

# BRUNSWICK NAVAL AIR STATION

## BRUNSWICK, MAINE



<b>Engineering Field Division/Activity:</b>	NORTHDIV		
<b>Major Claimant:</b>	CINCLANTFLT		
<b>Size:</b>	7,259 Acres		
<b>Funding to Date:</b>	\$40,134,000		
<b>Estimated Funding to Complete:</b>	\$35,411,000		
<b>Base Mission:</b>	Provides facilities, services, materials and aircraft for submarine warfare		
<b>Contaminants:</b>	Benzene, dichlorodiphenyl trichloroethane, PCBs, polynuclear aromatic hydrocarbons, trichloroethane, trichloroethylene, xylene, volatile organic compounds		
<b>Number of Sites:</b>			
<b>CERCLA:</b>	18	<b>Relative Risk Ranking of Sites:</b>	
<b>RCRA Corrective Action:</b>	0	<b>High:</b>	11
<b>RCRA UST:</b>	2	<b>Medium:</b>	2
<b>Total Sites:</b>	20	<b>Low:</b>	6
		<b>Not Evaluated:</b>	0
		<b>Response Complete:</b>	1
		<b>Total Sites:</b>	20



### EXECUTIVE SUMMARY

The Brunswick Naval Air Station (NAS) is located within the town of Brunswick, Maine, approximately two miles east of the city's main business district, in Cumberland County, Maine, five miles inland from the Atlantic Ocean. The air station was commissioned in April 1943 and its size and mission grew during the 1940's and 1950's. The station's current mission is to provide facilities, services, materials, and aircraft for submarine warfare. Typical station operations that contributed to contaminated sites on the facility include operation of an all-weather air station, intermediate aircraft maintenance, material support for maintenance, aircraft fueling services, and explosive ordnance storage and disposal. Prominent site types at the installation include landfills, a groundwater plume, and two Underground Storage Tank (UST) sites. The media most affected by contamination are groundwater and soil. Current operations at the station include pollution prevention technologies to prevent further contamination. The installation was placed on the National Priorities List (NPL) in July 1978. A Federal Facility Agreement (FFA) was signed in 1989 between the Navy and EPA, and revised in 1990 to include the state of Maine.

Contaminants can be transported to streams via surface runoff or can infiltrate into the ground and enter the groundwater system. In the developed portion of the base, most of the natural drainage is directed to the storm sewer system. The potential for migration of contaminants to groundwater is enhanced by the high permeability of surface soils and the shallowness of the bedrock. Because of these factors, contaminants introduced at the surface will enter the groundwater system rapidly. The Brunswick NAS contains a significant amount of undeveloped, natural areas, both woodlands and wetlands. Several endangered animal species may be present in the state of Maine, but none are known to be in the vicinity of the air station.

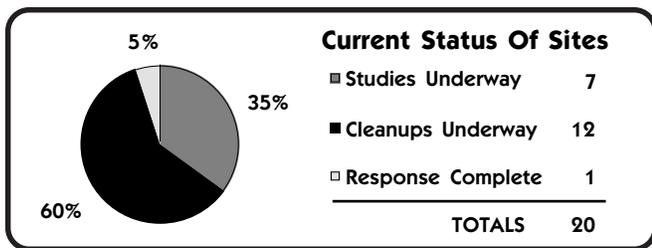
A Technical Review Committee (TRC) was formed in February 1988 and held regular meetings until it was converted to a Restoration Advisory Board (RAB) in FY95. The first RAB meeting was held on July 19, 1995. Another community group, known as the Brunswick Area Citizens for a Safe

Environment, is also active at Brunswick NAS. The Community Relations Plan (CRP) was completed and released to the public in September 1988 with plans for an update in FY96. An Administrative Record and an Information Repository were established in August 1987.

Ten of the 18 CERCLA sites at the NAS were established with an Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), in FY83. Seven additional sites were added with PAs between FY84 and FY94. One site, Site 17, was added without a PA; it started with a Remedial Investigation/Feasibility Study (RI/FS) phase in FY92. Site 10 was transferred out of the Brunswick's Installation Restoration Program (IRP) into the Defense Logistics Agency (DLA) program following the IAS. Site Inspections (SIs) have been completed for 16 sites; 12 sites in FY85 and four more between FY91 and FY95. Fourteen of the seventeen active sites have completed the RI/FS phase; 13 completed in FY91 and one in FY93. The other three sites will complete RI/FS in FY99. All seventeen sites are scheduled for both a Remedial Design (RD) and Remedial Action (RA) phase. Ten sites have completed RD, nine sites in FY93, the other in FY95. The remaining seven RDs will start in FY97 and all will be complete by FY00. The RAs including Final Remedial Actions (FRAs) will follow, one was completed in FY95, one will be complete in FY96 and the remaining CERCLA sites will be completed between FY97 and FY05. There are two RCRA UST sites at Brunswick NAS. UST 2 completed all cleanup work in FY95. The other, UST 1, will complete scheduled cleanup in FY97.

