Document Control No.: 4200-016-081-AEMS

FINAL
SITE INSPECTION PRIORITIZATION REPORT
AMENIA
TOWN OF AMENIA, NEW YORK

CERCLIS I.D. No.: NYD980641559

23 SEPTEMBER 1994

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Prepared by:

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W.O. No.: 04200-022-081-0081

295870

GENERAL DESCRIPTION AND SITE HISTORY

The inactive Amenia site (CERCLIS ID No. NYD980641559) is located in the Town of Amenia, Dutchess County, New York, and is 10 acres in size (Ref. Nos. 1, p. 4-1; 18). The site is located in a rural valley, bordered to the east by Route 22 and to the north and west by a freshwater wetland through which perennial stream (unnamed tributary to Amenia Brook) flows (Ref. No. 3). Amenia is also known (in historical information) as "Surico Refuse Disposal" and "Amenia-Route 22 South" (Ref. No. 2, pp. 42, 65). The site began accepting waste in the late 1940s and officially closed on 16 April 1976 (Ref. No. 21, p. 4-1, 4-4).

The site was originally owned by William and Mary Murphy. During the Murphys' ownership of the land, the Town of Amenia leased the property and operated the landfill. A 26 April 1963 Dutchess County Department of Health (DCDOH) inspection report states that the landfill was jointly operated by the highway departments of Amenia and the Town of Sharon (Connecticut). Parties listed as disposing of waste at the landfill included the Town of Sharon and the Sharon Hospital. Additional parties that disposed of waste on site were listed in an October 1966 DCDOH inspection report as the Town of Amenia, residents of the Town of Sharon, Tri-Wall Corporation, and two unnamed commercial haulers (Ref. No. 21, p. 4-1).

Operation of the landfill continued until December 1968, when the Murphy's sold the site to Salvatore (Ben) Surico. At this time the Town of Amenia discontinued dumping at the site and opened an emergency disposal area immediately north of the site on property owned by Walt and Emily Culver. This area (which is not part of this investigation) was operated for approximately one year, starting in January 1969 (Ref. No. 21, p. 4-1).

Mr. Surico re-opened the landfill in 1969 and operated it until April 1971. A DCDOH inspection conducted in October 1970 noted "several hundred barrels of industrial waste" covering a 1-acre area in the southern part of the site. Some of the barrels were punctured and had discharged their contents, which included oily liquids of various colors and a white powder, onto the ground (Ref. No. 2, p. 42).

In June 1971, Mr. Surico transferred the property to the Tri-Town Landfill Corporation (Tri-Town), of which he was president. In August 1971, two acres of the site were sold by Tri-Town to Thomas C. Romano, Peter J. Brevi, and Archie Deane, Jr. These individuals were all residents of the Town of Amenia. This 2-acre portion of the site, currently owned by Karl Saliter of the Town of Sharon, Connecticut, is used by Sharon Oil for fuel storage; several aboveground tanks are located in a bermed and fenced area (Ref. Nos. 4,6). Mr. Saliter and his wife are the owners of the Sharon Oil & Gas Company (Ref. No. 21 p. 4-4).

A November 1971 DCDOH inspection report regarding the landfill stated that Mr. Surico was in bankruptcy and that the Town of Amenia had assumed responsibility for operating the landfill. The town continued to operate the landfill until it was officially closed on 16 April 1976, about the same time the Harlem Valley Landfill opened 0.25 mile southwest of the site. Ownership of the property was transferred several times between 1971 and 1976. The current owner of the site is John Segalla, a resident of the Town of Amenia (Ref. Nos. 21, p. 4-5; 6).

Waste sources at this site include drums (barrels) and the landfill itself. Reportedly the chemicals in the drums were pumped out and shipped out of state for disposal. Empty drums were sold if not damaged; if damaged, the empty drums were crushed and buried. The exact number of drums stored or disposed of at the site as well as the areal extent and depth of the landfill is unknown (Ref. No. 2, p. 42).

Sampling was conducted at the site on 25 February 1987 by NUS Corporation Region 2 Field Investigation Team during a site inspection conducted on behalf of the U.S. EPA. The Site Inspection report was submitted to EPA in December 1990. Samples collected included three groundwater samples from two public supply wells and one domestic supply well, three surface water and three sediment samples from the nearby unnamed tributary, one surface soil samples from the northeastern site perimeter and three surface soil samples from the western site perimeter. Samples were analyzed for Target Compound List (TCL) organic compounds and Target Analyte List (TAL) metals under the U.S. EPA Contract Laboratory Program (CLP) (Ref. No. 2, p. 6). Additional sampling was conducted at the site by Lawler, Matusky and Skelly Engineers as part of a Phase II Investigation conducted on behalf of the New York State Department of Environmental Conservation (NYSDEC) in April 1993. Samples collected included 24 surface soil samples (2 from the northeast corner and 22 from the western perimeter of the site) and 5 surface water and 5 sediment samples from the nearby unnamed tributary. Samples were analyzed for TCL organic compounds, Extraction Procedure (EP) toxicity, RCRA hazardous characteristics, and metals (Ref. No. 21, p. 4-12 to 4-17). Analytical results are presented in Table 1.

An off-site reconnaissance of the Amenia site was conducted by Roy F. Weston, Inc. (WESTON) on 20 June 1994 in order to document current site conditions. During this reconnaissance, it was observed that the closest residence exists approximately 750 feet south of the site and an active golf course is located west of the site. It also appears that a helicopter pad has been built on the northern section of the site near the oil storage tanks whose presence had been noted in previous reports. The landfill area appeared to be sparsely vegetated with patches of sand and gravel visible and appeared inactive. There were no barriers or fences to prevent unauthorized access (Ref. No. 4).

WESTON
MANAGERS DESIGNERS/CONSULTANTS

Document Control No.: 4200-22-AEMS

TABLE 1

SUMMARY OF SELECTED ANALYTICAL RESULTS FOR SAMPLING EVENTS CONDUCTED AT THE AMENIA LANDFILL

(All results in mg/kg except where noted)

Hazardous Substance	Matrix	Downgradient	Upgradient
Aroclor-1232	sediment	18.0	ND
Aroclor-1248	sediment	5.2	0.51
Iron	sediment	175,000	18,400
Lead	sediment	128,000	51,400
Magnesium	sediment	71.4	19.1
Manganese	sediment	1,380	132
Zinc	sediment	510	72
Manganese	surface water	590	175
Aroclor-1248 (ug/kg)	soil	170,000	NA
Magnesium	soil	20,400	100-5,000*
Zinc	soil	224	9-50*

Notes:

ND - Not detected at analytical detection limit.
NA - Not applicable.
mg/kg - Milligrams per kilogram.
ug/kg - Micrograms per kilogram.
ug/L - Micrograms per liter.
J - Compound identified below detection limit; estimated value
* - Eastern USA Background (Ref No. 19)

Ref Nos. 2, pp. 142-248; 21, pp. 4-12B4, 4-15A3, 4-16A1.

EVALUATION OF EXISTING INFORMATION AND SITE INSPECTION REPORT

Existing information and analytical data, primarily from the December 1990 NUS Corporation Site Inspection report and supporting documentation file, were used to conduct an evaluation of the site. Updated and additional information and data were also collected in order to evaluate the site and determine whether further CERCLA action is required. Specifically, the groundwater migration pathway was updated to include wells located within a 4-mile radius of the site and the surface water migration pathway was updated to include receptors within 15 miles downstream of the site. In addition, the air migration pathway was evaluated with respect to 1990 census data and sensitive environments, including threatened and endangered species habitats.

HAZARD ASSESSMENT

Groundwater Migration Pathway - A release from the site to groundwater is neither observed or suspected. An evaluation of the data from groundwater samples collected from one residential (downgradient) and two public supply (upgradient) wells in the vicinity of the Amenia site do not indicate a release of contaminants to groundwater from the site; however, it should be noted that the downgradient sample obtained was from a residential well located approximately 1 to 2 miles from the site (Ref. No. 2, p. 151). The site has no known liner or leachate collection system (Ref. No. 2, p. 116). No monitoring wells are known to exist on site.

The aquifer of concern consists of Pleistocene sand and gravel, as well as the underlying Stockbridge limestone, which are considered to act as one geohydrologic unit in this area (Ref. Nos. 2, p. 120; 5, pp. 17-19, 23-25). The Pleistocene sand and gravel consists of stream-laid deposits, called outwash, laid down by melt water streams. The deposits range from layers of relatively clean sand to layers composed of a mixture of sand and gravel (Ref. No. 5, p. 25). The Pleistocene sand and gravel has an estimated hydraulic conductivity of 10^{-4} centimeters per second (cm/sec) (Ref. No. 20). The underlying Stockbridge limestone consists of carbonate rocks which range in composition from almost pure calcium carbonate (limestone) to almost pure calcium-magnesium carbonate (dolomite) (Ref. No. 5, p. 17). The hydraulic conductivity of the Stockbridge limestone is estimated to be 10^{-6} cm/sec (Ref. No. 20).

Based on a review of well records in the area of the site, the depth from the lowest point of waste disposal (assuming that ground surface is the lowest point) to groundwater is less than 20 feet (Ref. No. 5, Table 13). The nearest well used for drinking is located approximately 0.3 mile from site (Ref. No. 3). Groundwater flow in the area of the site is in a southerly direction (Ref. No. 2, p. 13). Drinking water within 4 miles of the site is derived from both private and public supply wells (Ref No. 8). These wells serve a total population of approximately 8,010 people (0-¼ miles: 10; ¼-½ miles: 40; ½-1 miles: 250; 1-2 miles: 1,120; 2-3 miles: 1,470;

3-4 miles 5,120) (Ref. No. 8; 9). There is a wellhead protection area located within a four mile radius of the site (Ref. No. 10; 11).

Surface Water Migration Pathway - There is an observed release of hazardous substances from the site to surface water as determined by analytical evidence. Analytical results for downstream sediment samples collected from a pond that discharges to the unnamed tributary to Amenia Brook indicate polychlorinated biphenyl (PCB) concentrations at least three times higher than concentrations in a sample collected from an upstream location in the same pond. Soil samples collected from the site at locations adjacent to this pond also contain PCBs (Ref. No. 21, p. 4-16A1).

The nearest downslope surface water is the unnamed tributary to the Amenia Brook, and is approximately 200 feet from the site (Ref. No. 3). There are no surface water intakes which supply drinking water within 15 mile downstream of the site (Ref. No. 8). The unnamed tributary to Amenia Brook flows into Amenia Brook approximately 0.15 mile downstream of the site. Amenia Brook flows in a southerly direction for about 1.8 miles before emptying into the Wassaic Creek. Wassaic Creek also flows in a southerly direction for about 2 miles before emptying into Ten Mile River. The surface water pathway ends approximately 11 miles downstream of the Wassaic Creek in Ten Mile River near the Town of South Dover (Ref. No. 15). The unnamed tributary to Amenia Brook, Amenia Brook and Wassaic Creek are all class C(T) streams with flow rates estimated to be less than 5 cubic feet per second. Ten Mile River is classified as a C(T) stream, with the exception of a small portion of the river approximately 0.2 mile long located approximately 7 miles from site. This small portion is classified as B(T). The flow rate for Ten Mile River is estimated to be 15 cubic feet per second (Ref. No. 12, 13). Class B(T) and C(T) streams are designated by the NYSDEC for fish propagation and survival (Ref. No. 22).

All of the water bodies along the surface water migration pathway, with the exception of the unnamed tributary, are fisheries (Ref. No. 16). Wetlands along the surface water migration pathway consist of palustrine and riverine wetlands. Since it is unknown if the palustrine wetlands flood annually, they were not evaluated except for wetlands that are within the boundary of the release. The applicable wetland frontage found along the 15-mile surface water migration pathway totals approximately 1.3 miles, of which 1.0 mile is located along Ten Mile River, 0.11 mile is located along the unnamed tributary to Wassaic Creek and Wassaic Creek itself, and 0.1 mile which is classified as Level II wetlands along the unnamed tributary (Ref. Nos. 15; 21, p. 4-16A1). The Level II wetlands are located adjacent to site. Surface water bodies within the 15-mile surface water migration pathway are considered sensitive environments since they are areas designated for the protection and maintenance of aquatic life. There are no other known sensitive environments along the waterways associated with the surface water migration pathway. The site is located outside the boundary of the 500-year floodplain (Ref.

No. 14). It was reported that the Ten Mile River is used for irrigation purposes and the upper portion of the Wassaic Creek is used for cattle watering; however, it was not possible to determine the exact locations of these activities (Ref. No. 13).

Soil Exposure Pathway - Observed contamination of on-site soils is documented (Ref. No. 2, p. 171, 236, 237; 21, p. 4-12A, 4-12B3, 4-12B4). During sampling efforts conducted at the site in the past, background samples were not collected; however, zinc and magnesium were found at concentrations three times that of background levels typically found in the eastern United States (Ref. No. 19). In addition, PCB concentrations were detected in soil samples. The depths at which the above samples were collected is unknown; however, available information suggests that the samples were obtained as grab samples from the surficial soil horizon (i.e., within 2 feet of the ground surface) (Ref. Nos. 2, pp. 50-52; 21, p. 4-12A). Because only limited soil sampling has been conducted at the site the exact extent of contamination is unknown. The site is located in a rural area; no residences, schools, or day care centers are known to exist within 200 feet of observed contamination (Ref. Nos. 3; 4). There are no workers on site; on-site operations ceased in 1975 (Ref. No. 2, p. 5). An off-site reconnaissance conducted by WESTON on 20 June 1994 confirmed that the site is not fenced and is inactive (Ref. No. 4). There are no terrestrial sensitive environments, including threatened or endangered species habitats, located on or within 200 feet of the site boundaries (Ref. No. 17).

Air Pathway - A release of contaminants to air is not observed or suspected. No analytical data are available to document a release to air. During the on- and off-site sampling effort conducted by NUS Corporation on 25 February 1987 one organic vapor analyzer (OVA) reading of 40 units above background was observed near a soil pile by a storage tank located in the northeast corner of the site (Ref. No. 2, p. 50). There are approximately 8,010 people living within a 4-mile radius of the site (0-¼ miles: 10; ¼-½ miles: 40; ½-1 miles: 250; 1-2 miles: 1,120; 2-3 miles: 1,470; 3-4 miles 5,120) (Ref. No. 9). Within a 4-mile radius of the site there is a total of approximately 830 acres of wetlands (0-¼ mile: 30; ¼-½mile: 20; ½-1 mile: 30; 1-2 miles: 80; 2-3 miles: 300; 3-4 miles: 370) (Ref. No. 15). Also within the 4-mile radius are other sensitive environments, including one State-listed endangered species habitat and two State-listed threatened species habitats (Ref. No. 17).

SUMMARY

The existing information and data and the additional information collected were sufficient to evaluate this site. Analytical data indicate that the unnamed tributary to Amenia Brook located near the site has been impacted. Fisheries and sensitive environments are located within 15 miles downstream of the site. No residences, schools, or day care centers are within 200 feet of the site. The closest potable well is located approximately 0.3 mile from site.

REFERENCES

1. Engineering Investigations at Inactive Hazardous Waste Sites, Phase 1 Investigation, Amenia - Route 22 South, Site No. 314006, prepared by EA Science and Technology, August 1986.

2. Final Draft Site Inspection Report, Amenia, Amenia, Dutchess County, New York, NUS Corporation, 19 December 1990.

3. Four-mile Vicinity Map for Amenia, compiled from U.S. Department of Interior, Geological Survey Topographic Maps, 7.5 Minutes Series; "Amenia, NY" Quadrangle, 1958, photorevised 1984; "Millerton, NY-CONN" Quadrangle, 1955; "Millbrook, NY" Quadrangle, 1960; and "Ellsworth, CONN" Quadrangle, 1956, photorevised 1969.

4. Field Notebook, Amenia Site, Work Order No. 04200-022-081-0018, Document Control Number 4200-22-ADWW, Off-Site Reconnaissance conducted by Roy F. Weston, Inc. (WESTON), Edison, New Jersey, 20 June 1994.

5. Ground-Water Resources of Dutchess County, New York, Bulletin GW - 43, U.S. Geological Survey, 1961

6. Phone Conversation Record: Conversation between Harold Kinney, Tax Assessor, Town of Amenia, and Sandra Klepacki, WESTON, 23 August 1994.

7. United States Geological Survey (USGS) well log data from USGS computer data base, 1 June 1994.

8. Project Note from Sandra Klepacki, WESTON, to Amenia File, Subject: Public Water Supply, 30 June 1994; plus attachments.

9. Project Note from Sandra Klepacki, WESTON, to Amenia File, Subject: Population Data, 30 June 1994; plus attachments.

10. Letter from Constantine Sidamon-Eristoff, Regional Administrator, U.S. EPA, to Honorable Mario M. Cuomo, Governor of the State of New York, 27 September 1990; plus attachments.

11. Miller, Todd S. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York--Lower Hudson Sheet, U.S. Geological Survey, Water Resources Investigation Report 88-4706, 1988.

REFERENCES (CONTINUED)

12. Letter from Joseph F. Marcogliese, P.E., NYSDEC, Division of Water, to Sandra Klepacki, WESTON, 27 May 1994.

13. Project Note from Sandra Klepacki, WESTON, to Amenia File, Subject: Stream Flow and Use Information, 30 June 1994.

14. National Flood Insurance Program Flood Insurance Rate Map, Town of Amenia, New York, Dutchess County, Community-Panel Number 361332 0009 D, map revised November 15, 1989.

15. Fifteen-Mile Surface Water Pathway Map for the Amenia Site, compiled from the U.S. Fish and Wildlife Service, Natural Wetlands Inventory Maps, "Amenia, NY" Quadrangle, 1990; "Millerton, NY-CONN" Quadrangle, 1990; and "Millbrook, NY" Quadrangle, 1990; "Ellsworth, CONN" Quadrangle, 1990; "Dover Plains, NY" Quadrangle 1990.

16. Phone Conversation Record: Conversation between Ron Pierce, NYSDEC - Fish Division, and Michelle Hunter, WESTON, 23 May 1994.

17. Project Note from Sandra Klepacki, WESTON, to Amenia File; Subject: Sensitive environments, 30 June 1994; plus attachment.

18. U.S. Environmental Protection Agency (EPA) Superfund Program, Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), List-4: Site Alias Location Listing, p. 286, 3 June 1994; and List-8: Site/Event Listing, p. 290, 6 June 1994.

19. NYSDEC memorandum from Michael J. O'Toole, Jr. Director, Division of Hazardous Waste Remediation, to Regional Hazardous Waste Remediation Engineers, Bureau Directors, and Section Chiefs (all of NYSDEC), Subject: Determination of Soil Cleanup Objectives and Cleanup Levels. 24 January 1994.

20. Federal Register, Vol. 55, No. 241, p. 51601, 14 December 1990.

21. Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase II Investigation, Old Amenia Landfill, NYSDEC ID No. 314006, prepared by Lawler, Matusky & Skelly Engineers, April 1993.

22. NYSDEC Water Quality Regulations, Surface Water and Groundwater Classifications and Standards, New York State Codes, Rules and Regulations, Title 6, Chapter X, Parts 700-705, 31 August 1991.

REFERENCE NO. 1

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE 1 INVESTIGATION
Amenia - Route 22 South
Site No. 314006
Town of Amenia, Dutchess County
Final - August 1986

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
Henry G. Williams, Commissioner

Division of Solid and Hazardous Waste
Norman H. Nosenchuck, P.E., Director

Prepared by:

EA SCIENCE AND TECHNOLOGY
A Division of EA Engineering, Science, and Technology, Inc.

EA REPORT DEC51A

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK PHASE I INVESTIGATIONS

AMENIA - ROUTE 22, SOUTH SITE
TOWN OF AMENIA, DUTCHESS COUNTY
NEW YORK ID NO. 314006

Prepared for

Division of Solid and Hazardous Waste
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Middletown, New York 10940

A Division of EA Engineering, Science, and Technology, Inc.

August 1986

Latitude: 41° 49' 38.9"
Longitude: 73° 33' 47.1"

AMENIA - ROUTE 22 , SOUTH SITE

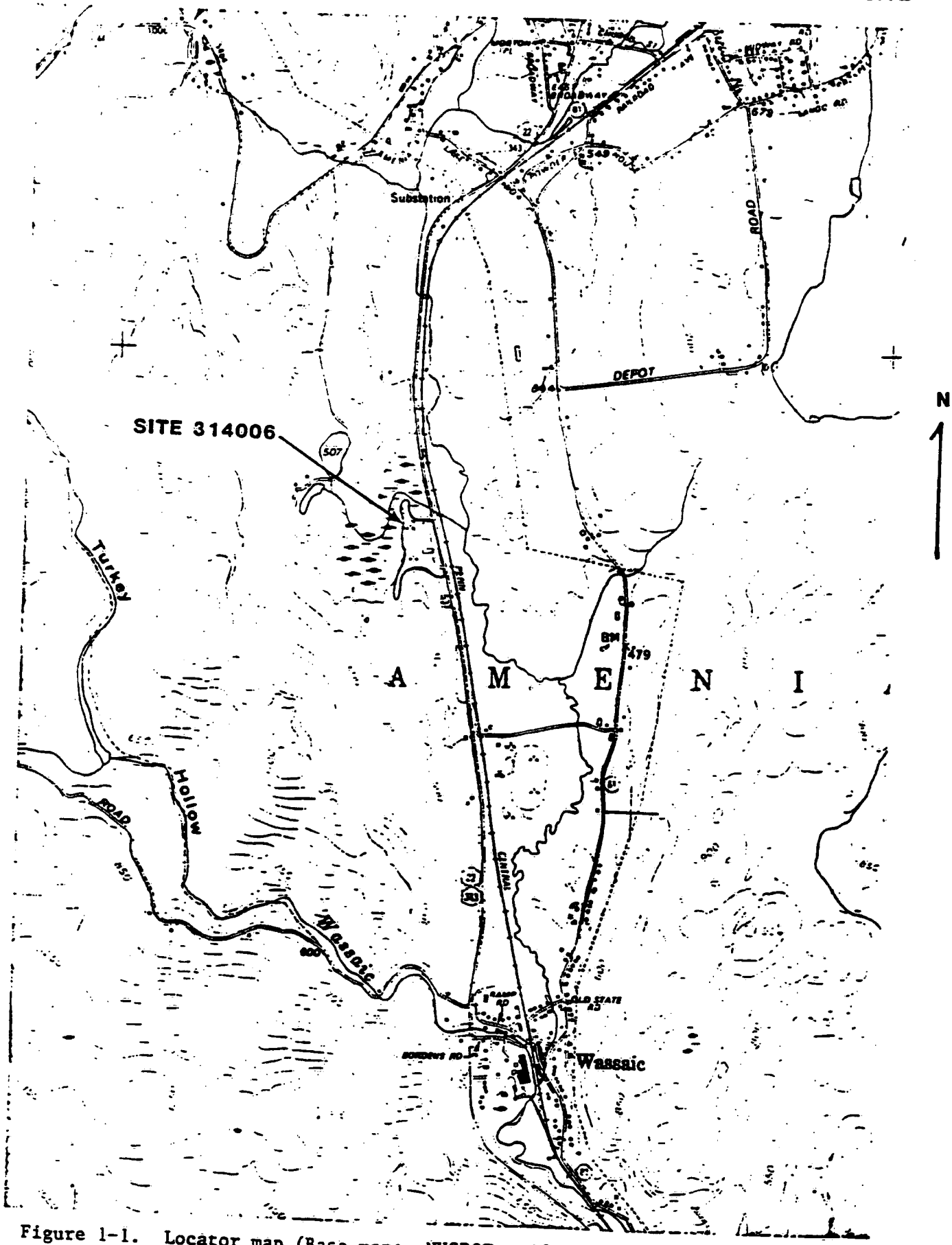

Figure 1-1. Locator map (Base map: NYSDOT. 1973. 7.5-Minute Series Topographic. Scale 1:24,000).

