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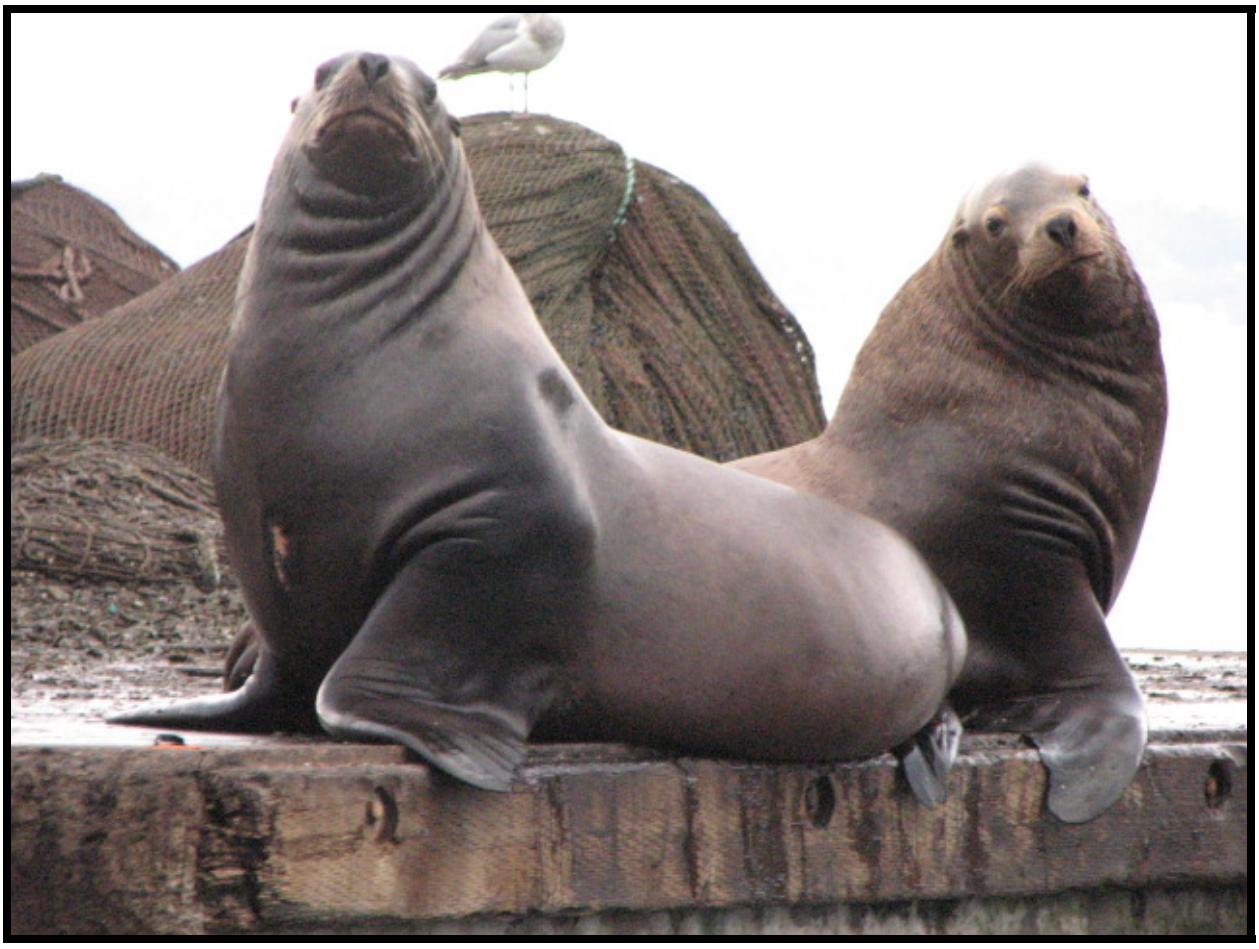
Manchester Fuel Department

Integrated Natural Resources Management Plan



June 2009

MANCHESTER FUEL DEPARTMENT
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

June 2009

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The plan will be reviewed annually and updated as necessary.

Date of Annual Review	Name and Title of Reviewer

Signature Page

This Integrated Natural Resources Management Plan is a long term planning document to guide the Manchester Fuel Department management of natural resources to support its military mission while protecting and enhancing natural resources for multiple uses, sustainable yield and biological integrity. The primary purpose of the plan is to ensure that natural resources conservation and military operations are integrated and consistent with legal and stewardship requirements. This plan and the use of the natural resources comply with legal mandates.

Reviewed and Approved by:

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Rear Admiral, U.S. Navy
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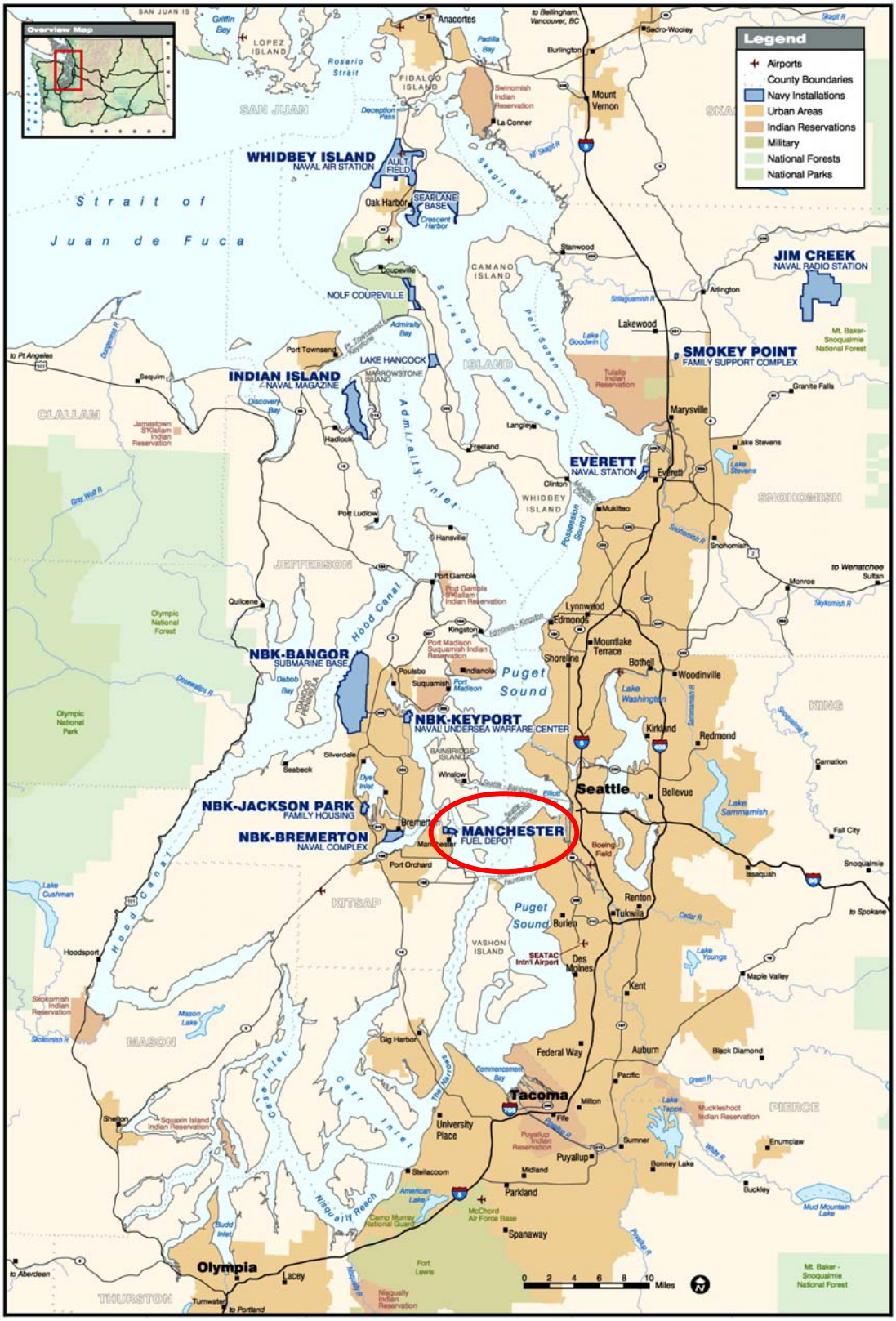

Figure 1-1. Location of Manchester Fuel Department within Puget Sound, Washington.

Figure 1-2. Aerial View of Manchester Fuel Department

TITLE

MANCHESTER FUEL DEPOT IMAGERY MAP SERIES

DEPARTMENT OF THE NAVY	FOR OFFICIAL USE ONLY	NAVY REGION NORTHWEST

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1.0 Overview of Integrated Natural Resources Management Plan

1.1 Purpose

This Integrated Natural Resources Management Plan is a planning document to guide the Manchester Fuel Department management of natural resources in support of the Navy's military mission, while protecting and enhancing natural resources for multiple uses, sustainable yield and biological integrity. The primary purpose of the plan is to ensure that natural resources conservation measures and military operations on the installation are integrated and compliant with stewardship and legal requirements.

This plan emphasizes ecosystem management, a process that considers the environment as a complex system functioning as a whole, not as a collection of parts. It recognizes the needs of people and the military mission as parts of the whole. Ecosystem management encourages partnerships among private, tribal, and local, state, and federal government interests.

1.2 Scope

This plan covers the federally-owned lands and tidal lands and waters of the U.S. Navy's Fleet and Industrial Supply Center - Puget Sound, Manchester Fuel Department.

1.3 Goals and Objectives

The installation's successfully implemented natural resources program will meet two basic goals, which are closely related and not mutually exclusive:

1) Ensure the sustainability of all ecosystems encompassed by an installation; and
2) Ensure no net loss of the capability of installation lands to support the DOD mission.

Manchester Fuel Department's natural resources program objectives are to accomplish the following:

a) Assign professionally trained personnel to this program and provide natural resource personnel the opportunity to participate in job-training activities and professional meetings.
b) Protect, conserve and manage the watersheds, wetlands, soils, forests, fish and wildlife and other natural resources as vital elements of a natural resources program.
c) Protect threatened, endangered, and sensitive (TES) species and critical habitats regulated by the Endangered Species Act (ESA).
d) Manage natural resources to provide outdoor recreation opportunities.
e) Use and care for natural resources in the combination best serving the present and future needs of the U.S. and its people.
f) Provide for the optimum use of land and water areas and access thereto while maintaining safety, security and ecological integrity.

1.4 Responsibilities

Responsibility for implementation of this program flows through the following chain of command:

1.4.1 Chief of Naval Operations, Environmental Readiness Division

The Chief of Naval Operations (CNO) shall serve as the principal leader and overall Navy program manager for the development, revision, and implementation of Integrated Natural Resources Management Plans (INRMPs) and shall:

a) Provide policy, guidance, and resources for the development, revision, and implementation of INRMPs and associated NEPA documents.
b) Represent the Navy on issues regarding development and implementation of INRMPs and delegate responsibility in writing.
c) Resolve high-level conflicts associated with development and implementation of INRMPs.
d) Approve all INRMP projects before INRMPs are submitted to regulatory agencies for signature.

1.4.2 Commander, Navy Installations Command

CNIC shall ensure that installations under their command develop, revise and implement INRMPs, if required, and shall:

a) Ensure that installations develop, revise and implement INRMPs.
    1) Reevaluate the need for an INRMP at all installations that currently do not have an INRMP.
    2) Following the initial evaluation, reevaluate all remaining installations that do not have an INRMP every five years.
b) Ensure that installations comply with DOD, DON and CNO policy on INRMPs and associated NEPA document preparation, revision and implementation.
c) Ensure the programming of resources necessary to maintain and implement INRMPs, which involves:
    1) The review of and endorsement of projects recommended for INRMP implementation prior to submittal for signature.
    2) The evaluation and validation of EPR-web project proposals.
d) Participate in the development and revision of INRMPs, which involves the maintenance of a close liaison with N45, NAVFAC and other budget submitting offices.
e) Provide overall program management oversight for all natural resources program elements.

1.4.3 Regional Commanders

Regional Commanders shall:

a) Ensure that installations comply with DOD, DON and CNO policy on INRMP and associated NEPA document preparation, revision and implementation.
b) Ensure that installations under their control undergo annual informal reviews as well as formal five-year evaluations.
c) Ensure the programming of resources necessary to maintain and implement INRMPs, which involves:
    1) The evaluation and validation of EPR-web project proposals.
    2) The funding of installation natural resources management staff.
d) Participate in the development and revision of INRMPs, which involves:
    1) Maintenance of a close liaison with the local/regional USFWS and appropriate state fish and wildlife agency and other INRMP stakeholders.
    2) Endorsement of the INRMP by Regional Commander signature.

1.4.4 Installation Commanding Officer

The Commanding Officer, Naval Base Kitsap shall ensure the preparation, completion and implementation of INRMPs and associated NEPA documentation for their installations and should systematically apply the conservation practices set forth in the Plans. Their role is to:

a) Act as stewards of natural resources under their jurisdiction and integrate natural resources requirements into the day-to-day decision-making process.
b) Ensure natural resources management and INRMPs comply with all natural resources-related legislation; Executive Orders and Executive Memoranda; and DOD, SECNAV, DON, and CNO directives, instructions and policies.
c) Involve appropriate tenant, operational, training or R&D commands in the INRMP review process to ensure no net loss of military mission.
d) Designate a Natural Resources Manager/Coordinator responsible for the management efforts related to the preparation, revision, implementation, and funding for INRMPs, as well as coordination with subordinate commands and installations.
e) Involve appropriate Navy Judge Advocate General (JAG) or Office of the General Counsel (OGC) Legal Counsel to provide advice and counsel with respect to legal matters related to natural resources management and INRMPs.
f) Endorse INRMPs via Commanding Officer signature.

An installation's Commanding Officer holds the highest-ranking position at the installation and ultimately is responsible for all aspects of the installation and its many functions. This includes ensuring that the INRMP is developed, implemented and fully supported. The Commanding Officer can facilitate the implementation of the INRMP by encouraging support down the chain of command. The Commanding Officer has to ensure that a process is established for early coordination between the Natural Resources Manager (NRM) and key installation staff. The Commanding Officer must also ensure that natural resources management is integrated with other installation management functions as well as with military training and testing activities.

1.4.5 Natural Resources Manager

The FISC PS Environmental Director is designated as the NRM at MFD. The NRM is primarily responsible for implementing this INRMP and coordinating with other personnel on the installation. Implementation responsibilities include identifying personnel, internal or external to the installation, with expertise to perform the work identified; identifying the appropriate funding source to accomplish the projects; and ensuring installation personnel are familiar with the contents of this INRMP. The NRM is responsible for providing staff support for the responsibilities identified in paragraph 1.4.4 and is also responsible for ensuring this plan is reviewed in coordination with the U.S. Fish and Wildlife Service (USFWS) and the Washington Department of Fish and Wildlife (WDFW).

1.4.6 Naval Facilities Engineering Command Northwest

Naval Facilities Engineering Command Northwest (NAVFAC NW) provides oversight and support for the development, maintenance and implementation of Navy Region Northwest's installation INRMPs and the natural resources program. NAVFAC NW's role in natural resources management is to:

a) Provide technical and contractual support to NRMs for the preparation, development and implementation of INRMPs and associated NEPA documents.

b) Facilitate and coordinate the issuance of INRMP related NEPA documentation.
c) Evaluate and disseminate information concerning new technology, methods, policies and procedures for use in the development and implementation of INRMPs.
d) Assist with the development of the INRMP Project Implementation Table, EPR and Legacy project proposals.
e) Provide technical and administrative guidance for the development and execution of contracts and cooperative agreements to develop and implement INRMPs.
f) Facilitate the acquisition of INRMP "mutual agreement" between the Navy, USFWS, and state fish and wildlife agencies.
g) Facilitate resolution of conflicts between the Navy, USFWS and state fish and wildlife agencies and other stakeholders if necessary.
h) Provide technical oversight and resources for forest management and agricultural outlease projects.
i) Provide technical oversight and budget approval of installation fish and wildlife/hunting and fishing fee and permit projects.
j) Compile, track and maintain INRMP metrics on the Natural Resources Data Call Station.
k) Review and sign INRMPs to ensure technical sufficiency.

In addition to the installation NRMs, NAVFAC NW has professionally qualified Senior Natural Resources Specialists in Forestry and Fish and Wildlife Management to support and assist the installation's Natural Resources Manager.

1.4.7 Other Federal Agencies

The Sikes Act directs DOD to cooperate with the U.S. Fish and Wildlife Service (USFWS) in the management of natural resources on DOD installations. The USFWS, along with the Navy and the appropriate state fish and wildlife agency, has signature approval authority over INRMPs and USFWS biologists may be called upon to provide assistance and support to the Natural Resources Manager, if necessary.

1.4.8 State Agencies

The Sikes Act also directs DOD to cooperate with the appropriate state fish and wildlife office in the management of natural resources on DOD installations. The appropriate state fish and wildlife office, along with the Navy and the USFWS, has signature approval authority over INRMPs and state biologists may be called upon to provide assistance and support to the NRM, if necessary.

1.4.9 Native American Tribes

Local area Native American Tribes with Usual and Accustomed (U&A) treaty harvest rights adjacent to the installation shall be consulted for comments and recommendations on the INRMP.

1.5 Authority

INRMPs are authorized under the Conservation Programs on Military Installations (Sikes Act), as amended; Public Law 86-797, 16 United States Code (USC) § 670(a) et seq., which requires military installations to prepare and implement INRMPs to provide for:

a) Fish and wildlife management, land management, forest management and fish and wildlife-oriented recreation.
b) Fish and wildlife habitat enhancement or modifications.
c) Wetlands protection, enhancement, and restoration, where necessary for support of fish, wildlife or plants.

d) Integration of and consistency among the various activities conducted under the plan.
e) Establishment of specific natural resources management goals and objectives and timeframes for proposed actions.
f) Sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of the fish and wildlife resources.
g) Public access to the military installation that is necessary and appropriate for the use described in (Reference (f)), subject to requirements necessary to ensure safety and military security.
h) Enforcement of applicable natural resources laws and regulations.
i) No net loss in the capability of military installation lands to support the military mission of the installation.
j) Such other activities as the Secretary of the Navy determines appropriate.

The Sikes Act also sets guidelines for the collection of fees for the use of natural resources such as hunting and fishing.

Over the last several years various guidance documents have been prepared on the interpretation of the Sikes Act Improvement Amendment (SAIA) and on INRMP preparation. Below are listed key Department of Defense (DOD) and Department of Navy (Navy) documents relevant to natural resource management.

a) *Memorandum on Implementation of Ecosystem Management in DOD.* This Memorandum issued by the Deputy Under Secretary of Defense on 8 August 1994, was the first formal statement of an ecosystem management approach to land management in the DOD. Ecosystem management is to be achieved through developing and implementing INRMPs. This Memorandum contains DOD's 10 principles of ecosystem management as an attachment, which were later included as an enclosure in DODINST 4715.3 (see below).
b) *DODINST 4715.3, Environmental Conservation Program (3 May 1996)* - This Department of Defense Instruction (DODINST) pertains to both natural and cultural resources management on DOD lands. It includes budgeting classifications for funding priorities and detailed information on the intent of INRMPs. Exhibit 1–1 lists the specific contents required in an INRMP document.
c) *Memorandum on Implementation of Sikes Act Improvement Amendment: Updated Guidance*. This Memorandum of the Under Secretary of Defense, issued on 10 October 2002, provides guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DOD and replaces the 21 September 1998 guidance Implementation of the Sikes Act Improvement Amendments. The October 2002 memorandum and its supplement issued in November 2004 emphasize implementing and improving the overall INRMP coordination process and focus on coordinating with stakeholders, reporting requirements and metrics, budgeting for INRMP projects, using the INRMP as a substitute for critical habitat designation, supporting military training and testing needs, and the INRMP review process.
d) *The Implementation of Sikes Act Improvement Amendment - Supplemental Guidance Concerning Leased Lands*, 17 May 2005. This document provides supplemental guidance for implementing SAIA requirements consistently throughout the Department of Defense. The guidance covers lands occupied by tenants or lessees or being used by others pursuant

to a permit, license, right of way or any other form of permission. INRMPs must address the resource management of all lands for which the subject installation has real property accountability, including leased lands. Installation Commanding Officers may require tenants to accept responsibility for performing appropriate natural resource management actions as a condition of their occupancy or use, but this does not preclude the requirement to address the natural resource management needs of these lands in the installation INRMP.

e) *OPNAVINST 5090.1C, Environmental and Natural Resources Management Manual – (SAIA 1997)* - Establishes broad policy and assigns responsibilities for the Naval Natural Resources Program. Naval Facilities Engineering Command is assigned overall program management responsibility with authority to establish, coordinate, and promulgate the program; to issue appropriate instructions to the Navy installations for implementation of the various natural resources programs; and to provide professional natural resources services and technical assistance, through Engineering Field Activities, to Navy and Marine Corps Installations. It also directs major claimants and intermediate commands to ensure that subordinate commands support natural resources programs on installations under their control. Installation Commanding Officers are tasked with:
   1) Requesting and using technical assistance from the appropriate NAVFAC office in developing and maintaining an effective natural resources program.
   2) Providing funding to ensure adequate support of the natural resources program.
   3) Applying practices set forth in approved natural resources management plans.
   4) Assigning specific responsibilities, centralized supervision and qualified personnel to the natural resources program.

f) *NAVFAC Real Estate Operations and Natural Resources Management Procedure Manual, P-73, Volume I, May 1987* - Establishes the governing format under which the INRMP is structured. This document addresses all CNO natural resources program requirements, guidelines and standards.

g) *Guidelines for Preparing Integrated Natural Resources Management Plans for Navy Installations*, September 1998. This guidance provides natural resources managers at Navy installations with an interpretation of what processes are needed to prepare INRMPs. This document is divided into three sections. The first section suggests a process to develop an INRMP. The second section addresses traditional technical areas to be included in the INRMP. The third section includes a discussion on implementing the INRMP. The Navy is developing updated INRMP guidance, including an INRMP template. This guidance may be issued in 2008.

1.6 Sustainability and Compliance

As a steward of military lands, the Navy recognizes that the installations in Navy Region Northwest are part of diverse and functioning ecosystems. Sustainability ensures the integrity of natural ecosystems over time while meeting the needs of the military mission. Sustainability goes beyond the definition of regulatory compliance, which is simply meeting the minimum requirements of laws and regulations that pertain to the environment. MFD's personnel will take an active approach to managing the natural resources of the installation and integrate all plans and operations into the concepts of biodiversity and sustainability of these resources.

1.7 Review and Revision Process

The effectiveness of the installation's INRMP will be evaluated annually. The evaluation will utilize the seven areas in the Navy's web-based Metrics Builder tool on the Natural Resources Data Call Station website (https://clients.emainc.com/dcs/navfac/index.htm). These seven areas are:

1) INRMP Implementation;
2) Partnerships/Cooperation and Effectiveness;
3) Team Adequacy;
4) INRMP Impact on the Installation Mission;
5) Status of Federally Listed Species and Critical Habitat (CH);
6) Ecosystem Integrity;
7) Fish and Wildlife Management and Public Use.

Use of the Metrics Builder to accomplish the INRMP Annual Reviews will also generate Navy conservation program metrics to measure effects of the conservation program on the installation's mission and the status of the installation's relationship with USFWS and WDFW.

