# Sherwin-Williams/Hilliards Creek

*Gibbsboro, New Jersey*
*EPA Facility ID: NJD980417976*
*Basin: Lower Delaware*
*HUC: 02040202*

## Executive Summary

The Sherwin-Williams/Hilliards Creek site surrounds a former paint manufacturing plant in a residential and light industrial area of Gibbsboro, Camden County, New Jersey. The former plant encompassed an area of approximately 24 ha (60 acres) that is bisected by Hilliards Creek, a headwater tributary of the Cooper River. From the mid-1800s to the late 1970s, lead-based paints, varnishes, and lacquers were manufactured at the former plant. During the manufacturing process, white lead was ground at the facility. Spills and leaks occurred during the transfer, storing, and shipping of these materials and products. Wastes from the manufacturing process were disposed of in Hilliards Creek; in on-site, unlined wastewater lagoons; and in dump sites in the vicinity of the former plant. The primary contaminants of concern to NOAA are lead and PAHs. Surface water runoff, groundwater transport, and sediment transport are the primary pathways for the migration of contaminants from the site to NOAA trust resources. The primary NOAA trust resource near the site is the catadromous American eel and Hilliards Creek is the habitat of most concern to NOAA.

## Site Background

The Sherwin-Williams/Hilliards Creek site surrounds a former paint manufacturing plant in a residential and light industrial area of Gibbsboro, Camden County, New Jersey (Figure 1). The former plant encompassed an area of approximately 24 ha (60 acres) and was bounded to the north by Silver Lake and to the south by Bridgewood Lake. Hilliards Creek bisects the property and flows through the Hilliards Creek Wildlife Refuge before discharging to the Cooper River approximately 2 km (1.25 mi) west of the former plant. The Cooper River is a tributary of the Delaware River. Two other waste sites, the Route 561 Dump and the United States Avenue Burn, are in the vicinity of the Sherwin-Williams/Hilliards Creek site. Both sites were landfills used as paint waste disposal areas.

From the mid-1800s to the late 1970s, lead-based paints, varnishes, and lacquers were manufactured at the former plant. During the manufacturing process, white lead was ground at the facility. Wastes from the manufacturing process were disposed of in Hilliards Creek; in on-site, unlined wastewater lagoons; and in dump sites in the vicinity of the former plant. Paint manufacturing materials and final products were stored in buildings, tank farms, and drum storage areas throughout the property. Raw materials and final products were shipped to and from the facility via railroad tanker cars, which were loaded and unloaded via a pipeline. Spills and leaks occurred during the transfer, storing, and shipping of these materials and products. In 1976, manufacturing at the plant was terminated and the entire facility was permanently closed in 1978. In the early 1980s, the land encompassing the former plant was redeveloped into a light industrial park. As part of the redevelopment, aboveground and underground storage tanks were removed and the unlined wastewater lagoons were backfilled (Tetra Tech 2006).