AMENIA QUAD

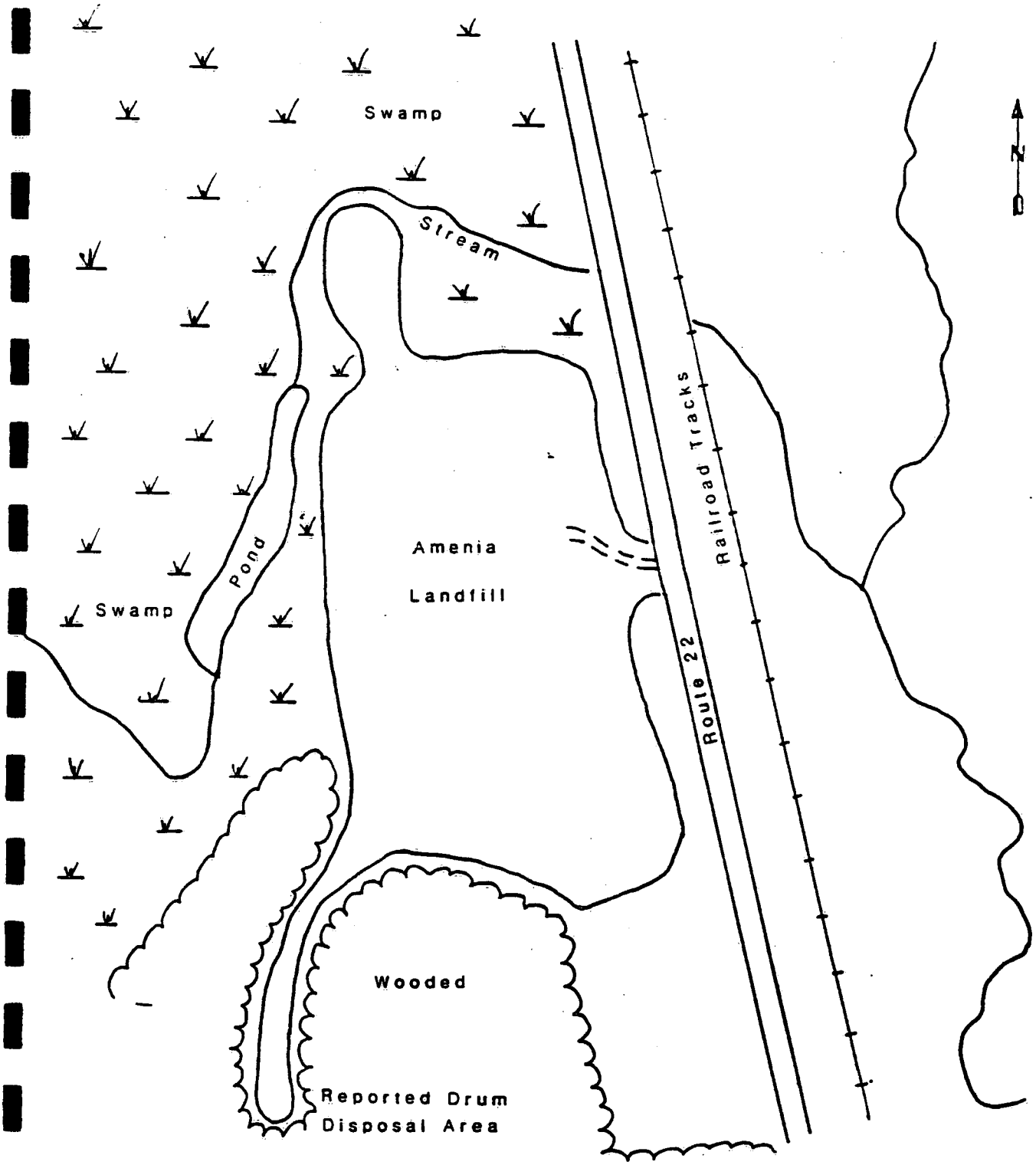

Figure 1-2. Site sketch. Amenia-Route 22, South site, 16 January 1985 (Not to scale).

4. SITE ASSESSMENT - AMENIA

4.1 SITE HISTORY

The Town of Amenia - Route 22, South site is an inactive municipal dump, approximately 10 acres in size, located on the west side of Route 22 in the Town of Amenia, Dutchess County, New York. The southern portion of the site area has recently been purchased by Mr. John Segalla of Leedsville Road, Amenia, New York 12501 (Appendix A1.1-1). The northern portion is currently owned by Mr. Karl Saliter of Box 128, Jackson Hill Road, Sharon, Connecticut 06069. Available information on the history of the site relative to the period of operation, site owners during operation of the dump, and location of the fill areas is incomplete. Mr. Harry Bly, Chairman, Amenia Zoning Board of Appeals, was interviewed during the site inspection conducted by EA on 16 January 1985, and provided information on his knowledge of the site (Appendix A1.1-2).

It is not known when operation of the site as a dump began. However, the dump operated for many years receiving municipal wastes from the Towns of Amenia, New York and Sharon, Connecticut. The site was privately owned by the "Murphy brothers" for a period of time during operation of the disposal area. A local resident, Mr. Surico, operated the site for a number of years. At an unknown point in time, he purchased the northern section of the site area from the Murphys (Appendix A1.1-1). Mr. Surico was forced to close the site in January 1969 by the Town of Amenia (Appendix A1.1-3). At closure, an unknown number of

55-gal drums were stored on the Surico property (Appendix A1.1-2). It is not known what was stored in the drums, if anything. Some of the drums were removed at a later time.

Following closure in January 1969, the Town of Amenia opened an emergency disposal area on property owned by Walt and Eleanor Culver that is located to the north of the site in question (Appendix A1.1-4). (This smaller disposal area, known as the Amenia - Route 22, North site, is not part of this Phase I investigation.) This emergency disposal area was operated for about a year and then closed (Appendix A1.1-2). Following this, the southern section of the site area, by then owned by Metal Improvement Company, Inc., was leased and operated by the Town of Amenia and the Town of Sharon, Connecticut until closed (Appendixes A1.1-2 and A1.1-5). Mr. Bly was uncertain exactly when the dump was permanently closed and covered over, but he indicated it was about the same time that the Harlem Valley Landfill (located southwest of the site) was started. A NYSDEC hazardous waste disposal site report indicates that the landfill was closed in 1975 (Appendix A1.1-5). At final closure, the main fill area received soil cover of unknown depth applied by a local contractor hired by the Town of Amenia (Appendix A1.1-1).

It is suspected that some drums may be buried at the site. According to NYSDEC hazardous waste disposal site reports (Appendix A1.1-4), evidence of drums south of the southwest corner of the site were observed as recently as December 1979. Notes in the Dutchess County Environmental Management Committee files regarding a site inspection conducted in December 1980 indicated that barrels were visible protruding from the ground (Appendix A1.1-7). There were no drums observed onsite during the site inspection conducted 16 January 1985.

The site is suspected by NYSDEC of having received industrial wastes from the general area, however, no generators have been identified. The DCDOH believes the site to have received normal refuse only. There is no documentation of hazardous or toxic waste disposal at the site.

4.2 SITE TOPOGRAPHY

The former Amenia landfill, located west of State Route 22 and approximately 2 mi south of the Village of Amenia, covers a total area of about 10 acres. The landfill is situated adjacent to a wetland through which a permanent stream (unnamed tributary of Wassaic Creek) runs (Figures 1-1 and 1-2). It is suspected that wastes may have been disposed of in a portion of the marsh north of the landfill. The surface of the landfill is vegetated with grass and slopes toward the west and north (average slope = approximately 21 percent). The west edge of the landfill drops off sharply to the wetland (slope = approximately 46 percent).

A smaller fill area (about one acre in size), known as Amenia - Route 22, North site, is located on the north edge of the marsh. This site is overgrown with brush and is relatively flat. Trash is visible on the ground surface. Both fill areas have separate access roads, and access to the sites is not restricted.

Two lakes are located approximately 1,000 ft west of the site. Both lakes are upgradient (20 ft higher in elevation) of the site. Both lakes discharge to the permanent stream that runs through the marsh adjacent to the landfill.

The nearest residence is located about 1,350 ft to the west, and the nearest commercial building is about 2 mi northeast of the site. There are no national/state parks or forests located within 2 mi of the landfill.

4.3 SITE HYDROGEOLOGY

The site is directly underlain by glacial outwash sand and gravel deposits. These sediments are confined to the valley floor and are of limited areal extent. Approximately 1 mi north of the site, these sediments are at least 70 ft in thickness and comprised of 28 ft of water bearing gravel overlain by 42 ft of clay with a gravel lens (Appendix A1.3-1: Simmons et al. 1961, Well Du 99). However, there is no site-specific data to confirm the presence of this thick clay at the site. The unconsolidated deposits which blanket the adjacent hillsides are comprised of glacial till.

The glacial sediments are underlain by marble bedrock of the Cambro-Ordovician Age Stockbridge Formation. There are several thrust faults within 1-2 mi of the site which are related to the Taconic Orogeny. The bedrock is present at or within 3 ft of ground surface at several locations throughout the valley, including the hills north and south of the site as shown on Appendix A1.3-1 (Gerber 1982).

Both the glacial sediments and marble bedrock (designated by Gerber as Aquifer No. 74 on Appendix A1.3-1) have been developed by wells for domestic (rural area) and public (Village of Amenia) water supplies and are both considered as the aquifer of concern. The glacial sediment portion of the aquifer of concern includes the sand and gravel deposits which are bounded by the adjacent glacial

till covered mountains as shown on Appendix A1.3-1 (Gerber 1982). Based upon the available literature, hydraulic connection between these two general aquifers cannot be confirmed. However, because bedrock is reportedly within 3 ft of ground surface in the immediate vicinity of the site, the bedrock aquifer, as well as the glacial sediment aquifer, may be affected by conditions at the site.

The data in this section is based upon:

1. Gerber, R.G. 1982. Final Report, Water Resources Study for Dutchess County: Amenia Quad with Surficial and Bedrock Aquifer Delineations. (Appendix A1.3-2.)

2. Simmons, E.T. et al. 1961. Ground-Water Resources of Dutchess County, New York: Well Logs. (Appendix A1.3-1.)

3. New York State Department of Health. 1982. New York State Atlas of Community Water System Sources.

4.4 SITE CONTAMINATION ASSESSMENT

Waste Types and Quantities

Though it is suspected that industrial wastes were received at the site, there is no documentation of it. It is reported that a number of 55-gal drums were stored at the site, however, it is not known what they contained, if anything.

Assuming that industrial wastes were disposed of at the site, there is a potential for soil, surface water, and ground-water contamination.

Ground Water

No data available.

Surface Water

No data available.

Soil

No data available.

Air

Total volatile organic vapors were measured during EA's site inspection (16 January 1985) using an HNU photoionizer. No levels above background were detected.

AMENIA - ROUTE 22, SOUTH SITE
TOWN OF AMENIA, DUTCHESS COUNTY

The Amenia - Route 22, South site, located on the west side of State Route 22 in the Town of Amenia, Dutchess County, New York, covers a total area of approximately 10 acres. The landfill, privately owned, was leased and operated by the Town of Amenia for several decades. The site received municipal wastes from the Town of Amenia, as well as Sharon, Connecticut. The NYSDEC suspects that industrial wastes were received at the site, however, there is no documentation of this. In 1969, a number of 55-gal drums were stored at the site. It is not known if the drums were empty or if they contained hazardous substances. Drums were observed on the landfill surface as recently as 1979.

There are no data available to evaluate site contamination. The site is partially surrounded by a marsh and there is a potential for soil, surface water, and ground-water contamination. The site is underlain by glacial outwash sand and gravel deposits. Both the glacial sediment and bedrock aquifers are considered to be aquifers of concern. The total population estimated to be utilizing these aquifers of concern is 1,718.

REFERENCE NO. 2

Reviewed: 1/10/92
Recommend: H.
by G. Ferreira

NUS CORPORATION
A Halliburton Company

FINAL DRAFT
SITE INSPECTION REPORT
AMENIA
AMENIA, DUTCHESS COUNTY, NEW YORK

FIELD INVESTIGATION TEAM ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCES FACILITIES — ZONE I

NUS CORPORATION
SUPERFUND DIVISION

02-8612-11-SR
REV. NO. 0

FINAL DRAFT
SITE INSPECTION REPORT
AMENIA
AMENIA, DUTCHESS COUNTY, NEW YORK

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8612-11
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

DECEMBER 19, 1990

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

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SECTION 1

SITE SUMMARY

SITE SUMMARY

Amenia consists of an inactive, 10-acre landfill located in the Town of Amenia, Dutchess County, New York (Ref. No. 5). It is also known (in historical information) as "Surico Refuse Disposal" and "Amenia-Route 22 South" (Ref. Nos. 1, 5). The site began accepting waste at an unknown time and reportedly was permanently closed in 1975 (Ref. No. 5). The owner/operator history of the site during that period is not clearly documented in available information. Apparently the site was originally owned for a period of time by persons known as the "Murphy brothers." For at least part of that time the disposal area was operated by a Mr. Surico, a local resident. Eventually, he purchased the northern section of the site from the Murphy brothers. Mr. Surico was forced to close the site by the Town of Amenia in 1969. At that time an unknown number of drums were being stored on the property (Ref. No. 5). A Dutchess County Health Department (DCHD) inspection conducted in October 1970, however, noted "several hundred barrels of industrial waste" covering a 1-acre area in the southern part of the site. Some of the barrels were punctured and had discharged their contents, which included oily liquids of various colors and a white powder, onto the ground (Ref. No. 1).

Some time after 1970 the southern section of the site was purchased by the Metal Improvement Company, Inc., which then leased the property to the Town of Amenia, New York and the Town of Sharon, Connecticut. The site received an unknown amount of municipal waste from the two townships, which operated the site until 1975. Some drums were reportedly removed from the site after the original closure in 1969; however, observations made in 1980 indicated that drums may have also been buried. The northern and southern sections of the site are currently owned by Karl Saliter of Sharon, Connecticut and John Segalla of Amenia, New York (Ref. No. 5).

Topographically the site is located in a rural valley almost completely enclosed by wooded hills with peaks over 1,300 feet above mean sea level (MSL). It lies adjacent to a freshwater wetland approximately 30 acres in size, through which flows a perennial, unnamed tributary to Amenia Brook (also known as Mill Pond Brook); Amenia Brook eventually empties into Wassaic Creek (Ref. No. 17). Both Amenia Brook and Wassaic Creek are stocked with trout and used for recreational fishing (Ref. No. 25). Surface water within 3 miles downstream of the site is not designated for use as a drinking water supply (Ref. No. 15). The unnamed tributary originates from two lakes located 1,500 feet northwest of the landfill (Ref. Nos. 17). A pond is located 200 feet west of the landfill, along the unnamed tributary (Ref. No. 3).

SITE SUMMARY (Cont'd)

The site is underlain by unconsolidated deposits of stratified drift consisting of sand and gravel. Beneath these deposits, which are generally less than 25 feet thick, lies the Stockbridge limestone formation (bedrock). The Stockbridge limestone consists of limestone and dolomite metamorphosed to marble in the eastern part of the county (Ref. No. 8). Water used for drinking is withdrawn from both aquifers, which are hydraulically connected, and supplied to over 6,600 people by municipal and domestic supply wells within 3 miles of the site (Ref. Nos. 4, 8, 11, 13, 14). No other sources of drinking water (including surface water) are used within 3 miles of the site (Ref. Nos. 4, 11, 13, 15).

During the NUS Corp. Region 2 FIT site inspection conducted on February 25, 1987, the following environmental samples were collected: three groundwater samples from two public supply wells and one domestic supply well, respectively, three surface water/sediment samples from the nearby unnamed tributary, and four surface soil samples from various locations (See Figure 2). Organic sample analyses indicates the presence of one volatile compound and one semivolatile compound in downgradient groundwater; two volatile compounds and one semivolatile compound in surface water; two volatile compounds, two semivolatile compounds, and one polychlorinated biphenyl (PCB) in sediment; and one volatile compound, three semivolatile compounds, and one PCB in on-site soils. There were no notable concentrations of inorganic substances in groundwater or surface water. Zinc, nickel, iron, and manganese were detected at concentrations more than 7, 8, 9, and 10 times higher in sediment downstream than upstream (Ref. No. 18). Inorganic analysis results for soils showed concentrations that did not vary significantly.

SECTION 2

ENVIRONMENTAL PROTECTION AGENCY FORM 2070-13

SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

01 STATE 02 SITE NUMBER
NY 0980641559

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): Amenia

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: Route 22

03 CITY: Amenia

04 STATE: NY

05 ZIP CODE: 12501

06 COUNTY: Dutchess

07 COUNTY CODE: 027

08 CONG DIST.: 21

09 COORDINATES

LATITUDE: 4 1° 4 9' 3 0". N

LONGITUDE: 0 7 3° 3 3' 5 8". W

10 TYPE OF OWNERSHIP (Check one)

X A. PRIVATE _ B. FEDERAL _ C. STATE
_ D. COUNTY _ E. MUNICIPAL _ F. OTHER
_ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 02 / 25 / 87 (MONTH DAY YEAR)

02 SITE STATUS: _ ACTIVE X INACTIVE

03 YEARS OF OPERATION: Unknown (BEGINNING YEAR) / 1975 (ENDING YEAR) _ UNKNOWN

AGENCY PERFORMING INSPECTION (Check all that apply)

_ A. EPA X B. EPA CONTRACTOR NUS Corp. Region 2 FIT (Name of firm) _ C. MUNICIPAL _ D. MUNICIPAL CONTRACTOR _____ (Name of firm)

_ E. STATE _ F. STATE CONTRACTOR _____ (Name of firm) _ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Gary Bielen	Environmental Scientist	NUS Corp.	(201) 225-6160

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Jane Bullis	Environmental Scientist	NUS Corp.	(201) 225-6160
John Ducar	Geologist	NUS Corp.	(201) 225-6160
Roberta Riccio	Environmental Scientist	NUS Corp.	(201) 225-6160
Dan de Bruijn	Chemist	NUS Corp.	(201) 225-6160

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Gerald Wilcox	Foreman	Amenia, New York	(914) 373-8151

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
X PERMISSION _ WARRANT	0900	Sunny, 15-20°F, wind 0-5 mph

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Amy Brochu	U.S. EPA Region 2, Edison, NJ	(201) 906-6802

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Thomas Varner	Region 2 FIT	NUS Corp.	(201) 225-6160	12 / 12/ 90 (MONTH DAY YEAR)

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

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY 0980641559

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

X A. SOLID
X B. POWDER, FINES
_ C. SLUDGE
_ D. OTHER _____ (Specify)
_ E. SLURRY
X F. LIQUID
_ G. GAS

02 WASTE QUANTITY AT SITE

(Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS _____
NO. OF DRUMS Several hundred

03 WASTE CHARACTERISTICS (Check all that apply)

X A. TOXIC
_ B. CORROSIVE
_ C. RADIOACTIVE
X D. PERSISTENT
_ E. SOLUBLE
_ F. INFECTIOUS
X G. FLAMMABLE
_ H. IGNITABLE
X 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			Several hundred drums were observed on site in October 1970. Some of the drums were marked as containing one of the following: Crystoton, P.F. Etchant, ferris chloride, 2-pyorrolidone, and mineral spirits.
OLW	OILY WASTE	Unknown		
SOL	SOLVENTS	Unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	Unknown		
IOC	INORGANIC CHEMICALS	Unknown		
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

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

Sampling results from NUS Corp. Region 2 FIT site inspection:

CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SOL	2-Butanone	78-93-3	detected in sediment	54	ug/kg
SOL	1,1,1-Trichloroethane	71-55-6	detected in soil	J	ug/kg
SOL	Trichloroethene	79-01-6	detected in surface water/ sediment, groundwater	J	ug/kg
OCC	Benzoic acid	65-85-0	detected in soil	1,200J	ug/kg
OCC	Diethylphthalate	84-66-2	detected in sediment	7,400	ug/kg
OCC	Di-n-butylphthalate	84-74-2	detected in soil	540J	ug/kg
OCC	Bis(2-ethylhexyl)phthalate	117-81-7	detected in soil	1,600	ug/kg
OCC	Aroclor-1248	12672-29-6	detected in soil	170,000	ug/kg
MES	Iron	1309-37-1	detected in sediment	175,000	mg/kg
MES	Manganese	7439-96-5	detected in sediment	1,380	mg/kg
MES	Nickel	7440-02-2	detected in sediment	193E	mg/kg
MES	Zinc	7440-66-6	detected in sediment	510	mg/kg

J - Compound present below specified detection limits; value is an estimate.
E - Value estimated due to laboratory interference.

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 (See specific references. e.g., state files, sample analysis, reports)

U.S. EPA Contract Laboratory Program, Clayton Environmental Consultants, Inc. (organic analyses), and Versar, Inc. (inorganic analyses), Case No. 6888, Laboratory Analysis from NUS Corp. Region 2 FIT Site Inspection conducted on February 25, 1987.

Dutchess County Health Department (DCHD) memorandum from David Ruff to Henry Scoralick (both of the DCHD), Subject: DCHD inspection of the Surico Refuse Disposal Site, October 26, 1970.

Sax, N. Irving. Dangerous properties of industrial materials. 6th ed, New York, Van Nostrand Reinhold Co., 1984.

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUNDWATER CONTAMINATION — 02 OBSERVED (DATE:) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 6,600 — 04 NARRATIVE DESCRIPTION

There is potential for groundwater contamination through migration of contaminants in leachate. The landfill has no liner, and 6,600 people within 3 miles of the site depend on groundwater for drinking. One volatile and one semivolatile organic compound were detected in a downgradient groundwater sample. The same semivolatile compound was found in on-site soil, along with two other semivolatile organic compounds, one volatile organic compound, and one polychlorinated biphenyl (PCB).

01. X B. SURFACE WATER CONTAMINATION — 02 X OBSERVED (DATE: 2/25/87) — POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED: Unknown — 04 NARRATIVE DESCRIPTION

Analysis of sediment samples collected from the adjacent unnamed tributary of Amenia Brook during the NUS Region 2 FIT site inspection indicates the presence of heavy metals at 7 to 10 times higher concentrations downstream. In addition, a PCB found in on-site soil was also found in downstream sediment. No dikes or diversion systems are in existence at the landfill. Amenia Brook is a tributary of Wassaic Creek, and both are used for recreational fishing within 3 miles downstream of the site.

01 X C. CONTAMINATION OF AIR — 02 OBSERVED (DATE:) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 6,600 — 04 NARRATIVE DESCRIPTION

There is potential for contamination of air. A reading of 40 parts per million was registered on the OVA flame ionization detector near a mound of soil during the NUS Corp. Region 2 FIT site inspection. Several hundred drums have been observed on site, some of which had been punctured and had discharged their contents onto the ground.

01. X D. FIRE/EXPLOSIVE CONDITIONS — 02 OBSERVED (DATE:) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 3,800 — 04 NARRATIVE DESCRIPTION

There is potential for the existence of fire/explosive conditions. Drums that contained mineral spirits, a flammable solvent, were observed on site by the Dutchess County Health Department (DCHD) in October 1970. Buried drums still potentially exist at the site.

01. X E. DIRECT CONTACT — 02 OBSERVED (DATE:) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 2,700 — 04 NARRATIVE DESCRIPTION

There is potential for direct contact since the site is unfenced and unsecured. The site is within 500 feet of a public roadway.

01 X F. CONTAMINATION OF SOIL — 02 X OBSERVED (DATE: 2/25/87) — POTENTIAL — ALLEGED
03 AREA POTENTIALLY AFFECTED: 10 (ACRES) — 04 NARRATIVE DESCRIPTION

Solvents, phthalates, a polychlorinated biphenyl (PCB), and various other contaminants were detected in soil samples collected during the NUS Corp. Region 2 FIT site inspection.

01. X G. DRINKING WATER CONTAMINATION — 02 OBSERVED (DATE:) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 6,600 — 04 NARRATIVE DESCRIPTION

There is potential for drinking water contamination, should contaminants leach into groundwater, which is drawn from the aquifer of concern and used by 6,600 people for drinking within 3 miles of the site. The landfill has no liner and is located over highly permeable sand and gravel deposits and a limestone bedrock aquifer, both of which supply drinking water to public and/or private wells.

01 H. WORKER EXPOSURE/INJURY — 02 OBSERVED (DATE:) — POTENTIAL — ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 0 — 04 NARRATIVE DESCRIPTION

There is no potential for worker exposure/injury since the site is inactive.

01 X I. POPULATION EXPOSURE/INJURY — 02 OBSERVED (DATE:) — X POTENTIAL — ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 6,600 — 04 NARRATIVE DESCRIPTION

There is potential for population exposure/injury through migration of contaminants into groundwater, which is drawn from the aquifer of concern and used for drinking by 6,600 people within 3 miles of the site. There is also potential for migration of volatile contaminants and particulates in air. The nearest residence is 0.3 mile from the site. The nearest well documented to be drawing from the aquifer of concern lies 0.5 mile from the site.

