

**Boarhead Farms**  
**Bridgeton Township, Pennsylvania**  
**Region 3**  
**PAD047726161**

### Site Exposure Potential

The Boarhead Farms site covers 45.8 hectares in Bridgeton Township, Pennsylvania (Figure 1). A waste salvaging and hauling business operated on the site from 1970 to 1976. The site includes pits, sumps, a tanker truck area, and excavated and regraded areas.

Little is known about the quantities and types of waste that may have been deposited, but three documented spills have occurred on the property: 9,463 liters of ferrous chloride in October 1973; 15,140 liters of anhydrous ammonia in April 1976; and 3,785 liters of sulfuric acid in September 1976. After the last spill, the State of Pennsylvania issued an injunction forbidding more chemicals being brought onto the property (EPA 1988).

The Boarhead Farms site is on a topographic plateau 165 meters above mean sea level (USGS 1970). The land drops sharply to 36 meters along the Delaware River. The site is partly covered by woods and lowlands, and there are four ponds on the property. A spring originates on the site and flows through two of the ponds before entering a wetland that is partly on-site. The wetland is drained by an unnamed creek, which discharges into the Delaware River 3 km from the Boarhead Farms site. The Delaware River flows 215 km before discharging into Delaware Bay (NUS 1986).

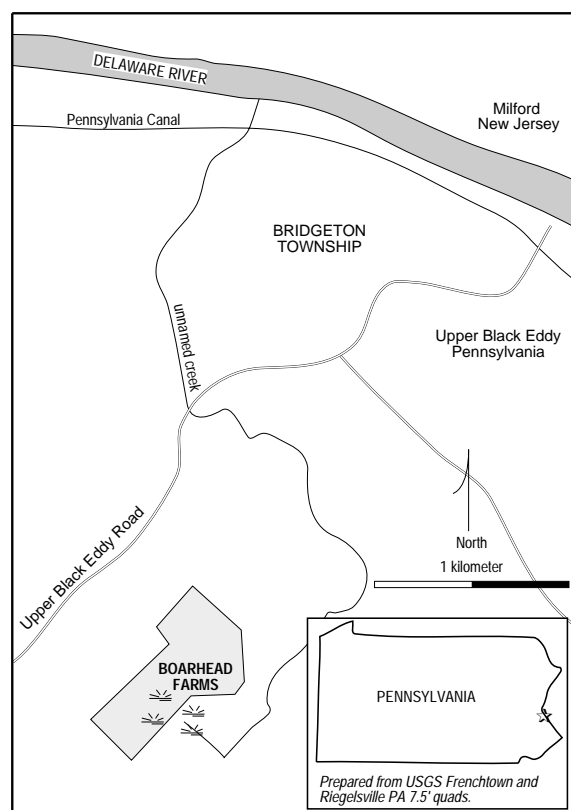


Figure 1. The Boarhead Farms site in Bridgeton Township, Pennsylvania.

### Site-Related Contamination

The major contaminants of concern at the Boarhead Farms site are trace metals. The concentrations of chromium, copper, nickel, and zinc measured in on-site surface waters exceeded the chronic AWQC for the protection of freshwater aquatic life by up to 25 times (Table 1) (EPA 1986; NUS 1986). In addition, the levels of copper, zinc, and cyanide observed in groundwater exceeded the chronic AWQC by up to 15 times. Cadmium, copper, nickel, and zinc were measured in on-site sediments at concentrations that exceeded the range observed in natural soil.

Table 1. Maximum concentrations of selected contaminants at the Boarhead Farms site (NUS 1986); ranges in natural soils (EPA 1988); AWQC for the protection of freshwater aquatic life (EPA 1986); concentrations for water in µg/l and for sediments in mg/kg.

Contaminant	Ground-water	Surface water	AWQC		Sediment	Range in Natural Sediments
			Acute	Chronic		
<b>ORGANIC COMPOUNDS</b>						
<u>Semi-volatiles</u>						
di-n-octylphthalate	690	N/A	N/D	N/D	N/A	N/A
<u>PCBs</u>						
PCB 1260	N/A	N/A	2	0.014	0.03	N/A
<b>INORGANIC SUBSTANCES</b>						
<u>Trace Metals</u>						
cadmium	N/A	N/A	3.9†	1.1†	8.3	0.01-0.7
chromium	N/A	250	16	11	978	1-1,000
copper	100	110	18†	12†	123	2-100
nickel	N/A	1,430	1,400†	160†	516	5-500
zinc	60	120	120†	110†	3,200	10-300
<u>Other</u>						
cyanide	20	N/A	22.0	5.2	4	N/A
N/A: Not available; N/D: Criteria not determined; † Hardness-dependent (based on 100 mg/l CaCO <sub>3</sub> )						

### NOAA Trust Habitats and Species in Site Vicinity

The unnamed creek adjacent to the Boarhead Farms site is a small, continuously flowing, low-gradient stream. The creek flows through the wooded areas of the plateau for 2 km before descending to the floodplains of the Delaware River through a ravine (USGS 1970). Before discharging into the river, the creek flows under the Pennsylvania Canal. The Delaware River near the site is a continuously flowing, low-gradient river system that is 200 to 400 meters wide and 0.6 to 3.5 meters deep (Koffman 1988). The substrate varies from cobble and gravel in the faster-flowing stretches of the river to sandy silt in the pooled areas. The shorelines are wooded.

Five anadromous fish species use the Delaware River as nursery and adult areas and as a migratory route (Table 2) (Koffman 1988). Shortnosed sturgeon, a federally endangered species given special status in the states of Pennsylvania and New Jersey, is common in the reaches of the river near the site. A substantial population of American shad (listed as threatened by the State of New Jersey) uses the river near the site as spawning ground and migratory route. The use of the unnamed creek by anadromous fish species has not been investigated.

Table 2. NOAA trust resource use of the Delaware River near the site (Koffman 1988).

Fish Species	Spawning Area	Nursery Area	Adult Area	Migration Route	Recreational Fishery
American shad	X	X		X	
Atlantic sturgeon				X	
blueback herring		X	X	X	X
shortnosed sturgeon				X	
striped bass		X	X	X	X

**Response Category:** Federal Enforcement Lead

**Current Stage of Site Action:** RI/FS Workplan

**EPA Site Manager**

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**References**

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