

Naval Education Training Center

Newport, Rhode Island
Region 1

RI6170085470

Site Exposure Potential

The Naval Education Training Center (NETC) is located in Middletown, on the western shore of Aquidneck Island in Narragansett Bay (Figure 1). The U.S. Navy has used this site since the 1860s for training, as a fuel depot, as a warfare research and development facility, and as a home port for the Atlantic cruiser and destroyer fleet. Torpedoes and other explosives were manufactured here from 1869 to 1951. In 1973, many of the facilities were moved to other sites or closed, and many of the original properties were sold. Wastes

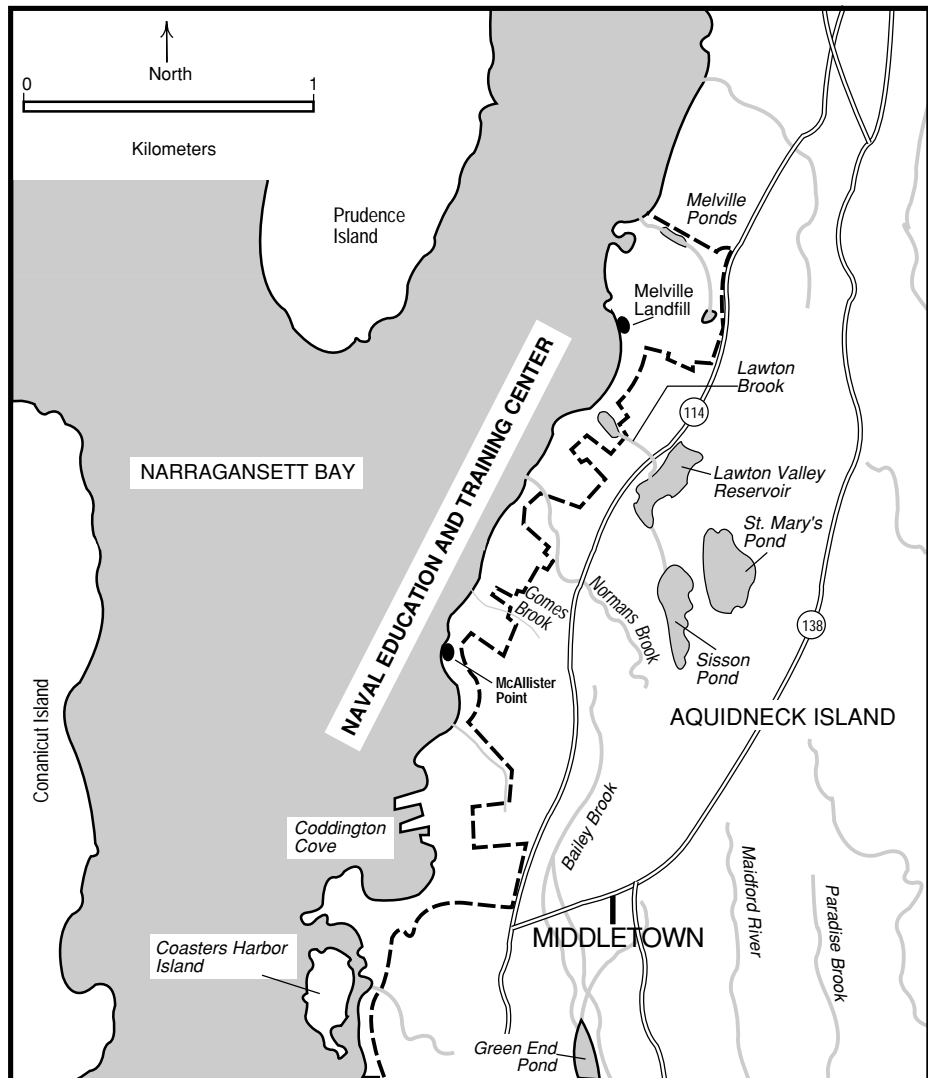
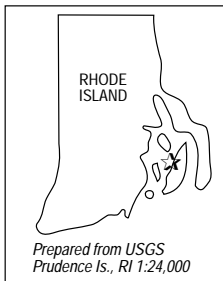


Figure 1.
Naval Education
Training Center,
Middletown,
Rhode Island.

Naval Education Training Center

Site Exposure Potential, *cont.*

generated at the site were disposed in two landfills: McAllister Point landfill and Melville North landfill. McAllister Point landfill has received all wastes generated at the facility since 1955. In addition, fuels and oils have been stored in five areas at the site (TRC 1989).

The NETC lies within the Narragansett drainage basin and includes 14.5 km of beach. Surface water on the site includes Normans, Lawton, and Gomes brooks, and several ponds and reservoirs. Most of this surface water discharges to Narragansett Bay. Surface runoff during storms tends to infiltrate the soil or run directly to the bay before reaching any other surface water body. Soil on the site is primarily unconsolidated glacial tills and is moderately permeable. Groundwater tends to be shallow (within 3 m of the surface) and generally flows from east to west.

Because of the site's characteristics and local hydrogeological features, there is a high potential for surface water transport of contaminants. Groundwater transport may also contribute to the migration of contaminants to habitats and species of concern to NOAA, but data to evaluate the significance of this pathway are limited.