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

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

There is potential for damage to flora through runoff. The site is located in a rural, vegetated area. Solvents, phthalates, a PCB, and various other contaminants were detected in soil samples collected during the NUS Corp. Region 2 FIT site inspection.

01 X K. DAMAGE TO FAUNA — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

There is potential for damage to fauna. Fauna could be affected through contact with contaminated soil on site, or indirectly through consumption of affected vegetation or surface water.

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

There is potential for contamination of the food chain through migration of contaminants in runoff. Analysis of sediment samples collected from an unnamed tributary of Amenia Brook indicate that it is being impacted by the site. Amenia Brook is used for recreational fishing, as is Wassaic Creek, which Amenia Brook eventually empties into.

01 X M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 X OBSERVED (DATE: 10/22/70) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 2,655 — 04 NARRATIVE DESCRIPTION

Punctured and damaged drums were observed by the Dutchess County Health Department. Several different-colored oily stains were also observed on the ground surface.

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

There is potential for damage to off-site property through migration of contaminants in runoff. The nearest house is 0.3 mile from the site.

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

There has been no known contamination of sewers, storm drains, or WWTPs by wastes disposed of at the site.

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

There is potential for illegal/unauthorized dumping since the site is unfenced and unsecured.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

There are no other known, potential, or alleged hazards.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 6,600

IV. COMMENTS

None

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

Telecon Note: Conversation between David Ruff, DCHD, and Thomas Varner, NUS Corp., August 27, 1987.
Three Mile Vicinity Map based on United States Department of the Interior Geological Survey Topographic Maps, 7.5 minute series, "Amenia Quadrangle, NY-Conn," 1958, and "Millbrook Quadrangle, NY," 1960.
Field Notebook No. 0030, Amenia, TDD No. 02-8612-11, Site Inspection, NUS Corp. Region 2 FIT, Edison, New Jersey, February 25, 1987.
Telecon Note: Conversation between Charles Shaw, Dutchess County Environmental Management Council, and Thomas Varner NUS Corp., August 25, 1987.
New York State Department of Environmental Conservation Phase I Report, Amenia-Rte. 22 South Site, prepared by EA Science and Technology, August 1986.
Telecon Note: Conversation between Harry Norbin, Amenia Town Supervisor, and Pauline Doherty, NUS Corp., May 20, 1987.
Dutchess County Health Department (DCHD) memorandum from Dave Ruff, DCHD, to Henry Scoralick, Subject: DCHD inspection of Surico Refuse Disposal Site. October 26, 1970.
General Sciences Corporation, Graphical Exposure Modeling Systems (GEMS). Landover, Maryland, 1986.
Telecon Note: Conversation between Norm Benson, Dutchess County Soil and Water Conservation Department (DCSWCD), and Thomas Varner, NUS Corp., December 8, 1987.
Telecon Note: Conversation between Marilyn Shields, Amenia Town Clerk, and Thomas Varner, NUS Corp., December 11, 1987.
U.S. EPA Contract Laboratory Program, Clayton Environmental Consultants (organic analyses), Inc., and Versar, Inc. (inorganic analyses), Case No. 6888, Laboratory Analysis from NUS Corp. Region 2 FIT Site Inspection conducted on February 25, 1987.
Simmons, E.T., et al. Ground-water resources of Dutchess County, New York. United States Geological Survey, Bulletin GW-43, Albany, New York, 1961.
Telecon Note: Conversation between Ron Pierce, NYSDEC, and Thomas Varner, NUS Corp., November 27, 1990.

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)				
X J. NONE				

III. SITE DESCRIPTION

01 Storage/Disposal (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
_ A. SURFACE IMPOUNDMENT		
_ B. PILES		
X C. DRUMS, ABOVE GROUND	Several hundred	55-gal.
_ D. TANK, ABOVE GROUND		
_ E. TANK, BELOW GROUND		
X F. LANDFILL	Unknown	
_ G. LANDFARM		
_ H. OPEN DUMP		
X I. OTHER buried drums (Specify)	Unknown	

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
X H. OTHER None (Specify)

05 OTHER
_ A. BUILDINGS ON SITE
None

06 AREA OF SITE
10 (Acres)

07 COMMENTS

On October 22, 1970, the Dutchess County Health Department (DCHD)inspected the site. Several hundred drums, some damaged, were being stored on a part of the site about 1 acre in area. Historical information indicates that some drums were removed; however, it is suspected that buried drums remain at the site. The number of buried drums and the amount of hazardous wastes deposited in the landfill, if any, are unknown.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

_ A. ADEQUATE, SECURE _ B. MODERATE _ C. INADEQUATE, POOR X D. INSECURE, UNSOUND, DANGEROUS

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

No containment of any kind is known to have been used. Oily, colored stains and a white powder have been observed on soil in association with punctured drums.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: X YES _ NO

02 COMMENTS

The site is unfenced and unsecured. Drums were observed above ground during the NUS Corp. Region 2 FIT site inspection.

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

Field Notebook No. 0030, Amenia, TDD No. 02-8612-11, On-Site Inspection, NUS Corp. Region 2 FIT, Edison, New Jersey, February 25, 1987.
Dutchess County Health Department (DCHD) memorandum from Dave Ruff to Henry Scoralick (both of DCHD), Subject: DCHD inspection of Surico Refuse Disposal Site. October 26, 1970.
Telecon Note: Conversation between Mr. Harry Norbin, Amenia Town Supervisor, and Pauline Doherty, NUS Corp., May 20, 1987.
New York State Department of Environmental Conservation Phase I Report, Amenia-Rte. 22 South Site, prepared by EA Science and Technology, August 1986.

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL	02 STATUS Potentially affected ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. _	B. X	A. X	B. _	C. _	A. 1.7 (mi)
NON-COMMUNITY	C. _	D. X	D. X	E. _	F. _	B. 0.3 (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

X A. ONLY SOURCE FOR DRINKING _ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) _ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) _ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER: 6,600 03 DISTANCE TO NEAREST DRINKING WATER WELL: 0.3 (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
7 (ft)	South	7 (ft)	Unknown (gpd)	_ YES X NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

Three public supply wells located within 3 miles of the site serve 1,200 people. These wells are completed in the overlying sand and gravel deposits. There are also several other scattered community water systems which serve 615 people who live in trailer parks. Another 4,820 people drink water from private wells, some of which draw from the sand and gravel aquifer and some of which draw from the limestone bedrock aquifer. However, there is hydraulic connection between the two aquifers and, therefore, both are of concern. The well log for a nearby well indicates that the unsaturated zone above the sand and gravel deposits there contain clay layers up to 22 feet thick. However, the presence of these layers beneath the site has not been verified. Available well data indicate that limestone bedrock as well as sand and gravel deposits lie near the ground surface; limestone bedrock is documented 7 feet below the ground surface at the location of the nearest well drawing from the aquifer of concern.

10 RECHARGE AREA

X YES _ NO COMMENTS The site is in an area underlain by highly permeable sand and gravel deposits.

11. DISCHARGE AREA

X YES _ NO COMMENTS A marshy area lies adjacent to the site.

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

X 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
Wassaic Creek	Unknown	2.0 (mi)
Amenia Brook (tributary of Wassaic Creek)	Unknown	0.1 (mi)
Unnamed tributary of Amenia Brook	Yes	adjacent (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	02 DISTANCE TO NEAREST POPULATION
A. 2,700 NO. OF PERSONS	B. 3,800 NO. OF PERSONS	C. 4,700 NO. OF PERSONS	0.3 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE	04 DISTANCE TO NEAREST OFF-SITE BUILDING
1,300	0.3 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site. e.g., rural, village, densely populated urban area)

The Town of Amenia is located in a rural area comprised of small villages spaced 1 to 5 miles apart.

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

_ A. 10^{-6} - 10^{-8} cm/sec _ B. 10^{-4} - 10^{-6} cm/sec X C. 10^{-4} - 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) X B. RELATIVELY IMPERMEABLE (10^{-4} - 10^{-6} cm/sec) _ C. RELATIVELY PERMEABLE (10^{-2} - 10^{-4} cm/sec) _ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK: 7 (ft)
04 DEPTH OF CONTAMINATED SOIL ZONE: Unknown (ft)
05 SOIL pH: 5.9 to 7.1

06 NET PRECIPITATION: 13 (in)
07 ONE YEAR 24 HOUR RAINFALL: 2.7 (in)
08 SLOPE
SITE SLOPE: Unknown %
DIRECTION OF SITE SLOPE: Northwest
TERRAIN AVERAGE SLOPE: 3 %

09 FLOOD POTENTIAL
SITE IS IN Unknown YEAR FLOODPLAIN _ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

10 DISTANCE TO WETLANDS (5 acre minimum)
ESTUARINE: A. > 2 (mi)
OTHER: B. adjacent (mi)

11 DISTANCE TO CRITICAL HABITAT (of endangered species): > 1 (mi)
ENDANGERED SPECIES: Not applicable

12 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. 1.4 (mi)	B. Residence: 0.3 (mi)	C. 0.3 (mi)	D. 0.3 (mi)

13 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site slopes gently to the northwest. To the north and adjacent to the site is a freshwater wetland, through which an unnamed tributary of Wassaic Creek runs. Two unnamed lakes lie 1,500 feet west of the site. A hilly, wooded area lies 0.5 mile to the west. The Wassaic and Webatuck Creeks lie south and east of the site, respectively. The site is located at the bottom of a valley almost completely enclosed by wooded hills with peaks over 1,300 feet above MSL.

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

Three Mile Vicinity Map based on U.S. Department of the Interior Geological Survey Topographic Maps, 7.5 minute series, "Amenia Quadrangle, NY-Conn", 1958, and "Millbrook Quadrangle, NY," 1960.
New York State Department of Environmental Conservation Phase I Report, Amenia-Rte. 22 South Site, prepared by EA Science and Technology, August 1986.
New York State Department of Environmental Conservation Significant Habitat Overlays, Nos. 1 and 2, "Hartford Quadrangle," March, 1981, revised April 20, 1987.
General Sciences Corporation, Graphical Exposure Modeling Systems (GEMS). Landover, Maryland, 1986.
Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.
United States Geological Survey (USGS) well log data from USGS computer data base.
Telecon Note: Conversation between David Ruff, DCHD, and Thomas Varner, NUS Corp., December 8, 1987.
Telecon Note: Conversation between Norm Benson, Dutchess County Soil and Water Conservation Department (DCSWCD), and Thomas Varner, NUS Corp., December 8, 1987.
Telecon Note: Conversation between Norm Benson, DCSWCD, and Thomas Varner, NUS Corp., December 9, 1987.
Simmons, E.T. et al. Ground-water resources of Dutchess County, New York. United States Geological Survey, Bulletin GW-43, Albany, New York, 1961.
New York State Atlas of Community Water System Sources, New York State Department of Health, 1982.
Prime Farmland of New York Map, U.S. Department of Agriculture, Soil Conservation Service, August 1977.
Important Farmland of New York Map, U.S. Department of Agriculture, Soil Conservation Service, August 1977.
Soil Survey of Dutchess County, New York, U.S. Department of Agriculture, Soil Conservation Service, December 1955.

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	3	Organic analyses: Clayton Environmental 22345 Roethel Drive Novi, MI 48050	Received by NUS Corp. on 10/14/87.
SURFACE WATER	3		
WASTE			
AIR			
RUNOFF			
SPILL		Inorganic analyses: Versar, Inc. 6850 Versar Center Springfield, VA 22151	Received by NUS Corp. on 10/6/87.
SOIL	4		
VEGETATION			
OTHER (sediment)	3		

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Air monitoring	OVA flame ionization detector: 40 parts per million near soil pile where NY66-S1 was collected.

IV. PHOTOGRAPHS AND MAPS

01 TYPE X GROUND _ AERIAL

02 IN CUSTODY OF NUS Corporation Region 2 FIT
(Name of organization or individual)

03 MAPS X YES _ NO

04 LOCATION OF MAPS NUS Corporation, Edison, New Jersey

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

Sample location measurements.

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

New York State Department of Environmental Conservation Phase I Report, Amenia-Route 22 South Site, prepared by EA Science and Technology, August 1986.
Field Notebook No. 0030, Amenia, TDD No. 02-8612-11, On-site Inspection, NUS Corp. Region 2 FIT, Edison, New Jersey, February 25, 1987.

II. CURRENT OWNER(S)

01 NAME	02 D + B NUMBER	08 NAME (PARENT COMPANY (If applicable))	09 D + B NUMBER
John Segalla		Not applicable	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE
Leedsville Rd.			
05 CITY / 06 STATE	07 ZIP CODE	12 CITY / 13 STATE	14 ZIP CODE
Amenia / NY	12501		

01 NAME	02 D + B NUMBER	08 NAME	09 D + B NUMBER
Karl Saliter		Not applicable	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE
Box 128 Jackson Hill Rd.			
05 CITY / 06 STATE	07 ZIP CODE	12 CITY / 13 STATE	14 ZIP CODE
Sharon / CT	06069		

01 NAME	02 D + B NUMBER	08 NAME	09 D + B NUMBER
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	12 CITY / 13 STATE	14 ZIP CODE

01 NAME	02 D + B NUMBER	08 NAME	09 D + B NUMBER
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	12 CITY / 13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D + B NUMBER
Metal Improvement Company, Inc.	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE
Unknown	
05 CITY / 06 STATE	07 ZIP CODE
Unknown / Unknown	Unknown

01 NAME	02 D + B NUMBER
Mr. Surico	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE
Unknown	
05 CITY / 06 STATE	07 ZIP CODE
Amenia / NY	12501

01 NAME	02 D + B NUMBER
Murphy brothers	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE
Unknown	
05 CITY / 06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D + B NUMBER
Not applicable	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE

01 NAME	02 D + B NUMBER
Not applicable	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE

01 NAME	02 D + B NUMBER
Not Applicable	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE

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

New York State Department of Environmental Conservation Phase I Report, Amenia-Route 22 South Site, prepared by EA Science and Technology, August 1986.

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

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D980641559

II. CURRENT OPERATOR(S)

01 NAME: Site is inactive
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 (If applicable)

10 NAME: Not applicable
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) (List most recent first: Provide only if different from owner)

01 NAME: Towns of Amenia, N.Y. and Sharon, Conn.
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: Some time after 1970 to 1975
09 NAME OF OWNER: Metal Improvement Company, Inc.

PREVIOUS OPERATOR'S PARENT COMPANIES (If applicable)

10 NAME: Not applicable
11 D + B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD#, etc.):
13 SIC CODE:
14 CITY:
15 STATE:
16 ZIP CODE:

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:

10 NAME:
11 D + B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD#, etc.):
13 SIC CODE:
14 CITY:
15 STATE:
16 ZIP CODE:

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:

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)

New York State Department of Environmental Conservation Phase I Report, Amenia-Rte. 22 South Site, prepared by EA Science and Technology, August 1986.

II ON-SITE GENERATOR

01 NAME | 02 D + B NUMBER

Not applicable

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

Unknown

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

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

IV. TRANSPORTER(S)

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

Unknown

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

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 specific references, e.g., state files, sample analysis, reports)

New York State Department of Environmental Conservation Phase I Report, Amenia-Rte. 22 South Site, prepared by EA Science and Technology, August 1986.

II. PAST RESPONSE ACTIVITIES

01 A. WATER SUPPLY CLOSED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 B. TEMPORARY WATER SUPPLY PROVIDED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 C. PERMANENT WATER SUPPLY PROVIDED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 D. SPILLED MATERIAL REMOVED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 E. CONTAMINATED SOIL REMOVED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 F. WASTE REPACKAGED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 G. WASTE DISPOSED ELSEWHERE 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 H. ON SITE BURIAL 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 I. IN SITU CHEMICAL TREATMENT 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 J. IN SITU BIOLOGICAL TREATMENT 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 K. IN SITU PHYSICAL TREATMENT 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 L. ENCAPSULATION 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 M. EMERGENCY WASTE TREATMENT 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 N. CUTOFF WALLS 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 O. EMERGENCY DIKING/SURFACE WATER DIVERSION 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 P. CUTOFF TRENCHES/SUMP 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 Q. SUBSURFACE CUTOFF WALL 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

II. PAST RESPONSE ACTIVITIES

01 R. BARRIER WALLS CONSTRUCTED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 S. CAPPING/COVERING 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 T. BULK TANKAGE REPAIRED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 U. GROUT CURTAIN CONSTRUCTED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 V. BOTTOM SEALED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 W. GAS CONTROL 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 X. FIRE CONTROL 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 Y. LEACHATE TREATMENT 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 Z. AREA EVACUATED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 1. ACCESS TO SITE RESTRICTED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 2. POPULATION RELOCATED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

01 3. OTHER REMEDIAL ACTIVITIES 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

No history of this response activity.

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

New York State Department of Environmental Conservation Phase I Report, Amenia-Rte. 22 South Site, prepared by EA Science and Technology, August 1986.

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION X YES _ NO

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

The Town of Amenia forced the closure of the site in January 1969. The southern section of the site was eventually reopened and operated by the Town of Amenia, New York and the Town of Sharon, Connecticut until it was finally closed in 1975.

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

New York State Department of Environmental Conservation Phase I Report, Amenia-Rte. 22 South Site, prepared by EA Science and Technology, August 1986.

SECTION 3

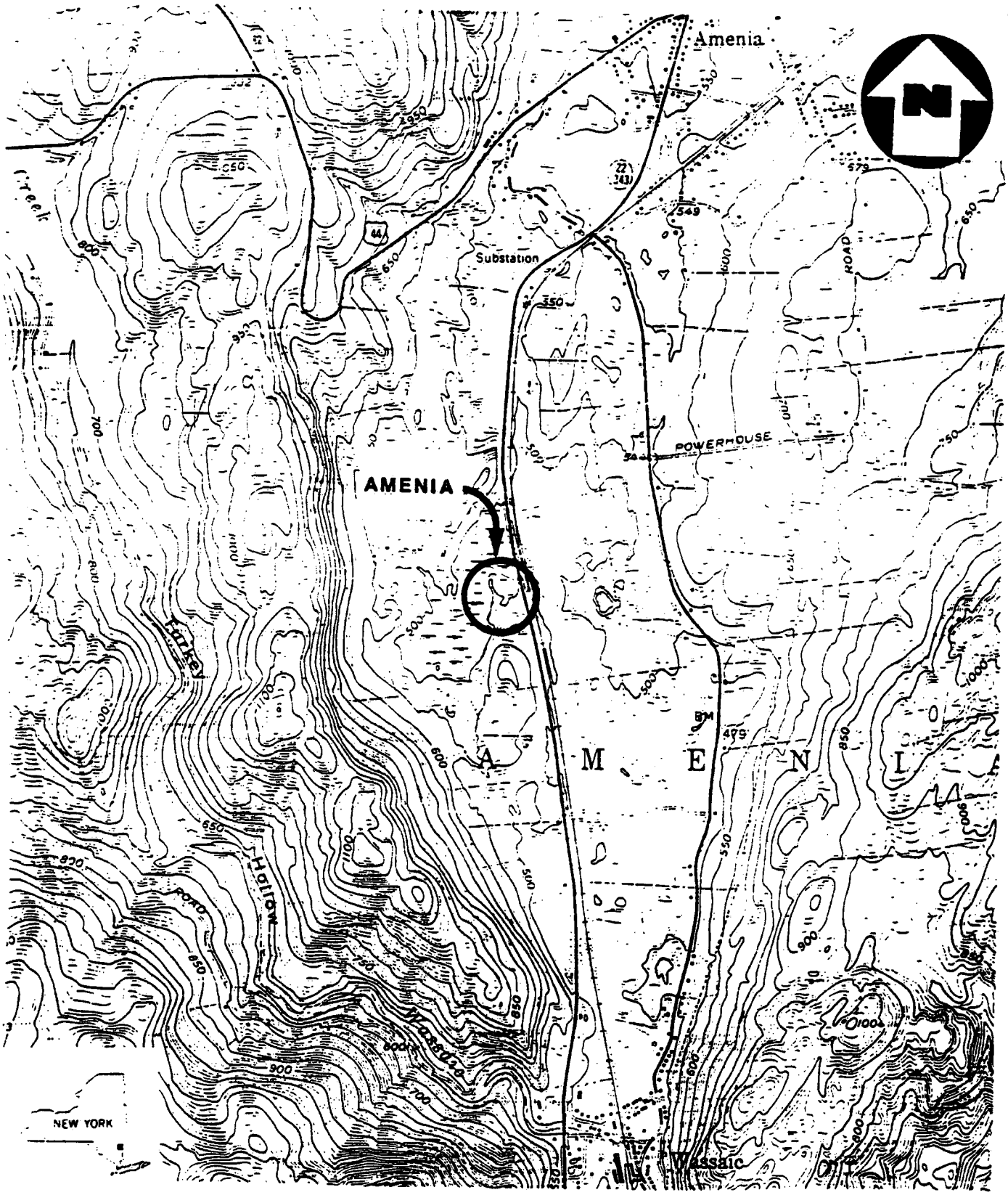
MAPS AND PHOTOGRAPHS

AMENIA
AMENIA, NEW YORK
TDD NO. 02-8612-11

CONTENTS

Figure 1: Site Location Map
Figure 2: Sample Location Map
Exhibit A: Photograph Log

24



(QUAD) AMENIA, N.Y.

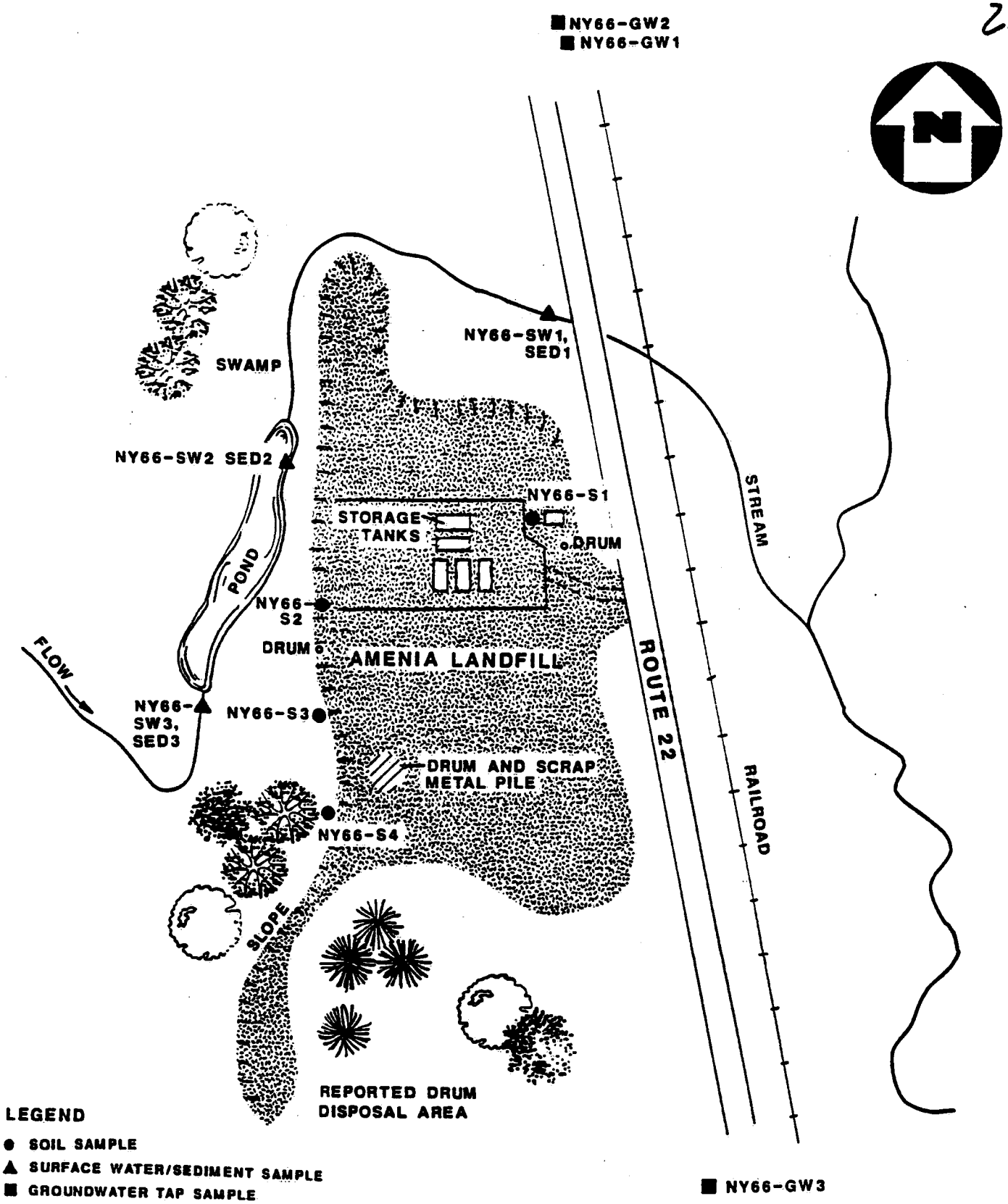
FIGURE 1

SITE LOCATION MAP

AMENIA, AMENIA, N.Y.

