT LOGISTICS OVER THE SHORE (JLOTS), MARITIME PREPOSITIONING FORCE (MPF), AND FIELD EXERCISE (FEX) TRAINING AT MARINE CORPS BASE (MCB) CAMP PENDLETON

Per the Federal Coastal Zone Management Act of 1972, as amended, the Commander, U.S. Pacific Fleet (CPF) has determined that the proposed JLOTS, MPF, and FEX amphibious training activities at MCB Camp Pendleton (the "Proposed Action") will not affect resources of the coastal zone, and therefore does not require a consistency determination. This determination is consistent with previous negative determinations issued by the California Coastal Commission (CCC) in the past for similar activities, specifically:

- ND-67-00 issued June 27, 2000,
- ND-100-01 issued January 3, 2002,
- ND-016-09 issued March 25, 2009 and
- ND-019-13 issued April 8, 2013

Due to past similar activities and the infrequency of operations with minimal effects to coastal resources, we have determined that no Consistency Determination (CD) is required. The Navy requests your concurrence on a Coastal Consistency General Negative Determination for the Proposed Action.

An Environmental Assessment (EA) is being prepared for this action under Navy procedures for implementing the National Environmental Policy Act. The EA will contain analysis supporting the determination that the proposed training exercises would not affect coastal resources, and that other environmental resources would experience no long-term effect. Also, the Navy will be applying for a multi-year Section 10 Letter of Permission and

Section 404 Permit from the Army Corps of Engineers, and a Clean Water Act Section 401 Water Quality Certification from the San Diego Regional Water Quality Control Board.

Project Purpose and Need

The purpose of executing amphibious training exercises is to provide Navy, Marine Corps, and Army personnel operating on the west coast an opportunity to gain and improve amphibious warfighting competencies at a west coast location that allows for the focused assemblage and execution of logistics movement from maritime offload to locations inland. These exercises would also provide the Navy and the Marine Corps an opportunity to integrate as an amphibious warfare team to move personnel from ships afloat to areas inland to support the range of military operations associated with amphibious warfare training. The Proposed Action is needed for Navy, Marine Corps, and Army units to conduct realistic routine amphibious training exercises to ensure continued combat readiness. Amphibious training exercises would allow military commands to practice their individual skills as well as prepare for joint operations, where multiple units, multiple commands, and multiple services work together under a single commander in a realistic setting.

Project Description

Proposed amphibious training exercises are similar in scope and size to other previously analyzed, approved, and on-going amphibious training exercises currently conducted at MCB Camp Pendleton within previously analyzed training areas. The impacts associated with activities described under the Proposed Action would be consistent with the impacts associated with training activities of similar scope and size that have and continue to occur at MCB Camp Pendleton since its establishment; these past and present similar training activities did not result in significant impacts to resources.

The Proposed Action would occur at MCB Camp Pendleton in the following existing training areas: offshore of and adjacent to three training beaches (i.e., Red, Gold, and White beaches), from training beaches to inland range and training areas, and within and adjacent to the Del Mar Boat Basin (DMBB). Figure 1 (attached) presents the general location of the Proposed Action

and provides a notional depiction of inland routes from the beaches. More detailed maps of the proposed activities are provided in additional figures that are also attached to this letter. These figures show the proposed activities at Red and Gold Beaches (Figure 2); White Beach (Figure 3); the DMBB (Figure 4) and the special use airspace (Figure 5).

Proposed training frequency is outlined in Table 1. The listed exercises are the most comprehensive and include the majority of the specific activities outlined below:

- JLOTS - could be expected to occur approximately once every three (3) years and would last for approximately 90 days. On average, 2,000 - 3,500 personnel would take part in JLOTS training exercises.
- MPF - exercises involve fewer of the listed activities and could be expected to occur up to once every year, would last approximately 30 days, and would include an average of 600 - 1,500 personnel.
- FEXs - involve the least amount of listed activities and personnel, and therefore, could be conducted more frequently. On average, 10 FEXs would be conducted on an annual basis. FEXs would last 7 to 14 days and would typically involve 30 - 800 personnel. No permanent construction or site improvements would occur as part of any of the exercises described above.

CPF supports logistical training exercises such as the U.S. Transportation Command's scheduled and coordinated JLOTS exercises and USMC MPF training. The location and timing of JLOTS exercises is variable and subject to changes due to real-world events (current global conflicts and natural disasters) making it difficult to predict accurately where and when the next JLOTS exercise would occur.

As part of the Proposed Action, emerging platforms and new technologies would be integrated into future exercises. The average annual amphibious training exercise tempo would increase by approximately 25%, resulting in an average annual total of 15 amphibious training exercises each year (as compared to 12 under existing conditions) at MCB Camp Pendleton. Of the average annual total of 15 exercises held each year, approximately 10 would

consist of FEXs, which as presented above, are small-scale amphibious exercises. The specific activities proposed are summarized in Table 1, in the paragraphs below, and are depicted in Figures 6 through 17.

Pre-deployment Activities

Pre-deployment training activities would involve establishing a Base Camp; conducting surveys; briefing personnel on environmental requirements; and completing other preliminary activities before commencing the amphibious training exercise.

Offshore Training Activities

Offshore training activities would involve offloading cargo, supplies and equipment ashore using a variety of systems/platforms; simulating the transfer of petroleum products¹ from ships to forces on the shore; and conducting ship-to-ship refueling in compliance and in accordance with Navy spill prevention protocols. All ship-to-ship refueling operations would occur more than three (3) nautical miles (NM) offshore.

Littoral Training Activities

Proposed training activities in littoral areas would involve offloading cargo using piers and beach landings; conducting Landing Craft Air Cushion (LCAC) operations; using the Del Mar Boat Basin (DMBB) as a safe harbor during inclement weather; and conducting force protection/security training.

Beach Training Activities

Beach training activities would involve marshaling and directing cargo offload and distribution activities; conducting Amphibious Assault Vehicle (AAV) operations; reassembling offloaded equipment; staging and organizing equipment, cargo, and materials; and conducting force protection/security training activities.

¹ The simulated transfer would use seawater; no petroleum products would be transferred to the shore during exercises.

Upland Activities

Proposed training activities in upland areas would involve using existing railhead to load and ship rolling stock, equipment and containerized cargo; temporarily billeting personnel at a tent camp near Red and Gold beaches; conducting force protection/security training; maintaining and refueling vehicles; and reloading cargo at the conclusion of the exercise.

Since the proposed alternatives do not include the use of Green beach, the EA does not need to analyze upland training that would result in the closure of the San Mateo Campground located on MCB Camp Pendleton or temporary closure of beach and surfing areas associated with San Onofre State Beach. The use of Red, Gold, and White beaches (per the proposed alternatives) would not result in the closure of the San Mateo Campground or San Onofre State Beach.

Air Activities

Air training activities would involve the transfer of cargo, equipment, and personnel to shore using helicopters and/or tilt-rotor aircraft, see Figure 5.

Coastal Resource Protection

Activities at MCB Camp Pendleton are conducted in a manner that is consistent with the MCB CPEN Estuarine and Beach Ecosystem Conservation Plan (2012a). This plan describes considerations and restrictions of activities to protect the California least tern, western snowy plover, light-footed clapper rail, and tidewater goby. This guidance applies to all coastal lagoons and estuaries; marshes and salt flats associated with Las Flores Creek, "Hidden Creek" grid coordinates 580818, Aliso Creek, French Creek, and Cocklebur Creek watersheds; and the Santa Margarita Endangered Species Management Zone. The following restrictions apply:

1. Avoid entering any lagoon or estuary, marsh, mud/salt flat, or posted nesting area due to potential impacts to federally listed species. If any creek and/or lagoon is flowing to the ocean, vehicles may cross the creek only at the ocean's edge. Bivouacking and digging of fighting positions are prohibited in the vicinity of the Estuarine/Beach Endangered Species Management Zones.

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2. All activities involving smoke, pyrotechnics, loud noises, blowing sand, and large groupings of personnel (14 or more) would remain at least 300 meters away from fenced or posted nesting areas. All other activities would be kept at least 5 meters from these areas.

3. Foot traffic involving less than 14 personnel would be kept as far away as possible, and approach no closer than 5 meters to posted nesting areas. Unit hikes would remain on the hard packed sand, as close to the ocean water edge as possible. When passing posted nesting areas, noise would be minimized.

4. Vehicle and equipment operations in the management zones would be kept to a minimum. All vehicles would travel on hard packed sand and would not approach posted nesting areas or lagoons closer than 5 meters. Speeds would not exceed 25 mph. Tracked vehicles would travel as close to the water (upper few inches of waves) as possible, year round, in the Santa Margarita Endangered Species Management Zone. Military vehicle operations transiting parallel to the beach during the combined western snowy plover/California least tern breeding season (1 March - 15 September) must keep one wheel in the water to minimize potential impacts to nesting terns and plovers.

5. Boat operations (including LCACs) are not authorized in lagoons and estuaries. LCACs shall not enter the management zones between 1 March and 15 September, except when entering or exiting seaward; and on return, shall exit the ocean heading directly up to the facility access ramp.

6. To the maximum extent practicable, vehicles and personnel accessing the beach at White Beach between 1 March and 15 September shall follow a route along the base of the northerly bluff to maintain the maximum distance from the tern colony.

7. Vehicle operations, inside fenced areas on the edge of the bluff between Aliso and French Creeks (White Beach), are not authorized between 1 March and 15 September.

8. Upon entering the beach from Camp Del Mar, vehicles shall transit in a direct line along a marked corridor bordering the southern edge of the Santa Margarita Endangered Species Management Zone before heading up-coast. During returns, vehicles

shall proceed along the same marked corridor. During the breeding season, amphibious tracked vehicles shall not traverse the Santa Margarita Endangered Species Management Zone in excess of a monthly average of 20 traverses per day (one traverse equals one round trip to and from Camp Del Mar).

Additional measures are taken when training activities occur in coastal sage scrub and riparian habitats. To protect the California gnatcatcher, least bell's vireo, and southwestern willow flycatcher the following measures apply:

1. Use extreme caution when conducting activities with the potential to cause a fire. Use of pyrotechnics would comply with Base Order 3500.1N *Environmental Procedures in Range Regulations*.

2. Maintain foot traffic on existing roads, trails, and established training facilities to the maximum extent practical. Foot traffic may be authorized in the vicinity of coastal sage scrub, riverine, and riparian habitats; however, care must be exercised to avoid crushing or otherwise destroying vegetation.

3. River and creek crossings, including dry riverbeds, would be avoided to the maximum extent possible, year-round.

4. Bivouac/command post/field support activities would be kept at least 50 meters from coastal sage scrub and riparian habitats, year round.

Vernal pool avoidance measures authorize foot traffic year round, restrict vehicle and equipment operation to existing roads and require bivouac/command post/field support activities to be at least 50 meters from identified vernal pool locations.

Air operations within R-1503A (Figure 5) are restricted during 1 March through 15 September to protect nesting and feeding habitat of least tern and snowy plover nesting areas. The restriction applies from the surface to 91 meters AGL and 300 meters laterally in the following areas:

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1. Beach Section G Margarita of Blue Beach inland to the I-5 Freeway, and from the bluffs north of the Santa Margarita River to the bluffs south of the river near the 21 Area.

2. Aircraft will not fly below 91 meters above ground level (AGL) over river mouths, riverbeds and streams, estuaries and lagoons other than established landing sites and terrain flight routes.

Cultural resources protective measures are defined in Base Order 3500.1N *Environmental Procedures in Range Regulations*. Personnel and vehicles are required to stay on established dirt roads, paths and routes. No activities or personnel are allowed within the brush areas adjacent to dirt roads. No ground disturbing activities are permitted inland near vegetation or along dirt roads that would be used as ingress routes or paths. Digging, including construction of fighting positions is prohibited at known archaeological sites. Bivouac/command post/field support activities are kept at least 50 meters from identified archaeological sites. If archaeological materials are discovered on the ground or below the soil surfaces, MCB CPEN Environmental Security will be notified as soon as possible and training in that area will be halted. No materials will be removed from the area.

Summary of Effects

The coastal zone, as defined in Section 304 (1) of the Coastal Zone Management Act, does not include "lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal government." The U.S. Department of the Navy and the USMC wholly own and operate MCB Camp Pendleton. However, the Navy recognizes that the Proposed Action may have a temporary effect on coastal resources such as natural resources along the coast outside of the boundaries of MCB Camp Pendleton and therefore is subject to the consistency provisions of the Coastal Zone Management Act. Accordingly, an analysis of the impacts of the Proposed Action on the coastal zone was performed. The conclusions of this analysis are summarized in the paragraphs below.

Public Access and Recreation

The Proposed Action is not anticipated to affect aquatic and land recreation along the coastline because amphibious training exercises would occur on military lands and not within any State Lease Area. The Proposed Action is located on a military installation where public access is restricted and no permanent commercial land uses have been established. Therefore, the Proposed Action would not have any effect on public access to, or commercial or recreational use of, coastal areas. The EA does not include or analyze any upland training that would result in the closure of the San Mateo Campground located on MCB Camp Pendleton or the temporary closure of the beach areas associated with San Onofre State Beach.

Marine Environment

The Navy has analyzed the effects to the marine environment of typical ship to shore activities in previous NEPA documents and consultations with the California Coastal Commission. Those documents include the Southern California Range EIS, the Silver Strand Training Complex EIS and the Hawaii - Southern California Training and Testing EIS/OEIS. Based on the analysis of similar training events, the Navy has determined the Proposed Action would have no long-term effect to the marine environment. Measures have been incorporated into the Proposed Action to avoid or minimize impacts to special status species and their habitat. No takes are anticipated and the Proposed Action shall be in accordance with previous and ongoing consultation with the National Marine Fisheries Service pursuant to Section 7 of the Endangered Species Act.

In addition to providing measures to minimize effects on species and habitat, the EA contains additional measures to limit or avoid impacts to the marine environment. This includes obtaining permits for in-water construction activities from the U.S. Army Corps of Engineers (Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act) and the San Diego Regional Water Quality Control Board (Section 401 of the Clean Water Act), and compliance with the Migratory Bird Treaty Act.

Impacts to marine flora and fauna resulting from movement of and anchoring of vessels and surf zone activities would be temporary and minor. The Proposed Action incorporates a number of policies and practices intended to minimize or avoid impacts to the marine environment. All military training events abide by Base Order 3500.1N *Environmental Procedures in Range Regulations*. Other practices include compliance with the Navy's Spill Prevention Control and Countermeasure Plan; minimizing noise and dust near environmentally sensitive areas; managing hazardous materials; and implementing erosion and sediment control measures. Similar to accepted and approved procedures, if pile driving or removal is conducted (during installation and removal of the Elevated Causeway), the area is visually monitored and activity would cease in the event a marine mammal or sea turtle is sighted within a 180 ft radius of the pile. For large vessel movements, the Navy would continue to use a 500 yd. (460 m) mitigation zone currently established for whales, and a 200 yd. (180 m) mitigation zone for all other marine mammals. Vessels would avoid approaching marine mammals head on and maneuver to maintain a mitigation zone of 500 yd. (460 m) around observed whales and 200 yd. (180 m) around all other marine mammals, providing it is safe to do so and not hazardous to navigation.

Eelgrass surveys will occur as required by the USACE Section 404 permit.

Each military training event would not always consist of every activity described above and could occur infrequently, therefore effects to the Marine Environment would be minimal and temporary.

Land Resources

The Proposed Action would involve the continuation of historic, regular and enduring training activities within established and previously disturbed existing training areas. Design measures would be implemented to minimize or avoid impacts to geological resources (i.e., restoring the beach to its normal contours after the exercises; limiting vehicle and personnel travel to existing roads; and stabilizing disturbed slopes or other features) and water resources (i.e., obtaining a graywater permit if percolation is required for the exercise, and requiring fueling and maintenance activities to be at least 100 feet from surface water features). Documented cultural sites would be avoided, and

measures would be implemented to avoid the disturbance of undocumented cultural resources.

Each military training event would not always consist of every activity described above and would not be conducted every year. All commands conducting training aboard MCB Camp Pendleton abide by the strict environmental and cultural resource protection requirements. Therefore there would be no effect to Land Resources.

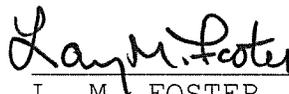
Visual Resources

The Proposed Action would not affect the visual resources in the coastal zone because the exercises are temporary in nature, would be consistent with training activities that have been occurring at MCB Camp Pendleton for 70 years, and would not constitute a change to the visual environment, which is already characteristic of a military training installation. Furthermore, no new permanent structures would be constructed that might alter the existing visual environment.

Conclusion

In accordance with 15 Code of Federal Regulations 930.33 and 930.35, the Navy has determined that the Proposed Action would have minimal or no effect on resources of the coastal zone. Accordingly, a Consistency Determination is not required.

The point of contact concerning this subject is Deb McKay at (619) 532-2284, or email deborah.mckay@navy.mil.



L. M. FOSTER
Director, Environmental
Readiness Division
COMPACFLT, Pearl Harbor, HI

CALIFORNIA COASTAL COMMISSION

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December 16, 2014

Larry K. Foster
Director, Fleet Environmental
Department of the Navy
U.S. Pacific Fleet (N01CE1)
250 Makalapa Drive
Pearl Harbor, HI 96860-3131

Subject: Negative Determination ND-0045-14 (Amphibious Training Exercises at Marine Corps Base Camp Pendleton, San Diego County)

Dear Mr. Foster:

The Coastal Commission staff has reviewed the above-referenced negative determination. The Navy proposes to conduct a series of amphibious training exercises at Red, Gold, and White beaches on Marine Corps Base Camp Pendleton and in adjacent offshore waters. The Commission's Executive Director previously concurred with negative determinations for similar training exercises at these locations on Camp Pendleton and offshore waters in ND-067-00, ND-100-01, ND-016-09, and ND-019-13.

The proposed training exercises would use Navy ships, Marine Corps amphibious vehicles, landing craft air-cushioned vehicles (LCACs), military vehicles, and aircraft. The exercises include a mix of the following activities: (1) pre-deployment training and base camp establishment inland of Red and Gold beaches; (2) offshore training for offloading cargo, simulating the transfer of petroleum products from ship-to-shore, and ship-to-ship refueling; (3) littoral training for offloading cargo using temporary piers and beach landings, installation and removal of an elevated causeway on pilings, conducting LCAC operations, and ship-to-shore maneuvers across Red, Gold, and White beaches; (4) beach training for cargo offloading and distribution and amphibious assault vehicle operations; (5) inland troop movements along existing designated dirt access roads; (6) air training activities to transfer cargo, equipment, and personnel from ship-to-shore using helicopters and/or tilt-rotor aircraft, and (7) use of the Del Mar Boat Basin.

The training exercises are organized as follows:

- Joint Logistics over the Shore (JLOTS) training is expected to occur once every three years, last approximately 90 days, include 2,000 to 3,500 personnel, and involve most of the aforementioned listed activities.

- Maritime Prepositioning Force (MPF) training is expected to occur annually, last approximately 30 days, include 600 to 1,500 personnel, and involve fewer of the listed activities.
- Field Exercise (FEX) training is expected to occur up to ten times a year, last one to two weeks, include 30 to 800 personnel, and involve even fewer of the listed activities.

The training exercises would be temporary, do not include permanent construction or site improvements, would avoid sensitive marine and terrestrial habitats, and would occur at ocean, beach, and inland sites historically used for amphibious training exercises previously concurred with by the Commission. None of the proposed training exercises would occur at Green Beach nor would they require the closure of the adjacent San Onofre State Beach or San Mateo Campground.

All of the proposed training activities would be conducted in a manner that is consistent with the Marine Corps Base Camp Pendleton *Estuarine and Beach Ecosystem Conservation Plan (2012a)* and with the *Riparian and Estuarine/Beach Ecosystems Programmatic Biological Opinion (1995)* from the U.S. Fish and Wildlife Service. These documents include numerous habitat and species protection measures and training activity restrictions that the Navy will adhere to during all training activities. Measures are incorporated into the training exercises to avoid or minimize potential impacts to marine mammals during offshore exercises and construction of the temporary elevated causeway. Ongoing consultation with the National Marine Fisheries Service pursuant to the Endangered Species Act will continue in order to protect special status species and their habitat. The Navy will also adhere to cultural resource protection measures defined in *Base Order 3500.1N Environmental Procedures in Range Regulations*, and as required after completing ongoing consultation with the State Historic Preservation Office.

