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# United States Avenue Burn

*Gibbsboro, New Jersey*

*EPA Facility ID: NJ0001120799*

*Basin: Lower Delaware*

*HUC: 02040202*

## Executive Summary

The United States Avenue Burn property is located approximately 15 km (9 mi) east of the Delaware River within the Cooper River watershed. The area was used to dump and burn waste and to store sludges generated from a local paint manufacturer. The area was also used as a landfill for municipal waste disposal. Soils, groundwater, surface water, and sediments are contaminated with trace elements, PAHs, and pentachlorophenol at concentrations that exceed screening guidelines. The habitats of primary concern to NOAA are the surface water and sediments in White Sand Branch, Haney Run Brook, Bridgewood Lake, and Millard Creek. The catadromous American eel is the trust resource present in the Cooper River and its tributaries due to several impassable dams on the river. However, fish passage facilities have been installed at the lowermost dam and will likely be installed on the remaining dams, which would allow anadromous fish access to the upper watershed in the future. A consumption advisory is in effect for all fish, shellfish, and crustaceans in the Cooper River and its tributaries.

## Site Background

The United States Avenue Burn property consists of approximately 5.3 hectares (13.1 acres) in Gibbsboro, New Jersey within the Cooper River watershed, the headwaters of which originate approximately 1.1 km (0.7 mi) south of the property (Figure 1). Two streams, White Sand Branch and Haney Run Brook, traverse the property and flow into Bridgewood Lake (Figure 2). Bridgewood Lake discharges into Millard Creek, which flows for approximately 2 km (1.2 mi) to the Cooper River. The Cooper River flows northwest for approximately 15 km (9 mi) and discharges into the Delaware River (Weston 1997a).

The U.S. Avenue Burn property is located in and around Blocks 23 and 25 in the town of Gibbsboro (Figure 2). The property was used to dump and burn waste from a local paint manufacturing facility from an unknown date until 1979 (USEPA 2000a). Reports indicate that paint wastes and solvents were dumped and poured onto the ground and then burned (USEPA 1998; USEPA 2000a). Visible wastes at the burn area occupy approximately 2,000 m<sup>2</sup> (21,500 ft<sup>2</sup>) and has been enclosed by a fence (Figure 2; Weston 1997a). Portions of Blocks 23 and 25 were used as a landfill for disposal of paint wastes, municipal wastes, and the storage of sludges generated from the former paint manufacturer (USEPA 2000a). The location of the landfill area in Block 23 was not available, although the approximate location of the former landfill area in Block 25 is indicated in Figure 2 (Weston 1997a).

The New Jersey Department of Environmental Protection (NJDEP) first detected contaminated groundwater in 1975 (Weston 1997a). In 1990 NJDEP issued a directive to conduct a Remedial Investigation and Feasibility Study. In 1995, Sherwin-Williams Co., the current property owner,