SCALE; 1" = 2000'

NUS CORPORATION



SAMPLE LOCATION MAP

AMENIA, AMENIA, N.Y.

(NOT TO SCALE)

FIGURE 2

NUS CORPORATION

EXHIBIT A

PHOTOGRAPH LOG

AMENIA
AMENIA, NEW YORK

SITE INSPECTION: FEBRUARY 25, 1987

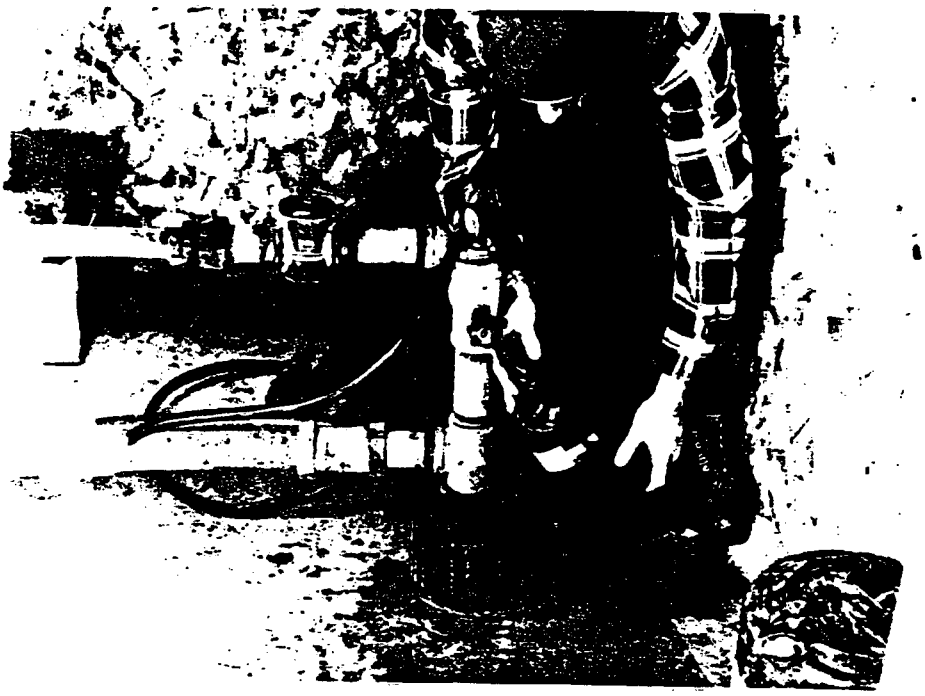
AMENIA
AMENIA, NEW YORK
FEBRUARY 25, 1987

PHOTOGRAPH INDEX

ALL PHOTOGRAPHS TAKEN BY GARY BIELEN

Photo Number	Description	Time
P5/S4	Sample NY66-GW1 being collected by D. DeBruijn at well No. 4 located off Route 22.	1010
P6/S5	Sample NY66-GW2 being collected by D. DeBruijn at well No. 3 located off Main Street (Route 343).	1021
P7/S6	Sample NY66-GW3 being collected by R. Riccio at the private home of Harry Schiffer in the town of Amenia.	1110
P8/S7	Sample NY66-S1 being collected by D. DeBruijn, 15 feet from a storage tank and 25 feet from a fence that surrounds the storage tank area. Sample depth is 0 to 6 inches.	1400
P9/S8	Sample NY66-S2 being collected by R. Riccio on the west side of the landfill, 6 feet from the end of the fence that surrounds the storage tank area Sample depth is 0 to 6 inches.	1420
P10/S9	Sample NY66-SW2 being collected by D. DeBruijn from a pond, approximately 100 feet from west side of landfill.	1440
P11/S10	Sample NY66-SED2 being collected by D. DeBruijn at same location as NY66-SW2.	1445
P12/S11	Sample NY66-S3 being collected by R. Riccio, approximately 25 feet from the pond on the western side of the landfill. Sample depth is 0 to 6 inches.	1455
P14/S14	Sample NY66-SW3 being collected by D. DeBruijn, approximately 40 feet from NY66-S3, in the pond near the edge of landfill.	1530
P15/S15	Sample NY66-SED3 being collected by D. DeBruijn at same location as NY66-SW3.	1540
P17/S17	Sample NY66-S4 being collected by R. Riccio, approximately 10 feet from the pond on the western side of the landfill.	1605
P18/S18	Sample NY66-SW1 being collected by D. DeBruijn, approximately 40 feet from Route 22, south of the landfill.	1620
P19/S19	Sample NY66-SED1 being collected by D. DeBruijn at same location as NY66-SW1.	1630

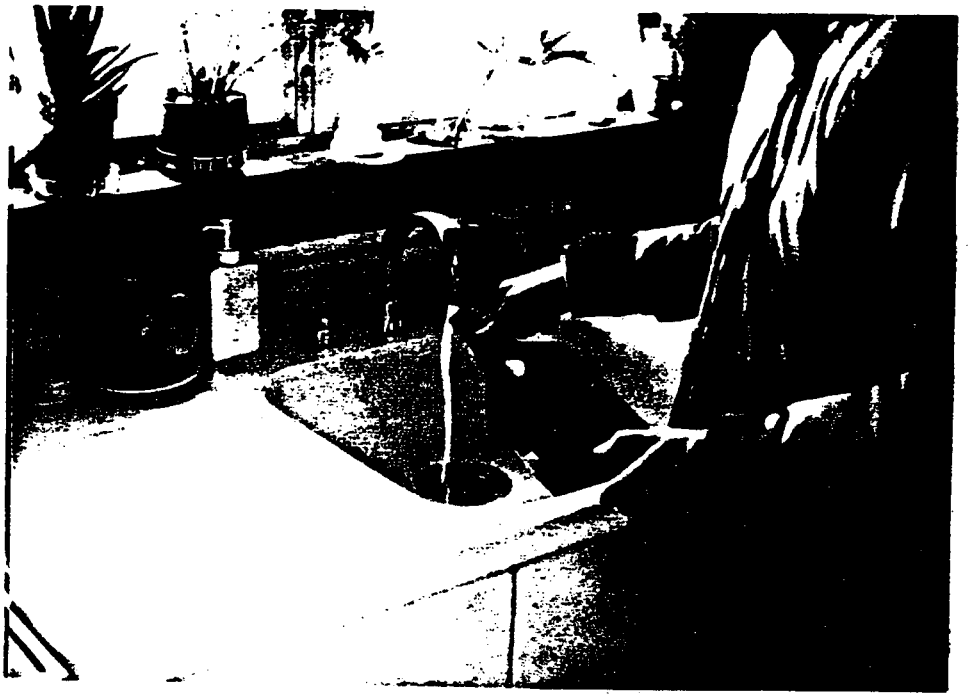
AMENIA
AMENIA, NEW YORK



P5 February 25, 1987 1010
Sample NY66-GW1 being collected by D. deBruijn at well No. 4, located off Route 22.

P6 February 25, 1987 1021
Sample NY66-GW2 being collected by D. deBruijn at well No. 3, located off Main Street (Route 343).

AMENIA
AMENIA, NEW YORK



P7 February 25, 1987 1110
Sample NY66-GW3 being collected by R. Riccio at the private home of H. Schiffer in the town of Amenia.

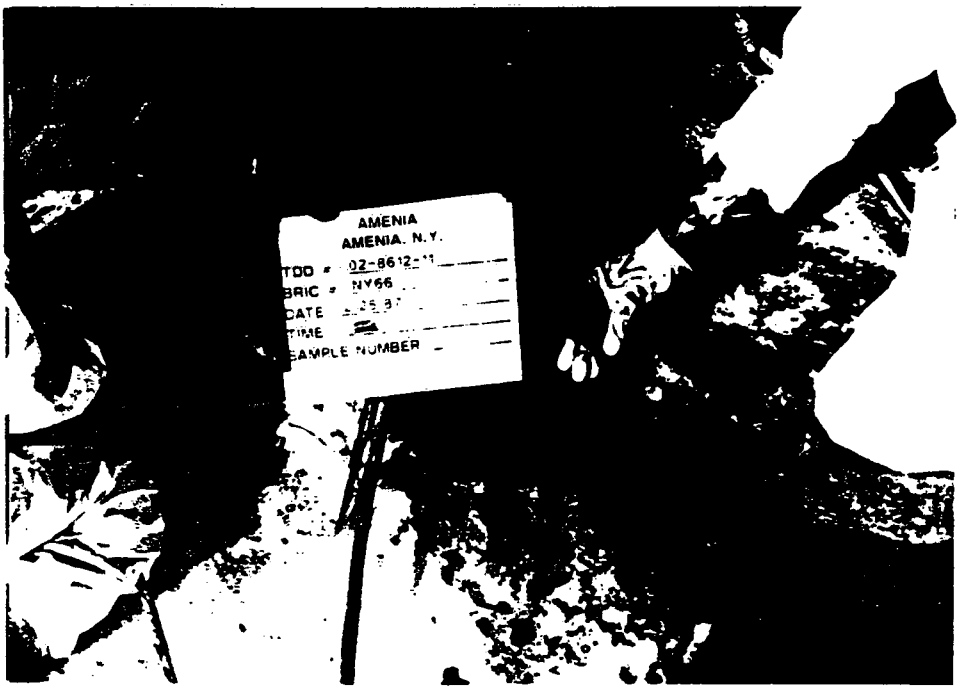
P8 February 25, 1987 1400
Sample NY66-S1 being collected by D. deBruijn, 15 feet from a storage tank and 25 feet from a fence surrounding the storage tank area. Sample depth is 0 to 6 inches.

AMENIA
AMENIA, NEW YORK

P9 February 25, 1987 1420
Sample NY66-S2 being collected by R. Riccio on the west side of the landfill, 6 feet from the end of the fence that surrounds the storage tank area. Sample depth is 0 to 6 inches.

P10 February 25, 1987 1440
Sample NY66-SW2 being collected by D. deBruijn from a pond, approximately 100 feet from west side of landfill.

AMENIA
AMENIA, NEW YORK



P11 February 25, 1987 1445
Sample NY66-SED2 being collected by D. deBruijn at the same location as NY66-SW2.

P12 February 25, 1987 1455
Sample NY66-S3 being collected by R. Riccio, approximately 25 feet from pond on the western side of the landfill. Sample depth is 0 to 6 inches.

AMENIA
AMENIA, NEW YORK

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P14 February 25, 1987 1530
Sample NY66-SW3 being collected by D. deBruijn, approximately 40 feet from NY66-S3, in the pond near the edge of the landfill.

P15 February 25, 1987 1540
Sample NY66-SED3 being collected by D. deBruijn at the same location as NY66-SW3.

AMENIA
AMENIA, NEW YORK

P17 February 25, 1987 1605
Sample NY66-S4 being collected by R. Riccio, approximately 10 feet from the pond on the western side of the landfill.

P18 February 25, 1987 1620
Sample NY66-SW1 being collected by D. deBruijn, approximately 40 feet from Route 22, south of the landfill.

AMENIA
AMENIA, NEW YORK

P19

February 25, 1987
Sample NY66-SED1 being collected by D. deBruijn at the same location as NY66-SW1.

1639

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

Analyses of environmental samples collected at or near the site revealed the presence of solvents in groundwater, surface water, sediment, and on-site soil. A documented release of these contaminants to groundwater and surface water can not be directly attributed to the site based on these data because concentrations downgradient/downstream were comparable to upgradient/upstream concentrations. It is possible that the upstream surface water/sediment sample was not free of influence by the site because of its proximity. However, four heavy metals were detected in downstream sediment at concentrations 7, 8, 9, and 10 times higher, respectively, than upstream concentrations. In addition, one PCB was found in downstream sediment which was also found in the on-site soils.

It is recommended that a **LISTING SITE INSPECTION** be conducted at this site, based upon the documented presence of hazardous substances, observed surface water/sediment contamination by heavy metals, the potential for contamination of the human food chain, the high potential for groundwater contamination, the number and proximity of drinking water wells within 3 miles of the site, and the proximity of a freshwater wetland to the site.

SECTION 5

BIBLIOGRAPHY OF INFORMATION SOURCES

BIBLIOGRAPHY OF INFORMATION SOURCES

1. Dutchess County Health Department (DCHD) memorandum from David Ruff to Henry W. Scoralick (both of the DCHD), Subject: DCHD inspection of the Surico Refuse Disposal, October 26, 1970.

2. Field Notebook No. 0030, Amenia, TDD No. 02-8612-11, Site Inspection, NUS Corp. Region 2 FIT, Edison, New Jersey, February 25, 1987.

3. Hazardous Waste Disposal Sites Report, New York State Department of Environmental Conservation, from "Hazardous Waste Disposal Sites in New York," Vol. 1, June 1980.

4. New York State Atlas of Community Water System Sources, New York State Department of Health, 1982.

5. New York State Department of Environmental Conservation Phase I Report, Amenia-Route 22 South Site, prepared by EA Science and Technology, August 1986.

6. Sax, N. Irving. Dangerous properties of industrial materials, 6th ed. New York, Van Nostrand Reinhold Co., 1984.

7. Significant Habitat Overlay, Nos. 1 and 2, New York State Department of Environmental Conservation, Division of Fish and Wildlife, "Hartford Quadrangle," March, 1981.

8. Simmons, E.T. et al. Ground-water resources of Dutchess County, New York. United States Geological Survey, Bulletin GW-43. Albany, New York, 1961.

9. Telecon Note: Conversation between Charles Shaw, Dutchess County Environmental Management Council, and Thomas Varner, NUS Corp., August 25, 1987.

10. Telecon Note: Conversation between David Ruff, Dutchess County Health Department, and Thomas Varner, NUS Corp., August 27, 1987.

11. Telecon Note: Conversation between David Ruff, Dutchess County Health Department, and Thomas Varner, NUS Corp., December 8, 1987.

12. Telecon Note: Conversation between Harry Norbin, Amenia Town Supervisor, and Pauline Doherty, NUS Corp., May 20, 1987.

13. Telecon Note: Conversation between Norm Benson, Dutchess County Soil and Water Conservation Department, and Thomas Varner, NUS Corp., December 8, 1987.

14. Telecon Note: Conversation between Norm Benson, Dutchess County Soil and Water Conservation Department, and Thomas Varner, NUS Corp., December 9, 1987.

BIBLIOGRAPHY OF INFORMATION SOURCES (CONT'D)

15. New York State Codes, Rules, and Regulations, Title 6, Chapter X, Parts 700-705, 825.

16. Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.

17. Three Mile Vicinity Map based on United States Department of the Interior Geological Survey Topographic Maps, 7.5 minute series, "Amenia Quadrangle, NY-Conn," 1958, and "Millbrook Quadrangle, NY," 1960.

18. U.S. EPA Contract Laboratory Program, Clayton Environmental Consultants, Inc. (organic analyses), and Versar Inc. (inorganic analyses), Case No. 6888, Laboratory Analysis from NUS Corp. Region 2 FIT Site Inspection conducted on February 25, 1987.

19. U.S. EPA Potential Hazardous Waste Site Identification and Preliminary Assessment, Amenia. Completed by M. Hauphman, August 28, 1981.

20. United States Geological Survey (USGS) well log data from USGS computer data base.

21. General Sciences Corporation, Graphical Exposure Modeling Systems (GEMS). Landover, Maryland, 1986.

22. Prime Farmland of New York Map, U.S. Department of Agriculture, Soil Conservation Service, August 1977.

23. Important Farmland of New York Map, U.S. Department of Agriculture, Soil Conservation Service, August 1977.

24. Soil Survey of Dutchess County, New York, U.S. Department of Agriculture, Soil Conservation Service, December 1955.

25. Telecon Note: Conversation between Ron Pierce, NYSDEC, and Thomas Varner, NUS Corp., November 27, 1990.

SECTION 6

BACKGROUND INFORMATION

REFERENCE NO. 1

4/2

RECEIVED

AUG 31 1987

NUS CORPORATION
REGION II
SENT TO_____

DUTCHESS COUNTY HEALTH DEPARTMENT

MEMORANDUM

TO: Mr. Henry W. Scoralick

FROM: D. Ruff.

SUBJECT: Surico Refuse Disposal Site
T. Amenia

DATE: October 26, 1970

On October 22, 1970 between 2:00-2:30 p.m., I conducted an inspection at the above noted facility. All refuse was deposited in an area approximately 50' wide and 20' deep. Operation appeared to be orderly and covering and compacting was done satisfactorily. Mr. Surico questioned if covering could be done every other day and I stated it had to be done every day.

I did not observe anywhere where industrial wastes were dumped into or near surface waters. On the upper level at the south end are stored several hundred barrels of industrial wastes and covering an area of one acre. Some barrels had been punctured with the resultant discharge of chemicals upon the surface of the ground. Mr. Surico claimed that this was the result of vandalism. He also claimed that some spillage was due to barrels falling off of fork lift. The industrial waste on surface of ground was a brownish oily, black oily, bluish and reddish brown liquid plus a white powder. The following names of companies and contents were observed on barrels:

1.	Remington Rand Electric Shaving Div. 60 Main Street Bridgeport, Connecticut	Crystoton
2.	U. S. Polymeric	P.F. Etchant' Ferris Chloride
3.	ALRAC Div. Radiation Research 649 Howe Street (P.O. Box 2109) Stamford, Connecticut	2 Pyorrolidone
4.	The Hubbard Hall Chemical Co. Waterbury, Connecticut	Mineral Spirits

Mr. Surico stated that chemicals are pumped out of barrels and shipped to New Jersey. Empty barrels are sold if not damaged. If damaged, barrels are crushed and buried.

In the summer, oil was used on entrance road to settle dust. There is a remote possibility that during a heavy rain some of this could have run off into swamp at north end. I could see no trace of chemicals in swamp areas. Mr. Surico claims all chemicals will be removed from site by November 1, 1970 and that business discontinued.

DTR/aed
HD ADM

REFERENCE NO. 2

NUS CORPORATION

II

0030

3/6/87 Amenia Site 02-8612-1

Table of Contents

pg 4-10 Sampling on site

pg 6 Health Safety Meeting
Tailgate Meeting

pg 11 Sample Management
Labs and Traffic Report Numbers

READY MIX CONCRETE

BLACKTOP

Amenia Sand & Gravel Inc.

"BEST BY TEST"

GERALD WILCOX

AMENIA, NEW YORK
Bus 914 373 6151
Res 914 373 9925

Gerald V. Gilbert
3-9-87

3/6/87

46

2/25   02-8712   11

Amenia Site (Route 22 South)
Amenia, New York

0815 Done with breakfast heading for site

0900 Arrive at site
Setting up decon

930 Mr Wilcox, Mr. Lyle Salifer and Harry Vordin
Wants good - Amenia Sand + Gravel (owner Sharon Oil Co.) (Town Supervisor)

1000 Harry Vordin is bringing me to do the well sampling at two town wells where they draw their water from.
Weather - Sunny 15-20 °F, 0-5 mph wind
1005 Arrive at well #4 (GW-1) most used well
~260' well   well located off Rt 22 South
south of town

They have a total of 4 wells
1 backup

1010 Begin Sampling GW 1   Dan deBruijn
Sampling well #4
camera #1 307128 picture #4
camera #2 422512 picture #5

took picture of D. deBruijn taken sample
@ 400 pop. of Amenia   picture #4 + 5

Gerald V. Gilliland 3-9-87   Gary Bell 2/2?/87

Amenia Site

1020 Arrived at well #3 (GW 2)

1021 Dan de Bruijn taking GW 2 at well #3
well off main St. (Rt 343)
picture # 5 & # 6

1030 Done sampling pick up ice
and going to GW 3 at
private residence south of Landfill
site.

1045 S. Shingh from NY DEC arrived on-site
Back from GW 2
heading for GW 3 down south of Landfill

1050 S. Shingh heading to another site
will possibly be back later.

Harlem Valley Landfill is south of Amenia site
active landfill

1100 Harry Schiffer P.O. Box 164 Town of Amenia
Village of Wassaic, N.Y.
140 deep

1110 D. de Bruijn sampling GW 3 at above
address, picture # 6 and # 7.

1120 Done sampling GW 3 drop off samples.

Gerald V. Gillen
3-9-87

[signature] 2/25/87

Amenia Site 2/25/87 02-86 [illegible]

6

1125 Back at Amenia site Mr. Wilcox will accompany us to show possible drum storage areas. Suiting up for Level B recon

1145 R. Riccio and D. de Bruijn suiting up in SOBA. D. de Bruijn will do recon while R. Riccio does rescue.

1155 J. Bullis conducted Health/Safety meeting and the following people have read & understand the work/safety plan

D. de Bruijn — [illegible]
J. Bullis — [illegible]
R. Riccio — [illegible]
J. Pucci — [illegible]
G. Bielen — Gary Bielen

1200 D. de Bruijn on air to do recon tank on 18 lbs/si
D. de Bruijn EPA regulator # 307171
R. Riccio EPA regulator #191312

Min. Rad Alert #428604
HNu # 307140 OVA # 428696

1205 Check drum & storage tank no readings on OVA or HNu.
D. de Bruijn OFF air

[illegible] 2-25-87 Gary Bielen 2-25-87

Memo Site 2/25/87

1210 D. de Bruijn on air
NO OVA or HNu readings on any area
1225 off air, out of Air D. de Bruijn
1230 D. De Bruijn on new tank 20 lbs in tank
1235 D de Bruijn on air
1250 D. de Bruijn off air
NO OVA or HNu readings on ground
1310 Moving around to take S-1
1330 June Kaufman from Harlem Valley Times taking pictures of us. From local paper.
D. de Bruijn got 40 ppm off mound of soil near storage tank 25' from fence that surrounds oil + gas yard on the OVA, zero on the HNu.
1350 D. De Bruijn on air to sample S-1
1355 D. DeBruijn off air needs new tank ran out of air.
1356 D De Bruijn on air

Gerald V. Gillette 3-9-87 Gary Bielan 2/25/87

Armenia Site 2/25/87 [illegible]

1400 D. DeBruijn taking S-1 25' ft from fence 15' from storage tank
Surface soil sample 0-6"
picture # 7 & 8

1410 Done sampling S-1
moving on to S2 & S3
J. Kaufman leaves site

1420 R. Riccio taking S-2 near scrap metal pieces 6' from end of fence, 1 drum on edge of landfill
No readings on OVA or HNu.
picture # 8 & 9

1440 D. DeBruijn taking SW2
~100' from end of landfill on its west side in [illegible]
picture # 9 & 10
No OVA or HNu readings

1445 D. DeBruijn taking SED 2
same spot as above SW2
picture # 10 & 11
No OVA or HNu readings

1450 Done sampling SED2 moving on to S2 & S3

1455 R. Riccio ~~D. DeBruijn~~ taking S3 at edge of landfill
about 25' from pond
picture # 11 & # 12
No OVA or HNu readings

Gerald V. Gilliland 3-9-87
[illegible] 2/25/87

1500 R. Riccio done sampling S3
picture 12 & 13 Beaver

1530 D. De Bruijn taking SW3
picture #13 on first camera Hawk
picture # 14 & 14 of sampling SW3
No OVA or HNu readings
Won't be able to get sediment
None available.
Change that sediment is available.
Sample taken ~40' from S3 near edge of landfill in pond.