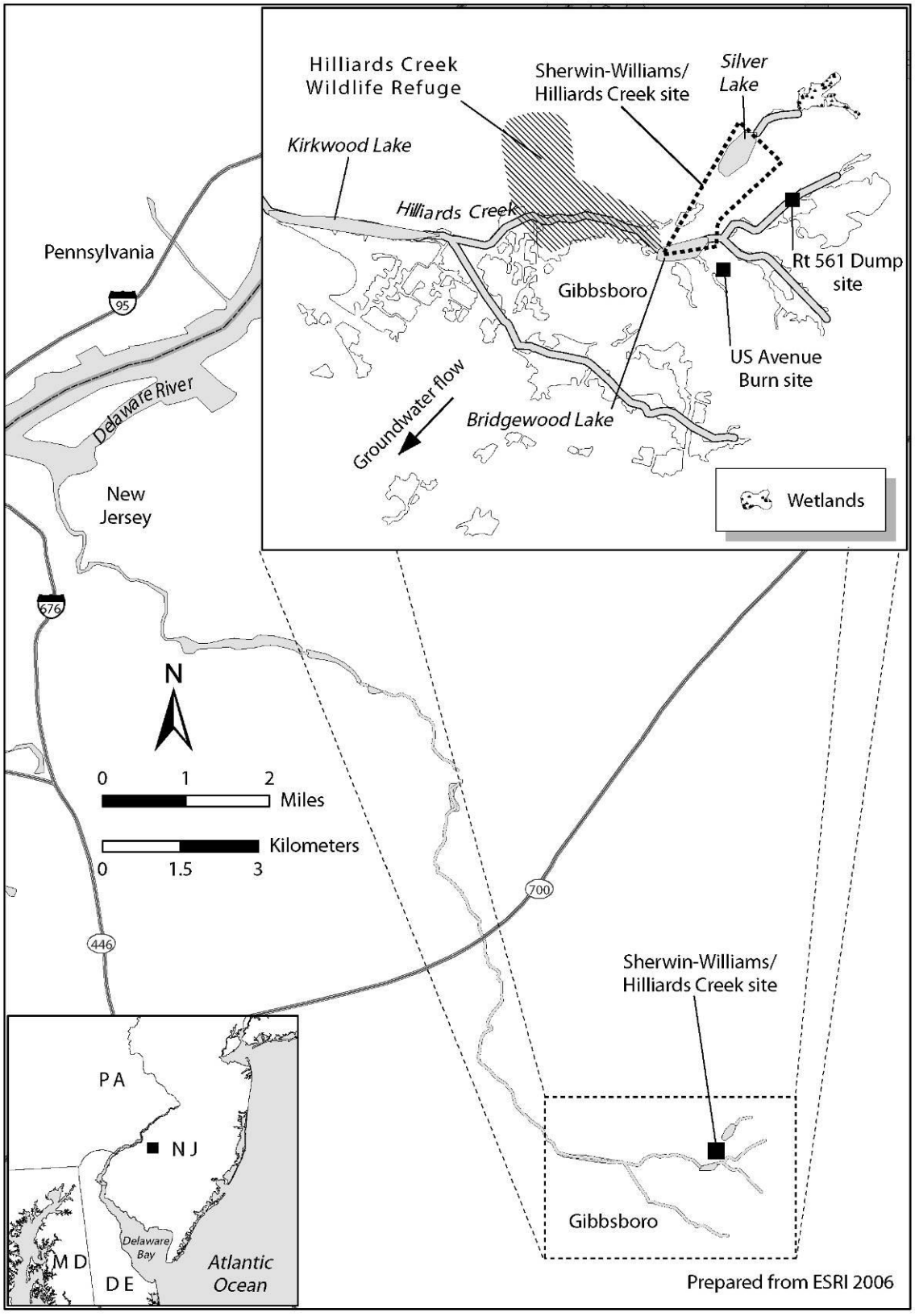


Figure 1. Location of the Sherwin-Williams/Hilliards Creek site, Gibbsboro, New Jersey.

Numerous investigations conducted at the site have detected elevated concentrations of metals, primarily lead; semivolatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs); and volatile organic compounds (VOCs) in surface water, sediment, groundwater, and soil samples collected from the site. Elevated concentrations of lead and PAHs were also been detected in surface water, sediment, and soil samples collected from Hilliards Creek and its associated wetlands and floodplain, and from nearby Kirkwood Lake (Tetra Tech 2006).

The U.S. Environmental Protection Agency (USEPA) completed a hazard ranking system (HRS) documentation package for the site in February 2006, and the site was proposed for placement on the USEPA's National Priorities List on April 19, 2006 (USEPA 2008). In September 1999, a remedial investigation and feasibility study was initiated at the site and is still underway (USEPA 2008); results from this work were not available at the time this report was prepared.

Surface water runoff, groundwater transport, and sediment transport are the primary pathways for the migration of contaminants from the site to NOAA trust resources. Surface water runoff from the site discharges to Hilliards Creek and Silver Lake. Silver Lake discharges to Hilliards Creek via an underground culvert. Groundwater in the area is encountered approximately 0.3 to 5 m (1 to 16 ft) below ground surface and flows to the southwest toward Hilliards Creek (Tetra Tech 2006).

### NOAA Trust Resources

Hilliards Creek, a headwater tributary of the Cooper River, is the habitat of primary concern to NOAA. Hilliards Creek is a small stream with silty to sandy substrates. The creek is generally less than 3 m (10 ft) wide and 1 m (3.3 ft) deep (Carberry 2000). Hilliards Creek bisects the property and flows through the Hilliards Creek Wildlife Refuge before discharging to the Cooper River approximately 2 km (1.25 mi) west of the former plant. The Cooper River flows to the northwest approximately 15 km (9 mi) before discharging to the lower Delaware River.

