**Department of the Army**
**Joint Base Lewis-McChord**
**Solo Point Boat Ramps Replacement**

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# Environmental Assessment

**March 2020**

**JBLM Solo Point Boat Ramps (Google Earth Image, 2018)**

**ENVIRONMENTAL ASSESSMENT FOR SOLO POINT BOAT RAMPS AT JOINT BASE LEWIS-MCCHORD, WASHINGTON**

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|---|---|
| BMP | best management practice |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CONUS | Contiguous United States |
| DOD | Department of Defense |
| EA | Environnemental Assessment |
| EIS | Environmental Impact Statement |
| EPA | U.S. Environmental Protection Agency |
| EO | Executive Order |
| FNSI | Finding of No Significant Impact |
| FORSCOM | US Army Forces Command |
| JBLM | Joint Base Lewis-McChord |
| MOA | Military Operations Area |
| MTA | Mountain Training Area |
| MTR | Military Training Route |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Policy Act |
| NM | nautical mile |
| NOA | Notice of Availability |
| NRNC | Nisqually Reach Nature Center |
| SOP | Standing Operating Procedure |
| TPY | tons per year |
| TSS | Total Suspended Solids |
| USACE | U.S. Army Corps of Engineers |
| USAR | U.S. Army Reserves |
| USCG | U.S. Coast Guard |
| USC | United States Code |
| WAC | Washington Administrative Code |
| WDFW | Washington Department of Fish and Wildlife |
| WDNR | Department of Natural Resources |
| WNG | Washington National Guard |
| WQC | Water Quality Certification |

# 1.0 INTRODUCTION

The U.S. Department of the Army (Army) at Joint Base Lewis-McChord (JBLM) proposes to replace a concrete boat ramp at Solo Point between Dupont and Steilacoom in Pierce County, Washington. Solo Point is the only portion of JBLM with marine access and is designated for the purpose of various amphibious training operations including small watercraft and helicopters. The Army is the lead Federal agency for compliance with the National Environmental Policy Act (NEPA) and has prepared this Environmental Assessment (EA) to meet the compliance requirements of the Council on Environmental Quality (CEQ) regulations implementing NEPA as specified under 40 Code of Federal Regulations (CFR) Part 1500-1508 as well as Army NEPA implementing regulations under 32 CFR 651. Under NEPA regulations (40 CFR Part 1500-1508) and the Army NEPA implementing regulation under 32 CFR 651, the Army must conduct an environmental impact analysis to inform decision-makers and the public of the potential environmental consequences of proposed Army actions.

This EA evaluates the potential environmental effects of the proposed action (Preferred Alternative) and the No Action alternative. This EA analyzes direct effects (those caused by the proposed action and occurring at the same time and place) and indirect effects (those caused by the proposed action and occurring later in time or farther removed in distance, but that are still reasonably foreseeable). The potential for cumulative effects (effects resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions) would also be addressed, and mitigation measures to avoid, minimize, rectify, reduce, or compensate for impacts would be identified, where appropriate.

## 1.1 Project Location

The location of the proposed action is adjacent to JBLM (Figure 1) property at Solo Point, a two-acre parcel that extends into Cormorant Passage in greater Puget Sound basin in Pierce County, Washington (Figure 2). The town of Steilacoom is located 2 miles to the north. The forested uplands of Solo Point are known as the Fourth Infantry Bluff. A four-mile trail on the hillside is used for infantry training, recreational hiking and mountain biking.

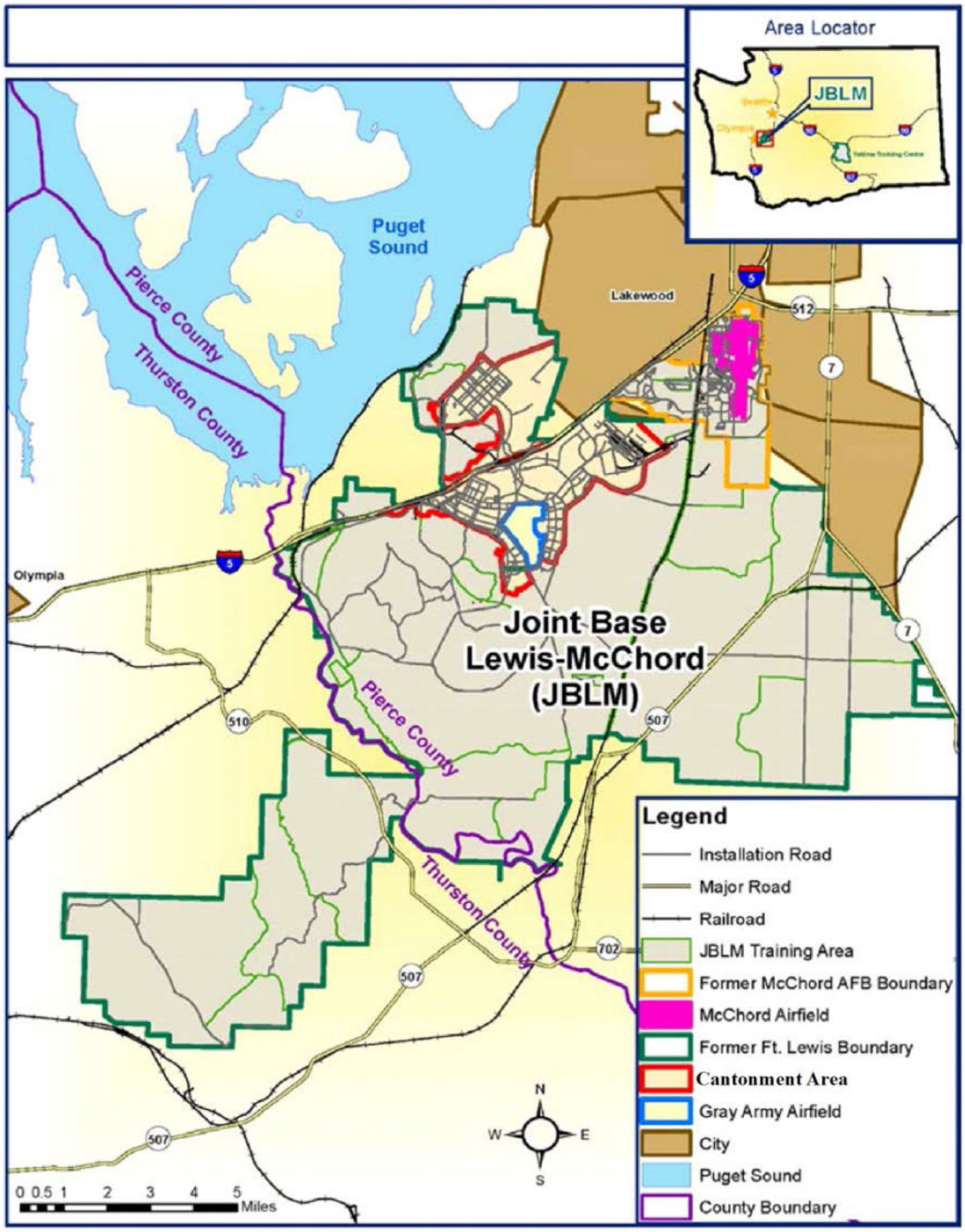


Figure 1. Location of Joint Base Lewis-McChord.

Figure 2. Location of Solo Point.

The eastern border of Solo Point extends to the double railroad tracks that run along the shoreline. The western, waterward border of Solo Point extends into Cormorant Passage. The southern end of Ketron Island is 0.6 miles to the west from the boat launch. A sand and gravel mine barge loading facility is located 0.67 miles to the south at Tatsolo Point. JBLM's Wastewater Treatment Plant is located 0.4 miles southeast of the project site which includes a 500-foot long outfall pipe that discharges effluent to Puget Sound about halfway between Solo Point and the barge loading facility through a series of diffusers.

### 1.2 Purpose and Need

There are three ramps at Solo Point, although only one is considered serviceable. Recent inspections found that all three boat ramps are in disrepair. Ramp one is 14 feet wide and 220 feet long. It consists of half a foot thick reinforced concrete and is in the best condition of the three ramps as it is still capable of supporting boat trailers to launch vessels; however, large holes have formed at the waterward end (Figure 4). Ramp two is approximately 12 feet wide and 117 feet long, its concrete is highly fragmented and also overgrown with marine vegetation. Ramp three is approximately 12 feet wide and 121 feet long with seaweed covering the ramp that hides holes in its surface and makes it slippery to walk on. Ramp one is the ramp that would be replaced, the other two ramps would be permanently removed. Over time, numerous repairs to the boat ramps have occurred including the placement of a line of tires

covered with concrete, the remnants of which are still visible just to the south of the boat ramp to be replaced

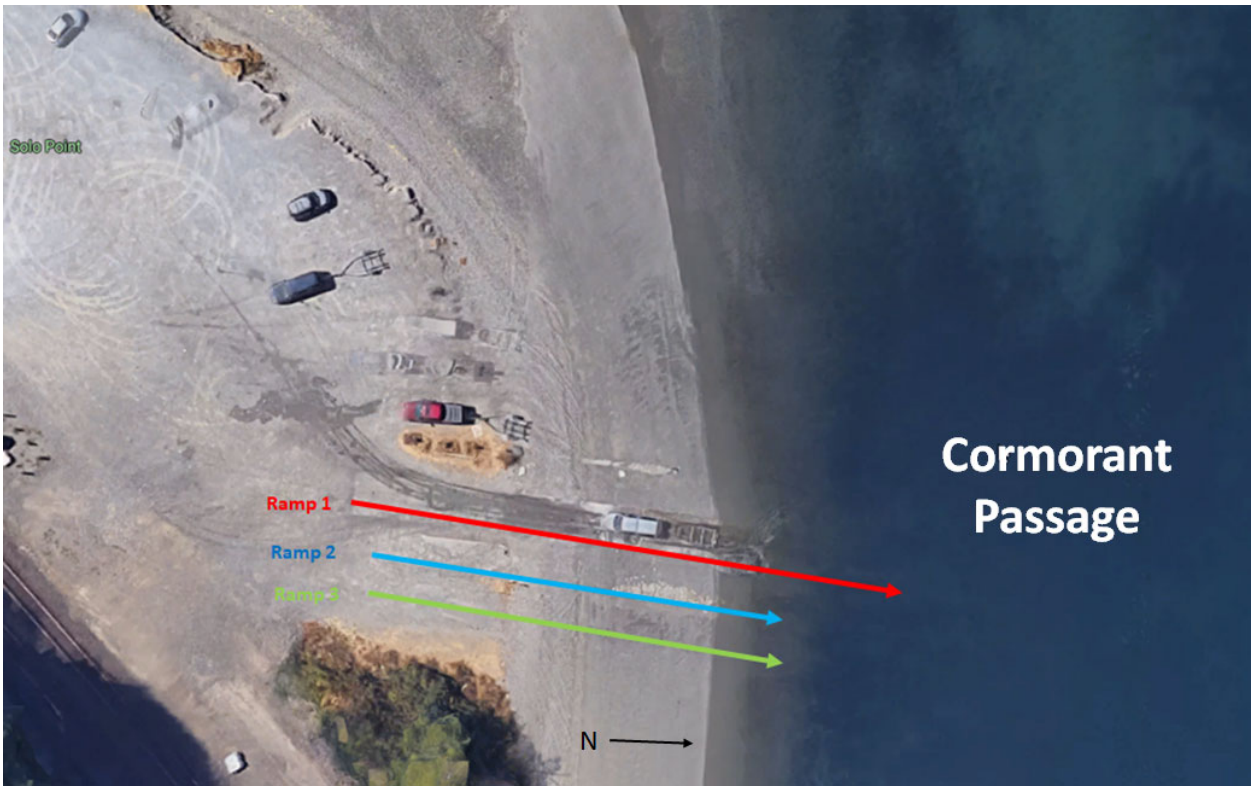


Figure 3. Existing Ramps at Solo Point.

Figure 4.The image on the left shows existing conditions 6 feet to the north of Ramp 1 (facing east); the image on the right shows existing conditions 6 feet to the north of Ramp 1 (facing west).

The purpose of the proposed action is to correct structural deficiencies of the boat launch facility at the Solo Point Amphibious Site A-1 while balancing the needs of sensitive environmental resources and the surrounding human environment. The current state of the boat launch facility presents hazardous conditions to users of Solo Point, which could injure users and/or damage military and civilian equipment. A reliable boat ramp is needed for authorized users of Solo Point, which includes military personnel for training, Department of Defense identification card holders, and Native Americans, and is essential to military readiness and disaster support services.

### 1.3 Relationship to Statutes, Regulations, and Policies

The intent of the EA is to comply with NEPA by assessing the potential impacts of completing the necessary replacement to the existing boat ramps at Solo Point on resources within the installation and surrounding communities. Additional guidance for NEPA compliance and for assessing impacts is provided in the CEQ *Regulations for Implementing the Procedural Provisions of NEPA* (40 CFR Parts 1500-1508), and *Environmental Effects of Army Actions* (32 CFR Part 651).

Army decisions that affect environmental resources and conditions also occur within the framework of numerous laws, regulations and Executive Orders (EOs). Some of these authorities prescribe standards for compliance; others require specified planning and management actions, the use of which is designed to protect environmental resources/values potentially affected by proposed training operations. Laws and related regulations bearing on the proposed Army actions include, but are not limited to, the Clean Air Act; Clean Water Act; Coastal Zone Management Act; Endangered Species Act; Magnuson-Stevens Fishery Conservation and Management Act; Marine Mammal Protection Act; Migratory Bird Treaty Act; National Historic Preservation Act; Noise Control Act; Pollution Prevention Act; Rivers and Harbors Act; Sikes Act and Tribal Treaty Rights.

EOs bearing on proposed Army actions include EO 11990 (Protection of Wetlands), EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), EO 13007 (Sacred Indian Sites), EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks), EO 13112 (Invasive Species), EO 13175 (Consultation with Indian Tribes, Alaska Natives, and Native Hawaiians) and EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds).

Army actions are also governed by Department of Defense (DoD), Army and JBLM regulations, including the following:

- Army Regulation 200-1 Environmental Quality – Environmental Protection and Enhancement; December 13, 2007
- JBLM Regulation 420-5 Procedures for the Protection of State and Federally Listed Threatened, Endangered, Candidate Species, Species of Concern, and Designated Critical Habitat; August 9, 2004
- JBLM Integrated Natural Resources Management Plan, XX 2019
- JBLM Standard Operating Procedures for Solo Point; December 30, 2009

- 32 CFR 651 Environmental Analysis of Army Actions
- 32 CFR Appendix A to Subpart M of Part 552, DPCA Recreational Areas in Training Areas
- 33 CFR Parts 325 and 332 Compensatory Mitigation for Losses of Aquatic Resources
- 40 CFR 1500-1508 National Environmental Policy Act Regulations
- Clean Water Act (CWA) (33 U.S.C. Section 1251 et seq.)
- Rivers and Harbors Act (RHA) (33 U.S.C. 401 et seq.)
- Coastal Zone Management Act (CZMA) (16 U.S.C. section 1451 et seq.)
- National Historic Preservation Act (NHPA) (54 U.S.C. section 300101 et seq.)
- Endangered Species Act (ESA) (16 U.S.C. Section 1531 et seq.)
- Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (16 U.S.C. section 1801 et seq.)
- Marine Mammal Protection Act (MMPA) (16 U.S.C. Section 1361 et seq.)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. Section 703-712)
- Bald and Golden Eagle Protection Act (16 U.S.C. Section 668-668d)
- EO 12088, Federal Compliance with Pollution Control Standards
- 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 13175, Consultation and Coordination with Indian Tribal Governments

## 1.4 Public Participation

Based on the findings of the EA, the Army would decide whether to implement the proposed action or another alternative. If the Army selects the proposed action and the EA determines that there would be no significant environmental impacts, a draft Finding of No Significant Impact (FONSI) would be published.

The premise for NEPA is that providing information to the decision-maker and the public would improve the quality of final decisions concerning the environmental effects of Federal actions. All persons who have a potential interest in the proposed action, including minority, low-income, and Native American groups, are urged to participate in the Army's environmental impact analysis process conducted under NEPA. The Army will make this EA available for public review and comment for 30 days, from MON DD YYYY to MON DD YYYY. The Notice of Availability (NOA) of the EA has been mailed electronically and/or hard copy to known stakeholders and interested parties. The NOA is publicized on the JBLM website and in the Tacoma News Tribune. The EA is available for download from the JBLM website (https://homeadmin.army.mil/lewis-mcchord/index.php?cID=452 ).

The Army will review and respond to comments received during the public comment period. If new impacts are found, these will be analyzed accordingly.

## 2.0 ALTERNATIVES CONSIDERED

Alternatives considered under NEPA must include the proposed action (Preferred Alternative), and the No Action alternative. The No Action alternative is included as a means of comparison to the action alternative to help distinguish the relative merits and disadvantages between alternatives. In order for any alternative to be acceptable for consideration, it must meet the purpose and need for action. Pursuant to Army Regulation 32 CFR 651, *Environmental Analysis of Army Actions*, the selected alternative must meet the project purpose and need and it should be environmentally acceptable, to the extent possible.

Under the No Action Alternative, military training would still occur at Solo Point, however the risk of a serious accident involving military and civilian personnel would continue to increase as the boat ramps continue to deteriorate. The current condition of the boat ramps negatively impacts the nearshore environment, impedes military readiness and if they continue to deteriorate the boat ramps may be closed to authorized recreational users of Solo Point. Therefore, the No Action Alternative does not meet the purpose and need for the proposed action.