The annual evaluation must be completed in cooperation with the appropriate field-level offices of the USFWS and WDFW. The cooperating partners will work together to measure both the successes and issues resulting from INRMP implementation. During these reviews, it may be determined that the installation's current INRMP is effective and is not in need of revision. With agreement from USFWS and WDFW, thorough written documentation of the annual informal evaluations may be used to substitute for the five-year formal review, thereby reducing the demands on the installation. In addition, minor changes can be made to the INRMP following annual reviews that will prevent the need for a more costly and time-consuming revision following the five-year review. Therefore, it is in the installation's best interest that it document annual reviews and work with USFWS and WDFW to utilize the annual review process to meet the five-year formal review requirement whenever possible.

1.8 Commitment of the Partner Agencies

No element of the SAIA is intended to either enlarge or diminish the existing responsibility and authority of the USFWS or WDFW concerning fish and wildlife responsibilities on military lands. The Sikes Act requires the INRMPs to be prepared in cooperation with the USFWS and appropriate state fish and wildlife agency (WDFW). An INRMP reflects mutual agreement of the parties concerning the conservation, protection and management of fish and wildlife resources. In addition, USFWS and the state fish and wildlife agency will review the INRMP as to the operation and effectiveness at least once every five years; however, it is preferred that this takes place annually.

1.9 Management Strategy

Ecosystem management is a goal-driven approach to environmental management that is at a scale compatible with natural processes; is cognizant of nature's time frames; recognizes social and economic viability within functioning ecosystems; and is realized through effective partnerships among private, local, state, tribal and federal interests. Ecosystem management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. The ecosystem management approach has the overarching goal of protecting the properties and functions of natural ecosystems. Over the long term, this approach will maintain and improve the sustainability and biological diversity of terrestrial and aquatic ecosystems while supporting sustainable economies and communities. Maintenance of healthy ecosystems supports realistic military training and testing, which in turn promotes mission readiness.

The Commander, Navy Region Northwest, considers this approach to be responsible stewardship. The Natural Resources Management Program is based on the premise that responsible stewardship and ecosystem management are synonymous and are compatible with integrated natural resources management.

1.9.1 Natural Resources Management Strategy

The natural resources management strategy for the Manchester Fuel Department begins with three words: "What, Where, When":

- **What:** what natural resources, habitats, vegetation, wildlife and water resources are on the installation?
- **Where:** where are these resources located?
- **When:** when are they present on the installation?

The NRM will use the best available data that helps answer the "What, Where, When" questions for management decisions for the installation.

1.9.2 Early Review and Risk Assessment

Early review of proposed actions and the assessment of environmental risk is achieved at the installation. Installation review process requires all new projects, programs and operations, or changes to existing projects, programs, and operations, be reviewed by the Environmental Division staff for potential impacts to natural resources. The NRM at Manchester reviews planned actions, assesses the risks to natural resources, and provides comments and/or alternatives to the action proponents that will minimize or eliminate the risks, if possible. The early review process also allows the installation an opportunity to identify the appropriate NEPA documents that will be generated based on the proposed action and the alternatives.

1.10 Restoration and Enhancement of Resources

The NRM will keep abreast of installation military requirements and identify areas heavily impacted by the operations and thus not appropriate for restoration activities. A ranking system must be developed in order to make efficient use of diminishing budgets and to focus restoration and monitoring activities. Mission, biological, seasonal or budgetary constraints may dictate when restoration projects can be implemented. Restoration planning must be detailed enough to allow for successful completion of the project. Monitoring for success or failure should also be a key component of any restoration or enhancement planning.

1.11 Current Conditions and Use

1.11.1 General Description

The Manchester Fuel Department (MFD) is a 234-acre site in eastern Kitsap County, Washington (see Figure I on page vii). It contains approximately 2 miles of Puget Sound shoreline at Orchard Point. The facility is divided into two separate areas by a county road and Little Clam Bay, a 26-acre lagoon that separates the base into 108 acres east of Little Clam Bay and 100 acres west of Little Clam Bay (Figure 2-1).

1.11.2 Installation History

The MFD property was acquired by the United States Army in 1898 and originally called Fort Mitchell. Fort Mitchell, initially used for gun emplacements to protect the navigable waterway of Rich Passage, occupied 385 acres. During World War I, the site held a torpedo testing station. The U.S. War Department proposed using the facility for surplus coal storage. The site was developed in 1939 as a petroleum fuel storage facility called U.S. Navy Fuel Depot Manchester Submarine and

Net Repair Facility. The fuel Depot delivered the first petroleum shipments in December 14, 1941 and became an important support facility for fleet and shore units during World War II.

During World War II, the Net Department and Fire Fighting School were established at the site. From approximately 1940 to the early 1950s, the Manchester Net Department functioned to construct, repair, and store submarine nets, made of steel cable and suspended from gate vessels across strategically important waterways. The Net Department was comprised of a large concrete pad and various structures including storage facilities and a sandblasting and paint building. Activities performed within this area of the site included net and buoy maintenance, sandblasting, painting and machining operations. The Net Department appears to have been disestablished in the early 1950s, when the area became devoted to boat storage.

Formally established in 1942, the initial purpose of the Fire Fighting School was to train World War II Navy personnel to extinguish ship fires. The school included a number of features which enabled typical ship fires to be set and extinguished. Associated equipment included underground storage tanks (USTs) for gas, diesel, and waste oil; fuel lines; water lines; and pumps. Three steel USTs were removed in 1994; however, at least five concrete USTs and several concrete simulators remain in this area.

Between approximately 1946 and 1962, the Navy filled the tidal lagoon between the Net Depot and Fire Training Area. The majority of the land filling occurred between 1946 and 1955. The bulk of this waste included building demolition debris and burnable garbage from the Puget Sound Naval Station, along with scrap metals, steel, old submarine nets, and other debris.

The Navy surplused 150 acres of the Station (the former Naval Station property other than the fuel Department) to the General Services Administration (GSA) in 1960, though Navy use reportedly continued until about 1962. In 1967, GSA transferred the Net Department and most of the Landfill Area to the Public Health Service, and the property subsequently fell under EPA control. The Fire Training Area was transferred in 1968 to the U.S. Fish and Wildlife Service (USFWS), and is now under the administration of NOAA/NMFS. The portion of the Station located north and northwest of the EPA and NMFS properties, including a small portion of the Landfill Area, was transferred to the State of Washington in 1970, becoming Manchester State Park.

In the late 1950s/early 1960s, the landfill, which has an average thickness of 6 feet and covers about 6 acres, was subsequently covered with a 1-foot thickness of sand and gravel to minimize contact with landfill waste. Further investigation into site contamination was formally conducted in 1987. Based on the findings, the Manchester site was listed on the Comprehensive Environmental Restoration and Compensation Liability Act (CERCLA) National Priorities List in 1994 and the Record of Decision (ROD) was signed in 1997.

The southeastern edge of the landfill (approximately 1,200 feet in length) was exposed along the Clam Bay shoreline, and landfill waste materials had eroded into the adjacent intertidal area. The selected clean up remedy included a landfill cap and shoreline protection system, a sediment cap in the intertidal area, and removal of contaminated soil and structures in the former fire training area.

The nearby Beaver Creek, though not contaminated, was also restored as part of the remedial actions to compensate for losses in wetland area caused by construction of the landfill cap and

shoreline protection system. As a result, this phased work included recreating 2,000 feet of floodplain and stream channel to its conditions prior to 1942, which is a significant step in Puget Sound recovery efforts. Biological monitoring at Beaver Creek has determined that three species of Pacific salmon, steelhead, and Cutthroat use Beaver Creek. Many of these species were using the newly restored stream almost as soon as construction was completed, indicating that restoration was successful in improving fish habitat.

1.11.3 Military Mission

MFD is a Defense Fuel Support Point of the Defense Logistic Agency, under the command of the Fleet Industrial Supply Center - Puget Sound. The Department's mission is to receive, store and issue on-specification aviation and marine petroleum products in support of DOD missions and operations, with appropriate controls to ensure safety, quality, inventory control and environmental protection. Fuel storage tanks are located both above and below the ground and effective safety and security precautions are in place due to the flammable nature of the various fuel mixtures stored and handled.

1.11.4 Operations and Activities

MFD's mission is to provide fuel to DOD, U.S. Coast Guard, National Oceanic and Atmospheric Administration and Canadian forces. The mission requires use of both terrestrial and marine areas within and immediately adjacent to MFD property. Following is a summary of land use by acreage under the integrated natural resources management at MFD.

Table 1-1. Land Use at MFD

Land Use	Area
Forested	160 acres
Freshwater wetlands	14 acres
Shoreline	2 miles
Surface water – fresh	1 acre
Surface water – estuarine	29.5 acres

Operationally constrained areas include fuel storage and conveyance systems within the installation. Fuel is transferred from the underground tanks east of Little Clam Bay to the fuel pier in pressurized pipelines. Fuel stored in the five above ground tanks and five underground storage tanks, west of Little Clam Bay, are transferred in above ground pipes. Photographs of the storage tanks and the fuel pier are provided in the Photograph Attachment, Photos 1 and 2.

1.11.5 Installation Restoration Sites

MFD contains a former polychlorinated biphenyl (PCB) site that has been managed as an Installation Restoration (IR) site. The IR site initially consisted of about 1.5 acres of undeveloped land. It is located along the southern boundary of the installation at the intersection of Alder Loop and Montecito Roads. The site is sparsely covered with grasses. It is located entirely within the installation inside a secondary fence enclosure and accessible only to authorized personnel. Land use in the vicinity is characterized as rural residential with forest and pasture land. The site is located on a north-trending ridge, which originates upgradient of the site. It was used as a dumping area for off-site ship bilge waste, transformer oil and other petroleum waste from local naval facilities from about 1955 to the mid 1970s when such dumping was discontinued due to construction of an oily waste treatment plant at MFD. One additional discharge occurred in the

mid- to late-1960s when jet fuel tanks were cleaned by pressure washing and the resulting wastewater discharged at the site.

Within the 3 acre fenced site, tests confirmed spots of elevated concentrations of PCBs and petroleum hydrocarbons in soils, sediments, water or biota (IT Corporation 1994). As a result, the Navy implemented a cleanup plan for the site that involved excavation and treatment of PCB-contaminated soils. When the excavation was successfully completed and the off-site analytical testing indicated that PCB clean-up levels were achieved, the water retention basins and excavated grids were back-filled with clean soil and the site was re-graded to provide for stormwater runoff detention. Topsoil was imported to cover the overall excavation area and the site was seeded with grasses indigenous to the area.

Natural resources staff will participate, as appropriate, in the IRP decision-making process by communicating natural resource issues on the installation to the RPM, attending Restoration Advisory Board meetings, reviewing and commenting on IRP documents (e.g., Remedial Investigation, Ecological Risk Assessment) and ensuring that response actions, to the maximum extent practicable, are undertaken in a manner that minimizes impacts to natural resources on the installation.

2.0 Physical Environment

2.1 Regional Setting

MFD is located in the Puget Lowland physiographic province of western Puget Sound. Landforms in this province developed as a result of glaciation that occurred 15,000 to 18,000 years ago. Topography associated with this portion of the Puget Lowland is flat to moderately steep. The predominant surface water feature is Puget Sound, a large water body consisting of a network of saltwater and brackish estuaries. Surface water features common to this portion of the province include freshwater lakes and streams. Streams, if not associated with a major watershed, are mostly small and ephemeral. There are no surface water streams in the industrial area of MFD, although a tidal lagoon (Little Clam Bay) occupies 17 acres of the west central area. Little Clam Bay is connected to Clam Bay, thence Rich Passage (a lobe of Puget Sound), through a culvert constructed under Olympic Drive.

Figure 2-1. Manchester Fuel Department – Fuel Pier.

Figure 2-2. Manchester Fuel Department – Oily Wastewater Tanks.

Figure 2.3. Manchester Fuel Department Installation Map.

MANCHESTER FUEL DEPOT BASE MAP

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N W E S

Clam Bay

Rich Passage

Little Clam Bay

Puget Sound

Upper Beaver Pond

Beaver Creek

Franco Pond

Beach Drive E

Montana Street (E)

Fuel Pier 213

Legend

- Bald Eagle Nest
- Land
- Other
- Water
- State Highway
- Local Road
- Fence
- Stream
- Pedestrian Trail
- Structure - Permanent
- Structure - Portable
- Structure - Temporary
- Slab
- Canopy
- Carport
- Shed
- Tower
- Pier / Dock
- Drydock
- Court / Field / Playground
- Electrical Substation
- Magazine
- Airfield - Landing
- Airfield - Other
- Tank - Fuel
- Tank - Unknown
- Tank - Water
- Oil/Water Separator
- Wastewater Lagoon
- Dam
- Bridge
- Tunnel
- PAVED
- UNPAVED
- Sidewalk
- Grass Area
- Brush Area
- Tree Area
- Wetland
- Water Body

Overview Map

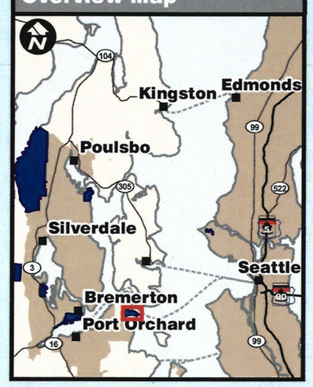


Table 2-1. Facility List.

2.1.1 Climate

The mid-latitude west marine climate of this area is seasonal and typically influenced by North Pacific weather patterns. The prevailing winds are generally from the southwest, influenced by a Pacific low-pressure system and from the northwest during brief periods of continental high pressure.

Precipitation is common from the fall through the spring due to prolonged periods of rain. The average annual precipitation for the Bremerton area is approximately 45 inches (US Navy 1995). The mean monthly precipitation reported from 1948 to 2007 at Bremerton National Airport ranged from less than 3 inches during summer months (June and July) to more than 15 inches during winter months (December and January). MFD is located approximately 10 miles southeast of this airport. The seasonal precipitation trend typical of the region affects the availability of surface water and groundwater.

The average maximum monthly temperature, reported in Bremerton from 1948 to 2007, was 59.9 F and the average minimum monthly temperature was 43.3 F. The cool marine air inhibits the extreme temperature fluctuations that can occur further inland. The Olympic Mountains, located 40 miles to the west on the Olympic Peninsula, shield the area from the intense winter storms that are generated in the North Pacific. The Cascade Mountains to the east help to modify the seasonal temperatures by obstructing air masses that travel overland.

Table 2-2. Monthly Climate Summary at Bremerton, Washington (1948 – 2007)

Month	Average Maximum Temperature (F)	Average Minimum Temperature (F)	Average Total Precipitation (in)
January	45.0	34.4	7.22
February	49.4	35.4	5.35
March	53.6	37.7	4.52
April	58.9	40.8	2.68
May	64.9	45.9	1.80
June	69.8	50.4	1.43
July	75.0	53.7	0.74
August	75.3	53.7	0.86
September	70.2	50.0	1.63
October	60.6	44.2	3.95
November	50.7	38.6	7.14
December	45.7	35.4	7.71
Annual	59.9	43.3	45.02

Western Regional Climate Center 2005

2.1.2 Geology

The geology of the Puget Lowland is comprised of a sequence of unconsolidated glacial deposition overlying Tertiary volcanic and sedimentary rocks (US Navy 1995). The glacial sequence varies in composition and thickness depending on location. The geology of MFD is

composed of reworked beach deposits and bedrock along the immediate shoreline to a thin sequence of glacial till and bedrock over the remainder of the area. There are three main geologic types: Vashon Drift and Double Bluff Drift in the upland areas, and raised marine terraces covering Orchard Point and the northern shoreline.

2.1.3 Seismology

One earthquake fault trace exists directly to the north of the facility. More than 200 earthquakes have occurred in the Puget Sound region since 1840; however, most were less than 5.0 magnitude on the Richter scale. In recent years, four earthquakes were rated as follows: 1939, magnitude 5.9; 1945, magnitude 6.1; 1949, magnitude 7.1; 1965, magnitude 6.5; and 2001, magnitude 6.8. The area is classed within the second highest risk rating and requires enforcement of building code specifications. Seismic factors were partially incorporated into the facility design and, consequently, tank or pipe damage has never occurred as a result of seismic activity (US Fish and Wildlife Service 1988).

2.1.4 Topography

Little Clam Bay divides MFD into two areas. The area west of the Bay contains approximately 100 acres and rises from sea level to 160 feet. The eastern portion is approximately 108 acres in area and rises to 249 feet in elevation. Most of the outer perimeter of the eastern portion of the installation falls into the intermediate slope stability category, indicating general slopes greater than 15 percent. Site development is somewhat constrained by the divided nature of the installation property and the steep slopes on the eastern portion of the property.

2.1.5 Soils

The soil is predominantly Melbourne loam, terrace phase. The top 1 to 2 inches of soil is organic matter; underlain with 12 to 13 inches of loam to loamy fine, sandy soil. Bedrock is composed of shale, sandstone, or conglomerate and is located at a depth of 14 to 15 inches. The beaches vary from rocky points to gravelly sand or mud.

The industrial and southeast area of the facility underwent a subsurface investigation in 1995. This study revealed that this area of MFD is underlain with unconsolidated soil and sediment reaching a depth of more than 100 feet. The portion of the industrial area immediately adjacent to Puget Sound is directly underlain by fill material of unknown origin. The study reported unconsolidated soil and sediment varying from 2 to more than 30 feet thick across the immediate industrial area. Bedrock was encountered near the surface in the northern areas of the site (US Navy 1995).

Figure 2-4. Manchester Fuel Department Geology and Slope.

MANCHESTER FUEL DEPOT
GEOLOGY AND SLOPE STABILITY

DEPARTMENT OF THE NAVY	FOR OFFICIAL USE ONLY	NAVY REGION NORTHWEST

DOCUMENT NUMBER	TILE	PRINT DATE
10 - MA - 00000		8 JULY 08

PROJECTION	SCALE	SIZE
STATE PLANE, WA NORTH DATUM NAD 83, FEET	1 in = 500 ft	B

Pacific NW GeoReadiness Center

Submit questions, requests, or updates to the Pacific NW Georeadiness Center: (360) 396-6047

IF SHEET IS LESS THAN 11" X 17" IT IS A REDUCED PRINT AND THE SCALE IS REDUCED ACCORDINGLY

0 1,000 2,000 Feet

0 0.1 0.2 0.3 Miles

Upper Beaver Pond

Beaver Creek

Qa

Clam Bay

OEm(b)

Franco Pond

Qgt

Rich Passage

OEm(b)

Little Clam Bay

Miller Creek

Qga

Qt

Qgt

Fuel Pier

Puget Sound

N W E S

Geologic Units

Qa- Quarternary, alluvium

Qga- Pleistocene, advance continental glacial outwash, Fraser-age

Qgt- Pleistocene, glacial till, Fraser-age

OEm(b)- Oligocene-Eocene, marine sedimentary rocks

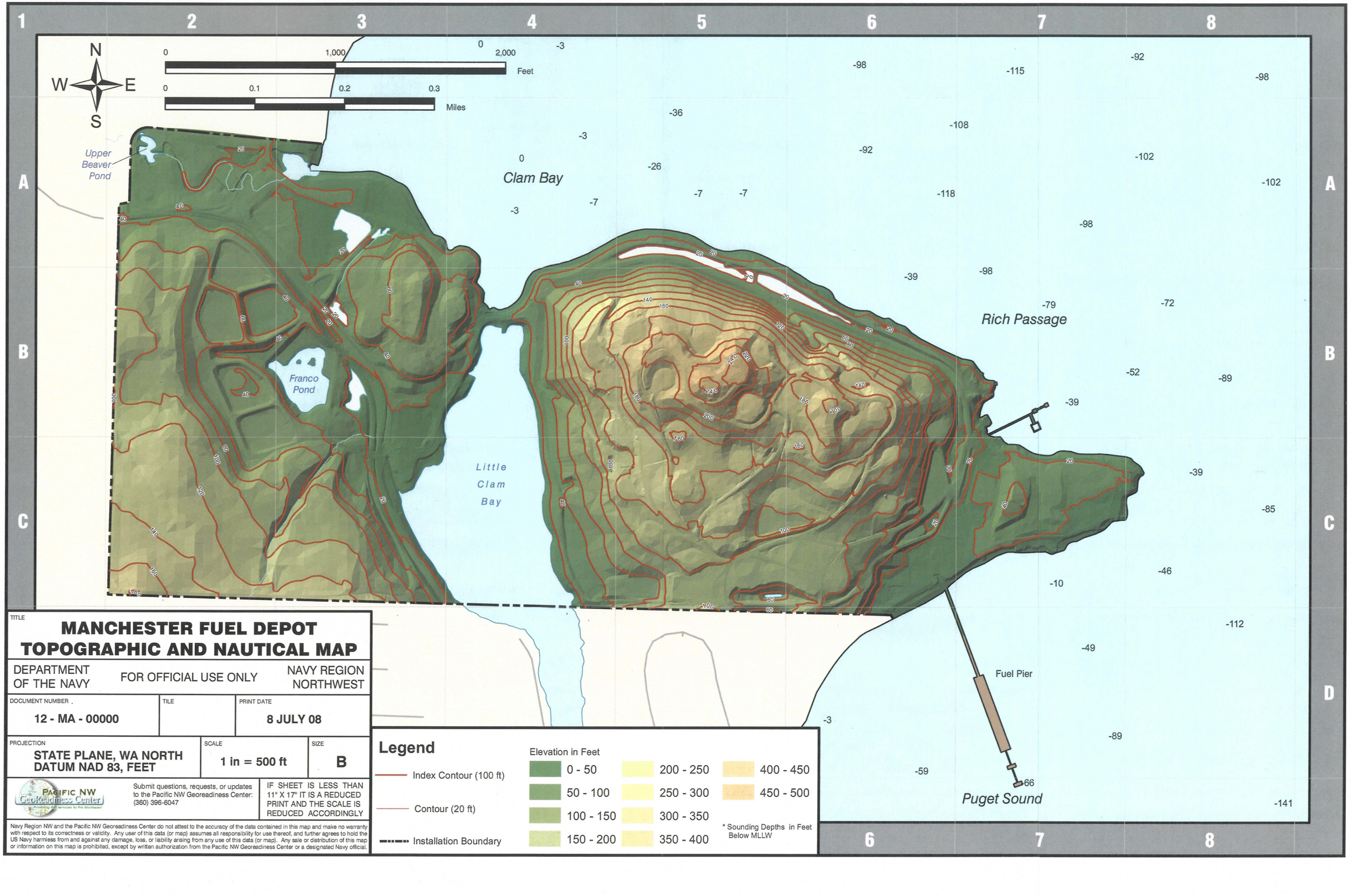
Slope Stability

Stable slope

Intermediate slope

No Data

Figure 2-5. Manchester Fuel Department Topography.



TITLE

MANCHESTER FUEL DEPOT TOPOGRAPHIC AND NAUTICAL MAP

DEPARTMENT OF THE NAVY	FOR OFFICIAL USE ONLY	NAVY REGION NORTHWEST

DOCUMENT NUMBER	TILE	PRINT DATE
12 - MA - 00000		8 JULY 08

PROJECTION	SCALE	SIZE
STATE PLANE, WA NORTH DATUM NAD 83, FEET	1 in = 500 ft	B

PACIFIC NW GeoReadiness Center

Submit questions, requests, or updates to the Pacific NW Georeadiness Center: (360) 396-6047

IF SHEET IS LESS THAN 11" X 17" IT IS A REDUCED PRINT AND THE SCALE IS REDUCED ACCORDINGLY

Legend

- Index Contour (100 ft)
- Contour (20 ft)
- Installation Boundary

Elevation in Feet

- 0 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- 200 - 250
- 250 - 300
- 300 - 350
- 350 - 400
- 400 - 450
- 450 - 500

* Sounding Depths in Feet Below MLLW

2.1.6 Marine Waters

The marine environment within MFD consists of marine waters, shoreline habitat and estuarine environments. There are approximately 2 miles of saltwater shoreline at MFD that provide habitat to a range of marine and bird life. The northern portion of MFD shoreline lies along Clam Bay, a small protected estuary where Beaver Creek empties into Puget Sound. The MFD shoreline to the south and east of Clam Bay includes Orchard Point and similar more exposed shoreline areas extending south to the town of Manchester.