The primary NOAA trust resource in the vicinity of the site is the catadromous American eel. The Cooper River and its tributaries, including Hilliards Creek, provide adult rearing habitat for the American eel (Carberry 2000). Although American eel spawn in the Atlantic Ocean, juvenile and adult eel migrate throughout the Cooper River basin, using the area for rearing and feeding.

Although numerous dams on the Cooper River block the migration of anadromous fish species such as alewife and blueback herring, American eel are able to traverse these lowhead dams and are found throughout the basin (Carberry 2000). Numerous restoration projects that include fish passage facilities are under way on the Cooper River. These efforts to restore fish passage will provide anadromous alewife and blueback herring with access to spawning and rearing habitat in the upper Cooper River basin (USEPA 2002).

There is no commercial fishery near the site. The Cooper River basin is not managed or stocked for recreational fishing and recreational fishing in the area is limited as a result (Carberry 2000).

A statewide fish consumption advisory is in effect for the freshwater rivers of New Jersey because of dioxin, mercury, and polychlorinated biphenyl (PCB) contamination (NJDEP 2006); the advisory recommends:

- The general public limit consumption of chain pickerel, largemouth bass, and smallmouth bass to one meal per week.
- High-risk individuals limit consumption of chain pickerel, largemouth bass, smallmouth bass, sunfish, and yellow bullhead to one meal per month.
- High-risk individuals limit consumption of brown bullhead to one meal per week.

A fish consumption advisory is also in effect for the Cooper River because of dioxin, mercury, and PCB contamination. The advisory recommends:

- The general public limit consumption of brown bullhead and common carp to one meal per month.
- The general public limit consumption of bluegill sunfish to one meal per week.
- High-risk individuals consume no common carp.
- High-risk individuals limit consumption of bluegill sunfish to one meal per month.
- High-risk individuals limit consumption of brown bullhead to four meals per year.

**Site-Related Contamination**

Numerous surface water, sediment, groundwater, and soil samples were collected at the Sherwin-Williams/Hilliards Creek site during multiple sampling events between 1990 and 2004 (Tetra Tech 2006). The samples were analyzed for metals, SVOCs (including PAHs), phenols, and VOCs. With the exception of groundwater, the contaminant concentrations discussed in this report were reported in the HRS documentation package (Tetra Tech 2006) and represent analytical results for samples collected downstream of the former plant in the floodplain of Hilliards Creek; groundwater samples discussed here were collected from monitoring wells on the [site?] property. The HRS provides a limited summary of the data and analytical results for numerous potential contaminants were not available for review at the time this report was prepared. The primary contaminants of concern to NOAA are lead and PAHs.

Table 1 summarizes the maximum concentrations of contaminants of concern to NOAA detected during the site investigations and compares them to relevant screening guidelines. Site-specific or regionally specific screening guidelines are always included when available. In the absence of such guidance, the screening guidelines for surface water are the USEPA ambient water quality criteria (AWQC; USEPA 2006); the screening guidelines for sediment in a freshwater environment are the threshold effects concentrations (TECs; MacDonald et al. 2000), and the screening guidelines for soil are the Oak Ridge National Laboratory final preliminary remediation goals (ORNL-PRGs; Efroymson et al. 1997). Exceptions to these screening guidelines, if any, are noted on Table 1. Only maximum concentrations that exceeded relevant screening guidelines or for which no screening guidelines are currently available, are discussed below. When known, the general sampling locations are also provided.

Surface Water

One metal was detected in a surface water sample collected from Hilliards Creek downstream of the site at a maximum concentration that exceeded the screening guideline (Table 1). The maximum concentration of lead exceeded the AWQC by one order of magnitude.

Sediment

Two metals were detected in sediment samples collected from downstream of the site in the floodplain of Hilliards Creek at maximum concentrations that exceeded screening guidelines (Table 1). The maximum concentrations of arsenic and lead exceeded the TECs by two orders of magnitude.

