Computer Circuits

Hauppauge, New York

EPA Facility ID: NYD125499673

Basin: Northern Long Island

HUC: 02030201

Executive Summary

The Computer Circuits property in Hauppauge, New York was the site of a circuit board manufacturing company from 1969 to 1977. The property is approximately 2.5 km (1.5 mi) southwest of the Nissequogue River, which flows into Smithtown Bay. Wastewater dumped into underground leaching pools; soil, groundwater, and surface water on the property have concentrations of trace elements above screening guidelines. Although trust resources use the Nissequogue River, no sampling has been conducted down-gradient of the site to determine whether contaminants are migrating toward NOAA trust habitats.

Site Background

The Computer Circuits property occupies 0.7 hectares (1.7 acres) approximately 2.5 km (1.5 mi) southwest of the Nissequogue River in Hauppauge, New York (Figure 1). The Nissequogue River is approximately 11 km (6.8 mi) upstream from Smithtown Bay.

The Computer Circuits Corporation manufactured printed circuit boards at this location from 1969 to 1977. Some of the chemicals used in this manufacturing process included copper sulfate, nickel, sulfuric acid, hydrochloric acid, lead fluoroborate, fluorides, copper, trichloroethylene, photography chemicals, gold cyanate, ammonia, lead, nitric acid, and tin (USEPA 1997). Wastewater produced during the manufacturing process was dumped into underground leaching pools. One of these pools was connected to a storm drain east of the property (Roux Associates Inc. 1989). The storm drain and all other runoff near the site empty into a stormwater management system that discharges to infiltration basins (USEPA 1997).

The U. S. Environmental Protection Agency (EPA) completed a Hazard Ranking System Package for the site in November 1997, and the site was placed on the National Priorities List in May 1999 (USEPA 2000).

The primary pathway for transport of contaminants from the Computer Circuits site to NOAA trust resources is via groundwater. Groundwater, which flows northeast towards the Nissequogue River, is encountered approximately 30 m (100 ft) bgs in the underlying glacial aquifer (Foster Wheeler 1999). Aside from the storm drain sampling, the surface water pathway has not been evaluated.

NOAA Trust Resources

The habitats of concern to NOAA are the upper and lower reaches of the Nissequogue River. The river extends north from central Long Island for approximately 10 km (6 mi) to Long Island Sound.