### 2.1 No Action Alternative

Analysis of the No Action Alternative is required by the CEQ (40 CFR Part 1500-1508) and Army NEPA-implementing regulations (32 CFR 651). The No Action Alternative serves as the baseline condition for analysis of other alternatives.

No action means no maintenance or replacement to the boat ramps. If there are no repairs or replacement of the boat ramps at Solo Point, the structures would continue to deteriorate. Visitors to the area may drive onto the beach to load their boats instead of using the designated boat launch since there is plenty of room to do so currently and there are no signs prohbiting this practice. This would be more impactful to the beach than having a designated area to load and unload boats and equipment. If the project is delayed it is likely that the boat ramps may be closed because of the risk of bodily harm or property damage that may be caused to anyone attempting to use Ramp 1. If the functioning boat ramp continues to deteriorate it may reach a point of disrepair that would necessitate closure if repairs are not implemented. This would negatively impact the training operations of various military users and limit the viability of Solo Point as a recreational asset to soldiers at JBLM.

### 2.2 Repair of all Boat Ramps

The replacement and repair of all three boat ramps was excluded from further consideration in order to avoid and minimize impacts to the aquatic environment. This alternative would result in an overall increase of long-term and short-term impacts. Three improved concrete boat ramps at Solo Point would result in more impervious surface, additional displacement of important nearshore habitat and a longer construction timeframe. Larger equipment would likely be brought in to maximize the work window which could result in additional temporary impacts.

## 2.3 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

### 2.3.1 Design

JBLM proposes to demolish and remove the three existing boats ramps and all concrete rubbish and tires (Figure 5). Ramp 1 would be replaced with a new, 20 ft. wide and 234 ft. long concrete plank boat ramp bordered with four foot wide Armorflex mats on each side (Figure 6 and Figure 7). In addition, approximately 193 boulders would be placed along the beach above mean higher high water (MHHW) with three pedestrian access points to prevent vehicle access to the adjacent beach (Figure 6). No curbs are proposed on either side of the boat ramp to prevent undercutting. The boat ramp would match the natural beach grade and would be level (not elevated from) with the surrounding beach grade so as to not disrupt sediment drift cell processes (Figure 8). The removal of all three existing ramps and concrete tires and rubble, with the addition of a new ramp, would result in a total reduction of 172 $ft^2$ of concrete with a reduction of 2,260 $ft^2$ of concrete below MHHW[1].

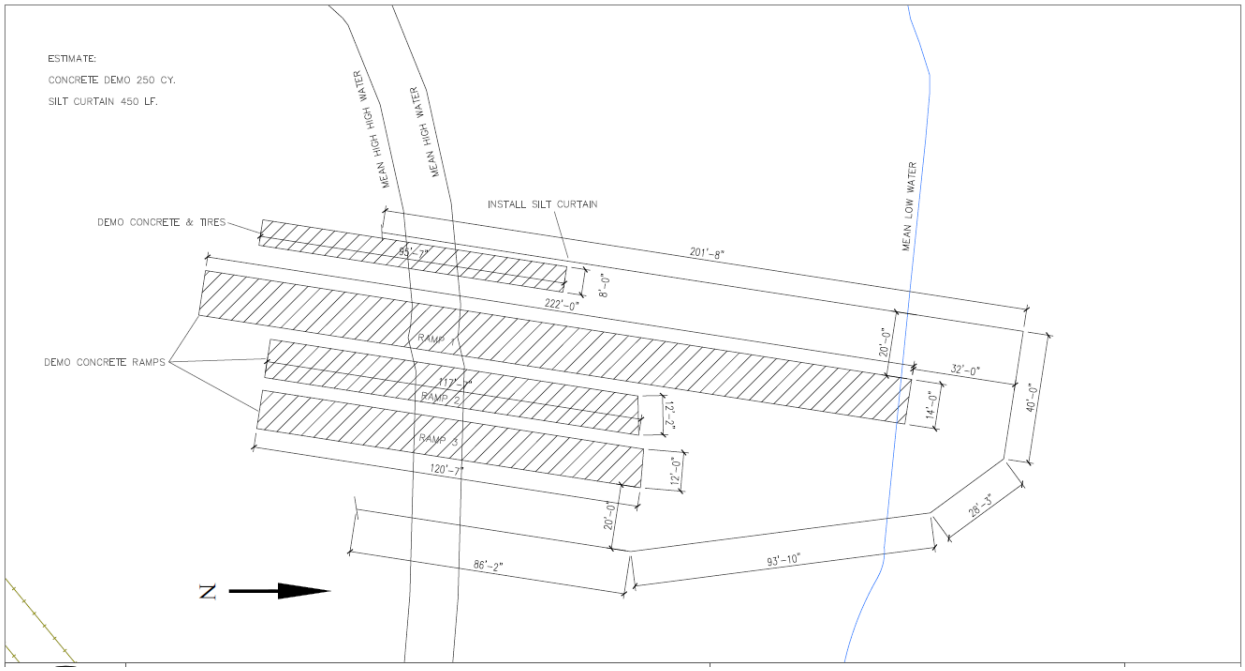


Figure 5. Plan view of existing boat ramps and concrete tires to be demolished

[1] Most of the new ramp would be above MHHW, whereas the old ramps were mostly below MHHW.

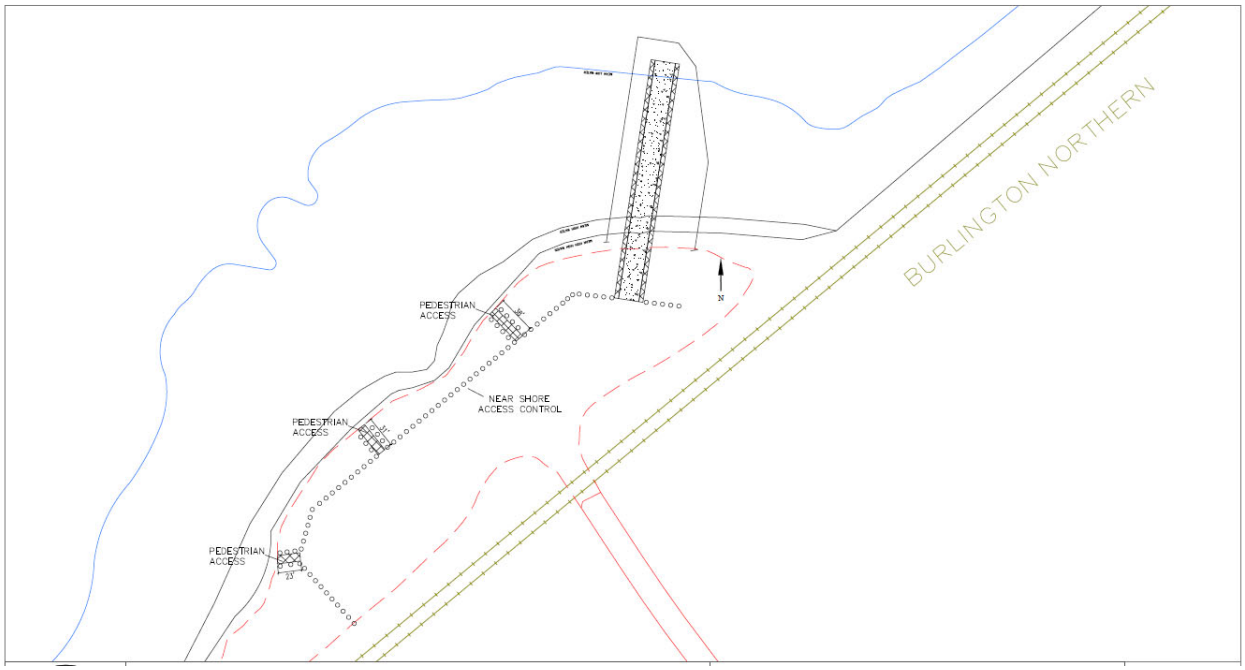


Figure 6. Plan view depicting the location of the proposed boat ramp and nearshore access control.

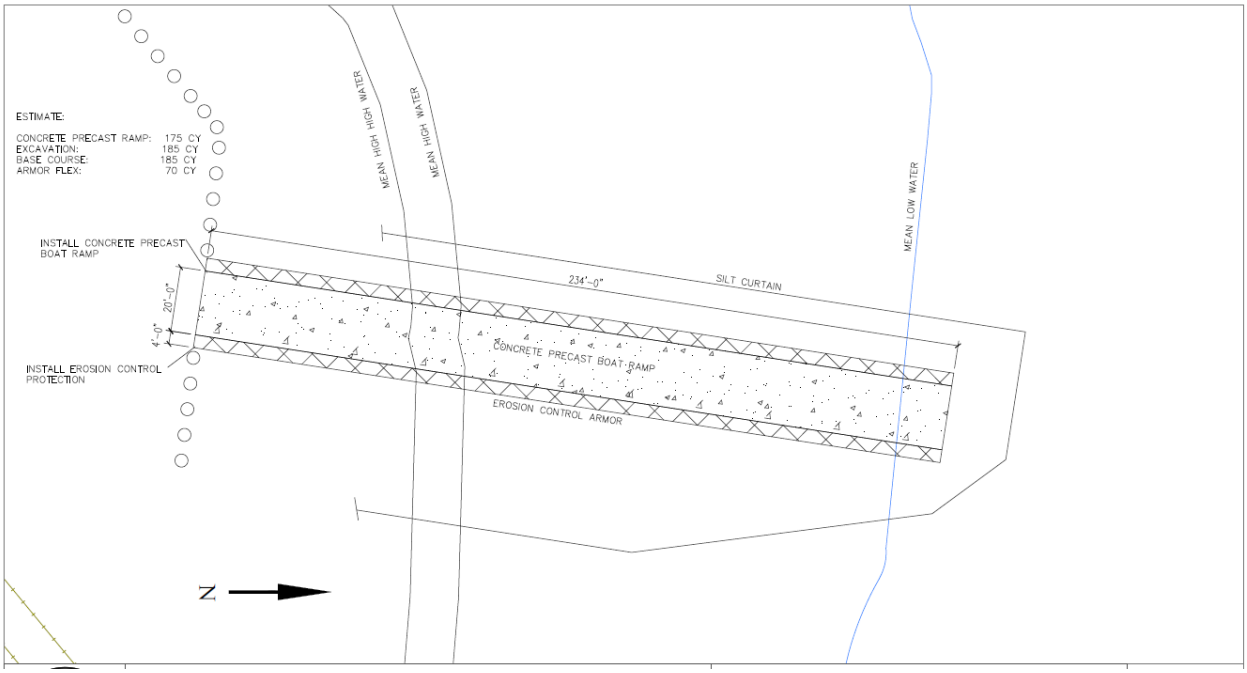


Figure 7. Zoomed-in plain view depicting the location of the proposed boat ramp

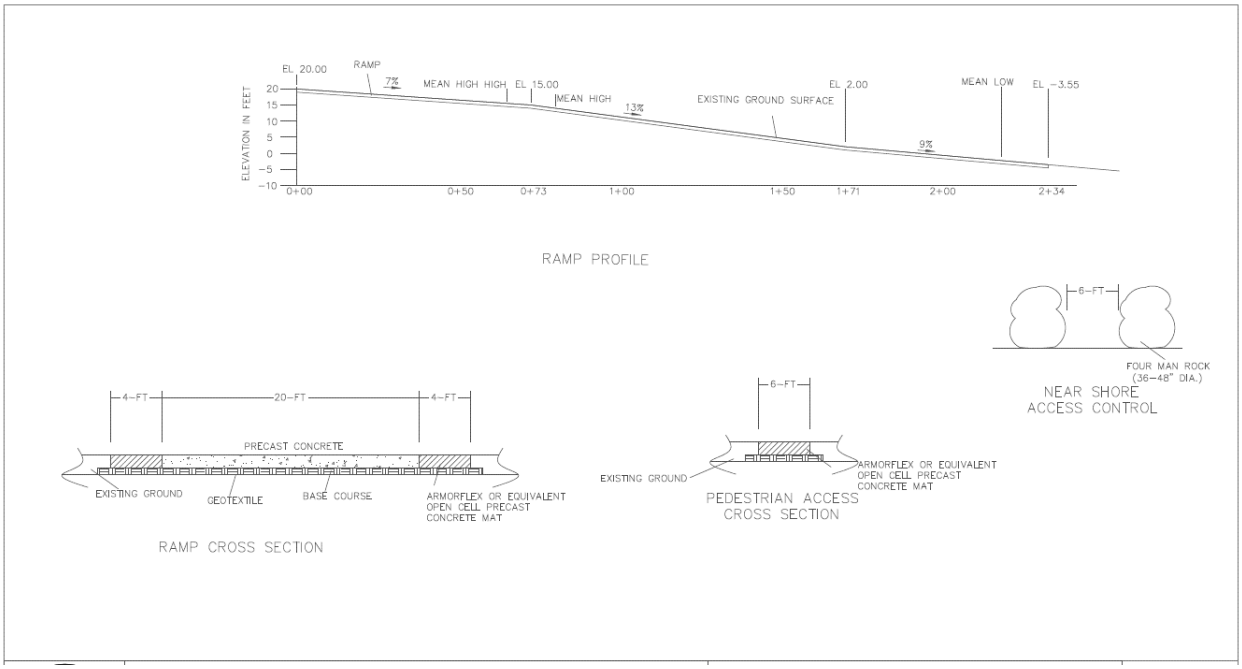

Figure 8. Profile view of proposed boat ramp.

### 2.3.2 Construction

*2.3.2.1 Staging and Access*

Use of equipment on the beach would be confined to a single access point, and limited to a 12-foot work corridor on either side of the proposed work. Equipment would be operated from the parking area, on existing concrete, on a temporary work platform, or similar out-of-water location.

*2.3.2.2 Existing Ramp and Debris Removal*

Concrete would be broken apart into chunks and removed with an excavator. Material would be directly loaded into a dump truck and hauled to a suitable upland disposal location. All work would take place on the beach and in the water, utilizing low tides to the extent practicable. A floating turbidity curtain would be used to contain the in-water work. Equipment staging would occur in the existing parking lot to minimize impacts to the beach. Solo Road would provide vehicle and equipment access. Construction fencing and signage would instruct recreational users to avoid the work zone.

*2.3.2.3 Preparation and Installation of New Ramp*

Once all three of the boat ramps are removed a small tracked excavator would grade an area up to 243 feet long and 28 feet wide at a slope between 7 and 13 percent that is about one foot deeper than the surrounding beach. This work would overlay with the original footprint of Ramp 1, however the area of the new ramp is much larger. Upon excavation, fifteen-foot-wide sections of non-woven filter fabric would be laid down on the substrate. This needle-punched geotextile is meant to enable water drainage while preventing the loss of soil fines that contribute to turbidity and can lead to structural failure. Next, a four-inch layer of 1 ¼-inch clean crushed rock would be installed and compacted using grading equipment at low tide. Afterwards, 16-foot-long, 3-feet wide

and 8-inch high pre-cast concrete planks would be installed parallel to the water and attached on either end to the Armorflex[2] sections using connection plate assemblies secured with anchor cable. See Figure 9 for a typical plan view.

The first two planks would be transported via small tracked equipment and positioned parallel to the shoreline at the water's edge and fastened together with the connection plate assembly. The plates would then be pushed into the water. Working landward, subsequent planks would be installed and connected by driving anchors through mat and tension cables until reaching the landward end of the boat ramp. Voids would be filled with clean 5/8-inch crushed rock.

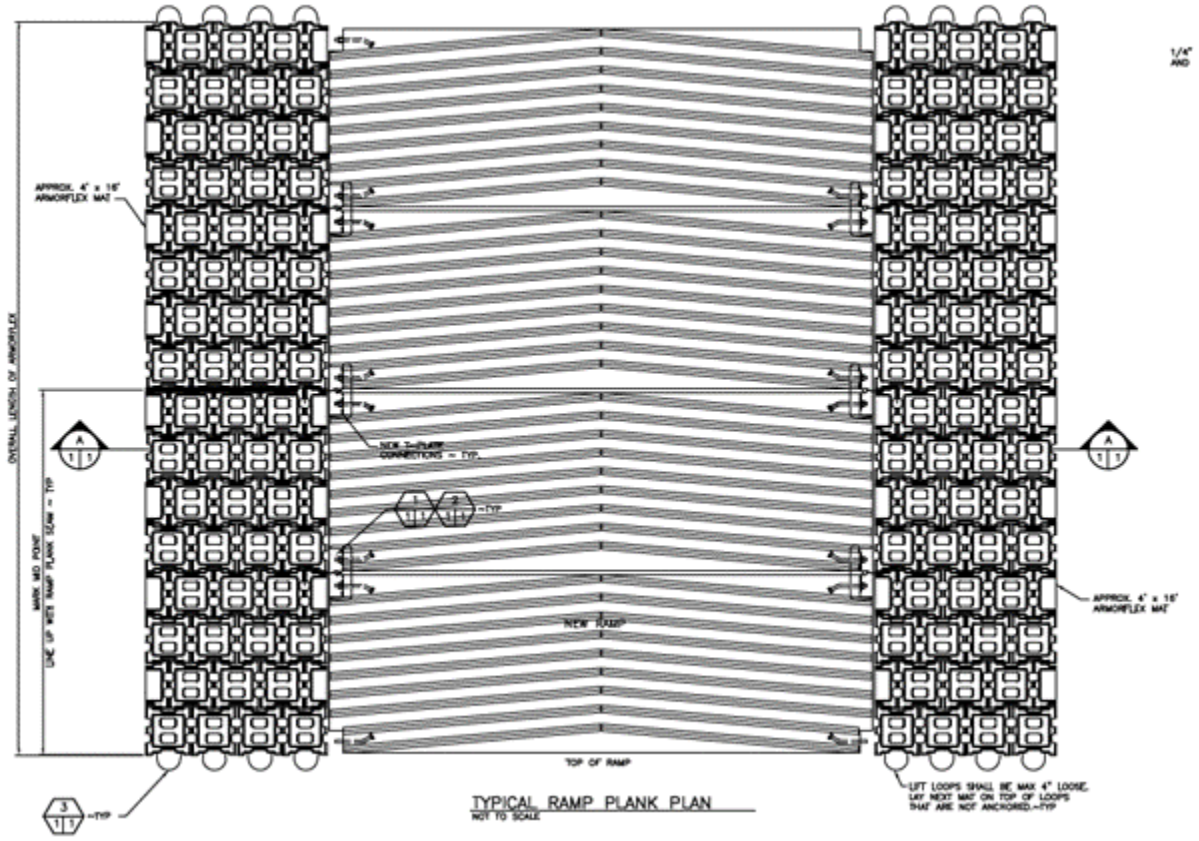


Figure 9. Plan view of the precast concrete planks bordered by sections of Armorflex.