2.1.6.1 Clam Bay

A NOAA marine inventory conducted in 1985 characterized the Clam Bay shoreline as consisting of sand and cobble beaches with stable sediments and riprap structures (NOAA 1985). The beach area supports several hardshell clam species, including horse, butter, and manila clams, as well as Japanese oyster, Olympia oyster, cockle and bay mussel. The tidal flats of Clam Bay are exposed during tidal cycles but are sheltered from normal wind-generated surf. Eelgrass beds are scattered along the subtidal margins in Clam Bay.

The shoreline section to the south and east of Clam Bay is more exposed to wind and surf influences and the habitat transitions towards pocket beaches along with exposed rocky shores. The rocky substrate along Orchard Point provides suitable substrate for kelp beds. This rocky and exposed habitat can be found south of Orchard Point until approximately the start of the MFD industrial area. The shoreline habitat in this area is similar to that of Clam Bay, with sand and cobble beaches and interspersed eelgrass beds.

2.1.6.2 Little Clam Bay

Little Clam Bay is a shallow, artificially impounded estuarine lagoon of approximately 26 acres. At one time it was completely open to tidal action from Clam Bay and Rich Passage and as such was a tidally influenced mudflat habitat. In 1960, the Washington State Department of Fisheries installed a weir at the mouth of the estuary to propagate anadromous fish. As a result, water exchange has been altered to the extent that Little Clam Bay no longer functions as a tidal mud flat. The result has been an increased incidence of algal blooms, higher water temperatures, increased biological oxygen demand (BOD) and reduced salinity. Water temperatures in the summer are too high to artificially raise large numbers of hatchery fish, so it is not used for that purpose today. The bay receives limited freshwater inflow from a small, unnamed tributary stream, freshwater seeps, and high saltwater inflow through a 48-inch culvert at high tide from Clam Bay. The result is brackish water impoundment habitat.

Little Clam Bay provides a unique habitat for sustaining both fresh and saltwater fish, as well as anadromous fish species. A 24-hour gillnet survey revealed the presence of nine different fish and marine species (Table 2-3; USFWS 1988). While the dataset is quite limited and, therefore, does not allow calculations of population abundance or diversity, it does indicate that the habitat functions to support a fairly large number of different marine life species. Waterfowl also use nesting platforms located on Little Clam Bay. Additionally, Olympia oysters, indigenous to the west coast of North America, have been found on MFD beaches in two locations. These oysters are listed as a state candidate threatened species and a state priority species.

Table 2-3. Results of Gillnet Sampling in Little Clam Bay Conducted February 1987 (USFWS 1988).

Species	Number Collected
Cutthroat trout (*Oncorhynchus clarkii*)	10 adults
Chinook salmon (*Oncorhynchus tshawytscha*)	1 jack/adult
Sculpins (*Cottidae*)	15
Spiny dogfish (*Squalus acanthias*)	2
Pacific herring (*Clupea pallasii)*	15
Surf perch (*Embiotocidae*)	4
Flounder (*Bothidae*)	1
Dungeness crab (*Cancer magister*)	Juvenile (no number)
Smelt (*Osmeridae*)	2

Sea stars are commonly observed on and around the inlet of the culvert and tide gate, on the inside of Little Clam Bay. They may have entered to feed on Olympia oysters, which are artificially propagated in Little Clam Bay.

2.1.7 Fresh Waters

MFD contains several freshwater ponds, streams, and wetland areas. Each of the major freshwater systems is described further below.

2.1.7.1 Franco Pond

Franco Pond is an isolated pond located in the western segment of the facility. It was developed into a freshwater resource and wildlife viewing area. The pond lies in a depression downslope from the above-ground storage tanks and is fed by small surface drainages as well as subsurface flow. There is an underground drainage system below the above-ground tanks that collect and funnel a large flow of spring water from the wooded area behind the tanks. The pond is approximately 30,000 square feet (0.70 acres) in size and surrounded by open grassland. In 1987, two islands were constructed in Franco Pond to create additional habitat for ducks and Canada geese. Aquatic vegetation in the form of cattail and various sedges is the primary riparian vegetation surrounding the pond. Habitat enhancements such as installation of wood duck nesting boxes and bat boxes have been conducted at Franco Pond regularly throughout MFD's recent history.

2.1.7.2 Beaver Creek

Beaver Creek originates upland about 4.5 miles off-base and flows through the northwest corner of MFD to Clam Bay. Beaver Creek supports both resident and anadromous fish populations. Information from WDFW Priority Species and Habitat (PHS) Program indicates that Coho salmon (*O. kisutch*), chum salmon (*O. keta*) and searun cutthroat trout (*O. clarkii*) are priority anadromous salmonids that inhabit Beaver Creek. Non-game fish, primarily sculpin, also have access to Beaver Creek. In 2004, the Suquamish Tribe implemented fish count studies at the mouth of Beaver Creek. These studies found that more than 1,600 Coho salmon returned to Beaver Creek. The recent success of this run has likely been aided by the Navy's coho salmon raising efforts.

In November 2001, Beaver Creek restoration was initiated on MFD property immediately south of the Manchester Annex Superfund site. Initially designed as off-site mitigation for impacts to

approximately 0.7 acres of forested wetland and vernal pools near the former landfill site, the restoration project was continued into downstream areas in 2004.

Restoration planning began in 2003 for the downstream portion of Beaver Creek, out to where it joins Clam Bay. Construction began in 2006 and was completed in 2007. Approximately one acre of Clam Bay estuary was created and an additional 3.5 acres of estuarine and riparian habitat was created and/or enhanced. This project was developed through cooperative efforts between the United States Navy, the Suquamish Tribe and the Mid-Puget Sound Fisheries Enhancement Group (MSFEG). The completed project consisted of installing a concrete arch culvert at the road that crosses the lower portion of the new alignment of Beaver Creek, removing an outlet fish ladder at the mouth entering Clam Bay, reconstructing the greater estuarine habitat, and reestablishing the saltwater wedge into the historic upper estuary location. The new arch culvert accommodates tidal fluctuation into the newly created upper estuary. The installation of the arch culvert allows Beaver Creek to bypass the old concrete fish ladder (approximately 50-feet long and 4-feet wide) and 48-inch metal culvert under the roadway.

The project also removed the lower dam and fish ladder and replaced these features with a naturally functioning stream and recovered estuary. This completed the removal of all barriers along Beaver Creek within MFD property. The estuary reconstruction carved out approximately 22,000 cubic yards of fill and restored the topography to a condition that was similar to pre-fill conditions.

Figure 2-6. New Arched Culvert at the Mouth of Beaver Creek.

Two forks of a small, unnamed stream originate south of the installation in wetlands and springs and flow northerly into the installation. They meet west of the PCB restoration site and then flow through a culvert under Beach Drive and then into Little Clam Bay. Beach Drive is a Kitsap County road that bisects the installation; see Figure 2-1. The stream has not been investigated for fish use. In 1998, the Navy Forester planted 1,000 western redcedar seedlings along the sides of these small stream forks to improve permanent shading of the streambeds.

2.1.8 Water Quality

Washington Department of Ecology's 2002-2004 final Section 303(d) list shows Beaver Creek to be a "Category 5 – Polluted Waters", for failing fecal coliform standards. It is also a "Category 2 – Waters of Concern", for failing to meet dissolved oxygen standards. The proposed list for 2008 recommends Beaver Creek be categorized as a "Category 5 – Polluted Waters", for dissolved oxygen and fecal coliforms.

2.2 General Biotic Environment

Manchester Fuel Department is located in the Puget Trough Ecoregion. The Puget Trough Ecoregion is nestled between the Cascade and Olympic Mountains and the Willapa Hills. It includes Puget Sound and the lowlands south to the Columbia River. The ecoregion extends north into the Georgia Basin in British Columbia and south into the Willamette Valley in Oregon. Roughly eight percent of Washington is within this ecoregion.

The Puget Trough Ecoregion includes the marine waters of Puget Sound and the lowlands generally up to about 1,000 feet above sea level. A few isolated highlands within the ecoregion extend up to 2,400 feet in elevation.

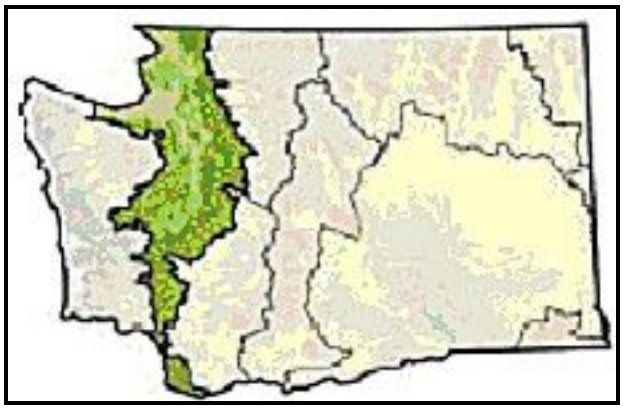


Figure 2-7. Map Showing the Puget Trough Ecoregion.

The Puget Trough Ecoregion is characterized by glacial landforms and cool, relatively mild climate dominated by Pacific maritime weather systems. Historically, the uplands were covered in extensive conifer forests, with prairies and other open areas found in the southern portion of the ecoregion.

2.2.1 Threatened and Endangered (T&E) Species and Species of Concern

Federal Threatened and Endangered (T&E) species that occur or potentially could occur on MFD property or in the adjacent waters are the bald eagle (Haliaeetus leucocephalus), marbled murrelet (Brachyramphus marmoratus), bull trout (Salvelinus confluentus), southern resident killer whale (Orcinus orca) and chinook salmon (Oncorhynchus tshawytscha). No T&E plant species are known to exist on MFD grounds.

There are other T&E species that migrate into Puget Sound and potentially may travel near the MFD shoreline but their presence would be extremely rare. There are humpback whale (Megaptera novaeangliae), leatherback sea turtles (Dermochelys coriacea), and Steller sea lions (Eumetopias jubatus).

2.2.2 Wetlands

The National Wetlands Inventory (NWI) compiled by the USFWS includes one area within MFD: the Beaver Creek area, including the upper and lower ponds. It is classified as palustrine open-water, permanently flooded (POWH). Because the USFWS inventory was based on aerial photography it often does not include smaller wetlands. MFD contains several other small wetland areas as follows:

Spill containment basin: Located between North Dike Road and Olympic Drive East, this man-made basin extends from near the dike at Little Clam Bay approximately 1,400 feet to the east. It occupies an area of approximately 8 to 10 acres. This basin is used in spill containment and as a stormwater catchment basin. It is vegetated with wetland species such as cattails (*Typha latifolia*), common duckweed (*Lemna minor*) and rushes (*Juncaceae spp.*).

Franco Pond marsh: A marsh of approximately 1 acre occupies the southwest shoreline of Franco Pond.

Beaver Creek wetland: A marsh of approximately 1 to 2 acres is located on the south side of Beaver Creek about 300 feet upstream of the Clam Bay estuary. It is associated with the Beaver Creek riparian corridor and has been incorporated into the restored Beaver Creek floodplain (GeoEngineers 2004).

Olympic Drive West wetland: A marsh of approximately 1.5 acres is located south of Olympic Drive West. This marsh is bisected by both Hemlock and Spruce roads, but there is hydraulic continuity underneath the roadbeds.

West Clam Bay Road wetland: A marsh of approximately 0.5 acres is located on the west side of West Clam Bay Road, just north of the oil/water separator No. 7 facility.

All these wetlands are important for water quality and purification, flood and erosion control, fish and wildlife habitat and recreation use, such as nature observation.

2.3 Flora

2.3.1 Terrestrial Vegetation

The Manchester Fuel Department is within the *Tsuga heterophylla* Zone (Western Hemlock Zone), a vegetative zone which occupies extensive areas of western Washington. Within this Zone, forests typically consist of Western hemlock (*Tsuga heterophylla)*, Douglas fir (*Psuedotsuga menziesii)*, and Western red cedar (*Thuja plicata)*, with an understory of sword fern (*Polystichum munitum)*, vine maple *(Acer circinatum)* and salmonberry *(Rubus spectabilis*) (Franklin and Dyrness 1988). Riparian and wetland plant communities tend to be dominated by red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), willow (*Salix spp.*) and salmonberry.

A thorough inventory of MFD plant species was conducted in 1997 and 1998 (Grassley *et al.* 1999). Survey efforts specifically attempted to identify plant species listed by the USFWS and the Washington Natural Heritage Program (WNHP) that are likely to exist near MFD. At the time of the 1997 survey, a total of 29 plant species were listed at any level by the USFWS and WNHP that were known to exist within the vicinity of, or were likely to occur on, MFD. None of these 29 listed species were positively identified at MFD during the 1997 survey. Since the time of the survey, an

additional 5 plant species have been added to the WNHP list; no field surveys have specifically attempted to confirm the presence of these species on MFD.

MFD forested lands consist of about 80 acres of established forest and approximately 80 acres of 1-year-old to 12-year-old plantation trees, for a total of 160 acres of managed forest land. The majority of existing trees are 50 to 80 years old and consist primarily of Douglas fir, western hemlock, western red cedar, Sitka spruce, red alder and bigleaf maple.

2.3.1.1 Marine Vegetation

Eelgrass beds are scattered along the subtidal margins in Clam Bay and may be found on both sides of the fuel pier.

2.3.2 Fauna

2.3.2.1 Marine Invertebrates

A NOAA marine inventory conducted in 1985 characterizes the Clam Bay shoreline as sand and cobble beach with stable sediments and riprap structures (NOAA 1985). The beach area supports several clam species, including horse, butter, manila clams and cockles as well as Japanese oyster, Olympia oyster and bay mussel.

2.3.2.2 Pelagic, Demersal, and Anadromous Fish

Before, during and after the replacement of the Fuel Department's large fuel pier in 1992-1993, the National Marine Fisheries Service monitored water quality, eelgrass distribution and density, juvenile salmonid migration patterns and fish abundance near the pier (Weitkamp 1994). Monitoring occurred in 1991, 1992 and 1993. Water quality parameters near the construction site were unexceptional and fell within the expected norms for this part of Puget Sound (USACOE 2001).

A total of 42 fin fish species were observed, with 37 collected in the beach seine and 9 collected in the purse seine. Twelve species collected in 1993 were not recorded in either 1991 or 1992. Most fish identified were typical of Puget Sound intertidal beaches. The most abundant species caught by beach seines were Pacific sand lance (*Ammodytes hexapterus*) and juvenile chum salmon (*Oncorhynchus keta*). For the purse seines, the most abundant fishes were juvenile chum salmon and coho salmon (*O. kisutch*). Other salmonids captured include: chinook (*O. tshawytscha*) salmon, cutthroat trout (*O. clarki*), and steelhead trout (*O. mykiss*).

Fish surveys within all freshwater bodies on the installation detected chum, steelhead, coho and cutthroat trout in upper Beaver Pond and Beaver Creek.

All five species of North Pacific salmon use the nearshore and offshore areas within the Puget Sound during juvenile and adult migration periods of their life cycle. During their marine occupancy life stage, all five species contribute to a substantial recreational and commercial fishery. Three species, chinook salmon, coho salmon and chum salmon occur within the immediate vicinity of the installation. A 2004 survey by the Suquamish Tribe found that more than 1,600 coho salmon returned to the mouth of Beaver Creek on MFD property.

A salmon-rearing program was operated by the Manchester Fuel Department from 1986 until 1998, except for 1992, and from 2002-2005. The first net pen was located in Little Clam Bay and

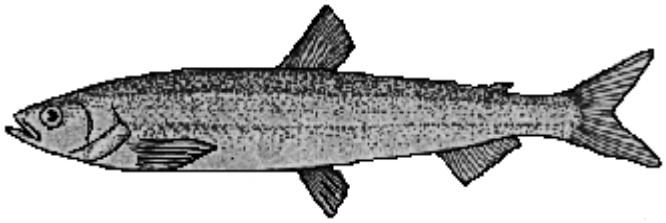
started with 35,000 yearling coho salmon. Poor water quality and high water temperatures required the pen to be relocated to the small boat pier where up to 150,000 coho were released during the last 8 years of the project. The program objective was to delay the release of salmon smelts by 5 to 6 months from their normal ocean migration period in the hopes they would remain resident in Puget Sound. This program was re-instituted in 1993 with 150,000 coho salmon and continued each year through 1998. The program restarted in 2002 and 2003 using the salmon quota of the Suquamish Indian Tribe. The project was discontinued after that time due to the down-sizing of the Manchester Fuel Department workforce.

2.3.2.3 Forage Fish

Herring, sand lance and surf smelt are considered forage fish (fish species that provide a food source for a wide array of other species). All spawn near Manchester. Surf smelt and sand lance tend to spawn in sediment depositional beaches, and herring deposit eggs within eelgrass beds. Forage fish are an important and abundant fish species in Washington. As the name implies, the significance of forage fish is related to the critical part they play as the prey base for a large variety of other marine organisms, their popularity as recreational fishing bait and their significance to commercial and subsistence fisheries.

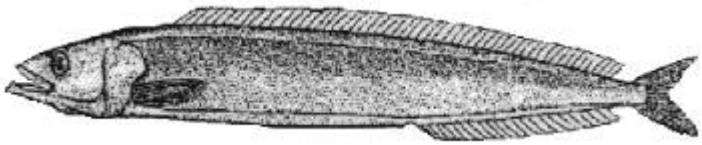
WDFW 2005

Pacific herring (*Clupea harengus pallasi*)



WDFW 2005

Surf smelt (*Hypomesus pretiosus*)



WDFW 2005

Sand lance (*Ammodytes hexapterus*)

Figure 2-8. Forage Fish Species.

2.3.2.4 Reptiles and Amphibians

Four different species of amphibians were trapped on MFD property in a 1997 study: northwestern salamander (*Ambystoma gracile*), Pacific treefrog (*Pseudacris regilla*), red-legged frog (*Rana aurora aurora*) and roughskin newt (*Taricha granulosa*). The salamander was found most frequently, in eight different pond/wetland habitats throughout the installation. The roughskin newt was found in only at Franco pond.

Three different species of reptiles have been positively identified on MFD: the common garter snake (*Thamnophis sirtalis*), the western terrestrial garter snake (*Thamnophis elagans*), and the northern alligator lizard (*Elgaria coerulea*). Based upon the known habitat conditions within MFD and the expected distributions of other reptiles, it is predicted that four other species of reptiles may inhabit MFD, including the northwestern garter snake (*Thamnophis ordinaoides*), the slider (*Trachemys scripta*), the painted turtle (*Chrysemys picta*) and the rubber boa (*Charina bottae*).

2.3.2.5 Terrestrial Mammals

Eight species of small mammals were identified on MFD property during the 1997 survey. An additional nine species may occur based upon their habitat needs, but were not confirmed present during the survey. The only large game species that occurs within MFD is the Columbian black-tailed deer (*Odocoileus hemionus columbianus).* Since 1976, this population has undergone extensive study with the aim of maintaining its long-term viability. Several factors have contributed to fluctuations in deer population size at MFD: predators, such as domestic dogs and coyotes that have been spotted on the installation; site constraints such as fences and shoreline which limit deer migration on and off MFD property. The population size in 1976 was estimated at 65 deer (Rappel 1976). In 1987-1988, the population was again estimated to be approximately 65-75 deer (Raedeke 1988). A deer harvest reduced the population to 22 deer by 1993 (Livezey 1996). No formal deer surveys have been conducted since that time. However, deer are regularly seen throughout the base.

A small population of red fox (*Vulpes vulpes*) currently exists on the installation. Four species of bats were positively identified during the 1997 survey, while an additional five species are predicted to occur within the installation area. The river otter (*Lutra canadensis*) is commonly found in the vicinity of MFD in both freshwater and marine environments. Their foraging takes them into Little Clam Bay and along Clam Bay proper and along the mouth of Beaver Creek. They favor a rocky shoreline area on the west side of the Little Clam Bay outfall.

2.3.2.6 Marine Mammals

Harbor seals and California sea lions are the marine mammals most likely to be spotted near the MFD. Harbor porpoises, gray whales, killer whales and humpback whales have all been spotted in or near Rich Passage and Yukon Harbor.

2.3.2.7 Birds

MFD provides suitable habitat for a variety of aquatic and terrestrial birds. A total of 42 different species of aquatic birds were observed at four tidal and freshwater wetlands surrounding MFD during spring, summer, and fall 1997 and winter 1998. The most common aquatic species are the mallard *(Anas platyrhynchos*) which are mainly found in Little Clam Bay. Wood ducks (*Aix sponsa*), mallards and buffleheads are common on Franco pond, while Western grebes, brandts, coromorants, surf scoters, harlequins and red-breasted mergansers frequent the saltwater areas. Of the four tidal wetland areas adjacent to MFD (Clam Bay, Rich Passage,

North Orchard Point, and South Orchard Point), Clam Bay was used by the greatest number of aquatic birds (Grassley *et al.* 1999). Little Clam Bay is an especially important environment for aquatic birds. A small stand of trees situated on the northern shoreline of Little Clam Bay is used as a communal site for roosting cormorants and great blue heron (*Ardea herodias)*. High quality habitat for the heron is considered a grove of trees that is at least one acre in area that is located less than 275 yards from water (Short and Cooper 1985).

A list of terrestrial birds recorded during surveys on MFD during the same time period reveals 80 different species present on MFD property. The most common terrestrial species are the song sparrow (*Melospiza melodai*) and the winter wren (*Troglodytes troglodytes*). Red-tailed hawk nests occur on MFD above Franco Pond. The southwest portion of the property probably provides the most important, relatively continuous tract of forest remaining at MFD. Many species of forest songbirds breed in this area or utilize it during the winter months. This is also prime habitat for the pileated woodpecker.

Figure 2-9. Little Clam Bay.

Figure 2-10. Rich Passage.

3.0 Environmental Management Strategy and Mission Sustainability

3.1 Supporting Sustainability of the Military Mission and the Natural Environment

The fundamental components of MFD's natural resources management are personnel and funding. OPNAVINST 5090.1B requires each installation to have, in writing, a designated Natural Resources Manager (NRM). This individual is to be a professional knowledgeable and trained in the particular resource issues for that installation. At MFD, the NRM is the Environmental Director, a permanent, funded position. This position reports to the Officer In Charge of the installation. The NRM can call upon other environmental professionals within the Navy Region Northwest and Naval Facilities Engineering Command Northwest, to assist in the management of natural resources. The NRM will integrate environmental protection, conservation, enhancement/restoration and outdoor recreation within the constraints of the installation's military mission. At the same time, the NRM will identify risks to the environment that may result from military activities and report these potential risks to the Command so that alternatives may be developed that reduce or eliminate the potential impacts.