The Commission staff **agrees** that the proposed amphibious training exercises at Marine Corps Base Camp Pendleton will not adversely affect coastal resources. Under the federal consistency regulations (Section 15 CFR 930.35(a)), a negative determination can be submitted for an activity “which is the same or similar to activities for which consistency determinations have been prepared in the past.” The proposed project is similar to previous military training activities previously concurred with by the Commission and the Executive Director at Marine Corps Base Camp Pendleton and at the U.S. Navy’s Silver Strand Training Complex in San Diego. We therefore **concur** with your negative determination made pursuant to 15 CFR 930.35 of the NOAA implementing regulations. Please contact Larry Simon at (415) 904-5288 should you have any questions regarding this matter.

Sincerely,



(son)

CHARLES LESTER
Executive Director

ND-0045-14 (U.S. Navy)

cc: CCC – San Diego Coast District
Deb McCay, U.S. Navy Region Southwest



DEPARTMENT OF THE NAVY

COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131

IN REPLY REFER TO:
5090
Ser N465/1128
November 6, 2014

Mr. Eric Chavez
Habitat Conservation Division
National Marine Fisheries Service, Southwest Regional Office
501 West Ocean Boulevard
Long Beach, California 90802-4213

SUBJECT: ESSENTIAL FISH HABITAT (EFH) ASSESSMENT FOR THE ENVIRONMENTAL ASSESSMENT (EA) FOR JOINT LOGISTICS OVER THE SHORE (JLOTS), MARITIME PREPOSITIONING FORCE (MPF), LARGE SCALE EXERCISES (LSE), AND FIELD EXERCISES (FEX) AT MARINE CORPS BASE CAMP PENDLETON

Dear Mr. Chavez:

In accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), the U.S. Navy has prepared the enclosed EFH Assessment for the JLOTS, MPFs, and LSEs and FEXs EA and requests initiation of the MSA's EFH consultation process. The U.S. Navy's assessment concludes that the JLOTS EA activities would have relatively minor, temporary adverse effects on EFH for federally managed species within the Coastal Pelagic Species and West Coast Groundfish Fishery Management Plan.

We appreciate your continued support in helping the U.S. Navy meet its environmental responsibilities while supporting Fleet readiness. If you have any further questions or concerns, our point of contact for the JLOTS EFH consultation is Ms. Jacque Rice at (619)545-9339 or jacqueline.rice@navy.mil.

Sincerely,

A handwritten signature in black ink that reads "L. M. Foster".

L. M. Foster
By direction

Enclosures: 1. EFH Assessment for JLOTS

Copy to:
Commander, Navy Region Southwest (N40)
Marine Corp Base Camp Pendleton, Head Environmental Conservation
Division



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

January 5, 2015

Mr. L. M. Foster
Director, Fleet Environmental
250 Makalapa Drive
Pearl Harbor, Hawaii 96860-3131

Dear Mr. Foster:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Navy's Essential Fish Habitat (EFH) Assessment for the Joint Logistics Over the Shore (JLOTS), Maritime Prepositioning Force (MPF), and other smaller scale Field Exercises (FEX), referred to collectively as "amphibious training exercises," to take place on and adjacent to Marine Corps Base (MCB) Camp Pendleton (Red, Gold and White Beaches; Del Mar Boat Basin; Pacific Ocean) near the City of Oceanside, San Diego County, California. NMFS offers the following comments pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act (FWCA).

Proposed Project

The proposed project includes a variety of amphibious military training activities to be performed at the MCB Camp Pendleton. The proposed amphibious training exercises are similar to existing training that has occurred at MCB Camp Pendleton since the 1940s. However, there would be an increase in the number of proposed activities each year and an expansion of the area in which they occur to accommodate an anticipated increase in amphibious training requirements in accordance with training plans developed as part of the National Military Strategy. Specifically, annual exercises would increase on average from 12 to 15 exercises (an increase of approximately 25%). In addition, although the majority of JLOTS, MPF and FEX military exercises would continue to occur at Red and Gold Beaches, they would be expanded to occur at White Beach as well. On average, there would be one JLOTS exercise every three years, one MPF exercise every year, and up to ten FEX activities every year, though these numbers could vary depending upon scheduling and training needs. These training activities occur in five general geographic areas at MCB Camp Pendleton, offshore, in the littoral zone (including the Del Mar Boat Basin [DMBB]), on the beaches, inland, and in the air. Brief descriptions of the training activities that occur in these areas and may impact EFH are included below. During the pre-deployment phase of these exercises, beach and hydrographic surveys are performed to map existing oceanographic conditions, and all personnel receive a pre-exercise environmental brief. Exercise duration can vary depending upon the type of activity, delays, etc., but on average, a JLOTS exercise would be expected to last a total of approximately 90 days.

FEX training exercises include some, but not all, components of a full JLOTS and/or MPF exercise, but at a much smaller scale. They occur approximately 6-8 times per year at Red and Gold Beaches, can involve as few as 30 and as many as 800 people, and generally last for 7-14 days. FEX exercises typically include small boat operations offshore, communication tents on the beach, convoy operations, campsite setup/security, entry control point operations, and command and control facilities/operations.



Offshore Activities

Cargo Offload

During JLOTS and MPF exercises, personnel transfer cargo, supplies and equipment from vessels anchored approximately 3 nautical miles offshore to the beach using a variety of systems and platforms, including the Improved Navy Lighterage System (INLS), Modular Causeway System (MCS), and other types of landing craft. The INLS and MCS are comprised of interchangeable floating platforms that are assembled offshore, and in the case of non-powered systems, towed into place by tugs. Cargo is transferred from a ship to the floating platforms using a crane or ramp.

Liquid Transfer

The transfer of petroleum products from vessels to shore-based operations is simulated using the Offshore Petroleum Discharge System (OPDS), Amphibious Bulk Liquid Transfer System (ABLTS), and Inland Petroleum Discharge System (IPDS). Approximately 100,000 to 200,000 gallons of seawater are used during an individual simulation, and no petroleum products have ever been used during training exercises. The seawater is pumped from the ocean into a tanker and then transferred through a flexible conduit to a single anchor leg mooring (SALM) anchored to the seafloor. From there the seawater is transferred via flexible conduit, anchored to the seafloor at various locations, to a beach termination unit located onshore. Following completion of the exercise, the seawater is gradually discharged into the Pacific Ocean away from the shoreline.

The Tactical Water Purification System is an infrequently used system that generates approximately 20,000 gallons of potable water per average use by treating seawater with reverse osmosis and chlorination. To discharge the potable water, a percolation pit large enough to accommodate all product water and brine solution is excavated in the sand above the high tide line. Then, the potable water and brine are released into the pit, allowed to remix and percolate into the underlying sand, and the pit is then backfilled.

Landing Craft Air Cushion

The Landing Craft Air Cushion is a high-speed, fully amphibious landing craft used to transport equipment, cargo and personnel from ship to shore and across the beach. These amphibious crafts can carry heavy payloads, such as an M-1 tank, and can access a much larger portion of the world's coastline.

Littoral Activities

Cargo Offload

Cargo transfer within the littoral zone is accomplished using one of three methods: the Elevated Causeway (ELCAS), the TRIDENT Pier, or by landing craft. The ELCAS is a temporary pier that extends from the beach to a depth of approximately 20 feet (ft) mean lower low water (MLLW), which can range from approximately 1,200 ft (at Red Beach) to 3,000 ft offshore. After the ELCAS components are assembled onshore, which requires an area of approximately 4 acres, two bulldozers grade a ramp in the beach to facilitate construction. The graded area is approximately 100 ft wide by 200 ft long (.46 acre), and the ramp is filled in to match existing beach contour after the ELCAS is removed. Roughly 100 24-inch diameter steel piles are driven into the sand over the course of approximately 10 days using a diesel impact hammer to support the causeway platform pieces, which are assembled using hydraulic jacks. The Navy estimates that installing these piles would require approximately 1,000 pile strikes per day, though these estimates could vary substantially. During pile installation, a ramping up procedure would be used to allow animals in the area to disperse. The temporary ELCAS and all its components, including the steel piles, are removed upon completion of the training exercise. Each pile takes

approximately 15 minutes to remove via vibratory extraction. The entire process to assemble, use and remove the ELCAS takes approximately 30 days.

The TRIDENT Pier is a floating platform that extends from the beach up to approximately 1,200 ft offshore and is typically 60-90 ft wide. The pier is assembled by excavating a pit, generally 25 ft wide by 30 ft long (.02 acre), and then anchoring it either to the beach or to the ocean floor.

Landing craft include Landing Craft Utility boats, Logistics Support Vessels, and Landing Craft Mechanized boats. These vessels receive cargo from larger ships via crane or roll-on/roll-off facilities, transport the cargo to shore where they lower their ramps and allow the vehicles and cargo to be driven onto the beach.

Safe Harbor

DMBB serves multiple purposes during these amphibious training exercises, including an anchoring location for Landing Craft Utility boats, an area to swap ship crews, perform minor maintenance, refuel lighterage craft, and as a safe harbor during inclement weather. To support these functions, an ADMIN pier or other causeway, approximately 270 ft long, is typically anchored onto the beach in the DMBB and/or in the water for the duration of the exercises.

Force Protection/Security

This component of the training exercises involves 35-ft long security boats, launched from the DMBB, performing patrols around supply ships.

Beach Activities

Cargo Offload

Various types of vehicles and equipment are used to transfer materials and personnel on to the beach. Lighter Amphibious Resupply Cargos are amphibious vehicles that can operate on the beach and in the nearshore to transfer supplies and personnel. Tactical vehicles then take those supplies from the beach further inland. Bulldozers are used to push vessels back into the water when they get stuck. Similar to the ELCAS setup mentioned previously, the bulldozers are also used to excavate areas (approximately 150 ft x 150 ft) for anchoring of causeway platforms that allow cargo to be driven onto the beach. These excavated areas are filled in once the exercise is completed. Lightweight mobility matting is also laid down above the high-water mark to allow military vehicles to drive on the soft sand. In the rare case that a vessel or causeway is pushed out of alignment by strong wave action, tugs are ready to pull the craft back out to sea. Finally, Amphibious Assault Vehicles, which have tracks similar to those used by tanks, may also be offloaded from ship to shore during JLOTS and MPF exercises. Although these vehicles contain artillery, live-fire only occurs within designated inland ranges.

Vehicle Maintenance and Refueling

The majority of vehicle maintenance occurs at the Base Camp away from the water, though it can take place at other locations, such as the DMBB, if vehicles cannot be transported easily. Hazardous materials associated with vehicle maintenance (e.g., antifreeze, brake fluid, solvents, lubricating oil, etc.) are kept a safe distance from the percolation pits and managed in accordance with applicable Federal and state regulations. When vehicles require washing, it is performed within a covered facility at the DMBB where runoff is collected and treated prior to disposal.

The Navy's Spill Prevention Control and Countermeasure Plan guides all maintenance and refueling activities associated with these amphibious training activities. Refueling occurs in designated areas away from the beach and from surface water drainages.

Cargo Reload

Cargo reloading occurs either at the DMBB or on the beach using the same procedures described previously in reverse.

Action Area

The proposed project occurs in EFH for various federally managed fish species within the Pacific Coast Groundfish, Coastal Pelagic Species and Highly Migratory Species Fishery Management Plans (FMPs). In addition, the project occurs within seagrass, canopy kelp, and rocky reef habitat which are considered habitat areas of particular concern (HAPC) for various federally managed fish species within the Pacific Coast Groundfish FMP. HAPC are described in the regulations as subsets of EFH which are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPC are not afforded any additional regulatory protection under MSA; however, federally permitted projects with potential adverse impacts to HAPC will be more carefully scrutinized during the consultation process.

According to the Nearshore Habitat Assessment and Biological Baseline and Community Assessment Study (Baseline Study) completed for MCB Camp Pendleton, there are a variety of habitats that extend from the shore out to 3 miles where the amphibious training exercises will occur. Specifically, surveys performed within the beach and nearshore portions of the action area observed: intertidal sandy beach and cobble beach; subtidal sand, cobble, and rocky reef, and kelp forest. Nearshore coastal waters off MCB Camp Pendleton are comprised primarily of sandy bottom (91.3%) and loose cobble substrate. Canopy forming kelp exists offshore, typically in depths greater than about 30 ft. Combined, kelp, rock and gravel cobble comprise approximately 7.8% of the project area, while fine sediments or mud within the DMBB accounts for 0.3%. The DMBB, a manmade feature with a maximum depth of approximately 25 ft, contains bare mud in the midchannel and intertidal, riprap, and eelgrass.

Effects of the Action

Aspects of vessel movement activities, including engine noise from large vessels and accelerating small vessels, can alter fish behavior resulting in an adverse impact to EFH. Amphibious exercises can also impact fish and will be discussed in more detail later. Studies have shown that the optimal hearing sensitivity for hearing generalists, which includes most marine fish, is at or around 300 Hz. These species respond primarily to particle motion as opposed to pressure. Hearing specialists, which are rare in marine waters, can detect sound at well above 1,000 Hz and include some clupeids, gadids and pomacentrids (Amoser and Ladich 2005, Popper 2003). Because of these differences in hearing sensitivities, the distance at which a fish will detect and exhibit a behavioral response can vary greatly. Behavioral responses noted during experiments with herring and rockfish ranged from avoidance (fish move slowly away from the sound source) to alarm (fish gathered together, fled at high speed, dove repeatedly, and quickly changed directions) to startle (fish severely flexed their bodies and then swam at high speed without changing direction, or shuddered with each blast) (Schwarz and Greer 1984, Pearson et al. 1992). In general, fish often exhibit a change in behavior to sound emission, especially continuous strong and/or intermittent sounds of low frequency. Low-frequency sounds emitted by large vessels or accelerating small vessels often evoke an avoidance response, but the fish return to normal behavior shortly after departure of the vessel. Therefore, the sound-related effects on EFH associated with vessel movement are expected to be temporary and no more than minimal in nature.

Pile driving can generate intense underwater sound pressure waves that may affect fish behavior, injure or kill fish. Popper and Hastings (2009) completed a review of information on the effects of anthropogenic sources of sound on fishes. Their review covers the wide range of potential effects from underwater sound, but notes a lack of peer-reviewed literature on the issue. The type and severity of the impact can vary greatly depending upon several factors, including the magnitude of the sound, proximity of habitat or fish to the sound, marine community characteristics, size and body type of fish, and type of water body (e.g., enclosed bay, open ocean, etc.). In 2008, NMFS, in collaboration with the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and state transportation agencies, established interim criteria for injury to fish from pile driving activities. The interim criteria identified the onset of injury from impact pile driving to occur at sound pressure levels of 206 decibels (dB) peak and 187 dB accumulated sound exposure level (SEL) for fish equal to or greater than 2 grams. For those fish less than 2 grams, the accumulated SEL was set at 183 dB. The Navy estimates the driving of the piles with an impact hammer for the ELCAS pier would generate a sound level of 210 dB peak and 190 dB root mean square at 10 meters from the source. As a result, the 206 dB injury threshold would only be exceeded for this particular activity and within about 59 ft of the pile driving. In addition, the Navy states that the SEL at 1,000 strikes per day is 180 dB for impact driving. Thus pile driving would potentially exceed the interim criteria for the onset of injury for peak sound level but not for SEL. In addition, vibratory extraction of the piles would produce underwater sound levels of 195 dB peak and 180 dB root mean square at 10 meters, as estimated by the Navy. These sound levels may result in behavioral effects to fish, but would not be expected to cause injury. Therefore, despite the potential for injury and/or behavioral effects to fish, given the location of the pile driving (i.e., in the open ocean as opposed to an enclosed bay), the relatively small impact zone, and the frequency and duration of the activity (i.e., it would only occur for approximately 30 days every few years), these impacts would be no more than minimal and temporary in nature.

A subset of the many amphibious activities to be performed at MCB Camp Pendleton, including those exercises that involve the construction and removal of temporary piers, the beaching of large landing craft, and the placement/anchoring of devices to implement fluid transfer training, have the potential to adversely impact EFH through direct physical disturbance. For example, the deployment of the offshore OPDS, which includes some anchoring to the seafloor could impact rocky reef, seagrass, or kelp habitat via direct disturbance if the conduit is laid on top of, or anchored within, sensitive habitats. Excavation of the percolation pit could also directly impact beach habitat. Other amphibious activities, such as the ELCAS, TRIDENT Pier, or landing craft, could also result in direct disturbance to sensitive habitats as they transport personnel and cargo onshore. In addition to the pile driving discussed previously, ELCAS and TRIDENT also include excavation or grading of the beach. The temporary piers and causeways would be constructed over bare sand on Red Beach, and impacts to kelp canopy would be avoided on all operational beaches during the proposed activities. In the unlikely event that kelp becomes opportunistically established on cobble exposed by wave action underneath one of these piers, there could be some direct disturbance during pier construction. However, this effect would be expected to be temporary and minimal given the temporary nature and limited geographic scope of the piers. In addition, MCB Camp Pendleton has committed to avoiding impacts to wetland areas on any operation beaches where breaches for tidal exchange exist, and the exercises would not be allowed within any lagoon or estuary (excluding DMBB), salt/mudflat, or marsh.

The resuspension of sediments from construction activities, including pile installation, would adversely affect EFH because of increased turbidity and/or increased exposure to contaminants. Increased turbidity in aquatic systems can reduce light penetration, alter pH and dissolved oxygen levels, smother fish spawning areas and food supplies, bury benthic invertebrates, hamper filtering capabilities of filter feeders, clog and harm the gills of fish, interfere with feeding behaviors and substantially reduce overall biological productivity (Benfield and Minello 1996, Gabr et al. 2004). Disruption of the bottom sediments can recirculate toxic metals, hydrocarbons, hydrophobic organics (e.g., dioxins), pesticides,

pathogens, and nutrients into the water column (Hanson et al. 2003). These substances can cause direct toxicological impacts to exposed fish, indirect impairment of the productivity of aquatic ecosystems, impacts to aquatic vegetation, and reduced oxygen levels. Toxic organics and metals, pathogens, and viruses absorbed or adsorbed to fine-grained particulates may become biologically available to organisms either in the water column or through food chain processes (Hanson et al. 2003). Driving piles in the primarily coarse grained sand would likely result in lower turbidity than pile driving in substrate comprised of finer material. As a result, NMFS expects any effects to EFH from increased turbidity or exposure to contaminants to be no more than minimal and temporary in nature.

Potential impacts to grunion from amphibious activities (e.g., ELCAS, TRIDENT pier) are also a concern. Along the coast of southern California to southern Baja California during the months of March through August, grunion use intertidal sandy beach habitats for spawning and maturation of eggs. These eggs will mature over a period of approximately two weeks, when extreme high tides reach eggs and stimulate hatching. Activities that require construction and/or the movement of material on beaches and within the tidal areas, such as those listed above, during this season may smother and/or physically damage grunion eggs because of compression by heavy work equipment or burial by the placement of sand material. This could have negative impacts on the reproductive success of grunion. NMFS believes it is important to ensure protection for grunion spawning activity, especially the high intensity spawning events, which can be rare. Therefore, grunion protection measures are included in the EFH Conservation Recommendations section below.

Overwater structures and associated activities affect the ecological functions of habitat through the alteration of habitat controlling factors, including light regime, wave energy, substrate and water quality. These alterations can, in turn, interfere with habitat processes supporting the key ecological functions of fish spawning, rearing, foraging, and refugia. Nightingale and Simenstad (2001) identify the potential mechanisms of impact overwater structures can pose to nearshore habitats. Some of the impacts that may result from the proposed overwater structure and related activities include: 1) reduced light levels and altered ambient light patterns; 2) altered wave and tidal energy patterns; 3) substrate disturbance and smothering; 4) an increase of non-indigenous species; and 5) elevated levels of toxics, nutrients, and bacteria. These impacts can limit plant growth and recruitment, alter plant and animal assemblages, affect animal behavior, modify substrate type, alter sediment transport and distribution, and facilitate the replacement of native species with exotics. For example, light is the single most important factor affecting aquatic plants (Hauxwell et al. 2003). Light levels underneath overwater structures have been found to fall below threshold levels for photosynthesis of diatoms, benthic algae, eelgrass, associated epiphytes and other autotrophs (Burdick and Short 1999). These photosynthesizers are an essential part of nearshore habitat and the estuarine and nearshore food webs that support many species of marine and estuarine fishes and invertebrates. Support activities that would occur within the DMBB, as described under the Safe Harbor section and including the anchoring and/or mooring of vessels and installation of temporary piers and/or causeways, would have the potential to impact eelgrass resources. However, similar exercises performed during the 2008 JLOTS did not result in impacts to eelgrass habitat. Regardless, pre-and post-construction eelgrass surveys would be conducted in the DMBB before and after every JLOTS and MPF exercise to determine if any impacts occurred and if mitigation is warranted.