Six PAHs were detected in sediment samples collected from downstream of the site in the floodplain of Hilliards Creek at maximum concentrations that exceeded screening guidelines, and one PAH was also detected for which no screening guideline is currently available (Table 1). The maximum concentrations of benz(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, phenanthrene, and pyrene exceeded the TECs by one order of magnitude. No screening guideline is currently available for comparison to the maximum concentration of benzo(b)fluoranthene detected in the sediment samples.

Groundwater

One metal was detected in a groundwater sample collected from a monitoring well at the site at a maximum concentration that exceeded the screening guideline (Table 1). The maximum concentration of lead exceeded the AWQC by one order of magnitude.

Pentachlorophenol was detected in a groundwater sample collected from a monitoring well at the site at a maximum concentration that exceeded the AWQC by two orders of magnitude.

Benzene, a VOC, was detected in a groundwater sample collected from a monitoring well at the site at a maximum concentration that slightly exceeded the screening guideline.

Soil

One metal was detected in a soil sample collected from a residential yard downstream of the site in the floodplain of Hilliards Creek at a maximum concentration that exceeded the screening guideline (Table 1). The maximum concentration of lead exceeded the ORNL-PRG by two orders of magnitude.

Table 1. Maximum concentrations of contaminants of concern to NOAA at the Sherwin-Williams/Hilliards Creek site (Tetra Tech 2006). Contaminant values in bold exceed or are equal to screening guidelines.

| | Soil (mg/kg) | | Water (µg/L) | | | Sediment (mg/kg) | |
|---|---|---|---|---|---|---|---|
| **Contaminant** | Soil | ORNL-PRG[a] | Ground-water | Surface Water | AWQC[b] | Sediment | TEC[c] |
| **METALS/INORGANICS** | | | | | | | |
| Arsenic | NA | 9.9 | NA | 30 | 150 | **1,100** | 9.79 |
| Lead | **39,000** | 40.5 | **240** | **29** | 2.5[d] | **9,100** | 35.8 |
| **PAHs** | | | | | | | |
| Benz(a)anthracene | NA | 0.1[e] | NA | NA | NA | **2.6** | 0.108 |
| Benzo(a)pyrene | NA | 0.1[e] | NA | NA | NA | **3.4** | 0.15 |
| Benzo(b)fluoranthene | NA | 0.1[e] | NA | NA | NA | 7.5 | NA |
| Benzo(k)fluoranthene | NA | 0.1[e] | NA | NA | NA | 1.9 | 13.4[f] |
| Chrysene | NA | NA | NA | NA | NA | **3.6** | 0.166 |
| Fluoranthene | NA | NA | NA | NA | NA | **7.1** | 0.423 |
| Phenanthrene | NA | 0.1[e] | NA | NA | NA | **3.1** | 0.204 |
| Pyrene | NA | 0.1[e] | NA | NA | NA | **7.3** | 0.195 |
| **PHENOLS** | | | | | | | |
| Pentachlorophenol | NA | 3 | **1,900** | NA | 15[g] | NA | NA |
| **VOCs** | | | | | | | |
| Benzene | NA | 0.1[e] | **5,500** | NA | 5,300[h,i] | NA | NA |
| Ethylbenzene | NA | 0.1[e] | 2,700 | NA | 32,000[h,i] | NA | NA |

a: Oak Ridge National Laboratory (ORNL) final preliminary remediation goals (PRG) for ecological endpoints (Efroymson et al. 1997).
b: Ambient water quality criteria for the protection of aquatic organisms (USEPA 2006). Freshwater chronic criteria presented.
c: Threshold Effects Concentration (TEC). Concentration below which harmful effects are unlikely to be observed (MacDonald et al. 2000).
d: Criterion expressed as a function of total hardness; concentrations shown correspond to hardness of 100 mg/L $CaCO_3$.
e: Canadian Council of Ministers of the Environment (CCME) soil quality guidelines for the protection of environmental and human health (CCME 2006).
f: Freshwater upper effects threshold (UET) for bioassays. The UET represents the concentration above which adverse biological impacts would be expected.
g: Chronic criterion is pH dependent; concentration shown above corresponds to pH of 7.8.
h: Chronic criterion not available; acute criterion presented.
i: Lowest observable effects level (LOEL) (USEPA 1986).
NA: Screening guideline or analytical result not available.

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