Rose Hill Regional Landfill
South Kingston, Rhode Island
Region 1
RID980521025

Site Exposure Potential

The Rose Hill Regional Landfill covers 28 hectares in South Kingston, Rhode Island (Figure 1). Before its use as a landfill, the site was used for sand and gravel operations. From 1967 to 1983, an unknown quantity of domestic and industrial wastes was disposed of in three areas at the landfill: an 11-hectare solid waste landfill, a 4.5 hectare-bulk waste disposal area, and a sewage sludge landfill. Copper and zinc sludge and process water containing trichloroethylene were included in the industrial wastes. During operation, wastes were buried below the water table. When operation ceased in 1983, the three areas were covered with soil, graded, and seeded. A transfer station for municipal refuse now occupies the site (NUS 1987).

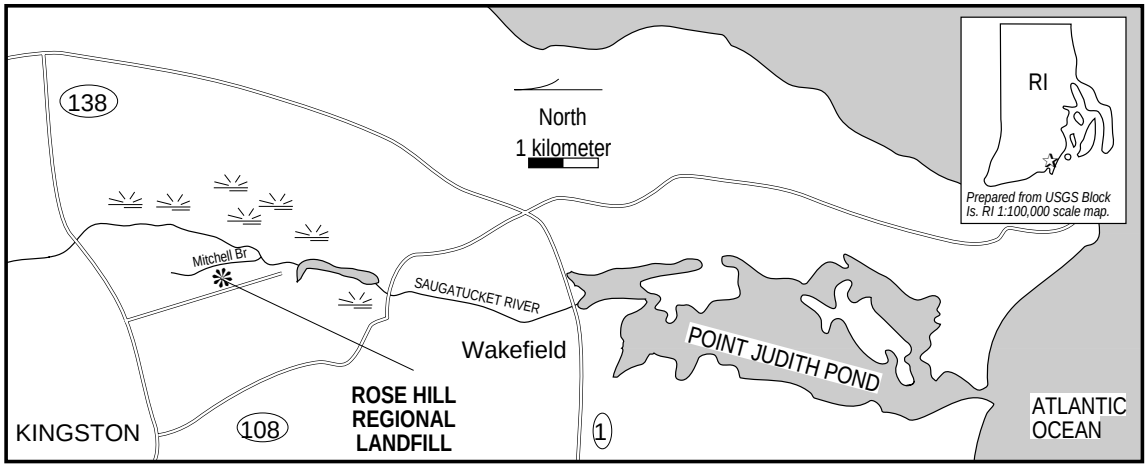

Figure 1. The Rose Hill Regional Landfill site in South Kingston, Rhode Island.

The topography in the area, typical of the coastal lowlands, is generally flat with gently rolling hills (NUS 1987). Elevations range from 15 to 30 meters above mean sea level with slopes less than three percent. There are three surface water bodies near the site. The Saugatucket River flows south, 60 to 90 meters east of the site. Mitchell Brook flows along the northern perimeter of the site and south between the solid waste landfill and the bulk waste disposal area on the site. Mitchell Brook joins the Saugatucket River 300 meters southeast of the site. An unnamed brook flows southeast 90 meters from the site and joins the Saugatucket River 150 meters south of the confluence of the river and Mitchell Brook. The Saugatucket River flows 4.5 km into Point Judith Pond,which empties into the Atlantic Ocean.

Contaminant migration pathways include leachates, surface water runoff, and groundwater discharge to Mitchell Brook and the Saugatucket River

Site-Related Contamination

Trace metals and VOCs are the contaminants of concern. Concentrations of cadmium, lead, mercury, and silver in on-site groundwater exceeded AWQC (Table 1) (EPA 1986; NUS 1987). In addition, concentrations of benzene and 1,2-dichloroethene exceeding

LOEL were found in on-site groundwater. Limited surface water sampling and analysis found low concentrations (<10 μg/l) of several VOCs in Mitchell Brook.

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

Contaminant	On-site Groundwater	AWQC Acute	AWQC Chronic
ORGANIC COMPOUNDS			
Semi-Volatile			
benzene	12,220	5,300*	N/D
1,2-dichloroethene	80,300	11,600*	N/D
INORGANIC SUBSTANCES			
Trace Metals			
cadmium	165	3.9†	1.1†
lead	100	82†	3.2†
mercury	4	2.4	0.012
silver	30	4.1†	0.12

* LOEL; † Hardness-dependent (based on 100 mg/l $CaCO_3$); N/D: Criteria not determined

NOAA Trust Habitats and Species in Site Vicinity

Habitats of interest to NOAA include the Saugatucket River, Point Judith Pond, and the Atlantic Ocean near the mouth of Point Judith Pond (Table 2). The Saugatucket River is a continuously flowing, low-gradient river system with an average width of 2.5 meters and an average depth of 0.2 meters. River water quality is generally good. The two small dams on the lower reach of the Saugatucket River both permit fish passage. The Saugatucket River supports an alewife run, estimated at 20,000-50,000 individuals (Gibson 1988). American eel also use the Saugatucket River. Point Judith Pond is a mid-salinity estuary used by NOAA trust resources. Mussels use this estuary for spawning. This habitat supports recreational fishing (Gibson 1989); the area of the Atlantic Ocean near the mouth of Point Judith Pond also supports numerous species. Mitchell Brook, the stream that flows near the Rose Hill site, is only a small, intermittent stream and is unlikely to be an important habitat of concern to NOAA (Gibson 1988).

Table 2. Selected resources in the vicinity of the Rose Hill Regional Landfill (USFWS 1980; Gibson 1989).

Species	Saugatucket River	Point Judith Pond
INVERTEBRATES		
mussels		A,S,R
FISH		
alewife	S,A,M	S,A,M
American eel	A	A
winter flounder		S,A,C,R
striped bass		M,A,R
white perch		M,A,R
spanish mackerel		

S : Spawning area; A : Adult area; M : Migration route; C : Commercial fishery; R : Recreational fishery

Response Category: Federal Fund Lead

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.

Gibson, M., fishery biologist, Rhode Island Fish and Wild Life Services, Sweetwater, Rhode Island, personal communications, December 1, 1988; March 9, 1989.

NUS. 1987. HRS Documentation Package, Rose Hill Regional Landfill, South Kingston, Rhode Island. TDD No. F1-8707-22. Boston: U.S. Environmental Protection Agency, Region 1.

USFWS. 1980. Atlantic coast ecological inventory: Providence. Washington, D.C.: U.S. Fish and Wildlife Service. 1:250,000 scale map. 41069-A8-EI-250.