Pollutants could also be released by activities associated with the operation and maintenance of vessels (e.g., accidental spills during refueling, discharge during washing). However, all maintenance and refueling activities are conducted in accordance with the Navy's Spill Prevention Control and Countermeasure Plan, and the wash racks are covered facilities that collect and treat the runoff before disposing of it. As a result, impacts from pollutant discharge are unlikely, and if they did occur, would be expected to be temporary and minimal in nature.

EFH Conservation Recommendations

Based upon the effects analysis above, NMFS believes the proposed project would adversely affect EFH for various federally managed fish species within the Pacific Coast Groundfish, Coastal Pelagic Species, and Highly Migratory Species FMPs. Pursuant to section 305(b)(4)(A) of the MSA, NMFS offers the following EFH Conservation Recommendations to further avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH.

1. Data collected during the nearshore benthic habitat surveys (i.e., Nearshore Habitat Assessment, Baseline Study) should be used to avoid any sensitive habitats (e.g., understory algal communities, surfgrass, kelp, sea fans or sea palms, etc.) when conducting amphibious training exercises that may impact bottom habitat. For instance, these data could be used to create an anchoring plan that would avoid placing anchors for vessels or the OPDS within sensitive habitats. Since the proposed visual reconnaissance measure would not be able to detect all sensitive habitats (e.g., rocky reef, surfgrass, understory algae), incorporating this more comprehensive benthic habitat survey data into the training exercise planning process would be more effective in avoiding direct physical disturbance to sensitive benthic habitats.
2. For amphibious training exercises that may occur between March 1st and August 31st, prior to any beach disturbing activities, a biologist should perform a survey of the project site, including areas where sand would be excavated, graded, or traversed with heavy equipment, to determine the suitability of the beach for grunion spawning. If suitable grunion spawning habitat does not exist, then no further grunion mitigation measures are necessary. If suitable grunion spawning habitat is identified, a biologist should observe the beach during the spawning time prior to the proposed beach impacting activity to determine if grunion have spawned in the area. If grunion have spawned, impacts to those areas should be avoided to the greatest extent practicable until the eggs are hatched at the following two spring-tide series and no subsequent spawning activities have occurred.

Statutory Response Requirement

Please be advised that regulations at section 305(b)(4)(B) of the MSA and 50 CFR 600.920(k) of the MSA require your office to provide a written response to this letter within 30 days of its receipt and at least 10 days prior to final approval of the action. A preliminary response is acceptable if final action cannot be completed within 30 days. Your final response must include a description of measures to be required to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH Conservation Recommendations, you must provide an explanation of the reasons for not implementing those recommendations. The reasons must include the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

Supplemental Consultation

Pursuant to 50 CFR 600.920(l), the Navy must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations.

Fish and Wildlife Coordination Act Comments

The purpose of the FWCA is to ensure that wildlife conservation receives equal consideration, and is coordinated with other aspects of water resources development [16 U.S.C. 661]. The FWCA establishes a consultation requirement for federal departments and agencies that undertake any action that proposes to

modify any stream or other body of water for any purpose, including navigation and drainage [16 U.S.C. 662(a)]. Consistent with this consultation requirement, NMFS provides recommendations and comments to federal action agencies for the purpose of conserving fish and wildlife resources. The FWCA allows the opportunity to offer recommendations for the conservation of species and habitats beyond those currently managed under the MSA. NMFS has determined that sensitive habitats (e.g., seagrasses, rocky reef, kelp) and California grunion may be negatively impacted by proposed project activities. These habitats and fish are important for a large variety of recreational fishery species and are key components of a healthy nearshore ecosystem. Assuming implementation of the protective measures included in the project description and EFH Conservation Recommendations noted previously, NMFS has no additional FWCA recommendations to provide.

Endangered Species Act Comments

As a federal agency and pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 et. seq.), the Navy shall, in consultation with and with the assistance of NMFS, insure that any action it authorizes, funds, or carries out, does not jeopardize the continued existence of any species listed as threatened or endangered, or result in the destruction or adverse modification of designated critical habitat designated. NMFS recommends that the Navy consider the potential effect of this proposed action on ESA-listed species that may be present in the action area, and consider implementation of appropriate measures to minimize the risks of adverse effects as necessary. NMFS is aware of an Environmental Assessment (EA) for the proposed project that may address potential impacts to ESA-listed species, but that document has not been provided to NMFS. Upon request, NMFS Protected Resources staff in Long Beach, California is available to help in the determination of how any ESA-listed species may be directly or indirectly affected by the proposed project, and assist the Navy with ESA compliance. NMFS staff may also be able to assist in further development of protective measures that can help minimize the potential for adverse effects to ESA-listed species.

Marine Mammal Protection Act Comments

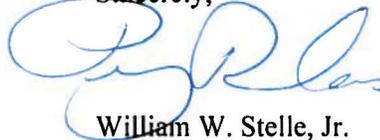
Marine mammals, including pinnipeds and cetaceans, may be found in or adjacent to the project area. Marine mammals are protected under the Marine Mammal Protection Act (MMPA; 16 U.S.C. § 1361 et. seq.). Under the MMPA, it is generally illegal to "take" a marine mammal without prior authorization from NMFS. "Take" is defined as harassing, hunting, capturing, or killing, or attempting to harass, hunt, capture, or kill any marine mammal. Except with respect to military readiness activities and certain scientific research conducted by, or on behalf of, the Federal Government, "harassment" is defined as any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

NMFS recommends that the Navy assess the potential for harassment or injury to marine mammals as a result of any activities that could occur under the proposed action, and consider implementing any measures that may be necessary to avoid the take of any marine mammals, as defined under the MMPA. As stated above, NMFS understands that such information may be contained in the EA for the proposed project. If the incidental take of marine mammals through injury or harassment from project activities, including the production of significant levels of sound, may be expected to occur as a result of the Project, the Navy should consider applying for an Incidental Harassment Authorization (IHA) or Letter of Authorization (LOA) from NMFS well in advance of any work conducted under the proposed project. NMFS staff is available to assist with this assessment and compliance with the MMPA, including any IHA or LOA applications. If it becomes apparent to the Navy that impacts to marine mammals in the form of "take" that hasn't been authorized by NMFS may be occurring as a result of any activities that are

implemented associated with this project, the Navy should cease operations and contact NMFS immediately to discuss appropriate steps going forward.

Please contact Mr. Eric Chavez at 562-980-4064, or via email at Eric.Chavez@noaa.gov if you have any questions concerning this EFH consultation or require additional information. If you have any questions pursuant to ESA or MMPA issues, please contact Dan Lawson at (562) 980-3209 or Dan.Lawson@noaa.gov, or Monica DeAngelis at (562) 980-3232 or Monica.DeAngelis@noaa.gov, respectively.

Sincerely,

A handwritten signature in blue ink, appearing to read "W. Stelle, Jr.", is positioned above the printed name.

William W. Stelle, Jr.
Regional Administrator

cc: Administrative File: 150316WCR2014PR_N39.07

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DEPARTMENT OF THE NAVY

**COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR, HAWAII 96860-3131**

IN REPLY REFER TO:

5090

Ser N465/0120

February 4, 2015

Mr. Eric Chavez
Habitat Conservation Division National Marine Fisheries Service
Southwest Regional Office
501 West Ocean Boulevard
Long Beach, California 90802-4213

Dear Mr. Chavez:

In a letter dated January 5, 2015, NOAA's National Marine Fisheries Service (NMFS) provided its review of the Navy's Essential Fish Habitat (EFH) Assessment for the Joint Logistics Over the Shore (JLOTS), Maritime Prepositioning Force (MPF), and other smaller scale Field Exercises (FEX), referred to collectively as "amphibious training exercises," to take place on and adjacent to Marine Corps Base (MCB) Camp Pendleton. NMFS offered EFH conservation recommendations to further avoid, minimize, mitigate, or otherwise offset adverse effects of the Proposed Action to EFH in that letter. The Navy received your letter on January 8, 2015, and this letter serves as 30-day written response pursuant to section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Further, under section 305(b)(4)(B) of MSA and regulations governing conservation of EFH, the Navy has carefully considered NMFS' three (3) EFH conservation recommendations and provides the following response.

NMFS' EFH Conservation Recommendation 1:

Data collected during the nearshore benthic habitat surveys (i.e., Nearshore Habitat Assessment, Baseline Study) should be used to avoid any sensitive habitats (e.g., understory algal communities, surfgrass, kelp, sea fans or sea palms, etc.) when conducting amphibious training exercises that may impact bottom habitat. For instance, these data could be used to create an anchoring plan that would avoid placing anchors for vessels or the Offshore Petroleum Discharge System within sensitive habitats. Since the proposed visual reconnaissance measure would not be able to detect all sensitive habitats (e.g., rocky reef, surfgrass, understory algae), incorporating this more comprehensive benthic habitat survey data into the training exercise planning process would be more effective in avoiding direct physical disturbance to sensitive benthic habitats.

Navy Response:

The Navy is unable to commit to the use of data collected during nearshore habitat assessment studies as requested in this conservation recommendation. But, the Navy will use data collected during the Nearshore Habitat Assessment Baseline Study in the exercise planning process to avoid and minimize impacts to sensitive habitats (e.g., rocky reef, understory algal communities, surfgrass, kelp, sea fans or sea palms, etc.) to the greatest extent practicable.

NMFS' EFH Conservation Recommendation 2:

For amphibious training exercises that may occur between March 1 and August 31, prior to any beach disturbing activities, a biologist should perform a survey of the project site, including areas where sand would be excavated, graded, or traversed with heavy equipment, to determine the suitability of the beach for grunion spawning. If suitable grunion spawning habitat does not exist, then no further grunion mitigation measures are necessary. If suitable grunion spawning habitat is identified, a biologist should observe the beach during the spawning time prior to the proposed beach impacting activity to determine if grunion have spawned in the area. If grunion have spawned, impacts to those areas should be avoided to the greatest extent practicable until the eggs are hatched at the following two spring-tide series and no subsequent spawning activities have occurred.

Navy Response:

The Navy cannot agree to the conservation recommendation requested. We will have a biologist perform a site survey of the project site, including areas where sand would be excavated, graded, or traversed with heavy equipment, to determine the suitability of the beach for grunion spawning, prior to large-scale amphibious training exercises that are scheduled to occur during the peak grunion spawning period (as specified annually by the California Department of Fish and Wildlife, currently April through May. If suitable grunion spawning habitat is identified, a biologist will observe the beach during the spawning time prior to the proposed beach impacting activity to determine if grunion have spawned in the area. If grunion have spawned, impacts to those areas will be

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avoided and minimized to the greatest extent practicable until the eggs are hatched at the following two spring-tide series and no subsequent spawning activities have occurred. There are many amphibious training events of different size that occur at Camp Pendleton and are not subject to this EFH consultation, therefore, the survey would only be warranted during large amphibious training events that occur at peak spawning period, when the high intensity spawning events referred to in the NMFS letter are most likely to occur. The Navy would adjust the timing of surveys, as appropriate, based on California Department of Fish and Wildlife's designation of the closed season during peak spawning. With implementation of this revised measure, the effects to EFH resulting from potential disturbance of grunion spawning will be minimal.

We again thank you for your support of this critical project and appreciate your timely response and review of the JLOTS project. Realistic training is critical to Navy and Marine Corps preparedness, and analysis like this is a vital piece of Navy's dedication to environmental stewardship in the completion of its mission. We also would like to reaffirm the Navy's working with your agency in support of our mutual goals. Our point of contact for the amphibious training exercises EFH consultation is Ms. Jacque Rice, 619-545-9339 or jacqueline.rice@navy.mil.

Sincerely,



L. M. Foster
By direction

Copy to:
Commander, Navy Region Southwest (N40)
Marine Corps Base Camp Pendleton, Head Environmental Conservation
Division

Hi All,

I spoke with Eric Chavez on our EFHA response today and I think we're on the same page. Please review below and let me know if you agree.

Vr,

Jacque

-----Original Message-----

From: Eric Chavez - NOAA Federal [mailto:eric.chavez@noaa.gov]

Sent: Tuesday, March 03, 2015 12:43 PM

To: Rice, Jacqueline D CIV COMPACFLT, N465JDR

Cc: Reed, Sara E CIV NAVFAC SW

Subject: Re: NFMS EHFA consultation - JLOTS EA Navy Response

Hi Jacque,

Thanks again for your time on the phone today. It's always nice when there is general agreement and resolving issues is simple. As promised, I'm following up with a brief summary of our discussion to memorialize our agreed to points.

EFH Conservation Recommendation # 1

The confusion was that the Navy thought NMFS was requesting additional data be collected prior to each future, individual exercise, which is not the case. Instead, NMFS is simply asking that the Navy use the data they've already collected to avoid impacting sensitive habitats to the greatest extent practicable. Given that the Navy does intend to use the data collected previously during the nearshore benthic habitat surveys to avoid sensitive habitats (e.g., implement an anchoring plan) when conducting amphibious training exercises that could impact bottom habitat, NMFS is satisfied with the Navy's response to this Conservation Recommendation.

EFH Conservation Recommendation # 2

The Navy clarified that they intend to implement the grunion protective measures provided by NMFS during the peak spawning months (typically April and May) and for large exercises. However, they do not intend to implement these measures for each and every "small" exercise conducted March 1st through October 31st. NMFS believes protecting grunion throughout the entire spawning season is important and is still concerned with impacts that may occur from some of the proposed smaller exercises. However, we are sympathetic to the Navy's logistical constraints and are pleased that grunion protection measures will be implemented during the peak spawning period and for larger exercises. Therefore, we have no further comments to provide with regard to this Conservation Recommendation.

Please let me know if I have mischaracterized anything. It has been a pleasure working with you, and I look forward to working with you again in the future.

Regards,

Eric

Appendix B

Record of Non-Applicability and Air Quality Calculations

**RECORD OF NON-APPLICABILITY (RONA)
FOR CLEAN AIR ACT CONFORMITY
SAN DIEGO AIR BASIN**

This Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

The United States Environmental Protection Agency (USEPA) published *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule*, in the 30 November 1993, Federal Register (40 CFR Parts 6, 51, and 93). The United States (U.S.) Navy published *Clean Air Act Conformity Guidance* in Appendix F, OPNAVINST 5090.1C, dated 30 October 2007. These publications provide implementing guidance to document Clean Air Act Conformity Determination requirements.

Federal regulations state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable implementation plan. It is the responsibility of the Federal Agency to determine whether a Federal action conforms to the applicable implementation plan, before the action is taken (40 CFR Part 1 51.850[a]).

Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* levels for criteria pollutants (40 CFR Part 51.853[b]). *De minimis* levels (in tons/year) for the air basin potentially affected by the Proposed Action are listed in Table 1.

Table 1
***De minimis* Levels for Criteria Pollutants in the San Diego Air Basin**

Criteria Pollutant	<i>De minimis</i> Level (tons/year)
Carbon Monoxide (CO)	100
Volatile Organic Compounds (VOC)	100
Oxides of Nitrogen (NO _x)	100

PROPOSED ACTION

Action Proponent: U.S. Navy

Location: Marine Corps Base Camp Pendleton

Proposed Action Name: Joint Logistics Over the Shore, Maritime Prepositioning Force, and Field Exercise Training

Proposed Action and Emissions Summary: The purpose of executing amphibious training exercises is to provide an opportunity for west coast Navy, Marine Corps, and Army personnel to gain and improve amphibious warfighting competencies at a west coast location that allows for the focused assemblage and execution of logistics movement from the offload to locations inland. These exercises also provide the Navy and the Marine Corps an opportunity to integrate as an amphibious warfare team to move Marines from ships afloat to areas inland to support the Range of Military Operations associated with amphibious warfare training.

Navy, Marine Corps, and Army units need to conduct realistic routine amphibious training exercises to ensure continued combat readiness. Amphibious training exercises allow military commands to practice their individual skills as well as prepare for joint operations, where multiple units, multiple commands, and multiple services work together under a single commander in a realistic setting. The training aims to validate, enhance, and refine military tactics, techniques, procedures, and doctrine for these operations, which ultimately provides the U.S. military the capability to move combat power across the surf zone, on to land, and to areas inland.

Air Emissions Summary: The Proposed Action would result in air emissions from training activities. There would be no permanent construction associated with the proposed action. Based on the air quality analysis for the proposed action, the maximum net increase in emissions when compared with baseline conditions would be below conformity *de minimis* levels (Table 2).

Table 2
Estimated Total Net Increase in Project Emissions - Tons per Year

Activity	Pollutant		
	CO	VOC	NO _x
Proposed Action Emissions	34.37	5.49	57.82
General Conformity <i>de minimis</i> Thresholds (Tons per year)	100	100	100
Exceeds Conformity <i>de minimis</i> threshold?	No	No	No

EMISSIONS EVALUATION AND CONCLUSION

The Navy concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting that conclusion is shown in Table 2 above, which is a summary of the calculations, methodology, data, and references included in the attachment to the RONA. Therefore, the Navy concludes that further formal Conformity Determination procedures are not required, resulting in this Record of Non-Applicability.