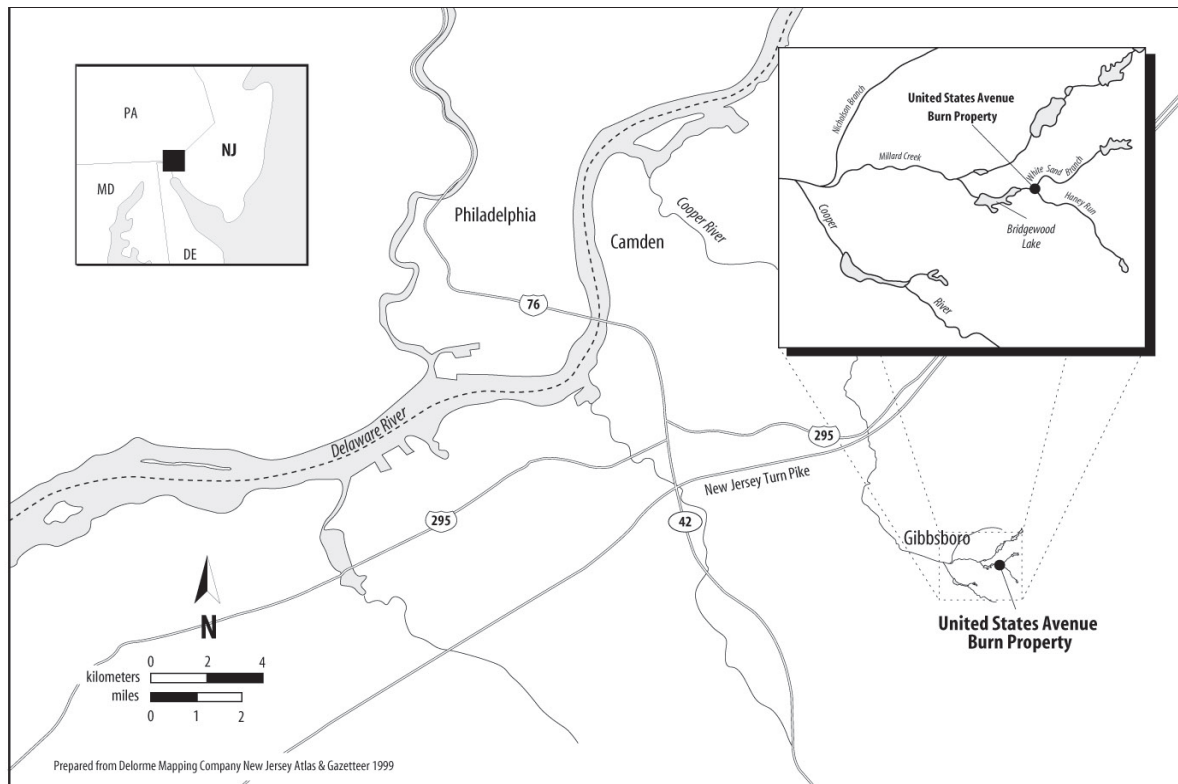


Figure 1. Location of the United States Avenue Burn site property in Gibbsboro, New Jersey.

entered into an Administrative Order of Consent with the U.S. Environmental Protection Agency to conduct a removal action investigation (USEPA 1998). The United States Avenue Burn site was added to the National Priorities List in July 1999 (USEPA 2000a).

Groundwater discharge and surface runoff into streams are the primary pathways for contaminant transport to NOAA trust resources. Soils in the vicinity of the burn area are well drained and moderate to highly permeable (Weston 1997b). Groundwater is encountered between 0.5 to 2 m (1.6 to 6.5 ft) below the surface within the Potomac-Raritan-Magothy aquifer system. Groundwater flow is north-northwest across the site. Most of the site is situated within a wetland area that is hydraulically connected to White Sand Branch (USEPA 1998). Surface runoff from Blocks 23 and 25 discharges into White Sand Branch and Haney Run Brook, respectively (Weston 1997a).

### NOAA Trust Resources

The habitats of primary concern to NOAA are the surface water and sediments in White Sand Branch, Haney Run Brook, Bridgewood Lake, and Millard Creek (Figure 1). These streams and lakes make up the headwaters of the Cooper River basin, a tributary of the lower Delaware River. The streams are small, generally less than 3 m (10 ft) wide and 1 m (3 ft) deep, with substrates ranging from silts to sands. Bridgewood Lake is approximately 2 to 3 ha (5 to 7 acres) in size. No information on bottom substrates or depths was available, but the fish communities in both the lake and streams are composed of warmwater resident species such as sunfish, catfish, carp, and shiners (Carberry 2000).

