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Site Inspection Report

Site Investigation of
Ohio River Park
Neville Island
Allegheny County
Pennsylvania
PA #0170

Prepared by the
Commonwealth of Pennsylvania
Department of Environmental Resources

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April 21, 1989

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1.0 INTRODUCTION

1.1 AUTHORIZATION

As a result of a site preliminary assessment and pursuant to preliminary assessment and site inspection Cooperative Agreement between the Department and the U. S. Environmental Protection Agency, the Department has conducted a Site Inspection at this site. The Department has determined that there is a potential risk of a significant release of hazardous substances from this site. Therefore, a potential risk to human health and the environment exists warranting further study through a Site Inspection.

1.2 SCOPE OF WORK

The Department was tasked to conduct a desktop Site Inspection of the Ohio River Park site. The Site Inspection centers on the possible contamination of surface water, groundwater, soil, and air from chemical substances on the site.

1.3 SUMMARY

Ohio River Park is a 35 acre site located at the western tip of Neville Island in Neville Township, Allegheny County, Pennsylvania (see (Figure 1). In 1976, the Neville Land Company (NLC) donated the land to Allegheny County for development as a park. During construction of the park in 1978, the County came to believe that industrial waste found at the site might represent a health hazard. The County retained Fred C. Hart Associates (FCHA) to conduct an investigation assessing the potential public health hazards at the site. The FCHA report submitted in July 1979 concluded that the site did pose a potential risk to the public health.[1] The County decided at that time to abandon plans to open the park. After discussions between NLC and the County, ownership of the park reverted back to NLC.[2]

The FCHA studies, and subsequent investigations by Environmental Research and Technology, Inc. (ERT) who were retained by NLC, determined that the site had been used for the disposal of industrial wastes starting in the late 1940's or early 50's and continued until the mid-1960s.[3] FCHA estimated that 225,000 cubic yards of waste had been disposed of on the site since 1941.[4] The effect of this activity on the groundwater and surface water of the site

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1 Fred C. Hart Associates. An Investigative Study of Potential Public Health Hazards at Ohio River Park. July 23, 1979, p. 55.

2 ERT, Inc. Plan of Study for Neville Island Site Investigation. December, 1980, Section 1-1.

3 ERT, Inc. Preliminary Risk Assessment of Neville Island Site. April, 1981, Section 3.3.

4 Fred C. Hart Associates. Assessment of Remedial Options at Ohio River Park. January, 1980, p. 40.

is documented by the reports of both FCHA and ERT: elevated levels of organics, pesticides, and metals have been detected in both groundwater and surface run-off.[1,2] Tables 1 and 2 are summaries of sampling conducted by ERT and FCHA respectively.

The following is a list of chemicals in excess of detection limits:

1) Benzene, toluene, ethylbenzene, xylenes, phenol, 2-chlorophenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol, naphthalene and 2,4-D have been confidently identified with levels greater than 3 times the detection limit and 5 times the background;

2) Diethylphthalate and bis(2-ethylhexyl)phthalate have been identified but with levels less than 3 times the detection limits;

3) Silvex and 2,4,5-T have been identified using one GC column with levels greater than 3 times the detection limits and 5 times that of background;

4) Arsenic, beryllium, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, thallium, and zinc were reported by ERT to be present on the site with levels greater than 5 times background; and

5) Cyanide was detected on the site with levels greater than 5 times background.

Among the chemicals listed above, benzene and arsenic are well known human carcinogens (Group A). 2,4,6-Trichlorophenol, beryllium, and lead are suspected human carcinogens (Group B2).

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1 ERT, Inc. Preliminary Risk Assessment of Neville Island Site, April, 1981, Table 1-2.

2 Fred C. Hart Associates. An Investigative Study of Potential Public Health Hazardous at Ohio River Park, July 23, 1979, pp. 39-44.

2.0 SITE DESCRIPTION

2.1 SITE LOCATION

Ohio River Park is located on Neville Island in Neville Township, Allegheny County, Pennsylvania. The site encompasses the western portion of Neville Island along river mile points 9.5-9.9. Coordinates are 40° 31' 06" N latitude and 80° 08' 10" W longitude. The USGS map location is 2.2 inches north and 3.8 inches west of the southeast corner of the USGS Ambridge quadrant.[1] See Figure 2.

2.2 SITE LAYOUT

Ohio River Park consists of a nearly completed park, including an administrative building, two outhouses, bleachers, footers, paved roads and parking areas. The site is relatively flat, with steep banks leading to small or nonexisting beaches. On the back channel, portions of the bank are undercut by the river. Three surface water runoff outfalls, two on the main channel and one on the back channel, are known to exist (see Figure 16). The majority of the facility lies at an elevation of 715' - 720'. The highest point is an observation knoll at 735' near the western tip of the island. The normal pool elevation of the Ohio River at this end of the site is 692'.[2]

Waste disposal, primarily trenching and end dumping, occurred extensively throughout the southern and western portions of the site (see Figures 9 and 18). Water ponding occurs randomly throughout the site in surface depressions. Areas of hard semi-impermeable layers of solidified waste residues retard drainage and serve as pockets to entrap surface runoff.

The Park is accessed by a gate on Grand Avenue, approximately 300 feet east of the Coraopolis Bridge on its eastern border. See Figure 3.

2.3 OWNERSHIP HISTORY

The Ohio River Park site was acquired by Pittsburgh Coke and Iron Company in the 1920s. On October 19, 1944, Pittsburgh Coke and Iron Company was renamed Pittsburgh Coke and Chemical Company (PC&C).[3]

PC&C continued to own the property until Aug. 14, 1970 when it conveyed the property to a wholly owned subsidiary, Neville Land Company. At about that time PC&C, a majority owned subsidiary of the Hillman Company, became wholly owned. Pittsburgh Coke and Chemical Company is no longer in existence as a result of a merger.[4]

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1 United States Geological Survey. Ambridge, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map, 1960, photorevised 1979.

2 Ibid.

3 ERT, Inc. Detailed Description of Neville Island Site, August, 1981, Section 3.1.1.

4 Rittmeyer, Robert W., ERT, Inc. Correspondence to James R. Shack, PADER, May 16, 1988.

In 1976, NLC donated the site to Allegheny County for the construction of a park. FCHA delivered the report in July, 1979 and concluded that a potential public health threat did exist. In 1980, ownership reverted back to NLC.[1]

2.4 SITE USE HISTORY

The Neville Land Company site was used primarily for agricultural purposes prior to 1947. From the mid-1930s through the mid-1950s a portion of the NLC site was used for the landfilling of municipal refuse.[2] During 1943 a housing project for the Navy was built at the eastern end of the NLC site. These barracks were demolished and removed from the site in 1970.[3]

In 1947-1948, some of the site's topsoil was removed for use in Forbes Field.[4] From 1952 until 1965, trenches were dug at the site to dispose of PC&C coking sludges and wastes from the production of cement, and various pesticides. In addition, other industrial wastes such as plant demolition materials and slag were disposed of on the site surface.[5] See Figure 4. A number of trenches have been identified by aerial photographs. However, no records exist of activities that may have occurred between the photograph sessions.

In 1977 the Hillman Company donated the site to Allegheny County[6] and construction of the park began. During the excavation effort, various wastes, including thirty drums of liquid product, were uncovered.[7] This alerted the County to the possibility that the site had been used for the disposal of hazardous wastes. After assessments by FCHA in 1979 and 1980, plans to open the virtually completed park were abandoned and ownership of the site reverted back to NLC.[8] NLC retained ERT to assess the hazards associated with the site and to determine remedial actions.[9] Table 3 summarizes these activities.

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1 Rittmeyer, Robert W., ERT, Inc. Correspondence to James R. Shack, PADER, May 16, 1988.

2 ERT, Inc. Preliminary Risk Assessment of Neville Island Site, April, 1981, Section 3.3.

3 ERT, Inc. Detailed Description of Neville Island Site, August, 1981, Section 3.1.2.

4 Ibid., Table 3-6.

5 ERT, Inc. Preliminary Risk Assessment of Neville Island Site, April, 1981, Section 1.1.

6 ERT, Inc. Correspondence to James R. Shack, PADER, May 16, 1988.

7 Fred C. Hart Associates. An Investigative Study of Potential Public Health Hazards at Ohio River Park, July 23, 1979, pp. 28-34.

8 Rittmeyer, Robert W., ERT, Inc. Correspondence to James R. Shack, PADER, May 16, 1988.

9 ERT, Inc. Detailed Description of Neville Island Site, August, 1981, Section 3.3.4.

2.5 PERMIT AND REGULATORY ACTION HISTORY

To date, no permit or regulatory action has been initiated regarding the Ohio River Park Site.

2.6 PREVIOUS SITE STUDIES

The Neville Island site has not been used as a waste disposal site since the mid-1960's. Since 1972 four firms have conducted investigations at the site for various purposes. In 1972 and 1973, Pittsburgh Testing Laboratory conducted a subsurface soil investigation for a proposed tank farm under contract to Exxon Company, U.S.A. In 1977, Richardson, Gordon, and Associates, Inc., made a similar study for the construction of a county park under the contract to the Environmental Planning and Design Partnership. FCHA studied the site to determine potential health hazards and to assess remedial options under contract to the Allegheny County Health Department.[1]

During the summer of 1980, ERT was engaged by NLC to investigate potential hazards at the site, including air and water monitoring. As a result of ERT's investigation the following reports were prepared:

1. Plan of Study for Neville Island Site Investigation. December 1980.
2. Concepts for Remedial Action at Neville Island. December 1980.
3. Preliminary Risk Assessment of Neville Island Site. April 1980.
4. Interim Monitoring Report for Neville Island Site. June 1981.
5. Detailed Description of Neville Island Site. August 1981.
6. Recommendations for Remedial Action at Neville Island Site. January 1982.
7. Security, Monitoring, Inspection and Maintenance Programs for Neville Island Site. March 1983.
8. Review of Initial Two Years of Long-Term Groundwater Monitoring Program for the Neville Island Site. April 1985.

In March of 1986, Pa. DER performed a Preliminary Assessment and gave the facility a high priority with regards to the need for a Site Inspection.[2]

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1 ERT, Inc. Detailed Description of Neville Island Site, August, 1981., Section 3.3.

2 Preliminary Assessment. Pennsylvania Department of Environmental Resources, PA 95, March, 1986.

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2.7 REMEDIAL ACTIONS TO DATE

In September 1981, one barrel of nearly pure 2,4-D and the contaminated surrounding soils were removed from the site and disposed at a landfill in Ohio. In November of that year, a narrow 60 foot long section of the northern shore was stabilized by the construction of a rip-rap buttress in an area of exposed desulfurization waste. In addition, 450 cubic yards of clayey silt was placed over a 0.2 acre area of exposed desulfurization waste adjacent to the buttress.[1]

Several actions were taken to secure the site from unauthorized and unknowing entry, including the installation of a nine foot high chain link fence with a locked gate on Grand Avenue. The fence runs along Von Stein Lane and Grand Avenue from the Main Channel to the Back Channel. To discourage entry from the northern, western, and southern shorelines, bushes were planted in areas of naturally sparse vegetation or where steep slopes did not exist. ERT decided that areas along the shoreline that had thick existing vegetation and/or steep slopes leading from the shoreline to the park interior were not required to have any modifications to discourage unauthorized entry. The entire perimeter has been posted with warning signs to discourage entry.[2] The effectiveness of these precautions is uncertain, as access to the site still occurs.

ERT has done monitoring of 10 perimeter wells on a quarterly basis from January 1981 until January 1985. From January 1985 until the present time, monitoring of these wells has continued on a semiannual basis.[3] Figure 5 shows the location of the perimeter wells.

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1 ERT, Inc. Recommendations for Remedial Action at Neville Island Site, January, 1982, Section 3.2

2 ERT, Inc. Security, Monitoring, Inspection, and Maintenance Programs for Neville Island Site, March, 1983, Section 3.2.

3 ERT, Inc. Review of Initial Two Years of Long-Term Groundwater Monitoring Program for the Neville Island Site, April, 1985, p.1.

3.0 ENVIRONMENTAL SETTING

3.1 WATER SUPPLIES

All users of the Ohio River are potentially affected because the surface water and groundwater from the site eventually enters the Ohio River. Of these potential receptors, the largest group affected are the municipal water suppliers. See Figure 6. The water suppliers in the area include:

A. The Borough of Coraopolis, which draws its water supply from a wellfield on the south side of the back channel. Nine wells exist, but only seven are currently used, the closest of these about 700 feet southwest of the site across the back channel of the Ohio River. The wells range in depth from 60 to 67 feet and tap the Quaternary Sand and Gravel Unit. The Borough distributes an average of 1,000,000 gpd (gallons per day) to approximately 8200 people.[1]

B. The Dixmont State Hospital, which utilized a surface water intake on the north shore of the main channel at mile point 8.0, 1.5 miles upstream from the nearest known outfall on the site. Dixmont is presently closed.

C. The Moon Township Water Authority, which draws its water from a wellfield on the south side of the Ohio River at river mile point 11.5, 1.8 stream miles downstream of the nearest known outfall at the site. The Authority employs two vertical wells and a Ranney well to tap the Quaternary Sand and Gravel Unit. The Authority distributes an average of 3,000,000 gpd to approximately 30,000 people.[2]

D. The Robinson Township Municipal Authority, which draws its water supply from a surface water intake on the south shore of the back channel approximately 0.9 miles upstream of the nearest known outfall of the site. Robinson Township distributes an average of 3,000,000 gpd to approximately 30,000 people.[3]

E. The Sewickley Waterworks, which employs a surface water intake located on the north shore of the Ohio River at river mile point 12.8, about 1.6 miles downstream of the nearest known outfall from the site. The Sewickley Waterworks distributes an average of 800,000 gpd to approximately 10,000 people.[4]

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1 Barrone, Robert, Coraopolis Department of Public Works, with William Bailey, PADER. Telecon. August 29, 1988.

2 Mr. Zollinger. Moon Township Municipal Authority, with William Bailey, PADER. Telecon. July 13, 1988.

3 Neil, Charles, Robinson Township Municipal Authority, with William Bailey, PADER. Telecon. August 31, 1988.

4 Tucci, Ernest. Sewickley Waterworks, with William Bailey, PADER. Telecon. July 11, 1988.

F. West View Municipal Authority, which utilizes a surface water intake and 3 wells at the eastern tip of the Island (river mile point 5.0) and 7 wells on Davis Island (river mile point 4.7). The wells, which are used only in emergency situations such as the Ashland oil spill in January, 1988, tap the Quaternary Sand and Gravel Unit and range in depth from 40 to 74 feet. The surface water intake lies about 4.5 miles upstream from the closest known outfall on the site. West View distributes an average of 18,000,000 gpd to approximately 220,000 people.[1]

There are no known private water supplies in the study area.

3.2 SURFACE WATERS

According to the U. S. Army Corps of Engineers, the main channel of the river carries the majority of the flow at an average of 32,500 cfs, while the back channel, under normal flood conditions, carries an average of 2,000 cfs. Approximately 2.8 miles upstream of the site at river mile point 6.4 is the Emsworth Back Channel Dam. This dam is a gated dam that keeps the pool elevation at 710'. Another dam, which is situated on the main channel of the Ohio River, is located at river mile point 13.2, approximately 3.4 miles downstream of the site. Any influence on the groundwater because of the difference in pool elevations would be from northeast to southwest.[2]

The migration of hazardous wastes from the site into the Ohio River by surface runoff was evidenced by analyses of ponded water and storm run-off at 50,000 ug/l (10-26-79) in ponded water and 24,000 ug/l (Outfall #1 on 10-26-79) at storm sewer outfalls; inorganics, such as sulfide, were also detected in ponded water at 5,500 ug/l (10-26-79) and in outfalls at 335,000 ug/l (Outfall #1, 10-26-79). See Table 4.

Pesticides have also been found at outfall areas, ERT detected 2,4-D levels at 2500 ug/l and 2,4,5-T at 114 ug/l in Outfall #1[3].

The Fish and Wildlife Service National Wetlands Inventory Map indicates several small wetland areas are present within the site study area, primarily on the Southern shore of the Ohio River across the back channel from Neville Island. None of the wetland areas within the study area have been field examined.

3.3 GEOLOGY AND SOILS

The site is located within the Allegheny Plateau section of the Appalachian Plateaus Physiographic Province. The structure of this area is characterized by gentle, parallel folds trending northeast-southwest.[3, 4]

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1 Depp, Donald, Westview Municipal Authority, with William Bailey, PADER. Telecon. November 23, 1988.

2 Hein, Paul. U. S. Army Corps of Engineers. Telecon with Deborah McNaughton, PADER, April 20, 1989.

3 Wagner, Walter R., et. al. Greater Pittsburgh Region Structure Contour Map, Map 43, 1975. Reprinted 1985.

4 Wagner, Walter R., et al. Geology of the Pittsburgh Area, General Geology Report G 59, 1970, p 3.

The bedrock in the immediate area of the site is the Conemaugh Group, a heterogeneous unit composed mainly of shales and sandstones of Pennsylvania age (see Figure 17). The Conemaugh Group consists of the Glenshaw (lower) and Casselman (upper) Formations. The lithology of the Glenshaw Formation is characterized by sandstones and shales, and to a lesser extent, limestones and coals. The best water producing unit of this formation is the Saltsburg Sandstone, with an average yield of 55 gpm. The lithology of the Casselman Formation is similarly characterized. The most important water producing unit of the Casselman is the Connellsville sandstone, with an average yield of 25 gpm.[1]

Stratigraphically overlying the Conemaugh and outcropping six miles to the south of the site is the Monongahela Group, which is also Pennsylvanian in age. Nearly one half of the Monongahela is comprised of limestones, and the remainder consists of shales, sandstones, and coals. The most economically important unit of the Group is the Pittsburgh coal seam. This Group may not have good aquifers because of dewatering due to coal mining activity.[2]

Quaternary alluvial deposits which overlie the bedrock are found in major stream valleys. This alluvium, which consists of unconsolidated clay, silt, sand, and gravel, is an important aquifer in the region with yields of 5 to 3000 gpm. The maximum thickness of the valley alluvium is about 60 feet and is derived from two sources: the basal portion of the alluvium is coarse-grained and consists primarily of sand and gravel of glaciofluvial origin (Pleistocene); the upper portion consists of more recently deposited silts and clays eroded from local drainage basins.[3]

Neville Island is a detached portion of a dissected river terrace deposited by an ancestral Ohio River. The terrace is partly submerged by impoundments on the river, but remnants of it flank both sides of the river at approximately the same elevation as the island.[4]

The geologic material which comprise Neville Island is a 60 foot sequence of unconsolidated alluvial deposits of clay, sand, and gravel overlying bedrock. See Figure 7 for a generalized stratigraphic column. The alluvium grades fine upward, with the fine-grained fraction ranging from zero thickness to fifteen feet, thickening toward the tip of the site and toward the northeastern corner. Silt and clay are generally found in discrete lenses with the upper part of the aquifer. The underlying coarse sand and gravel unit varies from 25 to 40 feet in thickness and extends laterally beneath the Ohio River, thickening in the central eastern portion of the site.[5]

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1 Gallaher, John T. Summary of Ground Water Resources in Allegheny County, Pennsylvania. Water Resource Report 35, 1973, pp. 53 - 55.

2 Ibid., p. 50 - 53.

3 Ibid., p. 39 - 47.

4 Adamson, J. H.; et. al. Groundwater Resources of Valley-Fill Deposits of Allegheny County, Pennsylvania. Bulletin W 8, 1949, pp. 17 - 22.

5 Ibid., pp. 17 - 19.

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The top of the bedrock beneath the site lies at an elevation of approximately 660 feet, rising locally to 670 feet at monitoring well ERT-1. The bedrock is composed of relatively flat-lying, interbedded, micaceous sandstone (argillite). Sandstone is the dominant rock type encountered in borings on the site.[1]

A further investigation would have to be made to determine a hydraulic connection between the aquifer and the underlying bedrock at the site.

The Conservation Service of the United States Department of Agriculture has classified the on-site soils as urban type (see Figure 8). Urban land is characteristically level land situated on a flood plain and is comprised of fill material that was placed over natural soils. Urban soils typically have a wide range of pH levels.[2]

In 1977, RGA prepared a Soil Reconnaissance Report and a subsurface investigation. The results showed that of the 50 test pits dug, only 5 indicated the presence of natural surface topsoil; the other 45 pits contained various amounts of waste material (see Figure 9). In some areas at the site, waste material extended to depths of 10 feet. Half of the test pits appeared to contain less than 5.0 feet of waste material with the rest contained 5.0 feet or more.[3]

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1 ERT, Inc. Preliminary Risk Assessment of Neville Island Site, April, 1981, Section 4.3.1.4.

2 Coleman, Rita, PADER, with Deborah McNaughton, PADER, December 7, 1988.

3 Fred C. Hart Associates. An Investigative Study of Potential Health Hazards at Ohio River Park, July 23, 1979, pp. 10-11.

In 1979 FCHA tested 278 soil samples taken at 19 locations at depths ranging from surface to four feet. Soil was found in only three of the samples.[1] The range of the pH of the soils of the site is 1.5 to 9.1.[2]

3.4 GROUNDWATERS

The top of the aquifer beneath the site lies about 25 feet below the ground surface.[3] The saturated portion extends 35 to 40 feet into fluvial sediments which consist primarily of sand and gravel. This thickness is relatively uniform underneath the island, but decreases abruptly at the Main and Back Channels where erosion of the aquifer by the river current is likely to occur. Drilling records of offshore and onshore borings suggest the river has eroded 10 to 20 feet of coarse-grained part of the aquifer along most of the shoreline of the site. The aquifer, therefore, has a direct hydraulic connection with the river.[4]

Groundwater levels taken from September 1979 to April 1981 (see Figures 10-13) show the aquifer to be elongated in shape, with a slight on-site mounding. Groundwater flow, as derived from water table elevations, is radial from the central part of the mound toward the Back and Main Channels. A groundwater divide parallel to the long axis of the island is apparent: the divide separates north and south flow.[5]

Aquifer recharge is from the Ohio River and from precipitation. The high permeability and ready rechargeability from the Ohio River has made valley deposits a valuable source of groundwater to residents of Neville Island, Coraopolis and vicinity. About 40,000 residents utilize 10 wells for drinking supplies within 1.5 miles downstream of the site. As of 1979, more than 30 wells on the island were used for industrial cooling and municipal supplies, including the reserve wells of West View. All these wells tap the Quaternary Sand and Gravel unit. The induced infiltration is so great that the water pumped from the wells is chemically indistinguishable from water of the Ohio River.[6]

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1 Fred C. Hart Associates, An Investigative Study of Potential Health Hazards at Ohio River Park, July 23, 1979, pp. 23-24.

2 ERT, Inc. Detailed Description of Neville Island Site, August 1981, Tables 4-1, 4-3, 4-4, 4-6, and 4-7.

3 ERT, Inc. Preliminary Risk Assessment of Neville Island Site, April, 1981, Section 4.3.2.

4 Ibid., Section 4.3.5.1

5 Ibid., Section 4.3.4.

6 Fred C. Hart Associates. An Investigative Study of Potential Public Health Hazards at Ohio River Park, July 23, 1979, p 8.

Recharge (infiltration) is calculated using the following equation:

$$\text{Recharge} = \frac{(\text{Precipitation} - \text{Runoff}) - (\text{Potential Evapotranpiration})}{(\text{Area})\ (\text{Time})}$$

Typical runoff coefficients for flat sandy soil with grass cover range from 0.05 to 0.10; for flat, clayey soil, typical coefficients range from 0.13 to 0.17 (data selected from Table 3 of EPA Document 530/SW-168, 1975.) Based on observations of site topography, surficial soils, vegetation characteristics, and absence of erosion features related to surface runoff, ERT estimates the recharge to the aquifer to be about 700 gallons per acre per day. The recharge will eventually discharge into the Main or Back Channels.[1]

Assuming that input to and discharge from the aquifer are equal over the long term, ERT calculates the discharge from the aquifer of about 10,000 gallons per day along both the north and south shoreline.

Darcy's law states that the rate of flow per unit area of an aquifer is proportional to the gradient of the potential head measured in the direction of flow.[2] Darcy's Equation describes discharge through a porous medium as a function of hydraulic conductivity, gradient, and area of flow. The following calculations are based on ERT's information:

The general equation is $Q = KiA$

where: Q is discharge (gal/day)
K is hydraulic permeability (gal/day/ft^2)
i is hydraulic gradient (ft/ft)
A is area of cross-section (ft^2)

After rearranging terms, the hydraulic conductivity can be determined:

$$K = \frac{Q}{iA}$$

where: $Q = 7000$ gal/day — calculated on about 10 acres subject to infiltration

$i = 0.0025$ ft/ft — average gradient of water table

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1 ERT, Inc. Preliminary Risk Assessment of Neville Island Site, April, 1981, p. 4 - 14.

2 Wilson, E. M. Engineering Hydrology. A Halsted Press Book, 1974, 2nd ed., p. 74.

$A = 62{,}700\ ft^2$ thickness of aquifer unit (38 feet) along south shore (1,650 feet)

therefore:

$$K = \frac{7{,}000\ gal/day}{(0.0025\ ft/ft)\ (62{,}700\ ft^2)}$$

or 45 gal/day/ft^2

Assuming that Q in is equal to Q out, the hydraulic conductivity of the aquifer is about 6 ft/day.

The linear velocity, v_l, can be determined by:

$$v_l = \frac{KI}{n}$$

where: n = porosity estimated to be about 30%

therefore:

$$v_l = \frac{(6\ ft/day)\ \ (0.0025\ ft/ft)}{0.30}$$

or 0.05 ft/day.[1]

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1 ERT, Inc. Preliminary Risk Assessment of Neville Island Park, April, 1981, Section 4.3.2 and 4.3.5.2.

3.5 CLIMATE AND METEOROLOGY

The average annual temperature for the Pittsburgh area is 61.9°F. The month with the coldest annual temperature is January which has an average temperature of 30.6°F. The warmest month, on average, is July with an average temperature of 74.6°F. The average annual precipitation is 36.30 inches for the area. The month with the lowest precipitation is November, with an average of 2.34 inches; and the highest is July, with an average of 3.83 inches.[1]

Although the main concern for monitoring the site has been suspected wastes in the groundwater, surface waters and sediments, the site has also had a history of problems concerning air pollution. In the summer of 1978, the Allegheny County Health Department was called into investigate fumes emanating from areas of the site.[2] The troubled areas have since been covered with soils.

3.6 LAND USE

The area of Neville Island immediately east of the site and extending 3/4 of a mile is primarily residential. The remainder of the Island to the east is mostly heavy industry. Coraopolis, on the mainland to the south is mixed use residential and commercial.[3] See Figure 14.

3.7 POPULATION DISTRIBUTION

Based on United States Geologic Survey 7.5 minute series topographic maps of the Ambridge, Oakdale, Emsworth, and Pittsburgh West quadrangles and 1980 U.S. Census Bureau data, the population within a 3-mile radius of the site is 27,552.[4]

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1 Eggers, Cindy, National Weather Service, with William Bailey, PADER. Telecon. July 13, 1988.

2 Fred C. Hart Associates. An Investigative Study of Health Hazards at Ohio River Park, July 23, 1979, p. 4.

3 United States Geological Survey, Ambridge, Pennsylvania Quadrangle 7.5 Minute Series. Topographic map, 1960, photorevised 1979.

4 United States Geological Survey, Ambridge, Oakdale, Emsworth, and Pittsburgh West, Pennsylvania 7.5 Minute Series. Topographic maps, 1960, photorevised 1979.

3.8 CRITICAL ENVIRONMENTS

According to the Pennsylvania Natural Diversity Inventory (PNDI), two species of special concern exist in the Neville Island area. The first is the invertebrate whose common name is Wabash Pigtoe (Fusconia flava). Although the species is not listed by state or federal regulations, it has been identified by the Pennsylvania Biological Survey's Invertebrate Technical Committee as a species of special concern. The evidence for the species location is a specimen collected by A. E. Ortmann in 1919 stored at the Carnegie Museum of Natural History. No modern research on this animal has been done. A second species known from the Island is the plant Vanilla Sweetgrass (Hierochole odorata). The plant is listed in Chapter 82 of the Pennsylvania Code as Pennsylvania Endangered. Evidence for the species exists from a specimen collected by J. A. Shafer in May, 1899 which is stored at the Carnegie Museum.[1]

Two federally listed endangered birds are expected to be found as transient species in the project area. They are the bald eagle (Haliaeetus levcocephalus)and the penegrine falcon (Falco peregrinus). There is no listed critical habitat for these species in the project area.[2]

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1 McKenna, Kathy, PADER Bureau of Forestry, with Deborah McNaughton, PADER. Telecon. September 1, 1988.

2 United States Department of the Interior, Fish and Wildlife Service, November, 1988.

4.0 WASTE TYPES AND QUANTITIES

ERT identified 13 types of waste based on physical description, process from which it was generated, and/or chemical analyses:[1]

1. Desulfurization waste consists of iron oxide beds, wood chips and sulfuric acid sludges. Table 5 is a summary of the data collected on this waste by FCHA, RGA, and ERT.

   ERT estimated the quantity to be 3,700 cubic yards. Only areas of known contamination were used in their estimates. FCHA estimates the quantity of highly contaminated soil containing this waste to be approximately 10,900 cubic yards.

2. Agricultural chemical waste; Pittsburgh Coke and Chemical manufactured, formulated, and resold pesticides. Table 6 summarizes the products involved. Of the 21 products listed, ERT analyzed only for 5: Silvex, 2,4-D, Malathion, 2,4,5-T and parathion. Low concentrations were found in over 50% of the soil samples analyzed. ERT reports that all former PC&C employees interviewed agree agricultural wastes were disposed randomly in the trenches. FCHA reports 4,700 cubic yards of highly contaminated soils are buried on site.

3. Coal coking sludges consist of tar decanter sludge and tar acid sludge. Table 7 is a summary of the chemical analysis of these sludges. Figure 15 illustrates the sampling points used by FCHA and ERT.

   ERT estimates the quantity of sludges contained in the trenches to be 10,000 - 20,000 cubic yards. FCHA estimates the quantity disposed to be 32,000 cubic yards.

4. Foundry sand was found in large quantities mixed with brick, sawdust, and miscellaneous fill. Table 8 is a summary of data from RGA and ERT samples. Pesticides were found in the ERT sample; RGA sample was not analyzed for pesticides. No estimate was made as to the quantity disposed.

---

1 ERT, Inc. Detailed Description of Neville Island Site, August, 1981, Section 4.0.

5. Dry ash is dry, powdery material appearing as a yellow and light gray ash, cinders, and black powdery carbon. ERT analysis demonstrated that it contains volatile organics and pesticides. Table 9 is a summary of ERT samples. No estimate was made as to the quantity disposed.

6. Slag was disposed throughout the site. Analyses performed for ERT show the slag is contaminated with volatile organics and pesticides (see Table 10). ERT did not esimate the quantity of slag disposed at the site, but FCHA calculates the amount to be 90,400 cubic yards.

7. Crystalline waste of various types are on site. Only one type was identified. FCHA identified phthalic anhydride. The qualitative description of a white crystalline solid suggested naphthalene. No estimate made as to quantity disposed.

8. Leachate samples were collected by FCHA and ERT. See Table 11.

9. Calcium carbonate was mixed with the acid sludge in order to "neutralize" the low pH wastes (see Table 12). No estimate was made as to the quantity disposed.

10. Miscellaneous wastes have been identified as pitch and epoxy resins. No estimate has been made as to quantity disposed.

11. Municipal wastes. Reports that 4 acres of the site was used for municipal waste.

12. Demolition waste. No estimate has been made as to quantity disposed.

13. Metal barrels reported to be empty or near empty. No estimate has been made as to the number of drums disposed on the site.

FCHA estimates that the total volume of waste disposed since 1941 was approximately 225,000 cubic yards.[1]

---

1 Fred C. Hart Associates. Assessment of Remedial Options at Ohio River Park, January, 1980, p. 37.

5.0 FIELD TRIP REPORT

5.1 The field trip report is not applicable, as a desk top study was performed. The laboratory analyses submitted by ERT was reviewed according to EPA Functional Guidelines for Evaluating Inorganics and Organic Analyses.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION
01 STATE: PA | 02 SITE NUMBER: PA 0170

II. SITE NAME AND LOCATION

01 SITE NAME	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Neville Island Park (Poison Park)	

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE
Neville Township	PA	15225	Allegheny	

08 COORDINATES: LATITUDE 40° 31' 06.0" | LONGITUDE 80° 08' 10.0"

10 TYPE OF OWNERSHIP: [X] A. PRIVATE [ ] B. FEDERAL _____ [ ] C. STATE [ ] D. COUNTY [ ] E. MUNICIPAL [ ] F. OTHER _____ [ ] G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
02/24/88 (MONTH DAY YEAR)	[ ] ACTIVE [X] INACTIVE	1930's (BEGINNING YEAR) 1966 (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION: [ ] A. EPA [ ] B. EPA CONTRACTOR _____ [ ] C. MUNICIPAL [ ] D. MUNICIPAL CONTRACTOR _____ [X] E. STATE [ ] F. STATE CONTRACTOR _____ [ ] G. OTHER _____

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
James R. Shack	Project Officer	PA DER	412 645-71
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
			( )
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Robert W. Rittmeyer, PE	ERT, Mgr.	10th Floor, 600 Grant St. Pittsburgh, PA 15219	412 261-29
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
[X] PERMISSION [ ] WARRANT	1100 HRS.	Cold (40s) Overcast

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (AGENCY/ORGANIZATION)	03 TELEPHONE NO.
James R. Shack	PA Dept. of Environmental Resources	412 645-7100

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
James R. Shack	Waste Mgmt.	PA DER	412 645-7100	(MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

AR100277

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE: PA | 02 SITE NUMBER: PA0170

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)
- A. SOLID
- B. POWDER, FINES
- C. SLUDGE
- D. OTHER _____ (Specify)
- E. SLURRY
- F. LIQUID
- G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)
- TONS: _____
- CUBIC YARDS: 225,000
- NO. OF DRUMS: _____

03 WASTE CHARACTERISTICS (Check all that apply)
- A. TOXIC
- B. CORROSIVE
- C. RADIOACTIVE
- D. PERSISTENT
- E. SOLUBLE
- F. INFECTIOUS
- G. FLAMMABLE
- H. IGNITABLE
- I. HIGHLY VOLATILE
- J. EXPLOSIVE
- K. REACTIVE
- L. INCOMPATIBLE
- M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE 40,000	40,000	Cu. yds.	From coal-coking operations
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES	4,700	yds 3	(ERT)
OCC	OTHER ORGANIC CHEMICALS	Unknown		
IOC	INORGANIC CHEMICALS	Unknown		
ACD	ACIDS	3,700	yds 3	(Hart)
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	Benzene	71-43-2		>10,000	ppb
OCC	Toluene	108-88-3		10,000	ppb
OCC	Phenol	108-95-2		> 50,000	ppb
OCC	2,4,6-trichlorophenol	88-06-2		> 50,000	ppb
OCC	Napthalene	91-20-3		410	ppb
OCC	Ethyl Benzene	100-41-4		120	ppb
PSD	2,4-D	94-75-7	Buried	9,200	ppb
PSD	2,4,5-T	93-76-5	Buried	266	ppb
PSD	2,4,5-TP (Silvex)	93-72-1	Buried	143	ppb
OCC	2,4 - dichlorophenol	120-83-2		18,000	ppb
OCC	2 - chlorophenol	95-57-8		5,400	ppb
MES	Arsenic			5,700	mg/l
MES	Mercury			1,200	mg/l
OCC	Xylenes			2,300	ppb
	Cyanides			2,800	ppb
MES	Beryllium			35	mg/l
MES	Lead			313	mg/l

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

See Neville Island Site Inspection

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: PA | 02 SITE NUMBER: PA0170

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 38,200
02 ☒ OBSERVED (DATE: 1/81, 4/81, 10/87) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Groundwater passes into and mixes with the Ohio River. Treated river water is then used as a drinking water source in Coraopolis and Moon Township.

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 10,000
02 ☒ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Water in the three existing ourfalls contains organic contaminants. Water enters river via storm drains. Surface runoff and erosion directly contaminating Ohio River where Sewickley has a surface water intake.

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: 27,552
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

Benzene vapors (35ppm) as draeger tubes. Potential spread of airborne dust contaminated with pesticides.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Explosive and fire potential from accumulation of flammable vapors (from benzene). A small fire could spread quickly due to flammable wastes on the site.

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: See memo
02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Perched leachate could rise to surface after heavy rain. Skin irritants due to photosensitization from coal tar residues. Eye irritations and possible ingestion.

01 ☐ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 32 acres
02 ☒ OBSERVED (DATE: 11/1980) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

The presence of benzene, toluene, 2,4-D, silvex, and 2,4,5-T was reported by ERT in their November 1980 sampling round.

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 10,000
02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Sewickley intake at 2.9 miles downstream of site.

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

Strong organic vapor fumes were observed by workers during construction of the park.

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Individuals using Ohio River for recreation: direct contact (swimming) and ingestion (fishing).

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: PA | 02 SITE NUMBER: PA0170

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include species of concern)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Recreational fishing in the Ohio River.

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

2,4-D in plastic bag contain in cardboard lever pack. Drum of 2,4-D. Empty and smashed drums.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Unknown

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Contaminated surface water to outfalls from storm drains.

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

III. DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

IV. TOTAL POPULATION POTENTIALLY AFFECTED: 238,000

V. COMMENTS

VI. SOURCES OF INFORMATION (Cite references, e.g., state files, sample analysis, reports)

See Neville Island Site Inspection Report

EPA FORM 2070-13 (7-81)

AR100280

ORIGINAL (RED)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
PA	PA0170

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☒ F. LANDFILL	225,000	CY
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☒ I. OTHER (Specify) Trenching		

04 TREATMENT (Check all that apply)

- ☐ A. INCINERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify) _____

05 OTHER

☒ A. BUILDINGS ON SITE outhouses, administration bldg.