1540 D. De Bruijn taking SED3
Same location as SW3
picture # 15 & #15
No OVA or HNu readings

1550 Done sampling SED3 move on to S-4

1605 R. Riccio taking S-4 near end of landfill on west side
~10' from pond. 1 drum on landfill ~10' from S-4
picture 16 & 16 Turkey Swamp
picture 17 & 17 of R. Riccio sampling S-4
No OVA or HNu readings

Gerald V. Colbert 3.9.87 Gary Bielen 2/25/87

25

2/25/87 Amenia Site 12

1620 D. DeBruijn taking SW1
~40' from Rt 22 on west side of road.
South of landfill
picture #18

1625 D. DeBruijn done sampling SW1

1630 D. DeBruijn taking SED1
same spot as SW1

1635 Done sampling, Gerald Wilcox leaves site
Decon bottles

1710 Leave site, Federal Express to
pick up at Holiday Inn in Poughkeepsie

1830 Federal Express receives
samples from me.

Gerald V. Gillard
3-4-87
Gary Bird
2/25/87

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REFERENCE NO. 3

HAZARDOUS WASTE DISPOSAL SITES REPORT
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

55 80)

Code: A
Site Code: 314006
Name of Site: (T) Amenia & Unknown
County: Dutchess
Region: 3
Town/City: Amenia
Street Address: Route 22

Status of Site Narrative:

Site suspected of having received industrial wastes from the general area. Site is rural, but accessible; it is vacant, and vegetation covers the area. There are no residences within ½ mile. A pond is located 200 feet to the west and a swamp is located adjacent to the north face. A stream meanders from the north to the face of the fill, then turns under Route 22 to the east. There was evidence of drums south of the southwest corner of the area where there is no vegetative growth.

Type of Site: Open Dump ☐ Landfill ☒ Structure ☐
Treatment Pond(s) ☐ Lagoon(s) ☐
Number of Ponds ____
Number of Lagoons ____

Estimated Size 8-10 acres Acres

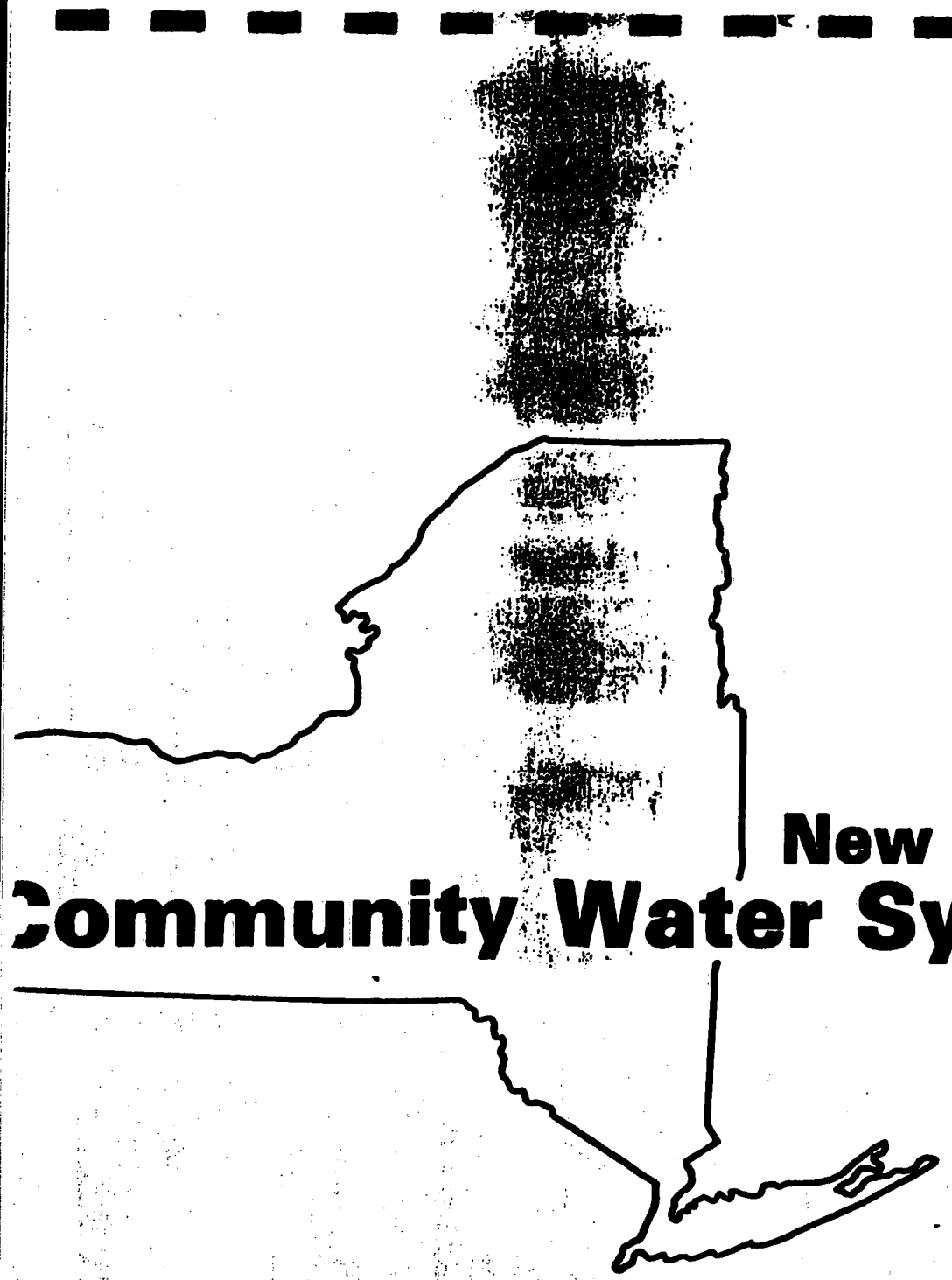
Hazardous Wastes Disposed? Confirmed ☐ Suspected ☒

*Type and Quantity of Hazardous Wastes:

TYPE	QUANTITY (Pounds, drums, tons, gallons)
Unknown drums	

*Use additional sheets if more space is needed.

REFERENCE NO. 4



New York State Atlas of Community Water System Sources 1982

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

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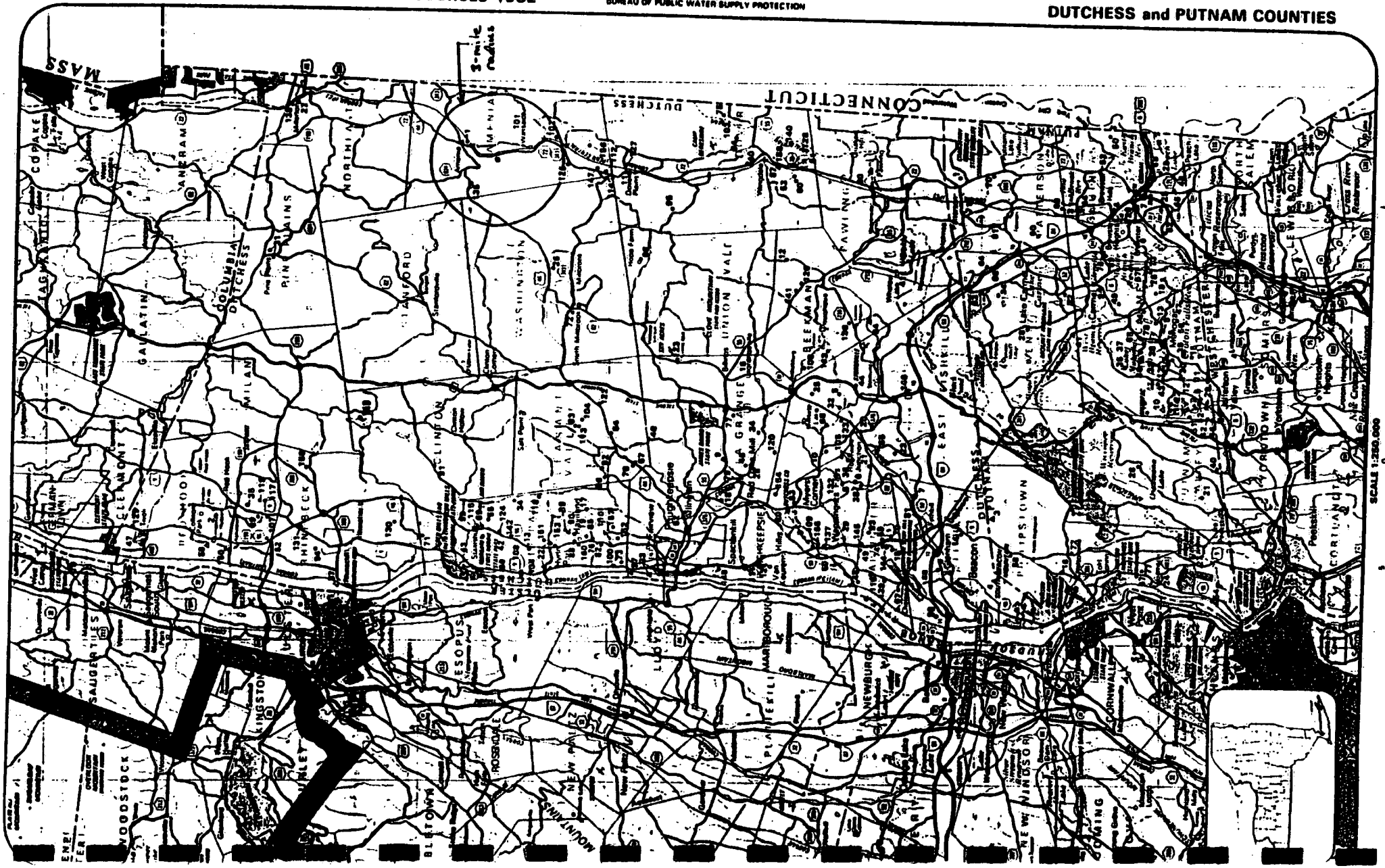
LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

DUTCHESS and PUTNAM COUNTIES



DUTCHESS COUNTY

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ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Amenia Water District #1.	1000.	Wells
2	Annandale Water Company.	1008.	Wells
3	Atlas Water Company.	1300.	Wells
4	Beacon City (See also No 3 Putnam Co).	5000.	Mt. Beacon & Melzingas Reservoirs, Wells
5	Beekman Country Club.	300.	Wells
6	Brettview Acres Water Company.	920.	Wells
7	Brinkerhoff Water Company.	3500.	Wells
8	Central Wappinger Improvement Area.	1800.	Wells
9	Deerfield Estates Water District.	900.	Wells
10	Dogwood Knolls.	600.	Wells
11	Dover Plains Water Company.	1500.	Wells
12	Dover Ridge Estates.	60.	Wells
13	Dutchess Estates Inc.	700.	Wells
14	Fishkill Village.	6000.	Wells
15	Fleetwood Manor Water District.	850.	Wells
16	Grandview Water District.	160.	Wells
17	Greenfield Water District.	1250.	Wells
18	Greenmeadow Park Water Company.	350.	Wells
19	Harbourd Hills Water Company Inc.	900.	Wells
20	Hopegard, Inc.	275.	Wells
21	Hopewell Services Inc.	900.	Wells
22	Hyde Park Fire & Water District.	4000.	Crum Elbow Creek, Wells
23	Kensington Park Water Company.	65.	Wells
24	La Grange Club Estates.	120.	Wells (Infiltration Gallery)
25	Little Switzerland Water Company.	600.	Wells
26	Millbrook Village.	1735.	Wells
27	Millerton Village.	1600.	Wells
28	Moxon Knolls Water District.	250.	Wells
29	Oakwood Knolls.	310.	Wells
30	Pawling Village.	2000.	Pawling Reservoir, Wells
31	Pine Plains Water Company.	1060.	Wells
32	Pinewood Knolls.	265.	Wells
33	Poughkeepsie City.	10000.	Hudson River
34	Quaker Hill Estates Water District.	424.	Wells
35	Red Hook Village.	2000.	Wells
36	Revere Park Water Company.	560.	Wells
37	Rhinebeck Village.	4200.	Hudson River
38	Rockingham Farms.	3000.	Wells
39	Rokeby Homes, Inc.	184.	Wells
40	Schreiber Water Works.	110.	Wells
41	Sharonsven Civic Association.	300.	Wells
42	South Cross Road Water Company Inc.	572.	Wells (Infiltration Gallery)
43	Staatsburgh Water Company.	1072.	Indian Kill Reservoir, Wells
44	Taconic Estates.	185.	Wells
45	Tall Trees.	250.	Wells
46	Titusville Water District.	700.	Wells
47	Tivoli Village.	713.	Wells
48	Valley Dale Water Company.	380.	Wells
49	Wappinger Park Homes.	400.	Wells
50	Wappingers Falls Village.	5300.	Wells
51	Willow Lake Water Company.	126.	Wells
52	Windermere Highlands.	375.	Wells
	Non-Municipal Community		
53	Angels Trailer Park.	40.	Wells
54	Arbor Arms Apartments.	50.	Wells
55	Arvams Mobile Court #1.	72.	Wells
56	Bard College.	NA.	Sawkill Creek
57	Bechwith Trailer Park.	26.	Wells
58	BCB Mobile Home Park.	137.	Wells
59	Birchwood Mobile Home Park.	42.	Wells
60	Brooks Mobile Home Park.	25.	Wells
61	Cannons Trailer Park.	16.	Wells
62	Canterbury Garden Apartments.	600.	Wells
63	Cedar Hollow Mobile Home Park.	90.	Wells
64	Cedar Lane Mobile Home Park #2.	28.	Wells
65	Charlotte Grove Mobile Trailer Park.	110.	Wells
66	Chateau Hyde Park Home for Adults.	120.	Wells
67	Chelsea Ridge Apartments.	1800.	Wells
68	Clove Branch Apartments.	19.	Wells
69	Colonial Maples Trailer Park.	30.	Wells
70	Cooper Road Trailer Park.	35.	Wells
71	Cove View Apartments.	48.	Wells
72	Dayton Village.	70.	Wells
73	Dutch Garden Apartments.	450.	Wells
74	Dutchess Trailer Park.	30.	Wells
75	East Mountain Trailer Park.	28.	Wells
76	Eleanor Roosevelt.	200.	Wells
77	Elliott Apartments.	38.	Wells
78	Ennis Mobile Home Park.	92.	Wells
79	Fetter Trailer Court.	60.	Wells
80	Fieldside Apartments.	50.	Wells
81	Fishkill Park Apartments.	240.	Wells
82	Franconi Villas.	50.	Wells
83	Gerhard P Stoetzel.	30.	Wells
84	Green Haven Correctional Facility.	NA.	Reservoir
85	Green Meadow Trailer Court.	44.	Wells
86	Greer School.	300.	Wells
87	Harlem Valley Psychiatric Center.	1200.	Swamp River
88	Haviland Apartments.	100.	Wells
89	Haviland Mobile Home Park #1.	44.	Wells
90	Haviland Mobile Home Park #2.	29.	Wells
91	Hi Vu.	50.	Wells
92	Hickory Hill Mobile Home Park.	250.	Wells
93	Hidden Hollow Apartments.	850.	Wells
94	Hidden Valley Mobile Court.	30.	Wells
95	High Meadows Park Inc.	196.	Wells
96	Hoffman Trailer Park.	26.	Wells
97	Hudson River Psychiatric Center.	2000.	Hudson River
98	Hudson View Water Works.	18000.	Wells
99	Hyde Park Mobile Manor Estates.	NA.	Wells
100	Hyde Park Terrace Apartments.	70.	Wells
101	Kent Hollow Apartments.	24.	Wells
102	Kommor Trailer Park.	20.	Wells
103	Lake Ellis Mobile Home Park.	81.	Wells
104	Lake Lodges Apartments.	24.	Wells
105	Lake Walton Park.	62.	Wells
106	Lakeview Mobile Home Park.	NA.	Wells
107	Lamplight Court Mobile Estates.	23.	Wells
108	Ledges Apartments.	460.	Wells
109	Little Falls Trailer Park.	163.	Wells
110	M and O Mobile Home Park.	108.	Wells
111	Maple Lane Trailer Park.	190.	Wells
112	May Lane Mobile Park.	30.	Wells
113	Meyeres Mobile Manor.	101.	Wells
114	McCartha's Trailer Park.	42.	Wells
115	Mobile Home Gardens.	30.	Wells
116	Montclair Townhouse Apartments.	660.	Wells
117	Mountain View Mobile Estates.	55.	Wells
118	Northeastern Conference Nursing Home.	120.	Wells
119	Northern Dutchess Mobile Home Park.	31.	Wells
120	Odells Trailer Park.	19.	Wells
121	Osborne Trailer Park.	15.	Wells
122	Palmer Apartments.	27.	Wells
123	Parkway Apartments.	16.	Wells
124	Partridge Hill Apartments	150.	Wells
125	Phillips Trailer Park.	45.	Wells
126	Pine Grove Mobile Home Park.	39.	Wells
127	Powell Road Mobile Park.	115.	Wells
128	Ramsey's Trailer Park.	28.	Wells
129	Red Church Trailer Park.	12.	Wells
130	Rhinebeck Country Village.	100.	Wells
131	Rhinebeck Mobile Court.	120.	Wells
132	Roberts Running Creek Trailer Park.	88.	Wells
133	Route 82 Trailer Park.	26.	Wells
134	Royal Crest Apartments.	158.	Wells
135	Sabo Trailer Park.	45.	Wells
136	Saith Mobile Home Park.	26.	Wells
137	Scenic Apartments.	432.	Wells
138	Scenic View Mobile Home Park.	27.	Wells
139	Shady Acres Trailer Park.	26.	Wells
140	Shady Homes Trailer Park.	42.	Wells
141	Shady Lane Trailer Park.	13.	Wells
142	Simpson Mobile Home Site.	27.	Wells
143	Springhill Mobile Home Park.	NA.	Wells
144	Sunset Farms Mobile Home Park.	35.	Wells
145	Sunset Knolls.	50.	Wells
146	Taconic Motor Lodge.	22.	Wells
147	Tally Ho Mobile Estates.	NA.	Wells
148	Tai Apartments.	14.	Wells
149	The Lodge at Rhinebeck.	NA.	Wells
150	Unification Theological Church.	150.	Wells
151	Val Kill Park East.	72.	Wells
152	Valley Forge Mobile Home Park.	60.	Wells
153	Venture Lake Estates.	46.	Wells
154	Village Crest Apartments.	600.	Wells
155	Wappingers Falls Trailer Park.	50.	Wells
156	Wassaic Developmental Center.	2300.	Wells
157	Willow Tree Park.	10.	Wells
158	Wingdale Village Park.	72.	Wells
159	Woodcrest Manor Adult Home.	NA.	Wells
160	Woodfield Apartments.	7.	Wells

REFERENCE NO. 5

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE 1 INVESTIGATION
Amenia - Route 22 South
Site No. 314006
Town of Amenia, Dutchess County
Final - August 1986

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
Henry G. Williams, Commissioner

Division of Solid and Hazardous Waste
Norman H. Nosenchuck, P.E., Director

Prepared by:

EA SCIENCE AND TECHNOLOGY
A Division of EA Engineering, Science, and Technology, Inc.

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EA REPORT DEC51A

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK PHASE I INVESTIGATIONS

AMENIA - ROUTE 22, SOUTH SITE
TOWN OF AMENIA, DUTCHESS COUNTY
NEW YORK ID NO. 314006

Prepared for

Division of Solid and Hazardous Waste
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-0001

Prepared by

EA Science and Technology
R.D. 2, Goshen Turnpike
Middletown, New York 10940

A Division of EA Engineering, Science, and Technology, Inc.

August 1986

Latitude: 41° 49' 38.9"
Longitude: 73° 33' 47.1"

AMENIA - ROUTE 22 , SOUTH SITE

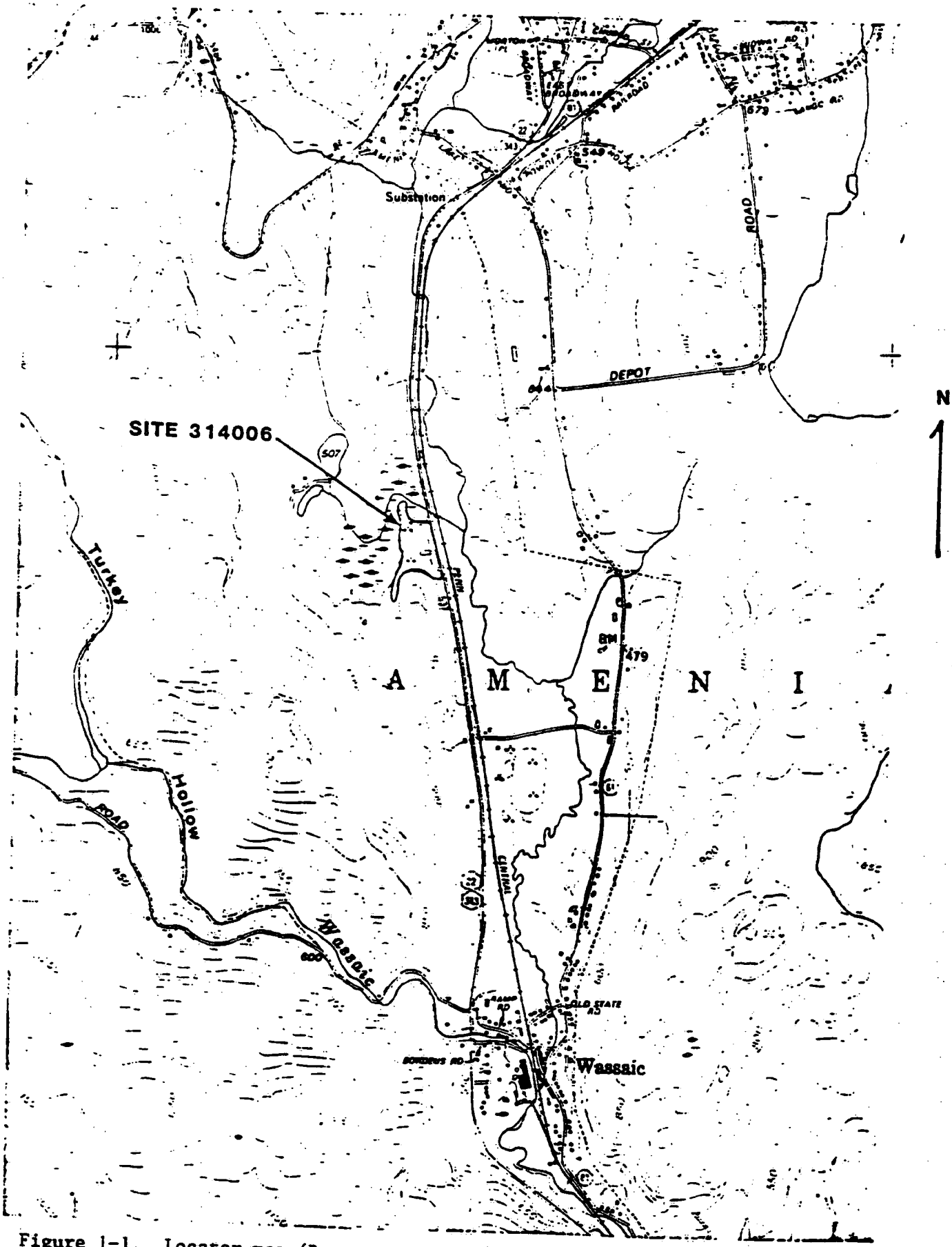


Figure 1-1. Locator map (Base map: NYSDOT. 1973. 7.5-Minute Series Topographic. Scale 1:24,000).