RONA APPROVAL

Date: _____

Signature: _____

Operations and Description

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year	
1	Field Exercises													
	Offshore Activities													
						OUBs	2	2						
						LCU	2	2						
						Barge Ferry	4	4						
						Warping Tug	4	4						
						LCM-8	2	2						
						Barge Ferry	1	1						
						Warping Tug	1	1						
						LCACs	2	2						
	Beach Activities								HMMWVs	2				
									Dozer	1				
									LARCV	2				
	Upland Activities								HMMWVs	25				
									4WD Pickups	14				
									Fuel Truck	1				
									Generators/various	10				
									Light Units	6				
								Bus	2					
								Van	3					
Air Activities											CH-53E/MV-22	0	0	
											CH-46E/MV-22	0	0	
2	MPF													
	Offshore Activities													
						MPF Utility Boat	1	1						
						OUBs	2	2						
						LCU	2	2						
						Barge Ferry	4	4						
						Warping Tug	4	4						
						LCM-8	2	2						
						WTs	1	1	HMMWVs/Jeeps	3	3	None	0	0
						Personal Watercraft	1	1	6-ton truck	1	1			
									Dozer	1	1			
									Cranes	2	2			
									RTVs	2	2			
									LARCV	2	2			
						OUBs	1	1	HMMWVs	1	1			
									5-ton truck	1	1			
									Dozer	2	2			
									Comm Van	1	1			
								RTV forklift	1	1				
								LARCV	2	2				
					Barge Ferry	1	1							
					Warping Tug	1	1							
					OUBs	1	1	HMMWVs	1	1				
								5-ton truck	1	1				

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			
	Tactical Craft				LCU	1	1						
	Littoral Activities												
	Security Boats				MPF Utility Boat	2	2						
	Beach Activities							HMMWVs	5		UAV	2	2
								5-ton truck	20				
								Dozer	3				
								LARCV	2				
								AAVs	10				
								Fuel Truck	1				
	Upland Activities							HMMWVs	47	47			
								4WD Pickups	18	18			
								Fuel Truck	3	3			
								Generators/variou	15	15			
								Light Units	6	6			
								Bus	5	5			
								Van	5	5			
	Air Activities										CH-53E/MV-22	1	1
											CH-46E/MV-22	1	1
3	JLOTS												
	Offshore Activities												
	MPF Ships				MPF Utility Boat	3	3						
	UB				OUBs	3	3						
	LCU 1600/2000				LCU	4	4						
	INLS Causeway "Ferries				Barge Ferry	4	4						
	INLS Warping Tugs				Warping Tug	4	4						
	MCS				LCU	2	2						
	LSV				LCU	1	1						
	LCM 8s				LCM-8	1	1						
	Roll-on/Roll-off Discharge Facility				LCM-8	4	4						
					WTs	2	2	HMMWVs/Jeeps	3	3	None	0	0
					Personal Watercraft	2	2	6-ton truck	1	1			
								Dozer	1	1			
								Cranes	2	2			
								RTVs	2	2			
								LARCV	2	2			
	Tugs				Warping Tug	2	2						
	OPDS				OUBs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			
	ABLTS				Barge Ferry	1	1						
	IPDS				Warping Tug	1	1						
					OUBs	1	1	HMMWVs	1	1			

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year
								5-ton truck	1	1			
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			
	Tactical Craft				LCU	3	3						
	Littoral Activities												
	Elevated Causeway System (ELCAS)				WTs	1	1	HMMWVs	2	2	None	0	0
					Personal Watercraft	1	1	5-ton truck	2	2			
					LCM	1	1	Light Trucks	2	2			
								Dozers	1	1			
								Forklifts	1	1			
								75-Ton Crane	1	1			
								Pile Driver	1	1			
								ambulance	1	1			
								water buffalo	1	1			
								140-ton crane	1	1			
								30-ton crane	1	1			
								LARCV	1	1			
								Air compressors	1	1			
								Pile Extractor	1	1			
	TRIDENT Pier				WTs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Van	1	1			
								Rough Terrain Forklift	1	1			
								Dozers	1	1			
								LARCV	1	1			
	Floating Causeway				Barge Ferry	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Van	1	1			
								Dozer	1	1			
								LARCV	1	1			
	Security Boats				MPF Utility Boat	2	2						
						2	2						
	SLWT				WTs	2	2						
	Beach Activities							HMMWVs	10		UAV	11	11
								5-ton truck	40				
								Dozer	5				
								LARCV	4				
								AAVs	10				
								Fuel Truck	2				
	Upland Activities							HMMWVs	119	119			
								4WD Pickups	50	50			
								Fuel Truck	5	5			
								Generators/various	36	36			
								Light Units	17	17			
								Bus	8	8			
								Van	8	8			
	Air Activities										CH-53E/MV-22	2	2
											CH-46E/MV-22	2	2

NAA Operations and Description

Scenario	Type Training	Days (a)	Operations (b)	Aircraft	Number	Aircraft Time on Range (hrs)	Emissions Factors (lb/operation)						Emissions (lbs)						
							CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	Sox	PM10	PM2.5	
							Hours												
2	MPF																		
	Air Activities	30	6	CH-53E/MV-22	1	1.0	0.32	6.93	0.01	0.21	0.83	0.8051	1.92	41.58	0.06	1.26	4.98	4.8306	
				CH-46E/MV-22	1	1.0	0.32	6.93	0.01	0.21	0.83	0.8051	1.92	41.58	0.06	1.26	4.98	4.8306	
	Total												3.84	83.16	0.12	2.52	9.96	9.6612	
3	JLOTS																		
	Beach Activities			UAV	11														
	Air Activities	90	3	CH-53E/MV-22	2	1.0	0.32	6.93	0.01	0.21	0.83	0.8051	1.92	41.58	0.06	1.26	4.98	4.8306	
				CH-46E/MV-22	2	1.0	0.32	6.93	0.01	0.21	0.83	0.8051	1.92	41.58	0.06	1.26	4.98	4.8306	
	Total												3.84	83.16	0.12	2.52	9.96	9.6612	

Assumptions: Assume that MV-22 operations are Special Personnel Insertion and Extraction Rig operations.
 Assume all aircraft will eventually be MV-22s
 Source: AESO Memorandum 9655.
 PM2.5 calculated as 97% of PM10 emissions, in accordance with EPA OTAQ/OAQPS guidance, Commercial Marine, Airports, and Trains Approach, EPA Docket #OAR-2003-0053-1696.

(a) Days = the number of days per operation
 (b) Operations = the number of operations per year

Scenario Type Training	Reference Days (a) Operations (b)	Ship/Boat Type	Number	Engines and Generators				Avg. Speed (knots)	Power Level (%) or horsepower	Engines on Line	Generator - Load (kW)	Emissions Factors (lb/hr) (c)						Emissions, (lbs/year)						
				Propulsion		Generator						CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	Sox	PM10	PM2.5	
				Hours	No.	No.	No.																	
Tactical Craft	49 0.25 LCU		3	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2 @ 2kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	5322.87	6607.65	76.44	457.17	230.79	223.8663	
Littoral Activities Elevated Causeway System (ELCAS)	32 0.25 WTs		1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	59.052567	348.41014	44.28943	1048.183	210.3748	204.06353
	32 0.25 Personal Watercraft		1	4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	26.13109	2.500937	14.9774	0.006349	3.591614	3.483865	836.1948	80.029983	479.2769	0.203179	114.9316	111.48369
	32 0.25 LCM		1	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2 @ 2kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	579.36	719.2	8.32	49.76	25.12	24.3664	
TRIDENT Pier	32 0.25 WTs		1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	59.052567	348.41014	44.28943	1048.183	210.3748	204.06353
Floating Causeway	32 0.25 Barge Ferry		1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	59.052567	348.41014	44.28943	1048.183	210.3748	204.06353
Security Boats	32 0.25 MPF Utility Boat		2	4	Diesel Engines	2	None	0	2	660	2	NA	20.46	4.4088	1.659306	1.353	1.452	1.40844	1309.44	282.1632	106.1956	86.592	92.928	90.14016
SLWT	32 0.25 WTs		2	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	118.10513	696.82029	88.57885	2096.366	420.7495	408.12705
Total																		38316.072	45933.325	3792.823	28275.36	7152.653	6938.0737	

NAA Operations and Description

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)						Emissions (lbs)					
									CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	Sox	PM10	PM2.5
1	Field Exercises																			
	Beach Activities	14	8	HMMWVs	2	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	80.75	901.35	262.89	83.56	75.11	72.86
		14	8	Dozer	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	730.04	2318.79	260.13	1.68	137.62	133.49
		14	8	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	4860.80	1047.42	394.21	321.44	344.96	334.61
	Upland Activities	14	8	HMMWVs	25	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	1009.32	11266.86	3286.17	1044.53	938.90	910.74
		14	8	4WD Pickups	14		2		0.20	0.02	0.01	0.00	0.00	0.00	633.47	53.00	37.95	0.72	3.21	3.12
		14	8	Fuel Truck	1		2		0.20	0.02	0.01	0.00	0.00	0.00	45.25	3.79	2.71	0.05	0.23	0.22
		14	8	Generators/vari	10	30%	24	Various	11.98	55.59	4.52	3.67	3.93	3.81	9658.68	44830.16	3648.09	2956.00	3165.88	3070.90
		14	8	Light Units	6		2		0.20	0.02	0.01	0.00	0.00	0.00	271.49	22.71	16.26	0.31	1.38	1.34
		14	8	Bus	2		2		0.21	0.74	0.04	0.00	0.02	0.02	91.84	331.79	18.41	0.39	7.48	7.26
		14	8	Van	3		8		0.20	0.02	0.01	0.00	0.00	0.00	542.98	45.43	32.52	0.62	2.76	2.67
	Total								17924.62	60821.30	7959.34	4409.31	4677.53	4537.20						
2	MPF																			
	Offshore Activities																			
	Roll-on/Roll-off Discharge Facility	30	0.5	HMMWVs/Jeeps	3	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	16.22	181.07	52.81	16.79	15.09	14.64
		30	0.5	6-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	2.94	3.57	0.25	0.01	0.17	0.17
		30	0.5	Dozer	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	97.77	310.55	34.84	0.22	18.43	17.88
		30	0.5	Cranes	2	43%	8	94.0	0.00	0.02	0.00	0.00	0.00	0.00	41.92	150.35	14.97	0.13	5.77	5.60
		30	0.5	RTVs	2	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	96.77	176.47	29.92	0.16	16.13	15.64
		30	0.5	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	651.00	140.28	52.80	43.05	46.20	44.81
	OPDS	15	0.5	HMMWVs	1	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	2.70	30.18	8.80	2.80	2.51	2.44
		15	0.5	5-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	1.47	1.79	0.13	0.00	0.09	0.08
		15	0.5	Dozer	2	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	97.77	310.55	34.84	0.22	18.43	17.88
		15	0.5	Comm Van	1		8		0.20	0.02	0.01	0.00	0.00	0.00	12.12	1.01	0.73	0.01	0.06	0.06
		15	0.5	RTV forklift	1	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	24.19	44.12	7.48	0.04	4.03	3.91
		15	0.5	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	325.50	70.14	26.40	21.53	23.10	22.41
	IPDS	15	0.5	HMMWVs	1	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	2.70	30.18	8.80	2.80	2.51	2.44
		15	0.5	5-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	1.47	1.79	0.13	0.00	0.09	0.08
		15	0.5	Dozer	2	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	97.77	310.55	34.84	0.22	18.43	17.88
		15	0.5	Comm Van	1		8		0.20	0.02	0.01	0.00	0.00	0.00	12.12	1.01	0.73	0.01	0.06	0.06
		15	0.5	RTV forklift	1	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	24.19	44.12	7.48	0.04	4.03	3.91
		15	0.5	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	325.50	70.14	26.40	21.53	23.10	22.41
	Beach Activities	30	0.5	HMMWVs	5	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	27.04	301.79	88.02	27.98	25.15	24.39
		30	0.5	5-ton truck	20	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	58.85	71.47	5.07	0.11	3.43	3.33
		30	0.5	Dozer	3	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	293.32	931.66	104.52	0.67	55.29	53.63
		30	0.5	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	651.00	140.28	52.80	43.05	46.20	44.81
		30	0.5	AAVs	10		2		0.444918	1.0	0.2	0.1	0.2	0.17	133.48	310.82	52.23	15.44	53.74	52.13
		30	0.5	Fuel Truck	1		2		0.20	0.02	0.01	0.00	0.00	0.00	6.06	0.51	0.36	0.01	0.03	0.03
	Upland Activities	30	0.5	HMMWVs	47	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	254.13	2836.83	827.41	263.00	236.40	229.31
		30	0.5	4WD Pickups	18		2		0.20	0.02	0.01	0.00	0.00	0.00	109.08	9.13	6.53	0.12	0.55	0.54
		30	0.5	Fuel Truck	3		2		0.20	0.02	0.01	0.00	0.00	0.00	18.18	1.52	1.09	0.02	0.09	0.09
		30	0.5	Generators/vari	15	30%	24	Various	11.98	55.59	4.52	3.67	3.93	3.81	1293.57	6004.04	488.58	395.89	424.00	411.28
		30	0.5	Light Units	6		2		0.20	0.02	0.01	0.00	0.00	0.00	36.36	3.04	2.18	0.04	0.18	0.18
		30	0.5	Bus	5		2		0.21	0.74	0.04	0.00	0.02	0.02	30.75	111.09	6.17	0.13	2.51	2.43
		30	0.5	Van	5		8		0.20	0.02	0.01	0.00	0.00	0.00	121.20	10.14	7.26	0.14	0.62	0.60
	Total								4867.16	12610.20	1984.55	856.18	1046.44	1015.05						
3	JLOTS																			
	Offshore Activities																			
	Roll-on/Roll-off Discharge Facility	49	0.25	HMMWVs/Jeeps	3	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	13.25	147.88	43.13	13.71	12.32	11.95
		49	0.25	6-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	2.40	2.92	0.21	0.00	0.14	0.14
		49	0.25	Dozer	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	79.85	253.62	28.45	0.18	15.05	14.60
		49	0.25	Cranes	2	43%	8	94.0	0.00	0.02	0.00	0.00	0.00	0.00	34.23	122.78	12.23	0.10	4.72	4.57
		49	0.25	RTVs	2	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	79.03	144.12	24.43	0.13	13.17	12.78
		49	0.25	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	531.65	114.56	43.12	35.16	37.73	36.60

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)						Emissions (lbs)						
									CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	Sox	PM10	PM2.5	
									OPDS	15	0.25	HMMWVs	1	65%	3			0.18	2.06	0.60	0.19
	15	0.25	5-ton truck	1	80%	1			0.25	0.30	0.02	0.00	0.01	0.01	0.74	0.89	0.06	0.00	0.04	0.04	
	15	0.25	Dozer	2	59%	8	240.0		0.01	0.02	0.00	0.00	0.00	0.00	48.89	155.28	17.42	0.11	9.22	8.94	
	15	0.25	Comm Van	1		8			0.20	0.02	0.01	0.00	0.00	0.00	6.06	0.51	0.36	0.01	0.03	0.03	
	15	0.25	RTV forklift	1	48%	8	93.0		0.01	0.02	0.00	0.00	0.00	0.00	12.10	22.06	3.74	0.02	2.02	1.96	
	15	0.25	LARCV	2		2	350.0		10.85	2.338	0.879935	0.7175	0.77	0.75	162.75	35.07	13.20	10.76	11.55	11.20	
IPDS	15	0.25	HMMWVs	1	65%	3			0.18	2.06	0.60	0.19	0.17	0.17	1.35	15.09	4.40	1.40	1.26	1.22	
	15	0.25	5-ton truck	1	80%	1			0.25	0.30	0.02	0.00	0.01	0.01	0.74	0.89	0.06	0.00	0.04	0.04	
	15	0.25	Dozer	2	59%	8	240.0		0.01	0.02	0.00	0.00	0.00	0.00	48.89	155.28	17.42	0.11	9.22	8.94	
	15	0.25	Comm Van	1		8			0.20	0.02	0.01	0.00	0.00	0.00	6.06	0.51	0.36	0.01	0.03	0.03	
	15	0.25	RTV forklift	1	48%	8	93.0		0.01	0.02	0.00	0.00	0.00	0.00	12.10	22.06	3.74	0.02	2.02	1.96	
	15	0.25	LARCV	2		2	350.0		10.85	2.338	0.879935	0.7175	0.77	0.75	162.75	35.07	13.20	10.76	11.55	11.20	
Littoral Activities																					
Elevated Causeway System (ELCAS)		32	0.25	HMMWVs	2	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	5.77	64.38	18.78	5.97	5.37	5.20	
		32	0.25	5-ton truck	2	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	3.14	3.81	0.27	0.01	0.18	0.18	
		32	0.25	Light Trucks	2		2		0.20	0.02	0.01	0.00	0.00	0.00	6.46	0.54	0.39	0.01	0.03	0.03	
		32	0.25	Dozers	1	59%	8	240.0		0.01	0.02	0.00	0.00	0.00	52.15	165.63	18.58	0.12	9.83	9.53	
		32	0.25	Forklifts	1	48%	8	37.0		0.01	0.02	0.00	0.00	0.00	10.37	18.92	3.21	0.02	1.73	1.68	
		32	0.25	75-Ton Crane	1	74%	8	194.0		0.00	0.02	0.00	0.00	0.00	39.70	142.40	14.18	0.12	5.47	5.31	
		32	0.25	Pile Driver	1	30%	24	20.0		0.01	0.01	0.00	0.00	0.00	6.86	10.41	3.68	2.30	1.52	1.48	
		32	0.25	ambulance	1		8		0.20	0.02	0.01	0.00	0.00	0.00	12.93	1.08	0.77	0.01	0.07	0.06	
		32	0.25	water buffalo	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	1.57	1.91	0.14	0.00	0.09	0.09	
		32	0.25	140-ton crane	1	74%	8	399.0		0.00	0.02	0.00	0.00	0.00	81.65	292.87	29.16	0.25	11.25	10.91	
		32	0.25	30-ton crane	1	74%	8	194.0		0.00	0.02	0.00	0.00	0.00	39.70	142.40	14.18	0.12	5.47	5.31	
		32	0.25	LARCV	1		2	350.0		10.85	2.338	0.879935	0.7175	0.77	173.60	37.41	14.08	11.48	12.32	11.95	
		32	0.25	Air compressors	1	48%	8	106.0		0.01	0.02	0.00	0.00	0.00	29.29	55.71	9.48	0.05	4.92	4.78	
		32	0.25	Pile Extractor	1	30%	24	20.0		0.01	0.01	0.00	0.00	0.00	6.86	10.41	3.68	2.30	1.52	1.48	
TRIDENT Pier	32	0.25	HMMWVs	1	65%	3			0.18	2.06	0.60	0.19	0.17	0.17	2.88	32.19	9.39	2.98	2.68	2.60	
	32	0.25	5-ton truck	1	80%	1			0.25	0.30	0.02	0.00	0.01	0.01	1.57	1.91	0.14	0.00	0.09	0.09	
	32	0.25	Van	1		8			0.20	0.02	0.01	0.00	0.00	0.00	12.93	1.08	0.77	0.01	0.07	0.06	
	32	0.25	Rough Terrain F	1	48%	8	93.0		0.01	0.02	0.00	0.00	0.00	0.00	25.80	47.06	7.98	0.04	4.30	4.17	
	32	0.25	Dozers	1	59%	8	240.0		0.01	0.02	0.00	0.00	0.00	0.00	52.15	165.63	18.58	0.12	9.83	9.53	
	32	0.25	LARCV	1		2	350.0		10.85	2.338	0.879935	0.7175	0.77	0.75	173.60	37.41	14.08	11.48	12.32	11.95	
Floating Causeway	32	0.25	HMMWVs	1	65%	3			0.18	2.06	0.60	0.19	0.17	0.17	2.88	32.19	9.39	2.98	2.68	2.60	
	32	0.25	5-ton truck	1	80%	1			0.25	0.30	0.02	0.00	0.01	0.01	1.57	1.91	0.14	0.00	0.09	0.09	
	32	0.25	Van	1		8			0.20	0.02	0.01	0.00	0.00	0.00	12.93	1.08	0.77	0.01	0.07	0.06	
	32	0.25	Dozer	1	59%	8	240.0		0.01	0.02	0.00	0.00	0.00	0.00	52.15	165.63	18.58	0.12	9.83	9.53	
	32	0.25	LARCV	1		2	350.0		10.85	2.338	0.879935	0.7175	0.77	0.75	173.60	37.41	14.08	11.48	12.32	11.95	
Beach Activities	90	0.25	HMMWVs	10	65%	3			0.18	2.06	0.60	0.19	0.17	0.17	81.11	905.37	264.07	83.94	75.45	73.18	
	90	0.25	5-ton truck	40	80%	1			0.25	0.30	0.02	0.00	0.01	0.01	176.55	214.42	15.21	0.33	10.30	9.99	
	90	0.25	Dozer	5	59%	8	240.0		0.01	0.02	0.00	0.00	0.00	0.00	733.30	2329.15	261.29	1.69	138.23	134.08	
	90	0.25	LARCV	4		2	350.0		10.85	2.338	0.879935	0.7175	0.77	0.75	1953.00	420.84	158.39	129.15	138.60	134.44	
	90	0.25	AAVs	10		2			0.444918	1.0	0.2	0.1	0.2	0.17	200.21	466.23	78.34	23.17	80.61	78.19	
	90	0.25	Fuel Truck	2		2			0.20	0.02	0.01	0.00	0.00	0.00	18.18	1.52	1.09	0.02	0.09	0.09	
Upland Activities	90	0.25	HMMWVs	119	65%	3			0.18	2.06	0.60	0.19	0.17	0.17	965.16	10773.93	3142.40	998.83	897.83	870.89	
	90	0.25	4WD Pickups	50		2			0.20	0.02	0.01	0.00	0.00	0.00	454.50	38.03	27.23	0.52	2.31	2.24	
	90	0.25	Fuel Truck	5		2			0.20	0.02	0.01	0.00	0.00	0.00	45.45	3.80	2.72	0.05	0.23	0.22	
	90	0.25	Generators/vari	36	30%	24	Various		11.98	55.59	4.52	3.67	3.93	3.81	1940.36	9006.06	732.87	593.84	636.00	616.92	
	90	0.25	Light Units	17		2			0.20	0.02	0.01	0.00	0.00	0.00	154.53	12.93	9.26	0.18	0.78	0.76	
	90	0.25	Bus	8		2			0.21	0.74	0.04	0.00	0.02	0.02	73.80	266.62	14.80	0.31	6.01	5.83	
	90	0.25	Van	8		8			0.20	0.02	0.01	0.00	0.00	0.00	290.88	24.34	17.42	0.33	1.48	1.43	
									9273.31	27178.26	5179.49	1958.27	2233.33	2166.33							