06 AREA OF SITE

35 Acres

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Unlined trenches

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☐ YES ☐ NO

02 COMMENTS Measures to prevent unknowing or unauthorized entry to the site may be adequate from the landside, because of fencing; however access to the park from the river is not barred.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

See Neville Island Site Inspection Report

EPA FORM 2070-13 (7-81)

AR100281

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: PA | 02 SITE NUMBER: PA0170

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY	SURFACE	WELL	02 STATUS	ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. ☐	B. ☒		A. ☒	B. ☐	C. ☐	A. 0.3 (mi)
NON-COMMUNITY	C. ☐	D. ☐		D. ☐	E. ☐	F. ☐	B. ____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY
☒ A. ONLY SOURCE FOR DRINKING | B. DRINKING; COMMERCIAL, INDUSTRIAL, IRRIGATION | C. COMMERCIAL, INDUSTRIAL, IRRIGATION | ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER: @ 38,200
03 DISTANCE TO NEAREST DRINKING WATER WELL: 0.1 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
25 (ft)	groundwater flow is concentric, radial	25 (ft)	4.3 million (gpd)	☒ YES ☐ NO

09 DESCRIPTION OF WELLS
List Coraopolis dept. of Public works Municipal well at the corner of Chestnut St and First Ave. in the Borough of Coraopolis about 700 ft. S.W. of site. The well is one of seven Municipal wells utilized by Coraopolis Dept. of Public works for Municipal water supply serving approximately 8200 people. Well depth about 60 feet.

10 RECHARGE AREA	COMMENTS	11 DISCHARGE AREA	COMMENTS
☒ YES ☐ NO	Direct hydraulic connection between groundwater and the Ohio River.	☒ YES ☐ NO	

IV. SURFACE WATER

01 SURFACE WATER USE
☒ A. RESERVOIR, RECREATION, DRINKING WATER SOURCE | ☒ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES | ☒ C. COMMERCIAL, INDUSTRIAL | ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Ohio River	☐	0-.2 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. ____ NO. OF PERSONS	B. ____ NO. OF PERSONS	C. 27552 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION: .1 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE: ____

04 DISTANCE TO NEAREST OFF-SITE BUILDING: .2 (mi)

05 POPULATION WITHIN VICINITY OF SITE
Immediately east of the site is a densely populated residential area of Neville township. Across the back channel is the borough of Coraopolis. Mixture of Residential, Commerical and Industrial land use within the vicinity of the site.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE: PA | 02 SITE NUMBER: PA0170

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. 10^{-4} - 10^{-6} cm/sec ☐ B. 10^{-4} - 10^{-4} cm/sec ☐ C. 10^{-3} - 10^{-3} cm/sec ☒ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE (10^{-4} - 10^{-6} cm/sec) ☒ C. RELATIVELY PERMEABLE (10^{-3} - 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-3} cm/sec)

Argillite

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
65 (ft)	5'-46' (ft)	variable 1.5 - 9.1

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
40 (in)	2.0 (in)	1 %	radial	.0025 ft/ft %

09 FLOOD POTENTIAL

SITE IS IN 100 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. .1 (mi) OTHER: B. .1 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. .3 (mi)	B. .3 (mi)	C. none (mi)	D. none (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site is relatively flat with steep banks leading to the river. The highest point is a knoll at the western tip of the island (735') the normal pool elevation of the Ohio River at this end of the site is 692'.

VII. SOURCES OF INFORMATION (Cite applicable references, e.g., state files, sampling reports)

See Neville Island Site Inspection Report.

EPA FORM 2070-13(7-81)

AR100283

CONFIDENTIAL

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
PA	PA0170

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	248	CompuChem, Enseco, ERT and Energy Res., Inc.	1/81,4/81,10/8
SURFACE WATER, runoff	10	CompuChem, ERT, and Energy Res., Inc.	1/81
WASTE Soil & Leachate	148	ERT	10/80
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL — 02 IN CUSTODY OF _____ (Name of organization or individual)

03 MAPS ☐ YES ☐ NO — 04 LOCATION OF MAPS _____

V. OTHER FIELD DATA COLLECTED (Describe narrative observations)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

See attached memo

AR100284

EPA FORM 2070-13 (7-81)

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
PA	PA0170

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	08 NAME (PARENT COMPANY)	09 D+B NUMBER
Neville Land Co.		Hillman Co.	

03 STREET ADDRESS	04 SIC CODE	10 STREET ADDRESS	11 SIC CODE
1900 Grant Bldg.		1006 Wilmington Trust Center	

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
Pittsburgh,	PA	15225	Wilmington,	DE	19801

III. PREVIOUS OWNER(S)

01 NAME	02 D+B NUMBER
Alleg. Co. Dept. of Planning	

03 STREET ADDRESS	04 SIC CODE
429 Forbes Ave.	

05 CITY	06 STATE	07 ZIP CODE
Pittsburgh,	PA	15108

01 NAME	02 D+B NUMBER
Pgh Coke & Chemical	

03 STREET ADDRESS	04 SIC CODE
No longer in existence due to mergers.	

IV. REALTY OWNER(S)

V. SOURCES OF INFORMATION

See Neville Island Site Inspection Report.

ORIGINAL

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER
PA | PA0170

II. CURRENT OPERATOR

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S)

01 NAME	02 D+B NUMBER
Pittsburgh Coke & Iron	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
1920's-1944	

PREVIOUS OPERATORS' PARENT COMPANIES

10 NAME	11 D+B NUMBER
Hillman Company	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
1006 Wilmington Tr. Center	

14 CITY	15 STATE	16 ZIP CODE
Wilmington	DE	19801

01 NAME	02 D+B NUMBER
Pgh Coke & Chemical	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER
Hillman Company	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
1006 Wilmington Tr. Center	

14 CITY	15 STATE	16 ZIP CODE
Wilmington	DE	19801

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

See Neville Island Site Inspection Report

ORIGINAL

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER
PA | PA0170

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Pittsburgh Coke & Chemical			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Neville Township			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
3rd Street & Grand Avenue			

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
Pittsburgh	PA	15225			

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Phillips Contracting Co.			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
88 Beaver Grade Rd.			

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
Coraopolis,	PA	15108			

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite references, e.g., state files, sampling results)

See Neville Island Site Inspection Report. PA DER Pittsburgh Region Open Files.

AR100287

EPA FORM 2070-13 (7-81)

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE: PA | 02 SITE NUMBER: PA0170

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☒ D. SPILLED MATERIAL REMOVED | 02 DATE Sept. 1981 | 03 AGENCY ____
04 DESCRIPTION
*One lever pack of nearly pure 2,4-D removed

01 ☒ E. CONTAMINATED SOIL REMOVED | 02 DATE Sept. 1981 | 03 AGENCY ____
04 DESCRIPTION
*Contaminated soils around above mentioned lever pack were removed.

01 ☐ F. WASTE REPACKAGED | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☒ G. WASTE DISPOSED ELSEWHERE | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION
Above mentioned lever pack deposited in an Ohio landfill.

01 ☐ H. ON SITE BURIAL | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ L. ENCAPSULATION | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ P. CUTOFF TRENCHES/SUMP | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL | 02 DATE ____ | 03 AGENCY ____
04 DESCRIPTION

ORIGINAL
(Faint)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE: PA | 02 SITE NUMBER: PA0170

II PAST RESPONSE ACTIVITIES (Continued)

01 [X] R. BARRIER WALLS CONSTRUCTED | 02 DATE Nov. 1981 | 03 AGENCY
04 DESCRIPTION
Rip Rap buttress constructed to stabilize desulferization waste

01 [ ] S. CAPPING/COVERING | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] T. BULK TANKAGE REPAIRED | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] U. GROUT CURTAIN CONSTRUCTED | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] V. BOTTOM SEALED | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] W. GAS CONTROL | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] X. FIRE CONTROL | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] Y. LEACHATE TREATMENT | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] Z. AREA EVACUATED | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] 1. ACCESS TO SITE RESTRICTED | 02 DATE | 03 AGENCY
04 DESCRIPTION Chain link fence from main channel to back channel Vegetation planted along shoreline.

01 [ ] 2. POPULATION RELOCATED | 02 DATE | 03 AGENCY
04 DESCRIPTION

01 [ ] 3. OTHER REMEDIAL ACTIVITIES | 02 DATE | 03 AGENCY
04 DESCRIPTION

III SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

See Neville Island Site Inspection Report

AR100289

EPA FORM 2070-13 (7-81)

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
PA	PA0170

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

None

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

See Neville Island Site Inspection Report

EPA FORM 2070-13 (7-81)

REFERENCES

Adamson, J. H., et al. Ground-Water Resources of the Valley-Fill Deposits of Allegheny County, Pennsylvania. Bulletin W 8, 1949.

Barrone, Robert. Coraopolis Department of Public Works.

Depp, Donald. West View Municipal Authority.

ERT, Inc. Plan of Study for Neville Island Site Investigation, December 1980.

ERT, Inc. Concepts for Remedial Action at Neville Island, December 1980.

ERT, Inc. Preliminary Risk Assessment of Neville Island Site, April 1981.

ERT, Inc. Interim Monitoring Report for Neville Island Site, June 1981.

ERT, Inc. Detailed Description of Neville Island Site, August 1981.

ERT, Inc. Recommendations for Remedial Action at Neville Island Site, January 1982.

ERT, Inc. Security, Monitoring, Inspection and Maintenance Programs for Neville Island Site, March 1983.

ERT, Inc. Review of Initial Two Years of Long-Term Ground-Water Monitoring Program for the Neville Island Site, April 1985.

Fred C. Hart Associates, Inc. An Investigative Study of Potential Public Health Hazards at Ohio River Park. Prepared for the Allegheny County Health Department by FCHA, July 23, 1979.

Fred C. Hart Associates, Inc. Assessment of Remedial Options at Ohio River Park. Prepared for the Allegheny County Health Department by FCHA, January, 1980.

Gallaher, John T. Pennsylvania Department of Environmental Resources. Summary of Groundwater Resources in Allegheny County, Pennsylvania. Water Resource Report 35, 1973.

Hein, Paul. U. S. Army Corps of Engineers.

Neil, Charles. Robinson Township Municipal Authority.

Soil Survey of Allegheny County, USDA Soil Conservation Service PADER State Conservation Commission, 1988.

Preliminary Assessment, PADER, PA 95, March, 1986.

Rittmeyer, Robert W., ERT, Inc. Correspondence to James R. Shack, PADER, May 16, 1988.

Tucci, Ernest. Sewickley Waterworks.

REFERENCES (continued)

United States Department of the Interior. Fish and Wilflife Service.

United States Geological Survey. Ambridge, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map, 1960, photorevised 1979.

United States Geological Survey. Emsworth, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map, 1960, photorevised 1979.

United States Geological Survey. Oakdale, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map, 1960, photorevised 1969.

United States Geological Survey. Pittsburgh West, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map, 1960, photorevised 1969.

Wagner, Walter R., et. al. Geology of the Pittsburgh Area, General Geology Report G59, 1970.

Wagner, Walter R., et. al. Greater Pittsburgh Region Structure Contour Map. Map 43, 1975. Reprinted 1985.

Wagner, Walter R., et. al. Greater Pittsburgh Region Geologic Map and Cross Sections, Map 42, 1975. Reprinted 1985.

Wilson, E. J. Engineering Hydrology. A Halsted Press Book, 1974, 2nd edition.

Zollinger. Moon Township Municipal Authority.

6.0 LABORATORY DATA

6.1 SAMPLE DATA SUMMARY

The following is the list of chemicals found in the Ohio River Park:

(1) Benzene, toluene, ethylbenzene, xylenes, phenol, 2-chlorophenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol, naphthalene and 2,4-D have been confidently identified with levels greater than 3 times the detection limits and 5 times the background;

(2) Diethylphthalate and bis(2-ethylhexyl)phthalate have been identified but with levels less than 3 times the detection limits;

(3) Silvex and 2,4,5-T have been identified using one GC column with levels greater than 3 times the detection limits and 5 times the background;

(4) Arsenic, beryllium, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, thallium and zinc were reported by ERT to be present on the site with levels greater than 5 times the background; and

(5) Cyanide was detected on the site with levels greater than 5 times the background.

Among the chemicals listed above, benzene and arsenic are well-known human carcinogens (Group A). 2,4,6-Trichlorophenol, beryllium and lead are suspected human carcinogens (Group B2).

The attached data summary reports contain only compounds which were identified in at least one sample.

The following codes are used in the data summary reports to indicate the confidence in the laboratory results:

CODES RELATED TO IDENTIFICATION
(confidence concerning presence or absence of compounds):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE)= Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in sample. Supporting data necessary to confirm result.

N = Tentative identification. Consider present. More analyses may be needed to confirm its presence or absence.

D = Data reported by PRP's consultant. Supporting document necessary to confirm result.

CODES RELATED TO QUANTITATING

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

6.2 QUALITY ASSURANCE REVIEW

6.2.1 ORGANIC DATA:

6.2.1.1 Introduction

Three ground water data packages (January 1981, April 1981, and October 1987), soil and waste data package (November 1981) and Outfall #1 data (included in the January 1981 data package) have been fully reviewed according to the EPA Functional Guidelines for the usability in the Site Inspection report. All data packages are not in the Contract Laboratory Program (CLP) deliverables format. This is understandable because ERT began the investigation of the site in early 1980's, prior to the initiation of CLP.

Since ERT did not have EPA CLP guidelines to follow, some of the data packages provided by ERT might be without some QC information required by present CLP guidelines. If a data package had this kind of problem, the reviewer would use his judgement based on the worst possible cases generally observed in the data package to qualify the data. For example, the January 1981 package had no spike data, the reviewer then assumed the spike recovery was out of QC limit and qualified all positive results with (J) flags and all results below the detection limits with (R) flags.

6.2.1.2 Qualifiers

6.2.1.2.a January 1981 Data Package

The January 1981 data package includes VOA, acid, and B/N results obtained using EPA methods 8240 and 8250 (GC/MS), as well as chlorinated herbicides data obtained using standard method 509B (GC).

Holding times, tuning, calibrations, surrogates, and compound identification have been fully reviewed for VOA, acid and B/N data according to the EPA Functional Guidelines. Problems in VOA's holding times, tuning, calibration, and surrogate recoveries of toluene-D8, nitrobenzene-D5, phenol-D6 and 2-fluorophenol were found.

- Some critical BFB and DFTPP ion abundance criteria were not met for some of the samples. The associated data have to be flagged (R) as unreliable.

- Since there were no spike, and spike/duplicate in this GC/MS package, and there was no evidence of gross contamination, all data which are above the detection limits are flagged (J) as analyte considered present with the estimated value. All other data below the detection limits are flagged (R) as unreliable results.

- Because no raw data come with the ERT-17S data report, all values for this sample are flagged (D) for requiring supporting document.

ORIGINAL (Red)

Herbicides data have been fully reviewed for holding times, calibrations, and blanks. 2,4-D, silvex and 2,4,5-T were identified in many samples using one GC column and none were detected in the field blanks. However, problems in holding times and calibrations were noted. These might make all values above the detection limits be qualified with (J) flags, but since there was no confirmation experiment, such as second GC column analysis, all data above the detection limits have been flagged (N) instead of (J). All values below the detection limits are unreliable for the holding time violation.

6.2.1.2.b April 1981 Data Package

The April 1981 data package also includes VOA, acid, B/N, and herbicides data obtained using methods 8240, 8250, and 509B.

For VOA, acid and B/N portion, holding times, tuning, calibrations, blanks, surrogates, and identification have been fully reviewed.

-- The data which did not pass the tuning criteria are flagged (R) as unreliable.

-- The benzene, chloroethane and 2,4-dimethylphenol results in ERT-18S, 2,4-dimethylphenol result in MW-4, and phenol result in MW-4 duplicate were flagged (UJ) because spectrum matching criteria were not met. Other positively identified VOCs in ERT-18S, and MW-4/MW-4 duplicate have been flagged (J) for surrogates being out of control limits. Acids in MW-4 duplicate and naphthalene in ERT-18S have been flagged (J) also for the surrogate problems.

-- Naphthalene results for ERT-18S and ERT-20 have to be flagged (J) because of poor precision suggested by the ERT-17S duplicate analyses.

-- The data of phenanthrene, anthracene, butylbenzylphthalate, and 3,3-dichlorobenzidine in ERT-20S have been flagged (UJ) because mass spectroscopic identification criteria were not met.

-- The data of ERT-17S/ERT-17S duplicate have been flagged (D) for requiring the supporting raw data.

For herbicide analysis, 0.2 ug/L of 2,4-D was detected in the Blank #4. Since no spike/spike duplicate and surrogate were analyzed, all 2,4-D data which are less than the detection limits are unreliable. 2,4-D in ERT-16D has to be flagged (B) for its values being less than 1 ug/L, 5 times the 2,4-D value in the blank. 2,4-D and 2,4,5-T were identified with one GC column. However, no confirmation analyses were performed for herbicides data. Therefore, all other 2,4-D and 2,4,5-T data have been flagged (N).

6.2.1.2.c October 1987 Data Package

The October 1987 data package includes VOA (method 8240) and herbicides analysis (method 8150).

VOA has been fully reviewed for holding times, calibrations, blanks, surrogates, matrix spike/matrix spike duplicate, and compound identification according to the EPA Functional Guidelines. No major problems which might affect the overall usage of the VOA data package were found except the following minor point: the toluene and xylene (o,p) in sample ERT-2D do not meet the standard spectral criteria. Therefore, toluene is flagged (UJ) for not being detected. Total xylene has been identified, but is flagged (K) for its value could be overestimated.

For herbicides analysis, no information about the precision and accuracy was provided. Since there is no evidence of 2,4-D carryover to sample ERT-26, 2,4-D was positively identified in the mass spectrum and its quantification could be unreliable, it is flagged (J).

6.2.1.2.d Soil, Waste, and Leachate Data Package

The soil, waste and leachate data package (November 1980) includes 59 samples analyzed for benzene, toluene, and methylene chloride along with 89 samples analyzed for five different pesticides: 2,4-D, silvex, 2,4,5-T, parathion, malathion.

-- Many of the volatile and herbicide raw data sheets, chromatograms and log-in record sheets could not be located by ERT. Therefore, all VOA data and large portion of pesticide data are without the supporting document and have been flagged (D).

-- For pesticide portion, poor accuracy and poor precision were shown by the results of spike samples. Because the high relative percent difference (>25%) between the initial and continuing calibration response factors was also noted, the following samples have (UJ) flags in their 2,4,5-T and/or silvex data: B-9 (1.3'-2.2'), B-26(1.8'-2.4'), B-28(10.5'-11.5'), B-30(18.0'-19.8'), and B-31(6.0'-9.0').

-- The parathion and malathion data of the following samples have been flagged (R) for exceeding the holding times: B-5(3.0'-3.4'), B-7(5'-10'), B-8(6.3'-6.7'), B-26(1.8'-2.4'), B-28(10.5'-11.5'), B-30(18.0'-19.8'), and B-31(6.0'-9.0').

-- 2,4-D, silvex, 2,4,5-T and parathion have been identified using GC method. The data of the following samples have been flagged (N) because they were above the detection limits but were lack of the confirmation data. These include the 2,4-D data of B-9(1.3'-2.2'), B-26(1.8'-2.4'), B-28(10.5'-11.5'), B-30(18.0'-19.8'), B-31(6.0'-9.0'), TP-200(9.0'), TP-250(1.5'-2.5'), TP-250(9.0'-10.5'), TP-253(8.0'-10'), TP-303(3.5'-6.5'), and TP-303(6.5'-7.0'); the 2,4,5-T data of B-9(1.3'-2.2'), TP-200(9.0'), TP-250(1.5'-2.5'), TP-250(9.0'-10.5'), and TP-303(6.5'-7.0'); the silvex data of TP-200(9.0') and TP-250(9.0'-10.5'); and the parathion data of B-9(1.3'-2.2').

-- The malathion data of B-9(1.3'-2.2') has a (R) flag for the sample exceeding the holding time.

6.2.1.3 Summary of Organic Data

6.2.1.3.a Summary of the Groundwater Data Review:

The following compounds have been found and positively identified at least in one of the groundwater samples obtained during the period from January 1981 to October 1987: benzene, toluene, ethylbenzene, xylenes, phenol, 2-chlorophenol, 2,4-dichlorophenol, naphthalene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, diethylphthalate, and 2,4-D. Silvex and 2,4,5-T have been identified in 31 groundwater samples using GC method but have never been confirmed by a second GC column or GC/MS.

6.2.1.3.b Summary of the Surface Water Data Review:

The presence of 2,4-dichlorophenol and 2,4,6-trichlorophenol in Outfall #1 (January 1981) is not confirmed because the DFTPP ion abundance criteria were not met and that made the identification very difficult. 2,4-D and 2,4,5-T in Outfall #1 have been identified using one column in the duplicate GC analyses. Although there was no confirmation column or GC/MS analysis, their presence in the surface water is supported by the existence of 2,4-D in the ground water and the fact that 2,4,5-T is one of the chemicals manufactured or formulated by PC&C.

6.2.1.3.c Summary of the Soil, Waste and Leachate Data Review:

The reviewer cannot validate the volatile data of the soil, waste, and leachate samples because ERT could not locate enough original document other than the raw data sheets. However, the existence of benzene and toluene in the soil and waste samples is supported by earlier results from FCHA report. 2,4-D, 2,4,5-T, and silvex have been identified with one GC column and their quantities reported in many soil and waste samples exceed the detection limits by 3 times. Although no confirmation analyses were performed by ERT, their presence in the soil and waste is also strongly supported by FCHA report.

6.2.2 INORGANIC DATA:

One usable cyanide analysis data package (August 1980) which has been fully reviewed for the Site Inspection report. Included in this package are eleven samples, one duplicate, two lab blanks, one blind control sample, and one standard control sample. Acceptable precision was demonstrated by the field duplicate results, but poor accuracy is also suggested by the low recovery (76%) of the standard control sample. The lab miscalculated the concentrations of all samples. All reported values in the raw data sheets should be doubled. The corrected values are reported in the data summary. Since the holding times were exceeded for all samples and 0.031 mg/L of cyanide was detected in one of the blanks, all values below 0.155 mg/L are flagged (B) and values above 0.155 mg/L are flagged (J) as estimated. For sample 9210 (MW-3), the lab reported a wrong value (<0.2 ug/ml) in the raw data sheet. The actual value should be 2.8 mg/L according to the original lab sheet.

Two sets of metal data (January 1981 and April 1981) have been reviewed. The raw data sheets of January 1981 were sent only with the copies of the ERT lab master logbook. No other QC information was provided. All data in this package have been flagged (D) for requiring more supporting documentation.

The April 1981 data was accompanied with the master logbook and QC information which included nineteen lab spikes, along with field duplicates, lab duplicates, blanks, and results of two check standards. All QC data provided by ERT met EPA criteria. According to the correspondence letter sent from Energy Resources Co., Inc. to ERT, samples 656, 974a, 794b, 795, and 834 had especially complex matrix effects and showed multiple peaks for Se. These samples were analyzed by standard addition of a diluted sample. However, no information about the calibrations, serial dilution, interference check sample analysis was provided by the lab for evaluation, all the April 1981 data have been flagged (D).

6.3 TOXICOLOGICAL EVALUATION

6.3.1 SUMMARY

Analyses of the groundwater samples collected from the on-site and offshore wells revealed that the groundwater was contaminated with at least twelve target organic compounds and three herbicides. Among these organic contaminants, human carcinogen benzene (up to 49,000 ppb), suspected human carcinogen 2,4,6-trichlorophenol (up to 50,000 ppb), the irritant and organ damaging phenol (up to 50,000 ppb), toxic 2,4-D (up to 25,700 ppb), and organ damaging silvex (up to 143 ppb) are of great concern. In addition, high levels of 2-chlorophenol (up to 5,400 ppb) and 2,4-dichlorophenol (up to 18,000 ppb) are of concern also because these levels are well above EPA water quality criteria.

With regard to inorganic contaminants, notable levels of the following have been found in the groundwater and are of concern because they exceed the enforceable Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs) and other water quality criteria (WQC):

	Levels Found	MCLs	MCLGs	WQC
-- arsenic	up to 5,700 ppb	50 ppb	50 ppb	
-- beryllium	up to 33 ppb			0.037 ppb
-- cadmium	up to 39 ppb	10 ppb	5 ppb	
-- chromium	up to 387 ppb	50 ppb	120 ppb	
-- iron	up to 4,518,000 ppb			300 ppb
-- nickel	up to 3,600 ppb			13.4 ppb
-- lead	up to 313 ppb	50 ppb	20 ppb	
-- selenium	up to 730 ppb	10 ppb	45 ppb	
-- thallium	up to 178 ppb			13 ppb
-- cyanide	about 2,800 ppb			200 ppb

Surface water contamination with 2,4-D (up to 2,500 ppb in Outfall No. 1), 2,4,5-T (up to 114 ppb in Outfall No. 1), bis(2-ethylhexyl)phthalate (93 ppb in Outfall No. 2), beryllium (1 ppb in Outfall No. 1), chromium (31 ppb in Outfall No. 1), nickel (17 ppb in Outfall No. 1), thallium (41 ppb in Outfall No. 1) and cyanide (192 ppb in Outfall No. 2) was reported by ERT. These contaminants have been identified or reported to be on the site. 2,4-D contamination of Outfall No. 1 is of concern because the level exceeds EPA drinking water standard of 100 ppb and NAS SNARL of 90 ppb. The levels of beryllium, chromium, nickel and thallium in Outfall No. 1 are of concern also because they exceed the MCLs, MCLGs, and other water quality criteria just mentioned.

The most significant pathway for potential off-site exposure is a route of leachate contaminating groundwater, groundwater entering the Ohio River, and human consumption of the treated river water via a public water supply system. The pathway of contaminated runoff entering the Ohio River and human ingestion of the treated river water is less significant than the groundwater contamination route.

6.3.2 SUPPORT DATA

Benzene was identified in samples from four on-site wells (ERT-20, ERT-26, ERT-27, and MW-4) in concentrations that range from 680 ppb to about 49,000 ppb. Benzene was also reported by ERT to be present in other ten on-site wells (ERT-10, ERT-11, ERT-17, ERT-18, ERT-19, MW-1, MW-1A, MW-3, MW-6, and MW-5) in concentrations that range from about 13 ppb to about 67,000 ppb.[2] Although most of the wells contaminated with benzene are in the south section of the island, three wells (ERT-11, MW-3, and MW-6) in the north sector and two wells (MW-1, and MW-1A) in the east part of the site were also contaminated with benzene. These indicate general groundwater contamination with benzene in most areas of the site.

Since benzene is rather mobile in the environment and wells ERT-26 and ERT-27 are close to the perimeter of Neville Island, they can be assumed to approximate concentrations moving off the site. Benzene is a Group A human carcinogen.[3,13] Benzene concentrations range at these two wells from 680 ppb to about 73,000 ppb and are from about 100 to about 7,000 times greater than the EPA water quality criterion of 6.6 ppb.[4] This criterion is based on the estimate of one additional cancer for 100,000 people exposed on a lifetime exposure (1×10^{-5}) to drinking water at this elevated concentration. The potential adverse risks from the benzene-contaminated groundwater moving off the site from the south sector are very significant. One f the potential receptors is the Borough of Coraopolis. Water supply of the Borough of Coraopolis is from the well-field located about 700 feet southwest of the site across the back channel of the Ohio River.

Similar discussions are also applicable to the groundwater moving from the north sector of the island. Since the April 1981 data in the ERT interim monitoring report[5] indicate the same, if not higher, order of benzene contamination in the ERT-11 well of the north sector as in those wells (ERT-18 and ERT-20) of south sector, and all these wells are close to the perimeter of island, the potential adverse risks from the benzene-contaminated groundwater moving off the site from the north sector should be very significant also.

Toluene was identified in samples from five on-site wells (ERT-18, ERT-20, ERT-26, ERT-27, and MW-4) and one offshore well (ERT-1) in concentrations that range from 10 ppb to about 11,000 ppb. Toluene was also reported by ERT to be present in other five on-site wells (ERT-11, ERT-17, MW-1, MW-1A, and MW-5).[5] These indicate that toluene contamination is widely distributed at the site although high toluene concentrations (> 1,000 ug/L) are reported in those wells located in the western half of the south sector only.

Since well ERT-26 is close to the island perimeter, it is reasonable to assume that toluene may be moving off the site and entering the river in concentrations of the order of 2,800 to 8,600 ppb. The level is about 8 to 25 times greater than the NAS recommended SNARL for chronic exposure of 340 ppb,[6] but is less than EPA's water quality criterion of 14,300 ppb.[34] Both criteria do include a safety factor of 1,000. In addition, toluene exposure does not appear to be linked with chronic risks such as carcinogenicity and mutagenicity. Off-site risk from toluene should therefore not be significant.

Ethylbenzene was identified in two on-site wells (ERT-18 and MW-4) and also reported by ERT in two other on-site wells (ERT-11, and ERT-17).[7] All these wells are in the west central part of the site. The area of ethylbenzene contamination is likely limited. The concentrations with maximum of about 120 ppb are several orders of magnitude below any expected adverse health effects and an order of magnitude below any recommended criteria. No adverse effects are expected to result from ethylbenzene off-site movement.

Xylene (ortho, meta, and para) was identified in two on-site wells (ERT-18 and MW-4) and one offshore well (ERT-2). Xylene was also detected in wells ERT-11, ERT-17 and MW-5.[8] The highest concentration occurred at ERT-18S, where the total xylene concentration was about 2,300 ppb. EPA has suggested a permissible concentration in water of 6,000 ppb based on health effects.[9] Therefore, no significant effects are expected to result from xylene off-site movement.

Phenol was identified in three on-site wells (ERT-18, ERT-20, and MW-4). Phenol was existing in wells ERT-11, ERT-17 and MW-5 also according to the ERT interim monitoring report.[10] The concentrations ranged from 200 ppb to greater than 50,000 ppb. Concentration of phenol is highest at shallow depth in the south-central area. To protect human health, the EPA water quality criterion for phenol is 300 ppb based on the organoleptic effects of chlorinated phenols inadvertently formed during water purification process.[11] Concentrations found at ERT-20 are in the range where some acute effects have been noted. It is of concern for phenol moving off the site at these concentrations.

2,4,6-Trichlorophenol was detected or reported by ERT in six on-site wells (ERT-11, ERT-17, ERT-18, ERT-20, MW-4 and MW-5).[12] The concentrations ranged from 120 ppb to greater than 50,000 ppb. ERT did not analyze the acid portion of the groundwater samples from wells ERT-26 and ERT-27 in the October 1987 monitoring program. Therefore, no data about 2,4,6-trichlorophenol in these two wells are available.

Since wells ERT-18 and ERT-20 are closer to south perimeter of island, these wells can be assumed to approximate closely the movement off site. 2,4,6-Trichlorophenol is suspected of being a human carcinogen (Group B2).[13] For a risk corresponding to 1×10^{-5} (one additional lifetime cancer risk for 100,000 people exposed) a level of 12 ppb is considered.[13] The measured groundwater concentration in ERT-20 exceeds this criterion by more than 4,000 fold. Drinking water contaminated with this level of 2,4,6-trichlorophenol would present a significant adverse health risk.

2-Chlorophenol was identified in three on-site wells (ERT-18, ERT-20, and MW-4). In addition, 2-chlorophenol was detected by ERT at ERT-11, ERT-17, and MW-5.[14] The highest concentration was in ERT-20 where about 5,400 ppb of 2-chlorophenol was detected. EPA water quality criterion of 0.1 ug/L for 2-chlorophenol was set due to its low odor threshold in water and its tainting properties.[15] This criterion is about fifty thousandth of the highest concentration detected on the site. 2-Chlorophenol in the ground water of the site is of concern, although 2-chlorophenol has been reported to be less toxic than the higher chlorophenols.

2,4-Dichlorophenol was identified in three on-site wells (ERT-18, ERT-20, and MW-4). ERT also reported that four other wells (ERT-11, ERT-17, MW-5, and MW-6) had 2,4-dichlorophenol contamination.[14] The highest concentration of 2,4-dichlorophenol was reported at well ERT-18, where 18,000 ppb was detected. This concentration is more than five times the EPA water criterion of 3,090 ppb based on toxicity data[16] and sixty thousand times the EPA criterion of 0.3 ppb based on organoleptic effects.[16] Although 2,4-dichlorophenol is less toxic than the higher chlorinated phenols, its toxicity to certain microorganisms and plant life has been demonstrated and its tumor promoting potential in mice has been reported. Also it can irritate tissue and mucous membranes.[16] 2,4-Dichlorophenol in the ground water of the site is of concern. The 2,4-dichlorophenol is likely to result from 2,4-D decomposition and chlorinated phenols disposed of on the site.

2,4-Dimethylphenol was reported to be present in ERT-17 and M-4.[17] However, its presence in samples taken from ERT-18 and MW-4 in April 1981 could not be confirmed because the GC/MS tuning criteria for the April, 1981 data were not met. The highest concentration of 2,4-dimethylphenol reported for the site is 500 ppb which is a little bit higher than the water quality criterion of 400 ppb based on the organoleptic effects.[18] Little human health data are available and no health-based criteria exist. The potential risks associated with exposure to deimethylphenol are unknown but expected to be small because of its limited on-site quantity.

Naphthalene was identified in three on-site wells (ERT-18, ERT-20, and MW-4). Three other wells (ERT-11, ERT-17, and ERT-19) also were reported by ERT to have naphthalene contamination.[19] The highest concentration of naphthalene was about 410 ppb, which is less than the short term (1 day and 10 days) Health Advisory of drinking water of 5,300 ppb for naphthalene, as well as the long term, 10-Kg Health Advisory of 5,300 ppb, and the long term, 70-Kg Health Advisory of 18,600 ppb.[20] Therefore, the naphthalene in the groundwater of the site is not expected to present a significant risk.

Bis(2-ethylhexyl)phthalate (BEHP) was identified in ERT-20, and was also reported to be present in wells ERT-10, ERT-11, ERT-12, ERT-16, ERT-17, MW-2 and MW-5, along with one Outfall (No. 2).[21] In all samples, the concentrations were less than 100 ppb. Because the EPA water quality criterion is 15,000 ppb,[22] no adverse off-site risk for BEHP is expected.

Diethylphthalate was identified in only one sample from ERT-18 in concentration of 28 ppb. Since the recommended water quality criterion level for protection of human health is 350,000 ppb,[1] the limited quality and low concentration of diethylphthalate on the site should pose no adverse health effects.

2,4-D was identified with GC/MS in samples from two on-site wells (ERT-26 and ERT-27)[33] and was also identified utilizing one GC column in samples from one offshore well (ERT-3), five on-site wells (ERT-10, ERT-11, ERT-17, ERT-18, and MW-4), and Outfall No. 1 at concentrations greater than 10 ppb. 2,4-D was also identified in samples from eight other wells (ERT-6, ERT-8, ERT-9, ERT-12, ERT-14, ERT-19, ERT-20, and ERT-32) in concentrations that ranged from the detection limit of 1 ppb to 10 ppb. From the data, it appears that 2,4-D is a significant groundwater contaminant widespread on the site.

The maximum concentration detected in the effluent from Outfall No. 1 was about 2,500 ppb. The maximum concentrations detected in ERT-3, ERT-26, and ERT-27 were about 216, 410, and 16 ppb respectively. These values may indicate the concentration level at which 2,4-D moves off-site. The highest concentration detected in the groundwater samples was from ERT-18 and was about 25,700 ppb.

The EPA drinking water standard for 2,4-D is 100 ppb[23] and the NAS SNARL is 90 ppb.[6] Since these criteria are several hundredth the maximum level detected in the groundwater of ERT-18, 2,4-D is of concern for its moderate acute toxicity. No chronic hazards have been shown to be associated with 2,4-D.

2,4,5-T was reported to be present in two offshore wells (ERT-3 and ERT-6), eight on-site wells (ERT-8, ERT-11, ERT-14, ERT-17, ERT-18, ERT-20, MW-4, and MW-5) and Outfall No. 1.[24] The reported highest concentration of 2,4,5-T in groundwater was about 266 ppb in sample from MW-4. The effluent from Outfall No. 1, had about 114 ppb of 2,4,5-T. From this information, 2,4,5-T seems to be located over much of the island.

2,4,5-T is an animal suspected carcinogen.[25] The EPA Health Advisory for short term exposures (one day and ten days) is 800 ppb. The long term Health Advisories for a 10-Kg child and a 70-Kg adult are 300 ppb and 1,050 ppb respectively.[26] In addition, a no-adverse-effect-level in drinking water has been calculated by NAS to be 700 ppb.[6] Therefore, 2,4,5-T should not present any significant adverse risk off-site.

Silvex (2,4,5-TP) was detected at two offshore wells (ERT-6 and ERT-7) and nine on-site wells (ERT-9, ERT-11, ERT-17, ERT-18, ERT-19, ERT-20, MW-4, and MW-5) with concentrations up to about 143 ppb. The concentration at MW-4 (143 ppb) is about 15 times the EPA drinking water MCL of 10 ppb[27] and about 30 times the NAS no-adverse-effect-level of 5.25 ppb.[6] Samples taken from two other wells (ERT-11 and ERT-18) in April 1981 also exceeded these criteria. Off-site risks due to silvex contaminated groundwater movement are of concern.

Metal analysis of January and April 1981 water samples revealed notable levels of arsenic (up to 5,700 ppb), beryllium (up to 33 ppb), cadmium (up to 39 ppb), chromium (up to 387 ppb), copper (up to 1,480 ppb), iron (up to 4,518,000 ppb), mercury (up to 2.2 ppb), nickel (up to 3,600 ppb), lead (up to 313 ppb), selenium (up to 730 ppb), thallium (up to 178 ppb), and zinc (up to 19,000 ppb). These levels exceed the enforceable Maximum Contaminant Levels [MCLs (arsenic, 50 ppb; cadmium, 10 ppb; chromium, 50 ppb; lead, 50 ppb; mercury, 2 ppb; and selenium, 10 ppb)],[27] Maximum Contaminant Level Goals [MCLGs (arsenic, 50 ppb; cadmium, 5 ppb; chromium, 120 ppb; copper, 1,300 ppb; lead, 20 ppb; and selenium, 45 ppb)], and other water quality criteria (beryllium, 0.0037 ppb; iron, 300 ppb; nickel, 13.4 ppb; thallium, 13 ppb; and zinc, 5,000 ppb).[28]

Among these metals, copper, mercury and zinc are of less concern because only one or two samples exceeded criteria mentioned above and their quantities might be limited on the site. Arsenic is of great concern because it is a Group A human carcinogen.[13,29] The unit risk of arsenic through the oral route is 5×10^{-5}/ug/L,[30] i.e. 5 additional lifetime cancer risk for 100,000 people exposed to the potable water with arsenic contamination of 1 ug/L. Approximately 285 additional cancer cases for 1,000 people would occur on exposure to 5,700 ppb arsenic contaminated potable water. Since both beryllium and lead are Group B2 carcinogens,[13,31] they are also of great concern.