AMENIA QUAD

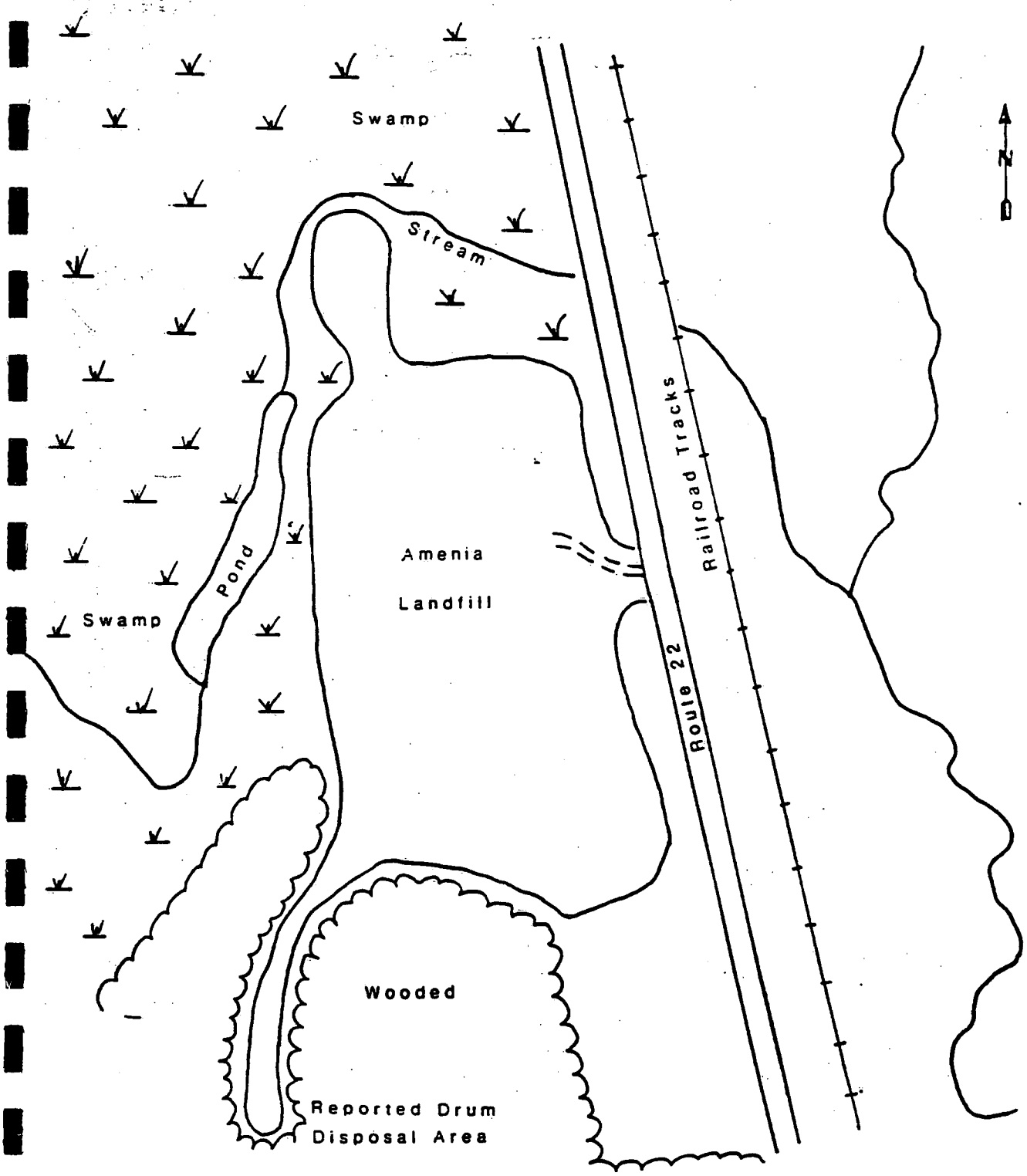


Figure 1-2. Site sketch. Amenia-Route 22, South site, 16 January 1985 (Not to scale).

4. SITE ASSESSMENT - AMENIA

4.1 SITE HISTORY

The Town of Amenia - Route 22, South site is an inactive municipal dump, approximately 10 acres in size, located on the west side of Route 22 in the Town of Amenia, Dutchess County, New York. The southern portion of the site area has recently been purchased by Mr. John Segalla of Leedsville Road, Amenia, New York 12501 (Appendix A1.1-1). The northern portion is currently owned by Mr. Karl Saliter of Box 128, Jackson Hill Road, Sharon, Connecticut 06069. Available information on the history of the site relative to the period of operation, site owners during operation of the dump, and location of the fill areas is incomplete. Mr. Harry Bly, Chairman, Amenia Zoning Board of Appeals, was interviewed during the site inspection conducted by EA on 16 January 1985, and provided information on his knowledge of the site (Appendix A1.1-2).

It is not known when operation of the site as a dump began. However, the dump operated for many years receiving municipal wastes from the Towns of Amenia, New York and Sharon, Connecticut. The site was privately owned by the "Murphy brothers" for a period of time during operation of the disposal area. A local resident, Mr. Surico, operated the site for a number of years. At an unknown point in time, he purchased the northern section of the site area from the Murphys (Appendix A1.1-1). Mr. Surico was forced to close the site in January 1969 by the Town of Amenia (Appendix A1.1-3). At closure, an unknown number of

55-gal drums were stored on the Surico property (Appendix A1.1-2). It is not known what was stored in the drums, if anything. Some of the drums were removed at a later time.

Following closure in January 1969, the Town of Amenia opened an emergency disposal area on property owned by Walt and Eleanor Culver that is located to the north of the site in question (Appendix A1.1-4). (This smaller disposal area, known as the Amenia - Route 22, North site, is not part of this Phase I investigation.) This emergency disposal area was operated for about a year and then closed (Appendix A1.1-2). Following this, the southern section of the site area, by then owned by Metal Improvement Company, Inc., was leased and operated by the Town of Amenia and the Town of Sharon, Connecticut until closed (Appendixes A1.1-2 and A1.1-5). Mr. Bly was uncertain exactly when the dump was permanently closed and covered over, but he indicated it was about the same time that the Harlem Valley Landfill (located southwest of the site) was started. A NYSDEC hazardous waste disposal site report indicates that the landfill was closed in 1975 (Appendix A1.1-5). At final closure, the main fill area received soil cover of unknown depth applied by a local contractor hired by the Town of Amenia (Appendix A1.1-1).

It is suspected that some drums may be buried at the site. According to NYSDEC hazardous waste disposal site reports (Appendix A1.1-4), evidence of drums south of the southwest corner of the site were observed as recently as December 1979. Notes in the Dutchess County Environmental Management Committee files regarding a site inspection conducted in December 1980 indicated that barrels were visible protruding from the ground (Appendix A1.1-7). There were no drums observed onsite during the site inspection conducted 16 January 1985.

The site is suspected by NYSDEC of having received industrial wastes from the general area, however, no generators have been identified. The DCDOH believes the site to have received normal refuse only. There is no documentation of hazardous or toxic waste disposal at the site.

4.2 SITE TOPOGRAPHY

The former Amenia landfill, located west of State Route 22 and approximately 2 mi south of the Village of Amenia, covers a total area of about 10 acres. The landfill is situated adjacent to a wetland through which a permanent stream (unnamed tributary of Wassaic Creek) runs (Figures 1-1 and 1-2). It is suspected that wastes may have been disposed of in a portion of the marsh north of the landfill. The surface of the landfill is vegetated with grass and slopes toward the west and north (average slope = approximately 21 percent). The west edge of the landfill drops off sharply to the wetland (slope = approximately 46 percent).

A smaller fill area (about one acre in size), known as Amenia - Route 22, North site, is located on the north edge of the marsh. This site is overgrown with brush and is relatively flat. Trash is visible on the ground surface. Both fill areas have separate access roads, and access to the sites is not restricted.

Two lakes are located approximately 1,000 ft west of the site. Both lakes are upgradient (20 ft higher in elevation) of the site. Both lakes discharge to the permanent stream that runs through the marsh adjacent to the landfill.

The nearest residence is located about 1,350 ft to the west, and the nearest commercial building is about 2 mi northeast of the site. There are no national/state parks or forests located within 2 mi of the landfill.

4.3 SITE HYDROGEOLOGY

The site is directly underlain by glacial outwash sand and gravel deposits. These sediments are confined to the valley floor and are of limited areal extent. Approximately 1 mi north of the site, these sediments are at least 70 ft in thickness and comprised of 28 ft of water bearing gravel overlain by 42 ft of clay with a gravel lens (Appendix A1.3-1: Simmons et al. 1961, Well Du 99). However, there is no site-specific data to confirm the presence of this thick clay at the site. The unconsolidated deposits which blanket the adjacent hillsides are comprised of glacial till.

The glacial sediments are underlain by marble bedrock of the Cambro-Ordovician Age Stockbridge Formation. There are several thrust faults within 1-2 mi of the site which are related to the Taconic Orogeny. The bedrock is present at or within 3 ft of ground surface at several locations throughout the valley, including the hills north and south of the site as shown on Appendix A1.3-1 (Gerber 1982).

Both the glacial sediments and marble bedrock (designated by Gerber as Aquifer No. 74 on Appendix A1.3-1) have been developed by wells for domestic (rural area) and public (Village of Amenia) water supplies and are both considered as the aquifer of concern. The glacial sediment portion of the aquifer of concern includes the sand and gravel deposits which are bounded by the adjacent glacial

till covered mountains as shown on Appendix A1.3-1 (Gerber 1982). Based upon the available literature, hydraulic connection between these two general aquifers cannot be confirmed. However, because bedrock is reportedly within 3 ft of ground surface in the immediate vicinity of the site, the bedrock aquifer, as well as the glacial sediment aquifer, may be affected by conditions at the site.

The data in this section is based upon:

1. Gerber, R.G. 1982. Final Report, Water Resources Study for Dutchess County: Amenia Quad with Surficial and Bedrock Aquifer Delineations. (Appendix A1.3-2.)

2. Simmons, E.T. et al. 1961. Ground-Water Resources of Dutchess County, New York: Well Logs. (Appendix A1.3-1.)

3. New York State Department of Health. 1982. New York State Atlas of Community Water System Sources.

4.4 SITE CONTAMINATION ASSESSMENT

Waste Types and Quantities

Though it is suspected that industrial wastes were received at the site, there is no documentation of it. It is reported that a number of 55-gal drums were stored at the site, however, it is not known what they contained, if anything.

Assuming that industrial wastes were disposed of at the site, there is a potential for soil, surface water, and ground-water contamination.

Ground Water

No data available.

Surface Water

No data available.

Soil

No data available.

Air

Total volatile organic vapors were measured during EA's site inspection (16 January 1985) using an HNU photoionizer. No levels above background were detected.

AMENIA - ROUTE 22, SOUTH SITE
TOWN OF AMENIA, DUTCHESS COUNTY

The Amenia - Route 22, South site, located on the west side of State Route 22 in the Town of Amenia, Dutchess County, New York, covers a total area of approximately 10 acres. The landfill, privately owned, was leased and operated by the Town of Amenia for several decades. The site received municipal wastes from the Town of Amenia, as well as Sharon, Connecticut. The NYSDEC suspects that industrial wastes were received at the site, however, there is no documentation of this. In 1969, a number of 55-gal drums were stored at the site. It is not known if the drums were empty or if they contained hazardous substances. Drums were observed on the landfill surface as recently as 1979.

There are no data available to evaluate site contamination. The site is partially surrounded by a marsh and there is a potential for soil, surface water, and ground-water contamination. The site is underlain by glacial outwash sand and gravel deposits. Both the glacial sediment and bedrock aquifers are considered to be aquifers of concern. The total population estimated to be utilizing these aquifers of concern is 1,718.

72

REFERENCE NO. 6

73

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VAN NOSTRAND REINHOLD COMPANY

NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

PETROLEUM COKE (uncalcined)

NIOSH #: SE 7426000

SYN: PETROLEUM COKE UNCALCINED (DOT)

TOXICITY DATA:
DOT-ORM-C, Label: None FEREAC 41,57018,76.

PETROLEUM DISTILLATE

CAS RN: 8002059 NIOSH #: SE 7449000

SYN: PETROLEUM DISTILLATE (DOT)

TOXICITY DATA: CODEN:
Toxicology Review: 27ZTAP 3,111,69. DOT: Combustible Liquid, Label: None FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E No: 05780148—Followup Sent as of April, 1979.
THR: Combustible liquid. See also petroleum and asphalt.

PETROLEUM GAS (LIQUEFIED)

CAS RN: 68476857 NIOSH #: SE 7545000

Mixture of Propane, Isobutane, Isobutylene and other hydrocarbons (FEREAC 41,15972,76)

SYN: LIQUEFIED PETROLEUM GAS (DOT)

TOXICITY DATA: CODEN:
DOT: Flammable Gas, Label: Flammable Gas FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: HIGHLY flammable matter.

PETROLEUM 60 SOLVENT

NIOSH #: SE 7551000

Consists of a mixture of hydrocarbons from C_5-C_{10}, chiefly of paraffins, cycloparaffins, alkyl benzenes and benzene (TXAPA9 34,374,75)

TOXICITY DATA:	2	CODEN:
ihl-hmn TCLo:550 ppm/15M:EYE		TXAPA9 34,374,75
ihl-rat LC50:4900 ppm/4H		TXAPA9 34,374,75
ihl-cat LCLo:4100 ppm/4H		TXAPA9 34,374,75

Occupational Exposure to REF PETR SOLV recm std: Air: TWA 350 mg/m3; CL 1800 mg/m3/15M NTIS**.
THR: EYE in hmn. MOD ihl.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PETROLEUM 70 SOLVENT

NIOSH #: SE 7552000

Consists of a mixture of hydrocarbons from C_5-C_{10}, chiefly of paraffins, monocycloparaffins, and alkyl benzenes (TXAPA9 34,395,75)

TOXICITY DATA:	3	CODEN:
ihl-hmn TCLo:180 ppm/15M TFX:IRR		TXAPA9 34,395,75
ihl-dog LCLo:930 ppm/4H		TXAPA9 34,395,75

Occupational Exposure to REF PETR SOLV recm std: Air: TWA 350 mg/m3; CL 1800 mg/m3/15M NTIS**.
THR: HIGH ihl.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PETROLEUM SPIRITS

CAS RN: 8030306 NIOSH #: SE 7555000

Volatile, clear, colorless and non-fluorescent liquid. mp: < −73°, bp: 40°-80°, uic: 95-100, lel = 1.1%, uel = 5.9%, flash P: < 0°F, d: 0.635-0.660, autoign. temp.: 550°F, vap. d: 2.50.

SYNS:

BENZINE	PAINTERS' NAPHTHA
BENZOLINE	REFINED SOLVENT NAPHTHA
CANADOL	SOLVENT NAPHTHA
HERBITOX	VARNISH MAKERS' NAPHTHA
LIGROIN	VARNISH MAKERS' AND PAINTERS' NAPHTHA
~~MINERAL SPIRITS~~	V.M. AND P. NAPHTHA
MINERAL THINNER	WHITE SPIRITS
MINERAL TURPENTINE	

TOXICITY DATA:	2-1	CODEN:
eye-hmn 880 ppm/15M		TXAPA9 32,263,75
ihl-hmn TCLo:600 mg/m3/8H:IRR		TPKVAL 10,116,68
unk-man LDLo:1470 mg/kg		85DCAI 2,73,70
ihl-rat LC50:3400 ppm/4H		TXAPA9 32,263,75
ipr-rat LDLo:8560 mg/kg		TXAPA9 1,156,59
ihl-mus LCLo:50000 mg/m3		TPKVAL 10,116,68

Aquatic Toxicity Rating: TLm96:over 1000 ppm WQCHM* 4,-,74.
Toxicology Review: 27ZTAP 3,97,69. Occupational Exposure to REF PETR SOLV recm std: Air: TWA 350 mg/m3;CL 1800 mg/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: MOD irr via oral and inhal and to skn, eyes and mu mem. Ingestion can cause a burning sensation, vomiting, diarrhea, drowsiness, and, in severe cases, pulmonary edema. Inhal of conc vapors causes intoxication resembling that from alcohol, headache, nausea, and coma. Hemorrhages into various vital organs have been reported.
Fire Hazard: Highly dangerous, when exposed to heat, flame sparks, etc.
Spontaneous Heating: No.
Explosion Hazard: Mod, when exposed to heat or flame.
Disaster Hazard: Highly dangerous; keep away from heat or flame!
To Fight Fire: Foam, CO_2, dry chemical.

PETROLEUM 50 THINNER

NIOSH #: SE 7558000

A mixture of paraffins, monocycloparaffins, condensed cycloparaffins, benzene, toluene, and C_8 alkyl benzenes (TXAPA9 36,427,76)

SYN: 50 THINNER

TOXICITY DATA:	2	CODEN:
eye-hmn 530 ppm/30M MLD		TXAPA9 36,427,76
ihl-rat LC50:8300 ppm/4H		TXAPA9 36,427,76

TOXICITY DATA: 3
scu-mus LD50:61 mg/kg
ipr-rbt LDLo:150 mg/kg
scu-rbt LDLo:250 mg/kg
unk-rbt LDLo:147 mg/kg

CODEN:
28ZEAL 4,335,69
AIPTAK 36,387,30
AIPTAK 36,387,30
AIPTAK 36,387,30

Reported in EPA TSCA Inventory, 1980.
THR: HIGH scu, ipr. Probably MOD via oral and inhal routes.
Fire Hazard: Mod, when exposed to heat, flame or oxidizers.
Disaster Hazard: Dangerous; when heated to decomp it emits highly tox fumes of NO_x; can react with oxidizing materials.
To Fight Fire: Foam, CO_2, dry chemical.

PYRROLIDINE

CAS RN: 123751
mf: C_4H_9N; mw: 71.14
NIOSH #: UX 9650000

Colorless, mobile liquid, penetrating amine-like odor. fp: −63°, flash p: 37°F (TCC), d: 0.8618 @ 20°/4°, vap. press: 128 mm @ 39°, vap. d: 2.45; bp: 88.5°-89°. Fumes in air. Misc with water; sol in alc, ether, chloroform.

SYNS:
AZACYCLOPENTANE
TETRAHYDROPYRROLE
TETRAMETHYLENIMINE

TOXICITY DATA: 3
orl-rat LD50:300 mg/kg
ihl-mus LC50:1300 mg/m3/2H
ivn-mus LD50:56 mg/kg

CODEN:
GTPZAB 18,29,74
GTPZAB 18,29,74
CSLNX* NX#06769

DOT: Flammable Liquid, Label: Flammable Liquid FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: HIGH oral, inhal, ivn tox.
Fire Hazard: Dangerous, when exposed to heat, flame or oxidizers.
Explosion Hazard: Unk.
Disaster Hazard: Dangerous; when heated to decomp it emits highly tox fumes of NO_x; can react vigorously with oxidizing materials.
To Fight Fire: Alcohol foam, CO_2, dry chemical.

1-PYRROLIDINECARBOTHIOIC ACID, (1-ISOQUINOLINYLMETHYLENE) HYDRAZIDE

CAS RN: 24898622
mf: $C_{15}H_{16}N_4S$; mw: 284.41
NIOSH #: UY 0282000

SYN: SILANE A-171

TOXICITY DATA: 2-1
skn-rbt 500 mg open MLD
orl-rat LD50:11 gm/kg
ihl-rat LCLo:4000 ppm/4H
skn-rbt LD50:3540 mg/kg

CODEN:
UCDS** 1/20/72
UCDS** 1/20/72
UCDS** 1/20/72
UCDS** 1/20/72

THR: MOD skn, ihl. LOW orl; A skn irr.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

PYRROLIDINE, L-(N-(2,6-DIMETHYLPHENYL)-3-(PYRROLIDINYL)SUCCINAMOYL) HYDROCHLORIDE

mf: $C_{20}H_{29}N_3O_2 \cdot ClH$; mw: 379.98
NIOSH #: UG 6415000

SYN: 2-PYRROLIDYL-BERNSTEINSAURE-1-0,0-XYLIDID-4-PYRROLIDID HYDROCHLORID (GERMAN)

TOXICITY DATA: 3
eye-rbt 2% MOD
ipr-rat LD50:26 mg/kg
scu-mus LD50:34 mg/kg

CODEN:
ARZNAD 8,609,58
ARZNAD 8,609,58
ARZNAD 8,609,58

THR: HIGH ipr, scu. An eye irr.
Disaster Hazard: When heated to decomp it emits very tox fumes of HCl and NO_x.

10-(PYRROLIDINOACETYL)PHENOTHIAZINE

CAS RN: 63834195
mf: $C_{18}H_{18}N_2OS$; mw: 310.44
NIOSH #: SP 4550000

SYN: USAF XR-26

TOXICITY DATA: 3
ipr-mus LD50:150 mg/kg
ivn-mus LD50:30 mg/kg

CODEN:
NTIS** AD277-689
ARZNAD 4,232,54

THR: HIGH ipr, ivn.
Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x and NO_x.

2-PYRROLIDINONE

CAS RN: 616455
mf: C_4H_7NO; mw: 85.12
NIOSH #: UY 5715000

SYNS:
PYRROLIDON (GERMAN)
2-PYRROLIDINONE

TOXICITY DATA: 1
orl-rat LD50:6500 mg/kg
scu-mus LDLo:10 gm/kg
orl-gpg LD50:6500 mg/kg

CODEN:
34ZIAG -,508,69
AEXPBL 50,199,1903
34ZIAG -,508,69

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: LOW orl, scu.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

1-(5-PYRROLIDINO-2,4-PENTADIENYLIDENE) PYRROLIDINIUM PAMOATE TETRAHYDRATE

CAS RN: 63915844
mf: $C_{36}H_{42}N_4 \cdot C_{23}H_{14}O_6 \cdot 4H_2O$; mw: 881.18
NIOSH #: UY 4950000

TOXICITY DATA: 3
orl-mus LD50:200 mg/kg
ipr-mus LD50:50 mg/kg

CODEN:
JMCMAR 12,806,69
JMCMAR 12,806,69

THR: HIGH orl, ipr.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

Orange crystals, camphor odor, insol in water, sol in alcohol and ether. mp: 174°, sublimes @ >100°, volatile in steam.

SYNS:
BISCYCLOPENTADIENYLIRON
DI-2,4-CYCLOPENTADIEN-1-YLIRON
IRON DICYCLOPENTADIENYL
IRON BIS(CYCLOPENTADIENE)

TOXICITY DATA: 3 CODEN:
ims-rat TDLo:5175 mg/kg/2Y-I TFX:ETA NCIUS* PH 43-64-886,AUG,69
orl-rat LD50:1320 mg/kg SCCUR* -,5,61
ipr-rat LD50:500 mg/kg NCIUS* PH 43-64-886,JAN,65
orl-mus LD50:1350 mg/kg SCCUR* -,5,61
ipr-mus LD50:335 mg/kg NCIUS* PH 43-64-886,JAN,65
ivn-mus LD50:178 mg/kg CSLNX* NX#02382

TLV: Air: 10 mg/m3 DTLVS* 4,138,80. Reported in EPA TSCA Inventory, 1980.
THR: An exper ETA. HIGH ipr, ivn. MOD oral and ipr.
Fire Hazard: Mod. Reacts violently with NH_4ClO_4.
Disaster Hazard: Dangerous; when heated to decomp it emits tox fumes.
For further information see Vol 1, No. 4 of *DPIM Report.*

FERROCHROME (EXOTHERMIC)

CAS RN: 11114468 NIOSH #: LK 0750000

SYNS:
CARBON FERROCHROMIUM
CHROME FERROALLOY
CHROMIUM ALLOY
CHROMIUM ALLOY, BASE, CR,C,FE,N,SI (FERROCHROMIUM)
EXOTHERMIC FERROCHROME (DOT)
FERROCHROMIUM

TOXICITY DATA: 3
Carcinogenic Determination: Indefinite IARC** 23, 205,80. DOT-ORM-C, Label: None FEREAC 41, 57018,76. Reported in EPA TSCA Inventory, 1980.
THR: HIGH. An exper CARC.

FERROMANGANESE (EXOTHERMIC)

CAS RN: 12604534 NIOSH #: LK 0900000

SYN: EXOTHERMIC FERROMANGANESE (DOT)

TOXICITY DATA:
Toxicology Review: ENVRAL 16,139,78. DOT-ORM-C, Label: None FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: See manganese compounds.
Disaster Hazard: The dust will burn violently and give off tox fumes of MnO_2.

FERROPHOSPHORUS (DOT)

CAS RN: 8049192 NIOSH #: LK 1300000

SYN: IRON ALLOY, BASE, FE,P (FERROPHOSPHORUS)

TOXICITY DATA: CODEN:
DOT-ORM-A, Label: None FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: See phosphorus.
Disaster Hazard: When heated to decomp it emits very tox fumes, including PO_x.

FERROSILICON

CAS RN: 8049170 NIOSH #: LK 1400000

Crystalline, metallic solid. Fe + Si, d: 5.4. Containing 30% or more but not more than 70% SILICON (FEREAC 41,15972,76)

TOXICITY DATA: CODEN:
DOT-ORM-A, Label: None FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: This material is decomp by moisture, under which conditions impurities may liberate such poisonous gases as phosphine and arsine.
Fire Hazard: Mod, by chemical reaction with moisture.
Explosion Hazard: Mod, by chemical reaction.
Disaster Hazard: Dangerous; will react with water or steam to produce hydrogen and other flam vapors; can react with oxidizing materials; on contact with acid or acid fumes, can emit tox fumes.

FERROUS ACETATE

CAS RN: 3094879 NIOSH #: AI 3850000
mf: $C_4H_6O_4 \cdot Fe$; mw: 173.95

SYNS:
IRON(2+) ACETATE
IRON (II) ACETATE
IRON DIACETATE

TOXICITY DATA: 2 CODEN:
scu-rat LD50:492 mg/kg 27ZWAY 3,2,1268,-
scu-rbt LDLo:492 mg/kg EQSSDX 1,1,75

Reported in EPA TSCA Inventory, 1980.
THR: MOD scu. See also iron compounds.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

[redacted]

CAS RN: 7758943 NIOSH #: NO 5400000
mf: Cl_2Fe; mw: 126.75

Green to yellow, deliquescent crystals. mp: 614°-670°, bp: 1026°, d: 3.16, vap. press: 10 mm @ 700°.