*2.3.2.4 Construction Timing*

It is estimated that the project would be completed within one month, with concrete demolition and removal taking two days. Nighttime work may be utilized to maximize low tide cycles. Work that involves excavation would occur in the dry or at low tide to the extent possible. In-water construction would adhere to the salmon and bull trout work window for Tidal Reference Area 3 for South Puget Sound, which occurs from July

[2] Armorflex is a flexible, interlocking matrix of cellular concrete blocks of uniform size, shape, and weight used for hard armor erosion control.

16 to February 15. According to the Washington Department of Fish and Wildlife (WDFW), no forage fish spawning has been mapped at the site. However, surf smelt spawning has been documented along the shoreline to the south of the project (WDFW 2018b). Pacific herring spawning is also possible at the site, given the marine vegetation. In order to ensure no impacts to forage fish spawning, a qualified biologist would perform a survey and confirm in writing, that no forage fish are spawning in the project area during the proposed construction. If forage fish are present in the project area, then the resource agencies would be contacted to discuss if the work window for that species applies. The surf smelt work window is May 1 to September 30 and the herring work window is April 1 to January 14 (USACE 2018).

### 2.3.3 Avoidance and Minimization

The majority of the proposed replacement boat ramp would be located in its existing footprint, although it would be longer and wider. However, this increase in size is the minimum amount necessary to sufficiently meet the project purpose. The majority of the work would occur in previously disturbed sediments within the boat ramp footprint, preventing a significant amount of new disturbance to the substrate and marine vegetation. The following conservation measures and best management practices would be implemented to reduce the impacts:

Conservation Measures

- Any disturbance of the beach area by construction activities or equipment, would be restored to the original pre-project conditions upon the immediate completion of construction.
- Existing habitat features such as native vegetation and large wood would be retained on-site to the extent possible.
- Approximately 193 boulders would be placed along the beach above MHHW with three pedestrian access points to prevent vehicle access to the adjacent beach.

Best Management Practices

The following Best Management Practices (BMP) are intended to avoid and minimize impacts to aquatic species and the natural environment from ephemeral, construction-related effects such as underwater noise or suspended sediment:

- Work would be done during low tides, to the extent possible.
- In-water work would be limited to the in-water work window (July 16 to February 15).
- A floating silt curtain would be installed prior to in-water work to avoid impacts to water quality and disturbance of aquatic biota.
- A pre-construction meeting should be conducted to look at existing conditions and any possible fine-tuning that should be done for BMPs or environmental requirements. The pre-construction meetings would include outside resources agencies like USFWS or NMFS.

- If fish or other wildlife are observed in distress or if a fish kill occurs, work would be stopped immediately and necessary agencies would be contacted and work would not resume until the issue is resolved.
- No pouring of fresh concrete is proposed in or near Puget Sound.
- Equipment used near and in the water would be cleaned prior to construction.
- Drive trains would not work in the water. Only the excavator bucket with thumb attachment would extend into the water.
- Care would be taken to prevent any petroleum products, chemicals, or other toxic or deleterious materials from construction equipment and vehicles from entering the water.
- A spill containment kit, including oil-absorbent materials would be kept on-site during construction in the event of a spill or if any oil product is observed in the water. If a spill were to occur, work would be stopped immediately, steps would be taken to contain the material, and appropriate agency notifications would be made.
- Fueling would occur off of the beach, and biodegradable hydraulic fluids would be used as appropriate in any portion of the equipment that would work in the water.
- Turbidity and other water quality parameters would be monitored to ensure construction activities are in conformance with the protocols and criteria in the U.S. Environmental Protection Agency (EPA) Water Quality Certification (WQC).
- A sediment fence would be installed around where construction vehicles would be parked and their path to the work zone in order to prevent surface flow and potential erosion occurring during construction.
- Staging would occur in the existing gravel parking lot adjacent to the boat ramps.

### 2.3.4 Compensatory Mitigation

JBLM proposes to mitigate on-site for unavoidable and long-term impacts to aquatic species and the natural environment under the proposed action. The waters of Solo Point are important to resident and migratory fish and marine mammals, including federally-listed endangered species. The substrate surrounding the boat ramps consists of sand/silt with a smaller fraction of cobble/gravel and is potentially suitable for sand lance spawning. Herring may spawn on the macroaglae around the lower elevations of the boat ramps. Solo Point is mostly devoid of wood on the beach and riparian vegetation with the exceptions of the north and south sides of the point that have some trees. The mitigation would be commensurate with the scale and scope of the impacts and prepared in accordance with the Federal Compensatory Mitigation for Losses of Aquatic Resources Final Rule (33 CFR Part 332, April 10, 2008).

The mitigation proposal would include the removal of excess impervious surface from the existing boat ramps and the difference in area of concrete between existing and post-construction conditions. The remaining boat ramps and concrete and tire debris

would be removed from the intertidal area of Solo Point (shown in Figure 10). An overall reduction of 172 $ft^2$ of concrete along the beach with a reduction of 2,260 $ft^2$ below MHHW would result from the removal of the existing ramps and concrete debris when combined with the placement of the new ramp. This reduction in concrete would increase the amount of intertidal nearshore habitat that has ecological, economic, recreational, and cultural value. Furthermore, the installation of boulders with pedestrian access paths would prevent vehicles from driving on the adjacent beach.

Figure 10. Photographs of tire and concrete debris to be removed as mitigation (July 2017).

## 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter presents baseline data for the affected environment and an assessment of the potential impacts, or environmental consequences that could result from implementation of the proposed action.

The following table identifies the resources analyzed or screened from detailed analysis including a rational for inclusion or exclusion. Resources were excluded from detailed analysis if they are not potentially affected by the alternatives or have a material bearing on the decision-making process.

Table 1. Resources Analyzed and Resources Screened from Detailed Analysis

| Resource | Included in Detailed Analysis (Y/N) | Rationale for inclusion or exclusion |
|---|---|---|
| Hydrology | Y | Although no long-term impacts to hydrology are expected, there is potential to temporarily alter site specific flow patterns during construction. |

| Resource | Included in Detailed Analysis (Y/N) | Rationale for inclusion or exclusion |
|---|---|---|
| Anthropogenic Use | Y | Removal of old ramps and replacement with a new ramp, and limiting vehicle access would affect anthropogenic use of the site. |
| Topography and Soils | N | The proposed action would not result in impacts to topography and soils. |
| Beach and Aquatic Habitat | Y | Removal and replacement of ramps would result in short-term degradation and long-term improvement in habitat. |
| Water Quality | Y | Temporary impacts include turbidity and decreases in dissolved oxygen (DO) during construction, which would be minimized through implementation of BMPs. Overall the proposed action would not result in long-term impacts to water quality. |
| Vegetation and Wetlands | Y | No wetlands are present at the project site, but marine vegetation exists within and adjacent to the project footprint. |
| Hazardous, Toxic, and Radiological Waste (HTRW) | N | The proposed action would not require the use of hazardous materials other than common materials used by construction equipment (motor oil, lubricant, coolant, fuel). Excavation would only be one foot and no HTRW sites are known to occur on site. |
| Fish, Macro-invertebrates, and Wildlife | Y | In-water work would be required for implementation of the preferred alternative. Fish and wildlife could be present at any of the three project locations during the time of construction. While the preferred alternative may cause short-term disruptions, it would not have a significant negative effect on wildlife or their habitat. |
| Threatened and Endangered Species | Y | Construction has the potential to effect ESA listed species. |
| Air Quality, Noise and Greenhouse Gas Emissions | Y | Machinery required during construction would result in emissions that are greenhouse gases and impact air quality. Underwater and airborne noise is addressed in the fish and wildlife sections. Airborne noise would be temporary and not impact human populations as the site in sparsely populated. |
| Tribal Treaty Rights | Y | Construction may temporarily interfere with Tribal fishing. |
| Cultural Resources | Y | The ground disturbance associated with ramp removal and excavation may impact cultural resources. |

| Resource | Included in Detailed Analysis (Y/N) | Rationale for inclusion or exclusion |
|---|---|---|
| Socioeconomics and Environmental Justice Communities | N | The proposed project occurs entirely within the JBLM boundaries, and would have no impacts to socioeconomics or environmental justice. No direct or indirect impacts associated with the proposed project would impact either of these resources. |
| Land Use | N | No changes to land use would occur as a result of the proposed action. |
| Transportation, Utilities, and Public Services | N | The road leading to Solo Point is a dead end and is located on a military base. No through traffic would be affected, and the site is not accessible to the public. Only local military and DoD users would be impacted by access to the site during construction. No utilities or public services would be affected. |

## 3.1 Hydrology

The in-water portion of the project is located within Puget Sound, the second largest estuary in the U.S., designated by the Environmental Protection Agency as an estuary of national importance. Cormorant Passage is the water directly adjacent to Solo Point. Tides of Puget Sound are mixed-semidiurnal with significant biweekly spring-neap modulation (Mofjeld and Larsen 1984). Thus, twice each day, the shorelines are alternately underwater and exposed to the air, rain, or sun. Beaches can be delineated into zones based on the length of time the substrate is underwater or exposed to air. The *intertidal* zone is between the limits of the tidal highs and lows and is inundated and exposed during each tidal cycle. The *sub tidal* zone is under water except during extreme low tides. The *supratidal* zone, or splash zone, is not frequently inundated except during extreme high tides. Each tidal zone hosts unique assemblages of species. In the mid-sound, the mean tidal range is 7.66 feet and the maximum is 14.4 feet of difference between the lower low and higher high tide. Solo Point is located in the south-sound, where the tidal range is even greater. Armoring along beaches, as is the case at Solo Point, limits the tidal inundation of higher beach elevations, creating deeper water along the shoreline, and affects sediment transport and delivery. The twice-daily exchange of this water can produce strong tidal currents through the narrow passages and over the seafloor sills that constrict flows. In Puget Sound, waves are primarily limited by fetch (the distance over water the wind blows), resulting in waves with small to moderate heights and short periods (Downing 1983).

The uplands of Solo Point are located within the Chambers-Clover Watershed, Water Resources Inventory Area 12 (Figure 11). It covers 180 square miles and comprises the Chambers-Clover Creek Basin, neighboring drainage of Sequalitchew Creek and others that empty into Puget Sound. JBLM occupies a large portion of the basin.

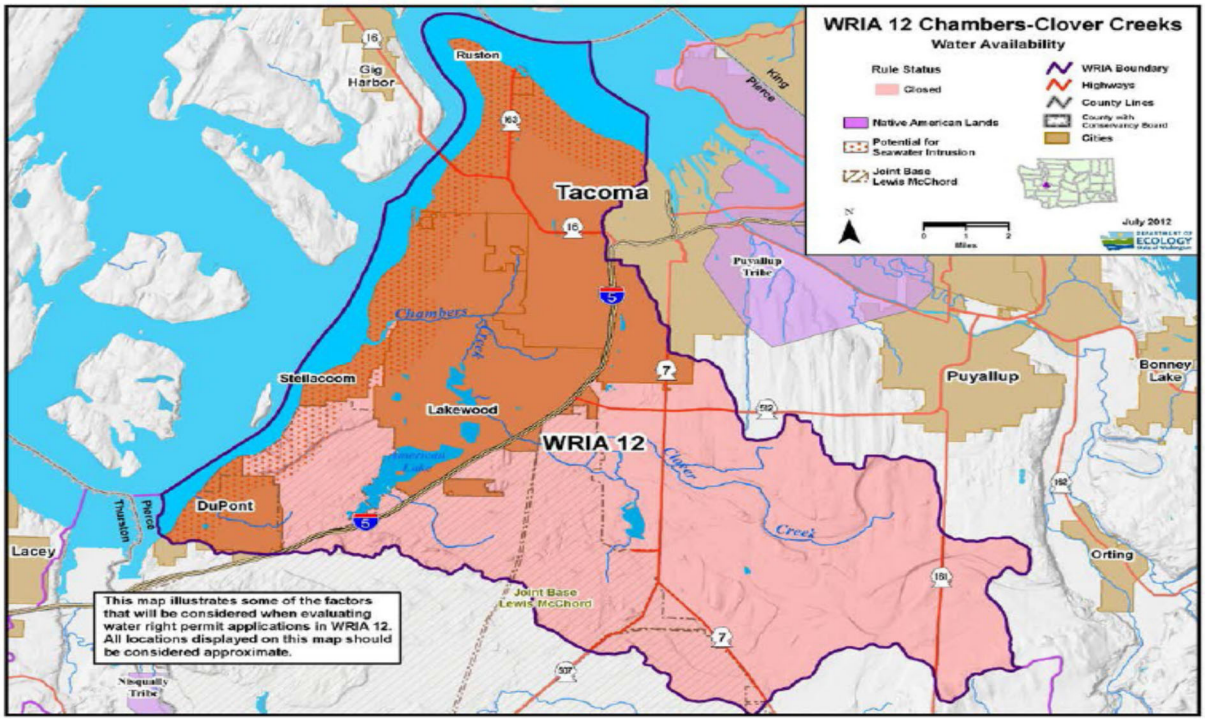

Figure 11. Department of Ecology, Chambers-Clover Watershed (WDOE 2015a)

The culvert under the parking lot of Solo Point is conveying water that “is coming from springs originating along the hillside above Solo Point” (David Clouse, personal communication 6/9/2017). WDFW Salmonscape shows streams that flowed to Puget Sound before installation of the railroad (Figure 12), which currently blocks flow unless directed through culverts (2015).

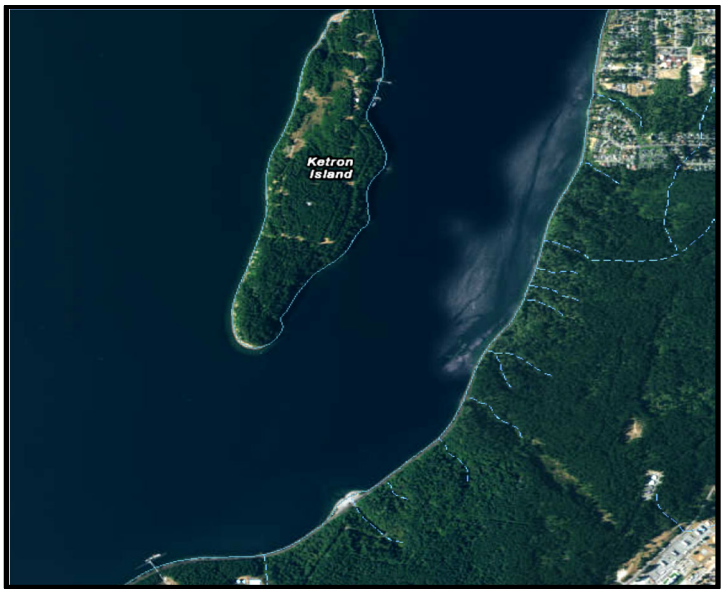

Figure 12. Unnamed streams near Solo Point (WDFW 2015).

### 3.1.1 No Action Alternative

There would be no impacts to hydrology under this alternative, other than the status quo described previously.

### 3.1.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

In general, there would be no impacts to hydrology. There may be slight changes in water flow at the microhabitat scale due to the presence of heavy equipment and a floating silt curtain during construction. No long-term impacts to hydrology are anticipated, as the new ramp would be flush with the substrate surface and not interfere with tidal inundation or littoral drift. Impacts are expected to be insignificant.

## 3.2 Anthropomorphic Uses

The U.S. Army built Camp Lewis on approximately 70,000 acres of land in 1917. Camp Lewis expanded and became Fort Lewis and the Tacoma Municipal Airport became McChord Field. JBLM was established in accordance with the 2005 Base Realignment and Closure Commission that ordered consolidation of adjoining but separate military installations. Fort Lewis and McChord Air Force Base officially merged February 1, 2010. The strip of tidelands where the concrete boat ramps are situated is owned by JBLM. The property was acquired by Pierce County under condemnation and deeded to the U.S. Army on July 14, 1920. The boundary between state-owned aquatic land and private land is a platted line. The bedlands to the west belong to Washington's Department of Natural Resources. To the east JBLM property extends to the Burlington Northern Santa Fe railroad right-of-way.