The area of the most serious metal-contamination of the groundwater seems to be the south-central section of the site because samples from either ERT-18 or MW-4 were consistent in showing the highest levels of all metals just mentioned before except mercury and iron. The highest level or iron was found in sample from MW-6 which is located in the central portion of the site.

The metal analysis of Outfall No. 1 sample taken during the January 1981 sampling round indicated notable levels of beryllium (1 ppb), chromium (31 ppb), nickel (17 ppb), and thallium (41 ppb). All these levels exceed the MCLs, MCLGs or other water quality criteria as mentioned before.

Cyanide was detected in samples taken from MW-3 (about 2,800 ppb) and Outfall No. 2 (about 192 ppb) in August 1980. To protect human health, the EPA has set the water quality criterion at 200 ppb. To protect freshwater aquatic life, maximum of 52 ppb is set.[32] Comparing with these criteria, the levels of cyanide in these two water samples are of concern.

Report prepared by _____ Date:
Sam Fang,
Environmental Chemist I

Report reviewed by _____ Date:
Joe Carpentier,
Environmental Chemist II

- Herbicide raw data sheets, QC data, chromatograms
- Volatile raw data sheets and chromatograms. Chromatograms for all analyses could not be located. The GC recorder paper used for this analysis has deteriorated with time, so some of the runs may have been discarded as no longer legible.
- No information other than a summary data sheet could be located for B-13, 13'-13.6' depth.

Sampling Procedures

Sampling procedures followed at the Neville Land Company Site have been consistent with industry standards for this type of work. Beginning in 1983, ERT developed Standard Operating Procedures (SOPs) for soil and water sampling. These SOPs, which are listed in Table 1 and included as Attachment 7, have been followed for all sampling activities since their issuance. Sampling procedures prior to SOP development were not documented in detail, but the SOPs adequately reflect the methods utilized. Some specific details of sampling procedures followed at the site prior to SOP development are presented below.

Ground Water Sampling

Two types of monitoring wells exist at the site: BarCad wells and conventional monitoring wells. BarCads are check valve-type sampling instruments that deliver slugs of water as the system is pressurized, but they cannot deliver a continuous stream of water. Therefore, each time a BarCad is pressurized, one "well volume" is delivered to the surface. Ultra High Purity (UHP) Grade 5 Nitrogen was used to pressurize the BarCads, and samples were collected after the BarCads had been purged three times.

Conventional monitoring wells were purged using bailers, a peristaltic pump, and/or a Johnson-Keck pump. Wells were purged until a minimum of three well volumes were removed. All VOC samples were collected using bailers, while some samples for other parameters were collected directly from the pump discharge. Samples for metals analysis were filtered in the field using 0.45 micron filters. Disposable filters or filters in reusable polycarbonate housing were used.

Surface Water Sampling

The Ohio River was sampled from an anchored boat using a peristaltic pump and a weighted length of tubing. Samples were collected by compositing water from 1.0 meter off the bottom, the mid-depth point, and 1.0 meter below the surface.

Outfalls were sampled during periods of very low flow in the outfalls. This occurred after a rainfall event, in order to get the "first flush," and also several days after rain, as the discharge slowed to just a trickle. All samples from outfalls were grab samples collected at the end of the pipe. No compositing was done.

Soil and Waste Sampling

Samples were collected from soil borings, as described in ERT's SOP 7115. Split spoons of two- and three-foot lengths were used, as well as a five-foot soil core barrel sampler. Stainless steel utensils were used to handle the soil.

A backhoe was used to excavate numerous test trenches at the site. Many of the trenches provided access for the field team to collect samples directly from the walls of the trench. Other trenches could not be entered, and samples were collected either from the bucket of the backhoe, or by using a long-handled shovel to sample the walls of the trench. Stainless steel utensils and disposable plastic scoops were used to handle the soil samples.

I hope that this information satisfies your needs. Please call me if you have any questions.

Sincerely,

Robert W. Rittmeyer, P.E.
Manager
Pittsburgh Operations

4920008E.RWR/cle

cc: M. J. Laskow
M. Ferlin

TABLE 1

SOIL AND WATER SAMPLING SOPs

Number	Title
7110	Surface Soil Sampling
7115	Subsurface Soil Sampling
7120	Surface Water Sampling Techniques
7130	Ground Water Sample Collection from Monitoring Wells
7131	Field Filtration of Water Samples for Inorganics
7220	Monitoring Well Construction and Installation
7230	Test Pits/Trench Subsurface Exploration
7315	Operation/Calibration of HNu Photoionization Analyzer
7320	Calibration and Operation of Hydrolab Water Quality Monitor
7510	Packaging and Shipment of Samples
7600	Decontamination of Equipment

Table 4, continued

Parameter	CONCENTRATION: (ug/l) Ponded Water (10/26/79)	Ponded Water (12/13/79)	Outfall No. 1 (10/26/79)	Outfall No. 1 (12/13/79)	Outfall No. 2 (12/13/79)
Metals and Other Organics (continued)					
Silver (Ag)	< 20	< 20	< 20	< 20	< 20
Sulfide (S)	5,500	< 200	335,000	3,400	< 200
Thallium (Tl)	< 100	< 100	< 100	< 100	< 100
Zinc (Zn)	900	40	40	40	30
Volatile Hydrocarbons					
Benzene	< 1	-	1	1	37
Toluene	-	-	<1	<1	1
Phenols					
Phenolic Cpds (as phenol)	27	3	4	18	290
Phenol	5	NT	10	NT	NT
2-chlorophenol	-	NT	6	NT	NT
2,4-dichlorophenol	-	NT	180	NT	NT
2,4,6-trichlorophenol	-	NT	23	NT	NT
4-nitrophenol	9	NT	220	NT	NT

4. Operators
What are the names, addresses, phone numbers and contact person names of all operators of the site? What is the name of their parent company? What was the time period that they operated the site?

5. What is the relationship between Neville Land Company, Pittsburgh Coke & Chemical, and Hillman Company?

6. What happened to MW-2A that made it inoperable?

7. Has the site received or applied for any state, county or federal permits? Has the site ever had an effect on any water supply, either private or public?

8. Where are the records pertaining to the site, generator, users, transporters, operators and/or owners retained?

As we agreed during our conversation of March 8, 1988, the Department would be willing to accept less than all the QA/QC qualifiers (especially Organics and Pesticides) as requested in the Department's letter of February 29, 1988.

After discussion with the U. S. EPA, the following is a list of the minimum sample results with QA/QC qualifiers would be needed to conduct the SI:

1. Groundwater results for:

ERT-1	January 29, 1981 and April 20, 1981
ERT-21-S	January 29, 1981 and April 20, 1981
MW-4	January 29, 1981 and April 20, 1981
ERT-18-S	January 29, 1981 and April 20, 1981
ERT-20-S	January 29, 1981 and April 20, 1981
ERT-17-S	January 29, 1981 and April 20, 1981

2. Surface Water Samples

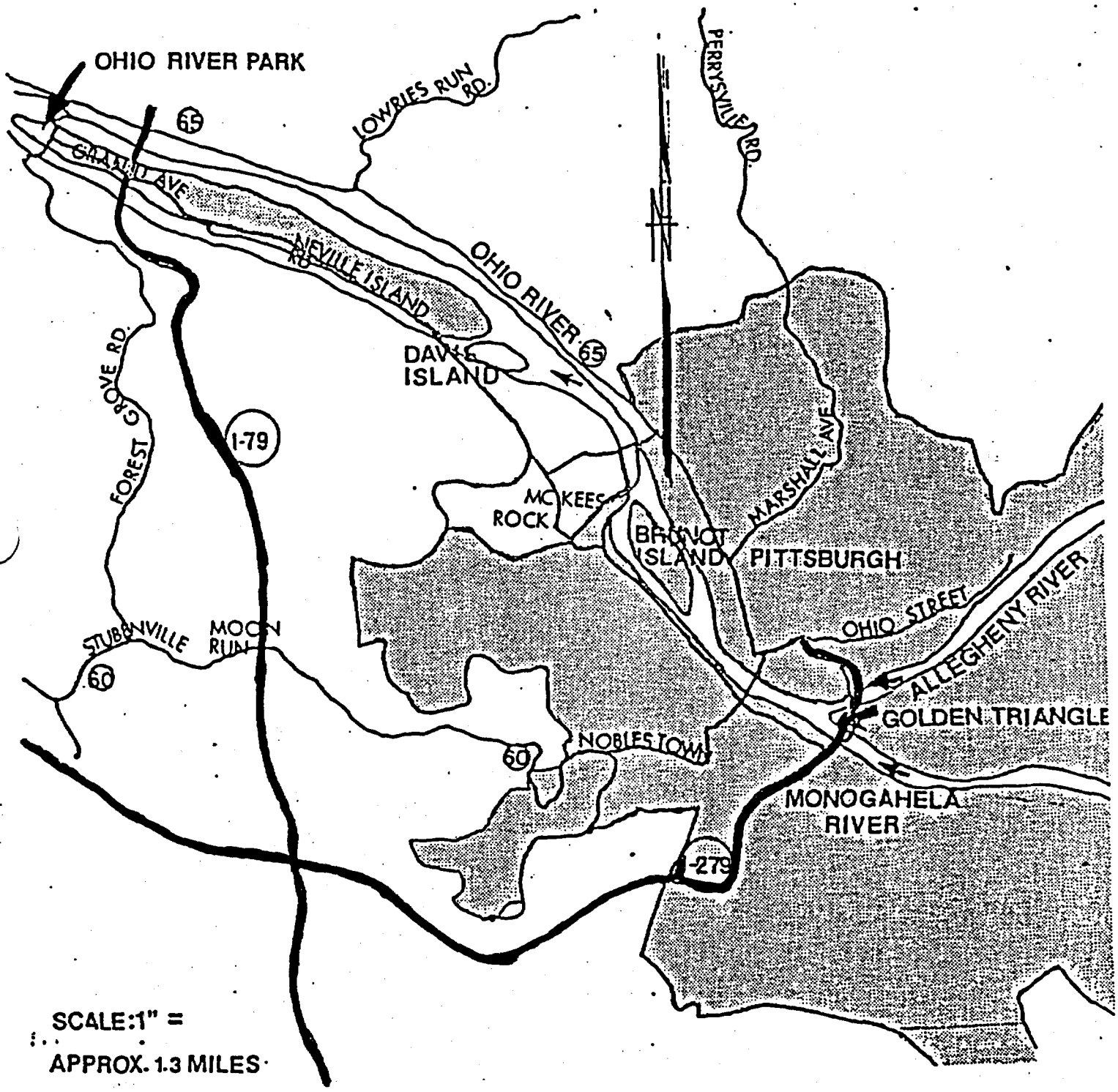
Outfall #2	August, 1980
Upstream Sample	August, 1980
Downstream Samples	August, 1980
Outfall #1	January, 1981

3. Soil/Waste:

TP275	Drum, 1' depth
B-28	10' - 11.5' depth
B-30	30.0' - 13.6' depth
B-5	3.0' - 3.4' depth
TP-200	Liquid
B-9	1.3' - 2.2' depth

Appendix B

Figure 1. Site Location



From: Fred C. Hart Associates
"Assessment of Remedial Options
at Ohio River Park", January, 1980, p.2.

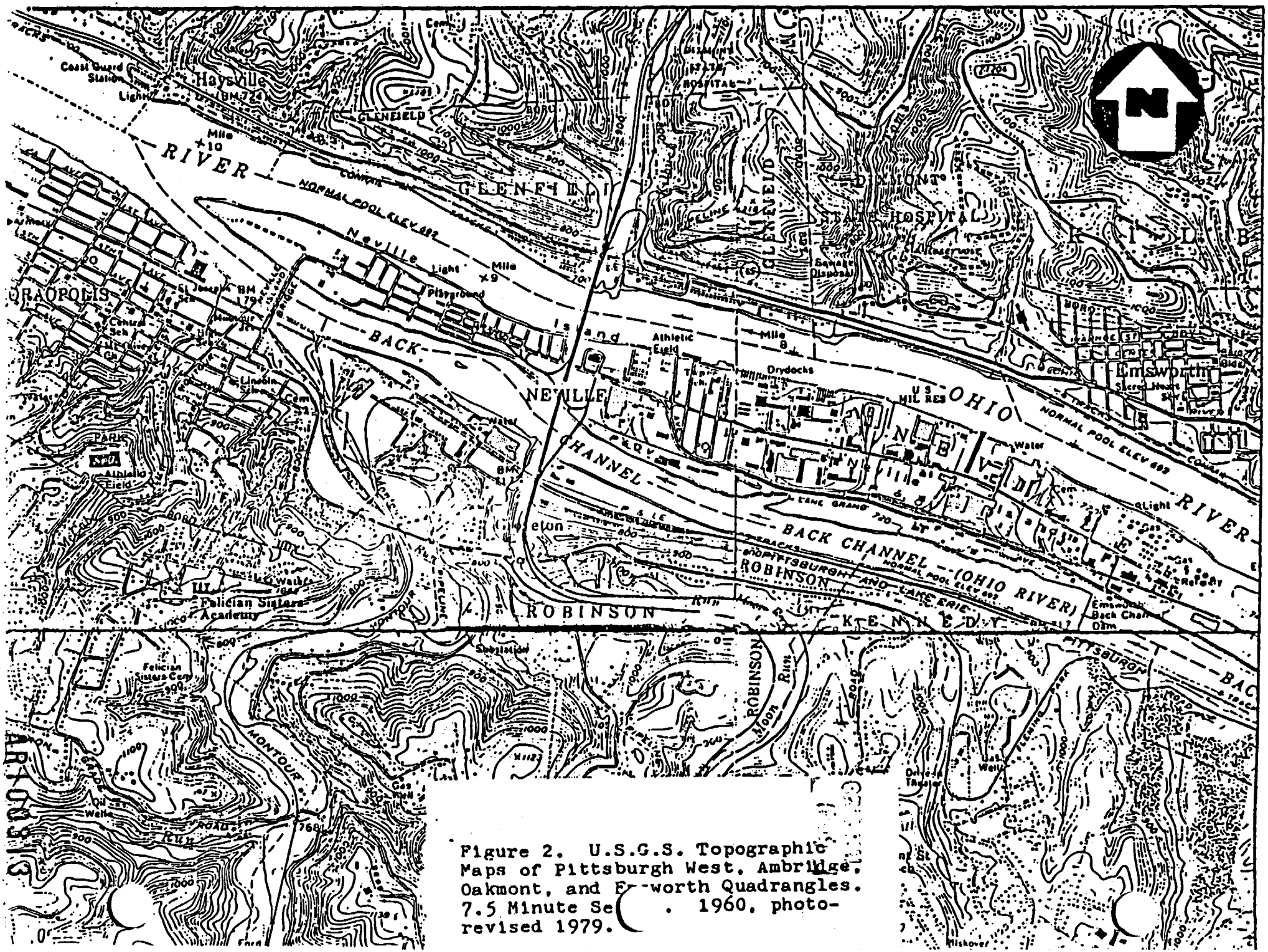
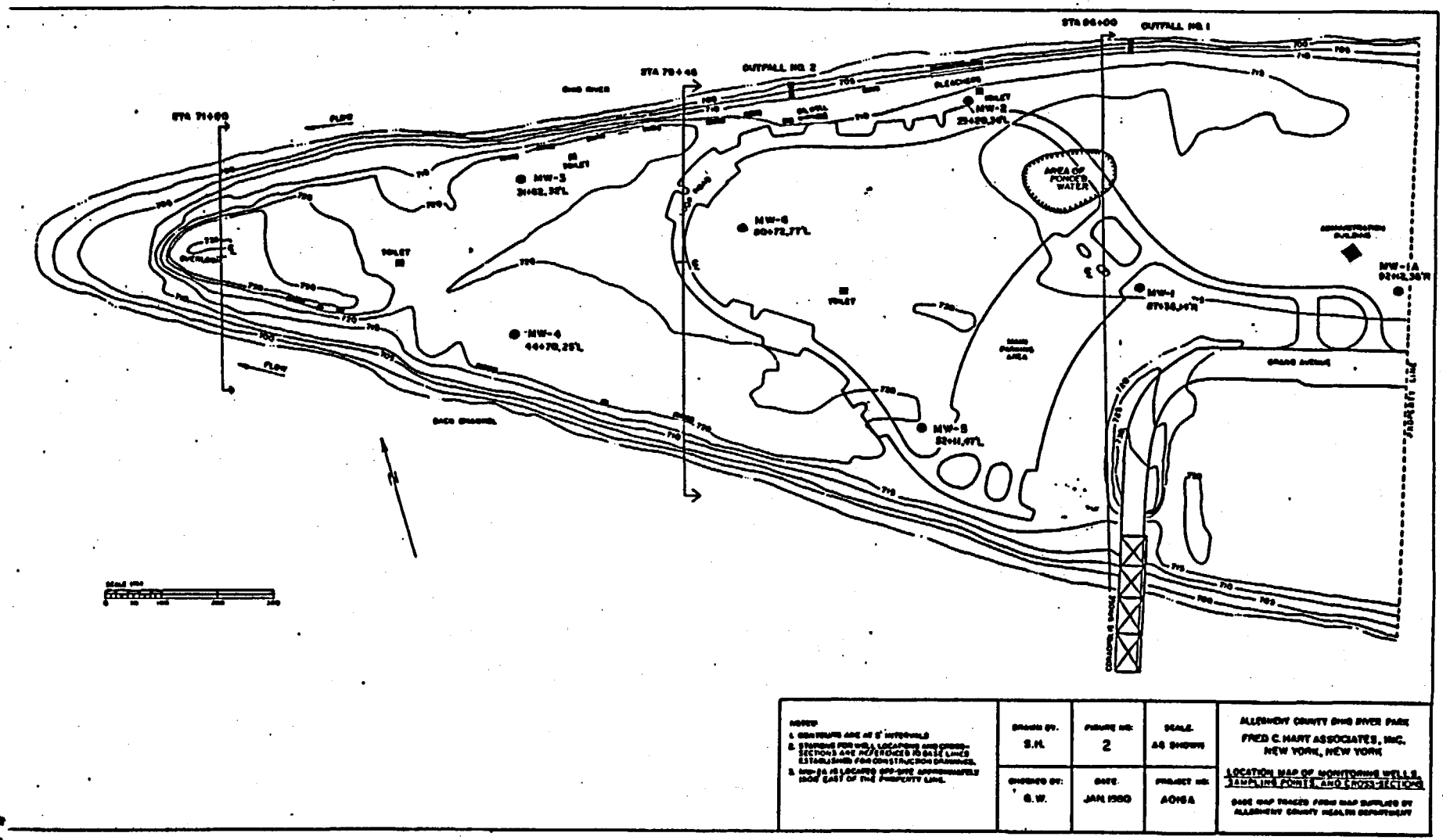


Figure 2. U.S.G.S. Topographic Maps of Pittsburgh West, Ambridge, Oakmont, and E[illegible]worth Quadrangles. 7.5 Minute Se[illegible]. 1960, photo-revised 1979.

Figure 3. Location Map of FCHA
Monitoring Wells and Outfalls



From: Fred C. Hart Associates "Assessment of Remedial Options at Ohio River Park", January, 1980, p.8

ERT ID # [redacted]

COMPUCHEM # [redacted]

ANALYSES PERFORMED:

VOA 2/10/81

ACID 2/13/81

B/N 2/05/81

PEST 2/05/81

SAMPLE IDENTIFIER: 8074
COMPU/CHEM SAMPLE NUMBER: 3833

3. PRIORITY POLLUTANT ANALYSIS REPORT

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
1V.	ACROLEIN	BDL	R	100
2V.	ACRYLONITRILE	BDL	R	100
3V.	BENZENE	BDL	R	10
4V.	BIS (CHLOROMETHYL) ETHER	BDL	R	10
5V.	BROMOFORM	BDL	R	10
6V.	CARBON TETRACHLORIDE	BDL	R	10
7V.	CHLOROBENZENE	BDL	R	10
8V.	CHLORODIBROMOMETHANE	BDL	R	10
9V.	CHLOROETHANE	BDL	R	10
10V.	2-CHLOROETHYLVINYL ETHER	BDL	R	10
11V.	CHLOROFORM	BDL	R	10
12V.	DICHLOROBROMOMETHANE	BDL	R	10
13V.	DICHLORODIFLUOROMETHANE	BDL	R	10
14V.	1, 1-DICHLOROETHANE	BDL	R	10
15V.	1, 2-DICHLOROETHANE	BDL	R	10
16V.	1, 1-DICHLOROETHYLENE	BDL	R	10
17V.	1, 2-DICHLOROPROPANE	BDL	R	10
18V.	1, 3-DICHLOROPROPYLENE	BDL	R	10
19V.	ETHYLBENZENE	BDL	R	10
20V.	METHYL BROMIDE	BDL	R	10
21V.	METHYL CHLORIDE	BDL	R	10
22V.	METHYLENE CHLORIDE	BDL	R	10
23V.	1, 1, 2, 2-TETRACHLOROETHANE	BDL	R	10
24V.	TETRACHLOROETHYLENE	BDL	R	10
25V.	TOLUENE	15	R	10
26V.	1, 2-TRANS-DICHLOROETHYLENE	BDL	R	10
27V.	1, 1, 1-TRICHLOROETHANE	BDL	R	10
28V.	1, 1, 2-TRICHLOROETHANE	BDL	R	10
29V.	TRICHLOROETHYLENE	BDL	R	10
30V.	TRICHLOROFLUOROMETHANE	BDL	R	10
31V.	VINYL CHLORIDE	BDL	R	10
1A.	2-CHLOROPHENOL	BDL	R	25
2A.	2, 4-DICHLOROPHENOL	BDL	R	25
3A.	2, 4-DIMETHYLPHENOL	BDL	R	25
4A.	4, 6-DINITRO-O-CRESOL	BDL	R	250
5A.	2, 4-DINITROPHENOL	BDL	R	250
6A.	2-NITROPHENOL	BDL	R	25
7A.	4-NITROPHENOL	BDL	R	25
8A.	P-CHLORO-M-CRESOL	BDL	R	25
9A.	PENTACHLOROPHENOL	BDL	R	25
10A.	PHENOL	BDL	R	25
11A.	2, 4, 6-TRICHLOROPHENOL	BDL	R	25
1B.	ACENAPHTHENE	BDL	R	10
2B.	ACENAPHTHYLENE	BDL	R	10
3B.	ANTHRACENE	BDL	R	10

BDL= BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 8074
COMPU/CHEM SAMPLE NUMBER: 3833

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
4B.	BENZIDINE	BDL	R	10
5B.	BENZO (A) ANTHRACENE	BDL	R	10
6B.	BENZO (A) PYRENE	BDL	R	10
7B.	3,4-BENZOFLUORANTHENE	BDL	R	10
8B.	BENZO (GHI) PERYLENE	BDL	R	25
9B.	BENZO (K) FLUORANTHENE	BDL	R	10
10B.	BIS (2-CHLOROETHOXY) METHANE	BDL	R	10
11B.	BIS (2-CHLOROETHYL) ETHER	BDL	R	10
12B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	R	10
13B.	BIS (2-ETHYLHEXYL) PHTHALATE	BDL	R	10
14B.	4-BROMOPHENYL PHENYL ETHER	BDL	R	10
15B.	BUTYL BENZYL PHTHALATE	BDL	R	10
16B.	2-CHLORONAPHTHALENE	BDL	R	10
17B.	4-CHLOROPHENYL PHENYL ETHER	BDL	R	10
18B.	CHRYSENE	BDL	R	10
19B.	DIBENZO (A,H) ANTHRACENE	BDL	R	25
20B.	1,2-DICHLOROBENZENE	BDL	R	10
21B.	1,3-DICHLOROBENZENE	BDL	R	10
22B.	1,4-DICHLORBENZENE	BDL	R	10
23B.	3,3'-DICHLOROBENZIDINE	BDL	R	10
24B.	DIETHYL PHTHALATE	BDL	R	10
25B.	DIMETHYL PHTHALATE	BDL	R	10
26B.	DI-N-BUTYL PHTHALATE	BDL	R	10
27B.	2,4-DINITROTOLUENE	BDL	R	10
28B.	2,6-DINITROTOLUENE	BDL	R	10
29B.	DI-N-OCTYL PHTHALATE	BDL	R	10
30B.	1,2-DIPHENYLHYDRAZINE	BDL	R	10
31B.	FLUORANTHENE	BDL	R	10
32B.	FLUORENE	BDL	R	10
33B.	HEXACHLOROBENZENE	BDL	R	10
34B.	HEXACHLOROBUTADIENE	BDL	R	10
35B.	HEXACHLOROCYCLOPENTADIENE	BDL	R	10
36B.	HEXACHLOROETHANE	BDL	R	10
37B.	INDENO (1,2,3-CD) PYRENE	BDL	R	25
38B.	ISOPHORONE	BDL	R	10
39B.	NAPHTHALENE	BDL	R	10
40B.	NITROBENZENE	BDL	R	10
41B.	N-NITROSODIMETHYLAMINE	BDL	R	10
42B.	N-NITROSODI-N-PROPYLAMINE	BDL	R	10
43B.	N-NITROSODIPHENYLAMINE	BDL	R	10
44B.	PHENANTHRENE	BDL	R	10
45B.	PYRENE	BDL	R	10
46B.	1,2,4-TRICHLOROBENZENE	BDL	R	10
1P.	ALDRIN	BDL	R	10
2P.	ALPHA-BHC	BDL	R	10

BDL= BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 8074
COMPU/CHEM SAMPLE NUMBER: 3833

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
3P.	BETA-BHC	BDL	R	10
4P.	GAMMA-BHC	BDL	R	10
5P.	DELTA-BHC	BDL	R	10
6P.	CHLORDANE	BDL	R	10
7P.	4, 4'-DDT	BDL	R	10
8P.	4, 4'-DDE	BDL	R	10
9P.	4, 4'-DDD	BDL	R	10
10P.	DIELDRIN	BDL	R	10
11P.	ALPHA-ENDOSULFAN	BDL	R	10
12P.	BETA-ENDOSULFAN	BDL	R	10
13P.	ENDOSULFAN SULFATE	BDL	R	10
14P.	ENDRIN	BDL	R	10
15P.	ENDRIN ALDEHYDE	BDL	R	10
16P.	HEPTACHLOR	BDL	R	10
17P.	HEPTACHLOR EPOXIDE	BDL	R	10
18P.	PCB-1242	BDL	R	10
19P.	PCB-1254	BDL	R	10
20P.	PCB-1221	BDL	R	10
21P.	PCB-1232	BDL	R	10
22P.	PCB-1248	BDL	R	10
23P.	PCB-1260	BDL	R	10
24P.	PCB-1016	BDL	R	10
25P.	TOXAPHENE	BDL	R	10

ERT ID # ERT-OUTFALL 1 8086

COMPUCHEM # 3826

ANALYSES PERFORMED:

VOA 2/04/81

ACID 2/04/81

B/N 2/05/81

PEST 2/05/81

SAMPLE IDENTIFIER: 8086
COMPU/CHEM SAMPLE NUMBER: 3826

3. PRIORITY POLLUTANT ANALYSIS REPORT

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
1V.	ACROLEIN	BDL	R	100
2V.	ACRYLONITRILE	BDL	R	100
3V.	BENZENE	BDL	R	10
4V.	BIS (CHLOROMETHYL) ETHER	BDL	R	10
5V.	BROMOFORM	BDL	R	10
6V.	CARBON TETRACHLORIDE	BDL	R	10
7V.	CHLOROBENZENE	BDL	R	10
8V.	CHLORODIBROMOMETHANE	BDL	R	10
9V.	CHLOROETHANE	BDL	R	10
10V.	2-CHLOROETHYLVINYL ETHER	BDL	R	10
11V.	CHLOROFORM	BDL	R	10
12V.	DICHLOROBROMOMETHANE	BDL	R	10
13V.	DICHLORODIFLUOROMETHANE	BDL	R	10
14V.	1, 1-DICHLOROETHANE	BDL	R	10
15V.	1, 2-DICHLOROETHANE	BDL	R	10
16V.	1, 1-DICHLOROETHYLENE	BDL	R	10
17V.	1, 2-DICHLOROPROPANE	BDL	R	10
18V.	1, 3-DICHLOROPROPYLENE	BDL	R	10
19V.	ETHYLBENZENE	BDL	R	10
20V.	METHYL BROMIDE	BDL	R	10
21V.	METHYL CHLORIDE	BDL	R	10
22V.	METHYLENE CHLORIDE	BDL	R	10
23V.	1, 1, 2, 2-TETRACHLOROETHANE	BDL	R	10
24V.	TETRACHLOROETHYLENE	BDL	R	10
25V.	TOLUENE	BDL	R	10
26V.	1, 2-TRANS-DICHLOROETHYLENE	BDL	R	10
27V.	1, 1, 1-TRICHLOROETHANE	BDL	R	10
28V.	1, 1, 2-TRICHLOROETHANE	BDL	R	10
29V.	TRICHLOROETHYLENE	BDL	R	10
30V.	TRICHLOROFLUOROMETHANE	BDL	R	10
31V.	VINYL CHLORIDE	BDL	R	10
1A.	2-CHLOROPHENOL	BDL	R	25
2A.	2, 4-DICHLOROPHENOL	63		25
3A.	2, 4-DIMETHYLPHENOL	BDL	R	25
4A.	4, 6-DINITRO-O-CRESOL	BDL	R	250
5A.	2, 4-DINITROPHENOL	BDL	R	250
6A.	2-NITROPHENOL	BDL	R	25
7A.	4-NITROPHENOL	BDL	R	25
8A.	P-CHLORO-M-CRESOL	BDL	R	25
9A.	PENTACHLOROPHENOL	BDL	R	25
10A.	PHENOL	BDL	R	25
11A.	2, 4, 6-TRICHLOROPHENOL	37		25
1B.	ACENAPHTHENE	BDL	R	10
2B.	ACENAPHTHYLENE	BDL	R	10
3B.	ANTHRACENE	BDL	R	10

BDL= BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 8086
COMPU/CHEM SAMPLE NUMBER: 3826

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
4B.	BENZIDINE	BDL	R	10
5B.	BENZO (A) ANTHRACENE	BDL	R	10
6B.	BENZO (A) PYRENE	BDL	R	10
7B.	3, 4-BENZOFLUORANTHENE	BDL	R	10
8B.	BENZO (GHI) PERYLENE	BDL	R	25
9B.	BENZO (K) FLUORANTHENE	BDL	R	10
10B.	BIS (2-CHLOROETHOXY) METHANE	BDL	R	10
11B.	BIS (2-CHLOROETHYL) ETHER	BDL	R	10
12B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	R	10
13B.	BIS (2-ETHYLHEXYL) PHTHALATE	BDL	R	10
14B.	4-BROMOPHENYL PHENYL ETHER	BDL	R	10
15B.	BUTYL BENZYL PHTHALATE	BDL	R	10
16B.	2-CHLORONAPHTHALENE	BDL	R	10
17B.	4-CHLOROPHENYL PHENYL ETHER	BDL	R	10
18B.	CHRYSENE	BDL	R	10
19B.	DIBENZO (A, H) ANTHRACENE	BDL	R	25
20B.	1, 2-DICHLOROBENZENE	BDL	R	10
21B.	1, 3-DICHLOROBENZENE	BDL	R	10
22B.	1, 4-DICHLORBENZENE	BDL	R	10
23B.	3, 3'-DICHLOROBENZIDINE	BDL	R	10
24B.	DIETHYL PHTHALATE	BDL	R	10
25B.	DIMETHYL PHTHALATE	BDL	R	10
26B.	DI-N-BUTYL PHTHALATE	BDL	R	10
27B.	2, 4-DINITROTOLUENE	BDL	R	10
28B.	2, 6-DINITROTOLUENE	BDL	R	10
29B.	DI-N-OCTYL PHTHALATE	BDL	R	10
30B.	1, 2-DIPHENYLHYDRAZINE	BDL	R	10
31B.	FLUORANTHENE	BDL	R	10
32B.	FLUORENE	BDL	R	10
33B.	HEXACHLOROBENZENE	BDL	R	10
34B.	HEXACHLOROBUTADIENE	BDL	R	10
35B.	HEXACHLOROCYCLOPENTADIENE	BDL	R	10
36B.	HEXACHLOROETHANE	BDL	R	10
37B.	INDENO (1, 2, 3-CD) PYRENE	BDL	R	25
38B.	ISOPHORONE	BDL	R	10
39B.	NAPHTHALENE	BDL	R	10
40B.	NITROBENZENE	BDL	R	10
41B.	N-NITROSODIMETHYLAMINE	BDL	R	10
42B.	N-NITROSODI-N-PROPYLAMINE	BDL	R	10
43B.	N-NITROSODIPHENYLAMINE	BDL	R	10
44B.	PHENANTHRENE	BDL	R	10
45B.	PYRENE	BDL	R	10
46B.	1, 2, 4-TRICHLOROBENZENE	BDL	R	10
1P.	ALDRIN	BDL	R	10
2P.	ALPHA-BHC	BDL	R	10

AR100321

BDL= BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 8086
COMPU/CHEM SAMPLE NUMBER: 3826

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
3P.	BETA-BHC	BDL	R	10
4P.	GAMMA-BHC	BDL	R	10
5P.	DELTA-BHC	BDL	R	10
6P.	CHLORDANE	BDL	R	10
7P.	4,4'-DDT	BDL	R	10
8P.	4,4'-DDE	BDL	R	10
9P.	4,4'-DDD	BDL	R	10
10P.	DIELDRIN	BDL	R	10
11P.	ALPHA-ENDOSULFAN	BDL	R	10
12P.	BETA-ENDOSULFAN	BDL	R	10
13P.	ENDOSULFAN SULFATE	BDL	R	10
14P.	ENDRIN	BDL	R	10
15P.	ENDRIN ALDEHYDE	BDL	R	10
16P.	HEPTACHLOR	BDL	R	10
17P.	HEPTACHLOR EPOXIDE	BDL	R	10
18P.	PCB-1242	BDL	R	10
19P.	PCB-1254	BDL	R	10
20P.	PCB-1221	BDL	R	10
21P.	PCB-1232	BDL	R	10
22P.	PCB-1248	BDL	R	10
23P.	PCB-1260	BDL	R	10
24P.	PCB-1016	BDL	R	10
25P.	TOXAPHENE	BDL	R	10

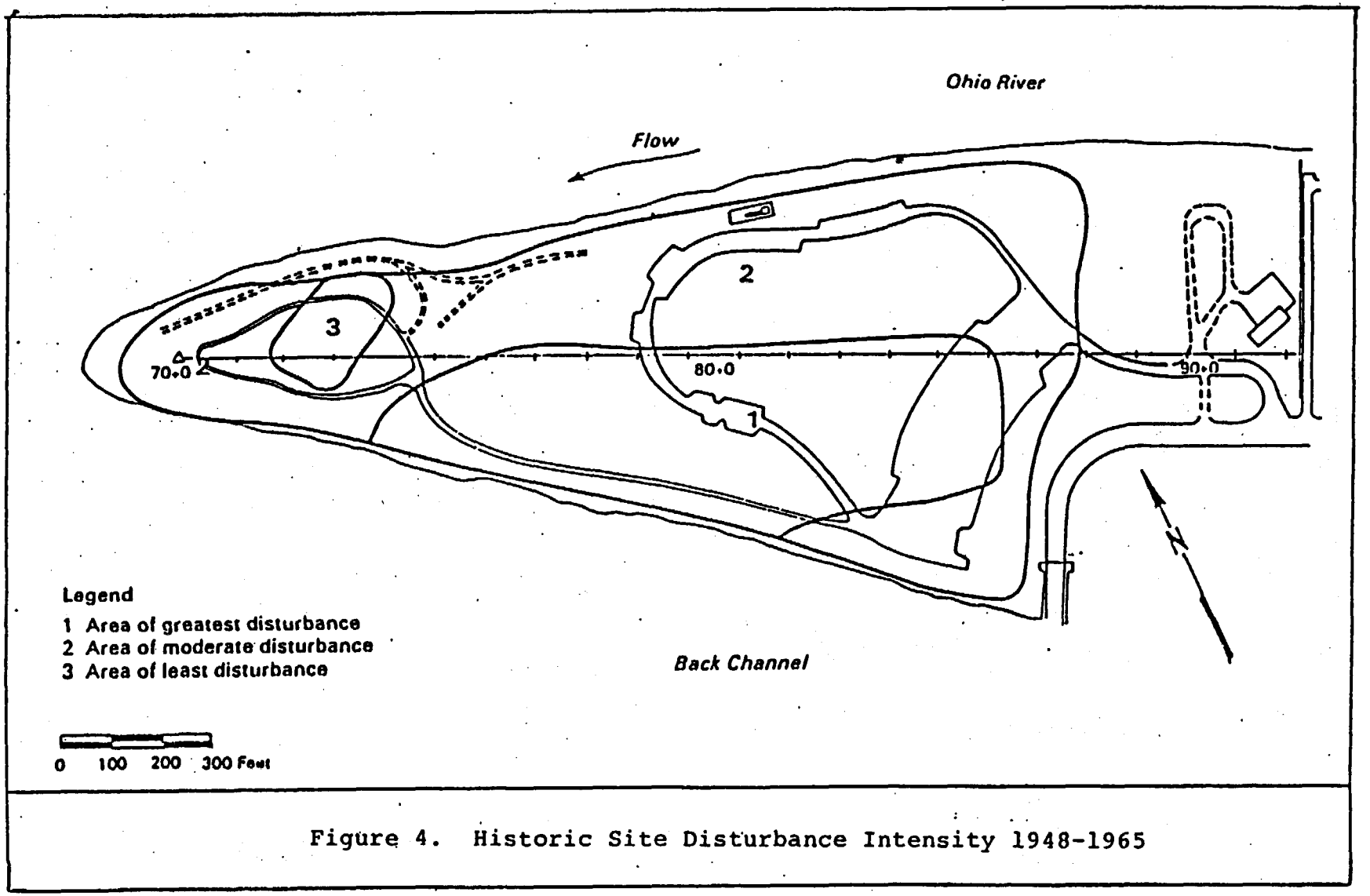


Figure 4. Historic Site Disturbance Intensity 1948-1965

From: ERT, Inc., "Detailed Description of Neville Island Site", August, 1981, p.3-21