SYNS:
IRON(II) CHLORIDE (1:2)
IRON DICHLORIDE
IRON PROTOCHLORIDE

TOXICITY DATA: 3 CODEN:
ctr-ham:emb 2500 umol/L GNREA8 39,193,79
ipr-mus LD50:59 mg/kg AEPPAE 244,17,62

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: HIGH via ipr route. See also chlorides and iron. Can react violently with ethylene oxide, K, Na. MUT data.
Disaster Hazard: Dangerous; see chlorides.

FERROUS CHLORIDE, TETRAHYDRATE

CAS RN: 13478109 NIOSH #: NO 5600000
mf: $Cl_2Fe \cdot 4H_2O$; mw: 198.83

SYN: IRON(2+) CHLORIDE, TETRAHYDRATE

TOXICITY DATA:	3-2	CODEN:
ori-rat LD50:984 mg/kg		27ZWAY 3,2,1278,-
rec-rat LDLo:498 mg/kg		EQSSDX 1,1,75
ipr-mus LD50:93 mg/kg		AEPPAE 244,17,62
ori-rbt LDLo:890 mg/kg		EQSSDX 1,1,75
scu-rbt LDLo:189 mg/kg		EQSSDX 1,1,75
rec-rbt LDLo:984 mg/kg		EQSSDX 1,1,75

THR: HIGH via ipr, scu and MOD via ori and rec. routes.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

FERROUS GLUCONATE

CAS RN: 299296 NIOSH #: LZ 5150000
mf: $C_{12}H_{22}O_{14} \cdot Fe$; mw: 446.19

Yellowish-gray or pale greenish-yellow, fine powder or granules with slight odor, sol in water and glycerin, insol in alcohol.

SYNS:
FERGON PREPARATIONS
FERLUCON
FERRONICUM
GLUCO-FERRUM
IRON GLUCONATE
IROX (GADOR)
NIONATE

TOXICITY DATA:	3	CODEN:
scu-mus TDLo:2600 mg/kg/13W-I:ETA		JNCIAM 24,109,60
ori-chd TDLo:162 mg/kg:CNS		JAMAAP 218,1179,71

Toxicology Review: CTOXAO 4,615,71. Reported in EPA TSCA Inventory, 1980.
THR: An exper ETA. Causes CNS problems in children via oral route. A nutrient food additive. A trace mineral added to animal feeds.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

FERROUS GLUCONATE DIHYDRATE

CAS RN: 22830451 NIOSH #: LZ 51800000
mf: $C_{12}H_{22}O_{14} \cdot Fe \cdot 2H_2O$; mw: 483.23

TOXICITY DATA:	2-3	CODEN:
ori-rat LD50:4500 mg/kg		AJMSA9 230,491,55
ori-mus LD50:3700 mg/kg		AJMSA9 230,491,55
ivn-mus LD50:98 mg/kg		AJMSA9 230,491,55

THR: HIGH ivn. MOD ori.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

FERROUS GLUTAMATE

CAS RN: 2896879 NIOSH #: MA 1300000
mf: $C_5H_9FeNO_4$; mw: 203.00

TOXICITY DATA:	3	CODEN:
scu-mus TDLo:2600 mg/kg/1:ETA		BECCAN 40,30,62

THR: An exper ETA.
Disaster Hazard: When heated to decomp it emits tox fumes such as NO_x.

FERROUS ION

CAS RN: 15438310 NIOSH #: NO 6925000
mf: Fe; mw: 55.85

SYNS:
FERROUS
IRON(2+)
IRON (FE 2+)
IRON (II) ION

TOXICITY DATA:	CODEN:
mmo-esc 200 umol/L	MAGDA3 10,249,79

THR: MUT data.

FERROUS SULFATE

CAS RN: 7782630 NIOSH #: NO 8510000
mf: $O_4S \cdot Fe \cdot 7H_2O$; mw: 278.05

Monoclinic crystals. d: 2.99-3.08.

SYN: IRON(II) SULFATE (1:1), HEPTAHYDRATE

TOXICITY DATA:	3-2	CODEN:
mmo-esc 30 umol/L		CIWYAO 49,144,50
ori-rat LDLo:1389 mg/kg		EQSSDX 1,1,75
rec-rat LDLo:697 mg/kg		EQSSDX 1,1,75
ori-mus LD50:1520 mg/kg		AJMSA9 230,491,55
ivn-mus LD50:51 mg/kg		AJMSA9 230,491,55

Toxicology Review: CTOXAO 4,615,71.
THR: MOD via ori; HIGH via ivn routes. MUT data. Used as a nutrient and/or dietary supplement food as well as a trace mineral added to animal feed; it is a substance migrating to foods from packaging materials.
Disaster Hazard: When heated to decomp it emits tox fumes of SO_x.

FERROVANADIUM DUST

CAS RN: 12604589 NIOSH #: LK 2900000
mf: FeV; mw: 106.8

A gray to black dust.

TOXICITY DATA: CODEN:
TLV: Air: 1 mg/m3 DTLVS* 4,192,80. *Toxicology Review:* 85DHAX V,46,74. OSHA Standard: Air: TWA 1 mg/m3 (SCP-N) FEREAC 39,23540,74. Occupational Exposure to Vanadium recm std: Air: TWA 1.0 mg(V)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: See also vanadium and iron. Can cause pulmonary damage.
Fire Hazard: Mod, when exposed to heat or flame.
Explosion Hazard: Slight, when dust is exposed to flame.

78

REFERENCE NO. 7

79 PA 5:
H

PROTOCOL FOR REVIEW OF SITES

Attachment I

Name Amenia

EPA I.D.# NYD980641559

State I.D. #

No File (NF) Site or No SI (NS) Site (circle)

SI or PA or Other (circle)

Date of Last Action Feb 25, 1987

Descriptive Information

Old HRS Score 29.74

Pathway Scores 48.92 GW 15.94 SW SE(DC) 0 A

Event Qualifier (as may be in the file but not in CERCLIS)

PA / SI Information

Nature of the Problem
The are an unknown number of drums onsite, with industrials waste being the suspected contents.

Pathways of Concern
GWSW

Likelihood of Scoring (PA Method, HRS) > 28.5.

i. Actual/Obs. release to a media
SW contains metals at 7-10 the conc at the downstream end.

ii. Targets (primary, secondary)
Unnamed tributary, Swamy, ST pop for GW

iii. HWC (hazardous waste characteristics)
2-Butanone Benzoic Acid Diethylphthalate
Arcolor 1248

Information Adequate (H- definitely able to score, M- most likely able to score, L- unlikely able to score)

Additional Information (that would aid in scoring)
Requirements

Decision (G, S, NS, NF)

New CERCLIS Event Qual.

84

REFERENCE NO. 8

85

STATE OF NEW YORK
DEPARTMENT OF CONSERVATION
WATER RESOURCES COMMISSION

Ground-Water Resourses of Dutchess County, New York

By

E. T. SIMMONS, I. G. GROSSMAN, AND R. C. HEATH
Geologists, U. S. Geological Survey

Prepared by the
U. S. GEOLOGICAL SURVEY
In cooperation with the
NEW YORK WATER RESOURCES COMMISSION

BULLETIN GW-43
ALBANY, N. Y.
1961

GROUND-WATER RESOURCES OF DUTCHESS COUNTY, NEW YORK

By

E. T. Simmons, I. G. Grossman, and R. C. Heath
Geologists, U. S. Geological Survey

ABSTRACT

Dutchess County encompasses an area of about 800 square miles in the southeastern part of New York State. The climate is humid continental. The mean monthly temperature is about 49°F and the mean annual precipitation is about 45 inches.

Ground water is obtained from unconsolidated surficial deposits and from bedrock. The unconsolidated deposits consist chiefly of unstratified till, and stratified clay, silt, sand, and gravel. The till ranges in thickness from less than 1 foot to more than 100 feet and underlies most of the uplands and some valley areas. The stratified deposits generally range in thickness from a few feet to as much as 200 feet and are chiefly restricted to valley areas. In the major valleys, large supplies adequate for municipal and industrial needs can be obtained from stratified deposits of sand and gravel. In upland areas, small supplies for domestic and farm needs may be obtained from large-diameter wells penetrating till.

The consolidated rocks range in age from Precambrian to Ordovician and in degree of metamorphism from highly metamorphosed rocks in the southeast to slightly altered rocks in the northwest. Argillaceous rocks are the most abundant. Other consolidated rocks in the county consist of limestone, dolomite, quartzite, granite, and gneiss. The average yield from wells in bedrock ranges from about 10 gpm (gallons per minute) for wells drawing water from quartzite, granite, and gneiss to 22 gpm for wells drawing from limestone.

Water from the Stockbridge limestone and the overlying unconsolidated deposits is hard and comparatively high in dissolved solids. Elsewhere, ground water is softer and lower in dissolved solids but is more likely to contain troublesome quantities of iron.

Ground water is the principal source of supply for farms, rural homes, and summer camps. It is also used for an increasing number of industrial and public supplies. The total use of ground water in the county in 1950 is estimated to have averaged about 7 million gallons a day. There are no known areas of appreciable size in which the supply is being depleted, and the overall supply is not only adequate for present requirements but is capable of supporting substantially larger demands.

GEOLOGY

Ground water occurs in all the geologic formations in Dutchess County and most of these are important sources of water. With respect to the principal kinds of openings in which the water occurs, these formations are placed in two major groups: (1) consolidated rocks that range in age from Precambrian to Ordovician, and (2) unconsolidated deposits of Pleistocene and Recent age. The areal extent of the different bedrock formations is shown on plate 2. These rocks underlie the entire county and crop out at the surface principally on hillsides and hilltops. In most of the count however, the bedrock is overlain by unconsolidated deposits, which range in thickness from less than a foot on steep hills to more than 100 feet in some of the larger valleys. The areal extent of the different types of unconsolidated deposits is shown on plate 3. The principal events leading to the present-day distribution of the consolidated rocks and unconsolidate deposits in the county are described briefly in the following paragraphs. Although this report is a cooperative product of the New York Water Resourc Commission and the U. S. Geological Survey, the geologic nomenclature does not necessarily follow that of the U. S. Geological Survey.

Geologic History

The oldest known strata in the county were laid down as clayey and lim mud and sand in a sea which covered the area in Precambrian time, more than 500 million years ago. After deposition, these strata were subjected to great heat and pressure which accompanied the intrusion of extensive masses of granite. The sediments were metamorphosed to a gneiss by the heat and pressure, and the gneiss is now so completely penetrated by the granite tha the two look very much alike and hence are referred to on the bedrock map (pl. 2) as "undifferentiated granite and gneiss." The intrusion of the granite was followed by a long period of erosion during which the area was reduced to a low plain.

During the Cambrian, the first period of the Paleozoic era, the sea once again advanced over the area. A thick mass of sediments, consisting chiefly of sand and limy mud, collected on the sea floor. Deposition of limy mud and of clay and sandy clay continued into the succeeding Ordovicia period. All these sediments were subsequently consolidated into beds of sandstone, limestone, and shale. At the end of the Ordovician, these beds were folded, metamorphosed, and raised above sea level during an episode of mountain-making known as the Taconic orogeny. During this orogeny the sand stone, limestone, and shale in the southern and eastern parts of the county were converted, through metamorphism, to quartzite, marble, and phyllite and schist. During and following the Taconic orogeny the area was subjecte to another long period of erosion. Some deposition may have occurred in th general area during subsequent periods of the Paleozoic era, although no bedrock younger than Ordovician is known to occur. Crustal movements near the end of Devonian time known as the Acadian disturbance, during which roc in areas to the north and west were faulted, also may have affected the roc in Dutchess County.

Table 2.--Geologic units in Dutchess County and their water-bearing properties

Class	Age	Geologic Unit		Maximum thickness (feet)	Character of material	Water-bearing properties
Unconsolidated deposits	Recent	Alluvium		30±	Clay, silt sand, and gravel deposited by present-day streams in lakes, swamps, and on flood plains.	Not important as source of water because of limited thickness and restriction to discontinuous areas adjacent to streams. Potentially important, however, in larger valleys where coarse-grained material permits induced infiltration from nearby streams.
	Pleistocene	Stratified drift	Sand and gravel	200	Irregularly interbedded and interlensing sand and gravel formed by glacial melt-water streams.	Most productive source of ground water in county, though restricted in areal extent to portions of main stream valleys. Yields moderate to large supplies from properly constructed wells. Water moderately hard in parts of the valleys underlain by Stockbridge limestone.
			Lacustrine deposits	200	Clay and silt deposited in glacial lakes.	Yields little water. Generally acts as a confining bed where underlain by permeable deposits.
		Unstratified drift	Till	150	Heterogeneous mixture of boulders and clay deposited by glacial ice. In places, contains small lenses of sand and gravel. Locally called "hardpan."	Generally thin and impermeable but yields small supplies to wells of large diameter.
Consolidated rocks	Late (?) and Middle Ordovician	Hudson River formation		3,000+	Shale or slate, chiefly gray or black but locally red, purple, and green. Contains beds of grit, limestone, limestone conglomerate, and black chert. Metamorphosed to phyllite and in east to schist.	Most extensive bedrock formation in county. Yields average 16 gpm. Water moderately soft and fairly low in dissolved solids, but hydrogen sulfide reported in some wells.
	Ordovician and Cambrian	Stockbridge limestone		1,000±	White, blue, and gray limestone and dolomite metamorphosed to marble in east. Veins of calcite and quartz common.	Chiefly restricted to valley areas. Most productive bedrock formation; yields average 22 gpm and range widely from 0 to 220 gpm. Water moderately hard and relatively high in dissolved solids.
	Early Cambrian	Cheshire quartzite		600±	Strong, compact rock composed almost entirely of quartz. Generally white except locally, where impurities result in buff or pink color.	Unimportant as a source of ground water because of small areal extent. Yields of five wells in southern part of county average 10 gpm.
	Precambrian	Undifferentiated granite and gneiss		Unknown	Banded black and white gneiss and gray or pink granite. Chief minerals feldspar and quartz. Locally contains basic dikes, quartz veins, and minor amounts of schist and marble.	Principally restricted to southern part of county. Yields of wells average 11 gpm. Water generally soft and low in dissolved solids.

The Cheshire is not important as a source of ground water because of its small areal extent and because it underlies steeply sloping hillsides which are sparsely settled. Only five wells in the county are known to tap quartzite; these are listed in table 13.

Stockbridge limestone.--Over the Cheshire quartzite is a thick sequence of carbonate rocks, which underlie a much greater part of the county than the quartzite. In the east, carbonate rocks lie beneath the broad Harlem Valley, which contains Tenmile River and its principal tributaries and which extends almost without interruption from the Putnam County line to the Columbia County line. In the south, the valley of Fishkill Creek is underlain by limestone which extends from Beacon northeastward to the head of the creek. Other areas in the western and central parts of the county also are underlain by elongate masses of carbonate rocks (pl. 2).

Several different names have been applied to the carbonate rocks in different parts of the county, including Barnegat limestone (Mather, 1843, p. 410), Fishkill limestone (Gordon, 1911, p. 70), and Wappinger limestone (Gordon, p. 48). Knopf (1956, p. 1817) found that the carbonate rocks near Stissing Mountain range in age from Early Cambrian to Early Ordovician and divided them into the Stissing dolomite, Pine Plains formation, Briarcliff, dolomite, Halcyon Lake formation, and Rochdale limestone. Because there appear to be no essential differences in the water-bearing properties of the carbonate rocks, all are included in this report under the Stockbridge limestone, after the locality in Massachusetts where they were first described (Emmons, 1842, p. 154-156).

The carbonate rocks range in composition from almost pure calcium carbonate (limestone) to almost pure calcium-magnesium carbonate (dolomite). Limestone is more abundant in the upper part of the sequence and dolomite is more common in the lower part. Table 3 lists an analysis of a typical sample of dolomite from the Stockbridge limestone.

This analysis shows that more than 10 percent of the dolomite consists of impurities, chiefly silica and alumina. In some localities these impurities are abundant enough to form sandy and shaly beds in the Stockbridge.

Table 3.--Chemical composition of dolomite 1/ from the Stockbridge limestone

Determination	Percent by weight
Lime (CaO).....	29.07
Magnesia (MgO).....	16.29
Carbonic acid (H_2CO_3).....	40.76
Alumina (Al_2O_3).....	2.33
Ferric oxide (Fe_2O_3).....	.47
Silica (SiO_2).....	10.17
Total.....	99.09

1/ Collected at the Stoneco quarry of the Clinton Point Stone Co. about 4 miles south of Poughkeepsie. Analysis from Ries (1901, p. 779).

The metamorphism of the Stockbridge limestone generally increases in intensity from northwest to southeast. In the northwest and west, the formation is relatively undisturbed and original bedding is easily visible. Fossils have been found in the formation as far south as Clove Valley. Farther east, however, as in the Valley of Swamp River, the formation has been metamorphosed to a marble and the beds are severely folded. Balk notes that the folding is greater in the thin layers than in the thicker ones and that it is greatest near thrust faults. In the southeastern part of the county, the marble has been so severely deformed by plastic flow that it appears to be wrapped around stronger rocks. South of Pawling, the marble contains masses of schist that are folded and faulted into the limestone.

The deformation of the Stockbridge limestone makes it difficult to determine its thickness. In southwestern Putnam County, where the formatic is relatively undisturbed, the thickness is about 1,000 feet. At Stissing Mountain, near Pine Plains in the north-central part of Dutchess County, th thickness of the different limestones and dolomites measured by Knopf (1946, p. 1211) totals 2,800 feet. The thickness of the carbonate rocks is

probably about 1,000 feet in most places in the county. The Stockbridge limestone weathers readily and commonly forms valley and lowland areas. In the valley of Fishkill Creek, solution cavities filled with clay and sand have been reported.

Hudson River formation.--The Hudson River formation is the most extensive bedrock unit in the county. As may be seen from plate 2, it extends from the Hudson River in the west to the Connecticut State line in the east, interrupted by only a few relatively narrow limestone belts. The name "Hudson River slate group" was first used by Mather (1840, p. 212, 256-258) for the slaty rocks in the southeastern part of the State. Gordon (1911) mapped these rocks in the Poughkeepsie quadrangle as the "Hudson River group." Berkey and Rice (1921) mapped the same rocks in southwestern Dutchess County as "Hudson River shales and phyllites." In the southeastern part of the county these rocks are referred to as "Hudson River pelite" in publications by Balk (1936) and Barth (1936). In the Copake quadrangle in southeastern Columbia County, the names Elizaville shale (mainly Cambrian, possibly including some Lower Ordovician), Berkshire schist (Ordovician), and Trenton black slate (Ordovician) have been used by Weaver (1957, pl. 1) for rocks that extend southward into northeastern Dutchess County. Ruedemann (1942) divided the predominantly argillaceous rocks in the Catskill quadrangle, in northwestern Dutchess County, into the Nassau beds and Schodack shale (including Bomoseen grit) of Cambrian age, and the Deepkill shale and Normanskill shale (including the Mount Merino member and the Austin Glen member) of Ordovician age. As used in this report, the Hudson River formation includes all the argillaceous and schistose rocks in Dutchess County.

Although the Hudson River formation is preponderantly argillaceous, it includes a large variety of rock types. The lower part of the unit contains much sandstone ("grit") and is locally called bluestone by some well drillers. The unit also contains chert and beds of sandstone, limestone, and conglomerate. Quartz veins are very abundant. The shale itself is locally black, gray, red, or green.

The metamorphism of the Hudson River formation increases in intensity from northwest to southeast, just as in the Stockbridge limestone. At Red Hook, in the northwestern part of the county, the unit is a shale. The shale grades imperceptibly southeastward into a slate and then into a lustrous phyllite. Between the valley of Wappinger Creek and the headwaters of Fishkill Creek, it is chiefly a phyllite. Farther southeast, between Fishkill Creek and the Harlem Valley it is predominantly a garnet-bearing schist. In the extreme southeastern part of the county, east of Pawling, it is a gneissic schist. The gneissic schist in this area contains amphibolite lenses and pegmatite intrusions.

Unconsolidated Deposits

Unconsolidated material deposited chiefly by glaciers and glacial melt water in Pleistocene time, lies on the bedrock in Dutchess County. Minor amounts of stream-laid material of Recent age mantle the Pleistocene deposits in a few narrow, discontinuous valley areas and in some lakes and swamps. The unconsolidated deposits are widespread and relatively thick, at least in lowland areas. The greatest thickness occurs in the gorge of the Hudson River, where borings for the Catskill Aqueduct of New York City penetrated several hundred feet of fill, most of which is probably of glacial origin. The deepest boring was at the Storm King crossing, near the Putnam County line, where bedrock reportedly was encountered at a depth of 608 feet below river level. If this reported depth is correct, the deepest part of the bedrock gorge probably is somewhat below 608 feet because it is unlikely that the drill was situated at exactly the deepest point. The layers penetrated by these borings ranged in composition from a mixture of clay and boulders to sand and gravel.

The Pleistocene drift is divided into three units, shown on plate 3: (1) till (unstratified drift), consisting of a mixture of rock materials deposited directly by the ice; (2) lacustrine deposits, consisting of silt and clay laid down in lakes; and (3) sand and gravel deposited in lowlands and in lakes from glacial melt water.

Till.--Till consists of a heterogeneous mixture of rock fragments of all sizes from microscopic particles of clay to large boulders several feet in diameter. As may be seen on plate 3, it is the most widespread of the Pleistocene deposits.

The till was laid down directly from the glacial ice, which was thick enough to pass over the highest peaks in the county, as well as the highest peaks of the Catskill and Taconic Mountains. The ice moved in a southerly direction, as indicated by the alinement of grooves and striations on exposed rock surfaces. Erosion was the dominant process in upland areas. Thus, the present-day cover of glacial debris in these areas is generally thin (less than 30 feet thick) or absent. Exceptions exist where thick deposits of till were laid down beneath the ice in the form of elliptical hills known as drumlins. These hills may contain as much as 200 feet of clay till. In lowland areas, the dominant process was that of deposition and the glacial deposits in these areas are relatively thick. For example, well Du 758, about 2 miles southwest of Wappingers Falls, penetrated 140 feet of unconsolidated material before reaching the Hudson River formation.

The rock fragments composing the till were derived mainly from the bedrock in the immediate area. In areas underlain by shale, slate, phyllite, and schist, the till consists largely of clay. In areas underlain by limestone, dolomite, or marble, the till contains numerous calcareous pebbles. Six mechanical analyses were made by the U.S. Department of Agriculture (Secor and others, 1955, p. 128) of samples of soil in the county

derived from glacial till. These samples consisted mainly of calcareous sandstone and some admixed shale, slate, limestone, and igneous erratics. The samples were collected from progressively greater depths. The analyses show that more than half of each sample consisted of silt and clay, and that the content of sand and fine gravel increased slightly from a low of 36.3 percent (by weight), at a depth of 0 to 10 inches, to a high of 43.0 percent, at a depth of 68 to 144 inches. In some areas, lenses of relatively clean sand may occur in till. However, sand lenses in till are generally thin and of small areal extent. Most of the till is clayey and some of it may even be cemented or compacted to form a tough aggregate referred to as "hardpan" by local drillers.

Lacustrine deposits.--Stratified drift deposited in glacial lakes underlies several areas in the county, notably along the Hudson River and in the lowland north of the Hudson Highlands in the southwestern part of the county. The approximate extent of these deposits where they compose the uppermost unconsolidated deposit is shown on plate 3. As may be seen from the plate, they underlie an irregularly shaped and relatively extensive area in the northwestern corner of the county, from the mouth of Crum Elbow Creek north to the county line. In the southwestern part of the county, they underlie numerous small areas from Poughkeepsie south to the Highlands.

Woodworth (1905, p. 175) believed that the lacustrine deposits along the Hudson River were laid down in one large lake, called glacial Lake Albany, which was dammed by a single tongue of stagnant ice. Cook (1942, p. 192) suggests, on the other hand, that the deposits were laid down in a complex series of small lakes rather than in a single lake. These lakes were largely restricted to the area adjacent to the Hudson River in the western part of the county. Thus, lacustrine deposits either are not present in the eastern part of the county or, if present, occupy relatively small areas and are covered by other unconsolidated deposits which obscure their presence.