Solo Point has been used for military operations since at least the 1920's (Figure 13). The dates of construction of the original boat ramps is unknown, although U.S. Army Corps of Engineers (Corps) real estate records dated March 26, 1981, indicate that the Army contracted with the Corps Sacramento District to remove the existing concrete

boat ramp and construct a new reinforced concrete boat ramp that would be 210 feet by 14 feet by 6 inches thick. Corps Seattle District, Regulatory Branch issued an individual permit to Fort Lewis for work at the site in 1982. Over time, numerous unauthorized repairs to the boat ramps have occurred including the placement of a line of tires covered with cement, the remnants of which are still visible. Despite these repairs, all three ramps are in various states of disrepair and only one of the ramps is currently serviceable.

Figure 13. Infantry soldiers practice beach landings at Solo Point in the 1950s. (Army Photo)

Units from JBLM, the Army National Guard, the 70th Reserve Support Command from Fort Lawton and other troops use Solo Point for training operations including the First Brigade 25th Infantry Division, Third Brigade 2nd Infantry Division, 593rd Corps Support Group, 555th Engineering Group, Fourth Marine Landing Support Battalion, U.S. Air Force 62nd Combat Control Squadron, and the U.S. Navy SEALs. Occasionally British troops and other allied forces utilize the area for training. The First Special Forces Group (SFG) have operated at Solo Point since 1984 and may be its most frequent user. The First SFG marine operations consist of 96 personnel equipped with three Zodiac F470 Combat Rubber Raiding Craft with 35 to 55 horsepower, 2-cycle, outboard gasoline engines. These boats are about 15.6 feet long, 6.2 feet wide with a draught of 2 feet. Operations include diving to 110 feet, drop zone recovery, small-boat maneuvering and beach landing procedures, water jumps and pick-ups. Water jumps occur no more than 8 times annually using fixed- and rotary-winged aircraft. Swim and navigation tests occur 3,000 to 10,000 feet off-shore from Solo Point. Equipment is serviced and refueled on base and transferred via 2.5- and 5-ton tactical vehicles. Other units perform similar exercises with less frequency. A causeway ferry or something similar would be the largest vessel to land at Solo Point because maneuvering vessels with deeper berths close enough to use utilize the boat ramp

would be difficult; the waters off Solo Point get down to approximately 20 feet during mean lower low water.

Amphibious training operations by various military forces have utilized Solo Point for almost 100 years. Solo Point is one of four strategic amphibious sites utilized by members of the U.S. Department of the Army (Army), U.S. Navy, U.S. Coast Guard, and Washington Army National Guard during Joint Logistics Over-The-Shore (JLOTS) and Cascadia Rising training exercises to help train emergency responders in the event of a Cascadia Subduction Zone earthquake and tsunami. In the aftermath of such an event, vessels would be loaded and unloaded by military so that life-saving supplies can be moved from ship to shore if infrastructure and port facilities are severely damaged. The most recent JLOTS training exercises took place in 2016.

Site-specific exercises utilized four amphibious landing sites that could reach the population living around Puget Sound: Port of Tacoma, Naval Magazine (NAVMAG) on Indian Island, Vashon Island and Solo Point. Each site was chosen for its marine access and acres of open space for upland training operations. National Guard training exercises were set to occur concurrently with the Cascadia Rising event. During these exercises, the serviceable boat ramp at Solo Point was designated for roll-on/roll-off operations facilitated by utility land ships and/or a causeway system for transport of up to 40 National Guard vehicles to Vashon Island.

Solo Point is also used recreationally by military, retired military, DoD civilian personnel, their family members and sponsored guests during daylight hours only. Camping is prohibited. Use to the general public is prohibited and would be considered trespassing although American Indian Tribes can use the beach at Solo Point for tribal fishing and gatherings. The beach and waters of Solo Point also are used for therapeutic experiences organized by the Heroes on the Water Organization that helps veterans and first-responders cope with post-traumatic stress (Figure 14).

Figure 14. Heroes on the Water prepare for a day of fishing at Solo Point.

### 3.2.1 No Action Alternative

Under this alternative the Solo Point boat ramp replacement would not occur and the ramp would have diminishing military use, thereby continuing to have an adverse impact to military and recreational activities. The ramp would only be utilized by certain military users.

### 3.2.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

Under the preferred alternative the current degraded boat ramps would be replaced with a new, fully serviceable boat ramp. This would allow military activities and Tribal and recreational uses of the site that require boats. The boulders along the beach would limit vehicle access to the adjacent beach, thereby protecting recreational resources on the beach that are used for activities such as beach combing and clamming. Any impacts to anthropogenic use of the site would be temporary (limited to construction) and insignificant.

## 3.3 Beach and Aquatic Habitat

The beach is composed of gravel and sand. The shoreline north and south of Solo Point is armored to protect the railroad that follows the shoreline, which also prevents sediment inputs from the bluff to the beach. There are large piles of what appear to be slide material from the hillside that have been placed on the water-ward side of the railroad tracks in the uplands. There is a shortage of large wood on the beach, although some logs have accumulated on the beach and on riprap located north of the boat ramp. The intertidal beach and subtidal zone consists of sand/silt substrate with a smaller fraction of gravel and cobble. There is interspersed marine algae including sea lettuce, Turkish towel (*Chondracanthus spp.*), and red algae (*Gracilaria spp*.) species

that host a variety of marine invertebrates and fish.

### 3.3.1 No Action Alternative

Under the no action alternative the existing ramps and concrete debris would not be removed, much of which is below MHHW. This concrete would limit the extent of colonization of marine algae and benthic invertebrate, and limits suitable spawning substrate for forage fish (sand, gravel, and marine vegetation). Vehicles would continue to be able to access the beach and further degrade the surrounding habitat.

### 3.3.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

The preferred alternative would result in an overall reduction of 172 $ft^2$ of concrete along the beach with a reduction of 2,260 $ft^2$ below MHHW (the intertidal zone). This reduction would result in more natural beach substrate (gravel, sand, and cobble) that would colonize with marine algae, which provides habitat for a variety of fish and invertebrates. Restricting vehicle access to the adjacent beach would prevent damage to these intertidal areas. Impacts to beach and aquatic habitat are expected to be temporary, localized, and minor, and therefore insignificant.

## 3.4 Water Quality

The waters of the Puget Sound adjacent to Solo Point are rated as Extraordinary (AA) for marine aquatic life uses. The Puget Sound waters immediately adjacent to Solo Point have no documented water quality impairments (WDOE 2015b).They have been designated as Category 1, meaning a water body meets the state water quality standards. Being placed in this category does not necessarily mean that a water body is free of all pollutants. Most water quality monitoring is designed to detect a specific array of pollutants, so placement in this category means that the water body met standards for all the pollutants for which it was tested. Specific information about the monitoring results may be found in the individual listings.

### 3.4.1 No Action Alternative

Under the no action alternative the existing ramps and concrete debris would not be removed and there would be no impacts to water quality. Users may continue to attempt to use the deteriorating ramps to launch their boats, which would temporarily stir up the substrate and increase turbidity.

### 3.4.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

Temporary impacts to water quality are expected during the removal of the existing ramps and excavation of materials for the installation of the new ramp, primarily in the form of increased turbidity. It is also possible that dissolved oxygen (DO) may decrease temporarily if anoxic sediments are exposed during excavation. Best management practices like a floating turbidity curtain and working during low tides to the extent practicable should minimize the impacts to water quality. The Army would also obtain a WQC from the U.S. Environmental Protection Agency (EPA), and adhere to all the criteria and conditions. Overall impacts to water quality are expected to be temporary, localized, and minor, and therefore insignificant.

### 3.5 Vegetation and Wetlands

Solo Point is mostly devoid of riparian vegetation with the exceptions of the north and south sides of the point that have some trees. The railroad tracks and accompanying riprap act as a barrier between the relatively intact native conifer forest on the hillside and the marine environment. Invasive blackberries are growing in and around the bank stabilization and sparsely throughout the uplands surrounding the beach. Scotch broom is also found onsite. A lone sword fern is growing out of the bank of the parking lot behind the outfall. If any freshwater wetlands are present near the action area they would exist in the forested hillside which is outside of the project footprint. A review of the USFWS Wetland Mapper showed no wetlands in the vicinity (USFWS 2018).

On June 6, 2016, USACE staff conducted a site visit to the Solo Point boat ramps on JBLM to survey marine vegetation surrounding the two existing parallel boats ramps. The purpose of the survey was to identify potential impacts to marine vegetation from the proposed boat ramp replacement. Surveys were conducted via kayak and on foot during a neap tide on June 6, 2016 to maximize visibility and exposure of marine vegetation. Measurements were taken from the water line at approximately 12:30 pm, at a tidal level of -3.2 feet MLLW. This water level corresponded to the waterward edge of the existing boat ramps.

Marine vegetation immediately surrounding the lower third of the boat ramps consisted primarily of sea lettuce. Immediately beyond the boat ramps a mixture of algal species and understory kelps were observed including sea lettuce, sugar kelp (, and red algae, Turkish towel was also observed, but in low density. Plumose anemones were noted within this marine vegetation (Figure 15).

Figure 15. Sea lettuce, sugar kelp, red algae, and plumose anemones in front of boat ramps. (USACE June 7, 2016)

The substrate surrounding the boat ramps consisted of sand/silt with a smaller fraction of cobble/gravel. The closest eelgrass patch was 154 feet (47 meters) northwest of the boat ramps (Figure 16), where the substrate was almost entirely sand/silt and the beach

profile was more gradual. No eelgrass was observed to the northeast of the boat ramps.


Figure 16. Aerial photo with mapped areas of marine vegetation. (USACE June 7, 2016)

### 3.5.1 No Action Alternative

Under the no action alternative the three existing ramps would remain and continue to deteriorate. This concrete in the intertidal zone would continue to limit the recruitment of marine algae species within the ramp footprints. Vehicles would continue to have access to the intertidal beach, with the potential to cause damage to marine algae.

### 3.5.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

No impacts to riparian vegetation or wetlands would occur. During construction there may be temporary impacts to marine vegetation that immediately surrounds the existing boats ramp from elevated turbidity and decreased DO. BMPs including a floating turbidity curtain and working during low tides to the extent practicable should minimize these impacts. The Army would also obtain a WQC from the EPA, and adhere to all the criteria and conditions. Vegetation in areas that overlap with the larger footprint of the new ramp would be covered in concrete. However, there would be a reduction of 2,260 $ft^2$ concrete below MHHW with the removal of the three existing ramps and concrete

debris. Removing this concrete would expose the natural intertidal beach substrate and allow for the recruitment of species that already occur in the surrounding areas. Re-establishment of marine vegetation is expected to occur within a year post construction, as many of these species are annuals. Given the long-term benefit to marine vegetation that would result from the decrease in concrete, no significant negative impacts to marine vegetation are anticipated.

## 3.6 Macroinvertebrates

A variety of shellfish, crustaceans, and other macroinvertebrates are present at Solo Point including, but not limited to, clams, crab, shrimp, marine worms, sea stars, and anemones. The Washington Department of Health (DOH) classifies shellfish harvest areas as "approved", "unclassified" or "closed due to pollution" depending on known pollution problems, this status can change daily. The beach at Solo Point is listed as "unclassified" because it has not been evaluated (Figure 17). Just to the south, the beach and nearshore waters of Tatsolo Point are consistently closed for clam, geoduck, scallop, mussel, oyster, snail and invertebrate harvesting; the JBLM Wastewater Treatment Plant outfall is identified as the primary cause (WDFW 2018a).

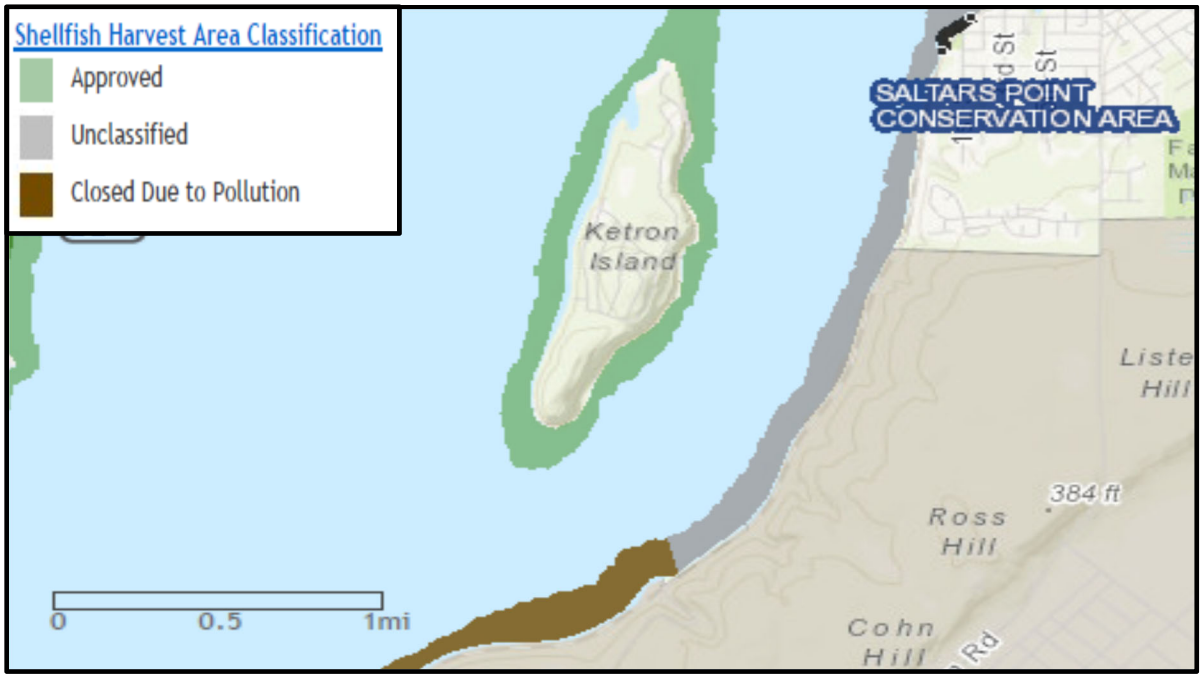


Figure 17. DOH Shellfish Harvest Area Classification at Solo Point.

Dungeness crab and red rock crab are commonly found in Marine Area 13.

### 3.6.1 No Action Alternative

Under this alternative the three existing ramps would remain and continue to deteriorate. This concrete in the intertidal zone would continue to limit the recruitment of marine algae species within the ramp footprints and cover up natural beach substrate, both of which are spawning and rearing habitat for fish.

### 3.6.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

During construction there may be temporary impacts to invertebrate communities that immediately surround the existing boats ramp due to elevated turbidity and decreased DO. These impacts would be minimized by using BMPs such as a turbidity curtain and working during low tides, and complying with the water quality standards in the WQC. Sessile Invertebrates within the footprint of the new ramp would be covered with concrete. However, there would be a reduction of 2,260 $ft^2$ concrete below MHHW. Removing this concrete would expose the natural intertidal beach substrate and allow for the recruitment of species that already occur in the surrounding areas. The boulders along the beach would limit vehicle access to the adjacent beach, thereby protecting fragile intertidal invertebrate communities. Given the long-term benefit to invertebrates that would result from the decrease in concrete, no significant negative impacts to invertebrates are anticipated.

## 3.7 Fish

Fish species present in South Puget Sound near Solo Point include multiple rockfish, flounder and sole species, hake, Chinook salmon, chum salmon, Coho salmon, pink salmon, sockeye salmon, and sea-run cutthroat trout (WDFW 2015). A variety of other fish associated with the sandy substrate can be found in shallow marine areas of Puget Sound like Solo Point.

WDFW documented surf smelt spawning on the beach at nearby Tatsolo Point (WDFW 2018b). Documented spawning habitat is habitat that has been inspected and determined by WDFW to support actual forage fish spawning. Potential spawning habitat has the characteristics of forage fish spawning habitat but no actual spawning has been documented by WDFW. Nisqually Reach Nature Center (NRNC) science technicians found surf smelt spawning at this location September 2017, at a low relative abundance in April 2017 (Pers. comm., Terence Lee, NRNC,). Neither WDFW nor the NRNC have survey data for Solo Point but there may be suitable substrate for sand lance spawning on the beach adjacent to the boat ramps and herring may spawn on the macroalgae waterward and around the lower elevations of the boat ramps.

### 3.7.1 No Action Alternative

Under this alternative the three existing ramps would remain and continue to deteriorate. This concrete in the intertidal zone would continue to limit the recruitment of marine algae species within the ramp footprints and cover up natural beach substrate, both of which are spawning and rearing habitat for fish. This habitat condition would continue to limit the full potential of fish use at the project location, including surf smelt spawning.

### 3.7.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

Temporary impacts to the fish community are likely during construction. Fish associated with finer substrate, non-floating marine vegetation, and shallow water are most likely to be affected. These fish include juvenile salmonids, flat fish like sole and flounder, forage fish like smelt, herring, and sand lance, and juvenile rockfish. Impacts include stress and physiological damage related to suspended sediment and decreased DO, release of toxic contaminants (although this is very unlikely at this location), noise

and vibrations, entrainment during excavation, smothering during ramp placement, and temporary impacts to their habitat and prey base.

