

**MAINE PUBLIC DRINKING WATER
SOURCE WATER ASSESSMENT PROGRAM
SHOALS MARINE LABORATORY
APPLEDORE ISLAND, MAINE**

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PREPARED BY

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Introduction

The Maine Drinking Water Program, a state agency within the Department of Human Services, Bureau of Health, has completed an assessment of the susceptibility to contamination of the water supply serving Shoals Marine Laboratory, a transient surface water supply located on Appledore Island, Maine. The assessment is a requirement of the Federal Safe Drinking Water Act, a law originally passed in 1974 in an effort to ensure the safety of public water supplies. The Transient Water Supplier (TWS) has voluntarily cooperated with the Drinking Water Program in completing this assessment. In the following report the water system and source are described and a photo of the source is included. The risk of contamination of the source is evaluated, and recommendations for action on the part of the water supplier are provided.

Water System Description

PWSID #: 10973

Water System Name: Shoals Marine Laboratory

Water System Location: Appledore Island, Maine

Source Name: Atlantic Ocean

Source size: unavailable

Source perimeter: unavailable

Watershed Size: not applicable

Watershed Perimeter: not applicable

Water System Type: Transient non-community

Operating Season: May 15-September 30

Population served: Not more than 100 per day (average is ~60)

Number of Intakes: 1

Location of intake in relation to any adjacent property: western shoreline of the island, northeast of Babb's cove.

Approximate distance of the intake from the shoreline: ~300 feet offshore

Approximate depth of the intake: ~40 feet

Approximate distance of the intake from the bottom: ~2-3 feet

The intake is not marked with buoys in the water and there are no signs on the shoreline identifying the drinking water supply. The surface water intake was used from July 2nd through September 12th during the summer of 2001. 37 days or 224 hours.

Number of Individuals served daily: Not more than 100 per day (average is ~60)

Number of Ground Water Sources: 1 dug well supplies the island

Number of Surface Water Sources: the surface water intake is used as a back up and to supplement the dug well.

The surface water source is combined with the dug well source as needed. The dug well is the primary source for the island but during a drought the surface water source can be put on line.

Treatment:

Disinfection: Pre hypo chlorination

Slow Sand Filtration

Dechlorination

Chloramines

Ion Exchange

Estimated Daily Water Use: ~ 1,220 gallons per day for the 2001 season.

Potential Risk of Contamination to the Source

Transient water systems are regulated by the Drinking Water Program for pathogens and nitrate/nitrite since the individuals consuming the water are not the same ones from one day to the next. In general, no individual consumes the water for an extended period of time and therefore contaminants, which pose a long-term health risk, are not significant. For this reason, evaluation only of the intake zone was completed.

Assessment Zones

Watershed: Coastal islands have small areas that directly contribute rainwater or runoff to surface water bodies that may exist within the shoreline boundaries of an island. Appledore Island does not have a delineated watershed boundary and the source of water is the Atlantic Ocean. The area that does contribute to the Atlantic ocean (an enormous surface water supply) is not to be determined by the Maine Drinking Water Program. The island has a 2.52-mile perimeter and is 98.94 acres. The Marine Lab leases the property (island) from the Star Island Corporation. Upon review of the Maine Department of Environmental Protection (MDEP) "Threats to Groundwater" database, there are no potential threats identified on Appledore Island.

Immediate Shore land: The shoreline near the intake follows a North-South orientation. The area includes a small cove and a stretch of rocky/cobble beach along the shoreline. A very low sloping bank meets the rocky shoreline. Much of the property immediate to the intake is an open grassy area. There are high bushes and alders that separate the grassy area from the rocky beach. Although the island soils are shallow there appears to be very low potential for erosion problems.

Intake (1,000 ft. radius): The intake is ~300 feet from the shoreline in ~40 feet of water. The intake is ~38 feet below the surface and ~2 feet off the bottom of the ocean. The intake is protected by a screen and is propped up off the bottom. There are no conditions that are currently affecting the water quality and there are no signs of viral, bacteriological or Nitrate/Nitrite contamination. There is a large population of gulls on the island that contribute guano to the ocean but they do not pose any significant threats to the system as a whole. There are two new 6,000-gallon diesel tanks within 1,000 feet of the intake and they are setting on a new concrete slab. There are three large diesel generators that supply electricity to the island. There are also some waste oil barrels within 1,000 feet of the intake but the barrels are removed from the island every month or so. Gasoline is stored in this area as well. There is a shed where paint and paint thinner materials are kept. The shed is locked and kept very tidy. There is also an on site sewage treatment plant.

SWAP Ranking:

The SWAP assessment factors indicate that the overall susceptibility of the water quality around Appledore Island to be **low**. This conclusion is based on the general conditions observed around the intake and shore land zone, the absence of any of the DEP threats around the Appledore Island intake and the large volume of water in the ocean.

Discussion and Recommendations

The susceptibility of the Shoals Marine Lab surface water source on Appledore Island to be impaired is low. There are no significant threats on Appledore Island that were identified by the Maine DEP. The threats that were identified during the site visit appeared to pose little threat to the water system because of the awareness of the operator and organization of the water system in relation to the threats. The system has shut off valves in numerous locations including at the well, the cistern, the pump station and the reverse osmosis unit. The surface water source is used only when there are drought conditions such as last August 2001. The system appeared to be very well designed and efficiently maintained.



View from the shoreline looking towards the intake location (when it is in use).