Activity	Annual Activity Emissions, tons/year					
	CO	NOx	ROG	SOx	PM10	PM2.5
Field Exercises						
Marine Vessels	45.10	75.62	3.69	77.55	16.55	16.05
Ground Vehicles	8.96	30.41	3.98	2.20	2.34	2.27
Total, tons/year	54.06	106.03	7.67	79.75	18.89	18.32
MPF						
Marine Vessels	10.78	13.18	1.12	10.60	2.54	2.46
Ground Vehicles	2.43	6.31	0.99	0.43	0.52	0.51
Aircraft	0.00	0.04	0.00	0.00	0.00	0.00
Total, tons/year	13.22	19.52	2.12	11.03	3.07	2.98
JLOTS						
Marine Vessels	19.16	22.97	1.90	14.14	3.58	3.47
Ground Vehicles	4.64	13.59	2.59	0.98	1.12	1.08
Aircraft	0.00	0.04	0.00	0.00	0.00	0.00
Total, tons/year	23.80	36.60	4.49	15.12	4.70	4.56
Grand Total	91.07	162.15	14.28	105.90	26.65	25.85

Assumptions: Field exercises - 8 per year, 14 days per exercise

MPF - 1 exercise every other year (0.5 exercise per year), 30 days per exercise

JLOTS - 1 exercise every four years (0.25 exercise per year), 90 days per exercise

Operations and Description

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year	
1	Field Exercises													
	Offshore Activities													
		Ubs				OUBs	2	2						
		LCU 1600/2000				LCU	2	2						
		INLS Causeway "Ferries				Barge Ferry	4	4						
		INLS Warping Tugs				Warping Tug	4	4						
		LCM 8s				LCM-8	2	2						
		ABLTS				Barge Ferry	1	1						
		LCACs				Warping Tug	1	1						
						LCACs	2	2						
	Beach Activities													
									HMMWVs	2				
									Dozer	1				
									LARCV	2				
	Upland Activities													
									HMMWVs	25				
									4WD Pickups	14				
								Fuel Truck	1					
								Generators/various	10					
								Light Units	6					
								Bus	2					
								Van	3					
Air Activities														
											CH-53E/MV-22	0	0	
											CH-46E/MV-22	0	0	
2	MPF													
	Offshore Activities													
		MPF Ships				MPF Utility Boat	1	1						
		UB				OUBs	2	2						
		LCU 1600/2000				LCU	2	2						
		INLS Causeway "Ferries				Barge Ferry	4	4						
		INLS Warping Tugs				Warping Tug	4	4						
		LCM 8s				LCM-8	2	2						
		Roll-on/Roll-off Discharge Facility				WTs	1	1	HMMWVs/Jeeps	3	3	None	0	0
						Personal Watercraft	1	1	6-ton truck	1	1			
									Dozer	1	1			
									Cranes	2	2			
									RTVs	2	2			
									LARCV	2	2			
	OPDS													
						OUBs	1	1	HMMWVs	1	1			
									5-ton truck	1	1			
									Dozer	2	2			
									Comm Van	1	1			
									RTV forklift	1	1			
									LARCV	2	2			
	ABLTS													
						Barge Ferry	1	1						
IPDS														
					Warping Tug	1	1							
					OUBs	1	1	HMMWVs	1	1				
								5-ton truck	1	1				
								Dozer	2	2				
								Comm Van	1	1				
								RTV forklift	1	1				
								LARCV	2	2				

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year
	Tactical Craft				LCU	1	1						
	Littoral Activities												
	Security Boats				MPF Utility Boat	2	2						
	Beach Activities							HMMWVs	5		UAV	2	2
								5-ton truck	20				
								Dozer	3				
								LARCV	2				
								AAVs	10				
								Fuel Truck	1				
	Upland Activities							HMMWVs	47	47			
								4WD Pickups	18	18			
								Fuel Truck	3	3			
								Generators/various	15	15			
								Light Units	6	6			
								Bus	5	5			
								Van	5	5			
	Air Activities										CH-53E/MV-22	1	1
											CH-46E/MV-22	1	1
3	JLOTS												
	Offshore Activities												
	MPF Ships				MPF Utility Boat	3	3						
	UB				OUBs	3	3						
	LCU 1600/2000				LCU	4	4						
	INLS Causeway "Ferries				Barge Ferry	4	4						
	INLS Warping Tugs				Warping Tug	4	4						
	MCS				LCU	2	2						
	LSV				LCU	1	1						
	LCM 8s				LCM-8	1	1						
	Roll-on/Roll-off Discharge Facility				LCM-8	4	4						
					WTs	2	2	HMMWVs/Jeeps	3	3	None	0	0
					Personal Watercraft	2	2	6-ton truck	1	1			
								Dozer	1	1			
								Cranes	2	2			
								RTVs	2	2			
								LARCV	2	2			
	Tugs				Warping Tug	2	2						
	OPDS				OUBs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			
	ABLTS				Barge Ferry	1	1						
					Warping Tug	1	1						
	IPDS				OUBs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year
	Tactical Craft				LCU	3	3						
	Littoral Activities												
	Elevated Causeway System (ELCAS)				WTs	1	1	HMMWVs	2	2	None	0	0
					Personal Watercraft	1	1	5-ton truck	2	2			
								Light Trucks	2	2			
					LCM	1	1	Dozers	1	1			
								Forklifts	1	1			
								75-Ton Crane	1	1			
								Pile Driver	1	1			
								ambulance	1	1			
								water buffalo	1	1			
								140-ton crane	1	1			
								30-ton crane	1	1			
								LARCV	1	1			
								Air compressors	1	1			
								Pile Extractor	1	1			
	TRIDENT Pier				WTs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Van	1	1			
								Rough Terrain Forklift	1	1			
								Dozers	1	1			
								LARCV	1	1			
	Floating Causeway				Barge Ferry	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Van	1	1			
								Dozer	1	1			
								LARCV	1	1			
	Security Boats				MPF Utility Boat	2	2						
						2	2						
	SLWT				WTs	2	2						
	Beach Activities							HMMWVs	10	10	UAV	11	11
								5-ton truck	40	40			
								Dozer	5	5			
								LARCV	4	4			
								AAVs	10	10			
								Fuel Truck	2	2			
	Upland Activities							HMMWVs	119	119			
								4WD Pickups	50	50			
								Fuel Truck	5	5			
								Generators/various	36	36			
								Light Units	17	17			
								Bus	8	8			
								Van	8	8			
	Air Activities										CH-53E/MV-22	2	2
											CH-46E/MV-22	2	2

Aircraft Operations and Description

Scenario	Type Training	Days (a)	Operations (b)	Aircraft	Number	Aircraft Time on Range (hrs)	Emissions Factors (lb/operation)			Emissions (lbs/year)			
							CO2	CH4	N2O	CO2	CH4	N2O	CO2e
2	MPF	30	6	CH-53E/MV-22 CH-46E/MV-22	1 1	1.0 1.0	1693 1693	0.044183 6.93	0.050728 0.01	10158	0.265096	0.30437	10257.92
										10158	41.58	0.06	11049.78
										20316	41.8451	0.36437	21307.7
3	JLOTS	90	3	UAV CH-53E/MV-22 CH-46E/MV-22	11 2 2	1.0 1.0	1693 1693	6.93 6.93	0.01 0.01	10158	41.58	0.06	11049.78
										10158	41.58	0.06	11049.78
										20316	83.16	0.12	22099.56

Assumptions: Assume that MV-22 operations are Special Personnel Insertion and Extraction Rig operations.
Assume all aircraft will eventually be MV-22s
Source: AESO Memorandum 9655.

- (a) Days = the number of days per operation
- (b) Operations = the number of operations per year

Scenario Type Training	Reference Days (a) Operations (b)	Ship/Boat Type	Number	Ship Time on Range (hrs) (e)				Avg. Speed (Knots)	Power Level (%) or horsepower	Engines on Line	Generator - Load (kW)	Emissions Factors (lb/hr) (c)			Emissions, (lbs/year)				
				Hours	Propulsion	No.	Generator					No.	CO2	CH4	N2O	CO2	CH4	N2O	CO2e
				LCM 8s	49	0.25 LCM-8	4					2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2
Roll-on/Roll-off Discharge Facility	49	0.25 WTs	2	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	499771.778	36.43656	12.80204	504506
				4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	26.13109	2.500937	14.9774	2560.84658	245.0918	1467.785	462721
Tugs	49	0.25 Warping Tug	2	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	499771.778	36.43656	12.80204	504506
OPDS	15	0.25 OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	31437.9895	2.292031	0.805308	31736
ABLTS	15	0.25 Barge Ferry	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	76495.6804	5.577025	1.959495	77220
				4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	76495.6804	5.577025	1.959495	77220
IPDS	15	0.25 OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	31437.9895	2.292031	0.805308	31736
Tactical Craft	49	0.25 LCU	3	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	308092.297	22.4619	7.892019	311011
Littoral Activities Elevated Causeway System (ELCAS)	32	0.25 WTs	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	163190.785	11.89765	4.180257	164737
				4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	1503.556	0.109619	0.038515	48113.7926	3.507804	1.232472	48570
				2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	33533.8555	2.444833	0.858995	33851
TRIDENT Pier	32	0.25 WTs	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	163190.785	11.89765	4.180257	164737
Floating Causeway	32	0.25 Barge Ferry	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	163190.785	11.89765	4.180257	164737
Security Boats	32	0.25 MPF Utility Boat	2	4	Diesel Engines	2	None	0	2	660	2	NA	1503.556	0.109619	0.038515	96227.5853	7.015607	2.464943	97138
SLWT	32	0.25 WTs	2	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	326381.57	23.79531	8.360513	329473
Total													6023720.95	684.073	1622.022	6540913.32			

Ground Vehicle Operations and Description

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)			Emissions (lbs)			
									CO2	CH4	N2O	CO2	CH4	N2O	
1 Field Exercises	Beach Activities	14	8	HMMWVs	2	65%	3		1.25	0.00	0.00	547.26	0.06	0.00	
		14	8	Dozer	1	59%	8	240.0	1.25	0.00	0.00	158959.12	17.62	0.00	
		14	8	LARCV	2	50%	2	350.0	1.25	0.00	0.00	98226.86	10.89	0.00	
	Upland Activities	14	8	HMMWVs	25	65%	3		1.25	0.00	0.00	6840.80	0.76	0.00	
		14	8	4WD Pickups	14		2		22.71	0.00	0.00	71227.97	5.91	5.03	
		14	8	Fuel Truck	1		2		22.71	0.00	0.00	5087.71	0.42	0.36	
		14	8	Generators/vari	10	30%	24	Various	2064.95	0.00	5.28	1665175.68	0.00	4257.79	
		14	8	Light Units	6		2		22.71	0.00	0.00	30526.27	2.53	2.16	
		14	8	Bus	2		2		89.15	0.00	0.07	39940.70	0.86	31.52	
	Total	14	8	Van	3		8		22.71	0.00	0.00	61052.54	5.07	4.31	
												2137584.92	44.12	4301.18	
2 MPF	Offshore Activities	Roll-on/Roll-off Discharge Facility	30	0.5	HMMWVs/Jeeps	3	65%	3		1.25	0.00	0.00	109.94	0.01	0.00
			30	0.5	6-ton truck	1	80%	1		48.21	0.00	0.03	578.47	0.02	0.34
			30	0.5	Dozer	1	59%	8	240.0	1.25	0.00	0.00	21289.17	2.36	0.00
			30	0.5	Cranes	2	43%	8	94.0	1.25	0.00	0.00	12154.07	1.35	0.00
			30	0.5	RTVs	2	48%	8	93.0	1.25	0.00	0.00	13283.18	1.47	0.00
			30	0.5	LARCV	2	50%	2	350.0	1.25	0.00	0.00	13155.38	1.46	0.00
	OPDS	15	0.5	HMMWVs	1	65%	3		1.25	0.00	0.00	18.32	0.00	0.00	
		15	0.5	5-ton truck	1	80%	1		48.21	0.00	0.03	289.24	0.01	0.17	
		15	0.5	Dozer	2	59%	8	240.0	1.25	0.00	0.00	21289.17	2.36	0.00	
		15	0.5	Comm Van	1		8		22.71	0.00	0.00	1362.78	0.11	0.10	
		15	0.5	RTV forklift	1	48%	8	93.0	1.25	0.00	0.00	3320.79	0.37	0.00	
		15	0.5	LARCV	2	50%	2	350.0	1.25	0.00	0.00	6577.69	0.73	0.00	
	IPDS	15	0.5	HMMWVs	1	65%	3		1.25	0.00	0.00	18.32	0.00	0.00	
		15	0.5	5-ton truck	1	80%	1		48.21	0.00	0.03	289.24	0.01	0.17	
		15	0.5	Dozer	2	59%	8	240.0	1.25	0.00	0.00	21289.17	2.36	0.00	
		15	0.5	Comm Van	1		8		22.71	0.00	0.00	1362.78	0.11	0.10	
		15	0.5	RTV forklift	1	48%	8	93.0	1.25	0.00	0.00	3320.79	0.37	0.00	
		15	0.5	LARCV	2	50%	2	350.0	1.25	0.00	0.00	6577.69	0.73	0.00	
	Beach Activities	30	0.5	HMMWVs	5	65%	3		1.25	0.00	0.00	183.24	0.02	0.00	
		30	0.5	5-ton truck	20	80%	1		48.21	0.00	0.03	11569.41	0.31	6.79	
		30	0.5	Dozer	3	59%	8	240.0	1.25	0.00	0.00	63867.50	7.08	0.00	
		30	0.5	LARCV	2	50%	2	350.0	1.25	0.00	0.00	13155.38	1.46	0.00	
		30	0.5	AAVs	10		2		0.444918	1.0	0.2	133.48	310.82	52.23	
		30	0.5	Fuel Truck	1		2		22.71	0.00	0.00	681.39	0.06	0.05	

Table GHG/NAA-4
Ground Vehicles Emissions
No Action Alternative

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)			Emissions (lbs)		
									CO2	CH4	N2O	CO2	CH4	N2O
Upland Activities														
		30	0.5	HMMWVs	47	65%	3		1.25	0.00	0.00	1722.42	0.19	0.00
		30	0.5	4WD Pickups	18		2		22.71	0.00	0.00	12265.02	1.02	0.87
		30	0.5	Fuel Truck	3		2		22.71	0.00	0.00	2044.17	0.17	0.14
		30	0.5	Generators/vari	15	30%	24	Various	2064.95	0.00	5.28	223014.60	0.00	570.24
		30	0.5	Light Units	6		2		22.71	0.00	0.00	4088.34	0.34	0.29
		30	0.5	Bus	5		2		89.15	0.00	0.07	13373.00	0.29	10.55
		30	0.5	Van	5		8		22.71	0.00	0.00	13627.80	1.13	0.96
											486011.94	336.71	642.99	
3	JLOTS													
	Offshore Activities													
	Roll-on/Roll-off Discharge Facility	49	0.25	HMMWVs/Jeeps	3	65%	3		1.25	0.00	0.00	89.79	0.01	0.00
		49	0.25	6-ton truck	1	80%	1		48.21	0.00	0.03	472.42	0.01	0.28
		49	0.25	Dozer	1	59%	8	240.0	1.25	0.00	0.00	17386.15	1.93	0.00
		49	0.25	Cranes	2	43%	8	94.0	1.25	0.00	0.00	9925.82	1.10	0.00
		49	0.25	RTVs	2	48%	8	93.0	1.25	0.00	0.00	10847.93	1.20	0.00
		49	0.25	LARCV	2	50%	2	350.0	1.25	0.00	0.00	10743.56	1.19	0.00
	OPDS	15	0.25	HMMWVs	1	65%	3		1.25	0.00	0.00	9.16	0.00	0.00
		15	0.25	5-ton truck	1	80%	1		48.21	0.00	0.03	144.62	0.00	0.08
		15	0.25	Dozer	2	59%	8	240.0	1.25	0.00	0.00	10644.58	1.18	0.00
		15	0.25	Comm Van	1		8		22.71	0.00	0.00	681.39	0.06	0.05
		15	0.25	RTV forklift	1	48%	8	93.0	1.25	0.00	0.00	1660.40	0.18	0.00
		15	0.25	LARCV	2	50%	2	350.0	1.25	0.00	0.00	3288.85	0.36	0.00
	IPDS	15	0.25	HMMWVs	1	65%	3		1.25	0.00	0.00	9.16	0.00	0.00
		15	0.25	5-ton truck	1	80%	1		48.21	0.00	0.03	144.62	0.00	0.08
		15	0.25	Dozer	2	59%	8	240.0	1.25	0.00	0.00	10644.58	1.18	0.00
		15	0.25	Comm Van	1		8		22.71	0.00	0.00	681.39	0.06	0.05
		15	0.25	RTV forklift	1	48%	8	93.0	1.25	0.00	0.00	1660.40	0.18	0.00
		15	0.25	LARCV	2	50%	2	350.0	1.25	0.00	0.00	3288.85	0.36	0.00
	Littoral Activities													
	Elevated Causeway System (ELCAS)	32	0.25	HMMWVs	2	65%	3		1.25	0.00	0.00	39.09	0.00	0.00
		32	0.25	5-ton truck	2	80%	1		48.21	0.00	0.03	617.03	0.02	0.36
		32	0.25	Light Trucks	2		2		1.25	0.00	0.00	40.09	0.00	0.00
		32	0.25	Dozers	1	59%	8	240.0	1.25	0.00	0.00	11354.22	1.26	0.00
		32	0.25	Forklifts	1	48%	8	37.0	1.25	0.00	0.00	1424.09	0.16	0.00
		32	0.25	75-Ton Crane	1	74%	8	194.0	1.25	0.00	0.00	11511.39	1.28	0.00
		32	0.25	Pile Driver	1	30%	24	20.0	1.25	0.00	0.00	1443.33	0.16	0.00
		32	0.25	ambulance	1		8		22.71	0.00	0.00	1453.63	0.12	0.10
		32	0.25	water buffalo	1	80%	1		48.21	0.00	0.03	308.52	0.01	0.18
		32	0.25	140-ton crane	1	74%	8	399.0	1.25	0.00	0.00	23675.48	2.62	0.00
		32	0.25	30-ton crane	1	74%	8	194.0	1.25	0.00	0.00	11511.39	1.28	0.00
		32	0.25	LARCV	1	50%	2	350.0	1.25	0.00	0.00	3508.10	0.39	0.00
		32	0.25	Air compressors	1	48%	8	106.0	1.25	0.00	0.00	4079.82	0.45	0.00
		32	0.25	Pile Extractor	1	30%	24	20.0	1.25	0.00	0.00	1443.33	0.16	0.00

Table GHG/NAA-4
Ground Vehicles Emissions
No Action Alternative

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)			Emissions (lbs)		
									CO2	CH4	N2O	CO2	CH4	N2O
TRIDENT Pier		32	0.25	HMMWVs	1	65%	3		1.25	0.00	0.00	19.55	0.00	0.00
		32	0.25	5-ton truck	1	80%	1		48.21	0.00	0.03	308.52	0.01	0.18
		32	0.25	Van	1		8		22.71	0.00	0.00	1453.63	0.12	0.10
		32	0.25	Rough Terrain F	1	48%	8	93.0	1.25	0.00	0.00	3542.18	0.39	0.00
		32	0.25	Dozers	1	59%	8	240.0	1.25	0.00	0.00	11354.22	1.26	0.00
		32	0.25	LARCV	1	50%	2	350.0	1.25	0.00	0.00	3508.10	0.39	0.00
Floating Causeway		32	0.25	HMMWVs	1	65%	3		1.25	0.00	0.00	19.55	0.00	0.00
		32	0.25	5-ton truck	1	80%	1		48.21	0.00	0.03	308.52	0.01	0.18
		32	0.25	Van	1		8		22.71	0.00	0.00	1453.63	0.12	0.10
		32	0.25	Dozer	1	59%	8	240.0	1.25	0.00	0.00	11354.22	1.26	0.00
		32	0.25	LARCV	1	50%	2	350.0	1.25	0.00	0.00	3508.10	0.39	0.00
Beach Activities		90	0.25	HMMWVs	10	65%	3		1.25	0.00	0.00	549.71	0.06	0.00
		90	0.25	5-ton truck	40	80%	1		48.21	0.00	0.03	34708.22	0.93	20.37
		90	0.25	Dozer	5	59%	8	240.0	1.25	0.00	0.00	159668.76	17.70	0.00
		90	0.25	LARCV	4	50%	2	350.0	1.25	0.00	0.00	39466.15	4.38	0.00
		90	0.25	AAVs	10		2		0.444918	1.0	0.2	200.21	466.23	78.34
		90	0.25	Fuel Truck	2		2		22.71	0.00	0.00	2044.17	0.17	0.14
Upland Activities		90	0.25	HMMWVs	119	65%	3		1.25	0.00	0.00	6541.51	0.73	0.00
		90	0.25	4WD Pickups	50		2		22.71	0.00	0.00	51104.25	4.24	3.61
		90	0.25	Fuel Truck	5		2		22.71	0.00	0.00	5110.43	0.42	0.36
		90	0.25	Generators/varic	36	30%	24	Various	2064.95	0.00	5.28	334521.90	0.00	855.36
		90	0.25	Light Units	17		2		22.71	0.00	0.00	17375.45	1.44	1.23
		90	0.25	Bus	8		2		89.15	0.00	0.07	32095.21	0.69	25.33
		90	0.25	Van	8		8		22.71	0.00	0.00	32706.72	2.71	2.31
											907656.08	520.59	988.81	

