

NOAA Hazardous Waste Site Report

Army Creek Landfill (III-2)
New Castle County, Delaware
April 13, 1984

Location and Nature of the Site:

The Army Creek Landfill was constructed in 1960 and covers 44 acres in New Castle County, Delaware (Figure 1). It was owned and operated by the County as a municipal and hazardous waste disposal facility until it reached capacity in 1970. The site holds 1.9 million cubic yards of refuse. It is approximately 4,400 feet long, 200 to 900 feet wide, and between six to 35 feet in depth. Since 1972, the county has spent \$3 million to control the migration of contaminants, including lead, chromium, arsenic, and a variety of organic compounds, to an aquifer that supplies water to over 100,000 people. New Castle County is the present owner of the site.

The Army Creek Landfill is hydrogeologically connected to the Delaware Sand and Gravel Landfill (NOAA Site III-4), which lies just southeast of the site. The sites are topographically separated by Army Creek.

The principal health-related problem with the site concerns groundwater contamination. The majority of the residents in the vicinity have abandoned their private wells and are now serviced by a private water company.

A groundwater recovery system has been in operation since 1978. Contaminated groundwater from the recovery well system is discharged untreated into Army Creek.

Proximity of Chemical Hazard to Marine Resources:

Army Creek flows between the Army Creek Landfill and the Delaware Sand and Gravel Landfill, and discharges into the Delaware River one mile downstream and east of the site. Most of the water in the creek now comes from the discharge of the groundwater recovery well.

Prior to the installation of the groundwater recovery well, surface waters from the site discharged into the Delaware River intermittently, that is, with storm rains or flooding. Surface water samples confirm the presence of organic contaminants identical to those in the groundwater, i.e., phenol, bis (2 ethylhexyl) phtalate, butyl benzyl phtalate, and di-m-butyl phtalate.