Innovative technologies are being employed, along with conventional cleanup practices, in the restoration of a major contamination concern, the Eastern Plume, which consists of three sites (Site 4, 11 and 13). The Eastern Plume is a groundwater plume of primarily the organic solvents TCA and TCE. An Interim Remedial Action (IRA) for the sites, started in September 1993, consists of extraction, treatment and discharge of the contaminated groundwater. For treatment, the extracted groundwater will be precipitated and filtered to remove iron and manganese, then treated by ultraviolet light and oxidation to remove VOCs, and then discharged into the public Wastewater Treatment Plant (WWTP). Following treatment, Long Term Monitoring (LTM) will continue through FY25. At Site 13, in addition to the groundwater treatment, three underground waste storage tanks were removed and replaced with new tanks. Downgradient monitoring wells have shown decreasing VOC levels since the tank removals and Site 13 is no longer considered a major contributor to the plume.

In FY94, a removal action for soil contaminated with the pesticide DDT was completed at Site 17 using excavation and incineration. No further action is planned for the site, except LTM of groundwater.



## BRUNSWICK NAS RELEVANT ISSUES

### ENVIRONMENTAL RISK



**HYDROGEOLOGY** - Both surface water and groundwater are important at the station. Contaminants can be transported to streams via surface runoff or can infiltrate into the ground and enter the groundwater system. In the developed portions of the base, most of the natural drainage is directed to the storm sewer system. In the undeveloped portions of the facility, runoff enters the surface watershed system. Surface water from the station ultimately flows to nearby wetlands or to the Androscoggin River. The Androscoggin River is the major surface water body in the Brunswick area and one of three major Maine rivers to flow into the Atlantic Ocean. At its closest point, the Androscoggin River is approximately 3,000 feet from the northern boundary of the air station. Groundwater in the Brunswick area occurs both in unconsolidated sediments and in underlying bedrock. The potential for migration of contaminants to groundwater is enhanced by the high permeability of surface soils and the shallowness of the bedrock. Because of these factors, contaminants introduced at the surface will enter the groundwater system rapidly. The direction and flow of the migration is determined by the structural orientation of the fractures in the bedrock. The most productive aquifers in the area are in the unconsolidated sand and gravel aquifers. The aquifers in bedrock produce a limited quantity of groundwater in wells and the groundwater in the bedrock aquifers is under local artesian pressure, which limits the downward migration. The two bedrock wells on the air station are no longer in use.



**NATURAL RESOURCES** - The Brunswick NAS contains a significant amount of undeveloped, natural areas. These are predominantly woodlands. Roughly 45% of the base is managed as a forest. Much of the area surrounding the air station is also undeveloped. The woodlands afford a suitable habitat for a variety of animals, including deer, squirrel, moose and migratory birds. In the southern area of the base, there are about 90 acres of wetlands and the area immediately south of the station is comprised of tidal coves and wetlands. The tidal wetlands are an ecologically important area used by a variety of aquatic and terrestrial animals. Several endangered animal species may be present in the state of Maine, but none are known to be in the vicinity of the air station.



**RISK** - A baseline Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA) was performed as part of the Remedial Investigation (RI). The findings were: Sites 1 and 3 (the Landfill Plume) and Sites 4, 11 and 13 (the Eastern Plume) present a current public health risk for groundwater contamination, Sites 8 and 9 present a current health risk for soil and sediment contamination, and Sites 1, 3, 8 and 9 present current risk due to leachate/sediment contamination.

DOD's Relative Risk Ranking system was used to rank the risk factors for all the sites on the installation in FY95. Eleven of the 20 sites at the installation received a high risk ranking. Groundwater contamination was listed as a concern driving the high risk ranking for all eleven sites. The reason for the high groundwater rating was the potential for the contaminants migrating into drinking water wells, and in some cases the groundwater had the potential for off-base migration. Three sites had additional high rating for surface water contamination and one site (Site 9, a former disposal site) also had a high ranking for sediment.

The Agency for Toxic Substance and Disease Registry (ATSDR) performed an initial site scoping visit in April 1991. At that time, ATSDR projected initiating the Health Assessment in FY94, but it has not been performed and no new date has been set.