Table GHG/NAA-4
 Ground Vehicles Emissions
 No Action Alternative

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)			Emissions (lbs)			
									CO2	CH4	N2O	CO2	CH4	N2O	

Assumptions: Fuel truck is equivalent to 4WD vehicle; large trucks modeled as MDTs. Busses assumed to be diesel powered
 Emission factors from ARB's OFFROAD 2007 Model

Activity	Annual Activity Emissions, metric tons/year			
	CO2	CH4	N2O	CO2e
Field Exercises				
Marine Vessels	12,639.10	0.92	0.32	12,758.82
Ground Vehicles	969.60	0.02	1.95	1,574.83
Total, tons/year	13,608.70	0.94	2.27	14,333.65
MPF				
Marine Vessels	1,914.94	0.14	0.05	1,933.07
Ground Vehicles	220.45	0.15	0.29	314.08
Aircraft	9.22	0.02	0.00	9.67
Total, tons/year	2,144.60	0.31	0.34	2,256.81
JLOTS				
Marine Vessels	2,732.34	0.31	0.74	2,966.94
Ground Vehicles	411.71	0.24	0.45	555.71
Aircraft	9.22	0.04	0.00	10.02
Total, tons/year	3,153.27	0.58	1.18	3,532.67
Grand Total	18,906.57	1.84	3.80	20,123.14

Assumptions: Field exercises - 8 per year, 14 days per exercise

MPF - 1 exercise every other year (0.5 exercise every year), 30 days per exercise

JLOTS - 1 exercise every 4 years (0.25 exercise every year), 90 days per exercise

Operations and Description

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year	
1	Field Exercises													
	Offshore Activities													
		Ubs				OUBs	2	2						
		LCU 1600/2000				LCU	2	2						
		INLS Causeway "Ferries				Barge Ferry	4	4						
		INLS Warping Tugs				Warping Tug	4	4						
		LCM 8s				LCM-8	2	2						
		ABLTS				Barge Ferry	1	1						
		LCACs				Warping Tug	1	1						
						LCACs	2	2						
	Beach Activities													
									HMMWVs	2				
									Dozer	1				
									LARCV	2				
	Upland Activities													
									HMMWVs	25				
									4WD Pickups	14				
									Fuel Truck	1				
								Generators/various	10					
								Light Units	6					
								Bus	2					
								Van	3					
Air Activities														
											CH-53E/MV-22	0	0	
											CH-46E/MV-22	0	0	
2	MPF													
	Offshore Activities													
		MPF Ships				MPF Utility Boat	1	1						
		UB				OUBs	2	2						
		LCU 1600/2000				LCU	2	2						
		INLS Causeway "Ferries				Barge Ferry	4	4						
		INLS Warping Tugs				Warping Tug	4	4						
		LCM 8s				LCM-8	2	2						
		Roll-on/Roll-off Discharge Facility				WTs	1	1	HMMWVs/Jeeps	3	3	None	0	0
						Personal Watercraft	1	1	6-ton truck	1	1			
									Dozer	1	1			
									Cranes	2	2			
									RTVs	2	2			
									LARCV	2	2			
	OPDS													
						OUBs	1	1	HMMWVs	1	1			
									5-ton truck	1	1			
									Dozer	2	2			
									Comm Van	1	1			
									RTV forklift	1	1			
									LARCV	2	2			
ABLTS														
					Barge Ferry	1	1							
					Warping Tug	1	1							
IPDS														
					OUBs	1	1	HMMWVs	1	1				
								5-ton truck	1	1				
								Dozer	2	2				
								Comm Van	1	1				
								RTV forklift	1	1				
								LARCV	2	2				

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year
	Tactical Craft				LCU	1	1						
	Littoral Activities												
	Security Boats				MPF Utility Boat	2	2						
	Beach Activities							HMMWVs	5		UAV	2	2
								5-ton truck	20				
								Dozer	3				
								LARCV	2				
								AAVs	10				
								Fuel Truck	1				
	Upland Activities							HMMWVs	47	47			
								4WD Pickups	18	18			
								Fuel Truck	3	3			
								Generators/various	15	15			
								Light Units	6	6			
								Bus	5	5			
								Van	5	5			
	Air Activities										CH-53E/MV-22	1	1
											CH-46E/MV-22	1	1
3	JLOTS												
	Offshore Activities												
	MPF Ships				MPF Utility Boat	3	3						
	UB				OUBs	3	3						
	LCU 1600/2000				LCU	4	4						
	INLS Causeway "Ferries				Barge Ferry	4	4						
	INLS Warping Tugs				Warping Tug	4	4						
	MCS				LCU	2	2						
	LSV				LCU	1	1						
	LCM 8s				LCM-8	1	1						
	Roll-on/Roll-off Discharge Facility				LCM-8	4	4						
					WTs	2	2	HMMWVs/Jeeps	3	3	None	0	0
					Personal Watercraft	2	2	6-ton truck	1	1			
								Dozer	1	1			
								Cranes	2	2			
								RTVs	2	2			
								LARCV	2	2			
	Tugs				Warping Tug	2	2	HMMWVs	1	1			
	OPDS				OUBs	1	1	5-ton truck	1	1			
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			
	ABLTS				Barge Ferry	1	1						
					Warping Tug	1	1						
	IPDS				OUBs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year
Tactical Craft					LCU	3	3						
Littoral Activities													
Elevated Causeway System (ELCAS)					WTs	1	1	HMMWVs	2	2	None	0	0
					Personal Watercraft	1	1	5-ton truck	2	2			
								Light Trucks	2	2			
					LCM	1	1	Dozers	1	1			
								Forklifts	1	1			
								75-Ton Crane	1	1			
								Pile Driver	1	1			
								ambulance	1	1			
								water buffalo	1	1			
								140-ton crane	1	1			
								30-ton crane	1	1			
								LARCV	1	1			
								Air compressors	1	1			
								Pile Extractor	1	1			
TRIDENT Pier					WTs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Van	1	1			
								Rough Terrain Forklift	1	1			
								Dozers	1	1			
								LARCV	1	1			
Floating Causeway					Barge Ferry	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Van	1	1			
								Dozer	1	1			
								LARCV	1	1			
Security Boats					MPF Utility Boat	2	2						
						2	2						
SLWT					WTs	2	2						
Beach Activities								HMMWVs	10	10	UAV	11	11
								5-ton truck	40	40			
								Dozer	5	5			
								LARCV	4	4			
								AAVs	10	10			
								Fuel Truck	2	2			
Upland Activities								HMMWVs	119	119			
								4WD Pickups	50	50			
								Fuel Truck	5	5			
								Generators/various	36	36			
								Light Units	17	17			
								Bus	8	8			
								Van	8	8			
Air Activities											CH-53E/MV-22	2	2
											CH-46E/MV-22	2	2

Alternatives Operations and Description

Scenario	Type Training	Days (a)	Operations (b)	Aircraft	Number	Aircraft Time on Range (hrs)	Emissions Factors (lb/operation)						Emissions (lbs)					
							Hours	CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	Sox	PM10
2	MPF	30	12	CH-53E/MV-22	1	1.0	0.32	6.93	0.01	0.21	0.83	0.8051	3.84	83.16	0.12	2.52	9.96	9.6612
				CH-46E/MV-22	1	1.0	0.32	6.93	0.01	0.21	0.83	0.8051	3.84	83.16	0.12	2.52	9.96	9.6612
				Total									7.68	166.32	0.24	5.04	19.92	19.3224
3	JLOTS	90	4	UAV	11													
				CH-53E/MV-22	2	1.0	0.32	6.93	0.01	0.21	0.83	0.8051	2.56	55.44	0.08	1.68	6.64	6.4408
				CH-46E/MV-22	2	1.0	0.32	6.93	0.01	0.21	0.83	0.8051	2.56	55.44	0.08	1.68	6.64	6.4408
				Total									5.12	110.88	0.16	3.36	13.28	12.8816

Assumptions: Assume that MV-22 operations are Special Personnel Insertion and Extraction Rig operations.
Assume all aircraft will eventually be MV-22s
Source: AESO Memorandum 9655.

- (a) Days = the number of days per operation
- (b) Operations = the number of operations per year

Alternatives Operations and Description

Scenario Type/Training	Reference Days (d)	Operations (b)	Ship/Boat Type	Number	Ship Time on Range (hrs) (e)	Engines and Generators		Ave. Speed (Knots)	Power Level (% of horsepower)	Engines on Line	Generator Load (kW)	Emissions Factors (lb/hr) (c)					Emissions, (lbs/year)											
						Propulsion	No.					Generator	No.	CO	NOx	ROG	SOx	PM10	PM2.5	CO	NOx	ROG	SOx	PM10	PM2.5			
																										Hours	No.	No.
1 Field Exercises Offshore Activities UBs	14	10	OUBs	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	40555.2	50344	582.4	3483.2	1758.4	1705.648			
	14	10	LCU	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	40555.2	50344	582.4	3483.2	1758.4	1705.648			
	14	10	Barge Ferry	4	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	4133.6797	24388.71	3100.26	73372.81	14726.23	14284.447			
	14	10	Warping Tug	4	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	4133.6797	24388.71	3100.26	73372.81	14726.23	14284.447			
	14	10	LCM-8	2	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	20277.6	25172	291.2	1741.6	879.2	852.824			
	14	10	Barge Ferry	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	1033.4199	6097.1775	775.0649	18343.2	3681.558	3571.1117			
	14	10	Warping Tug	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	1033.4199	6097.1775	775.0649	18343.2	3681.558	3571.1117			
	14	10	LCACs	2	2	Avco Lycoming TF-40B 3,955 hp each	4	APU T-62-T-40-7 Sunstrand 60 kW each	2	35	80%	4	2@ 10kW ea	25.41	55.32	0.72	43.30	3.89	3.7733	1016.4	2212.8	28.8	1732	155.6	150.932			
	Total											112738.6	189044.58	9235.449	193872	41367.18	40126.169											
	2 MPF MPF Ships UB	30	1	MPF Utility Boat	1	4	Diesel Engines	2	None	0	2	660	2	NA	20.46	4.4088	1.659306	1.353	1.452	1.40844	2455.2	529.056	199.1167	162.36	174.24	169.0128		
30		1	OUBs	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	8690.4	10788	124.8	746.4	376.8	365.496			
30		1	LCU	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	8690.4	10788	124.8	746.4	376.8	365.496			
30		1	Barge Ferry	4	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	885.7885	5226.1522	664.3414	15722.75	3155.622	3060.9529			
30		1	Warping Tug	4	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	885.7885	5226.1522	664.3414	15722.75	3155.622	3060.9529			
30		1	LCM-8	2	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	4345.2	5394	62.4	373.2	188.4	182.748			
30		1	WTs	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	221.44713	1306.538	166.0853	3930.686	788.9054	765.23822			
30		1	Personal Watercraft 160 hp (d)	1	4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	26.13109	2.500937	14.9774	0.006349	3.591614	3.483965	3135.7305	300.11244	1797.288	0.761922	430.9936	418.06382			
15		1	OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	2172.6	2697	31.2	186.6	94.2	91.374			
15		1	Barge Ferry	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	110.72356	653.26902	83.04267	1965.343	394.4527	382.61911			
15		1	Warping Tug	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	110.72356	653.26902	83.04267	1965.343	394.4527	382.61911			
15		1	OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	2172.6	2697	31.2	186.6	94.2	91.374			
30		1	LCU	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	4345.2	5394	62.4	373.2	188.4	182.748			
Littoral Activities Security Boats											20.46	4.4088	1.659306	1.353	1.452	1.40844	4910.4	1058.112	398.2334	324.72	348.48	338.0256						
Total											43132.202	52710.661	4492.292	42407.11	10161.57	9856.7204												
3 JLOTS Offshore Activities MPF Ships UB		49	0.33	MPF Utility Boat	3	4	Diesel Engines	2	None	0	2	660	2	NA	20.46	4.4088	1.659306	1.353	1.452	1.40844	3970.0584	855.48355	321.9717	262.5361	281.7461	273.2937		
	49	0.33	OUBs	3	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	7026.1884	8722.098	100.9008	603.4644	304.6428	295.50352			
	49	0.33	LCU	4	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	9368.2512	11629.464	134.5344	804.6192	406.1904	394.00469			
	49	0.33	Barge Ferry	4	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	477.44	2816.896	358.08	8474.56	1700.88	1649.8536			
	49	0.33	Warping Tug	4	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	477.44	2816.896	358.08	8474.56	1700.88	1649.8536			
	49	0.33	LCU	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	4684.1256	5814.732	67.2672	402.3096	203.0952	197.00234			
	49	0.33	LCU	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	2342.0628	2907.366	33.6336	201.1548	101.5478	98.501172			
	49	0.33	LCM-8	1	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	1171.0314	1453.683	16.8168	100.5774	50.7738	49.250586			
	49	0.33	LCM-8	4	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	4684.1256	5814.732	67.2672	402.3096	203.0952	197.00234			
	49	0.33	WTs	2	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	238.72	1408.448	179.04	4237.28	850.44	824.9268			
	49	0.33	Personal Watercraft 160 hp (d)	2	4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	26.13109	2.500937	14.9774	0.006349	3.591614	3.483965	3380.3175	323.52121	1937.477	0.821351	464.6111	450.6728			
	49	0.33	Warping Tug	2	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	238.72	1408.448	179.04	4237.28	850.44	824.9268			
	15	0.33	OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	716.958	890.01	10.296	61.578	31.086	30.15342			
	15	0.33	Barge Ferry	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	36.538776	215.57878	27.40408	648.5633	130.1694	126.26431			
	15	0.33	Warping Tug	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57	6.376985	36.538776	215.57878	27.40408	648.5633	130.1694	126.26431			
	15	0.33	OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	716.958	890.01	10.296	61.578	31.086	30.15342			

Scenario Type Training	Reference Days (a) Operations (b)	Ship/Boat Type	Number	Engines and Generators				Ave. Speed (knots)	Power Level (%) or horsepower	Engines on Line	Generator Load (kW)	Emissions Factors (lb/hr) (c)						Emissions, (lbs/year)						
				Ship Time on Range (hrs) (e)		Generator						CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	SOx	PM10	PM2.5	
				Hours	Propulsion	No.	No.																	
Tactical Craft	49 0.33	LCU	3	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2 @ 2kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	7026.1884	8722.098	100.9008	603.4644	304.6428	295.50352	
Littoral Activities Elevated Causeway System (ELCAS)	32 0.33	WTs	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57 6.376985	77.949388	459.90139	58.46204	1383.602	277.6947	269.36385	
	32 0.33	Personal Watercraft	1	4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	26.13109	2.500937	14.9774	0.006349	3.591614	3.483865	1103.7771	105.63958	632.6455	0.268196	151.7098	147.15846
	32 0.33	LCM	1	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2 @ 2kW ea	36.21	44.95	0.52	3.11	1.57	1.5229	764.7552	949.344	10.9824	65.6832	33.1584	32.163648	
TRIDENT Pier	32 0.33	WTs	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57 6.376985	77.949388	459.90139	58.46204	1383.602	277.6947	269.36385	
Floating Causeway	32 0.33	Barge Ferry	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57 6.376985	77.949388	459.90139	58.46204	1383.602	277.6947	269.36385	
Security Boats	32 0.33	MPF Utility Boat	2	4	Diesel Engines	2	None	0	2	660	2	NA	20.46	4.4088	1.659306	1.353	1.452 1.40844	1728.4608	372.45542	140.1782	114.3014	122.665	118.98501	
SLWT	32 0.33	WTs	2	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	1.85	10.89	1.38	32.76	6.57 6.376985	155.89878	919.80278	116.9241	2767.203	555.3894	538.72771	
Total																		50578.403	60631.989	5006.526	37323.48	9441.502	9158.2573	

NAA Operations and Description

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)						Emissions (lbs)							
									CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	SOx	PM10	PM2.5		
1 Field Exercises	Beach Activities	14	10	HMMWVs	2	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	100.93	1126.69	328.62	104.45	93.89	91.07		
		14	10	Dozer	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	912.55	2898.49	325.16	2.10	172.02	166.86		
		14	10	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	6076.00	1309.28	492.76	401.80	431.20	418.26		
	Upland Activities	14	10	HMMWVs	25	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	1261.65	14083.57	4107.71	1305.66	1173.63	1138.42		
		14	10	4WD Pickups	14		2		0.20	0.02	0.01	0.00	0.00	0.00	791.84	66.25	47.43	0.91	4.02	3.90		
		14	10	Fuel Truck	1		2		0.20	0.02	0.01	0.00	0.00	0.00	56.56	4.73	3.39	0.06	0.29	0.28		
		14	10	Generators/vari	10	30%	24	Various	11.98	55.59	4.52	3.67	3.93	3.81	12073.35	56037.70	4560.11	3695.00	3957.35	3838.63		
		14	10	Light Units	6		2		0.20	0.02	0.01	0.00	0.00	0.00	339.36	28.39	20.33	0.39	1.72	1.67		
		14	10	Bus	2		2		0.21	0.74	0.04	0.00	0.02	0.02	114.80	414.74	23.02	0.48	9.35	9.07		
		14	10	Van	3		8		0.20	0.02	0.01	0.00	0.00	0.00	678.72	56.78	40.66	0.78	3.44	3.34		
	Total														22405.77	76026.62	9949.18	5511.63	5846.91	5671.51		
	2 MPF	Offshore Activities	Roll-on/Roll-off Discharge Facility	30	1	HMMWVs/Jeeps	3	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	32.44	362.15	105.63	33.57	30.18	29.27
				30	1	6-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	5.89	7.15	0.51	0.01	0.34	0.33
				30	1	Dozer	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	195.55	621.11	69.68	0.45	36.86	35.76
30				1	Cranes	2	43%	8	94.0	0.00	0.02	0.00	0.00	0.00	0.00	83.84	300.70	29.94	0.26	11.55	11.20	
30				1	RTVs	2	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	193.53	352.94	59.84	0.33	32.26	31.29	
30				1	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	1302.00	280.56	105.59	86.10	92.40	89.63	
OPDS		15	1	HMMWVs	1	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	5.41	60.36	17.60	5.60	5.03	4.88		
		15	1	5-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	2.94	3.57	0.25	0.01	0.17	0.17		
		15	1	Dozer	2	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	195.55	621.11	69.68	0.45	36.86	35.76		
		15	1	Comm Van	1		8		0.20	0.02	0.01	0.00	0.00	0.00	24.24	2.03	1.45	0.03	0.12	0.12		
		15	1	RTV forklift	1	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	48.38	88.24	14.96	0.08	8.06	7.82		
IPDS		15	1	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	651.00	140.28	52.80	43.05	46.20	44.81		
		15	1	HMMWVs	1	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	5.41	60.36	17.60	5.60	5.03	4.88		
		15	1	5-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	2.94	3.57	0.25	0.01	0.17	0.17		
		15	1	Dozer	2	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	195.55	621.11	69.68	0.45	36.86	35.76		
		15	1	Comm Van	1		8		0.20	0.02	0.01	0.00	0.00	0.00	24.24	2.03	1.45	0.03	0.12	0.12		
Beach Activities		15	1	RTV forklift	1	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	48.38	88.24	14.96	0.08	8.06	7.82		
		15	1	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	651.00	140.28	52.80	43.05	46.20	44.81		
		30	1	HMMWVs	5	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	54.07	603.58	176.04	55.96	50.30	48.79		
		30	1	5-ton truck	20	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	117.70	142.94	10.14	0.22	6.86	6.66		
		30	1	Dozer	3	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	586.64	1863.32	209.03	1.35	110.59	107.27		
		30	1	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	1302.00	280.56	105.59	86.10	92.40	89.63		
Upland Activities		30	1	AAVs	10		2		0.444918	1.0	0.2	0.1	0.2	0.17	266.95	621.64	104.45	30.89	107.48	104.25		
		30	1	Fuel Truck	1		2		0.20	0.02	0.01	0.00	0.00	0.00	12.12	1.01	0.73	0.01	0.06	0.06		
		30	1	HMMWVs	47	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	508.27	5673.67	1654.82	526.00	472.81	458.62		
		30	1	4WD Pickups	18		2		0.20	0.02	0.01	0.00	0.00	0.00	218.16	18.25	13.07	0.25	1.11	1.07		
		30	1	Fuel Truck	3		2		0.20	0.02	0.01	0.00	0.00	0.00	36.36	3.04	2.18	0.04	0.18	0.18		
		30	1	Generators/vari	15	30%	24	Various	11.98	55.59	4.52	3.67	3.93	3.81	2587.15	12008.08	977.17	791.79	848.00	822.56		
		30	1	Light Units	6		2		0.20	0.02	0.01	0.00	0.00	0.00	72.72	6.08	4.36	0.08	0.37	0.36		
30		1	Bus	5		2		0.21	0.74	0.04	0.00	0.02	0.02	61.50	222.18	12.33	0.26	5.01	4.86			
30		1	Van	5		8		0.20	0.02	0.01	0.00	0.00	0.00	242.40	20.28	14.52	0.28	1.23	1.19			
Total															9734.32	25220.40	3969.10	1712.36	2092.88	2030.10		
3 JLOTS	Offshore Activities	Roll-on/Roll-off Discharge Facility	49	0.33	HMMWVs/Jeeps	3	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	17.49	195.20	56.93	18.10	16.27	15.78	
			49	0.33	6-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	3.17	3.85	0.27	0.01	0.18	0.18	
			49	0.33	Dozer	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	105.40	334.78	37.56	0.24	19.87	19.27	
			49	0.33	Cranes	2	43%	8	94.0	0.00	0.02	0.00	0.00	0.00	0.00	45.19	162.08	16.14	0.14	6.22	6.04	
			49	0.33	RTVs	2	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	104.31	190.23	32.25	0.18	17.39	16.86	
			49	0.33	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	701.78	151.22	56.91	46.41	49.80	48.31	
	OPDS	15	0.33	HMMWVs	1	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	1.78	19.92	5.81	1.85	1.66	1.61		
		15	0.33	5-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	0.97	1.18	0.08	0.00	0.06	0.05		
		15	0.33	Dozer	2	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	64.53	204.96	22.99	0.15	12.16	11.80		
		15	0.33	Comm Van	1		8		0.20	0.02	0.01	0.00	0.00	0.00	8.00	0.67	0.48	0.01	0.04	0.04		