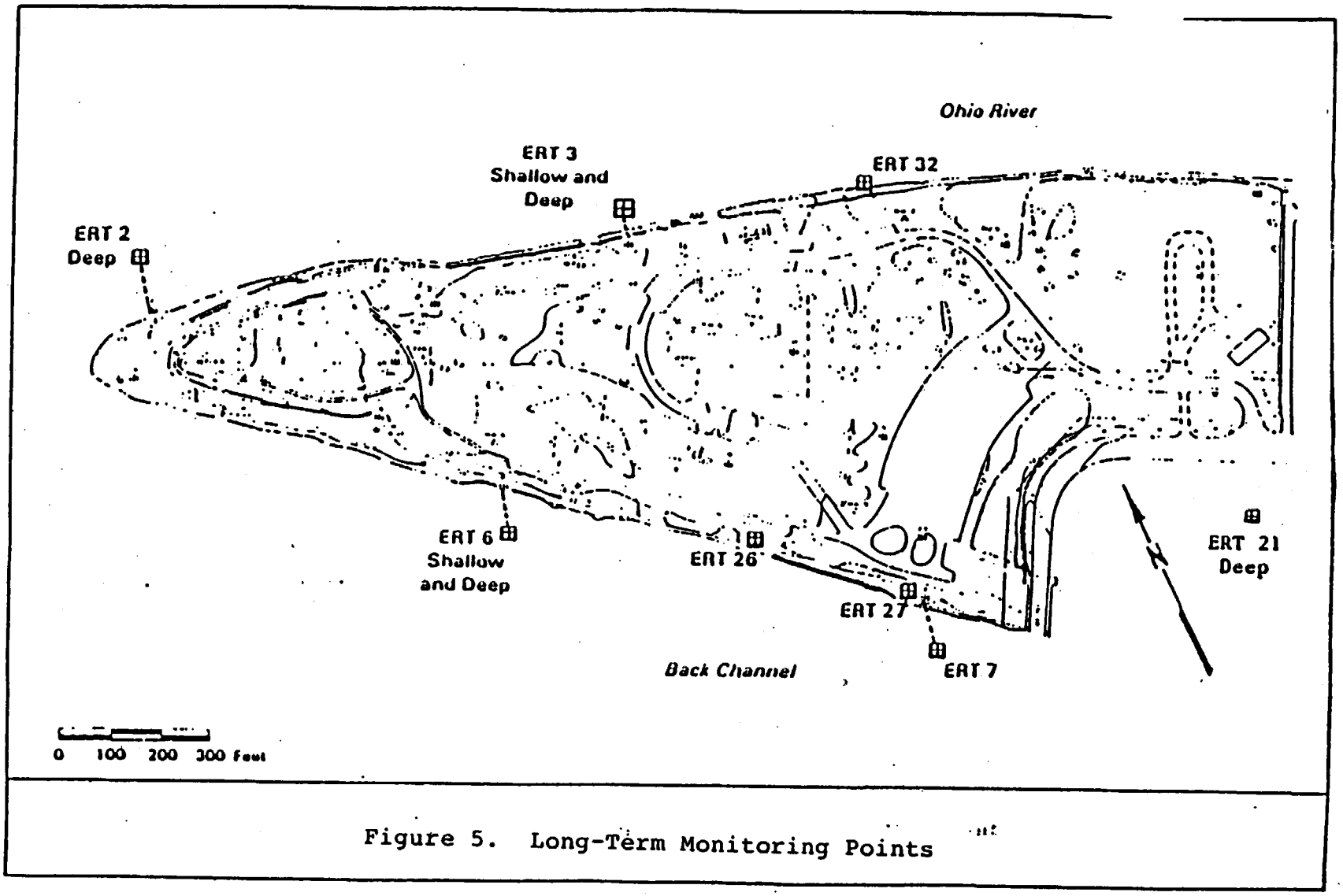


Figure 5. Long-Term Monitoring Points

From: "Review of Initial Two years of Long-Term Groundwater Monitoring Program for the Neville Island Site", April, 1985, p.2-3

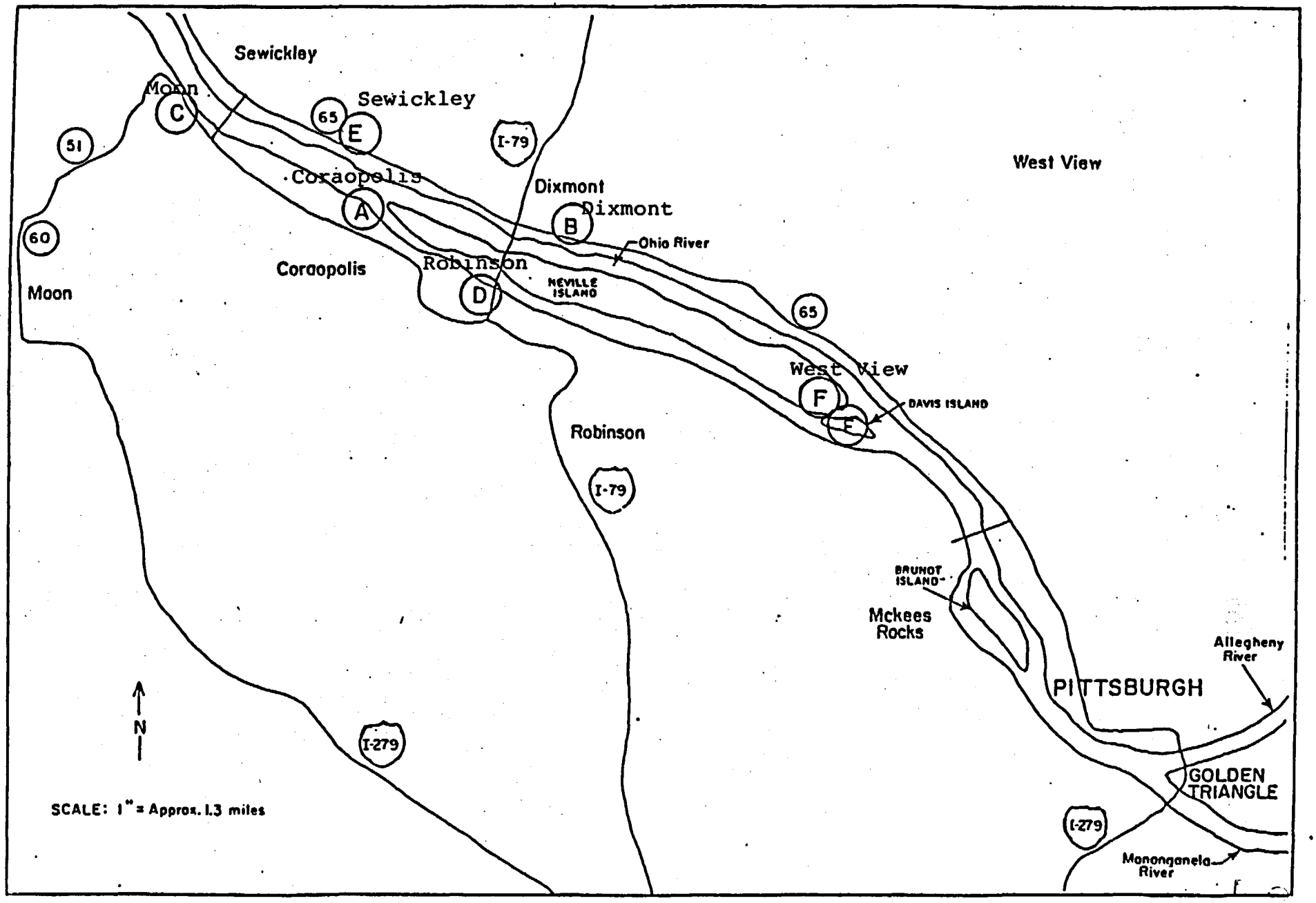
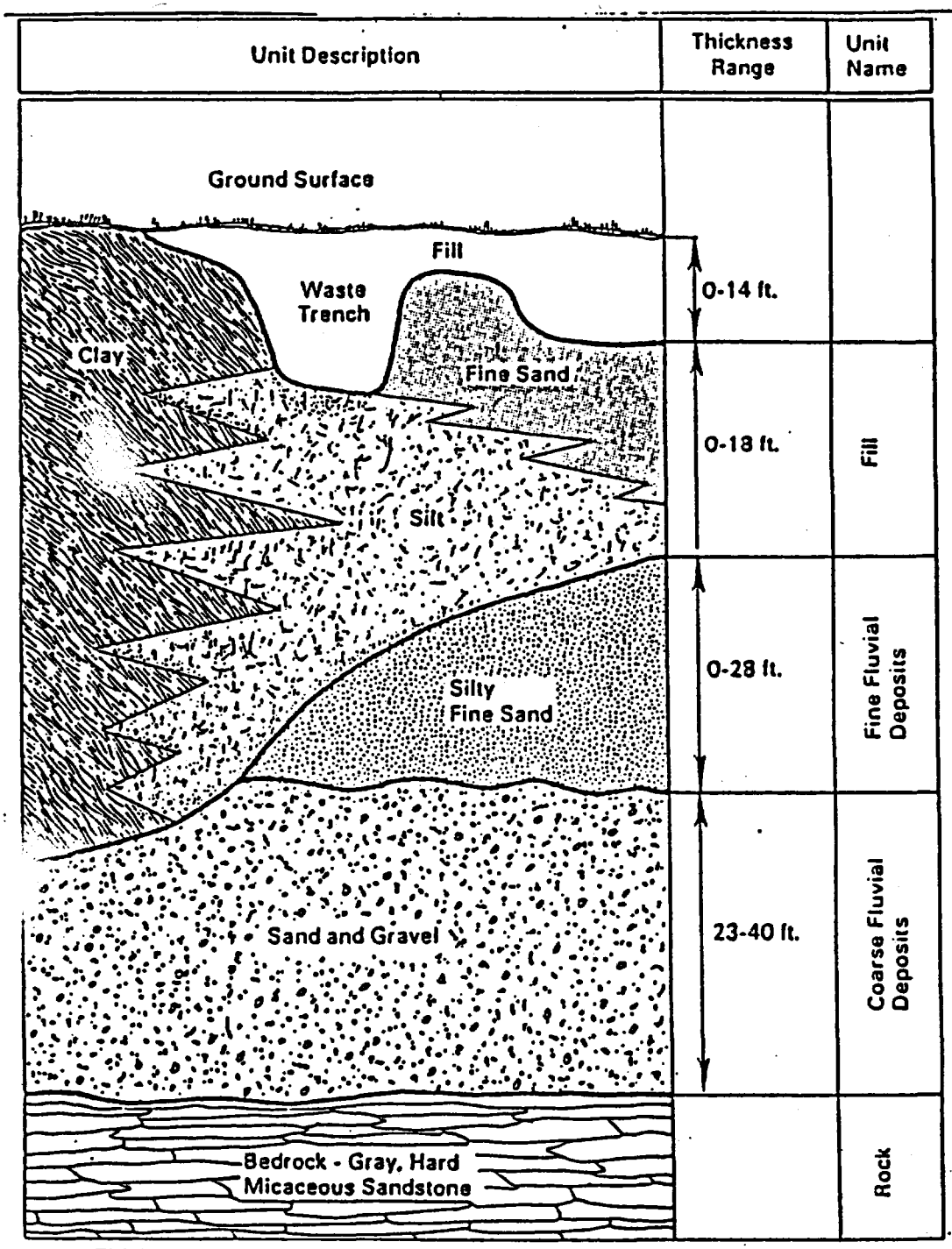


Figure 6. Municipal Water Users in the Neville Island Vicinity
From: Fred C. Hart Associates "Assessment of Remedial Options at Ohio River Park", January, 1980, p.62

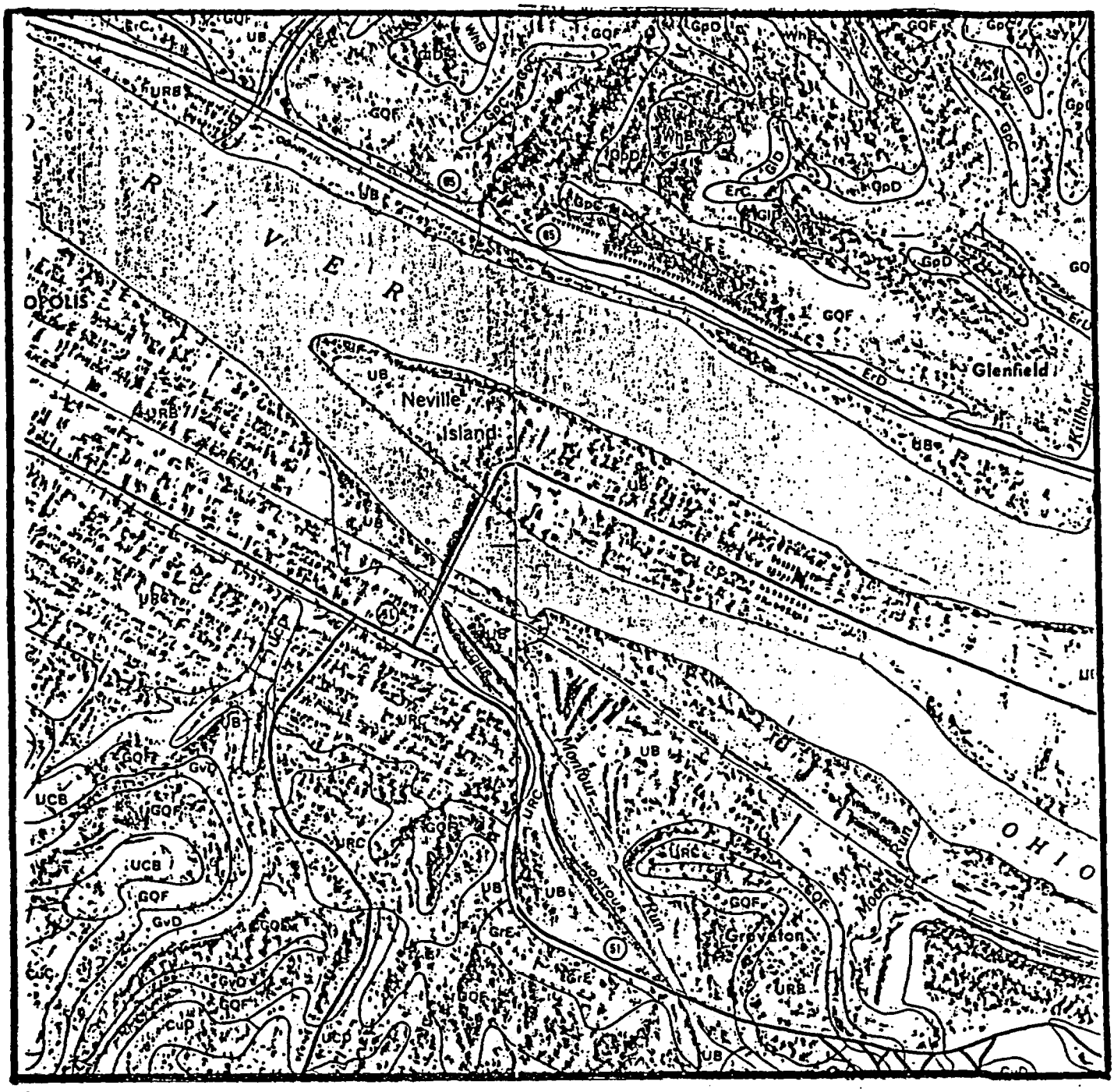
Figure 7. Schematic Stratigraphic Column



Thickness, morphology and position of geologic units are based on boring information. This column represents a variety of conditions that may be encountered beneath the site; it may not depict all possible conditions.

From: ERT, Inc. "Preliminary Risk Assessment of Neville Island Site", April, 1981, p.4-7

Figure 8. Urban soils of Neville Island Site



From: U.S.D.A. Soil Conservation Service
Soil Survey of Allegheny County, Pa.
PADER State Conservation Commission, March, 1988.

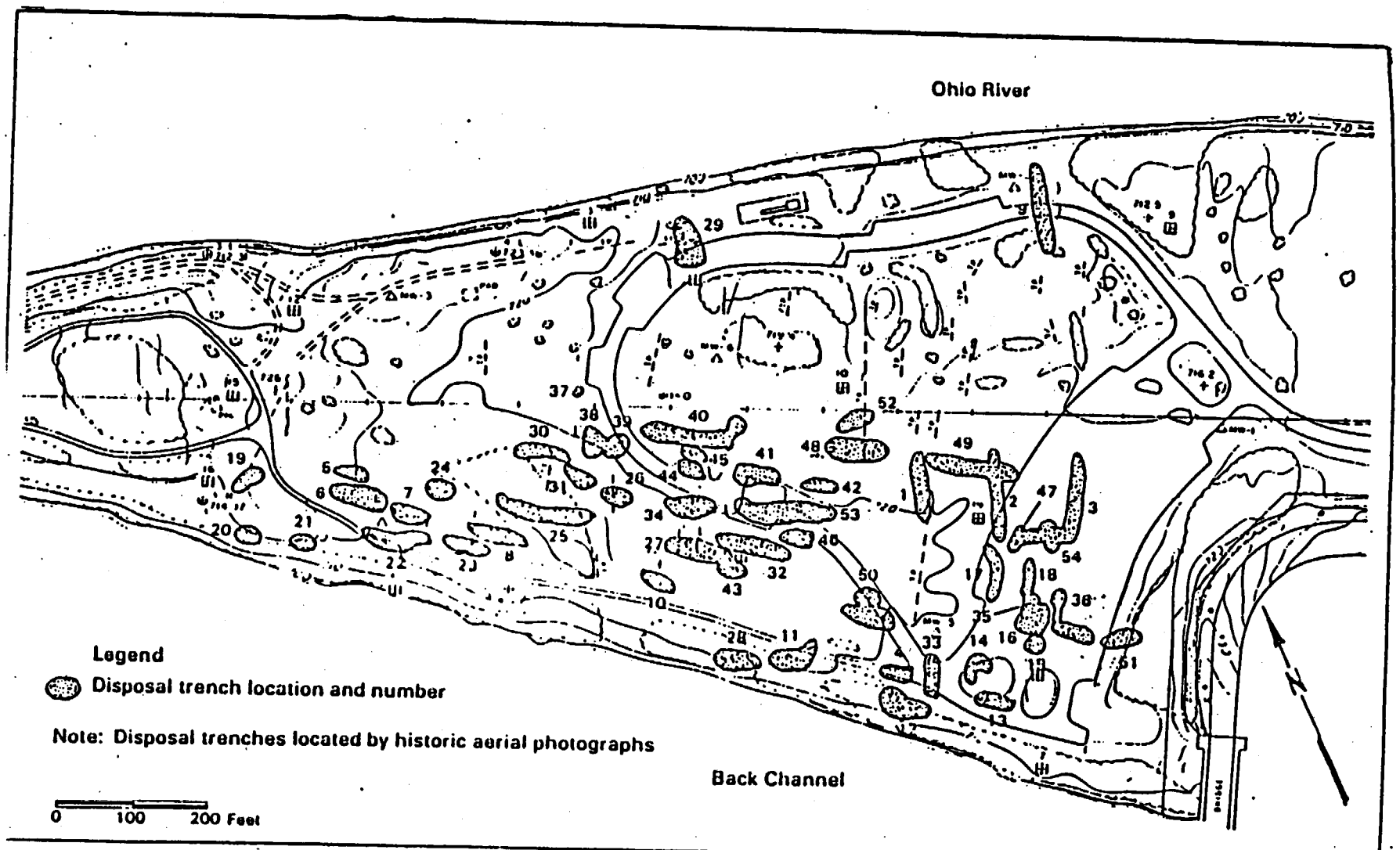


Figure 9. Disposal Trench Location

From: ERT, Inc. "Detailed Description of Neville Island Site", August, 1981, p.3-17

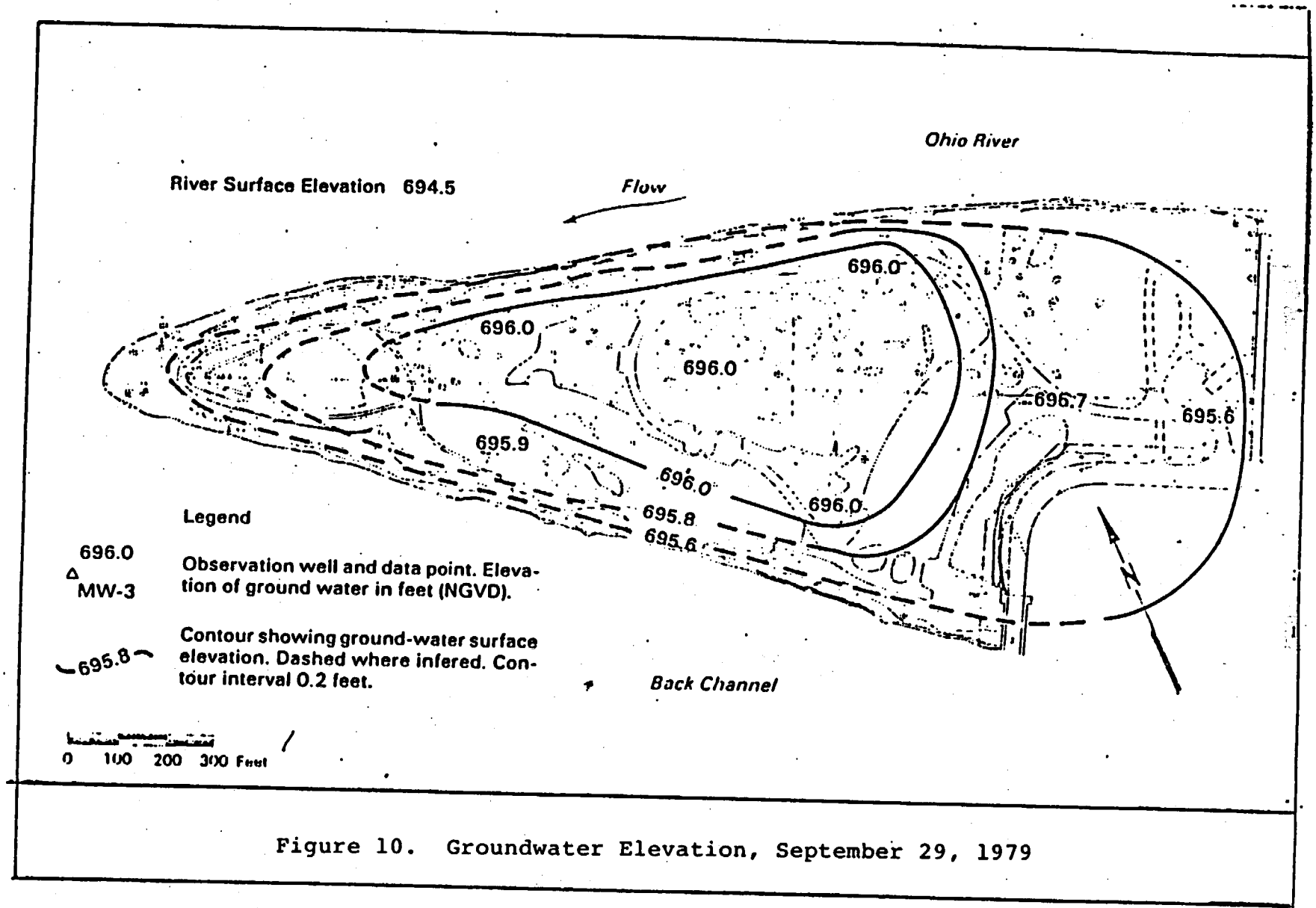


Figure 10. Groundwater Elevation, September 29, 1979

From: ERT, Inc., "Interim Monitoring Report for Neville Island Site", June, 1981, p.3-17

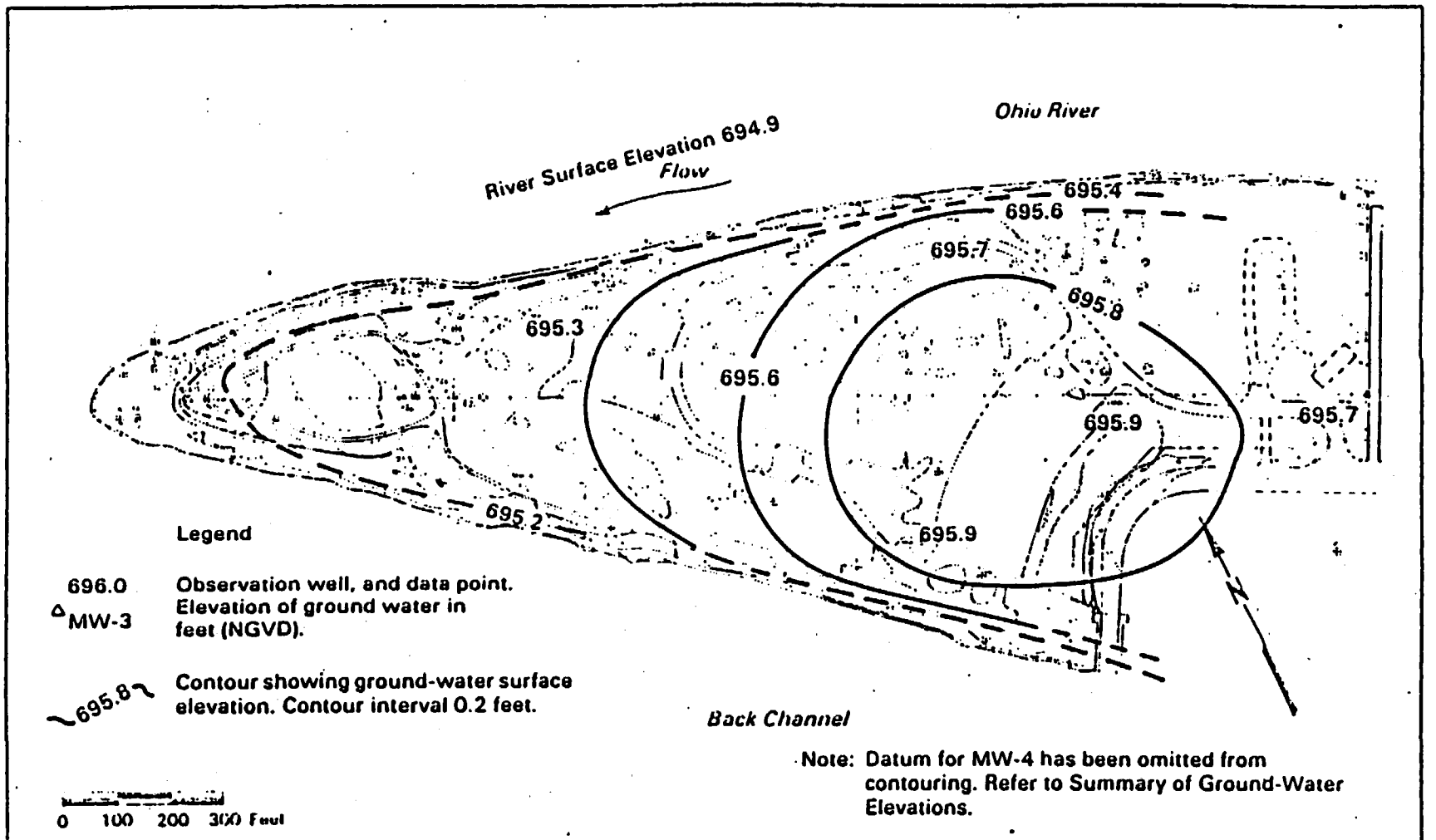


Figure 11. Groundwater Elevations, December 6, 1979

From: ERT, Inc., "Interim Monitoring Report for Neville Island Site", June, 1981, p.3-18

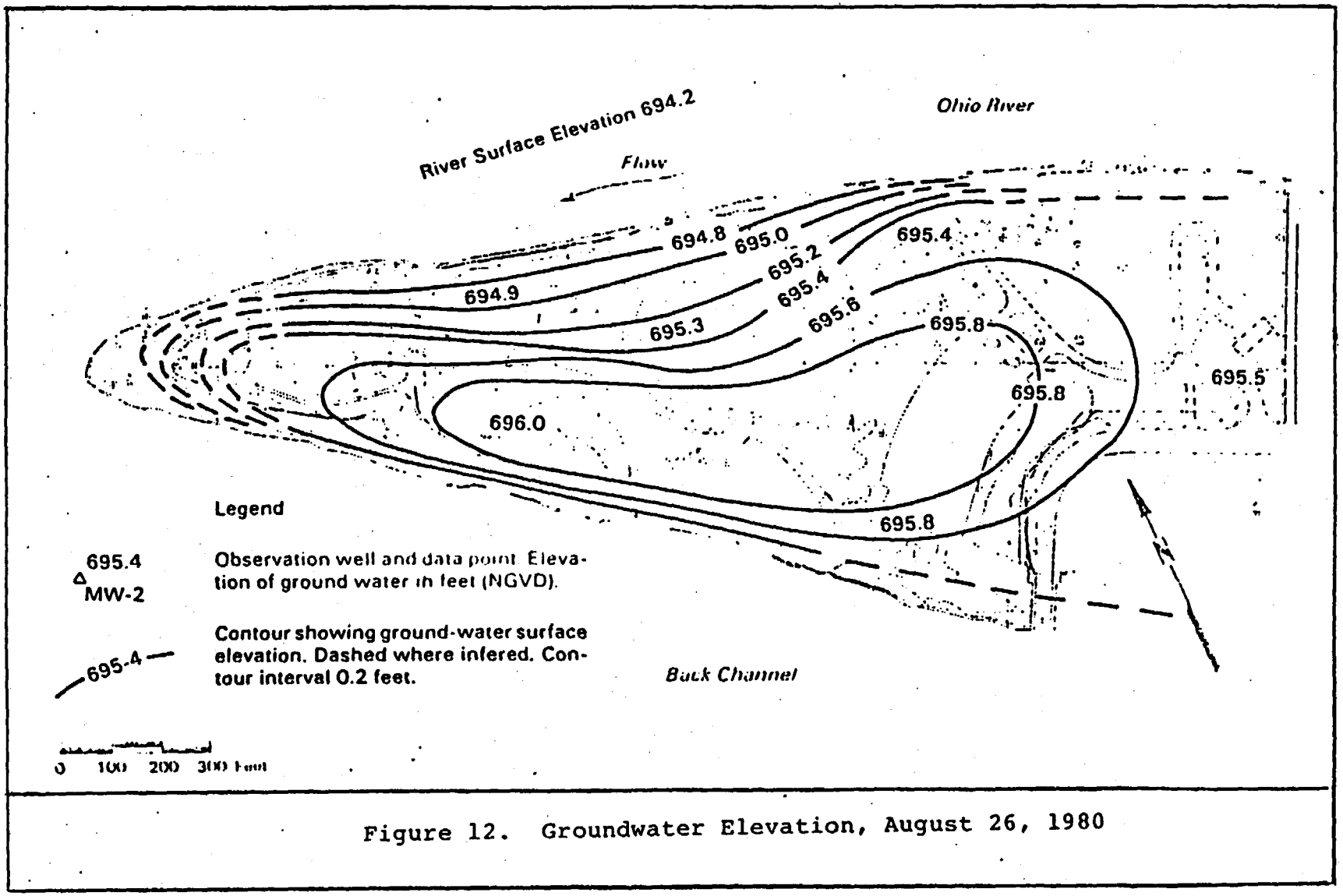


Figure 12. Groundwater Elevation, August 26, 1980

From: ERT, Inc. "Interim Monitoring Report for Neville Island Site", June, 1981, p.3-19

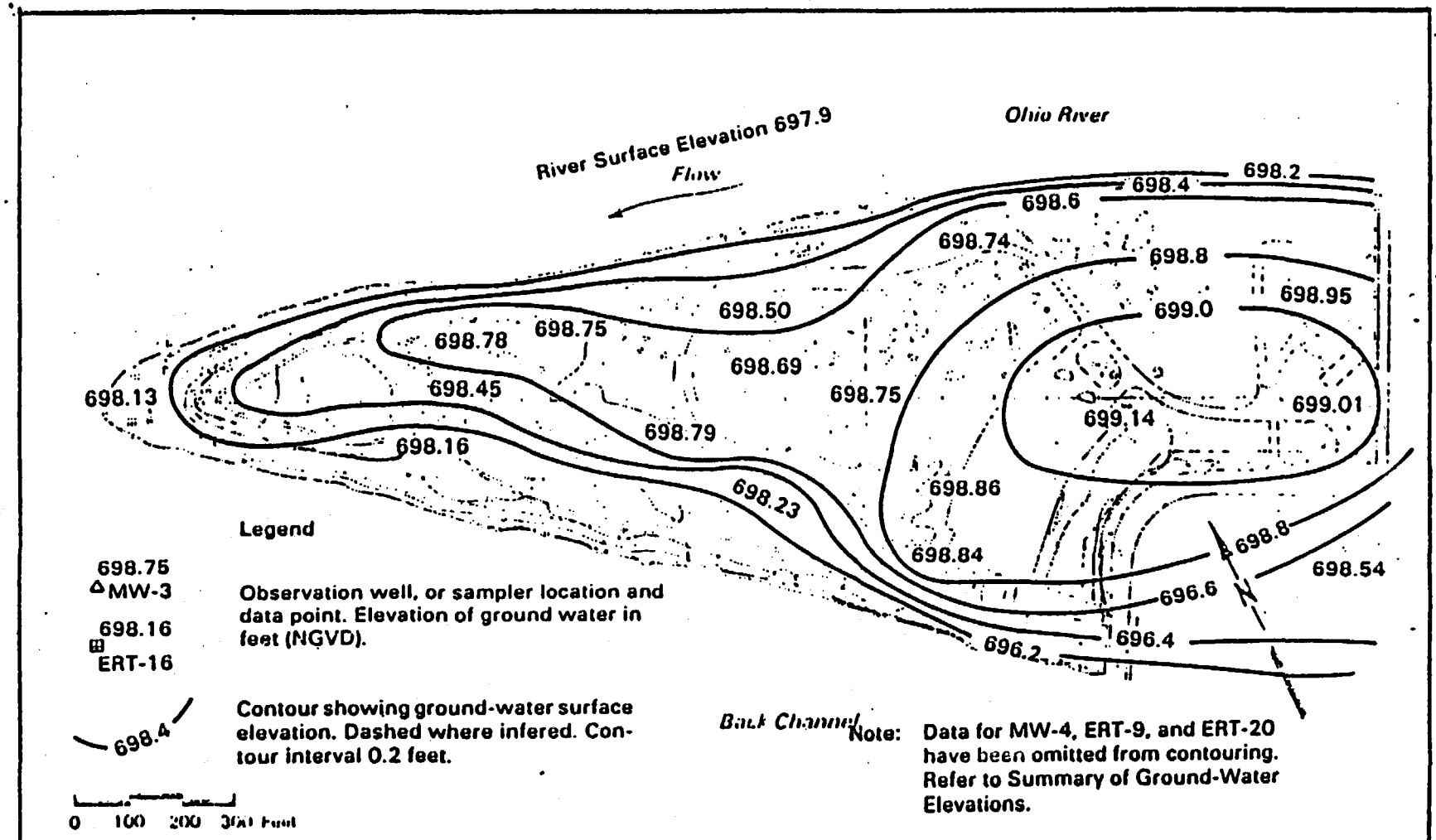


Figure 13. Groundwater Elevation March 4, 1981

From: ERT, Inc. "Interim Monitoring Report for Neville Island Site", June, 1981, p.3-20