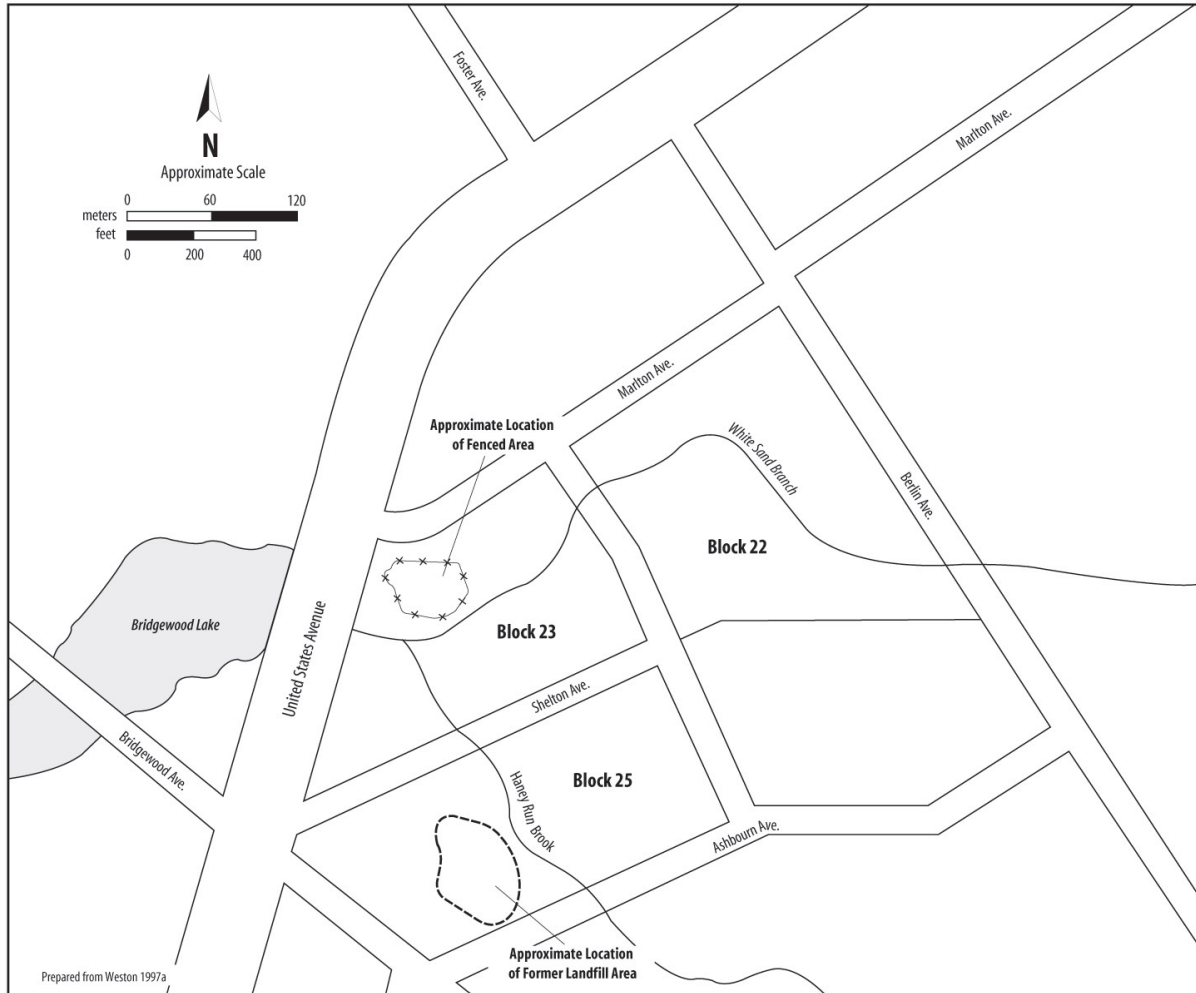


Figure 2. Detail of the United States Avenue Burn site property.

The catadromous American eel is the NOAA trust resource present in the Cooper River and its tributaries. Anadromous blueback herring and alewife are present near the mouth of the river. Several lowhead dams on the river block upstream migration of anadromous species. The first dam is located approximately 4 km (2 mi) upstream of the mouth and about 16 km (10 mi) downstream of the U.S. Avenue Burn property. American eel can traverse lowhead dams and are found throughout the Cooper River basin using the streams and lakes as adult habitat (Carberry 2000).

The installation of fish passage facilities at dams on the Cooper River is underway. Fish passage facilities were installed at the lowermost dam in 1998 and are planned at two additional dams. Although several more dams are on the river, it is likely that passage facilities will be installed at these as well, eventually allowing access to the upper Cooper River basin by anadromous fish. Blueback herring and alewife are the anadromous species most likely to use the small streams and lake habitats in the upper basin as spawning areas and juvenile nurseries.

Recreational fisheries in the Cooper River basin are limited. The lakes and streams within the basin are not stocked or managed for recreational fisheries and no commercial fisheries are present

## 26 EPA Region 2

Table 1. Maximum concentrations of contaminants of concern found at the United States Avenue Burn property (Weston 1997a).