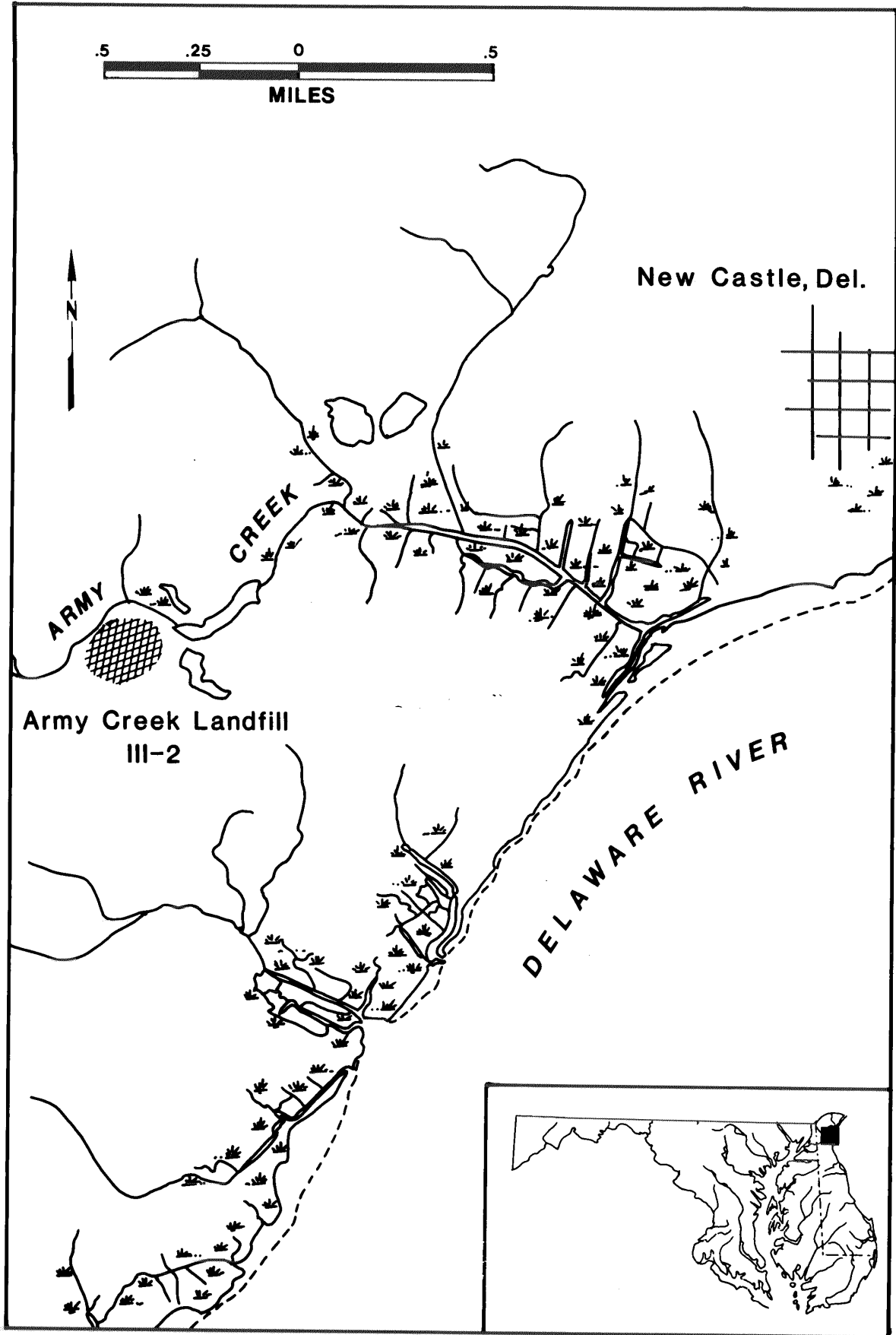


FIGURE 1. Site location.

Marine Resources at Risk:

The waters of Army Creek are not used for water supply, recreational or industrial purposes, however, the Delaware River and its tributaries provide significant habitat for a variety of finfish resources (See Table 1).

Table 1. Fishery Resources of Tidally Influenced Regions of the Delaware River (1, 2, 5)

Finfish Species	Adult Habitat	Spawning Area	Nursery Area	Commer. Fish.	Rec. Fish.	Migr. Route
<u>Anadromous</u>						
Alewife	x	x	x	x	x	x
Blueback herring	x	x	x	x	x	x
American shad	x	x	x	x	x	x
Shortnose sturgeon (Note 1)						
Atlantic sturgeon		x				
Striped bass		x	x	x	x	x
Gizzard shad	x	x	x			
<u>Non-anadromous</u>						
Atlantic menhaden			x			
White perch		x	x	x	x	x
Flounder	x					
Northern kingfish	x					
Bluefish			x			
Atlantic croaker			x			
Spotted seatrout					x	
Channel catfish	x					
White catfish				x	x	
Brown bullhead				x	x	
Bluegill	x				x	
Black crappie	x				x	

Note 1. Shortnose sturgeon is a species of special federal concern.

Anadromous fish migrate through the Delaware Bay estuarine system during the early spring on their way to freshwater spawning grounds. For most of the anadromous fish of the Delaware Bay this occurs upstream of Burlington, New Jersey (4), although some spawning does occur in freshwater

tributaries. The adults return to the lower parts of Delaware Bay. Juvenile fish, hatched in the spring, remain in the upper parts of Delaware Bay until the late summer and early fall, when they also migrate back into the lower parts of the Bay (3).

The Army Creek watershed is located within two miles of known spawning grounds of the Atlantic sturgeon at Supawna Meadows National Wildlife Refuge. The Atlantic sturgeon is a species of special concern to the State of Delaware.

It is unknown to what extent other species of finfish utilize the Army Creek watershed area, but this region of the Delaware River is unlikely to be an important nursery or spawning area for other anadromous fish due to the fairly high level of development in this area and to their preference for less saline waters for spawning. Blueback herring, American shad, and striped bass may utilize this area as nursery grounds.

Some tidal wetlands are present at the mouth of Army Creek, and some species of fish may be harvested by recreational and commercial fishermen in the Delaware River adjacent to Army Creek.

The Delaware Bay estuarine system is an important wintering area for many waterfowl and seabirds, particularly loons, grebes, and gannets. They tend to concentrate in coastal bays and wetland areas. Bald eagles nest at Augustine Wildlife Area and Appoquinimink Wildlife Area.

Several State and Federal Management Areas are located on the Delaware River in the vicinity of Army Creek:

Chesapeake and Delaware Canal Wildlife Area	7 mi. downstream
Augustine Wildlife Area	12 mi. downstream
Ft. Mott State Park	2 mi. downstream
Ft. Delaware State Park	5 mi. downstream
Supawna Meadows National Wildlife Refuge	5 mi. downstream
Appoquinimink Wildlife Area	13 mi. downstream

The Remedial Action Master Plan (6) notes that the effect of the creek on the Delaware River is expected to be minimal due to dilution.

Summary of Site-Related Actions:

EPA completed a Remedial Action Master Plan in April, 1983, outlining the investigations needed to determine the full extent of cleanup required at the site. This plan will guide further actions at the site.

The State of Delaware is drafting a National Pollutant Discharge Elimination System permit for the discharge of groundwater to Army Creek.

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References:

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2. Atlantic Coast Ecological Inventory, 1980. U.S. Fish and Wildlife Service.
3. Breder, C.M., and D.E. Rosen, 1966. Modes of Reproduction in Fishes. TFH Publications.
4. Byrne, D. Personal communication, Delaware River Anadromous Fishery Project, U.S. Fish and Wildlife Service.
5. Environmental Sensitivity Atlas. Research Planning Institute, Columbia, South Carolina. Unpublished.
6. Environmental Protection Agency, 1983. Draft Remedial Action Master Plan. Washington, D.C.