Table PA-4
Ground Vehicles Emissions
Alternatives 1 and 2

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)						Emissions (lbs)						
									CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	SOx	PM10	PM2.5	
IPDS		15	0.33	RTV forklift	1	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	0.00	15.97	29.12	4.94	0.03	2.66	2.58
		15	0.33	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	214.83	46.29	17.42	14.21	15.25	14.79	
		15	0.33	HMMWVs	1	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	1.78	19.92	5.81	1.85	1.66	1.61	
		15	0.33	5-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	0.97	1.18	0.08	0.00	0.06	0.05	
		15	0.33	Dozer	2	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	64.53	204.96	22.99	0.15	12.16	11.80	
		15	0.33	Comm Van	1		8		0.20	0.02	0.01	0.00	0.00	0.00	8.00	0.67	0.48	0.01	0.04	0.04	
		15	0.33	RTV forklift	1	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	15.97	29.12	4.94	0.03	2.66	2.58	
		15	0.33	LARCV	2		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	214.83	46.29	17.42	14.21	15.25	14.79	
	Littoral Activities Elevated Causeway System (ELCAS)		32	0.33	HMMWVs	2	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	7.61	84.98	24.79	7.88	7.08	6.87
			32	0.33	5-ton truck	2	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	4.14	5.03	0.36	0.01	0.24	0.23
		32	0.33	Light Trucks	2		2		0.20	0.02	0.01	0.00	0.00	0.00	8.53	0.71	0.51	0.01	0.04	0.04	
		32	0.33	Dozers	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	68.83	218.63	24.53	0.16	12.98	12.59	
		32	0.33	Forklifts	1	48%	8	37.0	0.01	0.02	0.00	0.00	0.00	0.00	13.69	24.97	4.23	0.02	2.28	2.21	
		32	0.33	75-Ton Crane	1	74%	8	194.0	0.00	0.02	0.00	0.00	0.00	0.00	52.41	187.97	18.72	0.16	7.22	7.00	
		32	0.33	Pile Driver	1	30%	24	20.0	0.01	0.01	0.00	0.00	0.00	0.00	9.05	13.75	4.86	3.04	2.01	1.95	
		32	0.33	ambulance	1		8		0.20	0.02	0.01	0.00	0.00	0.00	17.06	1.43	1.02	0.02	0.09	0.08	
		32	0.33	water buffalo	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	2.07	2.52	0.18	0.00	0.12	0.12	
		32	0.33	140-ton crane	1	74%	8	399.0	0.00	0.02	0.00	0.00	0.00	0.00	107.78	386.59	38.49	0.33	14.85	14.40	
		32	0.33	30-ton crane	1	74%	8	194.0	0.00	0.02	0.00	0.00	0.00	0.00	52.41	187.97	18.72	0.16	7.22	7.00	
		32	0.33	LARCV	1		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	229.15	49.38	18.58	15.15	16.26	15.77	
		32	0.33	Air compressors	1	48%	8	106.0	0.01	0.02	0.00	0.00	0.00	0.00	38.66	73.54	12.51	0.07	6.50	6.31	
		32	0.33	Pile Extractor	1	30%	24	20.0	0.01	0.01	0.00	0.00	0.00	0.00	9.05	13.75	4.86	3.04	2.01	1.95	
TRIDENT Pier		32	0.33	HMMWVs	1	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	3.81	42.49	12.39	3.94	3.54	3.43	
		32	0.33	5-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	2.07	2.52	0.18	0.00	0.12	0.12	
		32	0.33	Van	1		8		0.20	0.02	0.01	0.00	0.00	0.00	17.06	1.43	1.02	0.02	0.09	0.08	
		32	0.33	Rough Terrain F	1	48%	8	93.0	0.01	0.02	0.00	0.00	0.00	0.00	34.06	62.12	10.53	0.06	5.68	5.51	
		32	0.33	Dozers	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	68.83	218.63	24.53	0.16	12.98	12.59	
		32	0.33	LARCV	1		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	229.15	49.38	18.58	15.15	16.26	15.77	
Floating Causeway		32	0.33	HMMWVs	1	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	3.81	42.49	12.39	3.94	3.54	3.43	
		32	0.33	5-ton truck	1	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	2.07	2.52	0.18	0.00	0.12	0.12	
		32	0.33	Van	1		8		0.20	0.02	0.01	0.00	0.00	0.00	17.06	1.43	1.02	0.02	0.09	0.08	
		32	0.33	Dozer	1	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	68.83	218.63	24.53	0.16	12.98	12.59	
		32	0.33	LARCV	1		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	229.15	49.38	18.58	15.15	16.26	15.77	
Beach Activities		90	0.33	HMMWVs	10	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	107.06	1195.09	348.57	110.79	99.59	96.60	
		90	0.33	5-ton truck	40	80%	1		0.25	0.30	0.02	0.00	0.01	0.01	233.05	283.03	20.08	0.44	13.59	13.18	
		90	0.33	Dozer	5	59%	8	240.0	0.01	0.02	0.00	0.00	0.00	0.00	967.96	3074.47	344.90	2.23	182.47	176.99	
		90	0.33	LARCV	4		2	350.0	10.85	2.338	0.879935	0.7175	0.77	0.75	2577.96	555.51	209.07	170.48	182.95	177.46	
		90	0.33	AAVs	10		2		0.444918	1.0	0.2	0.1	0.2	0.17	264.28	615.43	103.41	30.58	106.40	103.21	
		90	0.33	Fuel Truck	2		2		0.20	0.02	0.01	0.00	0.00	0.00	24.00	2.01	1.44	0.03	0.12	0.12	
Upland Activities		90	0.33	HMMWVs	119	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	1274.02	14221.59	4147.96	1318.46	1185.13	1149.58	
		90	0.33	4WD Pickups	50		2		0.20	0.02	0.01	0.00	0.00	0.00	599.94	50.19	35.94	0.69	3.04	2.95	
		90	0.33	Fuel Truck	5		2		0.20	0.02	0.01	0.00	0.00	0.00	59.99	5.02	3.59	0.07	0.30	0.30	
		90	0.33	Generators/varic	36	30%	24	Various	11.98	55.59	4.52	3.67	3.93	3.81	2561.28	11888.00	967.39	783.87	839.52	814.34	
		90	0.33	Light Units	17		2		0.20	0.02	0.01	0.00	0.00	0.00	203.98	17.07	12.22	0.23	1.04	1.00	
		90	0.33	Bus	8		2		0.21	0.74	0.04	0.00	0.02	0.02	97.42	351.93	19.53	0.41	7.94	7.70	
		90	0.33	Van	8		8		0.20	0.02	0.01	0.00	0.00	0.00	383.96	32.12	23.00	0.44	1.95	1.89	
									12240.77	35875.31	6836.93	2584.92	2947.99	2859.55							
4 Regional Transportation from SSTC to CPEN		1	4	HMMWVs	10	65%	3		0.18	2.06	0.60	0.19	0.17	0.17	14.42	160.96	46.95	14.92	13.41	13.01	
		1	4	4WD Pickups	10		2		0.20	0.02	0.01	0.00	0.00	0.00	16.16	1.35	0.97	0.02	0.08	0.08	
		1	4	AAVs			2		0.444918	1.0	0.2	0.1	0.2	0.17	0.00	0.00	0.00	0.00	0.00	0.00	
		1	4	LAVs		65%	2		0.04	0.06	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
		1	4	IFAVs		65%	2		0.04	0.06	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
								30.58	162.31	47.91	14.94	13.49	13.09								

Table PA-4
 Ground Vehicles Emissions
 Alternatives 1 and 2

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)						Emissions (lbs)					
									CO	NOx	ROG	SOx	PM10	PM2.5	CO	Nox	ROG	SOx	PM10	PM2.5

Assumptions: Fuel truck is equivalent to 4WD vehicle; large trucks modeled as MDTs. Buses assumed to be diesel powered
 Emission factors from ARB's OFFROAD 2007 Model

JLOTS/MPF/FEX EA Air Emissions Analysis Emissions Summary:
 Alternatives 1 and 2

Activity	Annual Activity Emissions, tons/year					
	CO	NOx	ROG	SOx	PM10	PM2.5
Field Exercises						
Marine Vessels	56.37	94.52	4.62	96.94	20.68	20.06
Ground Vehicles	11.20	38.01	4.97	2.76	2.92	2.84
Total, tons/year	67.57	132.54	9.59	99.69	23.61	22.90
MPF						
Marine Vessels	21.57	26.36	2.25	21.20	5.08	4.93
Ground Vehicles	4.87	12.61	1.98	0.86	1.05	1.02
Aircraft	0.00	0.08	0.00	0.00	0.01	0.01
Total, tons/year	26.44	39.05	4.23	22.06	6.14	5.95
JLOTS						
Marine Vessels	25.29	30.32	2.50	18.66	4.72	4.58
Ground Vehicles	6.12	17.94	3.42	1.29	1.47	1.43
Aircraft	0.00	0.06	0.00	0.00	0.01	0.01
Total, tons/year	31.41	48.31	5.92	19.96	6.20	6.02
Regional Transportation						
Total, tons/year	0.02	0.08	0.02	0.01	0.01	0.01
Grand Total	125.44	219.97	19.77	141.72	35.95	34.87

Assumptions: Field exercises - 10 per year, 14 days per exercise

MPF - 1 exercise per year, 30 days per exercise

JLOTS - 1 exercise every three years (0.33 times per year), 90 days per exercise

Regional Transportation - up to 20 vehicles are used per trip, for four trips per year

Operations and Description

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year	
1	Field Exercises													
	Offshore Activities													
		Ubs				OUBs	2	2						
		LCU 1600/2000				LCU	2	2						
		INLS Causeway "Ferries				Barge Ferry	4	4						
		INLS Warping Tugs				Warping Tug	4	4						
		LCM 8s				LCM-8	2	2						
		ABLTS				Barge Ferry	1	1						
		LCACs				Warping Tug	1	1						
						LCACs	2	2						
		Beach Activities												
									HMMWVs	2				
									Dozer	1				
									LARCV	2				
		Upland Activities												
									HMMWVs	25				
									4WD Pickups	14				
									Fuel Truck	1				
									Generators/various	10				
									Light Units	6				
								Bus	2					
								Van	3					
	Air Activities													
											CH-53E/MV-22	0	0	
											CH-46E/MV-22	0	0	
2	MPF													
	Offshore Activities													
		MPF Ships				MPF Utility Boat	1	1						
		UB				OUBs	2	2						
		LCU 1600/2000				LCU	2	2						
		INLS Causeway "Ferries				Barge Ferry	4	4						
		INLS Warping Tugs				Warping Tug	4	4						
		LCM 8s				LCM-8	2	2						
		Roll-on/Roll-off Discharge Facility				WTs	1	1	HMMWVs/Jeeps	3	3	None	0	0
						Personal Watercraft	1	1	6-ton truck	1	1			
									Dozer	1	1			
									Cranes	2	2			
									RTVs	2	2			
									LARCV	2	2			
		OPDS												
						OUBs	1	1	HMMWVs	1	1			
									5-ton truck	1	1			
									Dozer	2	2			
									Comm Van	1	1			
									RTV forklift	1	1			
								LARCV	2	2				
	ABLTS													
					Barge Ferry	1	1							
					Warping Tug	1	1							
	IPDS													
					OUBs	1	1	HMMWVs	1	1				
								5-ton truck	1	1				
								Dozer	2	2				
								Comm Van	1	1				
								RTV forklift	1	1				
								LARCV	2	2				

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year
	Tactical Craft				LCU	1	1						
	Littoral Activities												
	Security Boats				MPF Utility Boat	2	2						
	Beach Activities							HMMWVs	5		UAV	2	2
								5-ton truck	20				
								Dozer	3				
								LARCV	2				
								AAVs	10				
								Fuel Truck	1				
	Upland Activities							HMMWVs	47	47			
								4WD Pickups	18	18			
								Fuel Truck	3	3			
								Generators/various	15	15			
								Light Units	6	6			
								Bus	5	5			
								Van	5	5			
	Air Activities										CH-53E/MV-22	1	1
											CH-46E/MV-22	1	1
3	JLOTS												
	Offshore Activities												
	MPF Ships				MPF Utility Boat	3	3						
	UB				OUBs	3	3						
	LCU 1600/2000				LCU	4	4						
	INLS Causeway "Ferries				Barge Ferry	4	4						
	INLS Warping Tugs				Warping Tug	4	4						
	MCS				LCU	2	2						
	LSV				LCU	1	1						
	LCM 8s				LCM-8	1	1						
	Roll-on/Roll-off Discharge Facility				LCM-8	4	4						
					WTs	2	2	HMMWVs/Jeeps	3	3	None	0	0
					Personal Watercraft	2	2	6-ton truck	1	1			
								Dozer	1	1			
								Cranes	2	2			
								RTVs	2	2			
								LARCV	2	2			
	Tugs				Warping Tug	2	2						
	OPDS				OUBs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			
	ABLTS				Barge Ferry	1	1						
					Warping Tug	1	1						
	IPDS				OUBs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Dozer	2	2			
								Comm Van	1	1			
								RTV forklift	1	1			
								LARCV	2	2			

Scenario	Type Training	Reference Days (a)	Operations (b)	No. of Personnel	Ship/Boat Type	Number of vessels assumed	Vessels per year	Ground Vehicles	Number of vehicles assumed	Vehicles per year	Aircraft	Number of aircraft assumed	Aircraft per year
	Tactical Craft				LCU	3	3						
	Littoral Activities												
	Elevated Causeway System (ELCAS)				WTs	1	1	HMMWVs	2	2	None	0	0
					Personal Watercraft	1	1	5-ton truck	2	2			
								Light Trucks	2	2			
					LCM	1	1	Dozers	1	1			
								Forklifts	1	1			
								75-Ton Crane	1	1			
								Pile Driver	1	1			
								ambulance	1	1			
								water buffalo	1	1			
								140-ton crane	1	1			
								30-ton crane	1	1			
								LARCV	1	1			
								Air compressors	1	1			
								Pile Extractor	1	1			
	TRIDENT Pier				WTs	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Van	1	1			
								Rough Terrain Forklift	1	1			
								Dozers	1	1			
								LARCV	1	1			
	Floating Causeway				Barge Ferry	1	1	HMMWVs	1	1			
								5-ton truck	1	1			
								Van	1	1			
								Dozer	1	1			
								LARCV	1	1			
	Security Boats				MPF Utility Boat	2	2						
						2	2						
	SLWT				WTs	2	2						
	Beach Activities							HMMWVs	10		UAV	11	11
								5-ton truck	40				
								Dozer	5				
								LARCV	4				
								AAVs	10				
								Fuel Truck	2				
	Upland Activities							HMMWVs	119	119			
								4WD Pickups	50	50			
								Fuel Truck	5	5			
								Generators/various	36	36			
								Light Units	17	17			
								Bus	8	8			
								Van	8	8			
	Air Activities										CH-53E/MV-22	2	2
											CH-46E/MV-22	2	2

Aircraft Operations and Description

Scenario	Type Training	Days (a)	Operations (b)	Aircraft	Number	Aircraft Time on Range (hrs)	Emissions Factors (lb/operation)			Emissions (lbs)					
							CO2	CH4	N2O	CO2	CH4	N2O	CO2e		
2	MPF	30	12	CH-53E/MV-22	1	1.0	1693	0.044183	0.050728	20316	0.530193	0.60874	20515.84		
				CH-46E/MV-22	1	1.0	1693	6.93	0.01	20316	83.16	0.12	22099.56		
				Total								40632	83.69019	0.72874	42615.4
3	JLOTS	90	4	UAV	11										
				CH-53E/MV-22	2	1.0	1693	6.93	0.01	13544	55.44	0.08	14733.04		
				CH-46E/MV-22	2	1.0	1693	6.93	0.01	13544	55.44	0.08	14733.04		
				Total								27088	110.88	0.16	29466.08

Assumptions: Assume that MV-22 operations are Special Personnel Insertion and Extraction Rig operations.
Assume all aircraft will eventually be MV-22s
Source: AESO Memorandum 9655.