### REGULATORY ISSUES



**NATIONAL PRIORITIES LIST** - The installation was placed on the National Priorities List (NPL) on 22 July 1987 with a Hazard Ranking System (HRS) score of 43.38. The driving force for placement on the NPL were seven areas, including landfills, storage and disposal sites, where pesticides, solvents and waste oils threatened groundwater, surface water and adjacent wetlands.



**LEGAL AGREEMENTS** - A Federal Facility Agreement (FFA) was signed in 1989 by the EPA and the Department of the Navy (DON). In 1990, this FFA was revised to include the state of Maine.



**PARTNERING** - No formal partnering arrangement is in place at Brunswick NAS.

### COMMUNITY INVOLVEMENT



**RESTORATION ADVISORY BOARD** - A Technical Review Committee (TRC) was formed in February 1988 and held regular meetings until it was converted to a Restoration Advisory Board (RAB) in FY95. The first RAB meeting was held on July 19, 1995. The RAB has 24 members, including community members. In addition to the regular quarterly RAB meetings, the Navy schedules technical meetings with the RAB to expedite decision-making and site management. Additional public meetings and fact sheets for public certification started in the FY90 time frame.

A community group known as the Brunswick Area Citizens for a Safe Environment sought out a Technical Assistance Grant (TAG) from EPA with which they hired a consultant (Gerber Associates of Portland, Maine) to provide public oversight of the Navy's environmental remediation actions. This group also participates in TRC meetings and produces a public newsletter. This was the first TAG for a DOD installation.



**COMMUNITY RELATIONS PLAN** - The Community Relations Plan (CRP) was completed and released to the public in September 1988. NAS Brunswick plans to update the CRP in FY96.



**INFORMATION REPOSITORY** - An Administrative Record and an Information Repository were established in August 1987. The Information Repository is located at the Brunswick Curtis Memorial Library.

## BRUNSWICK NAS HISTORICAL PROGRESS

### FY81

**UST 1** - The first site, a RCRA Underground Storage Tank (UST) site was identified during an Initial Site Characterization (ISC), equivalent to a Preliminary Assessment (PA).

### FY83

**Sites 1-10** - An Initial Assessment Study (IAS), equivalent to a PA, was completed. Ten sites were identified as potentially contaminated areas and all were recommended for further study.

**Site 10** - Site 10 (Harpwell Fuel Depot) was dropped from the Installation Restoration Program (IRP) and was transferred to the Defense Logistics Agency (DLA). It does not belong to Brunswick NAS.

### FY84

**Sites 11-13** - These sites were added to the Installation Restoration Program (IRP) based on information in the IAS completed in FY84. At Site 11, Benzene, Toluene, Exobenzene, Xylene (BTEX) was detected in the groundwater and propellant and chlorinated solvents were detected in the soils. Also during investigation, four buried drums containing unknown liquids were found at the site. At Site 12, nitrates and nitrites were found only in the surface soils. At Site 13, pesticides were found in surface soils, and Volatile Organic Compounds (VOCs) and BTEX detected in the groundwater.

### FY85

**Sites 1- 9 and 11-13** - Site Inspections (SIs) were completed and Remedial Investigations/Feasibility Studies (RI/FSs) were started for 12 sites.

### FY90

**Site 17** - NAS Brunswick submitted an Engineering Service Request (ESR) to Naval Facilities Engineering Command, Northern Division (NORTHDIV) to demolish the former Pesticide Shop, Building 95 (Site 17), and determine if any environmental cleanup was necessary.  
**UST 2** - The second UST site (UST 2) was identified during an ISC and began a Corrective Action Plan (CAP) the same year.

### FY91

**Site 14** - Site 14 was added as a new site and has completed a PA, SI and RI/FS phase. A geophysical survey using Ground Penetrating Radar (GPR) and a magnetometer failed to reveal any indication of the existence of a dump. Based on the results of the investigation completed in August 1991, no further investigation was recommended for this site, but in FY95 additional phases, a Remedial Design (RD) and Remedial Action (RA), were scheduled for FY00.

### FY92

**Sites 1, 3, 4, 11 and 13** - Two Records of Decision (RODs) were signed between the EPA and the Department of the Navy (DON) in June 1992.

The first ROD, for Sites 1 and 3 (landfills), is for Long Term Monitoring (LTM), which will continue through FY98. The second ROD was for an Interim Remedial Action (IRA) for soil removal, capping and soil vapor treatment, at the Eastern Plume Groundwater Operable Unit (OU), OU 1 (Sites 4, 11, and 13).

**Sites 15 and 16** - An SI was started for these newly discovered, potential sites.

**Site 17** - As part of the RI/FS, sampling was performed at Site 17. The pesticide DDT was found in the soil and in unfiltered groundwater. Once filtered, the groundwater did not contain DDT, indicating that the DDT in the groundwater adheres to the sediment particles and can be filtered out. A Non-Time Critical Removal Action was planned to remove the contaminated soil to an off-site incinerator.