Suspended sediments can impair the foraging of visual predators, damage gill tissue and structure, and result in behavioral changes to avoid turbid areas. The temporary increases in suspended solids could affect juvenile salmon in the immediate dredging area through decreased visibility for foraging activities and impaired oxygen exchange due to clogged or lacerated gills. However, the available evidence indicates that total suspended solids (TSS) levels sufficient to cause such effects would be limited in extent. LeGore and Des Voigne (1973) conducted 96-hour bioassays on juvenile Coho salmon using re-suspended Duwamish River sediments from five locations. Up to 5% sediment in suspension (28,800 mg/l dry weight), well above levels expected to be suspended during dredging, had no acute effects. Salo et al. (1979) reported a maximum of only 94 mg/l of sediment in solution in the immediate vicinity of a working dredge in Hood Canal. This indicates that turbidity would be elevated on a temporary and localized basis by dredging, but that TSS levels sufficient to cause adverse effects on salmon would be very limited in extent. Water quality related impacts to fish would be minimized by the use of BMPs like a turbidity curtain and working during low tides, and adhering to the conditions and criteria in the water quality certification.

The risk of entrainment during excavation of substrate and smothering during placement of the new ramp is low given the majority of fish are mobile, but would be greater for benthic species like flatfish and burrowing sand lance. Even so, the majority of the work would be done during low tides when the area is exposed and there is low likelihood of fish presence. Impacts to fish populations from water quality, entrainment, and smothering are expected to be insignificant.

Disturbance from noise and vibration is possible during construction. Vibration could cause any fish in the area to move away from the ongoing activity. Van Derwalker (1967) found that steelhead responded maximally to sounds between 35 and 170 Hz, but the fish did not move more than 60 cm from the sound source. Salmonids may be able to hear only in low ranges, generally 10Hz to 600 HZ (Blaxter and Hoss 1981 and Knudsen et al. 1992). Abbott (1972) observed no response at 600 Hz in rainbow trout which otherwise responded generally to signals at 150 and 300 Hz. These frequencies are all within the range of construction related noises like jack-hammering, excavation, and operation of large equipment. The proposed action could produce underwater sound from the removal and placement of concrete. Maximum sound levels would likely be generated by removal of the existing concrete ramps below the water line. Work conducted above the waterline could create sound that propagates through the ground to the water albeit at a lower level than the source (Reinhall and Dahl 2011, Hawkins and Johnstone 1978). The following are noise thresholds for salmonids for both vibratory and impact pile driving (Hastings 2002 and NMFS et al. 2008):

- 150 $dB_{RMS}$[3] for harassment for continuous noise for fish of all sizes (Hastings 2002)
- 187 dB cumulative SEL[4] for injury of fish ≥ 2 grams[5] (NMFS et al. 2008)
- 183 dB cumulative SEL for injury of fish < 2 grams (NMFS et al. 2008)
- 206 $dB_{peak}$[6] for injury of fish of all sizes (NMFS et al. 2008)

A more recent study lists the following continuous noise[2] thresholds based on Popper et al. 2014:

- For fish with swim bladders that are involved in hearing (e.g. herring, sardines, and anchovies)
  - 170 $dB_{RMS}$ for 48 hours for recoverable injury
  - 158 $dB_{RMS}$ for 12 hours for TTS (Temporary Threshold Shift, or complete recovery of hearing loss)
- There is no direct evidence for mortality or potential mortal injury for continuous noise.
- There are no continuous noise thresholds set for fish without swim bladders (sculpins) or those with bladders that are not involved in hearing (salmonids)

Data for how continuous sound affects fish is limited and in the technical report of sound exposure guidelines prepared by Popper et al. (2014), they rank the level of risk of injury as high, moderate, or low for most categories of fish instead of presenting number thresholds for harm. According to Popper, the risk of mortality for continuous sound such as this is low for all categories of fish at all distances from the sources of sound; the risk of recoverable injury is the same except for fish with a swim bladder used for hearing. Popper et al. (2014) and Rheine et al. (2012) both indicate there is no direct evidence for fish mortality or mortal injury from continuous sound such as that resulting from the proposed action.

Studies directly measuring underwater sound from underwater rock removal and placement are lacking (Wyatt 2008 and Kongsberg Maritime Limited 2015). Underwater removal of rock conducted under the proposed action has similarities with backhoe dredging with respect to the equipment and material involved. Sound from backhoe

[3] Decibels root mean square over a period of time
[4] Decibels sound exposure level over a 24 hour period (cumulative)
[5] Injury thresholds are based on pile driving (pulsed noise)
[6] Peak sounds in decibels

dredging was measured between 124 and 148 dB at 60 meters (Reine et al. 2012). The authors estimated a maximum intensity at 1 meter of 179 dB. However, a backhoe dredge is significantly larger and more powerful than the excavators that would be used to conduct work under the proposed action. The sound created during the proposed action is therefore expected to be less intense than what was observed during backhoe dredging.

NMFS fish injury thresholds for both continuous and pulsed sound are 183 dB (for cumulative sound) and 206 dB (for peak sound) (NMFS et al. 2008). The limited data available suggests sound potentially created by the proposed action would not exceed these thresholds and therefore not cause fish injury. The only fish in the study area that would be vulnerable to the physiological effects of noise generated from construction would be herring, and possibly sardine and anchovy (all of which have swim bladders involved in hearing). The noise levels generated during construction have the potential to approach/exceed the Popper et al. (2014) thresholds for this hearing group. Although the effects would be recoverable since the noise would not exceed the injury thresholds.

The NMFS threshold for fish harassment is 150 $dB_{RMS}$. It is possible this harassment threshold could be exceeded by the proposed in water excavation work based on Reine et al. (2012) discussed above. If this were to occur, it would result in fish moving away from the immediate project site. This behavior is likely to occur regardless simply due to the ground and water disturbance associated with construction. It is possible a temporary migration barrier could be formed during short periods when this work is occurring. The impacts of noise on fish are expected to be insignificant since there is a finite community of fish that would be affected within the limited confines of the action area, which already has higher levels of ambient noise from vessel traffic; and the size of this affected sub-population would be minimal compared to communities in the Puget Sound.

Although there would be temporary impacts to fish habitat and prey, there are long-term benefits to fish populations in the area from the reduction of 2,260 $ft^2$ of concrete below MHHW. Removing this concrete would expose the natural intertidal beach substrate and allow for the recruitment of marine algae and invertebrate that already occur in the surrounding areas. This would increase the amount of habitat and forage base for fish, and spawning substrate for species like sand lance and herring. The boulders along the beach would limit vehicle access to the adjacent beach, thereby protecting fragile intertidal fish habitat. Overall impacts to fish communities are expected to be insignificant.

### 3.8 Wildlife

Various cetaceans (whales, dolphins, porpoises) and pinnipeds (seals and sea lions) are found in the waters of South Puget Sound including Cormorant Passage, near Solo Point. The most common are harbor seals. Gray whales, humpback whales, orca whales, sea lions, and harbor porpoises are occasional visitors, and sea otters and Dall's porpoises are rare visitors to South Puget Sound (Osborne 1998).

Terrestrial mammals that may be found in the action includes those species that are generally adapted to human development including squirrels, raccoons, deer, and coyotes. These species are typically tolerant of human activity and would likely avoid the area during construction.

According to a search of the WDFW Priority Habitat and Species (PHS) map, the following bat species are most likely to roost in the adjacent hillside and forage around Solo Point: Big brown bat, Little brown bat, and Yuma myotis (WDFW 2019). Since these bats prefer insects with an aquatic life stage they often live near fresh water including wetlands, springs and streams. Their roosts would not be close enough to the work area to be impacted and no work would occur at night so it is unlikely that any bats would be encountered during construction.

The beach and waters around Solo Point are used as feeding areas by fish-eating and bivalve-eating birds, and in some cases, for nesting. The USFWS IPac (accessed July 2017) identified the following migratory bird species of particular conservation concern as present at Solo Point either year-round, for breeding or while migrating: Bald Eagle , Black Swift, Caspian Tern, Fox Sparrow, Olive-sided Flycatcher , Oregon Vesper Sparrow, Peregrine Falcon, Purple Finch, Rufous Hummingbird, Short-eared Owl, Western Grebe, and the Willow Flycatcher (USFWS 2017).

Many other birds, including cormorants, ducks, geese, swans and gulls utilize the marine waters and nearshore habitat of the project area. Pigeon guillemots are particularly common near Solo Point and the adjacent hillside provides suitable nesting habitat (Army 2010). Marbled murrelets have been observed near JBLM on the Nisqually River and in Puget Sound near Solo Point (Army 2013). A nest of Purple martins was observed at a birdhouse on the beach on the southern side of Solo Point during a Corps site visit in May 2017. Any number of birds may be present during construction but no work would occur near known nests and adult birds can avoid the work area.

### 3.8.1 No Action Alternative

Under this alternative the three existing ramps would remain and continue to deteriorate. This concrete in the intertidal zone would continue to limit the recruitment of marine algae species within the ramp footprints and cover up natural beach substrate, both of which are spawning and rearing habitat for fish and invertebrates that are wildlife prey.

### 3.8.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

Anticipated impacts to wildlife include elevated noise and turbidity, and potential temporary impacts to their prey base. Impacts of elevated turbidity would be minimized by BMPs like using a turbidity curtain and working during low tide, and adhering to criteria and conditions in the WQC. The most likely impacts to wildlife would be from noise, both airborne and underwater. Airborne noise is more likely to impact land based wildlife, resulting in avoidance behavior during construction. The noise and vibrations that propagate into the water are likely to result in a similar response. The hearing ranges and acoustic thresholds at which marine mammals are predicted to experience

changes in hearing due to non-impulsive anthropogenic underwater noise, are summarized in Table 2. There are different thresholds for temporary (TTS) and permenant threshold shifts (PTS) of hearing sensitivity. For non-impulsive sounds the thresholds are presented using the cumulative sound exposure level ($SEL_{cum}$) (NMFS 2016).

Table 2. Generalized Hearing Ranges, PTS, and TSS Thresholds for Non-impulsive Sounds

| Hearing Group | Generalized Hearing Range | PTS Onset Acoustic Thresholds (received level) | Weighted TTS onset acoustic threshold ($SEL_{cum}$) |
|---|---|---|---|
| Low frequency (LF) cetaceans (baleen whales) | 7 Hz to 35 kHz | $L_E$,LF,24h*:* 199 dB | 179 dB |
| Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales) | 105 Hz to 160 kHz | $L_E$,MF,24h: 198 dB | 178 dB |
| High-frequency cetaceans (true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*) | 275 Hz to 160 kHz | $L_E$,HF,24h: 173 dB | 153 dB |
| Phocid pinnipeds (underwater) (true seals) | 50 Hz to 86 kHz | $L_E$,PW,24h: 201 dB | 181 dB |
| Otariid pinnipeds (underwater) (sea lions and fur seals) | 60 Hz to 39 kHz | $L_E$,OW,24h: 219 dB | 199 dB |

The noise study on backhoe dredging was measured between 124 and 148 dB at 60 meters (Reine et al. 2012) with a maximum intensity at 1 meter of 179 dB, but noise levels associated with the excavators are likely to be lower. Note that these noise units are not the same as the thresholds listed Table 2. There is no simple way convert the noise units in the literature to the NMFS threshold units without having the raw data. A 2018 BiOP issued to USACE for eight maintenance dredging projects assumed $dB_{RMS}$ and $dB_{SEL}$ to be equal for continuous noise (NMFS 2018). It very unlikely that noise thresholds would be exceeded for most marine mammals hearing groups, including seals, sea lions, and orcas. It is possible that noise could exceed the TTS threshold for high frequency cetaceans like the harbor porpoise, but their occurrence in the action area during construction is unlikely given their low density in Puget Sound, and if present, they would be in deeper water where the noise would likely attenuate below these thresholds.

Little is known about how underwater noise effects diving birds. The first measurements of underwater auditory thresholds for diving birds were measured on long-tailed ducks. They responded to high intensity stimuli greater than 117 dB (Therrien 2014). For marbled murrelets the USFWS uses 150 $dB_{RMS}$ as a "guideline" for where to consider exposure to continuous sounds and the potential behavioral responses that exposure within that area would cause (E. Teachout, USFWS, pers. comm., Dec 27, 2017). As mentioned previously in the fish discussion, there is potential for this threshold to be exceeded but birds would likely avoid the area. This behavior is likely to occur regardless simply due to the ground and water disturbance associated with construction. Diving birds are expected to return upon completion of construction.

Although there would be temporary impacts to wildlife habitat and their prey, there are long-term benefits from the reduction of 2,260 $ft^2$ concrete below MHHW. Removing this concrete would expose the natural intertidal beach substrate and allow for the recruitment of marine algae and invertebrate that already occur in the surrounding areas. This would increase the amount of forage base for marine mammals and birds by providing spawning substrate for species like sand lance and herring, and habitat for juvenile salmonids and other shallow water fish. Temporary impacts to wildlife behavior would not have any impact at the population levels, and with the net improvement in intertidal habitat, impacts to wildlife are expected to be insignificant.

### 3.9 Threatened and Endangered Species

In accordance with Section 7(a)(2) of the ESA, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. A number of species protected under the ESA may occur in the action area.

Table 3. ESA protected species potentially within the action area.

| **SPECIES** | | **LISTING STATUS** | **CRITICAL HABITAT STATUS** | **CRITICAL HABITAT IN ACTION AREA** |
|---|---|---|---|---|
| Coastal/Puget Sound Bull Trout | *Salvelinus confluentus* | Threatened | Designated | Yes |
| Puget Sound Chinook Salmon | *Oncorhynchus tshawytscha* | Threatened | Designated | Yes |
| Puget Sound Steelhead Salmon | *Oncorhyncus mykiss* | Threatened | Proposed | Yes |
| Eulachon | Thaleichthys pacificus | Threatened | Designated | No |
| Georgia Basin Bocaccio | *Sebastes paucispinus* | Endangered | Designated | Yes |
| Georgia Basin Yelloweye Rockfish | *Sebastes ruberrimus* | Threatened | Designated | Yes |

| SPECIES | | LISTING STATUS | CRITICAL HABITAT STATUS | CRITICAL HABITAT IN ACTION AREA |
|---|---|---|---|---|
| Marbled murrelet | *Brachyramphus marmoratus* | Threatened | Designated | No |
| Streaked Horned Lark | *Eremophila alpestris strigata* | Threatened | Designated | No |
| Yellow-billed Cuckoo | *Coccyzus americanus* | Threatened | Designated | No |
| Southern Resident Killer Whale | *Orcinus orca* | Endangered | Designated | Yes |

No effect is anticipated for eulachon, streaked horned lark, and yellow-billed cuckoo due to lack of suitable habitat and/or species absence. The following sections summarizes relevant information for the ESA listed species that are likely to occur in the action area, evaluates how the proposed project may affect the species, and concludes with a determination of effect.

### 3.9.1 No Action Alternative

Under this alternative the three existing ramps would remain and continue to deteriorate. This concrete in the intertidal zone would continue to limit the recruitment of marine algae species within the ramp footprints and cover up natural beach substrate, both of which are spawning and rearing habitat for ESA listed fish.

### 3.9.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

There are likely to be temporary and localized impacts to threatened and endangered fish, birds, and marine mammals similar to those described in sections 3.7 and 3.8, including exposure to elevated turbidity and noise, potential entrainment, and impacts to prey. USACE has prepared a Biological Assessment (BA) and submitted it to USFWS and NMFS to comply with section seven of the ESA. The BA evaluates the effects of the proposed action on ESA-listed species and their critical habitat (if present) in the action area. Table 4, below, summarizes USACE's determinations:

Table 4. Summary of Effect Determinations

| SPECIES | EFFECT DETERMINATION | CRITICAL HABITAT DETERMINATION |
|---|---|---|
| Coastal/Puget Sound Bull Trout | not likely to adversely affect | not likely to adversely affect |
| Puget Sound Chinook Salmon | likely to adversely affect | likely to adversely affect |
| Puget Sound Steelhead | not likely to adversely affect | no effect |
| Puget Sound/Georgia Basin Bocaccio | not likely to adversely affect | not likely to adversely affect |

| | | |
|---|---|---|
| Puget Sound/ Georgia Basin Yelloweye Rockfish | not likely to adversely affect | not likely to adversely affect |
| Southern Resident Killer Whale | not likely to adversely affect | not likely to adversely affect |
| Marbled Murrelets | not likely to adversely affect | No effect |

Rationales for these determinations are listed below:

*Puget Sound bull trout:* Impacts to bull trout are expected to be discountable through the use of BMPs and conservation measures, and the net decrease in concrete on the beach and intertidal areas. Bull trout presence in the action areas is rare. Any that are present would be of an age class that is very mobile and could easily avoid impact and injury. The Army has determined that the proposed action **may affect, but is not likely to adversely affect** Coastal-Puget Sound bull trout and their designated critical habitat.

*Puget: Sound Chinook:* The Army has determined that the proposed action **may affect, and is likely to adversely affect** Puget Sound Chinook and their designated critical habitat. This determination is made based upon the likelihood of juvenile Chinook presence during construction, their extensive use of the shoreline and the short-term impacts to turbidity, as well as any increased noise or vibration from the actions. See section 3.7 for a detailed analysis of construction-related impacts to fish. Overall, permanent impacts to Chinook are expected to be beneficial given there would be a net decrease in concrete on the beach and the intertidal zone. Adverse impacts would be temporary.