- (a) Days = the number of days per operation
- (b) Operations = the number of operations per year

Marine Vessel Operations and Description

Scenario Type/Training	Reference Days (a)	Operations (b)	Ship/Boat Type	Number	Ship Time on Range (hrs) (e)		Engines and Generators				Ave. Speed (Knots)	Power Level (%) or horsepower	Engines on Line	Generator - Load (kW)	Emissions Factors (lb/hr) (c)			Emissions, (lbs/year)			
					Hours	Propulsion	No.	Generator	No.	CO2					CH4	N2O	CO2	CH4	N2O	CO2e	
1 Field Exercises Offshore Activities UBs	14	10	OUBs	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	2347369.88	171.1383	60.12967	2369604	
LCU 1600/2000	14	10	LCU	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	2347369.88	171.1383	60.12967	2369604	
INLS Causeway *Ferries	14	10	Barge Ferry	4	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	11423354.9	832.8357	292.618	11531556	
INLS Warping Tugs	14	10	Warping Tug	4	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	11423354.9	832.8357	292.618	11531556	
LCM 8s	14	10	LCM-8	2	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	1173684.94	85.56915	30.06484	1184802	
ABLTS	14	10	Barge Ferry	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	2855838.73	208.2089	73.15449	2882889	
	14	10	Warping Tug	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	2855838.73	208.2089	73.15449	2882889	
LCACs	14	10	LCACs	2	2	Avco Lycoming TF-40B 3,955 hp each	4	APU T-62-T-40-7 Sunstrand 60 kW each	2	35	80%	4	2@ 10kW ea	10084.68	0.735238	0.258327	403387.221	29.40951	10.33307	407208	
Total																	34830199.3	2539.345	892.2021	35160108	
2 MPF MPF Ships UB	30	1	MPF Utility Boat	1	4	Diesel Engines	2	None	0	2	660	2	NA	1503.556	0.109619	0.038515	180426.722	13.15426	4.621768	182136	
	30	1	OUBs	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	503007.832	36.67249	12.88493	507772	
LCU 1600/2000	30	1	LCU	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	503007.832	36.67249	12.88493	507772	
INLS Causeway *Ferries	30	1	Barge Ferry	4	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	2447861.77	178.4648	62.70385	2471048	
INLS Warping Tugs	30	1	Warping Tug	4	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	2447861.77	178.4648	62.70385	2471048	
LCM 8s	30	1	LCM-8	2	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	251503.916	18.33625	6.442465	253886	
Roll-on/Roll-off Discharge Facility	30	1	WTs	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	611965.443	44.6162	15.67596	617762	
	30	1	Personal Watercraft	1	4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	182.2492	0.013287	0.004668	21869.9057	1.594456	0.562014	22077	
OPDS	15	1	OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	125751.958	9.168123	3.221232	126943	
ABLTS	15	1	Barge Ferry	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	305982.722	22.3081	7.837981	308881	
	15	1	Warping Tug	1	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	305982.722	22.3081	7.837981	308881	
IPDS	15	1	OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	125751.958	9.168123	3.221232	126943	
Tactical Craft	30	1	LCU	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	251503.916	18.33625	6.442465	253886	
Littoral Activities Security Boats Total	30	1	MPF Utility Boat	2	4	Diesel Engines	2	None	0	2	660	2	NA	1503.556	0.109619	0.038515	360853.445	26.30853	9.243537	364271	
																	8443331.92	615.573	216.2824	8523306.491	
3 JLOTS Offshore Activities MPF Ships UB	49	0.33	MPF Utility Boat	3	4	Diesel Engines	2	None	0	2	660	2	NA	1503.556	0.109619	0.038515	291750.01	21.27044	7.473399	294513	
	49	0.33	OUBs	3	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	406681.832	29.64971	10.41747	410534	
LCU 1600/2000	49	0.33	LCU	4	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	542242.443	39.53295	13.88995	547379	
INLS Causeway *Ferries	49	0.33	Barge Ferry	4	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	1319397.5	96.19253	33.79737	1331895	
INLS Warping Tugs	49	0.33	Warping Tug	4	4	Foster Wheeler/Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	1319397.5	96.19253	33.79737	1331895	
MCS	49	0.33	LCU	2	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	271121.222	19.76647	6.944977	273689	
LSV	49	0.33	LCU	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	135560.611	9.883237	3.472489	136845	
	49	0.33	LCM-8	1	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	67780.3054	4.941618	1.736244	68422	

Scenario Type Training	Reference Days (a)	Operations (b)	Ship/Boat Type	Number	Engines and Generators				Ave. Speed (knots)	Power Level (%) or horsepower	Engines on Line	Generator - Load (kW)	Emissions Factors (lb/hr) (c)			Emissions, (lbs/year)					
					Ship Time on Range (hrs) (e)		Generator						CO2	CH4	N2O	CO2	CH4	N2O	CO2e		
					Hours	Propulsion	No.	No.													
LCM 8s	49	0.33	LCM-8	4	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	271121.222	19.76647	6.944977	273689	
Roll-on/Roll-off Discharge Facility	49	0.33	WTs	2	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	659698.748	48.09626	16.89869	665947	
	49	0.33	Personal Watercraft	2	4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	26.13109	2.500937	14.9774	3380.31748	323.5212	1937.477	610792	
Tugs	49	0.33	Warping Tug	2	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	659698.748	48.09626	16.89869	665947	
OPDS	15	0.33	OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	41498.1462	3.025481	1.063007	41891	
ABLTS	15	0.33	Barge Ferry	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	100974.298	7.361673	2.586534	101931	
	15	0.33	Warping Tug	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	100974.298	7.361673	2.586534	101931	
IPDS	15	0.33	OUBs	1	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	41498.1462	3.025481	1.063007	41891	
Tactical Craft	49	0.33	LCU	3	4	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	406681.832	29.64971	10.41747	410534	
Littoral Activities																					
Elevated Causeway System (ELCAS)	32	0.33	WTs	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	215411.836	15.7049	5.517939	217452	
	32	0.33	Personal Watercraft	1	4	Yamaha Outboard, 160 hp (d)	1	None	0	2	100%	1	NA	1503.556	0.109619	0.038515	63510.2063	4.630301	1.628862	64112	
	32	0.33	LCM	1	2	GM Detroit, V12-71N 460bhp	2	3-71 GM Detroit, 40 kW	2	10	2000 rpm (97%)	2	2@ 7kW ea	2095.866	0.152802	0.053687	44264.6892	3.227179	1.133874	44684	
TRIDENT Pier	32	0.33	WTs	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	215411.836	15.7049	5.517939	217452	
Floating Causeway	32	0.33	Barge Ferry	1	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	215411.836	15.7049	5.517939	217452	
Security Boats	32	0.33	MPF Utility Boat	2	4	Diesel Engines	2	None	0	2	660	2	NA	1503.556	0.109619	0.038515	127020.413	9.260602	3.253725	128224	
SLWT	32	0.33	WTs	2	4	Foster Wheeler/ Babcock & Wilcox	2	NA - No separate emissions	0	7	25%	2	NA	5099.71	0.37	0.13	430823.672	31.4098	11.03588	434904	
Total														7951311.66	902.9763	2141.069	8634005.585				

Ground Vehicle Operations and Description

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)			Emissions (lbs)			
									CO2	CH4	N2O	CO2	CH4	N2O	
1 Field Exercises	Beach Activities	14	10	HMMWVs	2	65%	3		1.25	0.00	0.00	684.08	0.08	0.00	
		14	10	Dozer	1	59%	8	240.0	1.25	0.00	0.00	198698.90	22.03	0.00	
		14	10	LARCV	2	50%	2	350.0	1.25	0.00	0.00	122783.57	13.61	0.00	
	Upland Activities	14	10	HMMWVs	25	65%	3		1.25	0.00	0.00	8551.00	0.95	0.00	
		14	10	4WD Pickups	14		2		22.71	0.00	0.00	89034.96	7.39	6.29	
		14	10	Fuel Truck	1		2		22.71	0.00	0.00	6359.64	0.53	0.45	
		14	10	Generators/varic	10	30%	24	Various	2064.95	0.00	5.28	2081469.60	0.00	5322.24	
		14	10	Light Units	6		2		22.71	0.00	0.00	38157.84	3.17	2.70	
		14	10	Bus	2		2		89.15	0.00	0.07	49925.88	1.07	39.40	
		14	10	Van	3		8		22.71	0.00	0.00	76315.68	6.33	5.39	
	Total											2671981.15	55.15	5376.47	
2 MPF	Offshore Activities	Roll-on/Roll-off Discharge Facility	30	1	HMMWVs/Jeeps	3	65%	3		1.25	0.00	0.00	219.88	0.02	0.00
			30	1	6-ton truck	1	80%	1		48.21	0.00	0.03	1156.94	0.03	0.68
			30	1	Dozer	1	59%	8	240.0	1.25	0.00	0.00	42578.34	4.72	0.00
			30	1	Cranes	2	43%	8	94.0	1.25	0.00	0.00	24308.14	2.69	0.00
			30	1	RTVs	2	48%	8	93.0	1.25	0.00	0.00	26566.36	2.95	0.00
			30	1	LARCV	2	50%	2	350.0	1.25	0.00	0.00	26310.77	2.92	0.00
	OPDS	15	1	HMMWVs	1	65%	3		1.25	0.00	0.00	36.65	0.00	0.00	
		15	1	5-ton truck	1	80%	1		48.21	0.00	0.03	578.47	0.02	0.34	
		15	1	Dozer	2	59%	8	240.0	1.25	0.00	0.00	42578.34	4.72	0.00	
		15	1	Comm Van	1		8		22.71	0.00	0.00	2725.56	0.23	0.19	
		15	1	RTV forklift	1	48%	8	93.0	1.25	0.00	0.00	6641.59	0.74	0.00	
		15	1	LARCV	2	50%	2	350.0	1.25	0.00	0.00	13155.38	1.46	0.00	
	IPDS	15	1	HMMWVs	1	65%	3		1.25	0.00	0.00	36.65	0.00	0.00	
		15	1	5-ton truck	1	80%	1		48.21	0.00	0.03	578.47	0.02	0.34	
		15	1	Dozer	2	59%	8	240.0	1.25	0.00	0.00	42578.34	4.72	0.00	
		15	1	Comm Van	1		8		22.71	0.00	0.00	2725.56	0.23	0.19	
		15	1	RTV forklift	1	48%	8	93.0	1.25	0.00	0.00	6641.59	0.74	0.00	
		15	1	LARCV	2	50%	2	350.0	1.25	0.00	0.00	13155.38	1.46	0.00	
	Beach Activities	30	1	HMMWVs	5	65%	3		1.25	0.00	0.00	366.47	0.04	0.00	
		30	1	5-ton truck	20	80%	1		48.21	0.00	0.03	23138.81	0.62	13.58	
		30	1	Dozer	3	59%	8	240.0	1.25	0.00	0.00	127735.01	14.16	0.00	
		30	1	LARCV	2	50%	2	350.0	1.25	0.00	0.00	26310.77	2.92	0.00	
		30	1	AAVs	10		2		0.444918	1.0	0.2	266.95	621.64	104.45	
		30	1	Fuel Truck	1		2		22.71	0.00	0.00	1362.78	0.11	0.10	

Table GHG/PA-4
Ground Vehicles Emissions
Alternatives 1 and 2

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)			Emissions (lbs)		
									CO2	CH4	N2O	CO2	CH4	N2O
Upland Activities		30	1	HMMWVs	47	65%	3		1.25	0.00	0.00	3444.83	0.38	0.00
		30	1	4WD Pickups	18		2		22.71	0.00	0.00	24530.04	2.04	1.73
		30	1	Fuel Truck	3		2		22.71	0.00	0.00	4088.34	0.34	0.29
		30	1	Generators/varic	15	30%	24	Various	2064.95	0.00	5.28	446029.20	0.00	1140.48
		30	1	Light Units	6		2		22.71	0.00	0.00	8176.68	0.68	0.58
		30	1	Bus	5		2		89.15	0.00	0.07	26746.01	0.58	21.11
		30	1	Van	5		8		22.71	0.00	0.00	27255.60	2.26	1.93
									972023.87	673.42	1285.99			
3 JLOTS														
Offshore Activities														
	Roll-on/Roll-off Discharge Facility	49	0.33	HMMWVs/Jeeps	3	65%	3		1.25	0.00	0.00	118.52	0.01	0.00
		49	0.33	6-ton truck	1	80%	1		48.21	0.00	0.03	623.59	0.02	0.37
		49	0.33	Dozer	1	59%	8	240.0	1.25	0.00	0.00	22949.72	2.54	0.00
		49	0.33	Cranes	2	43%	8	94.0	1.25	0.00	0.00	13102.09	1.45	0.00
		49	0.33	RTVs	2	48%	8	93.0	1.25	0.00	0.00	14319.27	1.59	0.00
		49	0.33	LARCV	2	50%	2	350.0	1.25	0.00	0.00	14181.50	1.57	0.00
	OPDS	15	0.33	HMMWVs	1	65%	3		1.25	0.00	0.00	12.09	0.00	0.00
		15	0.33	5-ton truck	1	80%	1		48.21	0.00	0.03	190.90	0.01	0.11
		15	0.33	Dozer	2	59%	8	240.0	1.25	0.00	0.00	14050.85	1.56	0.00
		15	0.33	Comm Van	1		8		22.71	0.00	0.00	899.43	0.07	0.06
		15	0.33	RTV forklift	1	48%	8	93.0	1.25	0.00	0.00	2191.72	0.24	0.00
		15	0.33	LARCV	2	50%	2	350.0	1.25	0.00	0.00	4341.28	0.48	0.00
	IPDS	15	0.33	HMMWVs	1	65%	3		1.25	0.00	0.00	12.09	0.00	0.00
		15	0.33	5-ton truck	1	80%	1		48.21	0.00	0.03	190.90	0.01	0.11
		15	0.33	Dozer	2	59%	8	240.0	1.25	0.00	0.00	14050.85	1.56	0.00
		15	0.33	Comm Van	1		8		22.71	0.00	0.00	899.43	0.07	0.06
		15	0.33	RTV forklift	1	48%	8	93.0	1.25	0.00	0.00	2191.72	0.24	0.00
		15	0.33	LARCV	2	50%	2	350.0	1.25	0.00	0.00	4341.28	0.48	0.00
	Littoral Activities													
	Elevated Causeway System (ELCAS)	32	0.33	HMMWVs	2	65%	3		1.25	0.00	0.00	51.60	0.01	0.00
		32	0.33	5-ton truck	2	80%	1		48.21	0.00	0.03	814.49	0.02	0.48
		32	0.33	Light Trucks	2		2		1.25	0.00	0.00	52.92	0.01	0.00
		32	0.33	Dozers	1	59%	8	240.0	1.25	0.00	0.00	14987.57	1.66	0.00
		32	0.33	Forklifts	1	48%	8	37.0	1.25	0.00	0.00	1879.80	0.21	0.00
		32	0.33	75-Ton Crane	1	74%	8	194.0	1.25	0.00	0.00	15195.03	1.68	0.00
		32	0.33	Pile Driver	1	30%	24	20.0	1.25	0.00	0.00	1905.20	0.21	0.00
		32	0.33	ambulance	1		8		22.71	0.00	0.00	1918.79	0.16	0.14
		32	0.33	water buffalo	1	80%	1		48.21	0.00	0.03	407.24	0.01	0.24
		32	0.33	140-ton crane	1	74%	8	399.0	1.25	0.00	0.00	31251.63	3.46	0.00
		32	0.33	30-ton crane	1	74%	8	194.0	1.25	0.00	0.00	15195.03	1.68	0.00
		32	0.33	LARCV	1	50%	2	350.0	1.25	0.00	0.00	4630.69	0.51	0.00
		32	0.33	Air compressors	1	48%	8	106.0	1.25	0.00	0.00	5385.37	0.60	0.00
		32	0.33	Pile Extractor	1	30%	24	20.0	1.25	0.00	0.00	1905.20	0.21	0.00

Table GHG/PA-4
Ground Vehicles Emissions
Alternatives 1 and 2

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)			Emissions (lbs)		
									CO2	CH4	N2O	CO2	CH4	N2O
TRIDENT Pier		32	0.33	HMMWVs	1	65%	3		1.25	0.00	0.00	25.80	0.00	0.00
		32	0.33	5-ton truck	1	80%	1		48.21	0.00	0.03	407.24	0.01	0.24
		32	0.33	Van	1		8		22.71	0.00	0.00	1918.79	0.16	0.14
		32	0.33	Rough Terrain F	1	48%	8	93.0	1.25	0.00	0.00	4675.68	0.52	0.00
		32	0.33	Dozers	1	59%	8	240.0	1.25	0.00	0.00	14987.57	1.66	0.00
	32	0.33	LARCV	1	50%	2	350.0	1.25	0.00	0.00	4630.69	0.51	0.00	
Floating Causeway		32	0.33	HMMWVs	1	65%	3		1.25	0.00	0.00	25.80	0.00	0.00
		32	0.33	5-ton truck	1	80%	1		48.21	0.00	0.03	407.24	0.01	0.24
		32	0.33	Van	1		8		22.71	0.00	0.00	1918.79	0.16	0.14
		32	0.33	Dozer	1	59%	8	240.0	1.25	0.00	0.00	14987.57	1.66	0.00
		32	0.33	LARCV	1	50%	2	350.0	1.25	0.00	0.00	4630.69	0.51	0.00
Beach Activities		90	0.33	HMMWVs	10	65%	3		1.25	0.00	0.00	725.61	0.08	0.00
		90	0.33	5-ton truck	40	80%	1		48.21	0.00	0.03	45814.85	1.23	26.89
		90	0.33	Dozer	5	59%	8	240.0	1.25	0.00	0.00	210762.76	23.36	0.00
		90	0.33	LARCV	4	50%	2	350.0	1.25	0.00	0.00	52095.32	5.78	0.00
		90	0.33	AAVs	10		2		0.444918	1.0	0.2	264.28	615.43	103.41
	90	0.33	Fuel Truck	2		2		22.71	0.00	0.00	2698.30	0.22	0.19	
Upland Activities		90	0.33	HMMWVs	119	65%	3		1.25	0.00	0.00	8634.80	0.96	0.00
		90	0.33	4WD Pickups	50		2		22.71	0.00	0.00	67457.61	5.60	4.77
		90	0.33	Fuel Truck	5		2		22.71	0.00	0.00	6745.76	0.56	0.48
		90	0.33	Generators/varic	36	30%	24	Various	2064.95	0.00	5.28	441568.91	0.00	1129.08
		90	0.33	Light Units	17		2		22.71	0.00	0.00	22935.59	1.90	1.62
		90	0.33	Bus	8		2		89.15	0.00	0.07	42365.67	0.91	33.43
		90	0.33	Van	8		8		22.71	0.00	0.00	43172.87	3.58	3.05
1198106.02												687.18	1305.23	
5 Regional Transportation from SSTC to CPEN		21	4	HMMWVs	4	65%	3		1.252894	0.000139	0	820.90	0.09	0.00
		21	4	4WD Pickups	4		2		22.713	0.001885	0.001605	15263.14	1.27	1.08
		21	4	AAVs	4		2		180.277	0.013143	0.004618	121146.12	8.83	3.10
		21	4	LAVs	4	65%	2		1.252894	0.000139	0	547.26	0.06	0.00
		21	4	IFAVs	4	65%	2		1.252894	0.000139	0	547.26	0.06	0.00
138324.68												10.31	4.18	

Table GHG/PA-4
 Ground Vehicles Emissions
 Alternatives 1 and 2

Scenario	Type Training	Days (a)	Operations (b)	Ground Vehicles	Number	Engine Load	Hours per day	Horsepower	Emissions Factors (lb/hr)			Emissions (lbs)			
									CO2	CH4	N2O	CO2	CH4	N2O	

Assumptions: Fuel truck is equivalent to 4WD vehicle; large trucks modeled as MDTs. Busses assumed to be diesel powered
 Emission factors from ARB's OFFROAD 2007 Model

Activity	Annual Activity Emissions, metric tons/year			
	CO2	CH4	N2O	CO2e
Field Exercises				
Marine Vessels	15,798.87	1.15	0.40	15,948.52
Ground Vehicles	1,212.00	0.03	2.44	1,968.54
Total, tons/year	17,010.88	1.18	2.84	17,917.06
MPF				
Marine Vessels	3,829.87	0.28	0.10	3,866.15
Ground Vehicles	440.91	0.31	0.58	628.15
Aircraft	18.43	0.04	0.00	19.33
Total, tons/year	4,289.21	0.62	0.68	4,513.63
JLOTS				
Marine Vessels	3,606.69	0.41	0.97	3,916.36
Ground Vehicles	543.46	0.31	0.59	733.54
Aircraft	12.29	0.05	0.00	13.37
Total, tons/year	4,162.44	0.77	1.56	4,663.26
Regional Transportation				
Total, tons/year	62.74	0.005	0.002	63.43
Grand Total	25,525.26	2.58	5.09	27,157.38

Assumptions: Field exercises - 10 per year, 14 days per exercise

MPF - 1 exercise per year, 30 days per exercise

JLOTS - 1 exercise per every three years ,90 days per exercise

Regional Transportation - up to 20 vehicles are used per trip, for four trips per year

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