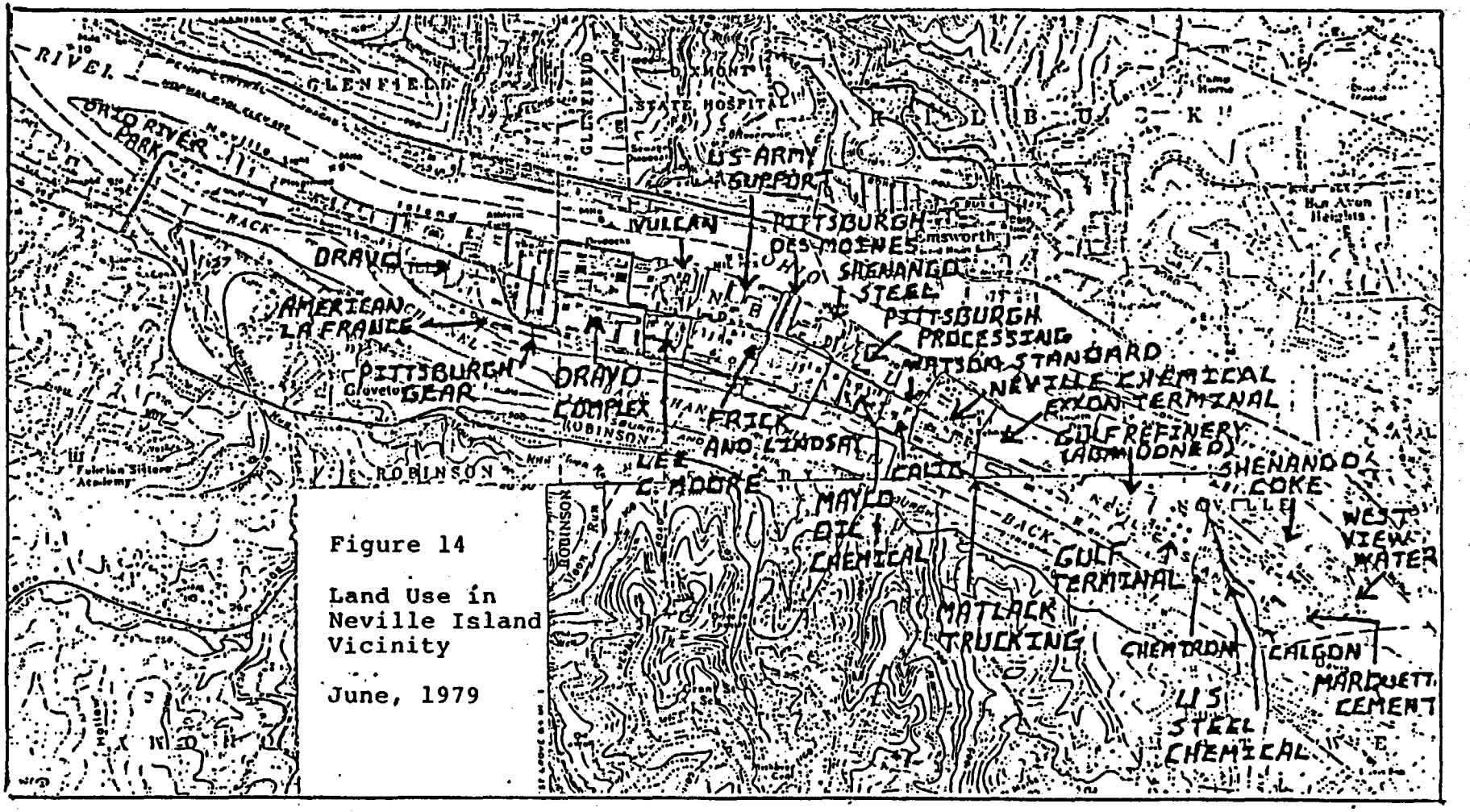


Figure 14

Land Use in Neville Island Vicinity

June, 1979

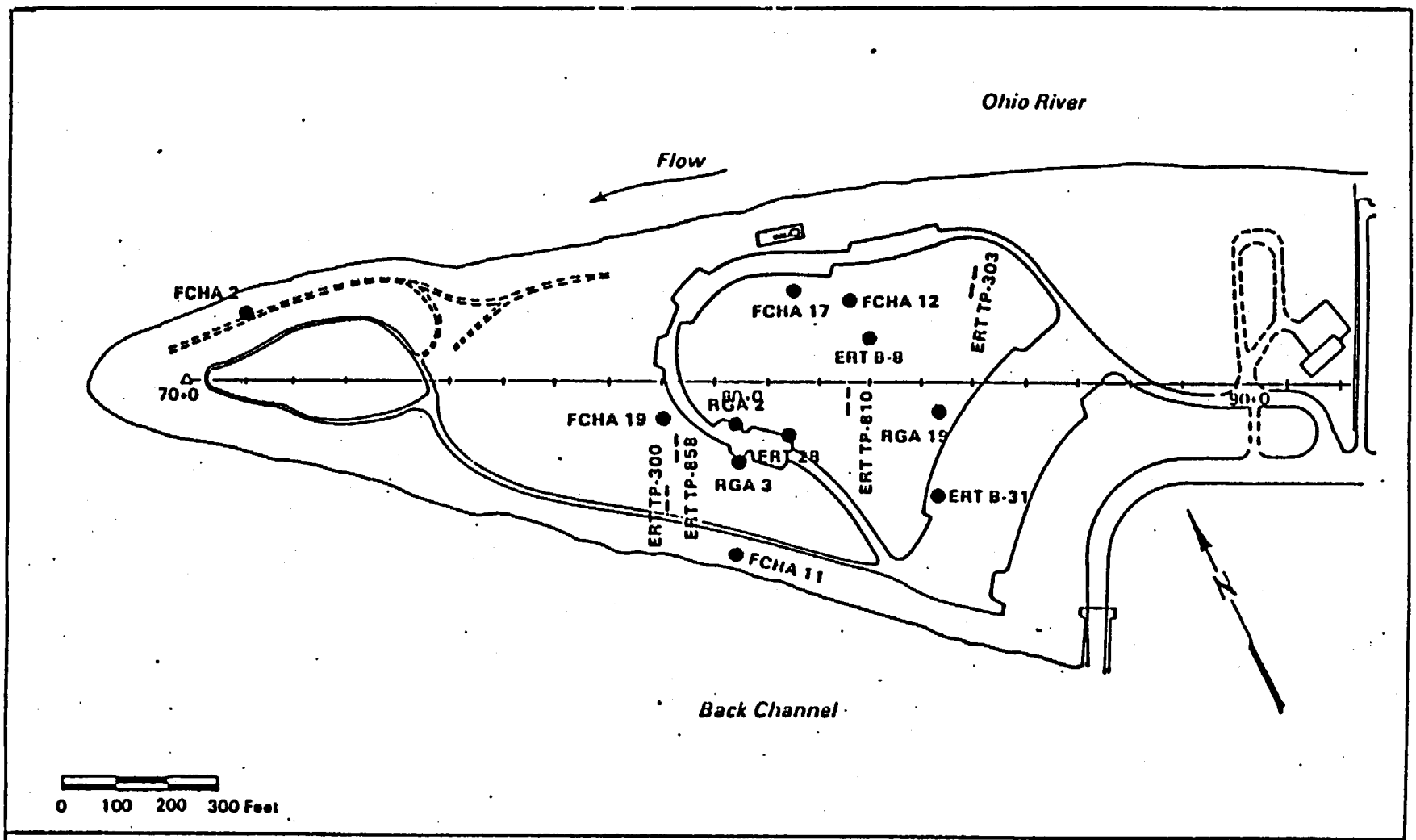


Figure 15 Sampling Locations for Coal Coking Sludges

From: ERT, Inc. "Detailed Description of Neville Island Site", August, 1981, p. 4-12

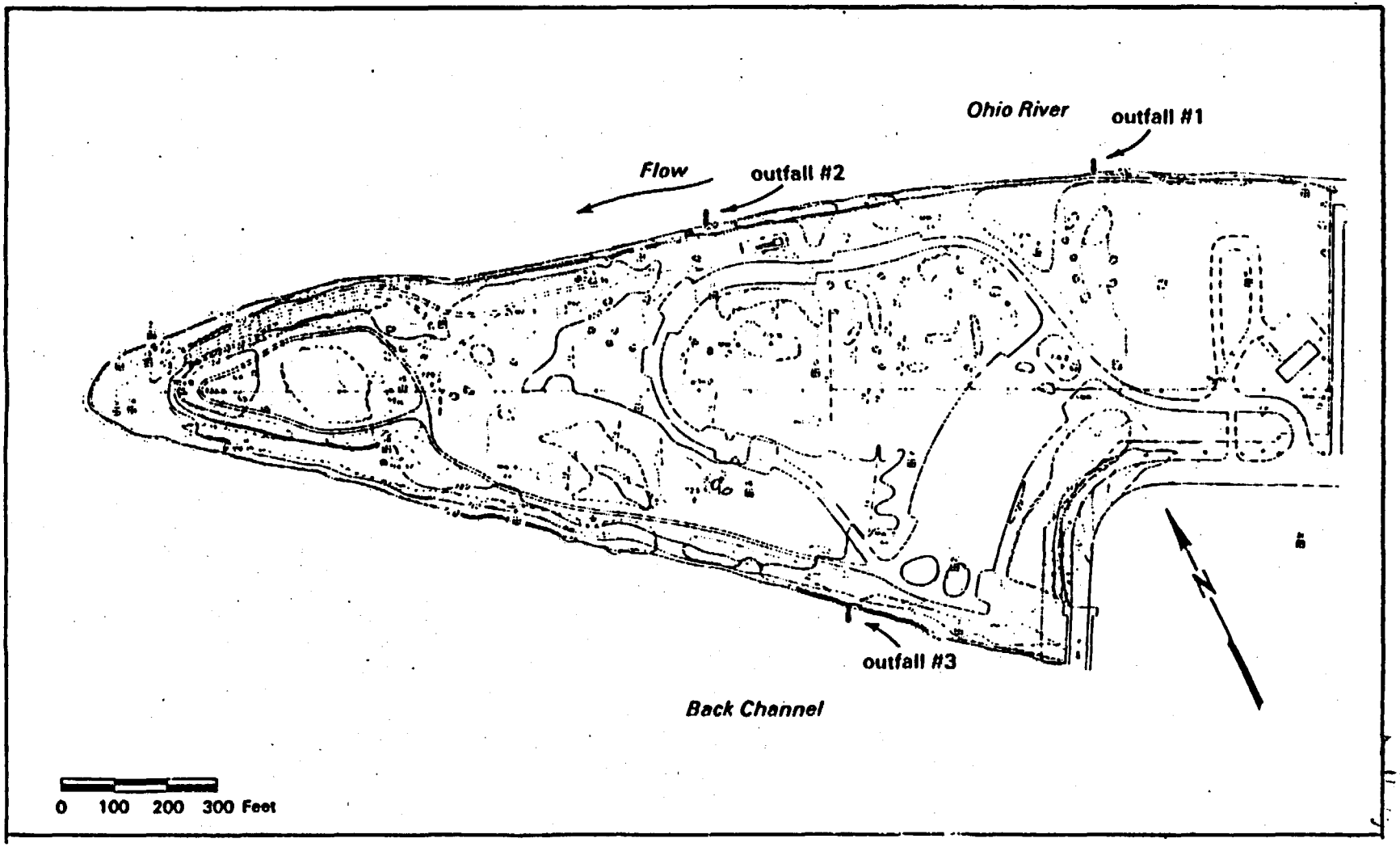


Figure 16. Surface Water Runoff Outfall Locations

From: ERT, Inc. "Preliminary Risk Assessment of Neville Island Site", April, 1982 p 5-2

LIST OF SOURCES

1. U. S. Environmental Protection Agency, Phthalate Esters: Ambient Water Quality Criteria, Washington, D.C., 1980..

2. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, p. 3 - 23.

3. U. S. Department of Health and Human Services, Third Annual Report on Carcinogens, Research Triangle Park, N.C., December 1982.

4. U. S. Environmental Protection Agency, Benzene: Ambient Water Quality Criteria, Washington, D.C., 1980.

5. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, p. 3 - 25.

6. National Academy of Science (NAS), Drinking Water & Health, Volumn 3, Drinking Water Committee, 1980.

7. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site,. June 1981, p. 3 - 24.

8. Ibid., p. 3 - 27.

9. U. S. Environmental Protection Agency, Multimedia Environmental Goals for Environmental Assessment, Report EPA-600/7-77-136, Research Triangle Park, N.C., November 1977.

10. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, p. 3 - 29.

11. Sittig, M., Handbook of Toxic and Hazardous Chemicals and Carcinogens, second edition, Noyes Publications, Park Ridge, N.J., 1985, p. 704.

12. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, p. 3 - 30.

13. U. S. Environmental Protection Agency, Public Health Risk Evaluation Database (PHRED), draft version 3.00, Office of Emergency and Remedial Response (OERR), Office of Solid Waste and Emergency Response, Washington, D.C., September 19, 1988.

14. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, p. 3 - 28.

15. Sittig, M., Handbook of Toxic and Hazardous Chemicals and Carcinogens, second edition, Noyes Publications, Park Ridge, N.J., 1985, p. 237.

LIST OF SOURCES
(continued)

16. Ibid., page 327.

17. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, page 3-29.

18. U. S. Environmental Protection Agency, 2,4-Dimethylphenol: Ambient Water Quality Criteria, Washington, D.C., 1980.

19. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, page 3-31.

20. U. S. Environmental Protection Agency, Naphthalene: Health Advisory, Office of Drinking Water, Wawshington, D.C., 1988.

21. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, page 3-30.

22. U. S. Environmental Protection Agency, Phthalate Esters: Ambient Water Quality Criteria, Washington, D.C., 1980.

23. Sittig, M., Handbook of Toxic and Hazardous Chemicals and Carcinogens, second edition, Noyes Publications, Park Ridge, N.J., 1985, page 288.

24. Environmental Research & Technology, Inc., Interim Monitoring Report for Neville Island Site, June 1981, page 3-33.

25. International Agency for Research on Cancer, IARC Monographs on the Carcinogenic Risks of Chemicals to Humans, Lyon, France 15, 273 (1977).

26. U. S. Environmental Protection Agency, 2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T): Health Advisory, Office of Drinking Water, Washington, D.C., 1988.

27. Federal Register. 1985. National Primary Drinking Water Regulations; Synthetic Organic Chemicals, Inorganic Chemicals, and Microorganisms; Final Rule and Proposed Rule. Vol. 50, No. 219. Wednesday, November 13, 1985.

28. (a) U. S. Environmental Protection Agency, Quality Criteria for Water, Office of Water and Hazardous Materials, Washington, D.C., July 1976.
(b) U. S. Environmental Protection Agency, Ambient Water Quality Criteria, Washington, D.C., 1980.

29. International Agency for Research on Cancer, IARC Monographs on the Carcinogenic Risks of Chemicals to Humans, Lyon, France 2, 48 (1973).

LIST OF SOURCES
(continued)

30. U. S. Environmental Protection Agency, Integrated Risk Information System (IRIS), Environmental Criteria and Assessment Office, Cincinnati, Ohio, September 7, 1988.

31. (a) International Agency for Research on Cancer, IARC Monographs on the Carcinogenic Risks of Chemicals to Humans, Lyon, France 1, 17 (1972). (b) ibid., 23, 325 (1980).

32. U. S. Environmental Protection Agency, Cyanides: Ambient Water Quality Criteria, Washington, D.C., 1980.

33. Environmental Research & Technology, Inc., Review of Initial Two Years of Long-Term Groundwater Monitoring Program for the Neville Island Site, April 1985.

34. U. S. Environmental Protection Agency, Toluene: Ambient Water Quality Criteria, Washington, D.C., 1980.

Appendix A

ERT
An ENSR Company
601 GRANT STREET, PORTER BUILDING, 10th FLOOR, PITTSBURGH, PA 15219, (412) 261-2910

environmental and engineering excellence

May 16, 1988

Mr. James R. Shack
Project Officer
Division of Remedial Response
Pennsylvania DER
Bureau of Waste Management
Highland Building
121 South Highland Avenue
Pittsburgh, PA 15206-3988

SUBJECT: NEVILLE ISLAND SITE

Dear Jim:

The enclosed report entitled "Security, Monitoring, Inspection and Maintenance Programs for Neville Island Site" was inadvertently left out of the information sent to you earlier today. My apologies for any inconvenience that this oversight may have caused.

Sincerely yours,

Bob Rittmeyer

Robert W. Rittmeyer, P.E.
Manager
Pittsburgh Operations

RWR/kml

Enclosure

cc: M.J. Laskow
M.A. Ferlin

ERT
An ENSR Company
601 GRANT STREET, PORTER BUILDING, 10th FLOOR, PITTSBURGH, PA 15219, (412) 261-2910

environmental and engineering excellence

May 16, 1988
ERT Project No.: 4920-001-400

Mr. James R. Shack
Project Officer
Division of Remedial Response
Pennsylvania DER
Bureau of Waste Management
Highland Building
121 South Highland Avenue
Pittsburgh, PA 15206-3988

SUBJECT: NEVILLE ISLAND SITE

Dear Jim:

This letter and its attachments are in response to your 15 March and 29 February 1988 letters requesting additional information regarding the Neville Land Company (NLC) site on Neville Island. The items listed in your 15 March 1988 letter are addressed separately below. A copy of the report entitled "Security, Monitoring, Inspection, and Maintenance Programs for Neville Island Site," as requested in your 29 February letter, is enclosed.

Ownership History

The site was farmland until it was acquired by Pittsburgh Coke & Iron Company in the 1920's. On October 19, 1944, Pittsburgh Coke & Iron Company was renamed to Pittsburgh Coke & Chemical Company.

Title to the site was probably held at one time or another by subsidiaries, Green Bag Cement Company and later Neville Island Land Company, which merged into Pittsburgh Coke & Chemical Company on December 10, 1964.

Pittsburgh Coke & Chemical Company continued to own the property until August 14, 1970, when it conveyed the property to a wholly-owned subsidiary, Neville Land Company. At about that time Pittsburgh Coke & Chemical Company, a majority-owned subsidiary of The Hillman Company, became wholly-owned. Pittsburgh Coke & Chemical Company is no longer in existence as a result of a merger. (See Company Relationships, below).

The site was donated to Allegheny County on March 4, 1977. In June, 1980 Allegheny County reconveyed the site to Neville Land Company.

Owner contacts are as follows:

- Neville Land Company
  1900 Grant Building
  Pittsburgh, Pennsylvania 15219
  Contact: Mark J. Laskow (412) 281-2620

  Parent Corporation: Wilmington Securities, Inc.
  1006 Wilmington Trust Center
  Wilmington, Delaware 19801
  Contact: Mark J. Laskow
  (412) 281-2620

- Allegheny County
  Department of Planning and Development
  429 Forbes Avenue
  Pittsburgh, Pennsylvania 15219
  Contact: Director of Department of Planning and Development (412) 355-5960

Generators/Users

- Pittsburgh Coke & Iron Company
  This corporation merged into Pittsburgh Coke & Chemical Company which went through a series of mergers and as a result merged into Wilmington Securities, Inc. whose principle office is located at:

  1006 Wilmington Trust Center
  Rodney Square North
  Wilmington, Delaware 19801
  Contact: Mark J. Laskow (412) 281-2620

- Neville Township
  3rd Street and Grand Avenue
  Pittsburgh, Pennsylvania 15225
  Contact: Supervisor (412) 264-8235

- Pittsburgh Coke & Chemical Company
  This corporation went through a series of mergers and as a result merged into Wilmington Securities, Inc. whose principle office if located at:

1006 Wilmington Trust Center
Rodney Square North
Wilmington, Delaware 19801
Contact: Mark J. Laskow (412) 281-2620
Parent Corporation: The Hillman Company

No formal records exist regarding the types and quantities of wastes disposed at the site. The report entitled "Detailed Description of Neville Island Site" (ERT Document No. P-A616-435, August 1981) presents the best available information regarding this issue. Section 5.1 of this report summarizes the types and estimated quantities of wastes presently found at the site.

Transporters

- Philips Contracting Company
  88 Beaver Grade Road
  Pittsburgh, Pennsylvania 15108
  Contact: Jake Philips (412) 923-1717

  Philips Contracting Company hauled only cinders, foundry sand, brick, etc. from 1936 - 1945. He also hauled and buried domestic garbage for Neville Township.

Operators

The site was operated by Pittsburgh Coke & Iron Company from the 1920's to 1944. Pittsburgh Coke & Iron Company merged into Pittsburgh Coke & Chemical Company who continued to operate the site until the 1950's. During the years that material was disposed of at the site, Pittsburgh Coke & Chemical Company was a publicly owned corporation whose largest stockholder was a corporate predecessor of The Hillman Company. This corporation's successor is now a wholly-owned subsidiary of The Hillman Company, Wilmington Securities, Inc. Its office is located at:

1006 Wilmington Trust Center
Rodney Square North
Wilmington, Delaware 19801
Contact: Mark J. Laskow (412) 281-2620
Parent Corporation: The Hillman Company

NLC, PC&C and Hillman Company Relationship

The Hillman Company owns all of the capital stock of Wilmington Securities, Inc. which is the successor by merger of Pittsburgh Coke & Chemical Company. Neville Land Company is a wholly-owned subsidiary of Wilmington Securities, Inc.

MW-2A Status

Monitoring well MW-2A was installed on property east of the site by Fred C. Hart during their investigations conducted for Allegheny County. This well was found to be damaged beyond repair when ERT conducted its first field sampling effort in August 1980. It was apparently run over by a grass cutter.

Site Permits - Water Supply Effects

No permits have been applied for or received for the site. A Notification of Hazardous Waste Activity was filed in June 1981 to secure an EPA Identification Number for use in manifesting off-site shipments of materials generated during TP-275 excavation (PAT 44-001-3688). NLC subsequently "denotified" in October 1981.

No evidence has been found suggesting that the site has had any effect on any private or public water supply. As discussed in the report entitled "Preliminary Risk Assessment of Neville Island Site" (ERT Document No. P-4616-721, April 1981), contaminated ground water is the most likely pathway for engendering adverse health effects off site. Hydrogeologic evidence, as presented in the report entitled "Interim Monitoring Report for Neville Island Site" (ERT Document No. P-4616-336), suggests that contaminated ground water beneath the site flows radially from the center of the site and enters the Ohio River. Once in the river, volatilization, degradation, and dilution reduce the concentrations of potentially harmful materials to levels below those at which adverse health effects have been demonstrated.

Records Retention

No operational records have been retained. Financial and corporate documents have been retained at the following locations:

- o Generator: Pittsburgh Coke & Chemical Company
  This company has merged out of existence
- o Owner/Operator: Neville Land Company
  1900 Grant Building
  Pittsburgh, Pennsylvania 15219
- o Generator: Neville Township
  3rd Street and Grand Avenue
  Pittsburgh, Pennsylvania 15225
- o Transporter: Philips Contracting Company
  88 Beaver Grade Road
  Pittsburgh, Pennsylvania 15108

Analytical QA/QC Information

Information is enclosed regarding the following samples:

- o Perimeter ground water monitoring wells, April and October, 1987 (Attachments 1 and 2);
- o Selected ground water monitoring wells, April 1981 (Attachment 3);
- o Selected ground water monitoring wells and Outfall 1, January 1980 (Attachment 4);
- o Outfall 2, upstream and downstream samples, August 1980 (Attachment 5); and
- o Selected soil and waste samples, November 1980 (Attachment 6).

The content of each attachment is presented below:

Attachment 1: Perimeter Monitoring Wells, October 1987

- ERT Report submitted to Program Manager
- Data report for volatiles and herbicides from ENSECO (subcontract laboratory)
- ENSECO full data packages, including chromatograms, mass spectra, quality control data, instrument tune and calibration
- Metals data, including laboratory notebook pages, computer printouts, calibration data, quality control data
- ERT laboratory and custody records

Attachment 2: Perimeter Monitoring Wells, May 1987

- ERT Report as submitted to Program Manager
- Herbicide report and raw data from ENSECO (subcontract laboratory) for GC analyses, chromatograms, computer printouts, QC data
- Herbicide report and raw data for GC/MS/SIM analyses from ENSECO, chromatograms, QC data
- Metals analyses raw data, computer printouts, QC data
- Volatile organics analyses, chromatograms, QC data
- ERT laboratory and custody records

Attachment 3: Selected Monitoring Wells, April 1981

- GC/MS analyses for volatiles, acids, base/neutrals, pesticides, and PCB. Full data packages, including data report sheets, chromatograms, computer printouts, mass spectra of all detected priority pollutants, instrument tune and calibration data are provided for a

total of 9 samples. These include two field blanks and a submitted duplicate of MW-4. Data reports for two duplicate analyses of ERT-17S include only the final report sheets; COMPU/CHEM (subcontract laboratory) could not provide the full package within the time frame of our request.

- Copies of Master Logbook pages for samples submitted to the ERT Laboratory
- Summary data sheets for metals, herbicides, water quality parameters
- Raw data and laboratory notebook pages for water quality measurements
- Metals data report with QC data from ERCO (subcontract laboratory)
- Herbicide data sheets
- Herbicide chromatograms

Attachment 4: Selected Monitoring Wells and Outfall 1, January 1981

- GC/MS analyses for volatiles, acids, base/neutrals, pesticides, and PCB. Full copies of data reports with chromatograms, mass spectra of all identified priority pollutants, computer printouts, instrument tune, and calibration data are provided for a total of 6 samples. COMPU/CHEM (subcontract laboratory) could not provide the full data package for 17S within the time frame of our request. The data report included for this sample does contain copies of the reconstructed total ion chromatograms and mass spectra of identified priority pollutants. Sample ERT-21S was not submitted for analysis.
- Copies of the ERT Master Log for samples submitted to the ERT Laboratory

- Data sheets for metals, TOC, cyanide analyses
- Data sheets for herbicide analyses, chromatograms for herbicides

Attachment 5: Outfall 2, Upstream and Downstream Samples, August 1980

- GC/MS analyses for volatile organics, acids, base/neutrals, pesticides, PCB, acrolein, and acrylonitrile. Copies of data report sheets only are included. COMPU/CHEM (subcontract laboratory) could not provide backup data within the required time frame of our request. Analyses were performed following the protocol of EPA Methods 624 and 625. Quality assurance requirements were met or exceeded according to COMPU/CHEM documentation.
- TCDD analyses. Analyses were performed by Monsanto. The laboratory listed on the report no longer provides this service, and its equipment and records were relocated several years ago. Attempts to track through Monsanto were unsuccessful. The report, as submitted to ERT, contains quality control results and method followed.
- ERT Master Log pages for samples submitted to ERT Laboratory
- Results for water quality analyses performed at ERT

Attachment 6: Selected Soil and Waste Samples, November 1980

- ERT Log Book for samples submitted to the ERT Laboratory
- TCDD analytical results and report. Analyses were performed at Battelle. The report includes a full discussion of the method, quality control measures, and results obtained for the samples.
- Herbicide and volatiles summary data sheets

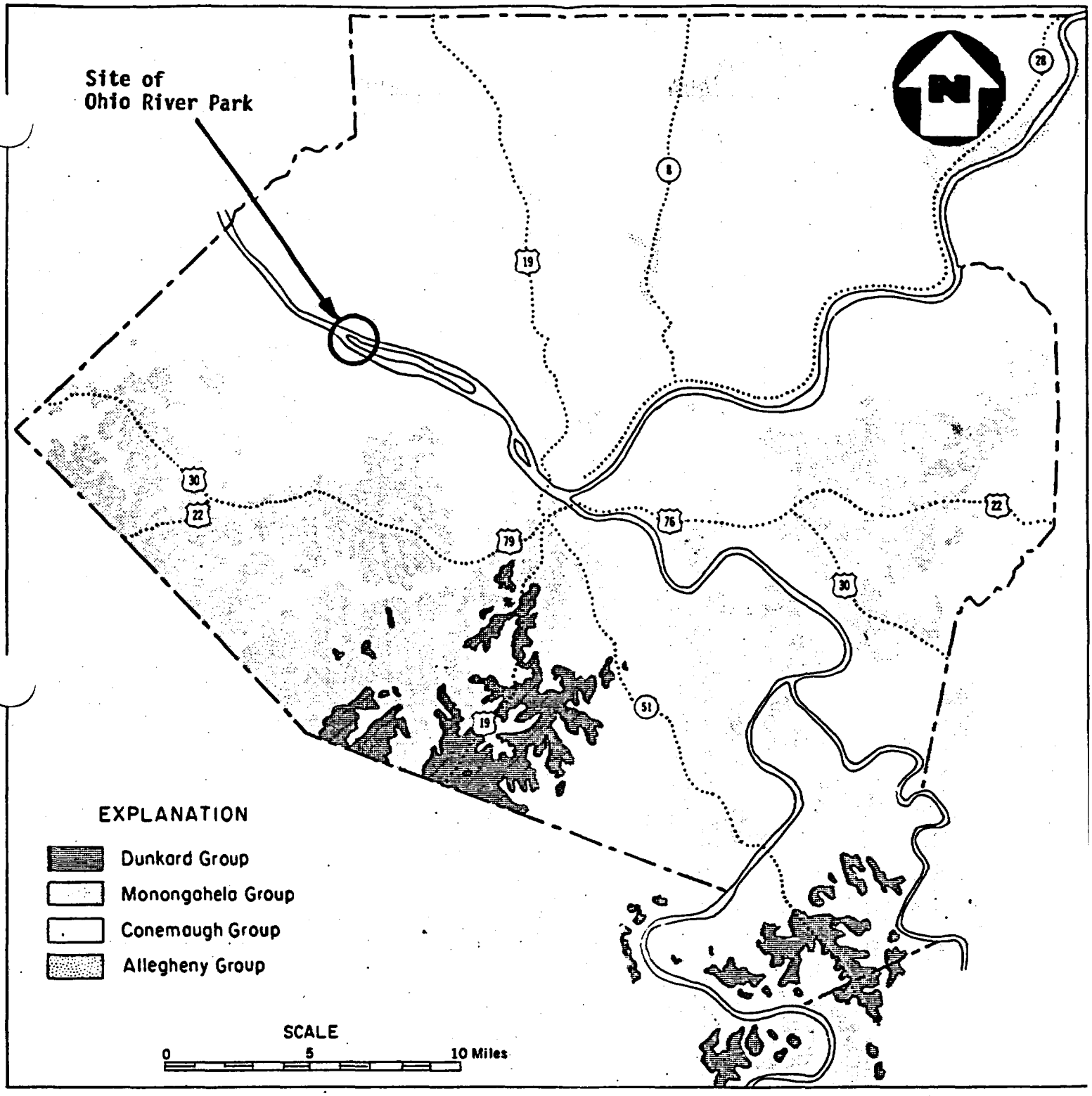


Figure 17 From: Walter R. Wagner Geology of the Pittsburgh Area, General Geology Report G 59 , 1970. Plate No. 1.

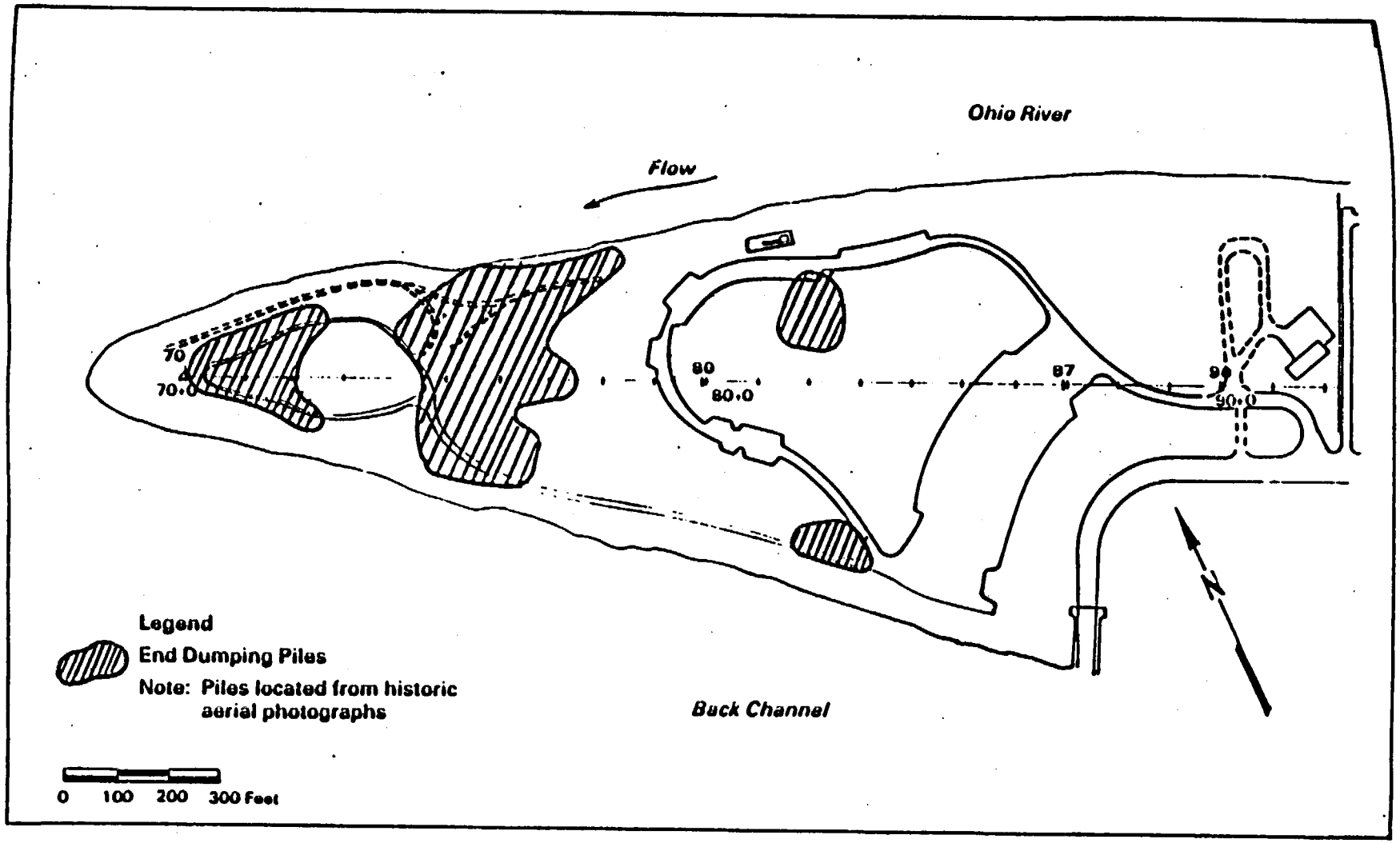


Figure 18 Location of End Dumping Piles

From: ERT, Inc., "Detailed Description of Neville Island Site", August, 1981 p. 3-20

Appendix C

Table 1

ANALYSIS OF GROUNDWATER SAMPLES FROM TEST WELLS: OHIO RIVER PARK

Parameter	Water Quality Criteria	Concentration (ug/l) in Test Well					
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
pH		6.3	7.2	6.8	3.5	6.3	6.9
Carbon Inorganic (C)		43,000	100,000	78,000	75,000	100,000	90,000
Carbon Organic (C)		11,000	20,000	13,000	605,000	80,000	24,000
Phenolic Cpds. (Phenol)		6	27	36	25,600	958	12
Cyanide Total (CN)		3	41	410	24	39	49
Metals[b]							
Arsenic (As)	0(0.02)[c]	6	< 5	16.5	<40	33	14
Cadmium (Cd)	10	<10	<10	<10	70	<10	<10
Chromium Total (Cr)	50[d]	40	30	<20	150	30	<20
Copper (Cu)	1,000	160	<20	160	1,300	480	430
Lead (Pb)	50	80	<50	140	210	410	180
Mercury (Hg)	0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Ni)	133	150	680	100	2,900	260	200
Selenium (Se)	10	< 5	< 5	<5	<40	<5	<5
Silver (Ag)	10	< 20	< 20	<20	60	<20	<20
Antimony (Sb)	145	<100	200	300	900	300	300
Beryllium (Be)	0(0.087)	< 20	<20	<20	120	20	≤20

From: Fred C. Hart Associates, "Assessment of Remedial Options at Ohio River Park", January, 1980, pp.42-46

Table 1, continued

Parameter	Water Quality Criteria (a)	Concentration (ug/l) in Test Well MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
Metals[b] (Con't)							
Thallium (Tl)	4	<100	<100	<100	300	100	100
Zinc (Zn)	5,000	190	250	470	9,400	910	410
Volatile Organics							
Benzene	0(15)	2	2	38	48,000	1,530	3
Chlorobenzene	20[e]	4	6	3	71	5	<1
1,1,1-trichloroethane	15,700	6	-	-	-	-	-
1,1,2,2-tetrachloroethane	0(1.8)	8	-	-	≤2	-	-
Chloroform	0(2.1)	2	1	2	170	-	-
1,3-dichloropropylene-cis	0.63	-	<1	-	-	-	3
Ethylbenzene	1,100	2	5	6	300	25	2
Methylene chloride	2	17	7	9	-	-	-
Dichlorobromomethane		-	-	-	≤3	-	-
Chlorodibromomethane		-	-	-	≤8	-	-
Tetrachloroethylene	0(2.0)	<1	<1	-	-	-	-
Toluene	17,400	13	5	8	6,200	-	5
Trichloroethylene	0(21)	59	<1	<1	37	-	-
Xylene		9	6	7	1,060	11	-

Table 1, continued

Parameter	Water Quality Criteria (a)	Concentration (ug/l) in Test Well MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
Phthalate Esters (cont'd)							
Diethyl phthalate	60,000	NT	2	3	230	360	NT
Bis (2-ethylhexyl) phthalate		NT	9	25	18	28	NT
Butyl benzyl phthalate		NT	<1	1	9	<1	NT
Polychlorinated Biphenyls (PCB)							
PCB-1254 (Aroclor 1254)	0(0.2 ng/l)	NT	-	0.20	-	0.64	
PCB-1248 (Aroclor 1248)	0(0.2 ng/l)	NT	-	0.19	-	0.54	NT
Other Organics							
Bis(2-chloroethyl) ether	0(0.42)	NT	-	-	-	22	NT
Bis(2-chloroethoxy) methane		NT	-	-	20	6	NT
Isophorone	460	NT	-	-	110	<1	NT
1,2-diphenyl hydrazine	0(0.4)	NT	<1	-	-	-	NT

(a) Criteria for protection of human health. For 2,4-D the Maximum Contaminant Level (MCL) specified in the Safe Drinking Water Act is given. All levels are given in ug/l unless otherwise noted.

(b) Analysis performed on filtered samples.

(c) Potential carcinogen. Numbers in parentheses give interim target risk level: concentration estimated to result in additional lifetime cancer risk of 1 in 100,000.

(d) Water Quality Criteria for chromium other than hexavalent. The Water Quality Criteria for hexavalent chromium is 0(8 ng/l for an interim target risk level of 1 in 100,000).

(e) For tainting -- 450 ug/l, toxic.

- Not detected.

NT: Not tested for in sample.