3.2 Natural Resources Consultation Requirements

3.2.1 Threatened and Endangered Species Consultation

The Endangered Species Act (ESA) requires federal agencies to manage federally listed threatened and endangered (T&E) species and their habitats in a manner that promotes conservation of T&E species and is consistent with recovery plans for such species. Section 7 of the ESA requires all federal agencies to enter into consultation with the USFWS and NOAA Fisheries (also known as National Marine Fisheries Service, or NMFS) whenever proposed actions may affect listed T&E species of plants and animals. At each installation, proposed projects, operations, or

other actions are scrutinized for potential impacts to T&E species through a formal review process. Section 7 consultations will be initiated if warranted. Otherwise, written documentation that there are no effects to T&E species will be generated by the NRM and kept with the project files. The NRM will use the installation's INRMP as a tool to identify at an early stage the potential impacts of planned Navy actions on endangered or threatened species and to provide a basis for altering the action to prevent or minimize those impacts. USFWS or NMFS, or both, may require changes or mitigation that could result in project delays and additional costs. Because of this, it is imperative that the Command at each installation initiate early environmental/natural resources review of proposed actions in order to assess risks, develop alternatives and correctly identify mitigation costs both in terms of time and dollars.

3.2.2 Essential Fish Habitat Consultation

The Magnuson-Stevens Fishery Conservation and Management Act, as amended in October 1996, requires that federal agencies consult with the U.S. Secretary of Commerce, through NMFS, on any action proposed to be undertaken that may adversely affect essential fish habitat (EFH). The objective of this EFH assessment is to determine whether or not the proposed project may adversely affect designated EFH for relevant commercial, federally managed fish species within the proposed action area. It also describes conservation measures proposed to avoid, minimize or otherwise offset potential adverse effects to designated EFH resulting from the proposed project. Subsection 50 CFR 600.920(f) specifies that EFH consultation should be consolidated with existing environmental review procedures required by other statutes, such as ESA, when appropriate. The installation's NRM will review all proposed projects, operations and training plans for possible impacts to EFH. Tthis process is described below in Section 2.3. If impacts to EFH are identified, the NRM provides recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process. NMFS may require changes or mitigation that could result in delays and additional costs. Because of this, it is imperative that the installation's Command initiate early environmental/natural resources review of proposed actions in order to assess risks, develop alternatives and correctly identify mitigation costs both in terms of time and dollars.

3.3 Planning for National Environmental Policy Act (NEPA) Compliance

The National Environmental Policy Act (NEPA) of 1969 (42 USC § 4321 et seq.) requires federal agencies to evaluate the impacts of their proposed actions on the quality of the human environment. The Navy's policies regarding NEPA, OPNAVINST 5090.1C , dated 30 October 2007, Chapter 2, Procedures for Implementing the National Environmental Policy Act (NEPA), SECNAVINST 5090.6A (SECNAV Instruction 5090.6A, Environmental Planning for Department of the Navy Actions, dated April 26, 2004), and Navy's Supplemental Environmental Planning Policy, dated 23 September 2004, echo NEPA and emphasize environmental planning at the earliest stages of projects. The Navy recognizes that the NEPA process includes the systematic examination of the likely environmental consequences of implementing a proposed action. To be an effective decision-making tool, the Navy integrates the process with project planning at the earliest possible time. This ensures that planning and decision-making reflect environmental values, avoid delays and avoid potential conflicts. The Navy is able to achieve its mission at home, at sea and abroad more efficiently when environmental planning is properly integrated into Navy decision-making for those Navy actions that have the potential for adverse environmental consequences.

NEPA and Navy policy require early review and coordination for environmental considerations. This is achieved by the installation's environmental review process, which requires all new projects, programs, and operations, or changes to existing projects, programs, and operations, be reviewed by the NRM for potential impacts to the environment, including potential impacts to natural resources. The NRM reviews planned actions, identifies the risks to natural resources, and provides comments and/or alternatives to the action proponents that will minimize or eliminate the risks, if possible. The early review process also allows the NRM an opportunity to identify the appropriate NEPA documents that will be generated based on the proposed action and the alternatives.

MFD projects and operations are not exempt from the review process, nor from the requirements of NEPA. Agricultural or shellfish harvesting leases, research projects, and vegetation management, just to name a few possible natural resource actions, must all be reviewed for environmental risks and impacts, the same as if the proposed action were a building project or a new training operation. Alternatives to proposed actions must be identified and investigated for projects that require an environmental assessment (EA) or an environmental impact statement (EIS). Because of the time and funding involved, it is imperative that the installation's Command initiate early environmental/natural resources review of proposed actions, in order to assess risks, develop alternatives and correctly identify mitigation costs.

3.4 Public Access and Outreach

Persons authorized to use recreation areas on MFD are current MFD employees and guests only. Sponsors must accompany dependants, relatives and guests. General public use of the installation is not permitted at this time.

Public outreach regarding natural resources is typically accomplished through efforts of each installation's Public Affairs Office. Outreach activities include participation with Earth Day events and invitations to local officials and newspapers to view restoration or protection measures.

3.5 State Comprehensive Wildlife Plans

As a stakeholder in the management of natural resources on the installation, WDFW works closely with the Navy on various fish and wildlife conservation issues, ranging from on-site habitat protection to invasive species control, and also cooperates with each installation on developing and conducting wildlife and habitat research and surveys.

4.0 Management of Natural Resources Program Elements

4.1 Threatened and Endangered Species Management

The Endangered Species Act (ESA) requires federal agencies to manage federally listed threatened and endangered (T&E) species and their habitats in a manner that promotes conservation of T&E species and is consistent with recovery plans for such species. Section 7 of the ESA requires all federal agencies to enter into consultation with the USFWS and NMFS whenever actions are proposed that may affect listed and proposed T&E species of plants and animals.

This INRMP is meant to be used as a tool to identify at an early stage the potential impacts of planned Navy actions on endangered or threatened species and to provide a basis for altering the action to prevent or minimize those impacts.

Special Management and Protection of T&E Species

Special management and protection is a term that originates in the definition of Occupied Critical Habitat (OCH) in Section 3 of the Endangered Species Act. For Occupied Critical Habitat, one determines whether the area contains the physical and biological features essential to the conservation of the species and if the area has or needs additional special management or protection. Additional special management is not required if adequate management or protection is already in place.

Adequate special management or protection is provided by a legally operative plan. The Navy uses the term "Integrated Natural Resources Management Plan", or INRMP. The INRMP is required by the Sikes Act. It addresses the maintenance and improvement of the primary constituent elements important to the species and manages for the long-term conservation of the species. The Navy uses the following three criteria to determine if a plan provides adequate special management or protection:

Criteria 1. Conservation Benefit

The plan provides a conservation benefit to the species. The cumulative benefits of INRMP management activities for the length of the plan, must maintain or provide for an increase in a specie's population, or the enhancement or restoration of its habitat within the area covered by the plan:i.e., those areas deemed essential to the conservation of the species. A conservation benefit may result from reducing fragmentation of habitat, maintaining or increasing populations, insuring against catastrophic events, enhancing and restoring habitats, buffering protected areas or testing and implementing new conservation strategies.

Criteria 2. Implementation of the Plan

The plan provides assurances that the management plan will be implemented. Persons charged with plan implementation are capable of accomplishing the objectives of the management plan and have adequate funding for the management plan. They have the authority to implement the plan and have obtained all the necessary authorizations or approvals. The plan provides a conservation effort implementation schedule, including completion dates.

Criteria 3. Management Effectiveness

The plan provides assurances that the conservation effort will be effective. The following criteria will be considered when determining the effectiveness of the conservation effort: The plan includes (1) biological goals (broad guiding principles for the program) and objectives (measurable targets for achieving the goals); (2) quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, and standards for these parameters by which progress will be measured; (3) provisions for monitoring and, where appropriate, adaptive management; (4) provisions for reporting progress on implementation based on compliance with the implementation schedule, and effectiveness based on evaluation of quantifiable parameters of the conservation effort. This goal will be accomplished at the annual INRMP review and update in coordination with the appropriate federal and state agencies; and (5) a duration sufficient to implement the plan and achieve the benefits of its goals and objectives. The INRMPs are five-year plans but may be extended further than five years if installation mission or natural resources do not change or changes are minimal. At the end of the five-year period the INRMP will be reviewed and updated or rewritten, as necessary, to continue protection and enhancement for T&E species and habitats.

4.2 Threatened and Endangered Species

4.2.1 Marbled Murrelet

Marbled murrelets were listed as Threatened under the ESA on October 1, 1992 (FR 57[191]: 45328-45337), effective September 28, 1992. Marbled murrelets range from the Aleutian Archipelago in Alaska to central California. The majority of their lives are spent in the marine environment, where they feed primarily on small fish such as sandlance and Pacific herring. Marbled murrelets nest in inland forests, typically in old-growth, mature stands at lower elevations. Nesting occurs from late March to late September when both parents tend a single young.

Critical Habitat

Critical Habitat has been designated for marbled murrelets but there is no designated Critical Habitat on or near the Manchester Fuel Department.

Marbled Murrelet Special Management and Protection Requirements

Criteria 1. Conservation Benefit

The installation command will ensure that all proposed actions that may potentially affect this protected species will comply with Section 7 of the Endangered Species Act. This Act requires, at a minimum, informal consultation with USFWS.

Criteria 2. Implementation of the Plan

Manchester Fuel Department annually funds and staffs the Environmental Director position and the incumbent is also the designated NRM. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider marbled murrelet protection measures.

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: survey forested areas to identify potential nest sites; monitor for marbled murrelet use and implement special protection measures, such as timing restrictions on human activities and protection of trees; record areas used by marbled murrelets, such as foraging areas along the shore, that may overlap with human activities; and use information gained to update the INRMP and provide management guidance to the installation's command and departments.

4.2.2 Bull Trout

On November 1, 1999, the USFWS designated as Threatened all populations of bull trout in the contiguous U.S. under the ESA (FR 64[210]: 58910-58933) (effective date December 1, 1999).

As a species, bull trout exhibit primarily freshwater phases, including resident and migratory life cycles. A portion of coastal bull trout may use an anadromous life strategy that was not well

documented in the past (Rieman and McIntyre 1993). Recent work by Goetz et al (2004/2005) has tracked bull trout from Puget Sound river systems into marine waters and back again, suggesting that some bull trout utilize both fresh and salt water habitats for foraging within the same year or even within the same season. They have also been tracked from one river system to another, which also suggests that they are not bound to natal river systems but are able to explore and forage in different watersheds in Puget Sound.

Critical Habitat

On September 26, 2005, USFWS designated Critical Habitat for bull trout but excluded designation on Navy installations in the northwest that have INRMPs (FR 70[185]: 56212-56311) (effective date October 26, 2005).

Bull Trout Special Management and Protection Requirements

Criteria 1. Conservation Benefit

Manchester will ensure that all proposed routine construction and repair activities that take place below the mean higher high water (MHHW) line be restricted to the approved in-water work time for bull trout (July 16th – February 15th), as published by the U.S. Army Corps of Engineers, Seattle Regulatory Branch.

The installation command will ensure that all proposed actions that may potentially affect this protected species will comply with Section 7 of the Endangered Species Act. This Act requires, at a minimum, informal consultation with USFWS.

The NRM will identify operations and infrastructure that could affect water quality and coordinate with the command and installation's departments to minimize or eliminate releases to marine waters. The NRM will provide assistance to the development of spill prevention, control and countermeasures for the facility and for operations. The NRM or designated staff will regularly inspect any structures that extend below the MHHW line and keep the structures free of debris or other materials that could hinder bull trout movement along the shoreline.

Criteria 2. Implementation of the Plan

Manchester Fuel Department annually funds and staffs the Environmental Director position and the incumbent is also the designated NRM. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider bull trout protection measures.

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: coordinate with the appropriate state and federal fish and wildlife agencies to conduct surveys along the installation's shorelines for bull trout presence; conduct a minimum of two surveys over five years to determine change over time, which will assist managers in assessing the effectiveness of the plan; consult with the regulatory partners during the annual INRMP review to identify necessary changes that would benefit bull trout.

4.2.3 Chinook Salmon

On March 24, 1999, NMFS listed the Puget Sound chinook salmon as Threatened, including native chinook populations as well as naturally spawned populations within the boundaries of Puget Sound that originated from hatchery stock. This status was reaffirmed on June 28, 2005 (FR 70[123]: 37160-37204) (effective date August 29, 2005). As of this writing (October 2008), NMFS is under a court order to include chinook salmon raised in hatcheries and released to the wild.

Critical Habitat

On September 2, 2005, Critical Habitat for chinook salmon was designated, with the exclusion of the waters within the boundaries of Department of Defense managed lands and waters (FR 70(170): 52630-52858) (effective date January 2, 2006).

Chinook Salmon Special Management and Protection Requirements

Criteria 1. Conservation Benefit

Manchester will ensure all proposed routine construction and repair activities below the mean higher high water (MHHW) line be restricted to the approved in-water work time for chinook salmon (July 2nd - March 2nd) (as published by the U.S. Army Corps of Engineers, Seattle Regulatory Branch).

The installation command will ensure that all proposed actions that may potentially affect this protected species will comply with Section 7 of the Endangered Species Act. This Act requires, at a minimum, informal consultation with USFWS.

The NRM will identify operations and infrastructure that could affect water quality and coordinate with the command and installation's departments to minimize or eliminate releases to marine waters. The NRM will provide assistance to the development of spill prevention, control and countermeasures for the facility and for operations. The NRM or designated staff will regularly inspect any structures that extend below the MHHW line and keep the structures free of debris or other materials that could hinder juvenile salmon movement along the shoreline.

The NRM and/or WDFW annually conduct forage fish spawning surveys along the shorelines of the installation. Identification and protection of these important habitat areas allows for better management and protection, thus benefiting salmon that feed on these species. There are also work windows posted for forage fish species. The NRM will ensure that actions that may take place in or near forage fish spawning areas be restricted to the approved in water work windows as published by the Corps of Engineers Seattle Regulatory Branch.

Criteria 2. Implementation of the Plan

Manchester Fuel Department annually funds and staffs the Environmental Director position and the incumbent is also the designated NRM. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider Chinook salmon protection measures.

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: coordinate with the appropriate state and federal fish and wildlife agencies to conduct surveys along the installation's shorelines for chinook salmon presence; conduct a minimum of two surveys over five years to determine change over time, which will assist managers in assessing the effectiveness of the plan; consult with the regulatory partners during the annual INRMP review to identify necessary changes that would benefit chinook salmon.

4.2.4 Steller Sea Lion

The Steller sea lion was originally listed as a Threatened species on December 4, 1990 (FR 55[233]: 50005-50006) (effective date December 4, 1990). Protected status was deemed necessary due to a large decline in Steller sea lion numbers throughout their range, and particularly in Alaska. In certain parts of Alaska declines of greater than 80 per cent have occurred since 1985.

The world population of Steller sea lions includes two stocks divided at 144° West longitude. On May 5, 1997, NMFS classified the Steller sea lion population west of 144° West longitude as endangered. The listing for the eastern Pacific population remains Threatened (FR 62[86]: 24345-24355) (effective date June 4, 1997).

Critical Habitat

On August 27, 1993, NMFS listed all rookeries, major haul-out sites and aquatic feeding areas in the southeastern Bering Sea and Shelikof Strait as Critical Habitat. Rookeries in Oregon and California have also been designated as Critical Habitat, but no areas in Washington State have been identified as critical for the species (FR 58[165]: 45269-45285) (effective date September 27, 1993).

Steller Sea Lion Special Management and Protection Requirements

Criteria 1. Conservation Benefit

The installation command will ensure that all proposed actions that may potentially affect this protected species will comply with Section 7 of the Endangered Species Act. This Act requires, at a minimum, informal consultation with NMFS.

In addition, actions that may affect Steller sea lions will require a permit under the Marine Mammal Protection Act. MFD will ensure that all proposed actions that may potentially affect Steller sea lions will comply with the requirements of the Marine Mammal Protection Act (MMPA).

Criteria 2. Implementation of the Plan

Manchester Fuel Department annually funds and staffs the Environmental Director position and the incumbent is also the designated NRM. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider Steller sea lion protection measures

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: record areas of use by Steller sea lions, such as foraging or haul out areas that may overlap with human activities. This information will be used to update the INRMPs and provide management guidance to the installation commands and departments.

4.2.5 Southern Resident Killer Whale

Southern Resident Killer Whales (SRKW), a subpopulation of *Orcinus orca*, was designated as Endangered by NMFS on November 18, 2005 (FR 70[222]: 69903-69912) (effective date February 16, 2006).

Orcas have been observed in Admiralty Inlet and the Straits of Juan de Fuca on numerous occasions, and occasionally in areas farther south in Puget Sound. The resident SRKW subpopulation are fish-eaters. The SRKW typically hunt for fish in deeper waters, but females and sub-adults have been observed hunting for salmon in rock crevices in shallow water (NMFS 2005). SRKW seem to prefer salmon but will also eat lingcod, flat fish, rockfish, and herring (NMFS 2005).

Other orca populations that visit the area are mammal-eaters (primarily seals in Puget Sound) and are known as the Transient population because they are not thought to be regular inhabitants of Puget Sound.

Researchers have studied the SRKW and documented the identification markings of each animal. To the casual observer, however, it is difficult to tell if a group of orcas are SRKW or Transients, unless feeding behavior is observed.

Critical Habitat

On November 29, 2006, Critical Habitat for SRKW was designated, with the exclusion of the waters within the boundaries of Department of Defense managed lands and waters (FR 71(229): 69054-69070) (effective date December 29, 2006).

Southern Resident Killer Whale Special Management and Protection Requirements

Criteria 1. Conservation Benefit

The installation will ensure that all proposed actions that may potentially affect this protected species will comply with Section 7 of the Endangered Species Act. This Act requires, at a minimum, informal consultation with NMFS.

Actions that may affect SRKW will require a permit under the MMPA. The installation will ensure that all proposed actions at the installation that potentially affect SRKW comply with the requirements of the Marine Mammal Protection Act.

Criteria 2. Implementation of the Plan

Manchester Fuel Department annually funds and staffs the Environmental Director position and the incumbent is also the designated NRM. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command

and departments to ensure that proposed new or changed operations and missions consider SRKW protection measures.

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: record areas of SRKW use in the waters of or near the installation. This information will be used to update the INRMPs and provide management guidance to the installation's commands and departments.

4.2.6 Humpback Whale

In 1965 humpback whales were protected from hunting by the International Whaling Commission and were listed as Endangered under the ESA on June 2, 1970 (FR 35[106]: 8491-8498). In the North Pacific, there are three distinct population groups: a western north Pacific population; a central Pacific population that migrates between Hawaii and Alaska; and a Mexico-California-Alaska population that seasonally migrates past Washington State between breeding areas and feeding areas.

During the summer, humpback whales in the North Pacific migrate and feed over the continental shelf and along the coasts of the Pacific Rim from Point Conception, California, to the Gulf of Alaska, Prince William Sound and Kodiak Island. Humpback whales spend the winter in three separate wintering grounds: the coastal waters along Baja California and the mainland of Mexico, the main islands of Hawaii, and the islands south of Japan (SAIC 2001).

In recent years humpback whales have been intermittently sighted in Puget Sound. An analysis of data compiled by the Orca Network, a community based marine mammal monitoring effort, shows humpbacks are regular visitors to the Straits of Juan De Fuca (although in low numbers), but are infrequent visitors to Puget Sound (Orca Network data 2002-2004). A presentation at the 2005 Puget Sound/Georgia Basin Research Conference in Seattle stated that humpbacks were sighted regularly (but in low numbers) in the eastern Strait of Juan de Fuca and in southern Puget Sound in 2004 (Falcone et al 2005).

Critical Habitat

Critical Habitat has not been designated for the humpback whale.

Humpback Whale Special Management and Protection Requirements

Criteria 1. Conservation Benefit

The installation command will ensure that all proposed actions that may potentially affect this protected species will comply with Section 7 of the Endangered Species Act. This Act requires, at a minimum, informal consultation with NMFS.

Actions that may affect humpback whales will require a permit under the Marine Mammal Protection Act. The installation will ensure that all proposed actions that may potentially affect this species will comply with the requirements of the Marine Mammal Protection Act.

Criteria 2. Implementation of the Plan

Manchester Fuel Department annually funds and staffs the Environmental Director position and the incumbent is also the designated NRM. The NRM is responsible for implementation of the

INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider humpback whale protection measures.

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: record areas of humpback whale use in the waters of or near the installation. This information will be used to update the INRMPs and provide management guidance to the installation's commands and departments.

4.2.7 Steelhead

On May 11, 2007, NMFS listed the Puget Sound Distinct Population Segment (DPS) of steelhead as a Threatened species (FR 72[91]: 26722-26735). The Puget Sound steelhead DPS includes all naturally spawned winter-run and summer-run steelhead populations below natural and man-made impassable barriers, in streams in the river basins of the Strait of Juan de Fuca, Puget Sound, and Hood Canal, bounded to the west by the Elwha River and to the north by the Nooksack River and Dakota Creek, as well as the Green River natural and Hamma Hamma winter-run hatchery steelhead stocks.

Steelhead is the name commonly applied to the anadromous form of the biological species *Oncorhynchus mykiss*. Steelhead exhibit perhaps the most complex suite of life-history traits of any species of Pacific salmonid. Steelhead can be anadromous (''steelhead''), or freshwater residents (''rainbow or redband trout''), and under some circumstances yield offspring of the opposite life-history form. Those that are anadromous can spend up to seven years in freshwater prior to smoltification and then spend up to 3 years in salt water prior to first spawning. Steelhead are also iteroparous (meaning individuals may spawn more than once), whereas the Pacific salmon species are principally semelparous (meaning individuals generally spawn once and die). Within the range of West Coast steelhead, spawning migrations occur throughout the year, with seasonal peaks of activity. In a given river basin there may be one or more peaks in migration activity; since these ''runs'' are usually named for the season in which the peak occurs. Some rivers may have runs known as winter, spring, summer or fall steelhead runs.

Critical Habitat

Critical Habitat has not been designated.

Steelhead Special Management and Protection Requirements

Criteria 1. Conservation Benefit

The NRM will identify operations and infrastructure that could affect water quality and coordinate with the command and installation departments to minimize or eliminate releases to marine waters. The NRM will provide assistance to the development of spill prevention, control

and countermeasures for the facility and for operations. The NRM or designated staff will regularly inspect any structures that extend below the MHHW line or OHWL and keep the structures free of debris or other materials that could hinder steelhead movement along the shoreline.

As needed, the NRM and/or WDFW will conduct forage fish spawning surveys along the shorelines of the installations. Identification and protection of these important habitat areas allows for better management and protection, thus benefiting salmonids that feed on these species. There are also work windows posted for forage fish species. The NRM will ensure that actions that may take place in or near forage fish spawning areas be restricted to the approved in water work windows as published by the Corps of Engineers Seattle Regulatory Branch.

Criteria 2. Implementation of the Plan

Manchester Fuel Department annually funds and staffs the Environmental Director position and the incumbent is also the designated NRM. The NRM is responsible for implementation of the INRMP. The NRM may call upon environmental planners and specialists within NAVFAC NW to assist in conservation and environmental compliance requirements. The NRM has the authority to implement maintenance and protection plans and obtain all the necessary authorizations or approvals for proposed management actions.

The NRM annually develops projects and seeks funding for natural resources management issues, including habitat enhancement projects and special projects to assist in the recovery of T&E species, as circumstances require. The NRM will regularly meet with the installation's command and departments to ensure that proposed new or changed operations and missions consider steelhead protection measures.

Criteria 3. Management Effectiveness

The NRM or designated staff will do the following as needed: coordinate with the appropriate state and federal fish and wildlife agencies to conduct surveys along the installation's shorelines for steelhead presence; conduct a minimum of two surveys over five years to determine change over time, which will assist managers in assessing the effectiveness of the plan; consult with the regulatory partners during the annual INRMP review to identify necessary changes that would benefit steelhead.

