BFI Sanitary Landfill
Rockingham, Vermont
Region 1
VTD980520092

Site Exposure Potential

The BFI Sanitary Landfill covers 10 hectares on a 42-hectare property in Rockingham, Vermont (Figure 1). The site was originally a soil borrow area owned by Mr. Shepard, who began operating a municipal landfill in 1968; in 1977, the landfill was purchased by BFI. The landfill is unlined and records indicate that it receives 21,228 metric tons of municipal, industrial, and solid waste each year. The wastes include grinding sludge, waste oils, cutting fluids, pesticides, solvents, and epoxy resin (NUS 1987).

Groundwater discharges out of the bedrock cliff face west of the landfill and flows the length of the landfill. The waste directly contacts the groundwater. To reduce leachate generation, a bituminous (tar) intermediate liner was installed in 1981 over the western portion of the landfill and sprayed against the exposed cliff face. However, the liner has been only marginally successful in reducing the leachate. Leachate from the western part of the landfill is channeled to a runoff collection pond at the southwestern end of the landfill. Sediment settles in the pond before runoff drains into a culvert that discharges to the Connecticut River. Surface water from the northern part of the landfill is routed directly to the river. The volume of leachate ranges from 1,900 to 18,900 liters per day. Reported fish kills in the Connecticut River may have been the result of leachate runoff from the landfill (NUS 1987).

In 1986, BFI began using a 0.6-hectare expansion area lined with 40-milliliter, high-density polyethylene (NUS 1987). Leachate generated in the new area is stored in a 38,000-liter tank before being pumped to the Springfield Wastewater Treatment Facility. The landfill sends 3,800 liters of leachate per day to the treatment facility.

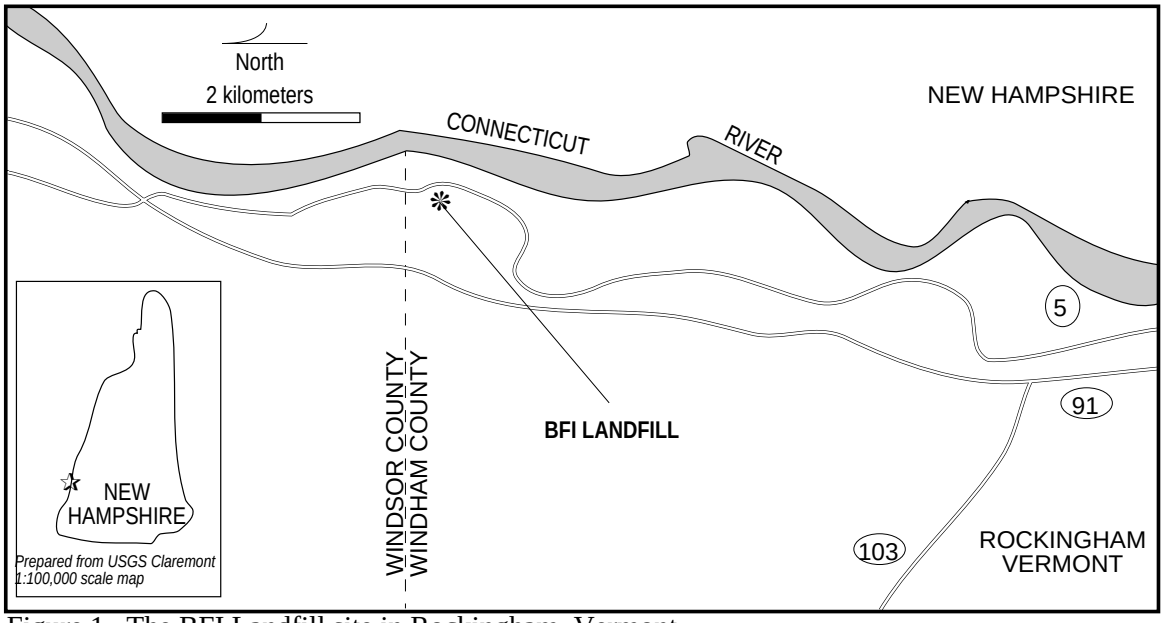

Figure 1. The BFI Landfill site in Rockingham, Vermont.

The BFI landfill area was originally a glacier-derived terrace 140 to 160 meters above mean sea level (NUS 1987). A steep cliff face forms the western boundary of the site. The Connecticut River is less than 160 meters east of the landfill and flows 230 km to the Atlantic Ocean.

Contaminant migration pathways to NOAA trust resources are leachates, surface water runoff, and groundwater flow to the Connecticut River.

Site-Related Contamination

The contaminants of concern to NOAA include the trace metals cadmium, chromium, copper, and lead, which have been measured in groundwater at concentrations that exceeded AWQC for the protection of freshwater aquatic life by up to 440 times (Table 1) (EPA 1986; NUS 1987). In addition, high levels of VOCs have been measured in the groundwater. No data were available regarding contamination by pesticides.

Table 1. Maximum concentrations of selected contaminants at the BFI Sanitary Landfill site (NUS 1987); AWQC for the protection of freshwater aquatic life (EPA 1986); concentrations in μg/l.

		AWQC	
Contaminant	Groundwater	Acute	Chronic
Semi-Volatiles			
acetone	18,000	N/D	N/D
2-butanone	92,000	N/D	N/D
Trace Metals			
cadmium	290	3.9*	1.1*
chromium	147.5	16	11
copper	1,400	18*	12*
lead	457	82*	3.2*

N/D: Criteria not determined

* Hardness-dependent (based on 100 mg/l $CaCO_3$)

NOAA Trust Habitats and Species in Site Vicinity

The Connecticut River is a continuously flowing, low-gradient river system and the largest river in New England. Near the site, the river is 90 to 150 meters wide (McMeniny 1988). The river has been classified by the State of Vermont as a coldwater fish habitat and the water quality is generally good. There is a 1.6-hectare, intermittently flooded wetlands area 1.5 km downstream of the landfill.

An Atlantic salmon run has been restored on the Connecticut River adjacent to the site. The run is small, but is expected to grow considerably over the next few years (McMeniny 1988). The aquatic habitats near the site are used as nursery area and as a migratory corridor. Atlantic salmon smolt are stocked on the river and its tributaries; the White River National Fish Hatchery, 84 km upstream from the landfill, can produce more than one million Atlantic salmon smolts.

American shad also use the Connecticut River near the site (McMeniny 1988). Historically, the American shad run terminated in the area near Bellows Falls, 14 km below the site. However, when the fish passage was installed on the dam at Bellows Falls, a few American shad began to migrate further upstream.

Response Category: Not Determined

Current Stage of Site Action: RI/FS Workplan

EPA Site Manager

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References

EPA. 1986. Quality Criteria for Water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-86-001.

McMeniny, J. , fishery biologist, Vermont Department of Fish and Wildlife Services, Burlington, Vermont, personal communication, December 14, 1988.

NUS Corporation. 1987. Final Site Inspection Report, BFI Landfill, Rockingham, Vermont. Boston: U.S. Environmental Protection Agency, Region 1.
TDD No. F1-8706-09.