**USTs 1 and 2** - The CAP phase, equivalent to an RI/FS, completed for USTs 1 and 2.

### FY93

**Sites 1, 3, 5, 6 and 8** - RD phases were completed and RA phases, including Final Remedial Actions (FRAs), were started for five sites. At Sites 1 and 3, the FRA will be capping; Sites 5 and 6 will have waste removal and Site 8 will have soil removal actions as the FRA. A ROD for Sites 5, 6 and 8 were signed in August 1993.

**Sites 4, 11 and 13** - An RD was completed and the RA phase started. The RA phase will be complete in FY98. An IRA started in September 1993, will consist of extraction, treatment and discharge of the contaminated groundwater. It also includes LTM which will continue through FY25.

**Site 17** - The RI/FS and RD phases were completed and the RA phase, along with a FRA for soil incineration, were started. An Environmental Engineering Cost Analysis (EE/CA) was completed 29 November 1992, and the Action Memorandum was signed 12 April 1993.

**UST 1** - Five of the seven tanks at the site were removed; the Design (DES) phase was completed; the Implementation (IMP) phase was started and a pilot air sparging system was installed at UST 1 (Fuel Farms).

**UST 2** - Three tanks were removed; the DES phase and the IMP phase were started and a pilot air sparging system was installed at UST 2 (Navy Exchange Service Station).

### FY94

**Site 12** - A ROD recommending no further action for Site 12 was submitted to EPA to close out the site.

**Site 17** - A removal action was completed at Site 17 in June 1994.

**Site 18** - Site 18 was added as a new site following a completed PA. SI phase also completed FY94.

**UST 1** - The final two tanks were removed from UST 1.

**UST 2** - At the Navy Exchange Service Station, UST 2, the Navy completed pilot operation and began full-scale operation of an air-sparging system to remediate petroleum hydrocarbon contamination in soils.

## PROGRESS DURING FISCAL YEAR 1995

### FY95

**Sites 1, 3, 5, 6, 8 and 11** - Began construction of a landfill cap at Sites 1 and 3. Excavated material at Sites 5, 6, 8 and 11 and placed it under the cap at Sites 1 and 3.

**Sites 1, 3, 4, 11, 13 and 17** - Completed construction of a groundwater pump and treat system using ultra-violet (UV) oxidation for Sites 1, 3, 4, 11 and 13. Performed three rounds of monitoring at these sites, and Site 17.

**Site 9** - An RD was complete and the RA phase started. As part of the RA, Long Term Operation (LTO) will continue through FY05. Performed source investigations at disposal site where incinerator ash, solvents, paint

sludges, and refuse are present in trenches.

**Site 17** - Completed a soil removal action for soil contaminated with the pesticide DDT at Site 17 (Former Pesticide Shop Bldg. 95), where DDT contamination was detected in soils and unfiltered groundwater samples.

**UST 2** - The IMP phase and three FRAs for groundwater treatment, soil vapor treatment and bioremediation were completed for UST 2.

**UST 1** - The IMP phase and three FRAs for groundwater treatment, soil vapor treatment and bioremediation were completed at UST 1. These projects are scheduled for completion in FY97.

**BRUNSWICK NAS  
PLANS FOR FISCAL YEARS 1996 AND 1997**

**FY96**

**Sites 1 and 3** - The landfill cap will be complete.

**Sites 1, 3, 5, 6 and 8** - RA phase and FRAs will be complete and two of the five sites will be Response Complete (RC).

**Sites 4, 11 and 13** - The Navy plans a final ROD for the Eastern Plume for groundwater treatment.

**FY97**

**Site 2** - Both RD and RA phases will be complete, a final ROD for LTM under CERCLA will be implemented and a LTM Plan will be written.

**UST 2** - IMP is expected to be completed.

**PROGRESS AND PLANS**

<b>CERCLA</b>	<b>FY94 and before</b>	<b>FY95</b>	<b>FY96</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01 and after</b>
<b>PA</b>	17							
<b>SI</b>	15	1						
<b>RI/FS</b>	14					3		
<b>RD</b>	9	1		1		1	5	
<b>RA</b>		1	5	1	3		4	3
<b>IRA</b>		1(1)						3(3)
<b>RC</b>	1		2				3	12
<b>Cumulative Response Complete</b>	6%		17%				33%	100%
<b>UST</b>	<b>FY94 and before</b>	<b>FY95</b>	<b>FY96</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01 and after</b>
<b>ISC</b>	2							
<b>INV</b>								
<b>CAP</b>	2							
<b>DES</b>	2							
<b>IMP</b>		1		1				
<b>IRA</b>								
<b>RC</b>				2				
<b>Cumulative Response Complete</b>				100%				