Table 4-1. T & E Species that may be present at or near MFD.

Species	ESA Status	Critical Habitat Determination
Marbled murrelet (*B. marmoratus*)	Threatened	Not Designated at Manchester Fuel Department
Chinook salmon (*O. tshawytscha*)	Threatened	DoD Facilities and Adjacent Waters Excluded from Designation
Steelhead (*O. mykiss)*	Proposed	Not Designated
Bull trout (*S. confluentus*)	Threatened	Not Designated at Manchester Fuel Department:
Leatherback sea turtle (*D. coviacea*)	Endangered	Not Designated in Washington State:
Steller sea lion (*E. jubatus*)	Endangered	Not Designated in Washington State:
Humpback whale (*M. novaeangliae*)	Endangered	Not Designated
Killer whale (*O. orca*)	Endangered	Not Designated

4.3 Wetlands Management

According to Executive Order (EO) 11990 (1977), the term "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats and natural ponds. EO 11990 requires Federal agencies to minimize the loss or degradation of wetlands and to enhance their natural values. Section 404 of the Clean Water Act prohibits discharges of dredged or filled material into waters of the U.S., including wetlands, without first obtaining a permit from the U.S. Army Corps of Engineers. According to OPNAVINST 5090.1C (OCT 2007), the Navy will comply with the national goal of no net loss of wetlands, and will avoid loss of size, function and value of wetlands.

In addition, the Navy will preserve and enhance the natural and beneficial values of wetlands in carrying out its activities. In order to comply with the "No Net Loss of Wetlands Policy" of the Navy, commands with land management responsibilities shall ensure the following:

a) The Navy will plan all construction and operational actions to avoid adverse impacts to or destruction of wetlands. Any construction requirement that cannot be sited to avoid wetlands shall be designed to minimize wetlands degradation and shall include compensatory mitigation as required by wetlands regulatory agencies in all phases of the project's planning, programming and budgeting process. Within this policy, use of Navy lands and lands of other entities are permissible for mitigation purposes for

Navy projects when consistent with EPA and COE guidelines or permit provisions. Requests by non-Navy entities to mitigate the effects of non-Navy projects on Navy property should be reviewed on a case-by-case basis for their effect on Navy mission, the environment, and appropriateness of economic compensation to the Navy for the long-term use of the site. All such projects need to be approved by the chain of command;

b) Any action significantly affecting wetlands is addressed by the environmental review and public notification process (NEPA);
c) Boundaries of legally defined wetlands on all Navy lands are identified and mapped with sufficient accuracy to protect them from potential unplanned impacts. Wetland maps will be distributed to all potential users, including facilities planners, operational units and tenant commands. Jurisdictional maps may be required prior to actual construction if there is any potential of wetlands present in the vicinity of the project. Field verification and jurisdictional determinations will be required for all projects;
d) Adequate expertise is available to installation commanding officers for the protection, management, identification and mapping of wetlands;
e) Implementation of wetlands creation or enhancement projects and wetlands banking, where compatible with the installation mission, is encouraged. Natural resources managers should identify potential wetland mitigation sites.

4.4 Fish and Wildlife Management

4.4.1 Habitat

Habitat loss has a direct correlation to a decline or loss of fish and wildlife populations. This INRMP will be used in operations, training, and construction planning to minimize or prevent loss of habitat, thereby preserving species diversity and populations. The following management criteria will ensure that the installation provides wise stewardship ethics in managing the fish and wildlife resources:

Program and Project Review

The installation NRM is a part of all planning teams and reviews proposed projects, operations and training plans for possible impacts to habitat and fish and wildlife. If impacts to habitat or fish and wildlife are identified, the NRM will provide recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process. The recommendations may include, but are not limited to, construction best management practices (BMPs) for erosion control, changing the aspect or placement of a new building to protect trees, identifying wetlands and wetland buffers that must be protected or other recommendations that will help an installation preserve its fish and wildlife habitats. The NRM is also available to help decide on the best mitigation designs if habitat loss is unavoidable.

Habitat Inspections

The NRM drives and walks throughout the installation, inspecting various habitats for unauthorized encroachment or impacts and stays familiar with fish and wildlife use of these areas. The NRM has the ability to elevate concerns about habitat impacts to the installation's Commanding Officer.

Habitat Enhancement and Restoration

Hunting, fishing, and trapping fees for the privilege of access onto military lands may be collected under the authority of the Sikes Act. These fees may be used to recover expenses of implementing these programs and shall be used only to defray costs of the fish and wildlife management program at the installation collecting the fees. Collected fees shall be accounted for and reported under a special fund entitled "Wildlife Conservation". Funds in these accounts have been used in the past to enhance habitat, which has a direct benefit to fish and wildlife.

Wetlands Habitat Management

Wetland management strategies vary depending primarily on the wetland classification, which is determined by the value of a particular wetland area. A wetland's value is decided by the quality of the functions it provides, including its biomass production, habitat, erosion control, stormwater storage, water quality protection, aquifer recharge potential and low flow augmentation. Some of the factors used to measure the quality of these functions are the wetland's size, its location in the watershed, the amount of development in the watershed, vegetative structure and composition, rate of water flow through the wetland, the size of natural buffers and surrounding land uses. Regardless of the habitat value, wetland areas are almost always poor choices for building sites or for most activities, other than providing non-consumptive enjoyment of the outdoors. The NRM, during the program/project review process, will be diligent about encroachment and impacts to wetlands and ensure that program/project managers are aware of the laws and regulations regarding the protection of wetlands. The following general management guidelines apply to the installation:

- **Maintain buffers in which no construction, logging or other disturbance occurs.** Generally, the Navy is required to comply with applicable county environmental requirements.
- **Carefully plan for and control runoff in uplands.** If building is to occur near wetlands, water quality and quantity impact can be lessened by retention of natural swales, depressions and areas with permeable soils.
- **Retain adjacent areas of native vegetation, especially if they connect to other wetlands**. Retain connections and corridors of native vegetation to other natural areas. These corridors allow uninhibited movement of wildlife between wetlands and adjacent habitat areas.
- **Use only sound pesticide management techniques**. All pesticide uses and applications will comply with the Navy's Pest Management Program requirements.
- **Exclude livestock, vehicles and foot traffic from wetlands and buffers.** Plant native vegetation around wetlands; don't use fences that would restrict wildlife movement.

Forests Habitat Management

Forest management is discussed in Section 4.4.

Shorelines Habitat Management

Shellfish, forage fish and many other wildlife species use beach and shoreline areas. The NRM will do the following items to protect beach and shoreline habitats:

- **Inspect the beaches and shorelines for man-made debris and coordinate removal.** Man-made trash washes up on many shorelines in the Puget Sound area. This trash is not only unsightly, but some items may be perceived as a food source by wildlife and cause harm. Accumulations of trash or man-made objects may interfere with forage fish spawning or bird use. . The NRM will coordinate with WDFW in the removal of anthropogenic debris. WDFW will recommend timing of such removal to avoid egg mass disturbance for some low intertidal fish, as well as propose methodology for avoiding excessive disturbance of the substrate or sediments.
- **Protect eelgrass areas.** Eelgrass may be found along much of the sub and inter-tidal areas around Puget Sound. This aquatic plant species is an important habitat for many marine invertebrate and vertebrate species. During the program/project review process, the NRM will look for potential impacts to eelgrass areas and offer alternatives to minimize or eliminate the impacts.
- **Stormwater runoff.** The NRM will review proposed projects and programs for stormwater or other discharges, and ensure that these discharges do not degrade the water or sediment quality of the waters surrounding an installation.
- **Military training.** The Navy and other services may conduct annual training operations at MFD. These operations often require that equipment and personnel utilize beach areas for landings and encampments. The NRM will be familiar as to the seasonal use of beaches by birds and forage fish spawning and recommend shoreline areas or seasonal timing that will result in minimal or no impact to these species or their habitats.
- **Forage fish habitat protection.** Studies are being conducted north and south of the Fuel Pier to document fish utilization of the nearshore habitat of MFD. These studies will provide the NRM with a tool for establishing a baseline inventory and identify trends for the protection, conservation, and management of shoreline habitat.

Developed Areas Habitat Management

The following items may enhance wildlife habitat:

- **Where feasible, reduce mowed areas**. Reducing areas that are mowed will save money, allow native vegetation to grow and enhance wildlife habitat .
- **Use native vegetation for landscaping around buildings**. Native vegetation is well-suited to the conditions of the Pacific Northwest and will require less maintenance. Native vegetation provides better wildlife habitat then exotic, non-native plants and trees.
- **Reduce pesticide/herbicide/fertilizer use.** Reducing the use of chemicals will help protect surface and groundwater quality at the installation, as well as the quality of the surrounding marine waters.

4.4.2 Hunting Program

Hunting is not allowed at Manchester due to security and safety considerations. If hunting or trapping is allowed in the future, laws and rules specified in current WDFW Hunting Regulations

will be enforced by the MFD NRM, assisted by MFD Security and WDFW Law Enforcement personnel.

4.4.3 Fishing Program

Recreational fishing is allowed for MFD personnel only, due to security and safety considerations. All authorized fishers will be required to abide by State of Washington fishing regulations, including obtaining the appropriate license, and also obtain a special installation permit. The fee charged by the MFD department includes funds collected pursuant to the Sikes Act, which will be used for fish and wildlife enhancement projects. Laws and Rules specified in the WDFW Fishing Regulations will be enforced by the MFD NRM, assisted by MFD Security and WDFW Law Enforcement personnel.

4.4.4 Shellfish

Shellfish harvesting is not allowed at Manchester Fuel Department due to security and safety considerations.

MFD actively participates with the Puget Sound Restoration Fund, a nonprofit organization that restores marine and watershed habitats throughout Puget Sound, to plant Olympia oysters (*Ostrea conchaphila*) in the installation tidelands. The Olympia oyster is the only oyster native to Puget Sound and the entire west coast of the United States. All other oysters that are grown and harvested are non-native, exotic species originating mostly from Asia. Olympia oysters were one of the abundant bivalves in most of the larger estuaries on the west coast, including Puget Sound, until the late 1800's, when over-harvesting, logging and pollution brought them to near extinction. Native oysters were also an important food source to Native American Tribes of Puget Sound prior to European settlement. Olympia oysters play an important role in the marine ecosystem. They are biological filters, cleaning nutrients and other impurities from local waters. Olympia oysters provide structure, food and shelter for a huge variety of marine crustaceans and finfish, including salmonids. Additionally, native oyster beds likely increase water column clarity and facilitate nutrient cycling. Manchester will continue to cooperate with the Puget Sound Restoration Fund to support the restoration of the Olympia oyster populations within Puget Sound.

4.4.5 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended in October 1996, requires that federal agencies consult with the U.S. Secretary of Commerce through the National Marine Fisheries Service (NMFS) on any action proposed to be undertaken that may adversely affect Essential Fish Habitat (EFH). The objective of this EFH assessment is to determine whether or not the proposed project may adversely affect designated EFH for relevant commercial, federally managed fish species within the proposed action area. It also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the proposed project. Subsection 50 CFR 600.920(f) specifies that EFH consultation should be consolidated with existing environmental review procedures required by other statutes, such as ESA, when appropriate. The NRM will review all proposed projects, operations, and training plans for possible impacts to EFH. If impacts to EFH are identified, the NRM will provide recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process.

4.4.6 Marine Mammals

The Marine Mammal Protection Act of 1972 (MMPA) prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Congress passed the MMPA based on the following findings and policies:

- Some marine mammal species or stocks may be in danger of extinction or depletion as a result of human activities;
- These species or stocks must not be permitted to fall below their optimum sustainable population level (depleted);
- Measures should be taken to replenish these species or stocks;
- There is inadequate knowledge of the ecology and population dynamics; and
- Marine mammals have proven to be resources of great international significance.

MMPA Definitions

Take: to harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal.

Harassment

The Administration transmitted its Marine Mammal Protection Act reauthorization bill to Congress on June 16, 2005. Among other proposals, the bill includes amendments to clarify the harassment definition:

Section 3 (16 U.S.C. § 1362) is amended in subsection (18) to read as follows:
"(18) The term "harassment" means any act which–

> (A) [Level A] injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild; or
> (B) [Level B] (i) disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering to a point where such behavioral patterns are abandoned or significantly altered; or
> (ii) is directed toward a specific individual, group or stock of marine mammals in the wild that is likely to disturb the individual, group, or stock of marine mammals by disrupting behavior, including, but not limited to, migration, surfacing, nursing, breeding, feeding or sheltering."

The NRM will review all proposed projects, operations and training plans for possible impacts to marine mammals. If impacts to marine mammals are identified, the NRM will provide recommendations to the program/project managers so that changes or mitigation can be considered early in the planning process. The NRM will also inform personnel that operate watercraft about the MMPA regulations and restrictions regarding marine mammals.

If distressed or stranded marine mammals are located at MFD, the Environmental Director/NRM should be immediately contacted. After recording species and location information,

the Environmental Director/NRM should contact the State Patrol or the Whale Hotline (1-800-562-8832) to alert the Northwest Marine Mammal Stranding Network.

4.4.7 Birds

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the Act, taking, killing or possessing migratory birds is unlawful.

Prohibited Acts: Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or receive any migratory bird, part, nest, egg or product, manufactured or not.

On March 15, 2005, the U.S. Fish and Wildlife Service published in the Federal Register (FR 70(49):12710-12716) a final list of the bird species to which the MBTA does not apply because they are not native to the United States and have been introduced by humans everywhere they occur in the nation. The list is required by the Migratory Bird Treaty Reform Act of 2004. The actual list of migratory birds protected by the MBTA is published in the Code of Federal Regulations (Title 50, Part 10.13). When it became law in 2004, the Reform Act excluded any species from protection not specifically included on the Title 50, Part 10 list.

Nuisance birds using Navy Northwest installations include the glaucous-winged gull, Canada goose, rock dove, Eurasian starling and house sparrow. Gulls and geese are a nuisance because of the large amount of feces they produce. The Navy has contracted with U.S. Department of Agriculture Wildlife Services (USDA WS) to control these problem birds on some installations. USDA WS has the expertise and necessary permits to deal with all problem wildlife, not just birds.

Partners in Flight

In 1990, the National Fish and Wildlife Foundation initiated the Neotropical Migratory Bird Conservation Program, known as "Partners in Flight - Aves de Las Americas." The purpose of the program is to bring together the diverse array of groups and individuals involved in the conservation and management of birds and their habitats. The initial focus was on neotropical migrants, but has now spread to include most birds requiring terrestrial habitats. The PIF strategy for effective conservation relies on setting realistic biological priorities, using an appropriate geographic scale and applying an ecosystem management approach. The primary goals and objectives of the DOD Partners in Flight program are to:

- Apply information collected from this partnership program to support DOD mission requirements;
- Take proactive management actions to prevent bird species from reaching threatened or endangered status;
- Facilitate cooperative partnership efforts consistent with the military mission;
- Determine the status of migratory and resident bird populations on DOD lands and the causes of population fluctuations;
- Reduce bird aircraft strike hazard risks through implementation of` mobile radar;

- Maintain and restore priority habitats on DOD lands for migratory and resident bird populations;
- Reduce or eliminate pesticide use in sensitive habitats, especially in and around wetlands and riparian areas;
- Reduce the spread and impact to birds and their habitats of invasive and nuisance species on military lands, including feral and free-roaming cats.

For further information on the DOD Partners in Flight program go to http://www.DODpif.org.

Bald Eagles

Bald eagles are protected federally under the Bald and Golden Eagle Protection Act (16 USC 668) and the Migratory Bird Treaty Act (16 USC 703), and within Washington State by the Bald Eagle Protection Rules Washington Code (WAC) 232-12-292) and enabling legislation Revised Code of Washington (RCW 77.12.655).

There is one known bald eagle nest platform on MFD that will be monitored for occupancy annually during the nesting season. Bald eagles feed primarily on waterfowl and fish and prefer to use large trees and snags near shorelines for perching and roosting. Eagles are observed feeding and roosting within the MFD boundary and occupy one nest.

The following recommendations for management of nesting bald eagles were derived from the "Bald Eagle Protection in Washington State" guidelines (WDFW 2002) and "Washington Department of Fish & Wildlife's Priority Habitat and Species Management Recommendations, Volume IV: Birds, Bald Eagle" (WDFW 2001).

Specific Nest Site Management

Concerted efforts must be made to assure that human disturbances are eliminated or greatly minimized around the nest site during the nesting season. Human disturbance includes, but is not limited to: entering the nesting area on foot or in vehicles, logging and wood-cutting activities, discharge of firearms or explosives, low flying aircraft, construction activities, bright lights at night, power lines, and construction of buildings and other structures.

Olympic Drive Nest - This nest is in a Douglas-fir tree located south of Olympic Drive East between Storage Tanks 20 and 21 (Figure 4-1)[1]. The primary buffer zone should extend from the nest in a northerly direction to Olympic Drive East, and an approximate100 meter radius from the nest to the east, south, and west.

[1] Bald eagle nest tree #1322-3 is located on MFD within Eagle Territory #1322; old growth Douglas-fir, DBH = 55.5" Dec 2008); total tree height = 155'. Tree located above Olympic Drive, 150 feet from Tank #20 at azimuth 332 degrees. Nest platform 90' above ground on south side of trunk. Tree marked with yellow signs "US Navy Wildlife Tree Do Not Cut".

Figure 4-1. Bald Eagle Nest Tree Map

The following protective measures will be implemented within this primary buffer zone:

- Human activity should be avoided during the nesting season, which is considered to be from the time that adult eagles are first observed near the nest tree (usually during winter) until after fledging of young is apparent (usually late summer). If exact dates are unknown, no human activity should occur in the primary buffer zone from January 1 through August 31.
- If it is obvious that no nesting is taking place at this nest tree, human activity can commence within the primary buffer zone after July 1. NRMs will conduct annual productivity surveys to verify nesting activity.
- Timber harvesting should not occur within the primary buffer zone. Woodcutting of downed trees in the primary buffer zone should occur prior to or after the nesting season. Standing dead trees and snags should remain.
- Broadcast application of chemicals should not occur within the primary buffer zone except for emergency situations such as severe insect infestation. This should only occur during non-nesting periods. Only those chemicals approved for use by the Environmental Protection Agency should be used with strict adherence to application procedures. However, approved chemical compounds that are known to be toxic to fish and/or wildlife should be avoided within the primary buffer zone.
- Vehicular traffic use on existing roads need not be altered.
- Power line and pole construction should not occur within the primary buffer zone.

The following protective measures will be implemented within this secondary buffer zone:

- This zone serves as a buffer between the primary buffer zone and the areas of normal human activity. It should be developed and maintained in such a manner that the visual line of sight between all human activities and the nest are obscured. All secondary buffers are at a minimum of 400 meters radius around the nest.
- Human activities within this zone should be avoided or at best minimized during the nesting period. The guidance presented above for suspected non-active nests should prevail.
- Timber harvesting and woodcutting can occur prior to and after the nesting period provided that:
- Total removal of all standing timber does not occur;
- At least 50 trees greater than 11 inches diameter at breast height (d.b.h.) be retained per acre. The density can be altered if the forest manager deems it necessary to reduce windthrow;
- Standing snags and dead trees be retained except where an obvious safety hazard is evident.
- The use of chemical compounds, especially herbicides and pesticides, be restricted.
- The construction of permanent buildings or other structures be avoided at all times in the secondary buffer zone.
- Vehicular traffic use of existing roads need not be altered.
- Construction of new roads should be avoided. Any necessary road construction within the secondary buffer zone should not occur during the nesting season.

- <u>General Nest Site Management</u>
- During nesting season, helicopters should not operate within 1000 feet of a nest and fixed-winged aircraft within 500 feet of a nest.
- Should a nest appear to be abandoned or the nest and/or nest tree destroyed, the primary buffer zone, and if feasible, the secondary buffer zone should be maintained and managed

according to the above guidelines. Eagles often reoccupy an abandoned nest or another tree within a territory even after several years of non-use of a site.

- Guidelines and restrictions for new nests within an existing territory or for newly established territories are the same as those listed above.
- Power lines should not be constructed in the secondary buffer zone. If it is deemed absolutely necessary to construct power lines (either above ground or below ground) construction should not occur during the nesting season.

4.4.8 Amphibians and Reptiles

As mentioned above, managing habitat for diversity, protection and enhancement will have the greatest benefit for wildlife, including reptiles and amphibians, on MFD. Protection of wetlands and retention of some downed logs will have the greatest benefit to these species.

4.4.9 Noise in Water and Air

There is increasing concern regarding the effect of human-generated (anthropogenic) noise on marine organisms. While most concern is focused on marine mammals, many of the lower frequency (under 1,000 Hz) sounds are also likely to affect fish (Popper 2003).

At MFD, the NRM will review operations and projects for potential noise impacts to fish and wildlife. The NRM will recognize that some project actions (such as pile driving) may result in noise and may negatively affect nearby species. The NRM will work with project and program managers to reduce the effects of anthropogenic noise on fish and wildlife. The NRM will use his or her expertise to advise the command and program and project managers in the use of Best Management Practices to reduce or eliminate the effects of noise on fish and wildlife.

4.5 Forest Management

4.5.1 Introduction

Manchester Fuel Department (MFD) forest lands extend over about 80 acres of established forest and approximately 80 acres of 2YO to 10YO plantation trees. The recent history of forest management on the installation can be surmised from the existing timber stands. The majority of existing trees are 50 to 80 years old. This indicates that most of the installation's forest was harvested just prior to or during construction of the fuel facilities. West of the above-ground tanks there are some relict older trees, mostly western redcedar and western hemlock with large red alder and bigleaf maple interspersed.

The subsequent reforestation on areas harvested resulted from natural seeding coinciding with favorable environmental conditions for the establishment of new stands of timber. Since Douglas-fir, western redcedar and western hemlock dominated the acreage adjacent to harvested areas, they were the primary coniferous species available to provide seed. In addition, bigleaf maple, red alder, wild cherry and willow colonized harvested areas. The existing stands have essentially developed naturally.

Since the Navy acquired the Department property, there has been little active forest management due to the combination of young second growth and the desire to maintain visual and aesthetic buffers between installation facilities and abutting privately-owned properties. In addition

to tree planting, there has been some removal of blowdown timber and hazard trees that threaten roads, fences, powerlines and pipelines.

In accordance with DOD and DON requirements, the Navy Forest Management Program is centrally funded and executed through the Naval Facilities Engineering Command. The Forester, Naval Facilities Engineering Command Northwest (NAVFAC NW), will provide professional forestry services to manage and develop the forest resources for the economical production of forest products and the conservation of related resources. The Forester will prepare, and review with the MFD, the forestry Annual Increments for the Manchester Fuel Department.

4.5.2 Authority and Requirement

The authority and requirement to have a Forest Management Plan is contained in an array of laws and DOD, DON and NAVFACENGCOM instructions and directives cited elsewhere in this INRMP. For example, 32 CFR 190 "prescribes policies and procedures for an integrated program for multiple-use management of natural resources on property under DOD control." Title 10 U.S. Code, Section 2665 authorizes the sale of forest products as well as reimbursement for the costs of managing forest resources for timber production. This is administered in accordance with DODINST 7310.5 Accounting For Production and Sale of Forest Products. The NAVCOMPT Manual, Volume 3, paragraphs 07150 and 035475-79 provide guidance on funding, accounting, and fiscal reporting procedures. The Timber Conservation and Shortage Relief Act of 1990 prohibits export of unprocessed timber originating from federal lands west of the 100th meridian. OPNAVINST 5090.1B Environmental and Natural Resources Program Manual discusses requirements, responsibilities and policy for natural resources management for Navy ships and shore activities.