*Puget Sound Steelhead:* The Army has determined that the proposed action **may affect, but is not likely to adversely affect** Puget Sound steelhead and there would be **no effect** to their proposed critical habitat. This determination is made based upon the short-term construction impacts in the nearshore, their lack of use of the nearshore zone and associated low likelihood of occurrence in the action area. Overall, impacts to Puget Sound steelhead are expected to be discountable through the use of best management practices and conservation measures. Any steelhead that are present in deeper waters that may be impacted by noise would be of an age class that is very mobile and could easily avoid the area.

*Bocaccio and Yelloweye Rockfish:* The Army has determined that the proposed action **may affect, but is not likely to adversely affect** the Puget Sound/Georgia Basin DPSs of yelloweye rockfish and bocaccio or their critical habitat. This determination is based upon the increase in available habitat in the area, the short duration of construction-related impacts, and the low likelihood that these species would be present in the action area during project activities.

*Southern Resident Killer Whale:* The Army has determined that the proposed action **may affect, but is not likely to adversely affect** Southern Resident killer whales or their designated critical habitat. This determination is made based upon the low likelihood of Southern Resident killer whale occurrence in the action area during

construction, the short duration and minor impacts of construction related disturbance like noise, and the discountable effects to prey species.

*Marbled Murrelet:* The Army has determined that the proposed action **may affect, but is not likely to adversely affect** marbled murrelets. This determination is based upon the short duration of construction, their ability to avoid the area, and the minimal impact to their prey species. Overall, impacts to marbled murrelets are expected to be discountable through the use of best management practices and conservation measures. Because designated critical habitat is not in the project areas, replacement of the boat ramps would have **no effect** on designated marbled murrelet critical habitat.

In summary, impacts to ESA listed species would be temporary and no long-term significant impacts would result from the proposed action.

## 3.10 Air Quality and Green House Gases

Federal and state agencies set air quality standards for outdoor air. The purpose of the standards is to prevent air pollution from reaching levels that hurt human health. The EPA sets the national ambient air quality standards (NAAQS) for six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. The EPA established 100 tons per year (TPY) as the threshold level for the requirement of a conformity determination for key NAAQS pollutants in a non-attainment or maintenance area; the 100 TPY threshold applies separately to each pollutant (40 CFR 93 § 153). Where air quality does not meet NAAQS, the area is designated as a Non-Attainment Area. Areas that have always met NAAQS are designated as Attainment Areas. At areas previously designated as Non-Attainment, and where air quality has improved above NAAQS, the area is designated as a Maintenance Area. The project is located in an attainment area; however, there is a site in the nearby City of Tacoma that is a Maintenance Area for PM2.5 and PM10 but is no longer a maintenance area for carbon monoxide or ozone as of 2016. This site is approximately 14.6 miles to the north of Solo Point.

Anthropogenic sources of greenhouse gases (primarily carbon dioxide, methane, and water vapor) have been increasing over the past 150 years, and have reached a rate of contribution that is causing global climate change. GHGs include water vapor, carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), ozone ($O_3$), and some hydrocarbons and chlorofluorocarbons.

### 3.10.1 No Action Alternative

The No-Action Alternative would have no effect on regional or local air quality and would have no output of greenhouse gases.

### 3.10.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

Construction activities associated with the proposal would create air emissions from operating equipment during construction, which would have a short-term effect and highly localized effect to air quality. An increase in motorized boat activity may occur with the new ramp in place, but given that the site in not accessible to the public this

increase is expected to be insignificant. The proposed action would not occur in a non-attainment or maintenance area. Given the short duration of the construction, emissions are not expected to cause adverse health effects or result in violation of applicable air quality standards, therefore, impacts would be inconsequential.

Operation of the construction equipment and the potential minor increase in boat activity would emit greenhouse gasses, primarily carbon dioxide and nitrous oxides from burning fossil fuels. When compared to the global emissions measured at nearly 7,000 million metric tons in 2014 (EPA 2016), the minor contribution of the proposed action would not constitute a measurable effect among the impacts of climate change and sea level rise and is therefore not considered a significant impact. Although greenhouse gas emissions associated with this alternative are not expected to significantly increase the rate of climate change and sea level rise, diesel fuel consumption by heavy machinery are a part of world-wide cumulative contributions to change in climate by way of increases in greenhouse gas emissions.

### 3.11 Tribal Treaty Rights

Other primary users of Solo Point are Native American Tribes. The beach at Solo Point is used for tribal fishing and gatherings. The first settlers of the land that is now Pierce County were the ancestors of today's Nisqually, Puyallup, Squaxin, Steilacoom and Muckleshoot Indians. The waters around Solo Point have been the subject of recent litigation to clarify language from the 1974 ruling by U.S. District Court Judge George H. Boldt which stated, “The usual and accustomed fishing places of the Nisqually Indians included at least the saltwater areas at the mouth of the Nisqually River and the surrounding bay, and the freshwater courses of the Nisqually River and its tributaries. The saltwater fisheries were shared with other Indians.” United States v. Washington, 384 F. Supp. 312, 369 (1974). In 2016 the District Court deemed that both the Squaxin and the Nisqually have fishing rights in the waters off Solo Point. United States v. Washington, 193 F. Supp. 3d 1190 (2016).

Figure 18. Nisqually Tribal canoe at Solo Point boat ramps in 2015. (Google Images

2017)

### 3.11.1 No Action Alternative

Under this alternative the three existing ramps would remain and continue to deteriorate. Over time this could affect Tribes' ability to access the waters off of Solo Point for Tribal fishing.

### 3.11.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

Under the preferred alternative there may temporary impacts to Tribal access during construction. The Army would coordinate the construction period with the local Tribes. The current degraded boat ramps would be replaced with a new, fully serviceable boat ramp. This new ramp would allow Tribal uses of the site that require boats. The boulders along the beach would limit vehicle access to the adjacent beach, thereby protecting Tribal resources on the beach. The reduction of 2,260 $ft^2$ concrete below MHHW would expose the natural intertidal beach substrate and allow for the recruitment of marine algae habitat and forage base for fish and shellfish that have cultural value and provide subsistence to local Tribes.

## 3.12 Cultural Resources

An in depth on-site review was conducted of the broad project scope. Though Solo Point is associated with aquatic military training operations they pre-date the construction of the boat ramp making the ramp not eligible under Criterion A. Research did not yield an association with the lives of any significant persons in our past (Criterion B.), nor is it exceptional from an engineering or stylistic perspective (Criterion C.). This site has been previously assessed and it is not likely to yield information about history or prehistory (Criterion D.). Although Ramp one retains a high level of integrity in all aspects--location, design, setting, materials, workmanship, feeling, and association-- it is in mediocre condition. This resource is minimal in design and materials, there are no significant architectural elements or features of the boat ramp and it is not the best example of similar concrete boat ramps on military installation therefore Joint Base Lewis-McChord has determined that the boat ramps at Solo Point are not eligible for listing on the National Register of Historic Places. In a letter dated February 20th, 2020, SHPO concurred with that determination.

### 3.12.1 No Action Alternative

Under this alternative the three existing ramps would remain and continue to deteriorate. Over time the deterioration may become a hazard to users of the Area.

### 3.12.2 Pre-cast Concrete Boat Ramp (Agency Preferred Alternative)

Under the preferred alternative the current degraded boat ramps would be replaced with a new, fully serviceable boat ramp. Since the existing boat ramps are not eligible for listing on the National Register no impact to cultural resources would occur with the removal of existing ramps and construction of a new ramp in the same footprint.

# 4.0 CUMULATIVE EFFECTS

Evidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time (CEQ 1997). Cumulative effects address the incremental environment impacts of the proposed action, together with impacts of past, present, and reasonably foreseeable future actions. The cumulative effects address the impacts from projects that may be individually minor, but result in collectively significant impacts when taking into account actions occurring over a period of time (40 CFR §1508.7). As such, they include the impacts of this boat ramp replacement project considered in conjunction with current and future projects constructed or planned at JBLM and the surrounding area.

As discussed in previous sections, Solo Point has a long history of anthropomorphic uses and changes including shoreline armoring and a railroad that backs the beach, the three existing ramps and concrete tires and rubble, various military training exercises, and recreational uses by DoD employees, veterans, and Tribes. Given the site is on Federal land, future development and use of the site is not expected to change substantially from existing conditions, other than increased boat activity associated with the new ramp which is addressed in throughout this EA. The negative environmental effects of the Solo Point boat ramp replacement are temporary and minor, and are associated primarily with the actual construction of the project. The combination of BMPs and mitigation measures reduce these impacts to an insignificant level. More importantly, the beneficial effects generated by the project compensate for these short-term negative effects. It is unlikely that any other project would occur within the project vicinity at the same time that also construction-related impacts. Thus, the proposed ramp replacement project would not contribute cumulatively to significant effects when combined with past, present, and future projects within the watershed and along the shoreline.

# 5.0 OTHER CONSIDERATIONS REQUIRED BY NEPA

## 5.1 Endangered Species Act

The ESA of 1973 provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered, and their critical habitats. The proposed project is located along a stretch of shoreline where numerous ESA listed species occur. The Army prepared a Biological Assessment that evaluated the impacts of the proposed action to ESA listed species, which was submitted to U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) on August 13, 2019 Based on the effects analysis completed in the BA, the Army determined that the proposed action ***may affect, and is likely to adversely affect*** Puget Sound Chinook, and for all other species the action ***may affect, but is not likely to adversely affect*** or would have ***no effect*** (see section 3.9 for more details). Implementation of conservation measures and BMPs outlined in 2.3.3 would minimize impacts and lessen any take associated with the proposed action.

## 5.2 Clean Water Act

The CWA (33 U.S.C. §1251 et seq.) requires Federal agencies to protect waters of the United States. The regulation implementing the Act disallows the placement of dredged or fill material into water unless it can be demonstrated there are no practical alternatives that are less environmentally damaging. The sections of the CWA that apply to the proposal are 401 regarding discharges to waterways, 404 regarding fill material in waters and wetlands, and 402 regarding the discharge of pollutants into waters of the United States.

*Section 404*

Section 404 of the CWA authorized a permit program for the disposal of dredged or fill material into waters of the United States, and defined conditions which must be met by Federal projects before they may make such discharges. The Corps retains primary responsibility for this permit program. The Army would submit the documentation necessary to obtain a 404 permit from the Corps regulatory department.

*Section 401*

Any project that involves placing dredged or fill material in waters of the U.S. or wetlands, or mechanized clearing of wetlands, requires a water quality certification from the EPA or the state agency as delegated by EPA. For this project on Federal land, EPA has authority for Section 401 compliance. The Army would submit documentation necessary for EPA's 401 review.

*Section 402*

Section 402 of the Act requires a National Pollutant Discharge Elimination System (NPDES) permit and the associated implementing regulations for General Permit for Discharges from Large and Small Construction Activities for construction disturbance over one acre. This project would have land disturbance of over one acre and therefore a NPDES permit would be obtained by the contractor from the EPA and they would prepare and implement a Stormwater Pollution Prevention Plan.

## 5.3 Magnusson Stevens Fisheries Act and Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), (16 U.S.C. §1801 et. seq.) requires Federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). The objective of an EFH assessment is to determine whether the proposed action(s) "may adversely affect" designated EFH for relevant commercial, federally managed fisheries species within the proposed study area. The assessment also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the proposed action. Adverse effects to EFH may result from actions occurring within outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

An EFH determination for the boat ramp replacement at Solo Point is included in the Biological Assessment submitted to NMFS. The Army has made a determination that the action ***would not adversely affect*** EFH.

## 5.4 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 as amended (16 U.S.C. §§ 1451-1466) requires Federal agencies to conduct activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved State Coastal Zone Management Program. The aim of the act is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." The delegated authority for review of consistency with the Coastal Zone Management Program is WDOE. In compliance with State law, each of the 15 coastal counties in Washington has developed its own Shoreline Master Program (SMP) in compliance with the State Shoreline Management Act. The proposed action is on Federal land and is thus excluded from any SMP. The Army has prepared a memorandum documenting its consistency with the enforceable policies of the approved State Coastal Zone Management Program that can be found in Appendix A.

## 5.5 National Historic Preservation Act of 1966

Research did not yield an association with the lives of any significant persons in our past (Criterion B.), nor is it exceptional from an engineering or stylistic perspective (Criterion C.). This site has been previously assessed and it is not likely to yield information about history or prehistory (Criterion D.). Although Ramp one retains a high level of integrity in all aspects--location, design, setting, materials, workmanship, feeling, and association-- it is in mediocre condition. This resource is minimal in design and materials, there are no significant architectural elements or features of the boat ramp and it is not the best example of similar concrete boat ramps on military installation therefore Joint Base Lewis-McChord has determined that the boat ramps at Solo Point are not eligible for listing on the National Register of Historic Places. Washington State SHPO concurred with this determination on February 20th, 2020, with the stipulation that ground disturbance be monitored by a professional archaeologist.

## 5.6 Executive Order 11990, Protection of Wetlands

EO 11990 encourages Federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. There would be no impacts to wetlands as none are located within the project footprint, including staging and access areas.

## 5.7 Executive Order 12898, Environmental Justice

EO 12898 directs every federal agency to identify and address disproportionately high and adverse human health or environmental effects of agency programs and activities on minority and low-income populations. Since no adverse human health or environmental effects are anticipated to result from the project, the Army has determined that no disproportional adverse impacts to low-income or minority populations would occur.

## 5.8 Executive Order 13007, Indian Sacred Sites

Executive Order 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

Sacred sites are defined in the executive order as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian Tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

Joint Base Lewis-McChord initiated consultation with the Nisqually Indian Tribe and the Puyallup Tribe of Indians on July 24, 2019. The Nisqually Indian Tribe responded to JBLM on Aug. 12, 2019. JBLM is consulting with interested Tribes regarding project activities that may affect a historic property that is considered by an Indian Tribe to be a sacred site. Consultation includes a request for the identification and evaluation of historic properties of religious and cultural significance to interested Indian tribes as well as the identification of those properties that are considered sacred sites and required access and ceremonial use of such sites.

## 5.9 Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks

EO 13045 requires Federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that policies, programs, activities and standards address disproportionate risks to children that result from environmental health or safety risks. Places that children generally gather include schools, parks, recreational facilities and day care centers. The proposed action is located on a military base and would not generate any disproportionate environmental health or safety risks to children.

## 5.10 Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

EO 13186 requires Federal agencies to evaluate whether actions have or are likely to have a measureable negative effect on migratory bird populations. If an action is determined to have a measureable negative effect, the Federal agency is required to develop a Memorandum of Understanding within 2 years with the USFWS to promote the conservation of migratory bird populations. The proposed action would not result in measurable negative effects on migratory bird populations as construction impacts are short-term and localized.

## 6.0 CONCLUSION

Based on the evaluations contained in this EA, it has been determined that the proposed action (Alternative 2), the removal of the three existing boat ramps at Solo Point and the replacement with a single large ramp, does not represent a major Federal action significantly affecting the quality of the human environment. The impacts would be temporary and localized during construction, with a long-term net improvement in intertidal habitat. Therefore the preparation of an environmental impact statement is not required.

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APPENIDIX A. COASTAL ZONE MANAGEMENT ACT ANALYSIS

**COASTAL ZONE MANAGEMENT ACT ANALYSIS**
**Solo Point Boat Ramp Replacement Project**

**May 2019**

**Prepared by:**

**US Army Corps of Engineers** ®
Seattle District

## Regulatory Requirements

Congress passed the federal Coastal Zone Management Act (CZMA) in 1972 to encourage the appropriate development and protection of the nation's coastal and shoreline resources. The Coastal Zone Management Act gives states the primary role in managing these areas. To assume this role, the state prepares a Coastal Zone Management Program (CZMP) document that describes the State's coastal resources and how these resources are managed. Washington was the first state to receive federal approval of a Coastal Zone Management Program in 1976.

Washington's Program defines the State's coastal zone to include the 15 counties with marine shorelines, including Pierce County where this project is proposed.

## Background

The U.S. Army at Joint Base Lewis-McChord (JBLM) proposes to replace a concrete boat ramp at Solo Point between Dupont and Steilacoom in Pierce County, Washington. Solo Point is the only portion of JBLM with marine access and is designated as an A-1 Military Facility delegated for the purpose of various amphibious training operations. The proposed action involves replacement of the existing Solo Point boat ramp and evaluates impacts to the beach and in the nearshore marine waters of Solo Point that extends into Puget Sound at Cormorant Passage.

The strip of tidelands where the concrete boat ramps are situated is owned by JBLM. The property was acquired by Pierce County under condemnation and deeded to the U.S. Army on July 14, 1920. The boundary between state-owned aquatic land and private land is a platted line. The bedlands to the west belong to Washington's Department of Natural Resources. To the east JBLM property extends to the Burlington Northern Santa Fe (BNSF) railroad right-of-way. Solo Point has been used for military operations since at least the 1920's.

Solo Point is also used recreationally by military, retired military, DOD civilian personnel, their family members and sponsored guests during daylight hours only. Camping is prohibited. Use to the general public is prohibited and would be considered trespassing although Native American Tribes can use the beach at Solo Point for tribal fishing and gatherings.