Table 1, continued

Parameter	Water Quality Criteria (a)	Concentration (ug/l) in Test Well					
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
Pesticides (cont'd)							
α- BHC		NT	0.04	0.03	1.8	0.05	NT
β- BHC		NT	0.92	≤0.02	-	-	NT
γ- BHC (lindane)		NT	-	0.04	0.2	0.02	NT
δ- BHC		NT	-	≤0.01	≤0.08	≤0.03	NT
2,4-D	100 (MCL)	NT	< 0.50	3.1	1,140	41	NT
Silvex		NT	1.2	<0.05	<0.05	8.3	NT
2,4,5-T		NT	< 0.50	<0.50	<0.50	1.5	NT
Polycyclic Aromatic Hydrocarbons (PAH) and Other Coal Tar Hydrocarbons							
Acenaphthene	20	NT	-	1	-	-	NT
Acenaphthalene		NT	-	<1	-	-	NT
Anthracene		NT	-	≤1	-	≤1	NT
Fluorene		NT	-	<1	<1	-	NT
Phenanthrene		NT	-	≤1	-	≤1	NT
Naphthalene	143	NT	-	-	690	28	NT
Phthalate Esters							
Di-n-butyl phthalate		NT	2	2	-	3	NT
Di-n-octyl phthalate		NT	<1	7	3	-	NT

Table 1, continued

Parameter	Water Quality Criteria (a)	Concentration (ug/l) in Test Well					
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
Phenols							
Phenol	3,400	NT	-	-	2,300	9	NT
2-chlorophenol	0.3	NT	-	-	41	9	NT
4-chlorophenol	30	NT	-	-	-	94	NT
2,4-dichlorophenol	0.5	NT	6	5	220	29	NT
2,4-dimethylphenol		NT	-	-	270	4	NT
2-nitrophenol		NT	-	-	-	12	NT
4-nitrophenol		NT	-	-	-	27	NT
2,4-dinitrophenol	68.6	NT	-	-	-	5	NT
2,4,6-trichlorophenol	100	NT	-	-	16	15	NT
Parachlorometacresol		NT	14	-	63	1	NT
Pesticides							
Aldrin	0(0.046 ng/l)	NT	-	≤0.01	≤8	≤0.03	NT
Dieldrin	0(0.044 ng/l)	NT	-	<0.01	-	-	NT
4,4'-DDT	0(0.98 ng/l)	NT	0.42	0.02	-	-	NT
4,4'-DDD	0(0.98 ng/l)	NT	-	<0.01	-	-	NT
Endrin aldehyde		NT	0.10	0.07	-	-	NT
Heptachlor	0(0.23 ng/l)	NT	-	≤0.02	-	-	NT
Heptachlor epoxide	0(0.23 ng/l)	NT	-	<0.01	-	-	NT

Table 2

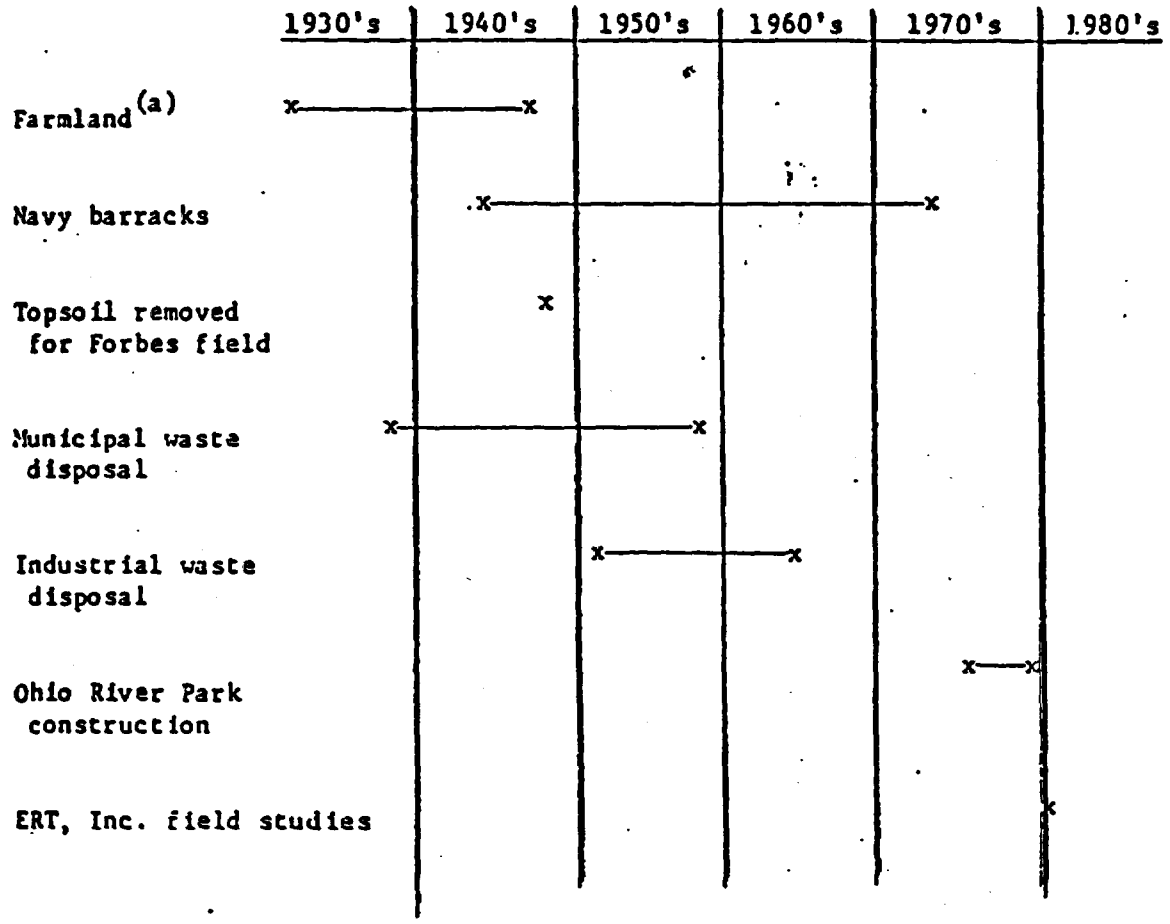
Major Organic Compounds - South-Central Tract

Organic Constituent	Approximate Maximum Concentration (ppb)	General Range (ppb)
Benzene	100,000	1,000 - 50,000
Toluene	30,000	100 - 6,000
Phenol	10,000	1,500 - 4,000
Chlorophenols		
2,4,6-trichloro -	10,000	50 - 150
2,4-dichloro -	8,000	500 - 3,000
2,chloro -	1,000	100 - 400
Napthalene	400	50 - 100
Ethyl benzene	100	20 - 30
Pesticides		
2,4-D	9,000	1 - 1,000
2,4,D-T	250	0.1 - 10
2,4,5-TP (Silvex)	140	0.1 - 10

From: ERT, Inc., "Preliminary Risk Assessment of Neville Island Site", April, 1981, pp 4-40 and 5-6

Table 3

CHRONOLOGICAL SUMMARY OF NLC SITE HISTORY



a) Neville Island was reported as a fertile farmland in 1880 and was free from any industrial development until after World War I.

From: ERT, Inc., "Detailed Description of Neville Island Site", August, 1981, p.3-26

Table 4

PRIORITY POLLUTANT ANALYSIS OF PONDED WATER AND STORM SEWER OUTFALL -- OHIO RIVER PARK

Parameter	CONCENTRATION: (ug/l) Ponded Water (10/26/79)	Ponded Water (12/13/79)	Outfall No. 1 (10/26/79)	Outfall No. 1 (12/13/79)	Outfall No. 2 (12/13/79)
pH	6.8	7.5	11.5	6.6	7.8
Total Cyanide	3	5	<1*	< 1	207
Carbon Organic	50,000	24,000	24,000	7,000	17,000
Metals and Other Inorganics					
Antimony (Sb)	<100	200	<100	<100	300
Beryllium (Be)	< 20	< 20	< 20	< 20	< 20
Arsenic (As)	<5	< 5	5	< 5	< 5
Cadmium (Cd)	<10	< 10	<10	<10	10
Chromium Total (Cr)	< 20	< 30	40	< 30	< 30
Copper (Cu)	50	< 20	40	< 20	< 20
Lead (Pb)	<50	<50	<50	< 50	< 50
Mercury (Hg)	< 0.2	< 0.2	0.7	< 0.2	< 0.2
Nickel (Ni)	20	20	80	< 20	< 20
Selenium (Se)	< 5	< 5	6	< 5	< 5

From: Fred C. Hart Associates, "Assessment of Remedial Options at Ohio River Park", January, 1980, pp.56-59

Table 4, continued

Parameter	CONCENTRATION: (ug/l) Ponded Water (10/26/79)	Ponded Water (12/13/79)	Outfall No. 1 (10/26/79)	Outfall No. 1 (12/13/79)	Outfall No. 2 (12/13/79)
Phenols (continued)					
2,4-dinitrophenol	1	NT	-	NT	NT
2,4-dimethylphenol	-	NT	< 1	NT	NT
Chlorinated Hydrocarbons					
Chloroform	2	2	< 1	4	2
Methylene chloride	12	8	NA	7	5
Polycyclic Aromatic and Other Coal Tar Hydrocarbons					
Anthracene	-	NT	≤1	NT	NT
Fluorene	-	NT	<1	NT	NT
Phenanthrene	-	NT	≤1	NT	NT
Naphthalene	1	NT	19	NT	NT
Phthalate Esters					
Bis (2-ethylhexyl) phthalate	73	NT	29	NT	NT
Di-n-octyl phthalate	8	NT	-	NT	NT

Table 4, continued

Parameter	CONCENTRATION: (ug/l) Ponded Water (10/26/79)	Ponded Water (12/13/79)	Outfall No. 1 (10/26/79)	Outfall No. 1 (12/13/79)	Outfall No. 2 (12/13/79)
Other Organics					
Bis (2-chloroethoxy) methane	6	NT	-	NT	NT
2,6-dinitrotoluene	-	NT	< 1	NT	NT

* Interference (sulfide).

NT: Not detected.

NA: Not available due to methylene chloride contamination of sample bottle.

\- "Not detected".

Table 5. Analytical Data Summary for Desulfurization Wastes

VEMA Samples			
Sample	1	1a	7
Location	1	1	8
Depth	surface	surface	surface
Miscellaneous Analysis			
pH	2	-	2
CN(ppm)	340	-	265
Cu(ppm)	850	-	93
Ni(ppm)	270	-	57
Head Space[a] Analysis			
Benzene	Large	-	Medium
Toluene	Small	-	Small
Xylenes	Small	-	Small
TMB[b]	Trace	-	Trace
Nap[c]	Trace	-	Small
DCB[d]	Trace	-	Trace
Volatile Organics Analysis			
Benzene	-	7	-
Toluene	-	1	-
Xylenes	-	1	-

RCA Samples			
Sample	77121	77123	77124
Location	TP-16	TP-16	TP-16
Depth	0-1.0'	0-4.0'	0-2.5'
Miscellaneous Analysis			
pH	3	7.8	4.4
Chloroform			
Extractables	3.4%	21%	0.5%
Loss on Ignition	18%	19%	15%
Elemental Analysis (ppb)			
SiO_2	18	12	23
Fe(tot)	2	5	4
CaO	16	7.1	14
MgO	3.5	1	1.5
P_2O_5	1	1	4
SO_3	46	23	36
CuO	1	1	1.
Al_2O_3	1.1	5	1.1

ERT Samples			
Sample	-	-	-
Location	A-26		TP-500
Depth	1.8-24'	surface	2-2.5'
Miscellaneous Analysis			
pH	-	1.5	2
CN(ppm)	-	280	200
Ultimate Analysis (%)			
Moisture	-	-	43.4
Ash	-	-	33.4
C	-	-	11.1
H	-	-	0.97
O	-	-	0.0
N	-	-	0.41
S	-	-	10.7
Btu/lb(wet)	-	-	491
Btu/lb(dry)	-	-	875
Pesticide Analysis (ppm)			
2,4-D	9	-	-
2,4,5-T	1	-	-
Silvex	Interference	-	-
Parathion	0.5	-	-
Malathion	1	-	-
Volatile Organics Analysis (ppm)			
Benzene	21	-	-
Toluene	1	-	-
Methylene Chloride	1	-	-
Scanning Electron Microscopy (SEM) Analysis			
	-	-	wood fiber with high S probably as H_2SO_4 or $(NH_4)SO_4$

(a) Defined as the "air" above the sample container.
(b) Trimethylbenzene
(c) Naphthalene
(d) Dichlorobenzene

From: ERT, Inc. "Detailed Description of Neville Island Site", August, 1981, p.4-5

Table 12. Analytical Data for Calcium Carbonates Wastes

NCA Sample | ERT Samples

Sample	772127	B-8	TP-200	TP-200	TP-220	TP-250	TP-250
Location	43						
Depth	30-40'	1.7-2.0'	3.2-3.9'	3.5-5.5'	7.0'	1-3.0'	1.5-2.5'

Miscellaneous Analysis

pH	9.9
Chloroform Extractables	0.34%
Loss of Ignition	41%

Pesticide Analysis (ppm)

2,4-D	0.64	2,4-D	1.0				
2,4,5-T	0.14	2,4,5-T	1.0				
Silvex	0.96	Silvex	1.0				
Parathion	0.13	Parathion	0.5				
Malathion	0.26	Malathion	1.0				

SEM Analysis

Fine Calcium carbonate particles containing some gypsum

Pesticide Analysis (ppm)

2,4-D	1.0	2,4-D	4.8	2,4-D	4.4		
2,4,5-T	1.0	2,4,5-T	1.0	2,4,5-T	1.2		
Silvex	1.0	Silvex	1.0	Silvex	1		
Parathion	0.5	Parathion	0.5	Parathion	0.5		
Malathion	1.0	Malathion	1.2	Malathion	1.0		

Chemical Analysis (%)

SiO_2	9.0
Fe_2O_3	1.0
CaO	45.0
MgO	16.0
P_2O_5	1.6
SO_3	1.0
CuO	1.0

Volatile Organic Analysis

Benzene	6
Toluene	80
Methylene Chloride	1

Volatile Organic Analysis (ppm)

Benzene	700	Benzene	1	Benzene	1
Toluene	10,000	Toluene	2	Toluene	1
$MeCl_2$	15	$MeCl_2$	1	$MeCl_2$	2

SEM Analysis

Fine calcium carbonate particles containing some gypsum

ERT Samples (Continued)

Location	TP-253	TP-275	TP-275	TP-290	TP-290	TP-500	TP-500
Depth	8-10.0'	5.8'	2.5-4.0'	8-8.5'	5.5-7.0'	2-3.0'	2.5-3.0'

Pesticide Analysis (ppm)

2,4-D	5.9	2,4-D	2.6	2,4-D	12.0	2,4-D	4.4				
2,4,5-T	1.0	2,4,5-T	1.0	2,4,5-T	1.6	2,4,5-T	1.1				
Silvex	1.0	Silvex	1.0	Silvex	1.1	Silvex	1.1				
Parathion	0.5	Parathion	0.5	Parathion	0.15	Parathion	0.047				
Malathion	1.1	Malathion	1.0	Malathion	0.31	Malathion	0.11				

SEM Analysis

Fine calcium carbonate particles containing some gypsum

Pesticide Analysis (ppm)

2,4-D	40.0	2,4-D	17.0				
2,4,5-T	2.1	2,4,5-T	1.0				
Silvex	10.1	Silvex	1.0				
Parathion	0.5	Parathion	0.5				
Malathion	1.4	Malathion	1.0				

Volatile Organic Analysis (ppm)

Benzene	1	Benzene	1
Toluene	2	Toluene	2
Methylene Chloride	2	Methylene Chloride	2

SEM Analysis

Mixture of gypsum quartz, and some iron oxide

From: ERT, Inc., "Detailed Description of Neville Island Site", August, 1981, p.4-29

Table 6

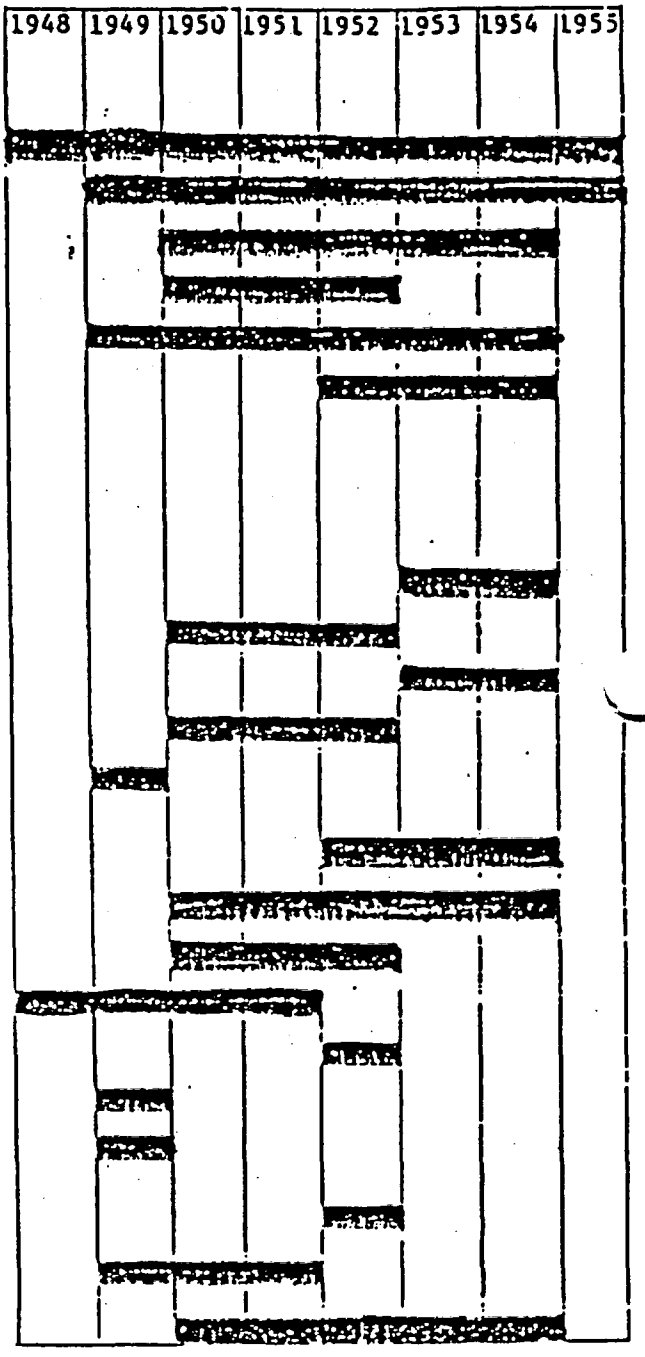
SUMMARY OF AGRICULTURAL CHEMICALS LISTED ON PC&C PRODUCT SLATE, 1948-1955

PESTICIDES MANUFACTURED BY PC&C*:

- 2,4-D Acid, Esters, Amines & Salts
- 2,4,5-T Acid, Esters
- BHC (Benzene hexachloride)
- Metacide
- Parathion
- Systox (Demeton)

PESTICIDES FORMULATED OR RESOLD BY PC&C:

- C-4 Weed Killer (Chlorinated aryl or alkyl carbonate)
- Aldrin
- ANTU (Alpha naphthyl thiourea)
- Chlordane
- Chlorosol A
- Cotton sprays & Dusts (BHC derivatives including lindane)
- DDT
- Dieldrin
- DNOC (Dinitro ortho-cresol)
- Fungicides
- Iminol A
- Iminol B
- Seed Disinfectants (Hydroquinone derivatives)
- Sodium Arsenite
- Toxaphene



* Available evidence suggests that only these pesticides were actually produced by PC&C. Other chemicals were formulated or resold.

From: ERT, Inc. Detailed Description of the Neville Island Site,

Table 7. Summary of Analytical Data for Coal Coking Sludges

Sample	J	II	IIa	I3	I7	23	23
Location	2	II	II	I7	I2	19	19
Depth	0.0'	2.0'	2.0'	2-4.0'	3-4.0'	1.0'	1.0'
Miscellaneous Analysis							
pH	6	pH 2 Phenol 25 ppm	pH 6	pH 6			
Head Space[a] Analysis							
Benzene	Trace	Benzene	Saturated	Benzene	Saturated	Benzene	Saturated
Toluene	Trace	Toluene	Saturated	Toluene	Saturated	Toluene	Large
Xylenes	Trace	Xylenes	Large	Xylenes	160 ppm	Xylenes	Large
TMB[b]	Trace	TMB	Large	TMB	Medium	TMB	Small
Nap.[c]	Small	Nap.	Medium				
Indane	Small	Indane	Small				
Methylene Chloride Extraction							
Fluorine		Toluene					
Phenanthrene							
Naphthalene							
Fluoranthene							
Pyrene							
Chrysene							
Acenaphthene							
Head Space Analysis							
Benzene	Saturated	Benzene	Saturated	Benzene	Saturated		
Toluene	Medium	Toluene	Saturated	Toluene	Saturated		
Xylenes	Large	Xylenes	Saturated	Xylenes	400 ppb		
TMB	Small	TMB	Large	TMB	Medium		
Nap.	Trace	Nap.	Saturated				
		Indane	Medium				
		DBC	Small				
		TM Nap[c]	Small				
Methylene Chloride Extraction in Soil		Methylene Chloride Extraction in Soil					
No organics detected		Fluorine Phenanthrene Anthracene					

ERT Samples

Location	B-8	B-8	B-28	B-28	B-31	TP-300	TP-303	TP-810	TP-858
Depth	5-6.3'	6.3-6.7'	10.5-11.5'	9.0-9.3'	6.0-8.0'	11.5'	6.0'	5.5-6.5'	8.0'
Pesticide Analysis (ppm)								**SEM Analysis**	
2,4-D	1.0	2,4-D 65.0	2,4-D 31.0		2,4-D 13.0	2,4-D 0.48	2,4-D 1.3	A carbonous ash containing coal dust and fuldspar.	Plastic solids. Looks like broken and burned plastic pieces.
2,4,5-T	0.88	2,4,5-T <1.0	2,4,5-T <1.0		2,4,5-T <1.0	2,4,5-T <0.07	2,4,5-T 0.76		
Silvex	0.88	Silvex <1.0	Silvex <1.0		Silvex <1.0	Silvex <0.085	Silvex <0.06		
Parathion	17.0	Parathion <0.5	Parathion <0.84		Parathion <0.5	Parathion 1.6	Parathion <0.18		
Malathion	1[d]	Malathion <1.0	Malathion <2.6		Malathion <1.0	Malathion <0.097	Malathion <0.06		
				Volatile Organic Analysis (ppm)				**Ultimate Analysis (%)**	
				Benzene 1000	**Volatile Organic Analysis**			Moisture 32.6	Moisture 21.0
				Toluene 2400	Benzene 6.0			Ash 67.7	Ash 8.3
				Methylene Chloride <7	Toluene 12.0			C 21.5	C 57.6
					Methylene chloride <1.0			H 1.85	H 5.2
								O 2.6	O 0.0
								N 0.14	N 5.3
								S 6.2	S 1.4
								Cl 0.02	Cl 9.7

From: ERT, Inc., "Detailed Description of Neville Island Site", August, 1981, p.4-9

Table 7, continued

RCA Samples

Sample	77124	77124	77125
Location	TP-3	TP-3	TP-19
Depth	3.0-7.5'	0.0-4.0'	4.0-9.0'

Miscellaneous Analysis

pH	4.5	pH	3.3	pH	2.8
Chloroform Extractables	1%	Chloroform Extractables	27%	Chloroform Extractables	20%
Loss on Ignition	15%	Loss on Ignition	82%	Loss on Ignition	32%

Chemical Analysis (ppm)

SiO_2	39	SiO_2	14	SiO_2	23
Fe_2O_3	4	Fe_2O_3	3	Fe_2O_3	1
CaO	3.4	CuO	<1	CaO	16
MgO	<1	MgO	<1	MgO	1
P_2O_5	<1	P_2O_5	<1	P_2O_5	<1
SO_3	9.0	SO_3	48	SO_3	<10
CuO	<1	CuO	<1	CuO	<1
Al_2O_3	7.7	Al_2O_3	3.5	Al_2O_3	1.5

a) Defined as the "air" space above the sample in the sample container.
b) Trimethyl Benzene.
c) Naphthalene.
d) Dichlorobenzene.
e) Trimethyl Naphthalene.
f) This material could not be handled by laboratory equipment.
g) Interference

ERT Sample TP-858
Ultimate Analysis (%) (CONT)

BTU/lb(wet)	2200	BTU/lb(wet)	10800
BTU/lb(dry)	3300	BTU/lb(dry)	(f)

EP Toxic Extraction Test (ppm)

Solution:		Solution:	
Benzene	100	Benzene	140
Toluene	5	Toluene	36
Xylenes	<1	Xylenes	96
Solid:		Solid:	
Benzene	2000	Benzene	140
Toluene	100	Toluene	36
Xylenes	<20	Xylenes	96

From: ERT, Inc., "Detailed Description of Neville Island Site", August, 1981, p.4-10

TABLE 8

SUMMARY OF ANALYTICAL DATA FOR FOUNDRY SAND

	RGA Sample	ERT Sample
Location [a]	TP-32	B-5
Depth	0-4.0'	15-16'

Miscellaneoue Analysis

pH	9.1
Chloroform Extractables	0.46%
Loss on Ignition	51%

Pesticide Analysis (ppm)

2,4-D	12
2,4,5-T	0.12
Silvex	<0.08
Parathion	<0.12
Malathion	<0.71

Elemental Analysis (%)

SiO_2	55
Fe_2O_3	6
CaO	<1
MgO	<1
P_2O_5	<1
SO_3	<1
Al_2O_3	9

From ERT, Inc., "Detailed Description of Neville Island Site", August, 1981, 4-13

Table 9. Analytical Data Summary of Dry Ash

ERT Samples[a]

Location	B-5	B-5	B-30
Depth	3.5-3.4'	5-10.0'	3.9-5.6'
Volatile Organic Analysis (ppm)			**Volatile Organic Analysis[b]**
Benzene	3000	Benzene 47	Benzene 34/680
Toluene	6000	Toluene 120	Toluene 4/80
Methylene Chloride	<6	Methylene Chloride <6	Xylenes <0.07/1
Pesticide Analysis (ppm)			**Ultimate Analysis (%)**
2,4-D	5.2	2,4-D <1	Moisture Content 41
2,4,5-T	<1	2,4,5-T <1	Ash 16
Silvex	<1	Silvex <1	C 54
Parathion	<0.5	Parathion <0.5	H 4.7
Malathion	<1	Malathion <1	O 13.5
			N 0.21
			S 11
			Cl 0
			BTU/lb (wet) 6300
			BTU/lb (dry) 10700
			SEM Analysis
			clinker material, coal impurities, sulfur crystals, aluminum and silica present

(a) Only ERT sampled dry ash.
(b) The first number is the result from HPLC analysis of EP extract (µg/ml). The second number is a calculated concentration for the solid (µg/g).

From: ERT, Inc., "Detailed Description of Neville Island Site", August, 1981, p.4-16

Table 10. Analytic Data Summary of Industrial Slag

FENA Samples

Sample	12	15
Location	6	12
Depth	0.0	1.5'

Miscellaneous Analysis

pH	8	pH	10+
Loss on Ignition	18%	Loss on Ignition	10%

X-Ray Spectrography (%)

P_2O_5	1-10
SO_3	1-10
Cl	<1

Emission Spectrography (%)

SiO_3	>10
Fe_2O_3	1-10
CaO	1-10
MgO	>10
CuO	<1
Al_2O_3	>10
Na_2O	ND
NiO	ND
ZnO	ND
Cr_2O_3	<1
PbO	ND
SnO_2	<1
MoO_2	ND
V_2O_5	<1
TiO_2	1-10
CoO	ND
CdO	ND
Sb_2O_3	ND
BaO	ND
MnO_2	1-10

Chemical Analysis (ppm)

CN	0.45
Cu, total	9.0
Mn	187

X-Ray Spectrography (%)

P_2O_5	1-10
SO_3	1-10
Cl	<1

Emission Spectography (%)

SiO_3	>10
Fe_2O_3	ND
CaO	1-10
MgO	>10
CuO	<1
Al_2O_3	>10
Na_2O	ND
MnO_2	1-10
NiO	ND
ZnO	ND
Cr_2O_3	ND
PbO	ND
SnO_2	<1
MoO_2	ND
V_2O_5	<1
TiO_2	1-10
CoO	ND
CdO	ND
Sb_2O_3	ND
BaO	ND

ERT Samples

Sample	-	-	-	-
Location	B-2%	B-29	TP-800	TP-800
Depth	0.5-0.6'	4.5-5.5'	2.5-3.5'	1.5-2.5'

Pesticide Analysis (ppm)

2,4-D	0.3	2,4-D	1.3	2,4-D	0.31
2,4,5-T	0.08	2,4,5-T	<0.12	2,4,5-T	<0.099
Silvex	0.098	Silvex	<0.12	Silvex	<0.099
Parathion	0.15	Parathion	<0.16	Parathion	<0.13
Malathion	0.31	Malathion	<0.13	Malathion	<0.28

Ultimate Analysis (%)

Moisture	26.1
Ash	77.1
C	24.6
H	1.9
O	0.0
N	0.16
S	1.0
Cl	0.01
BTU/lb (wet)	1850
BTU/lb (dry)	2510

SEM Analysis

High temperature residue rich in calcium and silica, forming a brittle composite containing iron, sulfur, and aluminum

Volatile Organic Analysis (ppm)

Benzene	70
Toluene	<2
Methylene Chloride	<2

ND - Not detectable

From: ERT, Inc., "Detailed Description of Neville Island Site", August, 1981, p.4-18

TABLE 11

SUMMARY OF ANALYTICAL DATA FOR LEACHATE SAMPLES

FCHA SAMPLES

Metals and Pesticides	Concentration (ppm)	
Sample	20	25
Location	13	7
Depth	4'	3.5'
Arsenic (As)	0.075	<0.1
Cadmium (Cd)	<0.01	<0.01
Chromium, total (Cr)	<0.02	0.04
Copper (Cu)	3.2	0.23
Cyanide, free (CN)	-	Present
Cyanide, total (CN)	0.015	1.32
Lead (Pb)	0.19	0.23
Manganese (Mn)	4.8	16
Mercury (Mg)	1200	2.6
Nickel (Ni)1	0.05	0.16
pH	7	7
Phenolic Compounds	2.6	36.5
Selenium (Se)	<0.02	<0.1
Silver (Ag)	<0.02	<0.02
Zinc (Zn)	0.26	0.35
Antimony (Sb)	<0.1	0.4
Beryllium (Be)	<0.02	<0.02
Thallium (Tl)	<0.1	0.19
Parathion	4.5	0.039
2,4-D	-	48
2,4,5-T	-	1.2
Silvex	-	0.05

Organic Parameters	Concentration (ppb)	
Acenaphthene	-	54
Benzene	420	5100
Carbon tetrachloride	4	2
Chlorobenzene	8	8
1,1,2,2-tetrachloroethane	6	5
2,4,6-trichlorophenol	-	2400
Parachlorometa cresol	<2	-
Chloroform	200	90
2-chlorophenol	-	800
2,4-dichlorophenol	23	15000
1,2-dichloropropylene, cis	240	-
Ethylbenzene	2	43
Fluoranthene	-	150
Methylene chloride	115	210
4-nitrophenol	[illegible]	

SUPPORT DOCUMENTATION FOR THE REVIEW OF ORGANIC ANALYSIS LAB DATA PACKAGE

CASE: Ohio River Park (January 1981)

APPLICABLE SAMPLE NO's.: 8074, 8040, 8054, 8058, 8059, 8086, 10237, 10240, 10239, 10268, 10269, 10295, 10296, 10307, 10308, 10309, 10179, 10181, 10182, 10184, 10185, 10186, 10206, 10207, 10208, 10209, 10224, 10225, 10226, 10227, 10228, 10229, 10187, and 10273.

TYPE OF ANALYSIS: Volatile, BNA, Herbicide

CONTRACT LABORATORY: ERT (Subcontractor CompuChem)

REVIEWER: Sam Fang

REVIEW DATE: 11-15-88

THE FOLLOWING TABLE INDICATES AREAS WHICH WERE EXAMINED IN DETAIL, THE IDENTIFIED PROBLEM AREAS, AND SUPPORT DOCUMENTATION ATTACHMENTS:	AREAS EXAMINED IN DETAIL — Check if yes or footnote letter for comments below				PROBLEM AREAS IDENTIFIED — Check if yes or footnote number for comments below				SUPPORT DOCUMENTATION ATTACHMENTS — Check if yes or identify Attachment No.			
	Volatile	Acid	B/N	Herbicide	Volatile	Acid	B/N	Herbicide	Volatile	Acid	B/N	Herbicide
HOLDING TIMES	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
BLANK ANALYSIS RESULTS: TARGET COMPOUNDS	✓	✓	✓	✓								
BLANK ANALYSIS RESULTS: TENTATIVE IDs.												
SURROGATE SPIKE RESULTS	✓	✓	✓	(1)	✓	✓	✓	(1)	✓	✓	✓	
MATRIX SPIKE RESULTS	(1)	(1)	(1)	✓	(1)	(1)	(1)	✓				✓
DUPLICATE ANLAYSIS RESULTS	(1)	(1)	(1)	✓	(1)	(1)	(1)	✓				✓
TARGET COMPOUND MATCHING QUALITY	✓	(2)	✓	✓					✓		✓	
TENTATIVELY IDENTIFIED COMPOUNDS	✓	✓	✓						✓			
DFTPP & BFB SPECTRUM TUNE RESULTS	✓	✓	✓	(4)	✓	✓	✓		✓	✓	✓	
GC INSTRUMENT PERFORMANCE	✓	✓	✓	✓								
INITIAL CALIBRATIONS	(2)	(2)	(2)	✓				✓				
CONTINUING CALIBRATIONS	✓	✓	✓	✓	✓		✓					
QUANTITATION OF RESULTS	✓	✓	✓	✓								
OTHERS (Compound Confirmation)				(3)				(3)				

COMMENTS: (1) Did not analyze. (2) Not available for evaluation. (3) No confirmation analysis (4) Not applicable.

SAMPLE DATA SUMMARY
TARGET COMPOUNDS

☑ ORGANIC ☐ INORGANIC

SITE NAME Ohio River Park

DATE OF SAMPLE January 1981

Sample Number	Sample Description and Location	Phase	Units	COMPOUNDS DETECTED: Benzene	Toluene	Ethylbenzene	Phenol	2-Chlorophenol	2,4-Dichlorophenol	Naphthalene	2,4,6-Trichlorophenol	bis(2-Ethylhexyl) phthalate					REMARKS
8074	ERT-1	Water	µg/L		15R												
8040	ERT-17S	Water	µg/L	>10000 D	1300 D	32 D	1700 D	440 D	500 D	180 D	160 D	10 D					
8054	ERT-18S	Water	µg/L	67000 R	9000 R	93 R	3900 R	140 R	8000 R	410 J	83 R						
8060	ERT-20S	Water	µg/L	>10000 J	14 J		>10000 R	>1000 R	1100 R		>10000 R	20 J					
8059	MW-4	Water	µg/L	100000 R	5800 R	32 R	2500 R	71 R	920 R	90 J	47 R						
8086	OUTFALL #1	Water	µg/L						63 R		37 R						
	Blank (field) #1	Water	µg/L														None detected
	Blank (field) #2	Water	µg/L														None detected

Note: For a [illegible] of this data and non-target, tentatively identified compou[illegible] please see the Analytical Quality Assurance section of this report.

BR-00772

2

SAMPLE DATA SUMMARY
~~TARGET COMPOUNDS~~
Herbicides

☑ ORGANIC Herbicides ☐ INORGANIC

SITE NAME Ohio River Park (January 1981)

DATE OF SAMPLE 1/13/81 – 1/28/81

Sample Number	Sample Description and Location	Phase	Units	COMPOUNDS DETECTED: 2,4-D	Silvex (2,4,5-TP)	2,4,5-T											REMARKS
10237	MW-5	Water	µg/L		4.8 N												
10240	ERT-20D	Water	µg/L	9.3 N	1.3 N	1.3 N											
10241	ERT-20D Duplicate	Water	µg/L	1.1 N	0.53 N	0.14 N											
10239	ERT-20M	Water	µg/L		0.25 N	0.16 N											
10268	ERT-12D	Water	µg/L	1.5 N													
10269	MW-2	Water	µg/L		0.8 N												
10295	ERT-6D	Water	µg/L	2.4 N	0.27 N	0.13 N											
10296	ERT-7	Water	µg/L		0.22 N												
10307	OUTFALL #1	Water	µg/L	2000 N		114 N											
10308	OUTFALL #1 Duplicate	Water	µg/L	2500 N		62 N											
10309	ERT-3S	Water	µg/L	21 6 N		11 N											
10179	ERT-8S	Water	µg/L	1.6 N		0.22 N											
10181	ERT-9S	Water	µg/L	3.2 N													
10182	ERT-9D	Water	µg/L	1.5 N	0.2 N												
10184	ERT-17S	Water	µg/L	2300 N		95 N											
10185	ERT-17M	Water	µg/L	3.9 N	1.0 N	0.78 N											
10186	ERT-17D	Water	µg/L	2.9 N	1.5 N												
10206	ERT-16D	Water	µg/L	<1.0 R													
10207	ERT-16D Duplicate	Water	µg/L	2.7 R													
10208	ERT-19M	Water	µg/L	1.4 N	0.71 N												
10209	ERT-19D	Water	µg/L		0.67 N												
10224	MW-4	Water	µg/L	1300 N	1.43 N	266 N											
10225	ERT-14S	Water	µg/L	8.8 N		0.29 N											
10226	ERT-18S	Water	µg/L	9200 N		49 N											

Note: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

SAMPLE DATA SUMMARY
~~TARGET COMPOUNDS~~
Herbicides (Continued)

☑ ORGANIC Herbicides ☐ INORGANIC

SITE NAME Ohio River Park (January 1981)

DATE OF SAMPLE 1/13/81 - 1/28/81

Sample Number	Sample Description and Location	Phase	Units	COMPOUNDS DETECTED: 2,4-D	Silvex (2,4,5-TP)	2,4,5-T											REMARKS
10227	ERT-18M	Water	µg/L	1000N		0.91N											
10228	ERT-18D	Water	µg/L	34N	0.50N	0.16N											
10229	ERT-19S	Water	µg/L		0.42N												

AR100374

Note: For a[illegible]w of this data and non-target, tentatively identified compo[illegible] please see the Analytical Quality Assurance section of th[illegible]eport.

4

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No. Ohio River Park Jan 1981 Contract Laboratory ERT (Subcontract Lab - CompuChem) Contract No. _____

		VOLATILE			SEMI-VOLATILE								PESTICIDE
	SMO TRAFFIC NO.	TOLUENE-D8 (88-110)	BFB (86-115)	1,2 DICHLOROETHANE-D4 (76-114)	NITROBENZENE-D5 (35-114)	2-FLUOROBIPHENYL (43-116)	TERPHENYL-D14 (33-141)			PHENOL-D6 (10-94)	2-FLUOROPHENOL (21-100)	2,4,6 TRIBROMOPHENOL (10-123)	DIBUTYLCHLORENDATE** (24-154)
ERT-10S	8060/3662	111 *			84	88				29.9	59.8		
ERT-1	8074/3873	114 *			39.7	46.2				7.4 *	13.5 *		
ERT-18S	8084/3634	108			0 *	43.8				26.6	25.5		
MW-4	8059/3655	106/102			0 *	49.9				16.2	52 *		
DUMFULL.1	8086/3836	88			0 *	41.3				28.3	41.5		

* VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

** ADVISORY LIMITS ONLY

Volatiles: 2 out of 6 ; outside of QC limits

Semi-Volatiles: 6 out of 20 ; outside of QC limits

Pesticides: 0 out of 0 ; outside of QC limits

Comments: _____

1/21/81 + 1/22/81 HERBICIDE RECOVERY

HERBICIDE SPIKE LEVELS

1.0 ug/l level	500ml H_2O Aliquot = 0.50ug recovery	+ 5ml BENZENE final vol =	EXPECT 0.10ug/ml
10.0ug/l	5.0 ug		1.0 ug/ml
50.0ug/l	25.0ug		5.0ug/ml
0.0 BLANK	500ml water		

COMPARE RECOVERY SOLN. to STANDARD SOLN MADE to EXPECTED LEVELS

				$\bar{x}$ AREA			
STD 0.10ug/ml	2,4-D	0.3411	0.3371	0.3391			
	Silvex	1.4816	1.5621	1.5219			
	2,4,5-T	1.3939	1.4604	1.4272			
							RPD
1.0ug/l REC A	D	0.5342	157% *	REC B	0.4037	119% *	27% *
	S	1.5020	98.8%		1.2296	80.8%	20.0% *
	T	1.4219	100% *		0.9818	68.7%	37.1% *
						$\bar{x}$	
STD 1.0ug/ml	D	2.7673	2.9500		2.7889	2.9553	2.7404
	S	13.0341	14.1036		12.9043	11.5776	12.8974
	T	12.1971	13.1500		12.3859	10.9318	12.1062
							RPD
2,4-D 10ug/l REC A		1.5335	56.0% *	REC B	2.2525	82.2%	37.7% *
Silvex		13.4547	104% *		13.5347	104.9% *	0.8%
2,4,5-T		7.5328	62.2% *		11.2953	92.8%	39.5% *
						$\bar{x}$	
STD 5.0ug/ml		11.4054	11.0176		11.2115		
		50.2451	48.2176		49.2313		
		50.8364	48.6579		49.7472		
							RPD
2,4-D 50ug/l A		8.5036	75.8%	5.9145	52.7% *		36.0% *
Silvex		42.0003	87.3%	35.0348	71.1% *		22.2% *
2,4,5-T		38.6432	77.1%	28.6796	57.7% *		29.5% *

QC Limits	Recovery	RPD
2,4-D	63 - 87	4%
Silvex	73 - 103	5%
2,4,5-T		6%

* Values are outside QC limits.