Annual Navy Forestry Program expenditures will normally not exceed annual income from the sale of forest products. In the case of the forest on the MFD, restoration and enhancement efforts in any one given year might exceed income from the property in that same year. This is not to be a cause of alarm, since deposits from other forested Naval activities will generate sufficient funds to cover approved expenses, and planning and budgeting constraints will enforce economic investment of available funds for production and sale of forest products. MFD also provides appropriated funds for tree planting.

4.5.3 Purpose and Objectives

The purpose of this forestry plan is to provide programmatic and silvicultural policy for management of forest resources at MFD. It outlines procedures, projects and silvicultural prescriptions to restore, enhance, conserve and protect the productivity and resources of existing forest and recent plantations.

The plan's policies address existing forest stands and plantations as well as afforestation of open, grassy areas not yet replanted to forest tree species. While base construction may have reduced the size and quality of the forest, this plan will improve and enhance the existing and nascent forests. The silvicultural and programmatic policies herein are consistent with DOD policy that forest lands suitable for timber production shall be intensively managed for restoration and improvement of forest resources and economical production of commercial forest products, based

on soil-site capabilities and integrated with the total natural resources program, and in consonance with military uses.

MFD forests will be managed on a multi-disciplinary, multi-use watershed basis. This means that other natural resources programs and uses, such as military training, wildlife management, endangered species protection, wetlands protection, outdoor recreation, etc will be incorporated on a reciprocal basis to assure that all natural resources programs and the military mission are truly integrated. This approach will facilitate the greatest good for the greatest array of uses over the longest period of time without diminishment of future productivity and land use options. Specific management strategies and prescriptions are presented below in the appropriate management sections.

The forest management objectives at MFD are: (1) continue to maintain the existing forest stands in a healthy, productive condition through selective thinning that will increase tree and stand vigor and health and enhance structural diversity; (2) support the military mission by maintaining land availability and use options and slope stability along forest access roads; (3) prevent Navy land management activities from impacting water resources; (4) generate forest products and income through timber sales contracts; and (5) integrate forest management with other natural resources disciplines and programs to protect natural resource attributes associated with the forested acreage on the Department, and (6) support natural resources aspects of outdoor recreation to the extent practicable.

Navy forest management programmatic and silvicultural policies protect the real estate investment, conserve and enhance both consumptive and non-consumptive natural resources, maintain high soil and water quality and provide financial returns to the Government, as well as contributing forest products to the local economy. Management of Navy forests will be coordinated in an integrated, balanced natural resources program to furnish soil and watershed protection, enhance wildlife habitat, promote natural beauty and other natural resource values while providing operating, training and buffer areas for the military mission. These policies and plan will guide the preparation of annual increments and the selection of silvicultural techniques and projects used on Navy forests. Annual increments will be reviewed with the installation prior to implementation to assure compatibility with mission requirements. When implemented, the projects and prescriptions of this plan will increase and restore the forested acreage, and enhance the horizontal and vertical structural diversity of forest stands to create habitat structure and opportunities for biological diversity.

4.5.4 Schedule for Review

This plan will be reviewed on a 5 year schedule. The greatest needs in forestry on Manchester Fuel Department lie in the afforestation of open areas; commercial thinning of dense second growth stands to encourage development of understory vegetation and to enhance structural diversity; precommercial timber stand improvement (TSI) cuts to reduce competing vegetation; and interplanting of existing stands to encourage restoration of coniferous cover. This plan will provide stand by stand prescriptions tailored to achieve these goals.

Thus, the plan will need review when: (1) the prescriptions have been fully implemented and regulated forest stands are achieved; (2) when sufficient time has passed and, in the absence of plan

implementation, natural processes have so changed forest conditions that the plan no longer reflects existing conditions; or (3) when sufficient land use changes have occurred as a result of mission requirements that the plan is outdated. Given recent types and intensities of mission uses, it is anticipated that a 5 year review schedule is appropriate.

4.5.5 Policies

The Navy Forest Management Program will be administered in consonance with applicable law and regulation. Planning, budgeting, fiscal management, reporting and implementation will be in accordance with DOD program requirements, including forest management initiatives, mission support, positive community relations and public affairs, ecosystem forest management on a watershed basis, and environmental protection.

The Navy is committed to conserving and managing soil, water, forests, fish, wildlife and outdoor recreation resources. Our primary purposes in managing these natural resources are to support our national defense mission, maximize multiple land use benefits and fulfill land stewardship responsibilities required by applicable Laws, Executive Orders, administration initiatives and DOD directives. In order to achieve these purposes, this forestry plan will: provide for sustainable yield production, conservation and management of quality forests and wood fiber; fish and wildlife habitat; endangered species conservation and recovery; watershed/wetlands protection; outdoor recreation opportunities; and development and maintenance of desirable structural diversity and biological balance in the forest consistent with proven scientific practices.

Stand prescriptions are interdisciplinary and ecosystem oriented in approach, and considerate of watershed conditions. This means, for example:

~ forest management will be holistic to include a wide array of natural resource uses, values and functions

~ that wildlife and fisheries issues are incorporated into forest management planning, project criteria and operations

~ that wildlife trees, snag retention and wetlands protection are integral parts of forest management and timber sales;

~ that thinning prescriptions will achieve vertical and horizontal structural diversity to foster greater opportunities for biological diversity;

~ stand prescriptions will contribute positively to enhancement of wildlife habitat and corridors, and endangered species protection, conservation and recovery

~ that wetlands will be protected not only within jurisdictional boundaries, but including hyporrheic zones. Particular protective attention will be given to palustrine wetlands.

~ adjacent land conditions will be considered in prescriptions and implementation schedules

4.5.6 Implementation

The Navy Forest Management Program is centrally funded and executed through the Naval Facilities Engineering Command. The Forester, Naval Facilities Engineering Command Northwest (NAVFAC NW) will provide professional forestry services to manage and develop the forest resources for the economical production of forest products and the conservation of related resources. The Forester will prepare, and review with MFD, the forestry Annual Work Increments and Budget Requests. Annual Increments are Forest Plan addenda which describe all forest

management work to be completed during a fiscal year. Planned work and expenditures are itemized by cost account codes. Upon approval of the Annual Increment and receipt of funding, the year's forestry work will be implemented.

Reimbursement for the cost of managing forest resources for timber production is authorized by 10 USC 2665 from the sale of forest products. Forest products sale income and reimbursement of forestry expenses are planned, budgeted and administered by the Forester at NAVFAC NW. MFD may provide appropriated funding for forestry projects as it sees fit.

Forest product sales are accomplished in accordance with NAVFAC P-73, Volume II. Service contracts used to acquire forestry services are processed per FAR. Sales of forest products and forestry services are not combined under one contract. The Forester will provide technical specifications, funding and contract administration for all forestry contracts. The installation may provide its own funds to NAVFAC NW for forestry projects and services.

4.5.7 Forest Description and Inventory

Vegetation Characteristics

The existing forest stands on MFD may be generally classed in three categories: (1) second growth mixed conifer and broadleaved; (2) relict advanced second growth of mixed conifer and broadleaved; and (3) conifer plantations less than 20 years of age.

Mixed conifer and broadleaved second growth forest dominates the installation. It is the result of logging and construction that occurred between the 1920s and the 1950s. A marked and protected old growth Douglas-fir is located west of Tank 21 and approximately 200 feet west of an eagle nest tree. These stands are dominated by Douglas-fir, western red cedar, big leaf maple, red alder and western hemlock. Less common species are black cottonwood, wild cherry, willow and vine maple.

The relict advanced second growth is located west and south of the above-ground tanks. Western red cedar, western hemlock, Douglas-fir and big leaf maple are the dominant species.

The conifer plantations are the result of plantings undertaken beginning in the mid-1990s. These plantings will continue until all available open areas are reforested. This will reduce grounds maintenance costs, reduce flash fuels such as grass, increase the ambient humidity at ground level and improve biological diversity.

Forest Soils

Soil characteristics can be used to predict the probable impact of various forest management practices on individual soil map units. Probable impacts can be predicted for: woodland suitability, soil compaction, slope stability, competing vegetation and tree windthrow. Refer to the USDA Soil Conservation Service (sic) "Soil Survey of Kitsap County Area, Washington (September 1980)" for specific soils mapping units, profile descriptions and pertinent land use information. Most of the soils on the Department have adequate nutrients, available water holding capacity and internal drainage for tree production. The exceptions are soils that are extremely wet or high in peat content which occur primarily in containment dike areas, Franco Pond and the wetlands by Beaver Creek.

Inventory

Detailed forest inventory data for MFD is given in Appendix D:
Table 1: Stand Data
Table 2: Stand Data by Decade of Origin
Table 3: Habitat Data by Cruised Stand
Table 4: Type Group Summary

Table 1 reports volume data by stand. Table 2 reports volume data by 10-year age class. Table 3 provides the percentage of ground cover by primary species. Table 4 reports volume data by type group. A variable sub plot was taken at each measure point to measure snags. A fixed length transect was taken at each measure point to measure down woody material to a 4-inch diameter.

On the map, the stands are identified by stand number, species, size class, stocking and decade of origin. A summary of the type symbols used follows:

Species

D	Douglas fir
H	Western hemlock
RC	Western red cedar
WP	Western white pine
LP	Lodgepole pine (shore pine)
TF	True fir (Grand fir, Silver fir)
SS	Sitka spruce
RA	Red alder (includes aspen, cherry)
BLM	Bigleaf maple
BC	Black Cottonwood
Md	Madrone
Q	Aspen
Hd	Mixed hardwoods

Lower case letter species designations indicate a secondary species which comprises 20% or more of the stand volume as estimated from the aerial photographs or cruisers judgment. The secondary call is useful to indicate that individual stands are somewhat different from the type group in which it is included.

Non-Forest Types

A	Agriculture
Br	Brush
G	Grass
O	Open (developed)

Size Class

4	21” dbh and larger
3	11-21” dbh
2	5-11” dbh
1	0-5” dbh

Occasionally a size class is difficult to determine because of the broad range of diameters present. In this case, the diameter class may be shown as 4/3 indicating a mixture of size class 4 and 3 trees.

Stocking

Stocking is represented by percent of crown closure, based on aerial photo examination.

,3	70-100 percent
,2	40-69 percent
,1	10-39 percent

Origin

Decade of origin is shown as a two-digit number following the type call. For instance, 92 indicates that the stand began in the decade of the 1920s, between 1921 and 1930.

92 1920
93 1930
94 1940
95 1950
96 1960
97 1970
98 1980
99 1990
00 2000
01 2010

For volume compilation purposes, cruise data from individual stands is combined with other similar stands into type groups. The groups contain stands with minor species variances that are unique to that stand, however the volume sample is too small to report individual stand volumes. Occasionally, an individual stand may not receive plots or may be too small to be reported separately. In that case, a judgment is made as to the most appropriate type group. When type groups are indicated with an "a", this means that the cruiser chose a different basal area factor for that stand, though the group is the same as other stands.

Type Groups

0 non-timber stands
1 D1,3
2 D2,1
3 D2,2
4 D2,3
5 D3,1
6 D3,2
6a Lp3,3
7 D3,3ra
8 D3,3
10 D4/3,3
11 D4,1
12 D4,2
13 D4,3
14 Ra1,3
15 Ra3,3
16 Cw3,3
17 M3,2
18 Rc3,2
19 H3,2
20 H3,3
21 H3,3,d

22 H4,3
23 H4,3,d

Site Index

Site quality is a term used to describe the relative productivity of a land area for a particular tree species. It is usually defined in terms of capacity to produce wood fiber. The most common expression of site quality is site index. Site index is based on tree growth patterns and refers to the height of dominant or dominant and codominant trees in even-aged stands at some index age, usually 100 years. The height growth of such trees is considered to be independent of stand density over a wide range of soil/site types.

Due to prior land management practices, including base construction that significantly disturbed the soils, many stands on Manchester Fuel Department have not been actively managed to maximize tree growth. Thus, the use of site indices may not always reflect actual site productivity potential. One goal of this plan is to achieve well stocked, regulated stands in order to take advantage of site productivity and to restore the coniferous forest cover previously found on these lands. Thus, site indices based on existing stand characteristics may increase with management and time. Site Indices are given in Table 1 for the dominant tree species in each stand.

4.5.8 Management

Management System

A forest management system of area control will be used to foster desirable forest age classes, stand structures, species composition and to enhance endangered species habitats. This will assure sustainable production of the most desirable timber and other forest products, functions and values while protecting water quality, structural and biological diversity, and outdoor recreation and education. It is not considered appropriate or advisable to fragment the forest into a number of stands equal to a rotation age. Rather, existing stand delineations will be the planning base for future age classes.

Tree planting and plantation maintenance, interplanting existing stands, and commercially thinning some areas will dominate forest activity over the next two decades. Most of the forest land is poorly to medium-well stocked second growth. The typical planting prescription will be 10 to 12 feet on center for plantations and when interplanting existing stands.

The typical thinning prescription will specify that 100 of the best commercial species “Leave Trees” will be left uncut and undamaged on each acre, spaced consistently and uniformly throughout the thinning area. In addition to the specified Leave Trees, all thinnings will leave intact all small non-commercial sized trees. This includes less prevalent species such as wild cherry, willow, cottonwood, yew, etc. The purposes of this approach include:

~ sustainable forest management without diminution of future diversity and productivity

~ minimizing stand disturbance while opening up the canopy sufficiently to allow more sunlight to hit the forest floor and establish understory vegetation

~ preserving and enhancing both horizontal and vertical structural diversity through retention of shade tolerant understory trees and development of grasses, forbs and woody brush species

~ providing a population of understory and suppressed trees that are recruitment for snags in future decades

~ providing botanical and structural diversity that will enhance forest stands for wildlife species.

Snags, Hollow Logs and Wildlife Trees

Snags and hollow logs play a very important role in forest ecology. Timber sale contracts will protect snags and downed large organic debris. In addition, trees deemed unique or of special interest for wildlife, such as advanced second growth specimens, isolated relict old growth, trees with large limbs or cavities, or less prevalent species (yew, cottonwood, bigleaf maple, wild cherry, willow, etc) will be protected in timber sales contracts.

Snags and downed hollow logs, important to cavity-nesting birds and other animals, will be left uncut except when determined by the NAVFAC NW Forester, in consultation with the timber purchaser, to present a safety hazard and no alternatives are available for working around the snag. All naturally downed logs will be left on the forest floor, unless inadvertently moved as part of the logging process, to provide habitat for wildlife including small mammals, salamanders, insects and other arthropods. Slash left from cutting the tops and branches off of harvested trees will be left on the forest floor to allow it to decompose naturally and contribute to nutrient cycling.

Species To be Grown

Douglas-fir is the mainstay of the Puget Sound forest products industry. Superior to other local species in strength, growth and disease resistance, Douglas-fir is the most useful and therefore the most valuable species adapted to most stands on MFD. However, for biological diversity, most sites will be reforested with a variable mixture of Douglas-fir, shore pine, true firs, Sitka spruce, western hemlock and redcedar.

Western redcedar is also a valuable tree for commercial and structural diversity functions. Cedar will be grown on a rotation probably equal to twice that of any other species. Because of shade tolerance and persistent foliage, it is critical for horizontal and vertical structural diversity in the forests. For the foreseeable future, all timber sale contracts will prohibit the cutting of any cedars. They are generally small (<24 inches DBH), of low Girard Form Class and current commercial value. Their highest and best use is contributing to structural and biological diversity over the next several centuries. Hazard cedars, however, may be removed on a case-by-case basis.

Natural regeneration of other native species such as alder, willow, wild cherry and maple is expected to diversify stands thinned or replanted, resulting in a species mix that will be more resistant to insect and disease attack through the synergistic effects of species and wildlife habitat diversities.

Reforestation

Reforestation will use a mixture of site-adapted native coniferous species. Plantings will be conducted the first planting season after harvest to achieve full stocking, which is defined as 302 live stems of commercial species per acre. This equates to a 12 foot on center spacing. Hand planting conifer seedlings will be the method used to reforest areas cleared for base construction or to fully stock deficient stands. Hand planting is more expensive than seeding, but affords more rapid and dependable stand establishment and can provide positive influence on stand species composition. Hand planting will be funded by either the installation or the NAVFAC NW Forest Management Program and accomplished by service contract. Some planting areas will be cleared

and scarified mechanically prior to planting. In areas of heavy grass and/or brush competition, spot application of herbicides may be used as part of the pre-planting site treatment. These plantings will continue until all available areas are fully stocked with live coniferous trees.

Rotation and Cutting Cycle

It is not appropriate to set a rotation and cutting cycle for MFD until the stands have been brought into a management system. Also, the setting of rigid rotation ages and cutting cycles may reduce the adaptive management needed to adequately strive for vigor, health and structural and biological diversity for all forest resources. Thus, this Plan will focus on intermediate silvicultural treatments and thinnings that will promote structural diversity, and protect endangered species habitats and water quality. However, it is anticipated that precommercial and commercial thinnings will be followed by a final harvest at a rotation age significantly in excess of 100 years. It is anticipated that rotations will be at ages 150 to 300 years. Some species such as western redcedar may have longer rotation ages. This will allow for development of high quality forest products and forest stands, which will provide superior structural and biological diversity supporting a mixture of consumptive and non-consumptive products, values and functions over multiple centuries.

Allowable Annual Harvest

The annual growth on MFD will improve as the stands are stocked and treated. Allowable annual cut will not be determined for this plan since the remedial and developmental treatments are considered intermediate. When the Plan is revised subsequent to full stocking of all forest lands and completion of all intermediate thinnings, the stands may be in a condition favorable to determination of cutting cycle, rotation age and allowable annual cut. It is not anticipated that an allowable final cut would involve harvests every year.

Silvicultural Treatments

(1) Methods of Cutting Clearcut final harvest is the silvicultural system best suited to the regeneration of Douglas-fir. Young Douglas-fir trees are the least shade-tolerant of any of the other commonly associated conifers. Partial cutting would favor the establishment of more shade-tolerant species and a gradual shift in stand species composition away from Douglas-fir towards more shade-tolerant but less valuable species such as grand fir and western hemlock. Except in cases of salvage of timber due to natural windthrow, deadfall or pest infestation/outbreak, landslide, fire or somesuch, it is anticipated that clearcutting will not be used under this Plan.

Selective cutting will be the system used in both precommercial and commercial thinnings for the foreseeable future. Intermediate selective cutting will be used to thin stands for the concentration of growth, development of horizontal and vertical structural diversity, increase in value of the residual trees and to salvage mortality losses. Thinning will improve stands by removing diseased trees, inferior species and damaged trees. In mixed alder and conifer stands, selective cutting may be used to remove the alder while leaving the conifers to mature. Additionally, this technique will be used to remove alder from mixed stands and to make room for supplemental plantings prescribed to achieve full stocking levels.

In riparian corridors, special care and restrictions will be used, such as machinery exclusion, to assure development of a healthy and vigorous stand of trees that will provide ample opportunity for wildlife uses while shading watercourses to maintain preferred water temperature regimes. In the

vicinity of raptor perch or nest trees discovered in field surveys, selective cutting will be used to assure development and perpetuation of vicinal large, open-grown trees similar to those already chosen as perches.

(2) Insect and Disease Control Insect and disease problems have not reached epidemic proportions on MFD in recent years. The following specific forest pests are the most frequently encountered and are listed along with the prescribed control method:

a. Tent Caterpillars are generally present in broadleaved trees and do considerable defoliation. Whole trees may be defoliated, causing an unsightly mess. Alder is seldom killed by this and investment in pest control measures, notably spraying, is not warranted. Also, conversion of alder to coniferous species will reduce the number of host plants on MFD.

b. Root Rot is a persistent problem, especially on heavier soils. Historically, this has not been a problem on MFD. Infected trees often fall prey to bark beetles, which speed loss of foliage and mortality and may offer the first outward sign of fungal infection. A great deal of control can be accomplished by clearcutting the stand, tipping over the stumps and planting back to a different species.

c. Douglas-fir Bark Beetle is frequently seen as a secondary invader of trees weakened by old age or disease. This insect has the potential for epidemic attack, but proper forest sanitation including thinning and harvest of diseased trees should keep it under control if it becomes a problem. In such cases, patch cutting will be used to salvage infested areas.

d. Douglas-fir Tussock Moth has not yet been identified on MFD lands. If this defoliating insect does become a problem, control will be difficult. At present, aerial application of insecticides is the only known control method. Any pesticide application will have to be thoroughly reviewed and approved prior to use. Suppression of forest pest insects will be coordinated through the DOD-USDA/USFS Memorandum of Agreement.

e. White Pine Blister Rust, an introduced disease, has virtually eliminated white pine from serious management at this time. White pine was not detected in the inventory. Development of rust-resistant strains may allow planting white pine in the future.

f. White Pocket Rot is a fairly common pathogen in Douglas-fir and is occasionally seen in young second growth. Patch cutting harvest of identifiably infested trees plus a surrounding transition area is the best control.

g. White Heart Rot is a very destructive disease of alder. This fungus is responsible for the slow destruction of alder stands after the age of 40 or 50 years. The best control is the harvest of mature alder before the fungal losses take their toll. Risk alder should be removed along roads, pipelines, powerlines and fences as well as in recreation areas where pedestrians hunt or walk.

h. Gypsy Moth is an introduced forest pest that has shown great capacity for destruction and sudden epidemic growth in Washington. Both the European and Asian gypsy moths are of concern. They have not been detected on MFD. The Navy will continue to cooperate with state and federal

agencies conducting surveys for the moths. Control is achieved by pheromone trapping, spraying with EPA approved insecticide as well as spraying with "BT" and in accordance with the "Memorandum of Agreement Between USDA and DOD for the Conduct of Forest Insect and Disease Suppression on Lands Administered by The U.S. Department of Defense" (1990).

(3) Wildlife Damage Control Deer browsing the growing tips of young conifers cause reduced height growth and in extreme cases may stop height growth completely. Plantations may be treated with repellants to dissuade deer from browsing the seedlings. Small mammals such as mice, moles, squirrels, rabbits and mountain beavers also inhibit reforestation by eating seed and seedlings. Seeding is not anticipated as a means of regeneration. Raptor predation helps keep small mammal populations under control. Snags and scattered low grade perch trees will be left in clearcut areas as roosts and hunting perches. Further small mammal discouragement is not anticipated.

(4) Fire Suppression There have been no forest fires at the Manchester Fuel Department. Forest fire detection would be by observation from the Department or adjacent lands. Given the controls on recreation, the most common source of ignition, human activity, is limited to industrial areas and fuel farm operations. Suppression of wildfire would probably be accomplished by local fire departments. Timber sale contracts require spark arrestors, fire tools, fire watchman and suppression and reporting of any fire on the sale area. During periods of high fire danger, additional equipment such as a water buffalo or tank truck with pump and hose is required also. The entire Manchester Fuel Department is served by a pressurized fire hydrant system allowing for quick suppression of landscape fires. Service contracts for silvicultural treatments also contain fire prevention and suppression requirements, although this is not the same threat because of the lack of machinery in most cases.

(5) Slash Treatment Logging slash will be treated after thinnings or clearcut harvest by lopping and scattering. Slash will decay over a period of years while slowly releasing organic nutrients back to the new stand of growing trees. Concentrations of slash will be removed to a minimum of 25 feet from roads and structures.