Contaminant	Soil (mg/kg)		Ground- water	Water (µg/L)		Sediment (mg/kg)	
	Soils	Mean U.S. <sup>a</sup>		Surface Water	AWQC <sup>b</sup>	Sediment	TEL <sup>c</sup>
<b>TRACE ELEMENTS</b>							
Arsenic	590	5.2	830	5.1	150	160	5.9
Cadmium	140	0.06	50	0.70	2.2 <sup>d</sup>	3.5	0.596
Chromium	310	37	16	1.5	11	12	37.3
Copper	1,900	17	31	R	9 <sup>d</sup>	19	35.7
Lead	240,000	16	270,000	9.7	2.5 <sup>d</sup>	2,200	35
Mercury	130	0.058	1.5	0.10	0.77	0.71	0.174
Nickel	50	13	11	2.7	52 <sup>d</sup>	13.4	18
Silver	9.6	0.05	8	0.90	0.12	<6.4	1.0 <sup>e</sup>
Zinc	99,000	48	130	R	120 <sup>d</sup>	210	123.1
<b>PAHs</b>							
Benz(a)anthracene	10	NA	<11	<11	300 <sup>f,g</sup>	1.6	0.0317
Chrysene	9.9	NA	<11	<11	300 <sup>f,g</sup>	1.7	0.0571
Fluoranthene	21	NA	<11	<11	3980 <sup>g,h</sup>	3.4	0.111
Phenanthrene	28	NA	<11	<11	6.3 <sup>i</sup>	0.34	0.0419
Pyrene	22	NA	<11	<11	300 <sup>f,g</sup>	1.2	0.053
<b>SVOCs</b>							
Pentachlorophenol	3.8	NA	<26	<27	15	<4	0.017 <sup>j</sup>

NA Screening guidelines not available

R Sample result did not pass QA/QC standards

< Not detected; value presented is the detection limit.

a Shacklette and Boerngen (1984), except for cadmium and silver which represent average concentrations in the earth's crust from Lindsay (1979).

b National Recommended Water Quality Criteria (USEPA 1999). Freshwater chronic criteria presented.

c TEL; Threshold Effects Level; Freshwater sediment value. Concentration below which adverse effects were rarely observed (geometric mean of the 15 percent concentration in the effects data set) as compiled by Smith et al. (1996).

d Criterion expressed as a function of total hardness; concentrations shown correspond to hardness of 100 mg/L

e TEL not available; marine Effects Range-Low (ERL) presented. ERL represents the 10th percentile for the data set in which effects were observed or predicted in studies compiled by Long et al. (1995).

f Freshwater chronic value not available; marine acute value presented; value for chemical class

g Lowest observable effect level

h Freshwater chronic value not available; freshwater acute value presented

i Proposed criteria

j TEL not available; marine Apparent Effects Threshold (AET) presented. The AET represents the concentration above which adverse biological impacts would always be expected. The lowest AET from a set of marine biological indicators was used.

(Carberry 2000). A consumption advisory is in effect for all fish, shellfish, and crustaceans in the Cooper River and its drainage due to PCB, dioxin, or chlordane contamination (NJDEP 1999). A fish consumption advisory based on chlordane contamination has been in effect since 1993 (USEPA 2000b; USEPA 2000c).

### Site-Related Contamination

Field investigations indicate contamination of soils, groundwater, surface water, and sediment at the United States Avenue Burn property. During a recent removal action Sherwin-Williams collected 595 soil, five groundwater, five surface water, and 38 sediment samples (Weston 1997a).

The maximum concentrations of the contaminants of concern to NOAA are summarized in Table 1, along with the appropriate screening guidelines. The primary contaminants of concern include trace elements, PAHs, and pentachlorophenol.

Arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc were detected in soils at concentrations exceeding screening guidelines (Table 1). Maximum lead concentrations exceeded screening guidelines by four orders of magnitude and have been detected in the surface soils and subsurface soils below the groundwater table. An estimated 36,000 m<sup>3</sup> (47,000 yd<sup>3</sup>) of soil are contaminated with lead (Weston 1997a). Elevated concentrations of PAHs and pentachlorophenol were also detected in soils on the property, although screening guidelines are not available.

Lead, mercury, and silver have been detected in groundwater at concentrations exceeding the Ambient Water Quality Criteria (AWQC) by an order of magnitude. Maximum lead concentrations exceeded screening guidelines by four orders of magnitude. Groundwater analyses were conducted on unfiltered samples and represent total trace elements in groundwater (Weston 1997a).

Lead, silver, and pentachlorophenol have been detected in the surface waters of Haney Run Brook at concentrations exceeding screening guidelines (Table 1). All five surface water samples were collected from Haney Run Brook (Weston 1997a).

Arsenic, cadmium, copper, lead, mercury, zinc, pentachlorophenol, and PAHs have been detected in the sediments of White Sand Branch and Haney Run Brook at concentrations exceeding the screening guidelines (Table 1; Weston 1997a). Maximum lead concentrations exceed screening guidelines by two orders of magnitude.

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## 28 EPA Region 2

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