# CUTLER NAVAL COMPUTER AND TELECOMMUNICATIONS STATION CUTLER, MAINE



Engineering Field Division/Activity: NORTHDIV  
 Major Claimant: COMNAVCOMTELCOM  
 Size: 3000 Acres  
 Funding to Date: \$323,000  
 Estimated Funding to Complete: \$8,774,000  
 Base Mission: Provides navigation support for Navy vessels in the North Atlantic  
 Contaminants: Electrolyte, scrap metal, solvents, paint, POLs

<b>Number of Sites:</b>		<b>Relative Risk Ranking of Sites:</b>			
CERCLA:	3	High:	2	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	1	Response Complete:	0
RCRA UST:	0	Low:	0	Total Sites:	3
Total Sites:	3				

## PROGRESS AND PLANS

CERCLA	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
PA	3							
SI	2							1
RI/FS								3
RD								3
RA								3
IRA								
RC								3
Cumulative Response Complete								100%

# PORTSMOUTH NAVAL SHIPYARD, KITTERY

## KITTERY, MAINE



<b>Engineering Field Division/Activity:</b>	NORTHDIV
<b>Major Claimant:</b>	COMNAVSEASYSKOM
<b>Size:</b>	278 Acres
<b>Funding to Date:</b>	\$15,694,000
<b>Estimated Funding to Complete:</b>	\$68,404,000
<b>Base Mission:</b>	Maintains, repairs and overhauls nuclear submarines
<b>Contaminants:</b>	Heavy metals, PCBs, pesticides, volatile organic compounds

<b>Number of Sites:</b>		<b>Relative Risk Ranking of Sites:</b>			
<b>CERCLA:</b>	17	<b>High:</b>	9	<b>Not Evaluated:</b>	1
<b>RCRA Corrective Action:</b>	15	<b>Medium:</b>	4	<b>Response Complete:</b>	15
<b>RCRA UST:</b>	1	<b>Low:</b>	4	<b>Total Sites:</b>	33
<b>Total Sites:</b>	33				



### EXECUTIVE SUMMARY

The Portsmouth Naval Shipyard, Kittery (NSY Kittery) is situated on Seavey Island in the Piscataqua River, a tidal estuary that is the boundary between New Hampshire and Maine. The shipyard is about 50 miles north of Boston, Massachusetts, and 50 miles south of Portland, Maine. The shipyard is actually located in Kittery, Maine about one mile northeast of Portsmouth, New Hampshire. Portsmouth is the largest center of population in the local area. The mission of NSY Kittery is servicing the fleet of nuclear propulsion, fleet ballistic missile and attack submarines. Shipyard activities that contributed to contamination were conducted in mechanical, structural, electrical/electronic, and public works shops. The shipyard was placed on the National Priorities List (NPL) in 1994. The current shipyard was created by filling in the areas between four small islands to create one large island near the mouth of Portsmouth Harbor in the Piscataqua River. Portsmouth, as a coastal area, has a complex hydrological environment. There are three ecological environments based on the salinity of the water. The marine ecosystem has a relatively high salt content. An estuarine ecosystem has a salinity which is highly variable depending on the tidal state and precipitation. The third environment, a freshwater ecosystem, has a very low salinity.

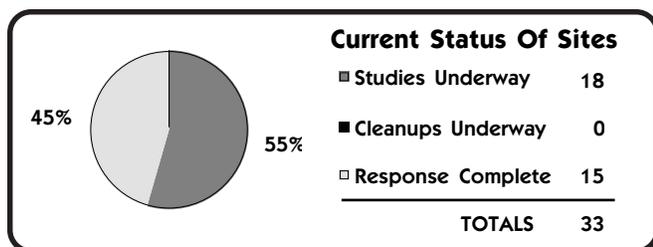
The Piscataqua River is part of the Great Bay Estuary. Ecological receptors specifically include lobster, shellfish, finfish, and other benthic fauna and flora. The presence of metals, oils, grease, the chemical additive PCB, cyanides, and phenols have been detected in sediment and surface water. The river, as part of the estuary, is a resource of tremendous value. The waters surrounding the shipyard are Class SB-1 which requires the water to be suitable for water contact recreation and fishing. Current use of the area includes recreational and commercial fishing, lobstering, clamming, oystering and boating.

There are no known federal or state endangered species in the area, however, the Great Bay is a wintering area for large numbers of waterfowl.