Firewood Cutting Program

A noncommercial firewood cutting program is established at the base. This is an opportunistic program, with the suitable material and areas available and dependent upon logging slash, removal of hazard trees and natural occurrences such as storm damage and windthrow in accessible areas. This is not a year-round program. It may be implemented only in areas with suitable material and access. In accordance with law and regulation, timber is government property that may be disposed of through prescribed, legally sufficient and compliant methods. For the firewood cutting program, this means that a cutting permit/bill of sale must be issued. Fees are collected for woodcutting ($15/pickup truck load or 64 cubic feet = ½ cord). These fees are collected via a special permit provided by the NAVFAC NW Forest Management Program, serially numbered and tracked for deposits to the U. S. Treasury. The funds received for firewood are deposited to the Navy Timber Sales Receipts Account pursuant to "Department of Defense Instruction 7310.5: Accounting for production and sale of forest products" (U.S. Navy 1988). The NAVFAC NW Forester will cooperate with MFD maintenance to identify suitable and available material

4.5.9 Natural Resources Protection Considerations in Forest Management

In accordance with The Sikes Act requirements, this Plan will be implemented upon approval. The designated NRM at MFD and the Forester at Naval Facilities Engineering Command Northwest (NAVFAC NW) will implement this Plan in a coordinated manner to achieve prescriptions and goals. While MFD has overall responsibility for the Plan, NAVFAC NW administers the Navy's centrally-managed Forest Management Program. As such, NAVFAC NW is responsible for planning, budgeting and executing forest management activities in coordination with the installation. The NAVFAC NW Forest Management Program is staffed, funded and equipped to carry out any and all forestry consultations, operations and projects in furtherance of this Plan's objectives.

4.5.10 Control of Non-point Sources of Water Pollution

(1) Pesticides Currently, the only anticipated use of herbicides would be possible spot applications for planting trees in areas of heavy grass sod. Other herbicides have been used for control of invasive nuisance species (Himalayan Blackberry, Scotch Broom, Japanese Knotweed, Bull thistle, Canadian thistle) which could impact fuel operations. Historically, however, mechanical grubbing has been used instead when planting in wildland areas. The installation desire to reduce grounds maintenance costs in developed areas may lead to additional tree plantings to convert mowed grass areas to nascent forest. Because of the fierce competition the grass poses to the seedlings, herbicides will be used in these situations. If and when pesticides are used, they will be applied by trained and certified personnel in accordance with DOD, EPA and installation rules and regulations.

(2) Erosion Control Erosion in forest areas has not been a problem on MFD because of the minimal disturbance to soils, the good vegetative cover and infrequency of silvicultural treatments. Natural development of the forest, timing of silvicultural treatments, choices of low-impact technologies and improving understory vegetation will protect the soils. Skid trails on slopes steeper than 10% will be water-barred to prevent gullying. Wind erosion has not been a problem due to consistent vegetative cover. The risk of erosion during the exposed period of logging and early regeneration is greatly reduced by limiting the size of clearcuts, careful planning of cutting unit boundaries, the use of uncut buffer strips, early planting or seeding and the use of water bars on roads and skid trails steeper than 10%. Erosion from forest access roads will be absolutely minimal since existing graded roads will be used. These roads were constructed during base construction. No new permanent roads are anticipated to be constructed. Erosion control requirements are included in timber sale contracts, so additional funds and projects should not be required.

(3) Logging Debris Logging slash will be treated as described above or in special cases will be treated or disposed of in a manner to reduce, trap or repair historic erosion.

(4) Riparian Zones The restoration and enhancement of the coniferous buffer strip along Beaver Creek will be a direct benefit to wildlife, most importantly salmon. It is anticipated that this strip will be a permanent stand of trees managed for wildlife and buffer purposes.

(5) Horses Due to their very low impact on the forest floor, certain logging or other silvicultural treatments might be accomplished using draught horses instead of machinery such as skidders.

(6) Wetlands Protection Wetlands will be protected in accordance with applicable law and regulation. The erosion control and buffer strip requirements included in the Plan and in timber sale and forestry services contracts will protect wetlands from damage by forestry operations.

(7) Endangered Species Protection There are no known federally listed threatened or endangered plant or animal species on MFD.

(8) Cultural and Historic Site Protection Any discovered sites will be evaluated and protected in accordance with law and regulation. There are no known historic or archeological sites on the Department. If sites or artifacts are discovered during presale investigations or other field inspections, they will be evaluated and protected from logging activity through restriction of treatments, machinery and skidding in such areas. The activities under this plan will comply with pertinent law and regulation.

(9) Aesthetics As with any question involving beauty, the question of forest aesthetics may be viewed from several perspectives. The common public view of the Navy property at Manchester Fuel Department is from Beach Drive or the Puget Sound. Adjacent property owners have a closer view. For base employees and recreational visitors, the view is from the immediate foreground. From a distance, this affords a vista of evergreen and deciduous trees, open grassy areas now in forest plantation, and Fuel Department facilities. Overall, it presents a semi-pastoral scene that cannot be construed as “natural”. It is not "natural" since it is the result of considerable land disturbance and a conversion of forest to an industrial facility. However, it does create a relatively open space for adjacent residents and passers-by.

In areas thinned pursuant to this Plan, it is not so much what is done to encourage structural and biological diversity, as the rate at which it is done that might upset some viewers. Up close, the reforestation efforts will appear somewhat harsher than from a distance. Trees cut or pushed over will appear less attractive as they turn brown and lose their leaves than they did when green and upright. Lopped, piled or windrowed slash will look better from afar than up close. This can be kept in mind when writing a prescription for silvicultural treatments.

Aesthetic considerations in forest management are intended to reduce visual impacts of logging and site preparation and include clean logging, placement and layout of cutting areas, and buffer strips to create visual barriers, when possible, between work areas and main roads.

(10) Wildlife Habitat The silvicultural methods used for reforestation, timber stand improvement and harvest will be supportive of wildlife. Dense timber stands shade out the understory plants that provide food and cover for wildlife. Thinnings and reforestation will provide young forest stands with a wide diversity of grass, forbs, woody shrubs and trees for food and cover. This will encourage a diversity of animal species. Treatments to improve the stands will help open up the forest canopy to allow sunlight to reach the forest floor so that the understory will be stimulated, developed and perpetuated as foraging, nesting and thermal cover for all wildlife

species. Timber harvest might temporarily displace wildlife from the operation area to adjacent undisturbed forest while operations are underway. Quite frequently, browsing and avian species will visit thinning areas during nonworking hours to take advantage of the foliage and insects available.

Following patch sanitation salvage clearcuts, as the area seeds or sprouts to brush, weeds and young trees, the rapidly growing young forest and decaying logging residues will provide increased forage for deer, granivores, and insectivores. Consequently, predators will benefit. Some species preferring closed canopy habitat will be displaced until the young trees reestablish a closed canopy. All wildlife management is subject to habitat manipulation and management for security requirements.

(11) Multiple Use Within the constraints of mission and safety requirements, the forests are managed for multiple use to produce sustained yields of wildlife, timber and other forest products, clean water, military training and recreational opportunity.

(12) Road Construction The roads developed for historic logging, construction and operation of Manchester Fuel Department are sufficient for forestry activities. To implement silvicultural treatments, it may be necessary to place crushed rock on existing roads, or to develop temporary haul spurs. Haul spurs will be developed using old grades where possible. Where these do not exist or present unacceptable risks, new spurs will be created by meandering between Leave Trees. Road construction will be minimized in order to retain as much land as possible in production and to minimize land disturbance and costs. Reforestation will be up to within 6 to 10 feet of road edges to reduce occluding ruderal vegetation and to fully stock the site. Full stocking will eventually function as a protector of the road corridor. Within cutting areas, road construction will be limited to temporary spurs as narrow as possible. These temporary spurs will be waterbarred or otherwise treated (seeding, cross ditching, etc) to prevent erosion.

4.5.11 Work Objectives and Thinning Criteria

The long term MFD forest management goal is to achieve fully stocked, healthy, productive, mixed conifer stands of timber for sustainable yield of quality forest products and other compatible forest uses and benefits; and to provide land use opportunities for military training, installation security and outdoor recreation and education. Over the span of this plan, this will involve thinnings, plantings, selective cuts and, in the case of natural disaster or pest infestation, small patch clearcuts. The actual stands and projects will be spelled out in the Annual Increment addenda to this plan, which is reviewed and approved by the installation. Since the bulk of the prescriptions are remedial silvicultural treatments to improve the health, vigor and structural diversity of the stands and forest as a whole, it is desirable that some work be accomplished each year under this plan. Specific recommendations on a stand-by-stand basis are given below.

Sales Procedures

The NAVFAC NW Forester provides professional forestry services to the installation to manage and develop the forest resources within the facility for the economical production of forest products and the conservation of all forest resources. In cooperation with the installation, the Forester: chooses the areas to be treated based on overall goals, silvicultural needs, resource protection considerations and stand inventory data below; analyzes the potential for environmental impacts of proposed silvicultural treatments; completes the field work, including volume and value estimates,

project or sale boundary establishment, snag and wildlife tree marking, and access spur layout and design; prepares and administers the contract. Projected sales are outlined for the fiscal year in the Annual Increment addenda to this Plan. All logging activities shall be carried out under contract issued by Naval Facilities Engineering Command Northwest (NAVFAC NW). Sales of forest products are accomplished in accordance with NAVFAC P-73, Volume II. Service contracts used to acquire forestry services are processed per FAR. Sales of forest products and forestry services are not combined under one contract.

The Forester will prepare timber sale contracts and administer them from advertisement and award through operations and completion. The installation will be kept advised of the schedule and progress of all forestry operations. Following award, the Forester will inspect timber sales to assure contract compliance and protection of the forest environment. Forestry services contracts will follow similar procedures.

Forestry Consultations and Support

The Forester will mark project boundaries, wetlands and riparian buffers, prepare and administer contracts, and coordinate forestry projects for commercial and precommercial thinnings, plantings and other forestry work as needed. This includes forestry consultations in support of base operations, maintenance, repair and construction projects.

Public Relations

The Navy's natural resources management has generated significant interest over the years. As requested by the installation, the Forester will provide docent tours, consultations and support for natural resources education events, tours with VIPs, school groups, governmental agencies, conservation organizations, media and freelance writers. All such events will be thoroughly coordinated with the FISCPS Corproate Communications Officer.

Thinning Criteria

A thinning project may cover 3 to 15 acres, leaving at least 100 stems/acre of merchantable trees. Additionally, less frequent species, wildlife trees, snags and unique specimens will be marked or identified in the contract for retention in furtherance of our goal of improving biological and structural diversity. The following are typical but not exclusive contract provisions governing selection of Leave Trees. These criteria apply to all thinnings and will be adjusted as needed in light of specific stand conditions.

" LEAVE TREE SELECTION AND CUTTING. On the coniferous thinning areas, one hundred (100) of the best live Douglas-fir or other conifer species shall be left uncut and undamaged as Leave Trees on each acre of the sale area. This equates to a spacing of approximately 20 feet on center between Leave Trees, which are to be uniformly and consistently spaced over the entire sale area. Trees marked with yellow or blue paint and/or signs are designated as wildlife and structural diversity trees, and are to be left uncut and undamaged. Live trees greater than 8 inches DBH so marked may be included in the 100 trees per acre. Dead wildlife trees may not be included in the 100 trees per acre count.

Leave trees shall be Purchaser selected on the following basis and criteria:

(1) Preferred coniferous species in the following order: Douglas-fir, western

redcedar, Pacific silver fir, grand fir and western hemlock.
(2) Deciduous trees may not be selected as Leave Trees.
(3) ***No western redcedar or Pacific yew trees may be cut.***
(4) All alder trees will be cut and removed.
(5) Coniferous trees free of defects, disease or damage.
(6) Fastest growth as evidenced by larger relative diameter breast high (DBH), greatest height, and light colored bark with active, buff colored crevices.
(7) Good form and straightness of the bole, and lack of forked tops.
(8) Spacing as near as possible to 20 feet by 20 feet, on centers, for a uniform and consistent distribution of 100 Leave Trees per acre.
(9) Dead trees, non merchantable culls, and understory trees less than 6 inches diameter on the stump are not to be selected as Leave Trees, but are to be left uncut when possible.
(10) Pitch bleeding western white pine and dwarf mistletoe infected western hemlock shall not be selected as Leave Trees. Live wildlife and structural diversity trees marked with yellow signs and/or paint may be selected as Leave Trees.
(11) Less abundant tree species such as madrona, dogwood, wild cherry, willow, bigleaf maple, western yew and holly may not be counted as Leave Trees and are to be left uncut and undamaged in the residual stand. Such trees do not have to comply with spacing requirements.

Trees to be cut and removed shall be Purchaser selected and cut so as to avoid damage to all Leave Trees. Trees smaller than 6 inches stump diameter and not selected as Leave Trees shall be left uncut when possible. Dead trees and non-merchantable culls shall be left uncut. Trees cut along sale area boundaries shall be felled into the sale area so as to contain slash and debris on the site. Stumps shall be cut as low as practicable and shall not exceed 12 inches or one DBH in height, whichever is greater. Limbs and tops are to be cut from merchantable stems and left in the woods. The Purchaser shall exercise care and use directional felling to minimize damage to residual trees. All felled trees shall be utilized to 6" DIB at the small end by 24 feet in length. Bucking to reduce length or diameter is not allowed. If the Purchaser bucks felled trees to reduce diameter or length, the spoiled merchantable portion will be scaled as though it were whole and the Purchaser will pay for such material at the unit prices bid."

Preferred yarding technology will be, in order of preference: draft horses or mules, skidders or excavators. No cable logging is anticipated. When compared to the other methods, the use of draft horses minimizes soil disturbance, compaction and churning, and impacts to forest floor organic matter, large organic debris and vegetation.

The only clearcutting permitted will be small cuts for salvage due to fire, insect infestation, disease, blowdown or other natural causes. Such clearcutting is expected no more than once a year. No tree-planting will be necessary in thinning cuts, because regeneration is by natural seeding from the remaining trees and by the seeds remaining in the soil.

4.5.12 Stand Prescriptions

The following prescriptions provide guidance in the preservation, management and treatment of forest stands. The prescriptions are descriptive and prescriptive. They address in unrestrictive terms the management and silvicultural goals and treatments to be applied over the lifespan of this plan and subsequent editions. Management will be adjusted in light of any unforeseen circumstances that pose new situations for forest and land management. Changing or evolving mission requirements and natural disasters may require some adjustment of the location, sequence and timing of silvicultural treatments. However, the silvicultural policies described elsewhere in this plan are considered ecologically sound and will be adhered to in the absence of urgent and compelling alternative land use requirements documented and adopted through established programmatic and project planning processes.

Due to the sensitive nature of such areas and resources, no information will be included here concerning historical, cultural or archeological items and sites discovered over the years while conducting forestry work. Such information may be available from the Forester, NAVFAC NW, through confidential discussions as appropriate and pertinent to land management issues and uses.

Most second growth stands need thinning and/or interplanting to focus site potential growth on fewer, larger trees per acre and to foster development of coniferous forest, understory vegetation and tree reproduction. The following prescriptions are provided for silvicultural treatments possible under this INRMP (Figure 4-2).

Stand #1: This small stand is dominated by western redcedar and bigleaf maple. It is the stand through which Beaver Creek runs to Clam Bay. The prescriptions for the stand are to increase its size by planting the open, grassy area on the south side of this stand; to improve the coniferous composition by interplanting with shade tolerant species that will provide permanent shade cover for the creek.

Stand #2: This stand is in sore need of replanting. This can best be accomplished by removing most of the alder and maple, leaving whatever conifers may be present. Then replant the area with a mixture of native conifers. This stand provides excellent forage and cover for wildlife.

Stand #3: This stand is located west of the above ground tanks. It is dominated by bigleaf maple and western redcedar. It is an aesthetically pleasing stand, with heavy canopy and shaded floor. The prescription is to selectively thin, leaving all conifers and sufficient BLM for shade, and interplant with a mixture of native conifers. The old road through this stand will have to be bladed open and rerocked.

The grassy slope between this stand and the above-ground tanks was planted with conifers (2001) and will have dead seedlings replaced in Jan-Mar of any year. The planting will continue around the north end of the tanks, thence along the slope above Beach drive, south to the overpass.

Stand #4: Located in the SW corner of the base in the above-ground tank area, this stand is in need of blackberry control, removal of competing vegetation and interplanting with a mixture of native conifers. Salvage logging of blowdown timber was conducted here in about 1992. The area was replanted the following year with Douglas-fir. The watercourses were planted with 1,000

western redcedar the same year in an attempt to increase the permanent coniferous forest that shades the streams. This was done to help reduce water temperatures.

Stand #5: This small open area was enlarged in the mid-1990s to allow cleanup of the soils. The area should be replanted as soon as soil contamination monitoring requirements will allow. A mixture of native coniferous species will be used.

Stand #6: This stand covers open areas on both sides of the base. All available areas that can be planted with trees will be so treated over the term of this plan. The goals are to re-establish the original coniferous forest, reduce grounds maintenance expenses and improve security by pruning lower limbs off existing trees.

Stand #7: This stand suffered blowdown damage in 1993 and salvage logged to remove the material. Subsequently, the area was interplanted. It still needs blackberry control and additional planting with a mixture of native conifers.

Stand #8: Situated along the east shore of Little Clam Bay, this stand will be selectively thinned to remove broadleaved trees (alder, willow and maple) and interplanted with native conifers. The stand shows evidence of maples being cut many years ago and the stumps not being treated with systemic herbicide. Some of the maples should be retained as shade trees for the conifer seedlings. Tree removal will be difficult due to the fence on the east edge of the stand (i.e., along East Clam Bay Road), but this can probably be overcome with appropriate machinery.

Stand #9: This stand extends from Pine Road south to the installation boundary and is situated on the east (uphill) side of East Clam Bay Road. It contains a significant presence of cedar and fir, but also a high number of stems of maple and alder. The prescription is to selectively remove most of the maple and alder and interplant the Leave Trees with a mixture of native conifers. This will have to be done very carefully to avoid damage to facilities or the forest floor vegetation. Erosion is a concern on this slope. The old midslope skid trail can be reused and perhaps extended to the south.

Stand #10: This "Open" category area is a storage area.

NOTE: The following provisional stands will be so labeled until they are fully mapped and included in the GIS database. At that time the term "provisional" will be dropped and standard stand numbers assigned.

Provisional Stand #11: This is the plantation on the slope in back of the above-ground tanks, extending from the southern slope along the grassy slope northward to Beach Drive, thence south along the slope to the overpass/bridge. This stand may be interplanted with native conifers.

Provisional Stand #12: This is the Franco Pond area, from Beach Drive to the west side of Franco Pond and south to the electric gate. In 2002 16 crab apple trees were planted in protective cages in the southern portion of this stand. The goal is to improve and increase the forage available to a wide variety of wildlife. Dead apple trees should be replaced.

Provisional Stand #13: This is the long, narrow stand of trees outboard of the fence along North Dike Road from the outfall of Little Clam Bay thence east and south almost to the Small Boat Pier. In 2000 this area was selectively thinned and pruned to improve security observations. Additional work can be accomplished to interplant the area with pine and spruce and to remove some of the ruderal species. This area is the result of fill placed during base construction.

Provisional Stand #14: This stand is located on Orchard Point, from the west side of the old Director's house east to the Orchard Point light. This area should be interplanted with Sitka spruce to fill in gaps and provide replacement for damaged Douglas-fir. Besides removal of hazard trees, no logging is anticipated.

Provisional Stand #15: This is the large plantation area covering most of the main tank farm hill. Tree planting will continue until the entire area is fully stocked with live trees. Trees will not be planted within 8 feet of roads, on tank tops or near vents and access vaults, under powerlines, or within 20 feet of pipelines.

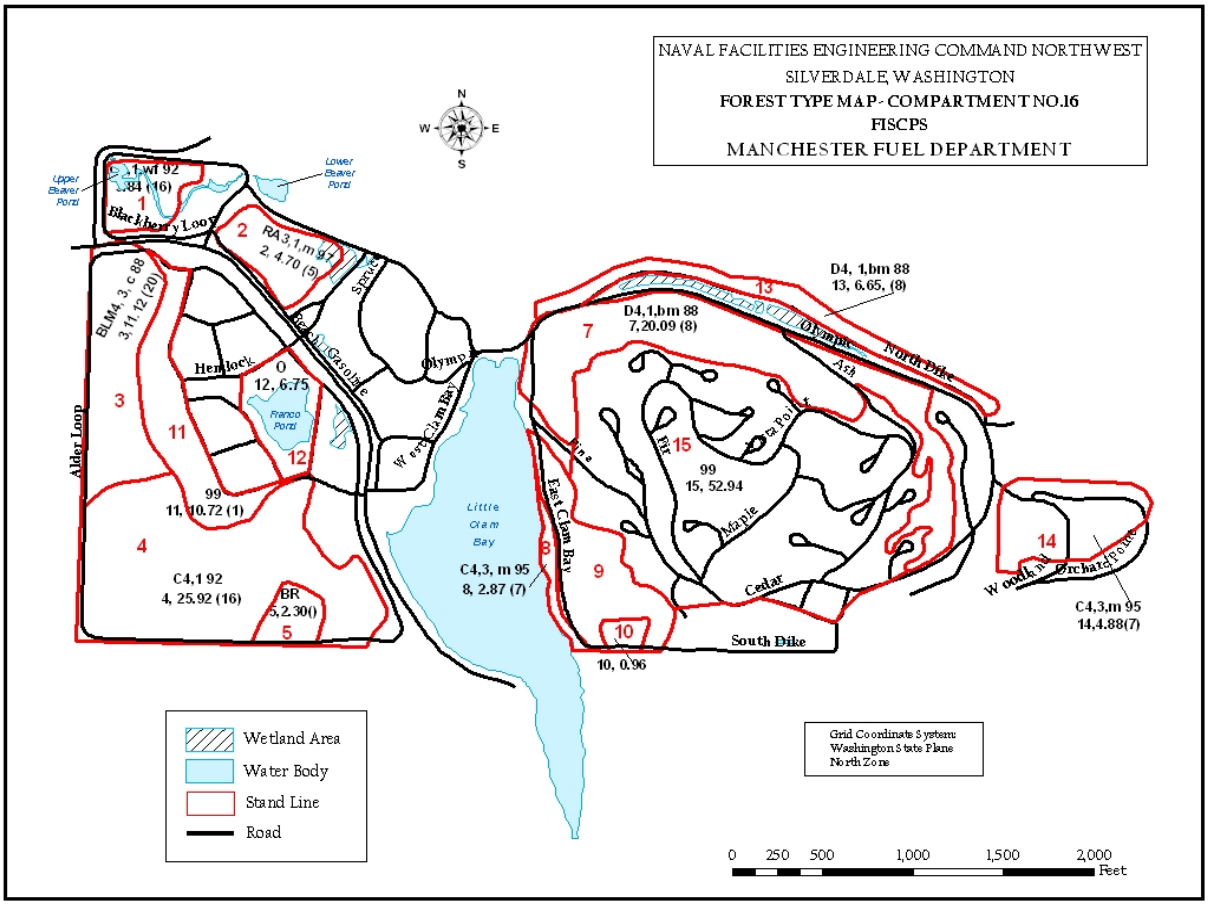


Figure 4-2. Forest Stand Map

4.6 Environmental Protection Measures

4.6.1 Project Review Procedure

The installation Environmental Director/NRM reviews all construction and maintenance projects performed on the installation. This ensures that the installation is in compliance with all environmental laws and regulations, provides feedback to the program managers regarding costs and length of time to receive permits, and provides an additional design review check to help catch conflicts or other issues that were overlooked by the program managers. The process consists of the following steps:

1. A program manager notifies the Environmental Director/NRM that a project or maintenance activity will be performed.
2. The program manager provides initial project information, including maps, outlining the project and showing the location.
3. The Environmental Director/NRM or a designated staff review coordinator will receive the package and a) log it into a database to track the review process and b) send it to the correct Environmental Division staff members for their review and comments.
4. The review coordinator (which may be the Environmental Director/NRM or a designated employee) will coordinate the comments and return them to the program manager. The review comments will include: a) the identification of any environmental concerns, b) suggestions for best management practices to minimize or eliminate any potential environmental degradation; c) the identification of all environmental permits and other documents required to carry out the project, d) the designation of the environmental staff person who will write and obtain the permits or carry out the environmental consultation process with outside regulatory agencies, e) an estimation of any costs necessary to obtain environmental permits or other documents (example: an EIS may require a consultant to carry out the work and these costs would be estimated and provided to the program manager), and f) provide a schedule for obtaining all permits and documentation.