GC/MS TUNING AND MASS CALIBRATION
Decafluorotriphenylphosphine (DFTPP)

Case No. Ohio River Park Contractor ERT (Subcontractor CompuChem) Contract No. _____

Instrument ID 4 Date 1/23/81 Time 8:09

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	55.13
68	less than 2.0% of mass 69	0.67 (1.36)[1]
69	mass 69 relative abundance	49.10
70	less than 2.0% of mass 69	0 (0)[1]
127	40.0 - 60.0% of mass 198	41.45
197	less than 1.0% of mass 198	0
198	base peak, 100% relative abundance	100
199	5.0 - 9.0% of mass 198	5.68
275	10.0 - 30.0% of mass 198	20.83
365	greater than 1.00% of mass 198	1.97
441	present, but less than mass 443	8.67
442	greater than 40.0% of mass 198	66.61
443	17.0 - 23.0% of mass 442	12.24 (18.38)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1]Value in parenthesis is % mass 69.
[2]Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS	
ERT-185	8054 / 13654	1/23/81	12:48	B/N
MW-4	8059 / 13655	1/23/81	14:03	B/N

GC/MS TUNING AND MASS CALIBRATION
Decafluorotriphenylphosphine (DFTPP)

ORIGINAL

Case No. Ohio River Park Contractor ERT (Subcontractor Compuchem) Contract No. _____

Instrument ID 4 Date 1/27/81 Time 19:05

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	61.61 meets extended criteria
68	less than 2.0% of mass 69	0.19 (0.3)[1]
69	mass 69 relative abundance	56.58
70	less than 2.0% of mass 69	0 (0)[1]
127	40.0 - 60.0% of mass 198	44.79
197	less than 1.0% of mass 198	0
198	base peak, 100% relative abundance	100
199	5.0 - 9.0% of mass 198	6.69
275	10.0 - 30.0% of mass 198	20.38
365	greater than 1.00% of mass 198	1.35
441	present, but less than mass 443	6.44
442	greater than 40.0% of mass 198	50.71
443	17.0 - 23.0% of mass 442	10.35 (20.4)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1]Value in parenthesis is % mass 69.
[2]Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS	
ERT-205	8060 / 3662	1/28/81	2:54	B/N

GC/MS TUNING AND MASS CALIBRATION
Decafluorotriphenylphosphine (DFTPP)

Case No. Ohio River Park Contractor ERT (Subcontractor Compuchem) Contract No. _____

Instrument ID 5 Date 1/29/81 Time 12:39

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	57.89
68	less than 2.0% of mass 69	0 (0)[1]
69	mass 69 relative abundance	67.64
70	less than 2.0% of mass 69	0 (0)[1]
127	40.0 - 60.0% of mass 198	43.24
197	less than 1.0% of mass 198	0
198	base peak, 100% relative abundance	100
199	5.0 - 9.0% of mass 198	5.89
275	10.0 - 30.0% of mass 198	16.36
365	greater than 1.00% of mass 198	0.74 *
441	present, but less than mass 443	8.53
442	greater than 40.0% of mass 198	63.73
443	17.0 - 23.0% of mass 442	11.66 (18.3)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS. * fail

[1]Value in parenthesis is % mass 69.
[2]Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS	
ERT-185	8054/3654	1/29/81	15:53	Acid
MIX-4	8059/3655	1/29/81	16:34	Acid

GC/MS TUNING AND MASS CALIBRATION
Decafluorotriphenylphosphine (DFTPP)

Case No. Ohio River Park Contractor ERT (Subcontractor CompuChem) Contract No. _____

Instrument ID 5 Date 2/4/81 Time 16:19

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	75.05 *
68	less than 2.0% of mass 69	1.67 (2.08)[1] *
69	mass 69 relative abundance	80.25
70	less than 2.0% of mass 69	0 (0)[1]
127	40.0 - 60.0% of mass 198	50.88
197	less than 1.0% of mass 198	0
198	base peak, 100% relative abundance	100
199	5.0 - 9.0% of mass 198	5.61
275	10.0 - 30.0% of mass 198	15.67
365	greater than 1.00% of mass 198	1.32
441	present, but less than mass 443	5.95
442	greater than 40.0% of mass 198	49.69
443	17.0 - 23.0% of mass 442	8.37 (16.84)[2] *

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS. * fail

[1]Value in parenthesis is % mass 69.
[2]Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS	
OUTFALL #1	8086 / 3826	2/4/81	21:40	Acid

GC/MS TUNING AND MASS CALIBRATION
Decafluorotriphenylphosphine (DFTPP)

ORIGINAL (1995)

Case No. Ohio River Park Contractor ERT (Subcontractor to CompuChem) Contract No. _____

Instrument ID 5 Date 2/11/81 Time 18:23

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	34.04 *
68	less than 2.0% of mass 69	0 (0)[1]
69	mass 69 relative abundance	78.01
70	less than 2.0% of mass 69	0 (0)[1]
127	40.0 - 60.0% of mass 198	5043
197	less than 1.0% of mass 198	3.14 *
198	base peak, 100% relative abundance	100
199	5.0 - 9.0% of mass 198	5.62
275	10.0 - 30.0% of mass 198	14.49
365	greater than 1.00% of mass 198	0 *
441	present, but less than mass 443	6.04
442	greater than 40.0% of mass 198	47.27
443	17.0 - 23.0% of mass 442	7.61 * (16.1)[2] *

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS. * fail

[1] Value in parenthesis is % mass 69.
[2] Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
ERT-205	8060/3662	2/11/81	20:50

Acid

7/86 Form V

ORIGINAL

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

Case No. Ohio River Park Contractor ERT (Subcontractor CompuChem) Contract No. _____

Instrument ID 2 Date 1/22/81 Time 16:30

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE	
50	15.0 - 40.0% of the base peak	26.40	
75	30.0 - 60.0% of the base peak	50.49	
95	Base peak, 100% relative abundance	100	
96	5.0 - 9.0% of the base peak	5.91	
173	Less than 1.0% of the base peak	0	
174	Greater than 50.0% of the base peak	81.97	
175	5.0 - 9.0% of mass 174	4.36	(5.32)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	81.57	(99.5)[1]
177	5.0 - 9.0% of mass 176	4.07	(4.99)[2] *

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS. * fail

[1]Value in parenthesis is % mass 174.
[2]Value in parenthesis is % mass 176.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
ERT-185	8054 / 3654	1/22/81	21:05

VOA

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

ORIGINAL (FORM)

Case No. Ohio River Park Contractor ERT (Subcontractor Compu Chem) Contract No. _____

Instrument ID 2 Date 1/3-/81 Time 1:40

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE	
50	15.0 - 40.0% of the base peak	29.35	
75	30.0 - 60.0% of the base peak	51.90	
95	Base peak, 100% relative abundance	100	
96	5.0 - 9.0% of the base peak	7.70	
173	Less than 1.0% of the base peak	0	
174	Greater than 50.0% of the base peak	74.67	
175	5.0 - 9.0% of mass 174	4.58	(6.13)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	73.33	(98.21)[1]
177	5.0 - 9.0% of mass 176	4.24	(5.78)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1]Value in parenthesis is % mass 174.
[2]Value in parenthesis is % mass 176.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS	
ERT-205	8060 13662	1/3-181	5:36	VOA

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

ORIGINAL

Case No. Ohio River Park Contractor ERT Subcontractor - CompuChem Contract No. _____

Instrument ID 9 Date 1/22/81 Time 22:20

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	21.65
75	30.0 - 60.0% of the base peak	39.89
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of the base peak	5.04
173	Less than 1.0% of the base peak	0
174	Greater than 50.0% of the base peak	65.19
175	5.0 - 9.0% of mass 174	3.42 (5.25)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	61.72 (94.68)[1] *
177	5.0 - 9.0% of mass 176	3.12 (5.06)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS. * fail

[1]Value in parenthesis is % mass 174.
[2]Value in parenthesis is % mass 176.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
MW-4	5059 / 3655	1/23/81	2:08 / 3:58

VOA

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

ORIGINAL (Red)

Case No. Ohio River Park Contractor ERT (Subcontractor Compuchem) Contract No. _____

Instrument ID 10 Date 2/10/81 Time 1:13

Lab ID _____ Data Release Authorized By: _____

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	19.52
75	30.0 - 60.0% of the base peak	41.46
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of the base peak	5.59
173	Less than 1.0% of the base peak	0
174	Greater than 50.0% of the base peak	90.19
175	5.0 - 9.0% of mass 174	4.60 (5.10) [1]
176	Greater than 95.0%, but less than 101.0% of mass 174	91.72 (101.90) [1] *
177	5.0 - 9.0% of mass 176	5.43 (5.92) [2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS. * fail

[1] Value in parenthesis is % mass 174.
[2] Value in parenthesis is % mass 176.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
ERT-1	8074 / 3833	2/10/81	4:45

VOA

Ohio River Park Jan 1981

ERT

SOP WORK SHEETS FOR VOLATILES

HOLDING TIMES

	SAMPLE NO.*	PRESERVED YES	PRESERVED NO	CONC. LEVEL/MATRIX	DATE SAMPLED	DATE RECEIVED	DATE ANALYZED	TIME ANALYZED	INSTRUMENT I.D.	CONTRACT HOLDING TIME MET YES	CONTRACT HOLDING TIME MET NO	40 CFR 136 HOLDING TIME MET YES	40 CFR 136 HOLDING TIME MET NO	ACTION	
ERT-1	8074/3833			Water	1/29/81		2/10/81	4:45	10		✓		✓		
RT-1/5	8040/3839		✓	Water	1/15/81	1/15/81	1/21/81	18:43		✓		✓			refrigerated
ERT-115	8054/3854			Water	1/17/81		1/27/81	21:05	2	✓		✓			50:1 dilutions
RT-205	8060/3862			Water	1/30/81		1/30/81	3:36	2		✓		✓		20:1 dilution
W-4	8059/3855			Water	1/17/81		1/31/81	3:08	9	✓		✓			200:1 dilution
OUTFALL 1	8086/3876			Water	1/29/81		2/9/81	23:44	10		✓		✓		
	Field Blank 1			Water	1/15/81										
	Field Blank 2			Water	1/30/81										

* INCLUDE MATRIX SPIKES, BLANKS AND RE-RUNS HERE

CASE NO. Ohio River Park Jan 1981
LABORATORY ERT

SOP WORK SHEETS FOR EXTRACTABLES

HOLDING TIMES

	SAMPLE NO.*	CONC. LEVEL/MATRIX	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	TIME ANALYZED	INSTRUMENT ID	CONTRACT HOLDING TIME MET		40 CFR 136 HOLDING TIME MET		ACTION
									YES	NO	YES	NO	
-RT-1	F090/3523	Water	1/29/81			2/13/81	15:46	5					Acid
RT-1	E094/3833	Water	1/29/81			2/6/81	22:36	4	✓		✓		B/N
ERT-19	F066/3629	Water	1/15/81	1/15/81	1/16/81	1/22/81	13:26		✓		✓		Acid
RT-19	F066/3629	Water	1/15/81	1/15/81	1/16/81	2/4/81	13:55		✓		✓		N/A
-RT-18	8054/3654	Water	1/19/81			1/27/81	15:53	5					Acid
-RT-18	8054/3654	Water	1/19/81			1/23/81	12:48	4	✓		✓		B/N
T-20	F060/3662	Water	1/20/81			2/1/81	20:57	5					Acid
ERT-20	F060/3662	Water	1/20/81			1/28/81	2:57	4					B/N
-1	8059/3655	Water	1/19/81			1/27/81	16:57	5					Acid
	8059/3655	Water	1/19/81			1/23/81	14:03	4	✓		✓		B/N
NTFALL1	F086/3826	Water	1/29/81			2/4/81	21:50	5	✓		✓		Acid
TFALL1	F086/3826	Water	1/29/81			2/5/81	15:42	3	✓		✓		B/N
	Field Blank		1/15/81										
	Field Blank		1/29/81										

* INCLUDE MATRIX SPIKES, BLANKS AND RE-RUNS HERE

LABORATORY ERT

Jan/[redacted] 1981

SOP WORK SHEETS FOR PESTICIDES / PCBs

HOLDING TIMES

	SAMPLE NO.*	CONC. LEVEL / MATRIX	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	TIME ANALYZED	INSTRUMENT I.D.	CONTRACT HOLDING TIME MET		40 CFR 136 HOLDING TIME MET		ACTION
									YES	NO	YES	NO	
MW-5	10237	Water	1/14/81	1/20/81		2/20/81	11:34			✓		✓	
ERT-20D	10240	"	1/19/81	1/20/81	2/5/81								
ERT-20D DUP	10241	"	1/19/81	1/20/81	2/5/81	2/19/81							
ERT-20M	10239	"	1/19/81	1/20/81	2/5/81	2/19/81							
ERT-12D	10268	"	1/20/81	1/21/81	2/5/81	2/19/81							
MW-2	10269	"	1/20/81	1/21/81	2/5/81	2/21/81	14:40						
6D	10295	"	1/27/81	1/28/81		2/23/81	11:52						
ERT-7	10296	"	1/27/81	1/28/81		2/23/81							
OUTFALL #1	10307	"	1/28/81	1/29/81		2/23/81	9:57						
OUTFALL #1 DUP	10308	"	1/28/81	1/29/81		2/23/81							
ERT-3S	10309	"	1/28/81	1/29/81		2/23/81							
ERT-8S	10179	"	1/13/81	1/15/81	2/1/81								
ERT-9S	10181	"	1/13/81	1/15/81	2/1/81								
ERT-9D	10182	"	1/13/81	1/15/81	2/1/81	2/19/81							
ERT-19S	10184	"	1/14/81	1/15/81	2/1/81	2/18/81	10:29						
ERT-19M	10185	"	1/14/81	1/15/81	2/1/81	2/19/81	10:19						
ERT-19D	10186	"	1/14/81	1/15/81	2/1/81	2/23/81	10:26						
ERT-16D	10206	"	1/15/81	1/15/81	2/1/81	2/18/81							
ERT-16D DUP	10207	"	1/15/81	1/15/81	2/1/81	2/18/81							
ERT-19M	10208	"	1/15/81	1/15/81	2/1/81	2/18/81	10:18						
ERT-19D	10209	"	1/15/81	1/15/81	2/1/81	2/23/81	10:56						
MW-4	10224	"	1/16/81	1/19/81	2/1/81	2/13/81	18:03						
ERT-14S	10225	"	1/16/81	1/19/81	2/1/81	2/15/81	15:00						
ERT-18S	10226	"	1/16/81	1/19/81	2/1/81	2/20/81	15:44						
ERT-18M	10227	"	1/16/81	1/19/81	2/1/81	2/18/81							
ERT-18D	10228	"	1/16/81	1/19/81	2/1/81								
ERT-19S	10229	"	1/16/81	1/19/81		2/13/81	12:04						
Field Blank #1	10187	"	1/14/81	1/15/81	2/1/81	2/15/81							
Field Blank #2	10223	"	1/16/81	1/19/81		2/15/81							

* INCLUDE MATRIX SPIKES, BLANKS AND RE-RUNS HERE

ERT -17 shallow

SAMPLE IDENTIFIER: 8040
COMPU/CHEM SAMPLE NUMBER: 3629

1. ANALYTICAL METHODOLOGY

THE SAMPLES WERE PREPARED AND ANALYZED ACCORDING TO TWO (2) GENERAL PROCEDURES: (1) "SAMPLING AND ANALYSIS PROCEDURES FOR SCREENING OF INDUSTRIAL EFFLUENTS FOR PRIORITY POLLUTANTS," REVISED APRIL 1977, US-EPA, AND (2) EPA METHOD 624, "ORGANICS BY PURGE AND TRAP," AND METHOD 625, "BASE/NEUTRALS, ACIDS, AND PESTICIDES," US-EPA, REVISED DECEMBER 3, 1979, FEDERAL REGISTER (GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS). THE LABORATORY PROCEDURES USED FOLLOW THOSE IN METHODS 608, 624, OR 625. QUALITY ASSURANCE, SAMPLE CUSTODY, AND DOCUMENT CONTROL PROCEDURES WERE FOLLOWED WHICH MEET OR EXCEED EPA REQUIREMENTS.

2. SAMPLE RECORD	DATE
A. RECEIVED/REFRIGERATED	01/15/81
B. ORGANICS	
1. EXTRACTED	01/16/81
2. ANALYZED	
VOLATILES	01/21/81
BASE/NEUTRALS	02/04/81
ACIDS	01/22/81
PESTICIDES/PCBS	02/04/81
C. METALS	
ANALYZED	NOT REQUESTED

SAMPLE IDENTIFIER: 8040
COMPU/CHEM SAMPLE NUMBER: 3629

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
3P.	BETA-BHC	BDL	D	10
4P.	GAMMA-BHC	BDL	D	10
5P.	DELTA-BHC	BDL	D	10
6P.	CHLORDANE	BDL	D	10
7P.	4, 4'-DDT	BDL	D	10
8P.	4, 4'-DDE	BDL	D	10
9P.	4, 4'-DDD	BDL	D	10
10P.	DIELDRIN	BDL	D	10
11P.	ALPHA-ENDOSULFAN	BDL	D	10
12P.	BETA-ENDOSULFAN	BDL	D	10
13P.	ENDOSULFAN SULFATE	BDL	D	10
14P.	ENDRIN	BDL	D	10
15P.	ENDRIN ALDEHYDE	BDL	D	10
16P.	HEPTACHLOR	BDL	D	10
17P.	HEPTACHLOR EPOXIDE	BDL	D	10
18P.	PCB-1242	BDL	D	10
19P.	PCB-1254	BDL	D	10
20P.	PCB-1221	BDL	D	10
21P.	PCB-1232	BDL	D	10
22P.	PCB-1248	BDL	D	10
23P.	PCB-1260	BDL	D	10
24P.	PCB-1016	BDL	D	10
25P.	TOXAPHENE	BDL	D	10

SAMPLE IDENTIFIER: 8040
COMPU/CHEM SAMPLE NUMBER: 3629

3. PRIORITY POLLUTANT ANALYSIS REPORT

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
1V.	ACROLEIN	BDL	D	100
2V.	ACRYLONITRILE	BDL	D	100
3V.	BENZENE	>10000 *	D	10
4V.	BIS (CHLOROMETHYL) ETHER	BDL	D	10
5V.	BROMOFORM	BDL	D	10
6V.	CARBON TETRACHLORIDE	BDL	D	10
7V.	CHLOROBENZENE	BDL	D	10
8V.	CHLORODIBROMOMETHANE	BDL	D	10
9V.	CHLOROETHANE	BDL	D	10
10V.	2-CHLOROETHYLVINYL ETHER	BDL	D	10
11V.	CHLOROFORM	BDL	D	10
12V.	DICHLOROBROMOMETHANE	BDL	D	10
13V.	DICHLORODIFLUOROMETHANE	BDL	D	10
14V	1, 1-DICHLOROETHANE	BDL	D	10
15V.	1, 2-DICHLOROETHANE	BDL	D	10
16V.	1, 1-DICHLOROETHYLENE	BDL	D	10
17V.	1, 2-DICHLOROPROPANE	BDL	D	10
18V.	1, 3-DICHLOROPROPYLENE	BDL	D	10
19V.	ETHYLBENZENE	32	D	10
20V.	METHYL BROMIDE	BDL	D	10
21V.	METHYL CHLORIDE	BDL	D	10
22V.	METHYLENE CHLORIDE	BDL	D	10
23V.	1, 1, 2, 2-TETRACHLOROETHANE	BDL	D	10
24V.	TETRACHLOROETHYLENE	BDL	D	10
25V.	TOLUENE	1300*	D	10
26V.	1, 2-TRANS-DICHLOROETHYLENE	BDL	D	10
27V.	1, 1, 1-TRICHLOROETHANE	BDL	D	10
28V.	1, 1, 2-TRICHLOROETHANE	BDL	D	10
29V.	TRICHLOROETHYLENE	BDL	D	10
30V.	TRICHLOROFLUOROMETHANE	BDL	D	10
31V.	VINYL CHLORIDE	BDL	D	10
1A.	2-CHLOROPHENOL	440	D	25
2A.	2, 4-DICHLOROPHENOL	500	D	25
3A.	2, 4-DIMETHYLPHENOL	BDL	D	25
4A.	4, 6-DINITRO-O-CRESOL	BDL	D	250
5A.	2, 4-DINITROPHENOL	BDL	D	250
6A.	2-NITROPHENOL	BDL	D	25
7A.	4-NITROPHENOL	BDL	D	25
8A.	P-CHLORO-M-CRESOL	BDL	D	25
9A.	PENTACHLOROPHENOL	BDL	D	25
10A.	PHENOL	1700*	D	25
11A.	2, 4, 6-TRICHLOROPHENOL	160	D	25
1B.	ACENAPHTHENE	BDL	D	10
2B.	ACENAPHTHYLENE	BDL	D	10
3B.	ANTHRACENE	BDL	D	10

BDL= BELOW DETECTION LIMIT
* Saturated Ions

ORIGINAL

SAMPLE IDENTIFIER: 8040
COMPU/CHEM SAMPLE NUMBER: 3629

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
4B.	BENZIDINE		BDL	10
5B.	BENZO (A) ANTHRACENE		BDL	10
6B.	BENZO (A) PYRENE		BDL	10
7B.	3, 4-BENZOFLUORANTHENE		BDL	10
8B.	BENZO (GHI) PERYLENE		BDL	25
9B.	BENZO (K) FLUORANTHENE		BDL	10
10B.	BIS (2-CHLOROETHOXY) METHANE		BDL	10
11B.	BIS (2-CHLOROETHYL) ETHER		BDL	10
12B.	BIS (2-CHLOROISOPROPYL) ETHER		BDL	10
13B.	BIS (2-ETHYLHEXYL) PHTHALATE	10		10
14B.	4-BROMOPHENYL PHENYL ETHER		BDL	10
15B.	BUTYL BENZYL PHTHALATE		BDL	10
16B.	2-CHLORONAPHTHALENE		BDL	10
17B.	4-CHLOROPHENYL PHENYL ETHER		BDL	10
18B.	CHRYSENE		BDL	10
19B.	DIBENZO (A, H) ANTHRACENE		BDL	25
20B.	1, 2-DICHLOROBENZENE		BDL	10
21B.	1, 3-DICHLOROBENZENE		BDL	10
22B.	1, 4-DICHLORBENZENE		BDL	10
23B.	3, 3'-DICHLOROBENZIDINE		BDL	10
24B.	DIETHYL PHTHALATE		BDL	10
25B.	DIMETHYL PHTHALATE		BDL	10
26B.	DI-N-BUTYL PHTHALATE		BDL	10
27B.	2, 4-DINITROTOLUENE		BDL	10
28B.	2, 6-DINITROTOLUENE		BDL	10
29B.	DI-N-OCTYL PHTHALATE		BDL	10
30B.	1, 2-DIPHENYLHYDRAZINE		BDL	10
31B.	FLUORANTHENE		BDL	10
32B.	FLUORENE		BDL	10
33B.	HEXACHLOROBENZENE		BDL	10
34B.	HEXACHLOROBUTADIENE		BDL	10
35B.	HEXACHLOROCYCLOPENTADIENE		BDL	10
36B.	HEXACHLOROETHANE		BDL	10
37B.	INDENO (1, 2, 3-CD) PYRENE		BDL	25
38B.	ISOPHORONE		BDL	10
39B.	NAPHTHALENE	180		10
40B.	NITROBENZENE		BDL	10
41B.	N-NITROSODIMETHYLAMINE		BDL	10
42B.	N-NITROSODI-N-PROPYLAMINE		BDL	10
43B.	N-NITROSODIPHENYLAMINE		BDL	10
44B.	PHENANTHRENE		BDL	10
45B.	PYRENE		BDL	10
46B.	1, 2, 4-TRICHLOROBENZENE		BDL	10
1P.	ALDRIN		BDL	10
2P.	ALPHA-BHC		BDL	10

BDL= BELOW DETECTION LIMIT

ERT ID # ERT-185 8054

COMPUCHEM # 3654

ANALYSES PERFORMED:

VOA 1/22/81; 50:1 DILUTION → 1/23/81

ACID 1/21/81

B/N 1/23/81

PEST 1/23/81

SAMPLE IDENTIFIER: 8054
COMPU/CHEM SAMPLE NUMBER: 3854

3. PRIORITY POLLUTANT ANALYSIS REPORT

	COMPOUNDS	CONCENTRATION (UG/L)			DETECTION LIMIT (UG/L)
1V.	ACROLEIN	BDL		R	100
2V.	ACRYLONITRILE	BDL		R	100
3V.	BENZENE	67000*	**	R	10
4V.	BIS (CHLOROMETHYL) ETHER	BDL		R	10
5V.	BROMOFORM	BDL		R	10
6V.	CARBON TETRACHLORIDE	BDL		R	10
7V.	CHLOROBENZENE	BDL		R	10
8V.	CHLORODIBROMOMETHANE	BDL		R	10
9V.	CHLOROETHANE	BDL		R	10
10V.	2-CHLOROETHYLVINYL ETHER	BDL		R	10
11V.	CHLOROFORM	BDL		R	10
12V.	DICHLOROBROMOMETHANE	BDL		R	10
13V.	DICHLORODIFLUOROMETHANE	BDL		R	10
14V.	1,1-DICHLOROETHANE	BDL		R	10
15V.	1,2-DICHLOROETHANE	BDL		R	10
16V.	1,1-DICHLOROETHYLENE	BDL		R	10
17V.	1,2-DICHLOROPROPANE	BDL		R	10
18V.	1,3-DICHLOROPROPYLENE	BDL		R	10
19V.	ETHYLBENZENE	93		R	10
20V.	METHYL BROMIDE	BDL		R	10
21V.	METHYL CHLORIDE	BDL		R	10
22V.	METHYLENE CHLORIDE	BDL		R	10
23V.	1,1,2,2-TETRACHLOROETHANE	BDL		R	10
24V.	TETRACHLOROETHYLENE	BDL		R	10
25V.	TOLUENE	9000*	**	R	10
26V.	1,2-TRANS-DICHLOROETHYLENE	BDL		R	10
27V.	1,1,1-TRICHLOROETHANE	BDL		R	10
28V.	1,1,2-TRICHLOROETHANE	BDL		R	10
29V.	TRICHLOROETHYLENE	BDL		R	10
30V.	TRICHLOROFLUOROMETHANE	BDL		R	10
31V.	VINYL CHLORIDE	BDL		R	10
1A.	2-CHLOROPHENOL	140		R	25
2A.	2,4-DICHLOROPHENOL	8000	**	R	25
3A.	2,4-DIMETHYLPHENOL	BDL		R	25
4A.	4,6-DINITRO-O-CRESOL	BDL		R	250
5A.	2,4-DINITROPHENOL	BDL		R	250
6A.	2-NITROPHENOL	BDL		R	25
7A.	4-NITROPHENOL	BDL		R	25
8A.	P-CHLORO-M-CRESOL	BDL		R	25
9A.	PENTACHLOROPHENOL	BDL		R	25
10A.	PHENOL	3900	**	R	25
11A.	2,4,6-TRICHLOROPHENOL	83		R	25
1B.	ACENAPHTHENE	BDL		R	10
2B.	ACENAPHTHYLENE	BDL		R	10
3B.	ANTHRACENE	BDL		R	10

BDL= BELOW DETECTION LIMIT
* Value determined from 50:1 dilution
** Quantitated from Secondary Ion

SAMPLE IDENTIFIER: 8054
COMPU/CHEM SAMPLE NUMBER: 3654

	COMPOUNDS	CONCENTRATION (UG/L)			DETECTION LIMIT (UG/L)
4B.	BENZIDINE		BDL	R	10
5B.	BENZO (A) ANTHRACENE		BDL	R	10
6B.	BENZO (A) PYRENE		BDL	R	10
7B.	3,4-BENZOFLUORANTHENE		BDL	R	10
8B.	BENZO (GHI) PERYLENE		BDL	R	25
9B.	BENZO (K) FLUORANTHENE		BDL	R	10
10B.	BIS (2-CHLOROETHOXY) METHANE		BDL	R	10
11B.	BIS (2-CHLOROETHYL) ETHER		BDL	R	10
12B.	BIS (2-CHLOROISOPROPYL) ETHER		BDL	R	10
13B.	BIS (2-ETHYLHEXYL) PHTHALATE		BDL	R	10
14B.	4-BROMOPHENYL PHENYL ETHER		BDL	R	10
15B.	BUTYL BENZYL PHTHALATE		BDL	R	10
16B.	2-CHLORONAPHTHALENE		BDL	R	10
17B.	4-CHLOROPHENYL PHENYL ETHER		BDL	R	10
18B.	CHRYSENE		BDL	R	10
19B.	DIBENZO (A,H) ANTHRACENE		BDL	R	25
20B.	1,2-DICHLOROBENZENE		BDL	R	10
21B.	1,3-DICHLOROBENZENE		BDL	R	10
22B.	1,4-DICHLORBENZENE		BDL	R	10
23B.	3,3'-DICHLOROBENZIDINE		BDL	R	10
24B.	DIETHYL PHTHALATE		BDL	R	10
25B.	DIMETHYL PHTHALATE		BDL	R	10
26B.	DI-N-BUTYL PHTHALATE		BDL	R	10
27B.	2,4-DINITROTOLUENE		BDL	R	10
28B.	2,6-DINITROTOLUENE		BDL	R	10
29B.	DI-N-OCTYL PHTHALATE		BDL	R	10
30B.	1,2-DIPHENYLHYDRAZINE		BDL	R	10
31B.	FLUORANTHENE		BDL	R	10
32B.	FLUORENE		BDL	R	10
33B.	HEXACHLOROBENZENE		BDL	R	10
34B.	HEXACHLOROBUTADIENE		BDL	R	10
35B.	HEXACHLOROCYCLOPENTADIENE		BDL	R	10
36B.	HEXACHLOROETHANE		BDL	R	10
37B.	INDENO (1,2,3-CD) PYRENE		BDL	R	25
38B.	ISOPHORONE		BDL	R	10
39B.	NAPHTHALENE	410		J	10
40B.	NITROBENZENE		BDL	R	10
41B.	N-NITROSODIMETHYLAMINE		BDL	R	10
42B.	N-NITROSODI-N-PROPYLAMINE		BDL	R	10
43B.	N-NITROSODIPHENYLAMINE		BDL	R	10
44B.	PHENANTHRENE		BDL	R	10
45B.	PYRENE		BDL	R	10
46B.	1,2,4-TRICHLOROBENZENE		BDL	R	10
1P.	ALDRIN		BDL	R	10
2P.	ALPHA-BHC		BDL	R	10

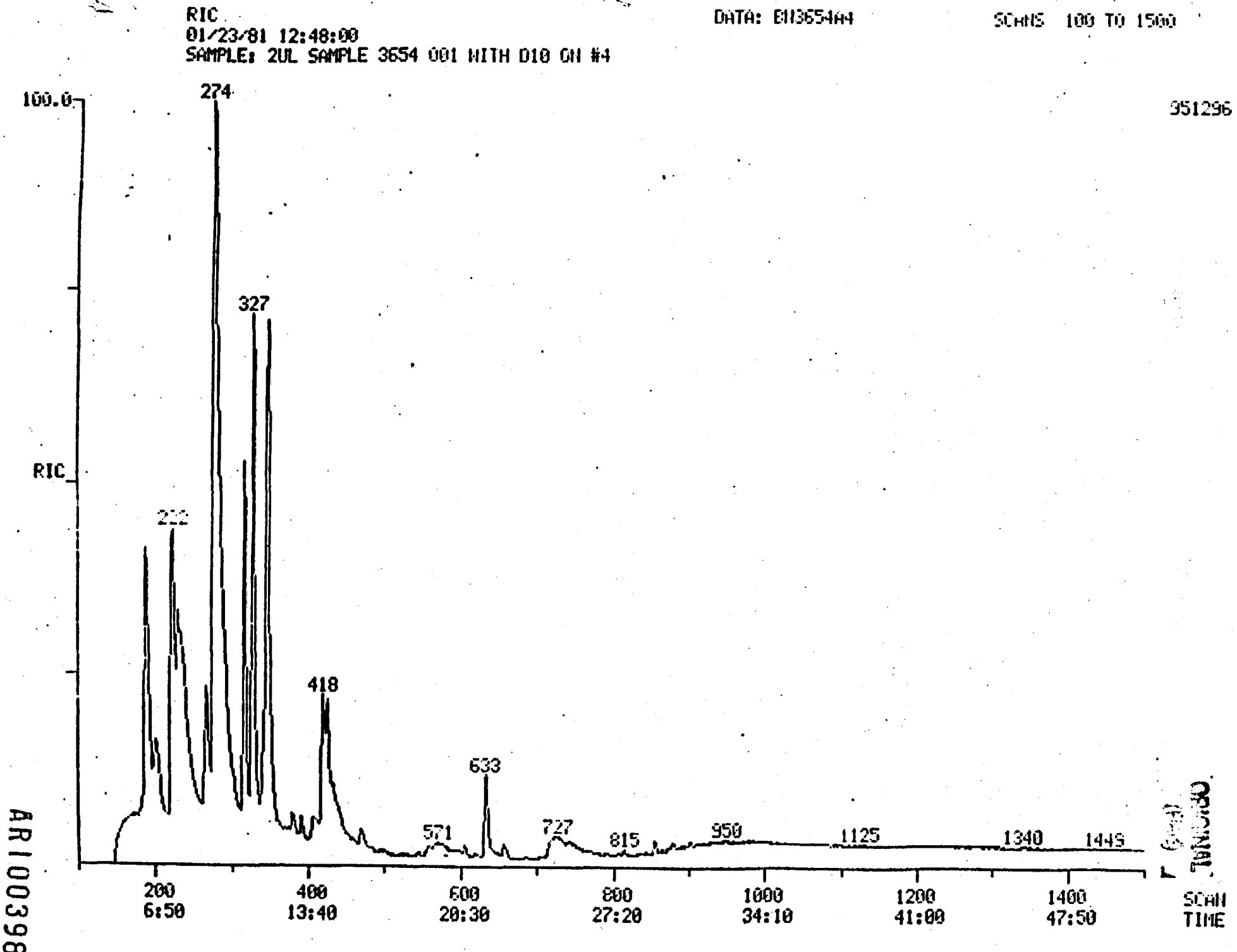
BDL= BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 8054
COMPU/CHEM SAMPLE NUMBER: 3654

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
3P.	BETA-BHC	BDL	R	10
4P.	GAMMA-BHC	BDL	R	10
5P.	DELTA-BHC	BDL	R	10
6P.	CHLORDANE	BDL	R	10
7P.	4,4'-DDT	BDL	R	10
8P.	4,4'-DDE	BDL	R	10
9P.	4,4'-DDD	BDL	R	10
10P.	DIELDRIN	BDL	R	10
11P.	ALPHA-ENDOSULFAN	BDL	R	10
12P.	BETA-ENDOSULFAN	BDL	R	10
13P.	ENDOSULFAN SULFATE	BDL	R	10
14P.	ENDRIN	BDL	R	10
15P.	ENDRIN ALDEHYDE	BDL	R	10
16P.	HEPTACHLOR	BDL	R	10
17P.	HEPTACHLOR EPOXIDE	BDL	R	10
18P.	PCB-1242	BDL	R	10
19P.	PCB-1254	BDL	R	10
20P.	PCB-1221	BDL	R	10
21P.	PCB-1232	BDL	R	10
22P.	PCB-1248	BDL	R	10
23P.	PCB-1260	BDL	R	10
24P.	PCB-1016	BDL	R	10
25P.	TOXAPHENE	BDL	R	10

I.C. B/N (CHROMATOGRAMS)

ORIGINAL
(P...)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01/23/81 12:48:00
SAMPLE: 2UL SAMPLE 3654 001 WITH D10 ON #4
DATA: B13654A4
SCANS 100 TO 1500
100.0
951296
RIC
274
327
222
418
633
571
727
815
950
1125
1340
1445
200
6:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400
47:50
SCAN
TIME
ORIGINAL