Undeveloped areas serve as rookeries for birds, while mudflats around the islands provide feeding areas. The shipyard is a highly-developed industrial property and is unattractive for most species of wildlife. Because it is a small highly-developed island, the shipyard has very little natural surface runoff. An extensive stormwater or collection system has been constructed at the shipyard, and most surface runoff is conveyed through the storm system to specific outlets into the Piscataqua River.

A Technical Review Committee (TRC) was established in 1987 and was converted into a Restoration Advisory Board (RAB) in FY95. There are twenty RAB members. The NSY Kittery RAB held its first public meeting in August 1995. Prior to establishing the RAB, four meetings were held for a site tour and to provide information to the new participants in the Installation Restoration Program (IRP) at Portsmouth and the role of the RAB members. An Information Repository was set up in 1987 at the Rice Public Library in Kittery, Maine and the Portsmouth Public Library in Portsmouth, New Hampshire.

At the end of FY95, 18 of the 33 sites at NSY Kittery were in the study phase, and 15 are Response Complete (RC). In FY95, a draft Feasibility Study (FS) Report for 11 of the 13 Solid Waste Management Units (SWMUs) was submitted to the EPA and the Maine Department of Environmental Protection (MEDEP). Based on review comments received, five SWMUs will be proposed for no further remedial action, and additional information will be necessary to characterize the extent of offshore migration at four SWMUs. Additional site characterization at two SWMUs is necessary due to regulatory concerns and historical information found by NSY Kittery indicating the sites are perhaps larger than originally believed.



## PORTSMOUTH NSY, KITTERY RELEVANT ISSUES

### ENVIRONMENTAL RISK



**HYDROGEOLOGY** - Portsmouth, as a coastal area, has a complex hydrological environment. There are three ecological environments based on the salinity of the water. The marine ecosystem has a relatively high salt content. An estuarine ecosystem has a salinity which is highly variable depending on the tidal state and precipitation. The third environment, a freshwater ecosystem, has very low salinity. The marine ecosystem begins in the vicinity of the shipyard and goes eastward into the Atlantic Ocean. The estuarine ecosystem abuts the marine ecosystem and reaches inland into Great Bay. The boundary between the two is indistinct and dependent on freshwater input and tidal flux. The freshwater ecosystem is entirely in the stream regime that feeds the bays and estuaries. The boundary between the estuarine and freshwater ecosystems is also indistinct for the same reasons. The harbor is in the marine ecosystem. Because it is a small highly-developed island, the shipyard has very little natural surface runoff. An extensive stormwater or collection system has been constructed at the Shipyard, and most surface runoff is conveyed through the storm system to specific outlets into the Piscataqua River.



**NATURAL RESOURCES** - The Piscataqua River is part of the Great Bay Estuary. There are five main habitats in the Estuary; eelgrass, mudflats (unvegetated), salt marshes, channel, and shellfish (part of other habitats). Ecological receptors specifically include lobster, shellfish, finfish, and other benthic fauna and flora. The presence of metals, oils, grease, the chemical additive PCB, cyanides, and phenols have been detected. Sediment and surface water have been impacted. The river, as part of the estuary, is a resource of tremendous value. Current use of the area includes recreational and commercial fishing, lobstering, clamming, oystering and boating.

There are no known federal or state endangered species in the area; however, the Great Bay is a wintering area for large numbers of waterfowl. Undeveloped areas serve as rookeries for birds, while mudflats around the islands provide feeding areas. The shipyard is a highly-developed industrial property and is unattractive for most species of wildlife.



**RISK** - A Human Health Risk Assessment was finalized for both on-shore and off-shore studies and submitted for review. No sites pose a risk to human health based on EPA's acceptable risk range. The Human Health Risk Assessment for off-shore exposure identified a number of risks based on recreational and subsistence fishing.

An Ecological Risk Assessment was developed for the Piscataqua River and Great Bay Estuary to determine the extent of ecological risk posed by NSY Kittery on these environments. Development of Preliminary Remedial Goals (PRGs) or Media Protection Standards in RCRA was begun. The offshore assessment has been coordinated by the Navy Marine Environmental Support Office (MESO) and has required the development of sampling and analytical methodologies for use in the marine environment, particularly regarding achieving low level detection of chemicals for sediment, surface water and biota.

Two sites and seven Solid Waste Management Units (SWMUs) have received a high relative risk ranking using the DOD Relative Risk Ranking System. One of the sites was used to incinerate wastes. Exposure can occur through contact with soils and groundwater in the area which flows to the Piscataqua River. Ash and residues were removed to a study yard. Another site was used for galvanizing and metal cleaning. This site is now a Navy school. Although there is a potential for the wastes to leach into the groundwater, dermal contact with the soils is of the greatest concern. Seven SWMUs have a high relative risk ranking because metals, oils, and solvents can migrate via surface and groundwater and to the shellfish and biota in the Piscataqua River. Four of the SWMUs are Underground Storage Tanks (USTs), two are landfills, and one is an area where an oil pipeline ruptured.