The above process is a standard practice for the installation and provides for the protection of the environment, natural resources, and health and safety of personnel. This process has also resulted in efficiencies and savings for Public Works by identifying concerns or compliance issues that could result in project delays.

4.6.2 Hazardous Materials Management

The Environmental Division and the Safety Director review and approve all hazardous material usage on the installation. The installation has hazardous materials storage lockers where materials are brought, logged into a tracking system, and disbursed upon request.

4.6.3 Hazardous Waste Management

The installation has hazardous waste storage areas where hazardous waste is stored temporarily. The installation is staffed with hazardous waste employees whose duties are to pick-up hazardous waste from visiting ships and on-base departments and shops, transport it to the storage areas, characterize the waste, repackage it if necessary, and manage the proper shipping and disposal of the waste according to the EPA and the appropriate state hazardous waste regulations. The

hazardous waste facilities are equipped with holding tanks and other measures to prevent any spilled material from entering storm drains.

4.6.4 Spill Prevention, Control, and Countermeasures

A Spill Prevention, Control, and Countermeasures (SPCC) plan has been developed for the installation. A full description of the plan will not be provided in this INRMP, but can be found in Appendix E. The Environmental Division implements the plan; coordinates training and drills for installation staff; carries out inspections of storage tanks and equipment; reviews procedures that have a potential to release oil to the environment; and participates as spill response team members in the event of an actual release. The SPCC plan identifies sensitive shorelines and wildlife areas in the vicinity of the installation and prescribes strategies for protecting these areas. The MFD Operations Division is trained and has the necessary equipment to respond to a spill to the water and begin clean-up procedures. The installation will call upon the Commander, Navy Region Northwest, for notification and assistance in a spill response.

4.6.5 Pest Management

The NRM and Pest Control Manager is responsible for the management of pest problems such as insects and rodents. The NRM will respond to calls for sick or injured wildlife and will either resolve the situation or notify the state for assistance. As mentioned in the Fish and Wildlife section, US Department of Agriculture Wildlife Services or other groups may be brought in to deal with chronic problems with birds or other wildlife. Pest management will include feral dog and cat control per Department of Navy Feral Dog and Cat Policy (Figure 4.3).

The installation has a Pest Management Plan (PMP) is managed by the NRM and provides guidelines for the use and storage of pesticides and herbicides. The NRM reviews the plan and ensures that pesticides and herbicides are used sparingly.

Dept. of Navy Feral Cat Policy

Department of the Navy
Office of the Chief of Naval Operations
2000 Navy Pentagon
Washington, D.C. 20350-2000

In Reply Refer To: 5090, Ser N456M/1U595820, 10 Jan 2002

From: Chief of Naval Operations
Subj: **Policy letter preventing feral cat and dog populations on Navy property**
Ref: (a) SECNAVINST 6410-1A, of 16 Aug 1994, Veterinary Health Services
(b) AFPMB TIM #37, Guidelines for Reducing Feral/Stray Cat Populations on Military Installations in the U.S.
(c) OPNAVINST 6250.4B, of 27 Aug 1998, Pest Management Programs
(d) Executive Order 13112, of 3 Feb 1999, Invasive Species

1. This letter clarifies the application of reference (a) regarding the prevention of free roaming (also called wild, feral or stray) tat and dog populations on Navy installations. The objective is to prevent injury or disease to Navy personnel, and eliminate adverse impacts on native wildlife. It requires Navy commands to institute pro-active pet management procedures in order to prevent establishment of free roaming cat and dog populations. Free roaming cats and dogs pose a potential public health threat to personnel on Navy installations, and they pose a threat to wildlife including endangered species and migratory birds.

2. Existing policy at paragraph 4-2c(4) of reference (a) states Dogs, cats, and other privately-owned or stray animals will not be permitted to run at large on military reservations. Consistent with this policy, Navy commands must ensure the humane capture and removal of free roaming cats and dogs. Consistent with this requirement, Trap/Neuter/Release (TNR) programs will no longer be established on Navy land. All existing TNR programs on Navy land must be terminated no later than 1 January 2003.

3. Responsible pet ownership is a key factor in eliminating free roaming cat and dog populations. In consultation with supporting Army Veterinary Office, installations shall implement appropriate pet management measures to preclude establishment of feral cat/dog populations, including, but not limited to the following:

Require installation residents to keep and feed pet animals indoors or under close supervision when outdoors (such as on leash and collar or other physical control device - cage, fenced yard etc.).

Encourage neutering or spaying of cats and dogs before they reach reproductive age (exceptions to this policy can be made on a case by case basis as determined by the Installation Commander).

Require routine vaccinations of vats and dogs for rabies and other diseases as required by federal, state and local laws and ordnances. A current vaccination record is required at time of registration of pets.

Require microchipping registration (or other system of pet identification approved by supporting veterinary office) of all pet cats and dogs brought onto installations. Installation residents must register cats and dogs and have pets wear registration or identification tags at all times.

Prohibit the feeding of feral animals on the installation.

Provide educational materials to pet owners regarding installation regulations and general pet management.

Enforce prohibition of abandonment of animals on installations.

Comply with all humane and animal control regulations at the federal, state and local level (and their equivalents in host nation countries).

Navy installations in Europe that do not have a supporting veterinary office contact 100th Medical Detachment (VA HQ) (011) 49-622-177-2968; for all other locations that do not have a supporting veterinary office the POC is the VETCOM HQ, Commander (210) 221-6522.

4. Effective prevention, management and elimination of feral cat and dog populations requires close coordination and cooperation between natural resources, pest management, security, veterinary, and housing personnel to develop and implement an effective and humane program. Reference (b) provides information for preventing free roaming cat populations on military installations General pest management guidelines are detailed in reference (c). Every effort should be made to work with other federal, state and local agencies to support reference (a) and reference (d) by eliminating free roaming cat and dog populations on Navy land. Navy commands. should work with local animal control agencies to determine the best approach for the ultimate disposition of the captured animals. Every effort should be made, if practical, to find homes for adoptable feral cats and dogs.

5. My point of contact on this issue is Mr. Joe Cook, CNO N456M, at (703) 602-5335, or DSN 332-5335.

WILLIAM G. MATTHEIS
Deputy Director, Environmental
Protection, Safety and Occupational
Health Division

Don't Let Your Cat Go AWOL

https://www.denix.osd.mil/denix/Public/ES-Programs/Conservation/Legacy/SafeCats/safecats.html

Military bases often struggle with how to manage domestic cat populations. Frequent transfers of personnel often means cats are left behind, abandoned to fend for themselves. Lucky cats find a new human, but most are not so fortunate. Base commanders must deal with how to humanely and cost-effectively resolve the issue of too many free-roaming cats. ***As a cat owner, you are an important part of the solution.***

Figure 4-3. Navy Feral Dog and Cat Policy.

5.0 Implementation

This chapter addresses how installation INRMPs will be carried out as a means of supporting the military mission through effective land stewardship. All actions contemplated in these plans are subject to the availability of funds properly authorized and appropriated under Federal law. Nothing in the INRMPs are intended to be nor construed to be a violation of the Anti-Deficiency Act (31 U.S.C. 1341 *et seq.*).

5.1 Project Drivers

5.1.1 INRMP Programming Hierarchy

The Navy programming hierarchy is based on DOD funding level classifications; therefore, the DOD programming hierarchy is described first, followed by the Navy programming hierarchy.

DOD Programming Hierarchy:

(1) Class 0 - Recurring Natural and Cultural Resources Conservation Management Requirement: Must contain INRMP actions necessary to rehabilitate or prevent resource degradation that may affect military readiness.
(2) Class 1 - Current Compliance: contains requirements to manage species and habitats of concern to prevent listing of species that could affect military readiness.
(3) Class 2 - Maintenance Requirements: includes projects and activities needed that are not currently out of compliance, but will be out of compliance if projects or activities are not implemented in time to meet an established deadline.
(4) Class 3 - Enhancement Actions Beyond Compliance: includes projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required under a regulation or Executive Orders (EO) and are not of an immediate nature.

The Navy Programming Hierarchy:

(1) Environmental Readiness Level (ERL) 4:
    a. Supports all actions specifically required by law, regulation or Executive Order (DOD Class 1 and 2 requirements) just in time.
    b. Supports all DOD Class 0 requirements as they relate to a specific statute such as hazardous waste disposal, permits, fees, monitoring, sampling and analysis, reporting and record keeping.
    c. Supports recurring administrative, personnel and other costs associated with managing environmental programs that are necessary to meet applicable compliance requirements (DOD Class 0).
    d. Supports DOD policy requirement to comply with overseas Final Governing Standards (FGS) and Overseas Environmental Baseline Guidance Document (OEBGD).
    e. Supports minimum feasible Navy executive agent responsibilities, participation in Office of the Secretary of Defense (OSD) sponsored inter-department and inter-agency efforts, and OSD mandated regional coordination efforts.

(2) Environmental Readiness Level 3:
   a. Supports all capabilities provided by ERL4.
   b. Supports existing level of Navy executive agent responsibilities, participation in OSD sponsored inter-department and inter-agency efforts, and OSD mandated regional coordination efforts.
   c. Supports proactive involvement in the legislative and regulatory process to identity and mitigate requirements that will impose excessive costs or restrictions on operations and training.
   d. Supports proactive initiatives critical to the protection of Navy operational readiness.

(3) Environmental Readiness Level 2:
   a. Supports all capabilities provided under ERL3.
   b. Supports enhanced proactive initiatives critical to the protection of Navy operational readiness.
   c. Supports all Navy and DOD policy requirements.
   d. Supports investments in pollution reduction, compliance enhancement, energy conservation and cost reduction.

(4) Environmental Readiness Level 1:
   a. Supports all capabilities provided under ERL2.
   b. Supports proactive actions required to ensure compliance with pending/strong anticipated laws and regulations in a timely manner and/or to prevent adverse impact to Navy mission.
   c. Supports investments that demonstrate Navy environmental leadership and proactive environmental stewardship.

5.1.2 Project Classification

"Must fund" conservation requirements are those projects and activities that are required to meet recurring natural and cultural resources conservation management requirements or current legal compliance needs, including EOs. These projects are designated ERL 4 or 3 in the Navy funding classification system, which is described in detail above. "Must fund" or ERL 4 or 3 projects could include:

- Developing, updating and revising INRMPs.
- Salaries and annual training of professional personnel, in accordance with Individual Development Plans (IDP), involved in the development and implementation of INRMPs.
- Terms and conditions of Biological Opinions (BOs) required by endangered species consultations.
- Baseline surveys to keep INRMPs current.
- Biological surveys to determine population status of endangered, threatened and sensitive species.
- Survey and monitoring programs to support the migratory bird rule.
- Wetland surveys for planning, monitoring and/or permit applications.
- Erosion control measures required in order to remain in compliance with natural resources protection regulations and to maintain land condition for realistic training operations.
- Memoranda of Agreement/Understanding (MOA/MOU) commitments.

This list is not meant to be all-inclusive, rather it is meant to give an indication of the types of projects that could be classified as compliance or must fund projects. INRMPs should also include valid projects and programs that enhance an installation's natural resources, promote proactive conservation measures, and support investments that demonstrate Navy environmental leadership and proactive environmental stewardship. These projects are considered "stewardship" projects and will fall under ERL 1 or 2 in the Navy classification system. Examples of these stewardship-type projects could include:

- Community outreach activities, such as Earth Day and Migratory Bird Day activities.
- Educational and public awareness projects, such as interpretive displays, oral histories, watchable wildlife areas, nature trails, wildlife checklists, and conservation teaching materials.
- Biological surveys or habitat protection for non-listed species.
- Management and execution of volunteer and partnership programs.
- Demonstration plantings of native plant materials.
- Experimental conservation techniques.
- Agriculture Outlease improvements.
- Forest stand improvements and other management efforts.
- Wildlife management efforts.

In addition, the natural resource manager should also utilize the Navy Environmental Requirements Guidebook, which assists project originators in preparing environmental program requirement submissions for consideration during the development of the Shore Environmental Quality (EQ) Program Memorandum (POM) or Program Review (PR).

All INRMP projects must be entered into the Environmental Program Requirements (EPR) web and receive approval up the chain of command prior to funding. Chief of Naval Operations, Code 45 is the final authority for designating the appropriate ERL.

5.2 Funding

Because INRMPs must be implemented and the status of implementation reported to Congress, the INRMP must reflect an annual strategy that addresses legal, regulatory, and DOD, DON, and CNO directive or policy requirements; funding; and manpower. "Implementation" anticipates the execution of all Environmental Readiness Level (ERL) 4 projects and activities in accordance with specific timeframes identified in the INRMP. The INRMP is considered implemented if the installation:

- Actively requests, receives, and uses funds for all Level 4 projects and activities;
- Ensures that sufficient numbers of professionally trained natural resources management staff are available to perform the tasks required by the INRMP.
- Coordinates annually with all cooperating offices; and
- Documents specific INRMP action accomplishments undertaken each year.

Once validated, and entered into EPR-web, typically, funding for all ERL Level 3 and 4 projects will be programmed. Projects that are ERL 1 and 2 should seek alternate funding sources, which are listed below. Executed funding should be entered into EPR-web. There are restrictions on how different Navy funding sources for natural resources management can be used. It is important, therefore, that appropriate funding sources are used and that EPR entries clearly justify funding

requests so that: (1) natural resource funds are distributed wisely and (2) funding levels are not threatened by the use of funds in ways that are inconsistent with funding program rules. The following are the primary funding sources for Navy natural resources programs:

(1) *O&MN Environmental Funds.* The majority of natural resource projects are funded with Operations and Maintenance, Navy (O&MN) environmental funds. These appropriated funds are the primary source of resources to support must-fund, just-in-time environmental compliance (i.e., Navy ERL 4 projects). O&MN funds are generally not available for Navy Environmental Readiness Level 3 - 1 projects. In addition to the restriction to Environmental Readiness Level 4 requirements, there are other limitations placed on the use of O&MN funds:

Only the initial procurement, construction, and modification of a facility or project are considered valid environmental funding requirements. The subsequent operation, modification due to mission requirements, maintenance, repair, and eventual replacement is considered a Real Property Maintenance (RPM) funding requirement. For example, the cost of initially installing a best management practice (BMP) can be funded through O&MN, but future maintenance or repair of that BMP must be paid by RPM funds.

When natural resource requirements are tied to a specific construction project or other action, funds for the natural resource requirements should be included in the overall project costs. For example, if a permit for filling wetlands is required as part of a military construction (MILCON) project, the costs of obtaining the permit and implementing required mitigation should be paid by MILCON funds as part of the overall construction project costs.

(2) *Legacy Funds.* The Legacy Resource Management Program (Legacy Program) is a special Congressionally mandated initiative to fund military conservation projects. Although the Legacy Program was originally funded from 1991 to 1996 only, funds for new projects have continued to be available through this program. The Legacy Program can provide funding for a variety of conservation projects, such as regional ecosystem management initiatives, habitat preservation efforts, archaeological investigations, invasive species control, monitoring and predicting migratory patterns of birds and animals, and National partnerships and initiatives, such as National Public Lands Day. If the installation plans to request Legacy Program funds, it should be aware of the following:

- The availability of Legacy funds is generally uncertain early in the year.
- Pre-proposals for Legacy projects are due in March and submitted using the Legacy Tracker Website: http://www.DODlegacy.org/.
- Project proposals are reviewed by the Navy chain of command before being submitted to the DOD Legacy Resources Management Office for final project selection.
- The Legacy Website provides further guidance on the proposal process and types of projects requested.

(3) *Forestry Revenues.* Revenues from the sale of forest products on Navy lands are a source of funding for forestry and potentially other natural resources management programs. Forestry revenues provide funds for two different funding programs:

a. Annual Navy Forestry Funds. These funds support commercial forestry operations at installations. Borrowed from NAVFACENGCOM Headquarters (NAVFAC HQ) O&MN funds at the beginning of each fiscal year, the funds are reimbursed when the forestry revenues are received. The NAVFAC field offices solicit funding needs each year from installations with commercial forestry programs in place. Forestry operations must be commercially viable to be eligible for these funds. The NAVFAC field offices can work with installations to make a work plan, known as an annual increment, for the commercial forestry program and ensure that all funding needs are included. Funding recommendations are forwarded from the field offices to NAVFAC HQ for final approval and disbursement of funds, based on revenue from timber sales.

b. DOD Forestry Reserve Account. Forestry revenues are first used to reimburse commercial forestry expenses. Then, as directed by DOD Financial Management Regulation 7000.14-R Volume 11A, 40 percent of installation net proceeds for the fiscal year are distributed to the state that contains the installation. The funding is used to support road systems and schools. Once the commercial forestry expenses are reimbursed and a portion of the proceeds are distributed among the state counties, any remaining amount is transferred to a holding account known as the DOD Forestry Reserve Account. Reserve account funds can be used for the following:

- Improvement of forest lands;
- Unanticipated contingencies in the administration of forest lands and the production of forest products for which other funding sources are not available within an acceptable timeframe (e.g., actions necessary as a result of a storm or wildfire); and
- Natural resources management that implements approved plans and agreements. To be eligible for funding, these project must:
    1) be specifically included in an approved management plan, such as an INRMP, and
    2) provide for at least one of the following purposes: fish and wildlife habitat improvements or modifications; range rehabilitation where necessary for support of wildlife; control of off-road vehicle traffic; specific habitat improvement projects and related activities; and adequate protection for species of fish, wildlife, and plants considered threatened or endangered.
- Projects included in a) and b) are generally given preference in the allocation of these funds. The amount available through this account varies from year to year, but the amount remaining for natural resources management as described in c) is relatively small. The

NAVFAC field offices usually solicit project proposals for the Forestry Reserve Account once there is an indication of the level of funding available (usually January or February). Installations need not harvest timber to be eligible for Reserve Account funds. Proposals are submitted to NAVFACHQ via the field office where they are reviewed and forwarded to the DUSD (I&E) for final selection. The installation should contact a NAVFAC field office or consult reference (f) for more information on funding availability and timelines. It is important to note that these funds may not be used for "must fund" projects.

(4) *Agricultural Outleasing.* Money collected through the leasing of Navy-owned property for agricultural use is directed back into the natural resources program and reallocated throughout the Navy by NAVFAC HQ. These funds are available to natural resource managers primarily for agricultural outlease improvements, and potentially for natural resources management and stewardship projects once the primary objective is met. Agricultural and grazing leases revenues from agricultural outleasing are available for the following:

a. Administrative expenses of agricultural lease (salaries of professional and technical support of the grazing and cropland programs in direct support of agricultural outlease which meet INRMP goals and objectives, training, scientific meetings, parts and supplies);
b. Initiation, improvement, and perpetuation of agricultural outleases (increased productivity, reduced soil erosion, and fencing);
c. Implementation of INRMP Stewardship Projects (compliance measures should be budgeted from O&MN Conservation POM process).

The NAVFAC field office sends a request for project proposals for agricultural outleasing funds to the regions and installations in November of each year. Proposals are submitted to the field office and reviewed. Recommended projects are forwarded to NAVFAC HQ for final review and project selection. While the available funding varies from year to year, this is one of the more consistent funding sources for implementing INRMP projects that are not Level 1 requirements. The installation should contact the field office for additional information on funding availability and timeline.

(5) *Fish and Wildlife Fees.* User fees collected for the privilege of hunting or fishing are collected, deposited and used in accordance with the Sikes Act and the DOD financial management regulations. The Sikes Act specifies that user fees collected for hunting and fishing shall be used only on the installation where collected. Further, collections will be used exclusively for fish and wildlife conservation and management on the installation where collected.

The same fee schedule will be used for all participants with the exception of senior citizens, children and the handicapped. Membership in an installation conservation organization will not give members priority in participating in hunting, fishing and trapping programs. Efforts should be made to utilize the services of the

installations MWR function to collect and administer these funds locally in accordance with Sikes Act authorization.

(6) *Recycling Funds.* An installation with a Qualified Recycling Program (QRP) may use proceeds for some types of natural resource projects. Proceeds must first be used to cover QRP costs. Up to 50 percent of net proceeds may then be used for pollution abatement, pollution prevention, composting, alternative fueled vehicle infrastructure support, vehicle conversion, energy conversion, or occupational safety and health projects, with first consideration given to projects included in the installation's pollution-prevention plans. Remaining funds may be transferred to the non-appropriated MWR account for approved programs, or retained to cover anticipated future program costs. Natural resource projects can be funded as pollution prevention/abatement (e.g., wetlands or riparian forest restoration) or MWR projects (e.g., trail construction and maintenance).

(7) *Strategic Environmental Research and Development Program (SERDP) Funds*: SERDP is DOD's corporate environmental research and development (R&D) program, planned and executing in full partnership with the Department of Energy (DOE) and Environmental Protection Agency (EPA), with participation by numerous other Federal and non-Federal organizations. SERDP funds for environmental and conservation are allocated through a competitive process. Within its broad areas of interest the SERDP focuses on Cleanup, Compliance, Conservation, and Pollution Preventions technologies. The purpose of the conservation technology program is to use research and development to provide improved inventory and monitoring capabilities; develop more effective impact and risk assessment techniques; and provide improved mitigation and rehabilitation capabilities. Recently, the program solicited Statements of Need for conservation technology proposals to research indicators of stress on threatened and endangered species and to develop techniques to inventory and monitor threatened and endangered species in accessible areas.

(8) *Non-DOD Funds.* Many grant programs are available for natural resources management projects, such as watershed management and restoration, habitat restoration, and wetland and riparian area restoration. When Federally funded, these programs typically require non-Federal matching funds. However, installations may partner with other groups to propose eligible projects. Below is one example of a grant program:

The Five-Star Restoration Challenge Grants Program is sponsored by the National Association of Counties, National Association of Service and Conservation Corps, National Fish and Wildlife Foundation, and Wildlife Habitat Council in cooperation with EPA, NMFS, and other sponsors. This program provides modest financial assistance ($5,000–$20,000) on a competitive basis to support community-based wetland and riparian restoration projects that build diverse partnerships and foster local natural resource stewardship. Installations would need to partner with other groups to be eligible for this type of program. Applications are due in March.

Information is available on the Web at http://www.epa.gov/owow/wetlands/restore/5star/.

INRMPs should include valid ERL 1 and 2 projects and actions that would enhance an installation's natural resources. Nontraditional sources of funding for natural resources programs include non-appropriated reimbursable funds (i.e., agricultural outleasing, forestry, hunting and fishing fees), and appropriated reimbursable funds (e.g., DOD Legacy Program, U.S. Department of Agriculture (USDA) Pest Management Program). These accounts are sources of funds for ERL 3 projects. Installations, however, should not depend on reimbursable programs to fund their natural resources management programs.

Figure 5-1. Black-Tailed Deer Near the Fuel Pier.

6.0 References

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