FINNIGAN TARGET COMPOUND ANALYSIS
QUANTITATION REPORT FILE: BN3654A4

DATA: BN3654A4 TI
01/23/81 12:48:00
SAMPLE: 2UL SAMPLE 3654 001 WITH D10 ON #4
SUBMITTED BY: #4 ANALYST: AC

AMOUNT=AREA(HGHT) * REF AMNT/(REF. AREA(HGHT)* RESP. FACT)
RESP. FAC. FROM LIBRARY ENTRY

NO	NAME
1	D10-ANTHRACENE (INTERNAL STANDARD)
2	D-5 NITROBENZENE (SURROGATE STANDARD)
3	2-FLUOROBIPHENYL (SURROGATE STANDARD)
4	D8-NAPHTHALENE (SURROGATE STANDARD)
5	D-10 ANTHRACENE (INTERNAL STANDARD)
6	1, 3-DICHLOROBENZENE
7	HEXACHLOROETHANE
8	NITROBENZENE
9	NAPHTHALENE
10	2-CHLORONAPHTHALENE
11	2, 6-DINITROTOLUENE
12	4-CHLOROPHENYL PHENYL ETHER
13	1, 2-DIPHENYLHYDRAZINE
14	N-NITROSODIPHENYLAMINE
15	HEXACHLOROBENZENE
16	ANTHRACENE
17	PHENANTHRENE
18	4-BROMOPHENYL PHENYL ETHER
19	FLUORANTHENE
20	CHRYSENE
21	D-10 ANTHRACENE (INTERNAL STANDARD)
22	1, 4-DICHLOROBENZENE
23	BIS (2-CHLOROETHYL) ETHER
24	HEXACHLOROBUTADIENE
25	BIS (2-CHLOROETHOXY)METHANE
26	ACENAPHTHYLENE
27	FLUORENE
28	2, 4-DINITROTOLUENE
29	PYRENE
30	BENZO(E)FLUORANTHENE
31	BENZO(A)PYRENE
32	BENZIDINE
33	1, 2, 4-TRICHLOROBENZENE
34	DIBENZO (A, H) ANTHRACENE
35	BENZO (A) ANTHRACENE
36	INDENO (1, 2, 3-CD) PYRENE
37	D-10 ANTHRACENE (INTERNAL STANDARD)
38	1, 2-DICHLOROBENZENE
39	ISOPHORONE
40	ACENAPHTHENE
41	DIMETHYLPHTHALATE
42	DIETHYLPHTHALATE
43	DI-N-BUTYLPHTHALATE
44	BUTYLBENZYLPHTHALATE
45	BIS (2-ETHYLHEXYL) PHTHALATE
46	DI-OCTYLPHTHALATE

NO	NAME
47	BIS(2-CHLOROISOPROPYL)ETHER
48	N-NITROSODI-N-PROPYLAMINE
49	BENZO (K) FLUORANTHENE
50	3,3'-DICHLOROBENZIDINE
51	BENZO (G,H,I) PERYLENE
52	BIS (2-ETHYLHEXYL) PHTHALATE (SECONDARY ION)

NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
1	188	633	21:36	1	1.000	A BB	169577.	100.000 UG/L	10.83
2	NOT FOUND								
3	172	425	14:31	1	0.671	A BB	100032.	43.781 UG/L	4.74
4	136	325	11:06	1	0.513	A BV	136612.	50.526 UG/L	5.47
5	188	633	21:38	5	1.000	A BB	169577.	100.000 UG/L	10.83
6	NOT FOUND								
7	NOT FOUND								
8	NOT FOUND								
9	128	327	11:10	5	0.517	A BB	1095490.	413.6368.064 UG/L	39.87
10	NOT FOUND								
11	NOT FOUND								
12	NOT FOUND								
13	77	556	19:00	5	0.878	A BB	1491.	0.351 UG/L	0.04
14	169	570	19:28	5	0.900	A BB	1088.	0.694 UG/L	0.08
15	NOT FOUND								
16	178	632	21:36	5	0.998	A BB	2763.	0.492 UG/L	0.05
17	178	632	21:36	5	0.998	A BB	2763.	0.492 UG/L	0.05
18	NOT FOUND								
19	NOT FOUND								
20	NOT FOUND								
21	188	633	21:38	21	1.000	A BB	169577.	100.000 UG/L	10.83
22	NOT FOUND								
23	NOT FOUND								
24	NOT FOUND								
25	93	335	11:37	21	0.529	A VB	2533.	2.501 UG/L	0.27
26	152	484	16:32	21	0.765	A BB	439.	0.149 UG/L	0.02
27	166	537	18:21	21	0.848	A BB	96.	0.041 UG/L	0.00
28	NOT FOUND								
29	202	769	26:16	21	1.215	A BB	2156.	0.549 UG/L	0.06
30	NOT FOUND								
31	NOT FOUND								
32	NOT FOUND								
33	NOT FOUND								
34	NOT FOUND								
35	NOT FOUND								
36	NOT FOUND								
37	188	633	21:38	37	1.000	A BB	169577.	100.000 UG/L	10.83
38	146	216	7:23	37	0.341	A BB	669.	0.632 UG/L	0.07
39	NOT FOUND								
40	NOT FOUND								
41	NOT FOUND								
42	NOT FOUND								
43	149	686	23:26	37	1.084	A BB	3314.	0.573 UG/L	0.06
44	149	835	28:32	37	1.321	A BB	1841	0.769 UG/L	0.09
45	149	856	29:15	37	1.353	A BB	14362.	3.393 UG/L	0.37
46	149	913	31:12	37	1.447	A BB	617.	0.087 UG/L	0.01
47	45	236	8:04	37	0.373	A VB	13426.	5.666 UG/L	0.61
48	130	304	10:32	37	0.480	A BB	3893.	41.068 UG/L	4.45

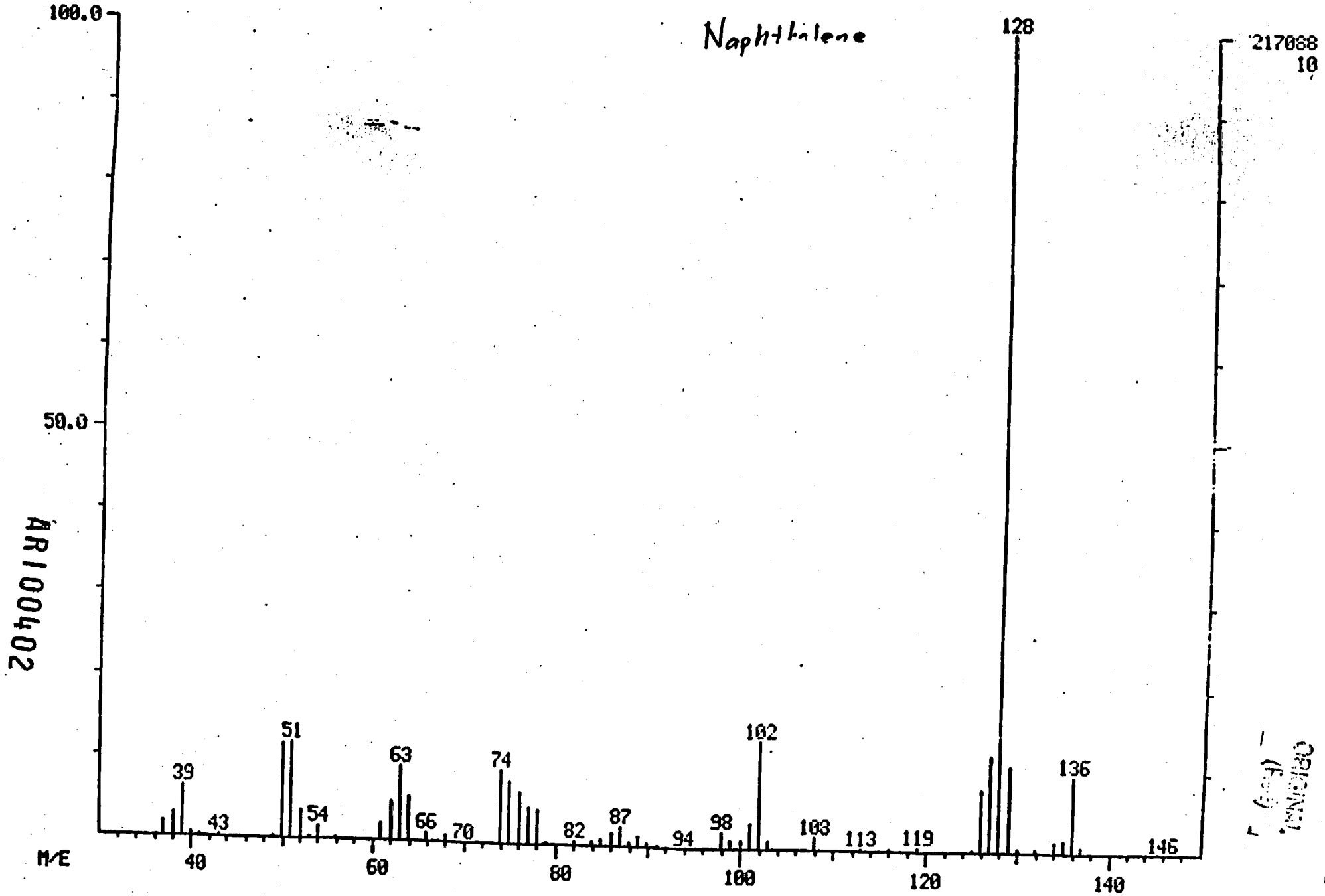
NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
49	NOT FOUND								
50	NOT FOUND								
51	NOT FOUND								
52	167	856	29:15	37	1.352	A BB	4132.	3.449 UG/L	0 37

No Pest. or TCDD found.

MASS SPECTRUM
01/23/81 12:48:00 + 11:10
SAMPLE: 2UL SAMPLE 3654 001 WITH D10 ON #4
ENHANCED (S 15B 2N)

DATA: BN3654A4 #327

BASE M/E: 128
RIC: 592896.



ERT ID # ERT-MW-4 [illegible]

COMPUCHEM # 3655

ANALYSES PERFORMED:

VOA 1/23/81 ; 20:1 DILUTION → 1/23/81
50:1 DILUTION → 1/23/81

ACID 1/21/81

B/N 1/23/81

PEST 1/23/81

ORIGINAL (RED)

SAMPLE IDENTIFIER: B059
COMPU/CHEM SAMPLE NUMBER: 3655

3. PRIORITY POLLUTANT ANALYSIS REPORT

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
1V.	ACROLEIN	BDL	R	100
2V.	ACRYLONITRILE	BDL	R	100
3V.	BENZENE	100000*	R	10
4V.	BIS (CHLOROMETHYL) ETHER	BDL	R	10
5V.	BROMOFORM	BDL	R	10
6V.	CARBON TETRACHLORIDE	BDL	R	10
7V.	CHLOROBENZENE	BDL	R	10
8V.	CHLORODIBROMOMETHANE	BDL	R	10
9V.	CHLOROETHANE	BDL	R	10
10V.	2-CHLOROETHYLVINYL ETHER	BDL	R	10
11V.	CHLOROFORM	BDL	R	10
12V.	DICHLOROBROMOMETHANE	BDL	R	10
13V.	DICHLORODIFLUOROMETHANE	BDL	R	10
14V.	1, 1-DICHLOROETHANE	BDL	R	10
15V.	1, 2-DICHLOROETHANE	BDL	R	10
16V.	1, 1-DICHLOROETHYLENE	BDL	R	10
17V.	1, 2-DICHLOROPROPANE	BDL	R	10
18V.	1, 3-DICHLOROPROPYLENE	BDL	R	10
19V.	ETHYLBENZENE	32	R	10
20V.	METHYL BROMIDE	BDL	R	10
21V.	METHYL CHLORIDE	BDL	R	10
22V.	METHYLENE CHLORIDE	BDL	R	10
23V.	1, 1, 2, 2-TETRACHLOROETHANE	BDL	R	10
24V.	TETRACHLOROETHYLENE	BDL	R	10
25V.	TOLUENE	5800**	R	10
26V.	1, 2-TRANS-DICHLOROETHYLENE	BDL	R	10
27V.	1, 1, 1-TRICHLOROETHANE	BDL	R	10
28V.	1, 1, 2-TRICHLOROETHANE	BDL	R	10
29V.	TRICHLOROETHYLENE	BDL	R	10
30V.	TRICHLOROFLUOROMETHANE	BDL	R	10
31V.	VINYL CHLORIDE	BDL	R	10
1A.	2-CHLOROPHENOL	71	R	25
2A.	2, 4-DICHLOROPHENOL	920	R	25
3A.	2, 4-DIMETHYLPHENOL	BDL	R	25
4A.	4, 6-DINITRO-O-CRESOL	BDL	R	250
5A.	2, 4-DINITROPHENOL	BDL	R	250
6A.	2-NITROPHENOL	BDL	R	25
7A.	4-NITROPHENOL	BDL	R	25
8A.	P-CHLORO-M-CRESOL	BDL	R	25
9A.	PENTACHLOROPHENOL	BDL	R	25
10A.	PHENOL	2500	R	25
11A.	2, 4, 6-TRICHLOROPHENOL	47	R	25
1B.	ACENAPHTHENE	BDL	R	10
2B.	ACENAPHTHYLENE	BDL	R	10
3B.	ANTHRACENE	BDL	R	10

BDL= BELOW DETECTION LIMIT
* Value determined from 50:1 dilution
** Value determined from 20:1 dilution

SAMPLE IDENTIFIER: 8059
COMPU/CHEM SAMPLE NUMBER: 3655

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
48.	BENZIDINE	BDL	R	10
58.	BENZO (A) ANTHRACENE	BDL	R	10
68.	BENZO (A) PYRENE	BDL	R	10
78.	3, 4-BENZOFLUORANTHENE	BDL	R	10
88.	BENZO (GHI) PERYLENE	BDL	R	25
98.	BENZO (K) FLUORANTHENE	BDL	R	10
108.	BIS (2-CHLOROETHOXY) METHANE	BDL	R	10
118.	BIS (2-CHLOROETHYL) ETHER	BDL	R	10
128.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	R	10
138.	BIS (2-ETHYLHEXYL) PHTHALATE	BDL	R	10
148.	4-BROMOPHENYL PHENYL ETHER	BDL	R	10
158.	BUTYL BENZYL PHTHALATE	BDL	R	10
168.	2-CHLORONAPHTHALENE	BDL	R	10
178.	4-CHLOROPHENYL PHENYL ETHER	BDL	R	10
188.	CHRYSENE	BDL	R	10
198.	DIBENZO (A, H) ANTHRACENE	BDL	R	25
208.	1, 2-DICHLOROBENZENE	BDL	R	10
218.	1, 3-DICHLOROBENZENE	BDL	R	10
228.	1, 4-DICHLORBENZENE	BDL	R	10
238.	3, 3'-DICHLOROBENZIDINE	BDL	R	10
248.	DIETHYL PHTHALATE	BDL	R	10
258.	DIMETHYL PHTHALATE	BDL	R	10
268.	DI-N-BUTYL PHTHALATE	BDL	R	10
278.	2, 4-DINITROTOLUENE	BDL	R	10
288.	2, 6-DINITROTOLUENE	BDL	R	10
298.	DI-N-OCTYL PHTHALATE	BDL	R	10
308.	1, 2-DIPHENYLHYDRAZINE	BDL	R	10
318.	FLUORANTHENE	BDL	R	10
328.	FLUORENE	BDL	R	10
338.	HEXACHLOROBENZENE	BDL	R	10
348.	HEXACHLOROBUTADIENE	BDL	R	10
358.	HEXACHLOROCYCLOPENTADIENE	BDL	R	10
368.	HEXACHLOROETHANE	BDL	R	10
378.	INDENO (1, 2, 3-CD) PYRENE	BDL	R	25
388.	ISOPHORONE	BDL	R	10
398.	NAPHTHALENE	90	J	10
408.	NITROBENZENE	BDL	R	10
418.	N-NITROSODIMETHYLAMINE	BDL	R	10
428.	N-NITROSODI-N-PROPYLAMINE	BDL	R	10
438.	N-NITROSODIPHENYLAMINE	BDL	R	10
448.	PHENANTHRENE	BDL	R	10
458.	PYRENE	BDL	R	10
468.	1, 2, 4-TRICHLOROBENZENE	BDL	R	10
1P.	ALDRIN	BDL	R	10
2P.	ALPHA-BHC	BDL	R	10

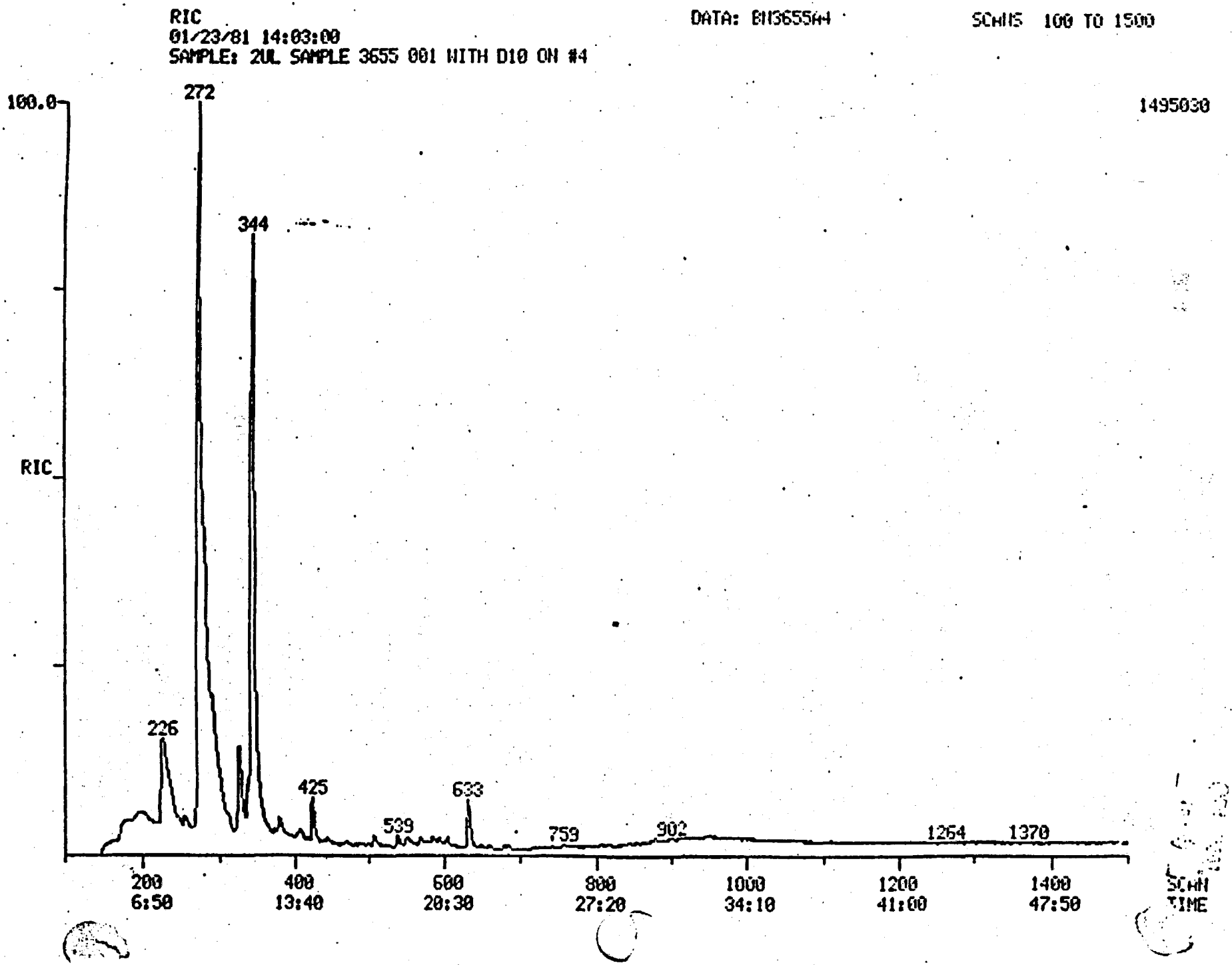
BDL= BELOW DETECTION LIMIT

ORIGINAL
(Red)

SAMPLE IDENTIFIER: 8059
COMPU/CHEM SAMPLE NUMBER: 3655

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
3P.	BETA-BHC	BDL	R	10
4P.	GAMMA-BHC	BDL	R	10
5P.	DELTA-BHC	BDL	R	10
6P.	CHLORDANE	BDL	R	10
7P.	4,4'-DDT	BDL	R	10
8P.	4,4'-DDE	BDL	R	10
9P.	4,4'-DDD	BDL	R	10
10P.	DIELDRIN	BDL	R	10
11P.	ALPHA-ENDOSULFAN	BDL	R	10
12P.	BETA-ENDOSULFAN	BDL	R	10
13P.	ENDOSULFAN SULFATE	BDL	R	10
14P.	ENDRIN	BDL	R	10
15P.	ENDRIN ALDEHYDE	BDL	R	10
16P.	HEPTACHLOR	BDL	R	10
17P.	HEPTACHLOR EPOXIDE	BDL	R	10
18P.	PCB-1242	BDL	R	10
19P.	PCB-1254	BDL	R	10
20P.	PCB-1221	BDL	R	10
21P.	PCB-1232	BDL	R	10
22P.	PCB-1248	BDL	R	10
23P.	PCB-1260	BDL	R	10
24P.	PCB-1016	BDL	R	10
25P.	TOXAPHENE	BDL	R	10

I.C. BIN (CHROMATOG[illegible]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01/23/81 14:03:00
SAMPLE: 2UL SAMPLE 3655 001 WITH D10 ON #4
DATA: BN3655A4
SCANS 100 TO 1500
100.0
272
1495030
344
RIC
226
425
539
633
759
902
1264
1370
200
6:50
400
13:40
600
20:30
800
27:20
1000
34:10
1200
41:00
1400
47:50
SCAN
TIME

AR1004.08

FINNIGAN TARGET COMPOUND ANALYSIS
QUANTITATION REPORT FILE. BN3655A4

DATA: BN3655A4. TI
01/23/81 14:03:00
SAMPLE: 2UL SAMPLE 3655 001 WITH D10 ON #4
SUBMITTED BY: #4 ANALYST: AC

AMOUNT=AREA(HGHT) * REF. AMNT/(REF. AREA(HGHT)* RESP. FACT)
RESP. FAC. FROM LIBRARY ENTRY

NO	NAME
1	D10-ANTHRACENE (INTERNAL STANDARD)
2	D-5 NITROBENZENE (SURROGATE STANDARD)
3	2-FLUOROBIPHENYL (SURROGATE STANDARD)
4	D8-NAPHTHALENE (SURROGATE STANDARD)
5	D-10 ANTHRACENE (INTERNAL STANDARD)
6	1,3-DICHLOROBENZENE
7	HEXACHLOROETHANE
8	NITROBENZENE
9	NAPHTHALENE
10	2-CHLORONAPHTHALENE
11	2,6-DINITROTOLUENE
12	4-CHLOROPHENYL PHENYL ETHER
13	1,2-DIPHENYLHYDRAZINE
14	N-NITROSODIPHENYLAMINE
15	HEXACHLOROBENZENE
16	ANTHRACENE
17	PHENANTHRENE
18	4-BROMOPHENYL PHENYL ETHER
19	FLUORANTHENE
20	CHRYSENE
21	D-10 ANTHRACENE (INTERNAL STANDARD)
22	1,4-DICHLOROBENZENE
23	BIS (2-CHLOROETHYL) ETHER
24	HEXACHLOROBUTADIENE
25	BIS (2-CHLOROETHOXY)METHANE
26	ACENAPHTHYLENE
27	FLUORENE
28	2,4-DINITROTOLUENE
29	PYRENE
30	BENZO(B)FLUORANTHENE
31	BENZO(A)PYRENE
32	BENZIDINE
33	1,2,4-TRICHLOROBENZENE
34	DIBENZO (A,H) ANTHRACENE
35	BENZO (A) ANTHRACENE
36	INDENO (1,2,3-CD) PYRENE
37	D-10 ANTHRACENE (INTERNAL STANDARD)
38	1,2-DICHLOROBENZENE
39	ISOPHORONE
40	ACENAPHTHENE
41	DIMETHYLPHTHALATE
42	DIETHYLPHTHALATE
43	DI-N-BUTYLPHTHALATE
44	BUTYLBENZYLPHTHALATE
45	BIS (2-ETHYLHEXYL) PHTHALATE
46	DI-OCTYLPHTHALATE

NO	NAME
47	BIS(2-CHLOROISOPROPYL)ETHER
48	N-NITROSODI-N-PROPYLAMINE
49	BENZO (K) FLUORANTHENE
50	3,3'-DICHLOROBENZIDINE
51	BENZO (G,H,I) PERYLENE
52	BIS (2-ETHYLHEXYL) PHTHALATE (SECONDARY ION)

NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)		AMOUNT		%TOT	
1	188	633	21:38	1	1.000	A BB	156356.		100.000	UG/L	16.57	
2	NOT FOUND											
3	172	425	14:31	1	0.671	A BB	105120.		49.898	UG/L	8.27	
4	136	326	11:08	1	0.515	A BV	144745.		58.061	UG/L	9.62	
5	188	633	21:38	5	1.000	A BB	156356.		100.000	UG/L	16.57	
6	NOT FOUND											
7	NOT FOUND											
8	NOT FOUND											
9	128	328	11:12	5	0.518	A BB	223414.	90	81.409	UG/L	13.49	-10%.
10	NOT FOUND											
11	NOT FOUND											
12	NOT FOUND											
13	77	551	18:50	5	0.870	A VV	13861.		3.534	UG/L	0.59	
14	NOT FOUND											
15	NOT FOUND											
16	178	631	21:34	5	0.997	A BB	1094.		0.211	UG/L	0.04	
17	178	631	21:34	5	0.997	A BB	1094.		0.211	UG/L	0.04	
18	NOT FOUND											
19	NOT FOUND											
20	NOT FOUND											
21	188	633	21:38	21	1.000	A BB	156356.		100 000	UG/L	16 57	
22	NOT FOUND											
23	NOT FOUND											
24	NOT FOUND											
25	NOT FOUND											
26	152	484	16:32	21	0.765	A BB	487.		0.179	UG/L	0.03	
27	166	528	18:02	21	0.834	A BB	1366.		0.633	UG/L	0.10	
28	NOT FOUND											
29	202	770	26:18	21	1.216	A BB	325.		0.090	UG/L	0.01	
30	NOT FOUND											
31	NOT FOUND											
32	NOT FOUND											
33	NOT FOUND											
34	NOT FOUND											
35	NOT FOUND											
36	NOT FOUND											
37	188	633	21:38	37	1.000	A BB	156356.		100.000	UG/L	16.57	
38	NOT FOUND											
39	NOT FOUND											
40	NOT FOUND											
41	163	508	17:21	37	0.803	A BB	8509.		3.815	UG/L	0.63	
42	149	554	18:56	37	0.875	A BV	782.		0.267	UG/L	0.04	
43	149	686	23:26	37	1.084	A BB	8229.		1.542	UG/L	0.26	
44	149	835	28:32	37	1.319	A BB	1019.		0.426	UG/L	0.07	
45	149	855	29:13	37	1.351	A BB	2324.		0.595	UG/L	0.10	
46	149	913	31:12	37	1.443	A BB	305.		0.047	UG/L	0.01	
47	45	229	7:49	37	0.362	A BB	3929.		1.798	UG/L	0.30	
48	NOT FOUND											

±.9 for volume for

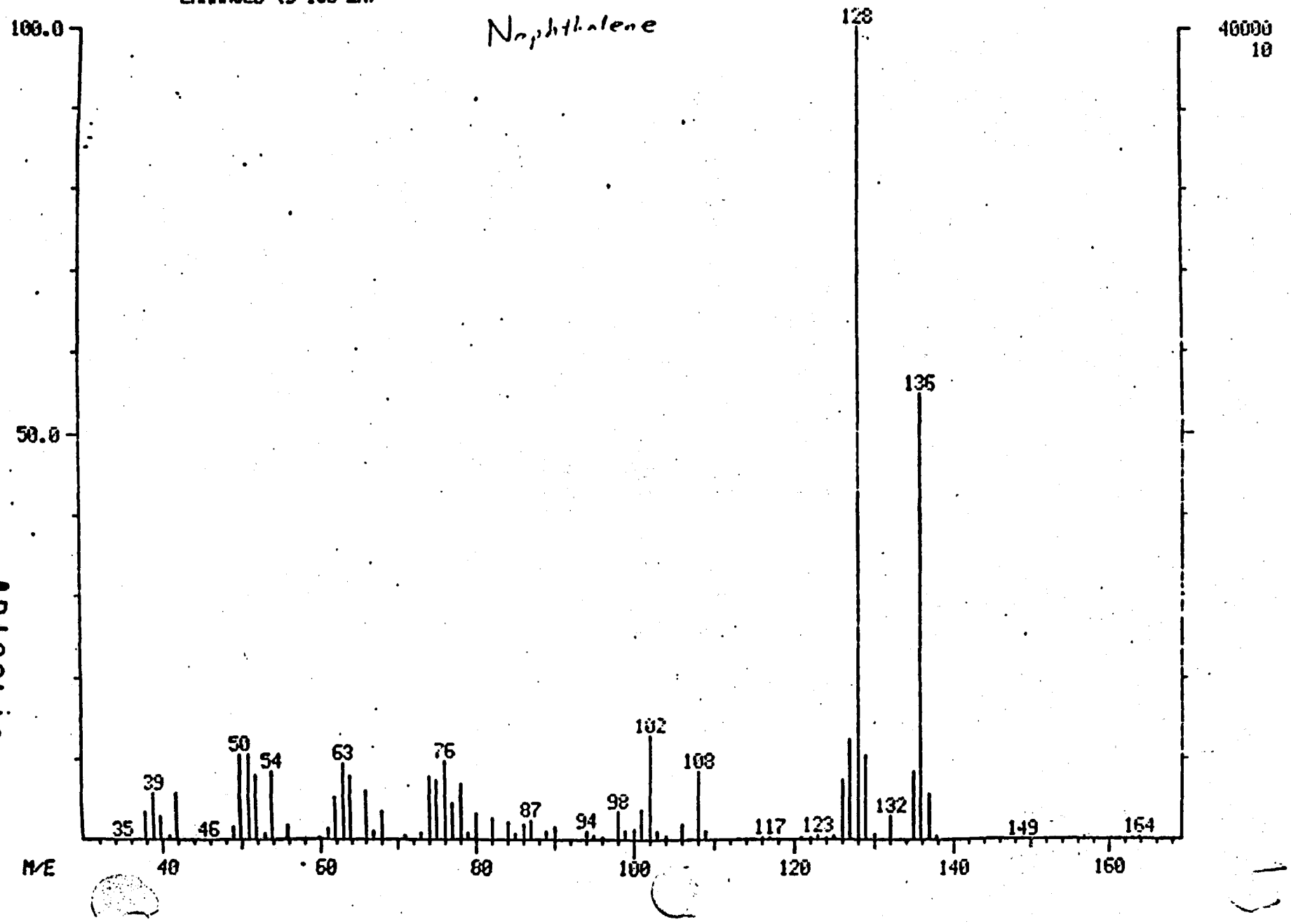
NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
49	NOT FOUND								
50	NOT FOUND								
51	NOT FOUND								
52	167	856	29:15	37	1.352	A BB	875.	0.792 UG/L	0 13

MASS SPECTRUM
01/23/81 14:03:00 +.11:12
SAMPLE: 2UL SAMPLE 3655 001 WITH D10 ON #4
ENHANCED (S 15B 2N)

DATA: B013655#4 #323

BASE M E: 128
RIC: 155904.

Naphthalene



ARI0041.2

42

ERT ID #: ERT-205 8060

COMPUCHEM #: 3662

ANALYSES PERFORMED:

VOA 1/30/81; 20:1 DILUTION → 1/30/81

ACID 2/11/81

B/N 1/28/81

PEST 1/28/81

SAMPLE IDENTIFIER: 8060
COMPU/CHEM SAMPLE NUMBER: 3662

3. PRIORITY POLLUTANT ANALYSIS REPORT

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
1V.	ACROLEIN	BDL	R	100
2V.	ACRYLONITRILE	BDL	R	100
3V.	BENZENE	>10000 **	J	10
4V.	BIS (CHLOROMETHYL) ETHER	BDL	R	10
5V.	BROMOFORM	BDL	R	10
6V.	CARBON TETRACHLORIDE	BDL	R	10
7V.	CHLOROBENZENE	BDL	R	10
8V.	CHLORODIBROMOMETHANE	BDL	R	10
9V.	CHLOROETHANE	BDL	R	10
10V.	2-CHLOROETHYLVINYL ETHER	BDL	R	10
11V.	CHLOROFORM	BDL	R	10
12V.	DICHLOROBROMOMETHANE	BDL	R	10
13V.	DICHLORODIFLUOROMETHANE	BDL	R	10
14V.	1, 1-DICHLOROETHANE	BDL	R	10
15V.	1, 2-DICHLOROETHANE	BDL	R	10
16V.	1, 1-DICHLOROETHYLENE	BDL	R	10
17V.	1, 2-DICHLOROPROPANE	BDL	R	10
18V.	1, 3-DICHLOROPROPYLENE	BDL	R	10
19V.	ETHYLBENZENE	BDL	R	10
20V.	METHYL BROMIDE	BDL	R	10
21V.	METHYL CHLORIDE	BDL	R	10
22V.	METHYLENE CHLORIDE	BDL	R	10
23V.	1, 1, 2, 2-TETRACHLOROETHANE	BDL	R	10
24V.	TETRACHLOROETHYLENE	BDL	R	10
25V.	TOLUENE	14	J	10
26V.	1, 2-TRANS-DICHLOROETHYLENE	BDL	R	10
27V.	1, 1, 1-TRICHLOROETHANE	BDL	R	10
28V.	1, 1, 2-TRICHLOROETHANE	BDL	R	10
29V.	TRICHLOROETHYLENE	BDL	R	10
30V.	TRICHLOROFLUOROMETHANE	BDL	R	10
31V.	VINYL CHLORIDE	BDL	R	10
1A.	2-CHLOROPHENOL	>1000*	R	25
2A.	2, 4-DICHLOROPHENOL	1100	R	25
3A.	2, 4-DIMETHYLPHENOL	BDL	R	25
4A.	4, 6-DINITRO-O-CRESOL	BDL	R	250
5A.	2, 4-DINITROPHENOL	BDL	R	250
6A.	2-NITROPHENOL	BDL	R	25
7A.	4-NITROPHENOL	BDL	R	25
8A.	P-CHLORO-M-CRESOL	BDL	R	25
9A.	PENTACHLOROPHENOL	BDL	R	25
10A.	PHENOL	>10000 *	R	25
11A.	2, 4, 6-TRICHLOROPHENOL	>10000 *	R	25
1B.	ACENAPHTHENE	BDL	R	10
2B.	ACENAPHTHYLENE	BDL	R	10
3B.	ANTHRACENE	BDL	R	10

BDL= BELOW DETECTION LIMIT
* Saturated Ion
** Value determined by Secondary Ion in a 20:1 dilution

ORIGINAL (Red)

SAMPLE IDENTIFIER: 8060
COMPU/CHEM SAMPLE NUMBER: 3662

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
4B.	BENZIDINE	BDL	R	10
5B.	BENZO (A) ANTHRACENE	BDL	R	10
6B.	BENZO (A) PYRENE	BDL	R	10
7B.	3, 4-BENZOFLUORANTHENE	BDL	R	10
8B.	BENZO (GHI) PERYLENE	BDL	R	25
9B.	BENZO (K) FLUORANTHENE	BDL	R	10
10B.	BIS (2-CHLOROETHOXY) METHANE	BDL	R	10
11B.	BIS (2-CHLOROETHYL) ETHER	BDL	R	10
12B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	R	10
13B.	BIS (2-ETHYLHEXYL) PHTHALATE	20	J	10
14B.	4-BROMOPHENYL PHENYL ETHER	BDL	R	10
15B.	BUTYL BENZYL PHTHALATE	BDL	R	10
16B.	2-CHLORONAPHTHALENE	BDL	R	10
17B.	4-CHLOROPHENYL PHENYL ETHER	BDL	R	10
18B.	CHRYSENE	BDL	R	10
19B.	DIBENZO (A, H) ANTHRACENE	BDL	R	25
20B.	1, 2-DICHLOROBENZENE	BDL	R	10
21B.	1, 3-DICHLOROBENZENE	BDL	R	10
22B.	1, 4-DICHLORBENZENE	BDL	R	10
23B.	3, 3'-DICHLOROBENZIDINE	BDL	R	10
24B.	DIETHYL PHTHALATE	BDL	R	10
25B.	DIMETHYL PHTHALATE	BDL	R	10
26B.	DI-N-BUTYL PHTHALATE	BDL	R	10
27B.	2, 4-DINITROTOLUENE	BDL	R	10
28B.	2, 6-DINITROTOLUENE	BDL	R	10
29B.	DI-N-OCTYL PHTHALATE	BDL	R	10
30B.	1, 2-DIPHENYLHYDRAZINE	BDL	R	10
31B.	FLUORANTHENE	BDL	R	10
32B.	FLUORENE	BDL	R	10
33B.	HEXACHLOROBENZENE	BDL	R	10
34B.	HEXACHLOROBUTADIENE	BDL	R	10
35B.	HEXACHLOROCYCLOPENTADIENE	BDL	R	10
36B.	HEXACHLOROETHANE	BDL	R	10
37B.	INDENO (1, 2, 3-CD) PYRENE	BDL	R	25
38B.	ISOPHORONE	BDL	R	10
39B.	NAPHTHALENE	BDL	R	10
40B.	NITROBENZENE	BDL	R	10
41B.	N-NITROSODIMETHYLAMINE	BDL	R	10
42B.	N-NITROSODI-N-PROPYLAMINE	BDL	R	10
43B.	N-NITROSODIPHENYLAMINE	BDL	R	10
44B.	PHENANTHRENE	BDL	R	10
45B.	PYRENE	BDL	R	10
46B.	1, 2, 4-TRICHLOROBENZENE	BDL	R	10
1P.	ALDRIN	BDL	R	10
2P.	ALPHA-BHC	BDL	R	10

BDL= BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 8060
COMPU/CHEM SAMPLE NUMBER: 3662

	COMPOUNDS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
3P.	BETA-BHC	BDL	R	10
4P.	GAMMA-BHC	BDL	R	10
5P.	DELTA-BHC	BDL	R	10
6P.	CHLORDANE	BDL	R	10
7P.	4, 4'-DDT	BDL	R	10
8P.	4, 4'-DDE	BDL	R	10
9P.	4, 4'-DDD	BDL	R	10
10P.	DIELDRIN	BDL	R	10
11P.	ALPHA-ENDOSULFAN	BDL	R	10
12P.	BETA-ENDOSULFAN	BDL	R	10
13P.	ENDOSULFAN SULFATE	BDL	R	10
14P.	ENDRIN	BDL	R	10
15P.	ENDRIN ALDEHYDE	BDL	R	10
16P.	HEPTACHLOR	BDL	R	10
17P.	HEPTACHLOR EPOXIDE	BDL	R	10
18P.	PCB-1242	BDL	R	10
19P.	PCB-1254	BDL	R	10
20P.	PCB-1221	BDL	R	10
21P.	PCB-1232	BDL	R	10
22P.	PCB-1248	BDL	R	10
23P.	PCB-1260	BDL	R	10
24P.	PCB-1016	BDL	R	10
25P.	TOXAPHENE	BDL	R	10