### REGULATORY ISSUES



**NATIONAL PRIORITIES LIST** - NSY Kittery was proposed for the National Priorities List (NPL) in June 1993 with a Hazard Ranking System (HRS) score of 67.70. It was listed on the NPL on 31 May 1994.



**LEGAL AGREEMENTS** - A Federal Facility Agreement (FFA) with EPA and the Maine Department of Environmental Protection (MEDEP) is under negotiation. A Site Management Plan (SMP) is being developed as a project management tool.



**PARTNERING** - NSY Kittery fostered partnering by including EPA, the MEDEP, and Natural Resource Trustees early in the decision-making process. EPA has been closely consulted to ensure smooth transition from the RCRA Corrective Action Program to a CERCLA cleanup program. Formal partnering is proposed for FY96.

### COMMUNITY INVOLVEMENT



**RESTORATION ADVISORY BOARD** - A Technical Review Committee (TRC) was established in 1987 and was converted into a Restoration Advisory Board (RAB) in FY95. There are twenty members on the RAB including representatives from the community, Navy, Natural Resources Trustees from Maine and New Hampshire, the US Fish and Wildlife Service, National Oceanographic and Atmospheric Agency, EPA Region I and Maine Department of Environmental Protection. The NSY Kittery RAB held its first public meeting in August 1995. Prior to establishing the RAB, four meetings were held for a site tour and to provide information to the new participants in the Installation Restoration Program (IRP) at Portsmouth and the role of the RAB members.



**COMMUNITY RELATIONS PLAN** - The Community Relations Plan (CRP) was established in FY93 and is being updated to reflect current informational needs of the community.



**INFORMATION REPOSITORY** - An Administrative Record was established in 1987. An Information Repository was set up in 1987 at the Rice Public Library in Kittery, Maine and the Portsmouth Public Library in Portsmouth, New Hampshire.

## PORTSMOUTH NSY, KITTERY HISTORICAL PROGRESS

### FY83

**Sites 1-4** - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in June 1983 at NSY Kittery which identified a total of four potentially contaminated sites. The study concluded that none of the sites posed an immediate threat to human health or to the environment. However, these sites went on to further study. **Site 1 (Jamaica Island Landfill)** - The IAS recommended this site for further investigation based on migration potential to the surrounding Harbor waters. The remaining sites were recommended for no further investigation.

### FY86

**Sites 1-4** - A Confirmation Study (CS), equivalent to a Site Inspection (SI), was completed in May 1986. The CS addressed Site AA (Site 1 in the IAS) and Site BB (Defense Property Disposal Office (DPDO) Scrapyard) which was identified during the Department of the Navy (DON) review of the IAS. The CS recommended actions were postponed because the EPA was conducting a RCRA Facility Assessment (RFA), which was completed in July 1986. The RFA renamed the four previously identified sites as Solid Waste Management Units (SWMUs). All remediation work is now being conducted under RCRA Corrective Action rather than CERCLA. **SWMUs 1-28** - An EPA Region I contractor completed an RFA at NSY Kittery in July 1986. The assessment identified 28 SWMUs. A RCRA/Hazardous Solid Waste Amendment (HSWA) permit required additional investigation at 13 SWMUs (5, 6, 8-13, 16, 21, 23, 26 and 27). The remaining SWMUs (1-4, 7, 14, 15, 17-20, 22, 24, 25 and 28) were recommended for No Further Action (NFA) after the RFA.

### FY89

**SWMUs 5, 6, 8-13, 16, 21, 23, 26 and 27** - A RCRA Facility Investigation (RFI) was conducted for the 13 SWMUs identified in the HSWA permit.

### FY90

**SWMUs 6, 8 and 9** - Phase I RFI field work was conducted. **SWMUs 5, 6, 8-10, and 27** - Phase II RFI consisted of a groundwater evaluation; a baseline sediment study of the Piscataqua River; additional studies at SWMUs 6, 8 and 9; and initial studies at SWMUs 5, 10, 27 and the River.

### FY91

**SWMUs 5, 6, 8-13, 16, 21, 23, 26 and 27** - The draft RFI Work Plan was submitted for regulatory review in November 1989 and was finalized in April 1991. Phase III RFI included additional surface soil and groundwater sampling at SWMUs 6, 8, 9, 27, the Day Care Center and the Freshwater Ponds. Phase IV RFI consisted of subsurface excavation at SWMUs 8 and 9; a seismic refraction survey; additional monitoring wells at SWMUs 6, 8 and 26, additional soil sampling at all SWMUs and a comprehensive air monitoring study.