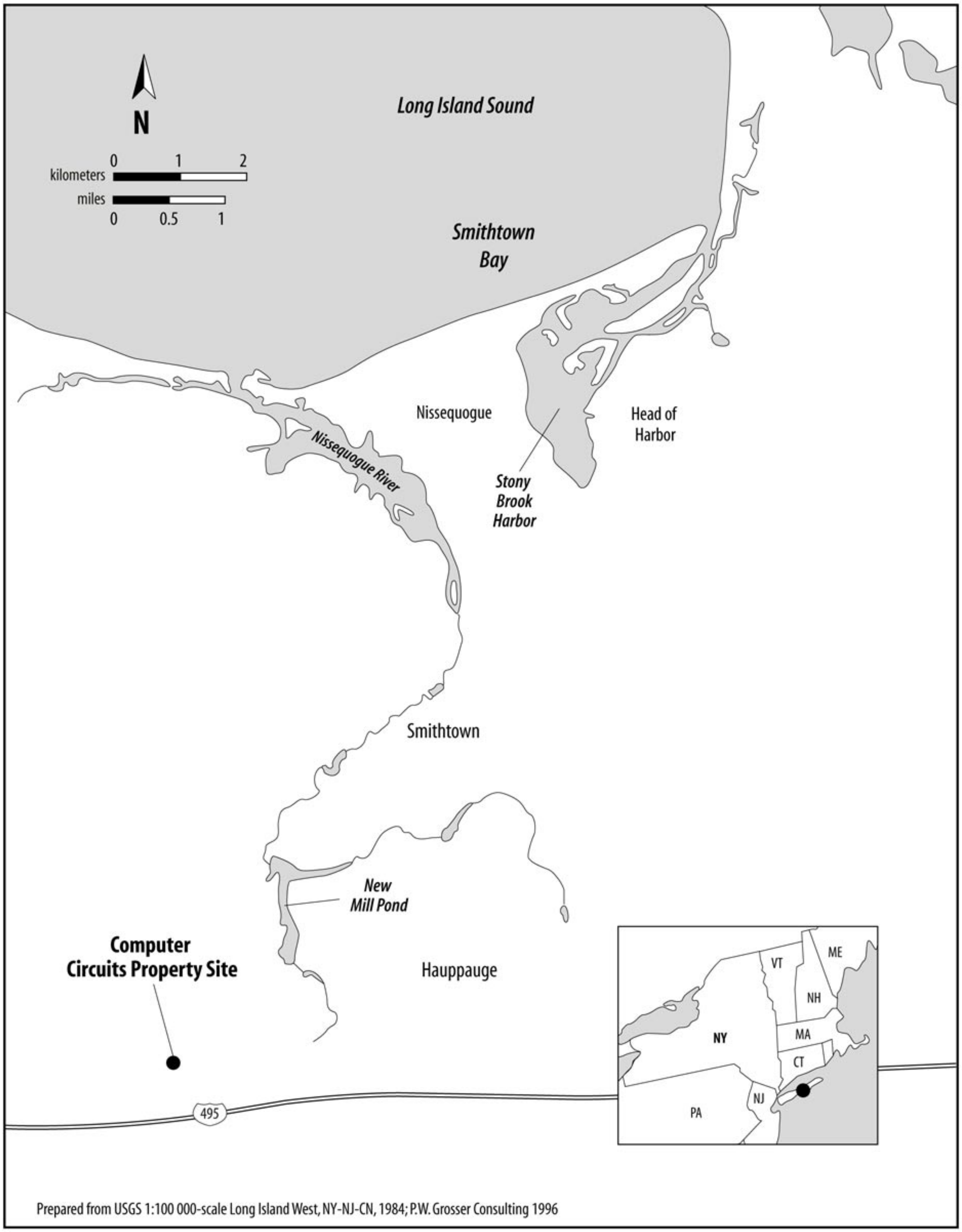

Figure 1. Location of the Computer Circuits Site in Hauppauge, New York.

The upper reaches of the stream, nearest the facility, are dammed to form New Mill Pond. Below New Mill Pond, the stream is low-gradient, meandering for approximately 5 km (3.1 mi) to the lower Nissequogue River. The lower river widens into a shallow, estuarine embayment of Long Island Sound that is predominantly composed of estuarine tidal flats and salt marsh islands (USGS 1967a, 1967b).

NOAA trust resources commonly found in Long Island Sound are presented in Table 1. The upper Nissequogue River contains anadromous runs of alewife and blueback herring that spawn in the stream below the New Mill Pond dam. Both species are spring spawners, migrating upstream between April and June. Juveniles use the stream as a nursery for several months before emigrating to Long Island Sound (Young 2000). The catadromous American eel is present upstream of the dam in New Mill Pond (Guthrie 1984).

The lower Nissequogue River and Long Island Sound contain numerous marine fish and invertebrate species. Small forage species such as silversides, killifish, goby, sheepshead minnow, bay anchovy, oyster toadfish, and pipefish are common, spending their entire lives within estuaries. Atlantic menhaden and Atlantic herring are also common forage species that usually spawn in coastal waters, but larvae are transported to estuaries where they reside through adulthood (Stone et al. 1994).

Larger demersal species such as winter flounder, windowpane flounder, and skates are common, spending all or most of their lives in the estuary. These animals spawn in estuaries and the coastal Sound (Stone et al. 1994).

Several cod species, including tomcod, red hake, and pollock, are present in Long Island Sound. Tomcod may spawn in salt water but apparently prefer to move into estuaries and up rivers to the head of the tide (Scott and Scott 1984). Pollock and hake spawn in coastal waters; their larvae are then transported to estuaries where they reside as juveniles and adults (Stone et al. 1994).

Most of the remaining species spawn in coastal areas; their larvae are then transported into estuaries where they will reside as juveniles. Adults use the estuaries seasonally, usually moving offshore during the winter (Stone et al. 1994).

Shellfish spend their entire lives within the estuary. The northern quahog is the most common species in Long Island Sound, followed by the eastern oyster. Grass shrimp, bay shrimp, and American lobster are common, spending most or all of their lives within the estuary. Blue crab are common; juveniles and adults use the estuary while brooding females generally move offshore (Stone et al. 1994).

There are recreational fisheries in the lower Nissequogue River and extensive commercial fisheries in Long Island Sound (Young 2000).

The New York State Department of Health has issued a health advisory warning against eating crab and lobster hepatopancreas due to contamination from cadmium and PCBs in the marine waters of Long Island Sound. The advisory also limits the consumption of striped bass to no more than one meal per month, and bluefish and American eel to no more than one meal per week (NYSDOH 2001).

Table 1. Fish and invertebrates commonly found in Long Island Sound estuaries (Guthrie 1984, Stone 1994, Young 2000).