## Project Description

JBLM proposes to demolish and remove the three existing boats ramps and all concrete rubbish and tires (Figure 1**Error! Reference source not found.**). Ramp 1 would be replaced with a new, 20 ft. wide and 234 ft. long concrete plank boat ramp bordered with four foot wide Armorflex mats on each side (Figure 2 and Figure 3). In addition, approximately 193 boulders would be placed along the beach above MHHW with three pedestrian access points to prevent vehicle access to the adjacent beach (Figure 2). No curbs are proposed on either side of the boat ramp to prevent undercutting. The boat ramp would match the natural beach grade and would be level (not elevated from) with the surrounding beach grade so as to not disrupt sediment drift cell processes

(Figure 4). The removal of all three existing ramps and concrete tires and rubble, with the addition of a new ramp, would result in a total reduction of 172 $ft^2$ of concrete with a reduction of 2,260 $ft^2$ below MHHW.

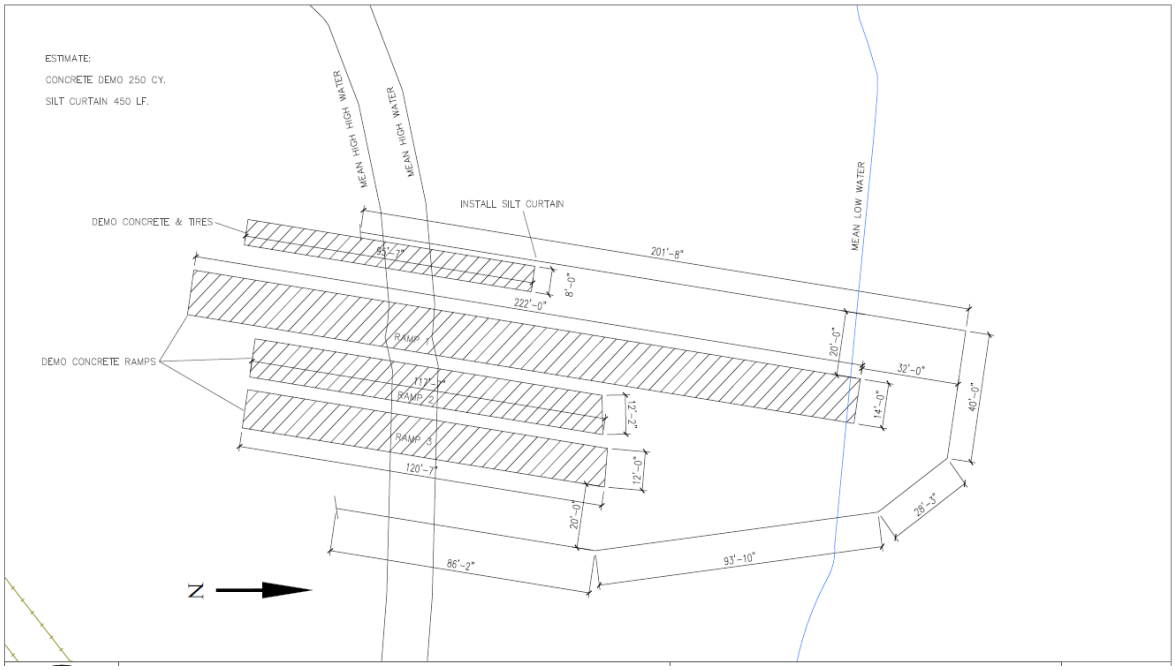


Figure 1. Plan view of existing boat ramps and concrete tires to be demolished

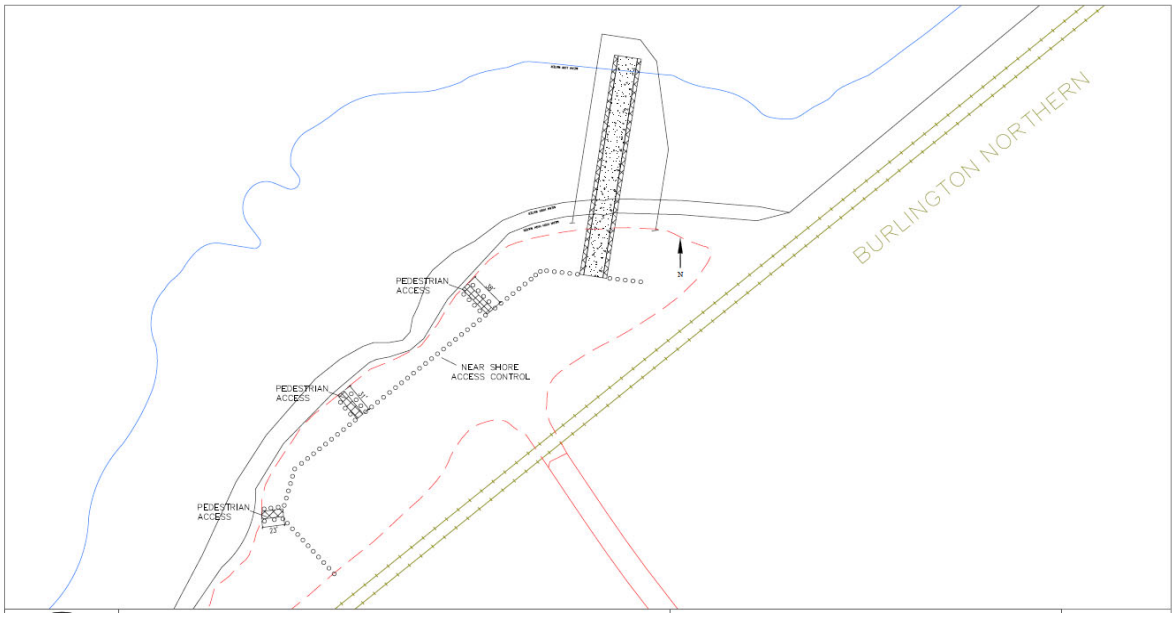


Figure 2. Plan view depicting the location of the proposed boat ramp and nearshore access control.

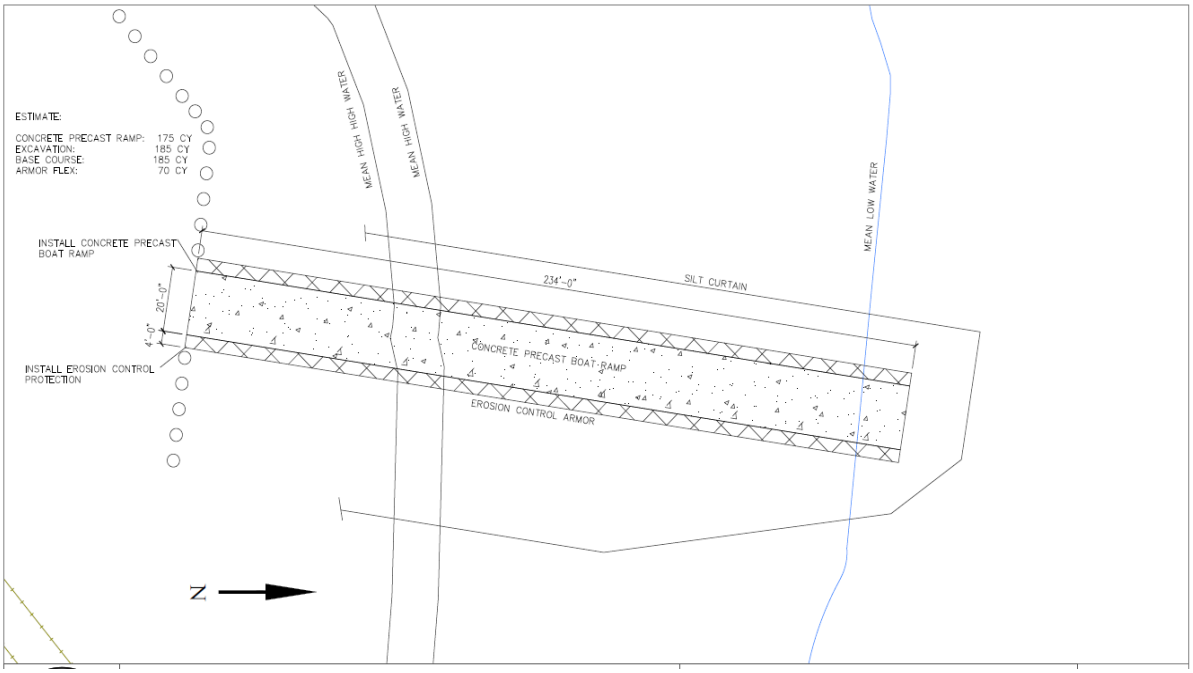


Figure 3. Zoomed-in plan view depicting the location of the proposed boat ramp

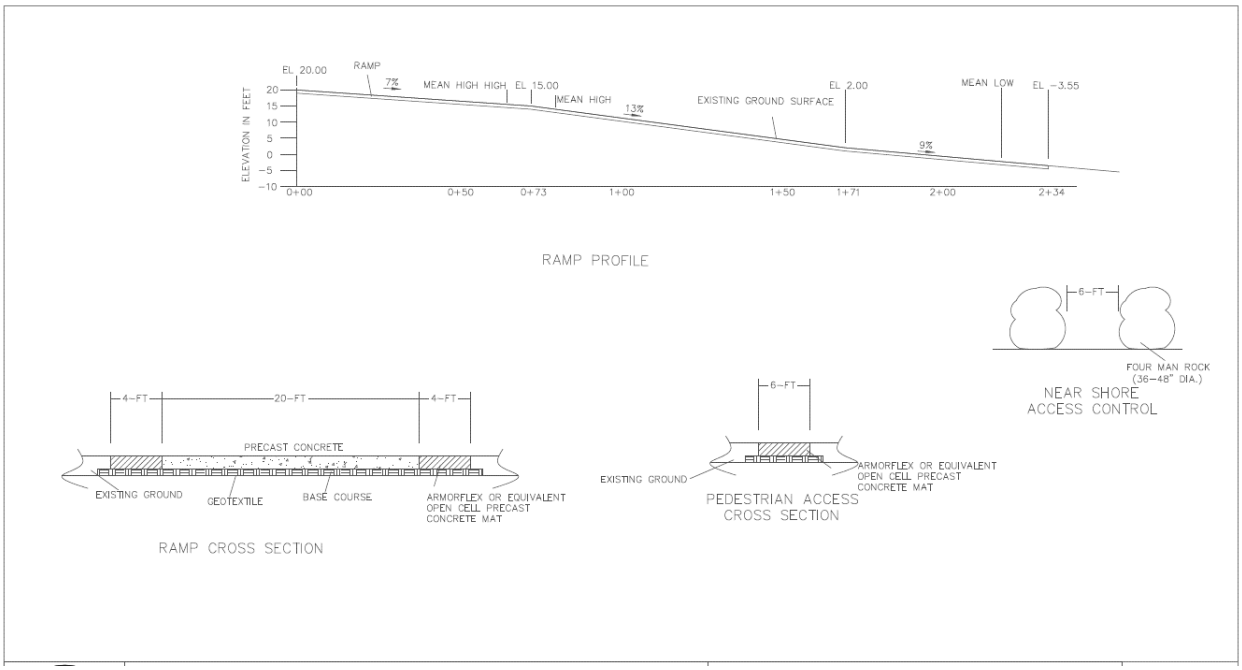


Figure 4. Profile view of proposed boat ramp.

## Federal Consistency

Under Washington's Program, federal activities that affect any land use, water use or natural resource of the coastal zone must comply with the enforceable policies within the six laws identified below.

Activities and development affecting coastal resources which involve the federal government are evaluated through a process called "federal consistency". This process allows the public, local governments, Tribes, and state agencies an opportunity to review Federal actions likely to affect Washington's coastal resources or uses. There are three categories of activities which trigger a federal consistency review:

1. Activities undertaken by a Federal agency,
2. Activities which require Federal approval and
3. Activities which use federal funding.

If a project falls into one of these categories AND is either in the coastal zone or it impacts coastal uses or resources, then the federal consistency process is triggered. In the case of this project, all three categories are triggered (CZMA, Section 307(c)(1)).

## Coastal Zone Management Act Analysis

The following analysis lists each of the enforceable policies of the Coastal Zone Management Program and explains how the project meets all applicable requirements:

**1. Shoreline Management Act (SMA):** Washington's Coastal Zone Management Program defines the State's coastal zone to include the 15 counties with marine shorelines, which includes Pierce County where the project is located. Primary responsibility for the implementation of the SMA is assigned to local government. As a Federal Reservation, JBLM is precluded from Washington's Coastal Zone Management Program

**2. State Environmental Policy Act (SEPA) (Chapter 43.21c RCW):** While the SEPA process is not applicable to federal actions, the Army is preparing the Environmental Assessment (EA) pursuant to Section 102(c) of the National Environmental Policy Act (NEPA).

**3. Clean Water Act & State Water Pollution Control Act (Chapter 90.48 RCW):** The proposed action replaces an existing concrete boat ramp. The Army is requesting permission to use a Nationwide section 404 CWA permit from the U.S. Army Corps of Engineers and a section 401 CWA water quality certification (WQC) from the U.S. EPA. The Army would comply with all conditions and criteria in these permits. Best Management Practices would be used to avoid and minimize impacts to aquatic species and the natural environment from construction-related effects such as underwater noise or suspended sediment.

**4. Clean Air Act/Washington Clean Air Act (Chapter 70.94 RCW):**

Section 176 of the Clean Air Act (CAA), 42 USC 7506(c), prohibits Federal agencies from approving any action that does not conform to an approved state or Federal implementation plan. The proposed boat ramps removals and replacement would occur in an attainment zone, therefore *de minimus* thresholds and conformity determination requirements do not apply [40 CFR 93.153 (c)(2)(ix)].

**5. Energy Facility Site Evaluation Council Law (Chapter 80.50 RCW):** This law is a state-local permitting system for large thermal energy facilities, oil refineries which process petroleum transported over marine waters, and petroleum and natural gas pipelines. Consequently, none of the enforceable policies apply to this proposal. The proposed action does not include the installation of any new energy facilities.

**6. Ocean Resource Management Act (ORMA) and Ocean Use Guidelines**: The enforceable policies of Chapter 43.143 RCW apply to coastal waters of the Pacific Ocean. The proposed action does not include sites in or near the Pacific Ocean. There would be no significant long-term impacts to coastal or marine resources or uses of the Pacific Ocean.

**Consistency Determination:** The proposed project is consistent to the maximum extent practicable with the all applicable enforceable polices of Washington's Coastal Zone Management Program.

APPENIDIX B. STATE HISTORIC PRESERVATION OFFICE CORRESPONDENCE

DEPARTMENT OF THE ARMY
JOINT BASE GARRISON HEADQUARTERS, JOINT BASE LEWIS-MCCHORD
1010 LIGGETT AVENUE, BOX 339500, MAIL STOP 1AA
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

24 JUL 2019

Subject: Replacement of the Solo Point Boat Ramp, Information System for Architectural and Archaeological Records Data Project Number: 2019-06-04233, Joint Base Lewis-McChord, Pierce County, Washington

Mr. David Z. Bean
Chair, Puyallup Tribal Council
3009 East Portland Avenue
Tacoma, WA 98404

Dear Mr. Bean:

The U.S. Department of the Army at Joint Base Lewis-McChord (JBLM) proposes to replace one concrete boat ramp at Solo Point between DuPont and Steilacoom in Pierce County, Washington. Solo Point Boat ramp was constructed in 1965; the location of the proposed action is adjacent to JBLM property at Solo Point, a two-acre parcel that extends into Cormorant Passage in greater Puget Sound basin in Pierce County, Washington. Solo Point is the only portion of JBLM with marine access and is designated as an A-1 Military Facility delegated for the purpose of various amphibious training operations.

There are three ramps at Solo Point, although only one is considered serviceable. Recent inspections found that all three boat ramps are in disrepair. Ramp one (O02NA) is a cast in place concrete slab built in 1965. It is 117 feet long by 12 feet 2 inches wide. It sits flush with the grade of the beach and is medium gray in color with a ¾ minus rounded aggregate. The edges have degraded and some sections have cracked and spalled away due to use and moisture exposer. It was constructed using six inch thick reinforced concrete and is in the best condition of the three ramps, ramp one is still capable of supporting boat trailers to launch vessels; however, large holes have formed at the waterward end.

The second adjacent boat ramp (O06NA) was added in 1981, parallel to ramp one. Ramp two is approximately 12 feet wide and 117 feet long; in 1997, a third ramp (O09NA) was added to the site, it is approximately 12 feet wide and 121 feet long. Since their construction, all three ramps have received minimal repairs and no alterations or additions. Over the years, ramps two and three have degraded and are no longer safe to use, ramp one is still somewhat serviceable today; ramp one would be replaced, the other two ramps would be permanently removed.

Ramp one will be replaced with a new, 20 ft wide and 234 ft long concrete plank boat ramp bordered with four foot wide Armorflex mats on each side. Additionally, in order to prevent unauthorized vehicle access to the beach, approximately 193 boulders will be placed along the perimeter of the parking area above the mean high water mark with three pedestrian access points. The boat ramp will match the natural beach grade and will be level (not elevated from) with the surrounding beach grade so as to not disrupt sediment drift cell processes. The removal of the two ramps will allow the marine ecosystem to repopulate the shoreline and near shore environments.

Ramp removal will include an excavator and trucks that will break up and haul the concrete away for disposal. All work will take place on the beach and in the water, utilizing low tides to the extent practicable. A floating turbidity curtain will be used to contain the in-water work. Equipment staging would occur in the existing parking lot to minimize impacts to the beach.