Site-Related Contamination

Previous investigations (TRC 1989) at the site focused on contaminant levels in sediment and tissue. Groundwater, leachate, and soil samples were collected as part of an investigation of the landfills. No surface water samples were collected. Most samples were analyzed for inorganic substances and a limited number of organic compounds, including PCBs and total petroleum hydrocarbons. The maximum concentrations of contaminants found in the various matrices are summarized in Table 1 (TRC 1989), along with applicable screening levels.

Inorganic substances were present in groundwater, landfill leachate, sediment, and mussel tissue. Concentrations of chromium, copper, lead, mercury, nickel, and zinc were elevated in groundwater near the McAllister Point landfill and in sediment along the beach adjacent to the site. It should be noted that fill materials were used to extend McAllister Point

Naval Education Training Center

Site-Related Contamination, *cont.*

Table 1. Maximum concentrations of contaminants of concern at the NETC site.

landfill into the bay. Concentrations of inorganic substances were below average U.S. soil levels (Lindsay 1979) in the few soil samples collected, but only capping material from the top of the landfill was sampled. Total petroleum hydrocarbons

	Water			Sediment		Tissue
	Landfill Leachate µg/l	Groundwater µg/l	AWQC Marine ¹ µg/l	Sediment mg/kg	ER-L ² mg/kg	Mussel Tissue mg/kg
INORGANIC SUBSTANCES						
cadmium	58	7	9.3	11	5	ND
chromium	32	220	50	2200	80	3.5
copper	ND	1000	2.9	25000	70	28
cyanide	870	13	1	ND	NA	NT
lead	ND	1600	5.6	4400	35	20
mercury	ND	1.2	0.025	ND	0.15	ND
nickel	ND	300	8.3	1300	30	7
zinc	ND	500	86	2400	120	ND
ORGANIC COMPOUNDS						
PCBs	ND	ND	0.03	2.03	0.05	0.38
TPH ³	ND	12300	NA	1100	NA	ND
1: Ambient water quality criteria for the protection of aquatic organisms. Marine chronic criteria presented (EPA 1986).						
2: Effective range-low; the concentration representing the lowest 10 percentile value for the data in which effects were observed or predicted in studies compiled by Long and Morgan (1990).						
3: Total Petroleum Hydrocarbons						
NA: Screening level not available						
ND: Not detected at method detection limit						
NT: Not analyzed						

were present at high levels in some groundwater and sediment samples collected from the site. Concentrations of PCBs were moderately high in beach sediment and mussels collected at the same sites.

NOAA Trust Habitats and Species

Narragansett Bay provides habitat for several species of bottom-fish, pelagic fish, and invertebrates and supports commercial and sport fisheries valued at several million dollars (Table 2; Oviatt and Nixon 1973; TRC 1989; Sisson personal communication 1990). The site's 14.5 km of shoreline along the eastern passage between Conanicut and Aquidneck islands in the southern part of Narragansett Bay includes eel-grass beds that are important for lobster and fish habitat (Sisson personal communication 1990).

Fish populations in Narragansett Bay vary seasonally. Commercial fisheries that operate seasonally in the vicinity of NETC catch herring, bay anchovy, bluefish, menhaden, silver

Naval Education Training Center

Table 2.
Species and
habitat use in
the eastern
passage of
Narragansett
Bay in the
vicinity of the
NETC.

Table available in hardcopy

**NOAA Trust
Habitats and
Species,**
cont.

hake, and scup (Oviatt and Nixon 1973; Sisson personal communication 1990). Winter flounder, a commercially fished species, pass through the area to spawning grounds north of the site. Recreational fisheries for striped bass, bluefish, weakfish, tautog, and summer flounder occur in the area (Sisson personal communication 1990).

Invertebrate resources in Narragansett Bay are extensive and commercially and recreationally valuable. Quahog is the most valuable commercial shellfish resource in the bay, though populations along the NETC shoreline are not as great as other areas of the bay, due to the greater depths there. Lobsters are caught in the Coddington Cove area, at the south end of the site. A small squid fishery takes place in Narragansett Bay, with traps located in Coddington Cove (TRC 1989; Sisson, personal communication 1990).

Naval Education Training Center

References

Lindsay, W.L. 1979. Chemical Equilibria in Soils. New York: John Wiley & Sons. 449pp.

Long, E.R., and L.G. Morgan. 1990. The potential for biological effects of sediment-sorbed contaminants tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA-52. Seattle: Coastal and Estuarine Assessment Branch, NOAA. 175 pp.+ Appendices.

Oviatt, C.A. and S.W. Nixon. 1973. The demersal fish of Narragansett Bay: an analysis of community structure, distribution and abundance. Estuar. and Coastal Mar. Sci 1: 361-378.

Sisson, R., Supervisory Marine Biologist, Division of Fish and Wildlife, Rhode Island Department of Environmental Management, Newport, Rhode Island, personal communication, June 28, 1990.

TRC Environmental Consultants, Inc. 1989. Installation restoration program. RI/FS workplan. Naval Education Training Center. Newport, Rhode Island. Philadelphia: U.S. Department of Navy, Northern Division, Naval Facilities Engineering Command.

U.S. Environmental Protection Agency. 1986. Quality criteria for water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-87-003.