Species		**Habitat Use**			**Fisheries**	
Common Name	**Scientific Name**	Spawning Area	Nursery Area	Adult Forage	Comm. Fishery	Recr. Fishery
ANADROMOUS/CATADROMOUS FISH						
Alewife	*Alosa pseudoharengus*		◆	◆		
American shad	*Alosa sapidissima*		◆	◆		
Blueback herring	*Alosa aestivalis*		◆	◆		
Rainbow smelt	*Osmerus mordax*		◆	◆		
Striped bass	*Morone saxatilis*		◆	◆		◆
White perch	*Morone americana*		◆	◆		◆
MARINE/ESTUARINE FISH						
American sand lance	*Ammodytes americanus*		◆	◆		
Atlantic herring	*Clupea harengus*		◆	◆		
Atlantic mackerel	*Scomber scombrus*		◆	◆		
Atlantic menhaden	*Brevoortia tyrannus*		◆	◆		
Atlantic tomcod	*Microgadus tomcod*		◆	◆		◆
Bay anchovy	*Anchoa mitchilli*		◆	◆		
Black sea bass	*Centropristis striata*		◆	◆		◆
Bluefish	*Pomatomus saltatrix*		◆	◆		◆
Butterfish	*Peprilus triacanthus*		◆	◆		
Cunner	*Tautogolabrus adspersus*		◆	◆		
Goby	*Gobiosama spp.*	◆	◆	◆		
Hogchoker	*Trinectes maculatus*	◆	◆	◆		
Killifish	*Fundulus spp.*	◆	◆	◆		
Northern pipefish	*Syngnathus fuscus*	◆	◆	◆		
Northern searobin	*Prionotus carolinus*	◆	◆	◆		
Pollock	*Pollachius virens*		◆	◆		
Red hake	*Urophycis chuss*		◆	◆		
Oyster toadfish	*Opsanus tau*	◆	◆	◆		
Scup	*Stenotomus chrysops*		◆	◆		
Sheepshead minnow	*Cyprinodon variegatus*	◆	◆	◆		
Silversides	*Menidia spp.*	◆	◆	◆		
Skate	*Raja spp.*	◆	◆	◆		
Tautog	*Tautoga onitis*		◆	◆	◆	◆
Weakfish	*Cynoscion regalis*		◆	◆		
Windowpane flounder	*Scophthalmus aquosus*	◆	◆	◆		
Winter flounder	*Pleuronectes americanus*	◆	◆	◆		◆
INVERTEBRATES						
American lobster	*Homarus americanus*	◆	◆	◆	◆	◆
Bay shrimp	*Crangon septemspinosa*	◆	◆	◆		
Blue crab	*Callinectes sapidus*		◆	◆		◆
Blue mussel	*Mytilus edulis*	◆	◆	◆		
Eastern oyster	*Crassostrea virginica*	◆	◆	◆		
Grass shrimp	*Palaemonetes pugio*	◆	◆	◆		
Northern quahog	*Mercenaria spp.*	◆	◆	◆	◆	◆
Softshell clam	*Mya arenaria*	◆	◆	◆		

Site-Related Contamination

Investigations at the Computer Circuits Property have found contaminants at concentrations substantially greater than screening guidelines in soil, groundwater, and surface water. In 1976

and 1977, the Suffolk County Department of Environmental Control collected surface water samples from leaching pools on the Computer Circuits property (Foster Wheeler 1999). In May 1989 the New York State Department of Environmental Conservation (NYSDEC) requested that 10 soil samples and three groundwater samples be collected from the site (Roux Associates Inc. 1989). In November 1995 NYSDEC arranged for five soil borings to be drilled by a consultant for the property owner (P.W. Grosser Consulting 1996). The EPA collected 14 soil samples and sampled five monitoring wells as part of the Hazard Ranking System Report completed in November 1997 (USEPA 1997).

Trace elements are the primary contaminants of concern to NOAA at the Computer Circuits site. High concentrations of volatile organic compounds were also found on the property but due to their relatively low persistence and toxicity, they are of less concern to NOAA. Table 2 summarizes maximum concentrations of contaminants, along with appropriate screening guidelines.

Table 2. Maximum concentrations of contaminants of concern at the Computer Circuits site (Analytical Resources Inc. 1996a, 1996b, 1996c; Foster Wheeler 1999; Roux Associates Inc. 1989).

	Soil (mg/kg)		**Water (µg/L)**		
Contaminant	Soil	Mean U.S.[a]	Groundwater	Surface water	AWQC[b]
TRACE ELEMENTS					
Cadmium	2.3	0.06	2.2	ND	2.2[c]
Chromium	9.3	37	340	ND	11
Copper	2,600	17	710	540,000	9[c]
Lead	370	16	110	82,000	2.5[c]
Mercury	0.14	0.058	0.11	ND	0.77
Nickel	180	13	270	57,000	52[c]
Silver	630	0.05	ND	620	0.12
Zinc	13	48	700	ND	120[c]

ND: Not detected; detection limit not available.

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

b: Ambient water quality criteria for the protection of aquatic organisms (USEPA 1999). Freshwater chronic criteria presented.

c: Criterion expressed as a function of total hardness; concentrations shown correspond to hardness of $CaCO_3$ 100 mg/L.

Concentrations of copper, silver, lead, nickel, cadmium, and mercury exceeded screening guidelines in soil (Table 2) (Foster Wheeler 1999).

Sediment samples collected from the leaching pool area exceeded screening guidelines for copper and silver by two and four orders of magnitude, respectively (Table 2) (Malcolm Pirnie Inc. 1996a).

Groundwater samples collected at the site contained concentrations of copper, chromium, and lead that exceeded the AWQC by at least one order of magnitude (Table 2) (Foster Wheeler 1999). The maximum concentrations of trace elements were found in samples collected from a monitoring well, down-gradient from the on-site leaching pools (Malcolm Pirnie Inc. 1996b).

In surface water, samples collected from the on-site leaching pools had concentrations of copper, lead, nickel, and silver that substantially exceeded the AWQC (Table 2) (Foster Wheeler 1999).

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