Once all three of the boat ramps are removed a small tracked excavator will grade an area up to 243 feet long and 28 feet wide at a slope between 7 and 13 percent that is about one foot deeper than the surrounding beach. This work will overlay with the original footprint of Ramp 1, however the area of the new ramp will be much larger. Upon excavation, fifteen-foot-wide sections of non-woven filter fabric will be laid down on the substrate. This needle-punched geotextile is meant to enable water drainage while preventing the loss of soil fines that contribute to turbidity and can lead to structural failure. Next, a four-inch layer of 1 ¼-inch clean crushed rock will be installed and compacted using grading equipment at low tide. Afterwards, 16-foot-long, 3-feet wide and 8-inch high pre-cast concrete planks will be installed parallel to the water and attached on either end to the Armorflex sections using connection plate assemblies secured with anchor cable. Armorflex is a flexible, interlocking matrix of cellular concrete blocks of uniform size, shape, and weight used for hard armor erosion control. Voids between the concrete planks will be filled with clean 5/8-inch crushed rock.

It is estimated that the project will be completed within one month, with concrete demolition and removal taking two days. Nighttime work may be utilized to maximize low tide cycles. Work that involves excavation will occur in the dry or at low tide to the extent possible. In-water construction will adhere to the Salmon and Bull Trout work window for Tidal Reference Area 3 for South Puget Sound, which occurs from July 16 to February 15. Fish species present in South Puget Sound near Solo Point include multiple Rockfish, Flounder and Sole species, Hake, Chinook salmon, Chum salmon, Coho salmon, Pink salmon, Sockeye salmon, and sea-run Cutthroat trout. A variety of other fish associated with the sandy substrate can be found in shallow marine areas of Puget Sound like Solo Point.

In order to ensure no impacts to forage fish spawning, a qualified biologist will perform a survey and confirm in writing, that no forage fish are spawning in the project area during the proposed construction. If forage fish are present in the project area,

then the resource agencies will be contacted to discuss if the work window for that species applies. Washington Department of Fish and Wildlife (WDFW) documented surf smelt spawning on the beach at nearby Tatsolo Point. Documented spawning habitat is a habitat that has been inspected and determined by WDFW to support actual forage fish spawning. Potential spawning habitat has the characteristics of forage fish spawning habitat but no actual spawning has been documented by WDFW. WDFW nor the Nisqually Reach Nature Center have survey data for Solo Point, however, there may be suitable substrate for sand lance spawning on the beach adjacent to the boat ramps and herring may spawn on the macroalgae waterward and around the lower elevations of the boat ramps.

Other primary users of Solo Point are Native American Tribes. The beach at Solo Point is used for tribal fishing and gatherings. The waters around Solo Point have been the subject of recent litigation to clarify language from the 1974 ruling by U.S. District Judge George H. Boldt which stated, "The usual and accustomed fishing places of the Nisqually Indians included at least the saltwater areas at the mouth of the Nisqually River and the surrounding bay, and the freshwater courses of the Nisqually River and its tributaries. The saltwater fisheries were shared with other Indians" (United States v. Washington 1974). A variety of shellfish, crustaceans, and other macroinvertebrates are present at Solo Point including, but not limited to, clams, crab, shrimp, marine worms, sea stars, and anemones. In 2016, the Court deemed that both the Squaxin and the Nisqually have fishing rights in the waters off Solo Point.

Under the preferred alternative, there may be temporary impacts to Tribal access during construction. Joint Base Lewis-McChord will coordinate the construction period with the local Tribes. The current degraded boat ramp would be replaced with a new, fully serviceable boat ramp; this new ramp will allow Tribal uses of the site that require boats. The boulders along the beach will limit vehicle access to the adjacent beach, thereby, protecting Tribal resources on the beach.

An in depth on-site review was conducted of the broad project scope. Though Solo Point is associated with aquatic military training operations, they pre-date the construction of the boat ramp making the ramp not eligible under Criterion A. Research did not yield an association with the lives of any significant persons in our past (Criterion B), nor is it exceptional from an engineering or stylistic perspective (Criterion C). This site has been previously assessed and it is not likely to yield information about history or prehistory (Criterion D). Although Ramp one retains a high level of integrity in all aspects (location, design, setting, materials, workmanship, feeling, and association) it is in mediocre condition. This resource is minimal in design and materials, there are no significant architectural elements or features of the boat ramp and it is not the best example of similar concrete boat ramps on military installation.

Joint Base Lewis-McChord has evaluated the project and has determined that the three boat ramps at Solo Point are not eligible for listing on the National Register and that the removal of these ramps will have no effect to historic properties at Solo Point. Joint Base Lewis-McChord requests State Historic Preservation Office's concurrence on the determination of Not Eligible for the three boat ramps at Solo Point and that the removal of these three ramps will have no effect on Historic Properties. The Environmental Assessment has been drafted and will be ready for review in the coming weeks.

If you would like a copy of the Environmental Assessment document or have any questions regarding this project or desire additional information, please contact Donna Turnipseed, at 253-966-1766 or at donna.l.turnipseed2.civ@mail.mil.

Sincerely,

Steven T. Perrenot, P.E.
Director, Public Works

Enclosure

DEPARTMENT OF THE ARMY
JOINT BASE GARRISON HEADQUARTERS, JOINT BASE LEWIS-MCCHORD
1010 LIGGETT AVENUE, BOX 339500, MAIL STOP 1AA
JOINT BASE LEWIS-MCCHORD, WA 98433-9500

24 JUL 2019

Subject: Replacement of the Solo Point Boat Ramp, Information System for Architectural and Archaeological Records Data Project Number: 2019-06-04233, Joint Base Lewis-McChord, Pierce County, Washington

Mr. Ken Choke
Chair, Nisqually Indian Tribe
4820 She-Nah-Num Drive SE
Olympia, WA 98513

Dear Mr. Choke:

The U.S. Department of the Army at Joint Base Lewis-McChord (JBLM) proposes to replace one concrete boat ramp at Solo Point between DuPont and Steilacoom in Pierce County, Washington. Solo Point Boat ramp was constructed in 1965; the location of the proposed action is adjacent to JBLM property at Solo Point, a two-acre parcel that extends into Cormorant Passage in greater Puget Sound basin in Pierce County, Washington. Solo Point is the only portion of JBLM with marine access and is designated as an A-1 Military Facility delegated for the purpose of various amphibious training operations.

There are three ramps at Solo Point, although only one is considered serviceable. Recent inspections found that all three boat ramps are in disrepair. Ramp one (O02NA) is a cast in place concrete slab built in 1965. It is 117 feet long by 12 feet 2 inches wide. It sits flush with the grade of the beach and is medium gray in color with a ¾ minus rounded aggregate. The edges have degraded and some sections have cracked and spalled away due to use and moisture exposer. It was constructed using six inch thick reinforced concrete and is in the best condition of the three ramps, ramp one is still capable of supporting boat trailers to launch vessels; however, large holes have formed at the waterward end.

The second adjacent boat ramp (O06NA) was added in 1981, parallel to ramp one. Ramp two is approximately 12 feet wide and 117 feet long; in 1997, a third ramp (O09NA) was added to the site, it is approximately 12 feet wide and 121 feet long. Since their construction, all three ramps have received minimal repairs and no alterations or additions. Over the years, ramps two and three have degraded and are no longer safe to use, ramp one is still somewhat serviceable today; ramp one would be replaced, the other two ramps would be permanently removed.

Ramp one will be replaced with a new, 20 ft wide and 234 ft long concrete plank boat ramp bordered with four foot wide Armorflex mats on each side. Additionally, in order to prevent unauthorized vehicle access to the beach, approximately 193 boulders will be placed along the perimeter of the parking area above the mean high water mark with three pedestrian access points. The boat ramp will match the natural beach grade and will be level (not elevated from) with the surrounding beach grade so as to not disrupt sediment drift cell processes. The removal of the two ramps will allow the marine ecosystem to repopulate the shoreline and near shore environments.

Ramp removal will include an excavator and trucks that will break up and haul the concrete away for disposal. All work will take place on the beach and in the water, utilizing low tides to the extent practicable. A floating turbidity curtain will be used to contain the in-water work. Equipment staging would occur in the existing parking lot to minimize impacts to the beach.

Once all three of the boat ramps are removed a small tracked excavator will grade an area up to 243 feet long and 28 feet wide at a slope between 7 and 13 percent that is about one foot deeper than the surrounding beach. This work will overlay with the original footprint of Ramp 1, however the area of the new ramp will be much larger. Upon excavation, fifteen-foot-wide sections of non-woven filter fabric will be laid down on the substrate. This needle-punched geotextile is meant to enable water drainage while preventing the loss of soil fines that contribute to turbidity and can lead to structural failure. Next, a four-inch layer of 1 ¼-inch clean crushed rock will be installed and compacted using grading equipment at low tide. Afterwards, 16-foot-long, 3-feet wide and 8-inch high pre-cast concrete planks will be installed parallel to the water and attached on either end to the Armorflex sections using connection plate assemblies secured with anchor cable. Armorflex is a flexible, interlocking matrix of cellular concrete blocks of uniform size, shape, and weight used for hard armor erosion control. Voids between the concrete planks will be filled with clean 5/8-inch crushed rock.

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Other primary users of Solo Point are Native American Tribes. The beach at Solo Point is used for tribal fishing and gatherings. The waters around Solo Point have been the subject of recent litigation to clarify language from the 1974 ruling by U.S. District Judge George H. Boldt which stated, "The usual and accustomed fishing places of the Nisqually Indians included at least the saltwater areas at the mouth of the Nisqually River and the surrounding bay, and the freshwater courses of the Nisqually River and its tributaries. The saltwater fisheries were shared with other Indians" (United States v. Washington 1974). A variety of shellfish, crustaceans, and other macroinvertebrates are present at Solo Point including, but not limited to, clams, crab, shrimp, marine worms, sea stars, and anemones. In 2016, the Court deemed that both the Squaxin and the Nisqually have fishing rights in the waters off Solo Point.

Under the preferred alternative, there may be temporary impacts to Tribal access during construction. Joint Base Lewis-McChord will coordinate the construction period with the local Tribes. The current degraded boat ramp would be replaced with a new, fully serviceable boat ramp; this new ramp will allow Tribal uses of the site that require boats. The boulders along the beach will limit vehicle access to the adjacent beach, thereby, protecting Tribal resources on the beach.

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JOINT BASE LEWIS-MCCHORD, WA 98433-9500

24 JUL 2019

Subject: Replacement of the Solo Point Boat Ramp, Information System for Architectural and Archaeological Records Data Project Number: 2019-06-04233, Joint Base Lewis-McChord, Pierce County, Washington

Dr. Allyson Brooks
State Historic Preservation Officer
Department of Archaeology and Historic Preservation
P.O. Box 48343
Olympia, Washington 98504-8343

Dear Dr. Brooks:

The U.S. Department of the Army at Joint Base Lewis-McChord (JBLM) proposes to replace one concrete boat ramp at Solo Point between DuPont and Steilacoom in Pierce County, Washington. Solo Point Boat ramp was constructed in 1965; the location of the proposed action is adjacent to JBLM property at Solo Point, a two-acre parcel that extends into Cormorant Passage in greater Puget Sound basin in Pierce County, Washington. Solo Point is the only portion of JBLM with marine access and is designated as an A-1 Military Facility delegated for the purpose of various amphibious training operations.

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then the resource agencies will be contacted to discuss if the work window for that species applies. Washington Department of Fish and Wildlife (WDFW) documented surf smelt spawning on the beach at nearby Tatsolo Point. Documented spawning habitat is a habitat that has been inspected and determined by WDFW to support actual forage fish spawning. Potential spawning habitat has the characteristics of forage fish spawning habitat but no actual spawning has been documented by WDFW. WDFW nor the Nisqually Reach Nature Center have survey data for Solo Point, however, there may be suitable substrate for sand lance spawning on the beach adjacent to the boat ramps and herring may spawn on the macroalgae waterward and around the lower elevations of the boat ramps.

Other primary users of Solo Point are Native American Tribes. The beach at Solo Point is used for tribal fishing and gatherings. The waters around Solo Point have been the subject of recent litigation to clarify language from the 1974 ruling by U.S. District Judge George H. Boldt which stated, "The usual and accustomed fishing places of the Nisqually Indians included at least the saltwater areas at the mouth of the Nisqually River and the surrounding bay, and the freshwater courses of the Nisqually River and its tributaries. The saltwater fisheries were shared with other Indians" (United States v. Washington 1974). A variety of shellfish, crustaceans, and other macroinvertebrates are present at Solo Point including, but not limited to, clams, crab, shrimp, marine worms, sea stars, and anemones. In 2016, the Court deemed that both the Squaxin and the Nisqually have fishing rights in the waters off Solo Point.

Under the preferred alternative, there may be temporary impacts to Tribal access during construction. Joint Base Lewis-McChord will coordinate the construction period with the local Tribes. The current degraded boat ramp would be replaced with a new, fully serviceable boat ramp; this new ramp will allow Tribal uses of the site that require boats. The boulders along the beach will limit vehicle access to the adjacent beach, thereby, protecting Tribal resources on the beach.

An in depth on-site review was conducted of the broad project scope. Though Solo Point is associated with aquatic military training operations, they pre-date the construction of the boat ramp making the ramp not eligible under Criterion A. Research did not yield an association with the lives of any significant persons in our past (Criterion B), nor is it exceptional from an engineering or stylistic perspective (Criterion C). This site has been previously assessed and it is not likely to yield information about history or prehistory (Criterion D). Although Ramp one retains a high level of integrity in all aspects (location, design, setting, materials, workmanship, feeling, and association) it is in mediocre condition. This resource is minimal in design and materials, there are no significant architectural elements or features of the boat ramp and it is not the best example of similar concrete boat ramps on military installation.

Joint Base Lewis-McChord has evaluated the project and has determined that the three boat ramps at Solo Point are not eligible for listing on the National Register and that the removal of these ramps will have no effect to historic properties at Solo Point. Joint Base Lewis-McChord requests State Historic Preservation Office's concurrence on the determination of Not Eligible for the three boat ramps at Solo Point and that the removal of these three ramps will have no effect on Historic Properties. The Environmental Assessment has been drafted and will be ready for review in the coming weeks.

If you would like a copy of the Environmental Assessment document or have any questions regarding this project or desire additional information, please contact Donna Turnipseed, at 253-966-1766 or at donna.l.turnipseed2.civ@mail.mil.

Sincerely,

Steven T. Perrenot, P.E.
Director, Public Works

Enclosure

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

September 3, 2019

Ms. Donna Turnipseed
Cultural Resources Department
2012 Liggett Avenue, Rm 305
JBLM
JBLM, Washington 98433

Re: Solo Point Boat Ramp Replacement Project
Log No.: 2019-06-04233-DOA

Dear Ms. Turnipseed:

Thank you for contacting our Department. We have reviewed the materials you provided for the proposed Solo Point Boat Ramp Replacement Project at Joint Base Lewis—McChord, Pierce County, Washington.

We concur with the definition of the Area of Potential Effect (APE) as detailed and illustrated in the letter and associated map.

We would also request receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

We look forward to receiving the results of your identification efforts, your cultural resources review, professional archaeological survey report, the results of tribal consultations, and your Determination of Effect.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. ). Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: *rob.whitlam@dahp.wa.gov*

State of Washington • **Department of Archaeology & Historic Preservation**
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065
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Allyson Brooks Ph.D., Director
State Historic Preservation Officer

February 20, 2020

Mr. Steven T. Perenot
Public Works
2012 Liggett Avenue, Rm 305
JBLM Garrison Headquarters
JBLM, Washington 98433

Re: Solo Point Boat Ramp Replacement Project
Log No.: 2019-06-04233-DOA

Dear Mr. Perenot:

Thank you for contacting our Department. We have reviewed the information and the professional archaeological survey report you provided for the proposed Solo Point Boat Ramp Replacement Project at Joint Base Lewis—McChord, Pierce County, Washington

We concur your Determination the ramps are not eligible. We concur with your Determination of No Historic Properties with the stipulation for professional archaeological monitoring and an unanticipated discovery plan.

In the event that archaeological or historic materials are discovered during the remaining project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe's cultural staff and cultural committee and this department notified.

We would also request receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. ). Should additional information become available, our assessment may be revised.

Thank you for the opportunity to comment.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 586-3080
email: *rob.whitlam@dahp.wa.gov*

**Nisqually Indian Tribe**
**4820 She-Nah-Num Dr. S.E.**
**Olympia, WA 98513**
**(360) 456-5221**

August 12, 2019

Ms. Donna Turnipseed
Cultural Resources Manager & Tribal Liaison
Joint Base Lewis-McChord
Environmental Division
Directorate of Public Works Building 2012, Room 305
Liggett Avenue
JBLM, WA 98433

Dear Ms. Turnipseed,

The Nisqually Indian Tribe thanks you for the opportunity to comment on:

**Re: Solo Point Boat Ramp Replacement**

The Nisqually Indian Tribe has reviewed the report you provided for the above-named project. The Nisqually Indian Tribe has no further information or concerns at this time. We do request that all excavations that extend beyond the footprint of the current boat ramps be monitored by a qualified archaeologist. Please keep us informed if there are any Inadvertent Discoveries of Archaeological Resources/Human Burials.

Sincerely,

Brad Beach
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# APPENDIX C. PUBLIC COMMENTS AND RESPONSES

[PENDING]