### FY92

**SWMUs 5, 6, 8-13, 16, 21, 23, 26 and 27** - The draft RFI report for the 13 SWMUs was submitted for regulatory review in July 1992 and was approved "with conditions" in April 1993 and seven of the SWMUs are being considered in the Corrective Measures Study (CMS). **SWMU 9** - Phase IV RFI was expanded to a Phase IV a in February 1992 to do some additional rounds of groundwater sampling and some subsurface excavation at SWMU 9.

### FY93

**SWMUs** - An Addendum to the RFI Report was submitted in May 1993. The proposed Media Protection Standards were submitted in July 1992 and disapproved in April 1993.

### FY94

**SWMUs** - Several significant cleanup milestones were reached in FY94. Actions completed were RFI data gap field work, Onshore Media Protection Standards, and draft Offshore Ecological and Human Health Media Protection Standards. **SWMU 6** - An interim Corrective Measure at the DRMO Scrap Yard to install a cap was completed in December 1993. Results of the Human Health Risk Assessment indicated elevated levels of heavy metals posing an occupational hazard. A geotextile cap was installed to reduce inhalation of dust and direct contact with the soil and to reduce surface runoff and infiltration. The design was completed in June 1993 and construction was completed in December 1993. **SWMU 8** - A removal action was completed in October 1993 which consisted of installing a soil and geocomposite clay cap. **SWMU 11** - A groundwater and soil gas survey was completed using direct push technology, which expedited the assessment. **SWMUs 10-13, 16, 21 and 23** - Seven Underground Storage Tanks (USTs) were removed during the RFI. Two of these sites remain under investigation for possible further cleanup.

## PROGRESS DURING FISCAL YEAR 1995

### FY95

**SWMUs** - During FY95, reports for field work conducted in FY94 were finalized for the RFI Data Gap Investigation and Phase II Ambient Air Quality Monitoring. A draft work plan for a groundwater investigation was developed in FY95. Development of a work plan to conduct data gap investigations and monitoring for the Piscataqua River was begun in FY95. An Ecological Risk Assessment was developed for the Piscataqua River and Great Bay Estuary to determine the extent of ecological risk. Development of Preliminary Remedial Goals (PRGs) or Media Protection Standards (MPS), was begun. As part of the off-shore investigation, the Navy Marine Environmental Support Office (MESO) developed sampling and analytical methodologies for use in the marine environment, particularly in regards to low level detection of chemicals for sediment, surface waste and biota.

**SWMUs 6, 8-13, 16, 23 and 27** - A draft Feasibility Study (FS) Report for 11 of the 13 SWMUs was submitted to the EPA and Maine Department of Environmental Protection (MEDEP). Based on review comments received, NFA is indicated at SWMUs 12, 13, 16 and 23. Additional information to characterize the extent of offshore migration at SWMUs 6, 8 and 27 is required as well as additional site characterizations at SWMUs 6 and 10 due to regulatory concerns and historical information found by NSY Kittery. **SWMUs 9 and 11** - These SWMUs will be included with SWMU 8 in an Operable Unit (OU). **SWMUs 10-13, 16, 21 and 23** - The sites continue to be investigated to determine whether further remediation is warranted.

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**FY96**

SWMUs - A draft work plan for a groundwater investigation will be finalized and implemented. Development of a work plan to conduct data gap investigations and monitoring for the Piscataqua River will be finalized and implemented. Finish PRGs or MPS for offshore media based on ecological and human health risks. Conduct a FS to consider possible remedial alternatives for offshore media.

SWMUs 6, 8, 10 and 27 - Conduct additional site characterization prior to finalizing the FS Report for these sites.

SWMUs 6, 8 and 9 - Long Term Monitoring (LTM) is expected.

SWMUs 12, 13, 16, 23 and 26 - NFA is expected.

**FY97**

SWMUs - Perform groundwater and offshore investigation.

SWMU 6 - Remedial Design (RD) at SWMUs 6 will be done.

**PROGRESS AND PLANS**

CERCLA	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
PA	13	1	1					2
SI		1		1				2
RI/FS			6	4		4		3
RD				1	1	3		6
RA								11
IRA	1(1)							5(5)
RC			5	1				11
Cumulative Response Complete			29%	35%				100%
RCRA CA	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
RFA	15							
RFI								
CMS								
DES								
CMI								
IRA								
RC	15							
Cumulative Response Complete	100%							
UST	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
ISC	1							
INV			1					
CAP				1				
DES					1			
IMP							1	
IRA					1(1)			
RC							1	
Cumulative Response Complete							100%	