The lacustrine deposits in the western part of the county contain layers of silt and clay that were deposited in those parts of the lakes in which the water was relatively quiet. The deposits also contain interbedded layers of sand and silt that were laid down near the mouths of streams entering the lakes. At the time the lakes drained, the lacustrine deposit formed a terrace that sloped westward toward the present channel of the Hudson River. The altitude of the terrace ranges from about 220 feet near its eastern margin to about 120 feet near the river. This terrace has been considerably modified by postglacial stream erosion.

Sand and gravel.--Stratified drift consisting principally of sand and gravel underlies extensive areas in the major stream valleys and in some tributary valleys. As shown in plate 3, the most extensive deposits are in the valleys drained by Fishkill Creek, Sprout Creek, Swamp River, Tenmile River, and Wappinger Creek.

Most of the sand and gravel consists of stream-laid deposits, called outwash, laid down by melt water streams. The deposits range from layers of relatively clean sand to layers composed of a mixture of sand and gravel. The alternation of layers of coarse and fine material reflect changes in the conditions under which the beds were laid down.

Stratified sand and gravel in the county occurs in four principal forms: kames, kame terraces, valley trains, and deltas. Kames, in the form of small conical hills, are relatively common in the extreme southern part of the county at the northern margin of the Hudson Highlands. They are present also between the Hudson River and U.S. Highway 9, about 3 miles south of Poughkeepsie. Kame terraces, relatively flat topped deposits of sand and gravel on the sides of valleys are prominent in the valley of Swamp River. They have also been observed by Woodworth (1905, p. 121) along the Hudson River between Poughkeepsie and the mouth of Wappinger Creek. Valley-train deposits are long and narrow deposits of sand and gravel underlying valley floors. These deposits underlie parts of many of the principal stream valleys, including those of Wappinger Creek, Fishkill Creek, Webatuck Creek, Crum Elbow Creek, and Tenmile River (pl. 3). Delta deposits laid down where melt water streams entered glacial lakes, have been mapped at New Hamburg, at the mouth of Wappinger Creek, by Woodworth (p. 119) and have been observed also in the Valley of Swamp River. There are large deltas also at Rhinebeck and Red Hook. Deposits of sand and gravel in the principal stream valleys of the county are discussed in greater detail in the section devoted to the occurrence of water in unconsolidated deposits.

GROUND WATER

Source and Movement

Ground water occurs in all the consolidated and unconsolidated deposits of Dutchess County. Records of 675 wells (table 13) and about 50 springs (table 9) provide information on its occurrence in the different deposits.

Practically all ground water in the county is derived from local precipitation. An inch of rain, or snow having a water content equivalent to 1 inch of rain, falling on an area of 1 square mile yields about 17 million gallons of water. The average annual precipitation is about 45 inches, or about 1.6 billion gallons per day, on the 816 square miles of the county.

A large part of the precipitation returns to the atmosphere by evaporation, is transpired by vegetation, or runs off to streams. The remainder percolates into the ground. The amount of precipitation entering the ground depends chiefly on (1) the porosity, permeability, and water content of the surficial deposits, (2) the slope of the land, (3) the amount and kind of vegetal cover, and (4) the intensity and amount of precipitation. It is

In view of the extremely low permeability of the clay and silt, the deposit will not yield water in usable quantities to wells and springs. In those areas in which clay and silt is the only or the principal unconsolidated deposit, ground-water supplies can be obtained only from the underlying bedrock. Although clay and silt is not important as a source of water, it exerts considerable influence on the occurrence of water. On the terraces adjacent to the Hudson River in the northwestern part of the county the clay and silt retards or prevents recharge to the underlying bedrock. Conversely, in the lower parts of many of the valleys the clay and silt retards upward leakage of water from the underlying beds of sand and gravel and bedrock. In these areas the water in the sand and gravel and in the bedrock occurs under artesian conditions, and in a few places is under sufficient pressure to flow at the land surface.

The sand and gravel is the most productive water-bearing deposit in the county. Plate 3 shows that this material underlies most of the lower part of the main valleys and many of the larger tributary valleys. The sand and gravel appears to have been laid down by swift-flowing streams of glacial melt water which were heavily laden with rock debris derived from the melting ice. As both the character and the amount of rock debris carried by the streams varied considerably from time to time, the thickness, character, and extent of the sand and gravel deposits vary considerably within relatively short distances. The beds of sand and gravel are associated with beds of silt and clay almost everywhere. In some areas wells penetrate as many as two or three distinct layers of sand and gravel, which are interbedded with layers of silt and clay. The layers of sand and gravel are generally less than 25 feet thick, although in some areas they are as much as 50 feet thick.

Deposits of sand and gravel are utilized extensively as a source of water supply. In these deposits small-diameter driven wells with screened drive points will generally yield water in sufficient quantity for domestic, farm, and small commercial needs. The moderate to large quantities of water needed by municipalities and industries can generally be obtained from large-diameter drilled wells. According to the quantity of water required and the character of the deposit, such wells may be either screened or finished with open-end casings. A comparison of the yield of screened and unscreened wells is shown in table 5. The yield of unscreened wells for which records were collected ranged from 3 to 200 gpm and averaged 38 gpm. The yield of screened wells ranged from 20 to 800 gpm and averaged 318 gpm.

The thickest section of unconsolidated deposits in the county underlies the present channel of the Hudson River. These deposits range in character from clay and silt to gravel and boulders. Berkey and Rice (1921, pl. 47a) indicate that more than 100 feet of sand underlies the river in the southeastern part of the county, about 0.1 mile north of the Putnam County line. The sand underlies about 100 feet of silt and clay and is underlain in turn by clay and by gravel, cobbles, and boulders. The sand is not continuous across the river but lenses out laterally. It also

lenses out both upstream and downstream, as shown by the results of drilling for the Delaware Aqueduct at Chelsea, about 10 miles north of the Putnam County line. Here much of the material consists of clay and other fine sediments. No wells are known to draw water from the stratified deposits underlying the channel of the river in Dutchess County.

Occurrence of Water in Consolidated Rocks

Joints, faults, bedding planes, and other openings serve as main channels for the storage and movement of water in the bedrock. The yield of wells in bedrock is determined primarily by the size, abundance, and continuity of these openings. Joints are the most important openings because they are numerous and widespread. Most of the major joints in Dutchess County dip relatively steeply and strike northeast, in conformity with the regional geologic structure. Cross joints and randomly oriented joints also are abundant locally. The spacing of joints generally ranges from a fraction of an inch in parts of the Hudson River formation to several feet in the more massive rocks such as the undifferentiated granite and gneiss and quartzite.

Faults are fractures along which recognizable differential movement of appreciable extent has taken place. They occur in all the consolidated rocks in Dutchess County, and their trend is northeast. Many of these faults, in whole or in part, are buried beneath unconsolidated material because they form weak zones beneath valley areas. The location of the more important faults mapped in the county is shown on the bedrock map (pl. 2). Some faults have been filled with minerals of igneous origin and their permeability may not differ much from that of the surrounding rocks. However, a brecciated fault that has not been cemented may be very permeable. Such a fault apparently was penetrated by well Du 630, which was drilled for the city of Beacon. The log of this well (table 12) shows that after penetrating about 90 feet of unconsolidated material, the drill entered a zone of decayed rock fragments mixed with clay. Disintegrated limestone mixed with clay was present to a depth of 370 feet. The exact depth to bedrock in the well is uncertain because of the disintegration of the rock. Of the total yield of 1,400 gpm, about 600 gpm was reportedly obtained from the bedrock. When the well was pumped, the bedrock, which was reported to be very soft, caved continuously.

The consolidated rocks in Dutchess County generally yield small to moderate supplies of water. The average yield of about 450 wells, as summarized in table 6, is about 17 gpm and the range is from 0 to 220 gpm. The yield of wells tapping the bedrock depends on several factors, the most important of which are (1) type of bedrock, (2) type of overlying unconsolidated deposits, (3) topographic position, and (4) occurrence of joints and other secondary openings.

The type of overlying material has an important effect on the yield of wells in bedrock. Table 7 shows that the average yield of wells tapping bedrock that is overlain by sand and gravel is more than 30 gpm. By contrast, the average yield of bedrock wells where the overlying material consists predominantly of clay or till is only about 13 gpm. Deposits of sand and gravel store large amounts of water and transmit water readily to the underlying bedrock where hydraulic continuity exists between the two materials. However, some of the large yields reported from bedrock wells overlain by sand and gravel may result from leakage of water from the overlying permeable deposits directly into the well. The yield of wells in bedrock where the overlying unconsolidated deposits are absent or are less than 10 feet thick is about the same, or only a little greater, than of wells where the overlying deposits are thicker but consist of impermeable till or clay. Thus, it may be concluded that thick but impermeable deposits which tend to retain the water above the bedrock have about the same effect on yield of bedrock as no overlying material at all.

Topographic location apparently affects the yield of bedrock wells in some areas (Ellis, 1909, p. 101). In Dutchess County, the yield is generally highest from bedrock wells situated in valleys and is lowest on hills. Table 8 shows that the average yield of wells in valleys is about 20 gpm compared to an average of about 16 gpm for wells on hillsides and an average of about 12 gpm for wells on hilltops. The Cheshire quartzite is not included in the table because only a few records of wells drawing from this formation are available. The influence of topography on the yields of wells apparently stems, at least in part, from the fact that the water table is generally closer to the land surface in valleys than on hills. Thus, wells of the same depth penetrate a greater thickness of saturated material in valleys than on hills and yield more water, other things being equal.

It should be emphasized that the factors affecting the yield of wells in bedrock are interdependent and tend to operate in the same direction. Thus, most wells drilled in valleys have comparatively large yields not only because of their favorable topographic location but also because the bedrock there is more permeable and is more likely to be overlain by permeable sand and gravel. Similarly, most wells drilled on hills yield smaller quantities of water not only because of a less favorable topographic situation, but also because the bedrock is less likely to be overlain by permeable deposits.

Table 9.--Records of selected springs in Dutchess County

Location: For explanation of location symbols see section entitled "Explanation of tables."

Altitude above sea level: estimated from topographic maps.

Use: Com, commercial; Dom, domestic; Ind, industrial; PS, public supply.

Remarks: gpd, gallons per day; gpm, gallons per minute; (a), chemical analysis in table 10.

Spring number	Location	Owner or occupant	Altitude above sea level (feet)	Water-bearing formation	Yield (gallons per minute)	Temperature (°F)	Date	Use	Remarks
Du 1Sp	13Y, 2.5S, 0.9E	Robert Cabessas	600	Hudson River formation	--	55	May 1948	Farm	
Du 2Sp	13Y, 1.1S, 3.5E	Joseph Levi	620	do.	3.5	47	do.	Dom	
Du 3Sp	13Y, 10.3S, 6.9E	Millbrook School	800	Pleistocene sand	25	57	Sept. 1948	Dom	Du 4Sp is more dependable supply.
Du 4Sp	13Y, 10.4S, 6.6E	do.	780	Pleistocene sand and gravel	--	56	do.	Dom	
Du 5Sp	14Y, 7.5N, 5.6W	Arthur Ostrom	480	Pleistocene sand	5	57	July 1948	Farm	Supplies house and livestock.
Du 6Sp	14Y, 4.1N, 2.2W	Salt Point Tavern	240	Hudson River formation	5	--	--	Com	Supplies tavern.
Du 8Sp	14Y, 1.6N, 2.3W	W. H. Mackey and Son	400	do.	20	--	--	Com	Supplies water for processing fruit.
Du 9Sp	14Y, 1.7N, 2.2W	do.	400	do.	5	--	--	Com	Supplies water for spraying fruit.
Du 10Sp	13Y, 6.3S, 2.6E	John Valentine	500	Stockbridge limestone	.5	--	--	Farm	Supplies livestock.
Du 11Sp	13Y, 2.0S, 9.1E	Henry Rundell	680	Hudson River formation	--	--	--	Farm	Supplies house and livestock.
Du 12Sp	13Y, 6.6S, 6.6E	A. J. McNab	700	do.	4	54	July 1948	Farm	do.
Du 13Sp	13Y, 6.6S, 6.8E	do.	890	Pleistocene gravel	4	53	do.	Dom	Supplies 2 houses.
Du 14Sp	14Y, 13.0N, 0.7W	T. Verin	660	Hudson River formation	4.5	50	do.	Dom	Supplies house.
Du 15Sp	13Y, 6.0S, 1.9E	Anthony Salvia	460	do.	--	50	Aug. 1948	None	(a).
Du 16Sp	14Y, 15.2N, 3.7W	New York State	325	do.	--	50	do.	None	
Du 17Sp	14Y, 13.4N, 5.4W	M. Proper	320	Pleistocene gravel	10	51	do.	None	
Du 18Sp	14Y, 12.7N, 5.4W	John Lobotsky	360	Hudson River formation	--	--	--	Dom	
Du 19Sp	13Y, 8.6S, 6.7E	Elizabeth Bockee	1,020	do.	--	--	--	Farm	Supplies house and 40 head of stock.
Du 20Sp	13Y, 8.4S, 6.7E	do.	1,040	do.	10	51	Sept. 1948	Farm	Du 19Sp also on property.
Du 21Sp	13Y, 5.3S, 7.7E	Stephen Millett	700	do.	10	49	do.	Dom	

98

Amenia.--Amenia (population 800) is supplied from two wells, Du 99 and Du 100, owned by the Amenia Water Co. Consumption averages about 100,000 gpd and maximum consumption is about 150,000 gpd.

Beacon.--Beacon (population 14,000) was formerly supplied entirely by the Cargill, Mount Beacon, and Melzingah reservoirs, with capacities of 160 million, 124 million, and 55 million gallons, respectively. The supply became inadequate during dry periods in the decade 1940-50, and additional water was pumped from Fishkill Creek. In 1948 and 1949 several test wells were drilled in the Fishkill Valley, about 4 miles northeast of Beacon, to determine whether a satisfactory ground-water supply could be obtained (see table 13, wells Du 626 and Du 630). Well Du 630, which was completed in 1950, reportedly yielded 1,400 gpm. The average consumption from ground-water and surface-water sources is 1,750,000 gpd. All water is chlorinated before distribution.

Dover Plains.--Prior to 1957, water for the village of Dover Plains (population 700) was obtained entirely from Seven Wells Brook. Since 1957, the supply has been supplemented with water from a drilled well. Distribution is effected by gravity. The maximum consumption is 120,000 gpd but the average is about 75,000 gpd. About 90 percent of the water is used by industries. The water is chlorinated.

Fishkill.--Fishkill (population 720) is supplied by water from Hell Hollow Brook and Clover Brook. The water from these streams is stored in a reservoir with a capacity of 6 million gallons, situated 5 miles south of the village. Water is distributed from the reservoirs by gravity. It is chlorinated and copper sulfate also is used to control the growth of algae in the reservoir when the water supply is low. The average consumption is 125,000 gpd but the maximum reaches 500,000 gpd.

Hyde Park.--Hyde Park (population 1,200) obtains water from Crum Elbow Creek. Consumption averages 50,000 gpd and rises to a maximum of 60,000 gpd. Treatment includes chlorination, coagulation, and filtration.

Millerton.--Millerton (population 953) is supplied by two wells, Du 166 and Du 167, and auxiliary springs. Consumption is reported to average 150,000 gpd. Chlorination is the only treatment.

Pawling.--Pawling (population 1,446) is supplied by a surface reservoir with a capacity of 30 million gallons, situated about 4 miles northwest of the village. Consumption is reported to be 150,000 gpd and maximum consumption is 170,000 gpd. Treatment consists of chlorination.

Pine Plains.--The Pine Plains Water Co. supplies water to 90 percent of Pine Plains (population 700) from dug and drilled wells. A dug well, Du 96, is 15 feet deep and is reported to yield 50 gpm. Two drilled wells, Du 97 and Du 680, yield 50 gpm and 220 gpm, respectively, from limestone. Average consumption is 45,000 gpd and the maximum is 60,000 gpd.

Rural Supplies

Rural homes, farms, and some suburban sections in Dutchess County not served by public water systems rely on individually owned water systems. Wells and springs supply practically all the water used in these systems although a few use precipitation collected in cisterns. Streams are generally not used because of pollution, treatment, and legal problems. Therefore, for purposes of estimate, it can be assumed that all rural supplies are obtained from ground-water sources. Figures collected in the 1950 census indicate that approximately 45 percent of the total county population of 136,781 live in areas not served by public water systems. On the assumption that the average per capita use is 50 gpd, the rural use of ground water for domestic purposes is estimated to be about 3 mgd. The use is undoubtedly greater than this during the summer as a result of the influx of vacationers and part-time residents. Additional quantities of ground water are used also for the watering of livestock and other farm purposes. A few wells, such as Du 135, are used for irrigation. The use of water for all rural purposes combined was probably about 4 mgd in 1950.

Chemical Quality

Information on the chemical quality of water in Dutchess County is based on 86 analyses of water from selected wells and springs, and 9 analyses of water from surface-water sources. Table 10 lists all these analyses together with the depth of well, water-bearing material, and date of collection of each sample. The median and range in concentration of certain selected constituents of the ground water in Dutchess County are shown in table 11. The values in the table are grouped according to the type of rock from which the water is drawn. The locations of the wells and springs for which analyses are listed in table 10 are shown on figure 5. The iron content and total hardness also are shown symbolically. The analyses of ground water were made by the New York State Department of Health, except two that were made by the U. S. Geological Survey and seven that were obtained from commercial and industrial sources.

Water percolating through the ground dissolves small quantities of mineral matter. The kind and amount of mineral matter dissolved depend on the initial composition of the water, the length of time the water is in contact with the earth materials, and the composition of these materials. In general, the longer the period of time water has been underground the more mineralized it is likely to be, other things being equal. Thus, water in discharge areas is more mineralized than water in recharge areas, and water from deep wells is more mineralized than water from shallow wells.

It is apparent from tables 10 and 11 that most ground water in the county contains moderate amounts of dissolved mineral matter. The median content of dissolved solids ranges from 165 ppm in water from the unconsolidated deposits overlying the Hudson River formation and undifferentiated granite and gneiss to 316 ppm in water from the Stockbridge limestone. The

Table 13.--Records of selected wells in Dutchess County (Continued)

Well number	Location	Owner or occupant	Altitude above sea level (feet)	Type of well	Depth below land surface (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing formation	Water level below land surface (feet)	Method of lift	Yield (gallons per minute)	Use	Remarks
Du 94	13V, 14.4S, 4.4E	Town of Millbrook	660	Dug	20	48	--	Pleistocene gravel	--	Centrifugal	--	PS	Well drawn water through bottom and from 2 lines of open-jointed tile 18 inches in diameter. One line extends 75 ft. to the east and the other extends 100 feet to the north. Each tile is surrounded by a layer of gravel.
Du 95	13V, 13.6S, 10.0E	Wappingers Water Co.	460	Dug	15	60	--	Pleistocene sand and gravel	7	Suction	26	PS	Well dry in summer.
Du 96	13V, 1.9S, 5.0E	Pine Plains Water Co.	480	Dug	15	100	--	do.	--	Centrifugal	50	PS	
Du 97	13V, 1.8S, 5.2E	do.	560	Drl	375	8	50+	Stockbridge limestone	30	Force	50	PS	(a).
Du 98	13V, 5.5S, 1.6E	H. H. Lewis	500	Drl	200	--	--	Hudson River formation	--	do.	95	Dom	Well flowed when drilled. Supplies swimming pool.
Du 99	13V, 10.0S, 10.1E	Amenia Water Co.	540	Drl	70	8	--	Pleistocene gravel	+1	Turbine	100	PS	Drawdown 9 ft after pumping 130 gpm for 8 hrs. Average consumption is 100,000 gpd. (a) (b).
Du 100	13V, 10.0S, 10.1E	do.	600	Drl	46	8	--	do.	+1	do.	100	PS	Well is auxiliary supply. Temperature 51°F, June 1946. (a).
Du 101	14V, 16.7N, 6.3W	Village of Red Hook	227	Drl	277	10	40	Hudson River formation	22	do.	100	PS	Drawdown 80 ft after pumping 100 gpm for 24 hrs. Yield diminished considerably during dry period in 1949. Two other similar wells at this location. (a).
Du 104	14V, 1.3N, 9.6W	F. D. Roosevelt National Historic Site	170	Drl	400	6	83	do.	--	--	15	Dom	(a) (b).
Du 105	14V, 1.3N, 9.6W	do.	180	Drl	212	6	80	do.	--	Turbine	10	Dom	Well has been pumped at 10 gpm for 24 hrs.
Du 106	15V, 15.7N, 8.7W	Schatz Manufacturing Co.	250	Drl	555	6	23	do.	--	Force	11	Ind	Temperature 51°F, July 1949.
Du 107	14V, 16.1N, 3.4W	John Juranic	520	Drl	60	6	4	do.	20	Jet	12	Dom	
Du 109	14V, 15.3N, 3.3W	F. W. Bottenfield & Son	300	Drl	135	6	20	do.	30	do.	3	Dom	
Du 110	14V, 14.4N, 7.5W	Joseph Chard	163	Drl	60	6	16	do.	0.5	Suction	20	Dom	Well flows during periods of heavy precipitation. Temperature 51°F, May 1948.
Du 111	14V, 14.4N, 7.6W	Rhinebeck Block Co.	160	Drl	100	6	18	do.	9	Jet	10	Ind	
Du 112	14V, 13.9N, 5.4W	H. H. Weaver	320	Dug	18	12	--	Pleistocene gravel	--	Suction	3	Dom	Temperature 50°F, May 1948. Average consumption is 500 gpd.
Du 114	14V, 13.6N, 5.2W	Rhinebeck School Dist. 9	320	Drl	90	6	10	Hudson River formation	--	do.	3	Dom	Temperature 50°F, May 1948.
Du 115	14V, 14.3N, 3.2W	Cyrus McCormick	680	Drl	150	6	--	do.	--	Force	--	Dom	
Du 116	14V, 14.2N, 3.2W	W. F. Pink	435	Drl	50	6	10	do.	--	do.	--	Dom	Temperature 50°F, May 1948.
Du 117	14V, 10.5N, 6.2W	W. Achert	380	Drl	175	6	8	do.	18	--	3	Dom	
Du 120	14V, 6.5N, 7.7W	R. Hallsen	200	Drl	105	6	11	do.	14	Jet	8	Dom	
Du 122	14V, 5.4N, 7.5W	A. T. Helmes	280	Dug	20	36	--	Pleistocene till	16	Suction	1	Farm	Average consumption is 1,000 gpd.
Du 124	14V, 4.6N, 8.1W	Strever's Garage	250	Drv	18	12	--	Pleistocene sand and gravel	--	do.	3	Com	Average consumption exceeds 500 gpd.
Du 126	14V, 3.6N, 8.5W	Howard Valle	240	Drv	15	12	--	do.	--	do.	2	Dom	
Du 127	14V, 3.6N, 8.6W	G. Wrenn	240	Drl	90	6	21	Hudson River formation	18	do.	--	Dom	
Du 128	14V, 16.0N, 7.1W	Edwin DuBois	200	Drl	129	6	90	do.	14	do.	5	Dom	(b).
Du 129	14V, 7.1S, 3.5E	R. McKinney	480	Drl	65	6	3	do.	18	do.	--	Farm	
Du 130	13V, 0.1S, 1.0W	R. Campbell	670	Drl	45	6	12	do.	6	--	3	Dom	
Du 131	14V, 16.4N, 7.6W	Louis Wagner	300	Drl	75	6	24	do.	10	Suction	15	Dom	
Du 132	14V, 15.2N, 7.6W	Russell Leavy	200	Drl	95	6	--	Pleistocene gravel	--	--	20	Dom	
Du 134	14V, 15.3N, 7.8W	Ralph Fischer	180	Drl	156	10 to 8	5	Hudson River formation	--	--	30	Com	Average consumption is 5,000 to 10,000 gpd.
Du 135	14V, 15.2N, 7.6W	Elmer Wilbur	180	Drl	110	6	60	do.	--	Force	50	Farm	Well supplies water for irrigation.
Du 136	14V, 15.4N, 5.3W	William Brandt	405	Drl	160	6	21	do.	--	--	2	Dom	
Du 137	14V, 13.1N, 9.4W	Vincent Astor	150	Drl	60	6	10	do.	--	--	5	Dom	

Table 12.--Drillers' logs of selected wells in Dutchess County

(Location coordinates are explained on preceding page. All logs from drillers unless otherwise indicated. Formation names are taken from the geologic map, pl. 2.)

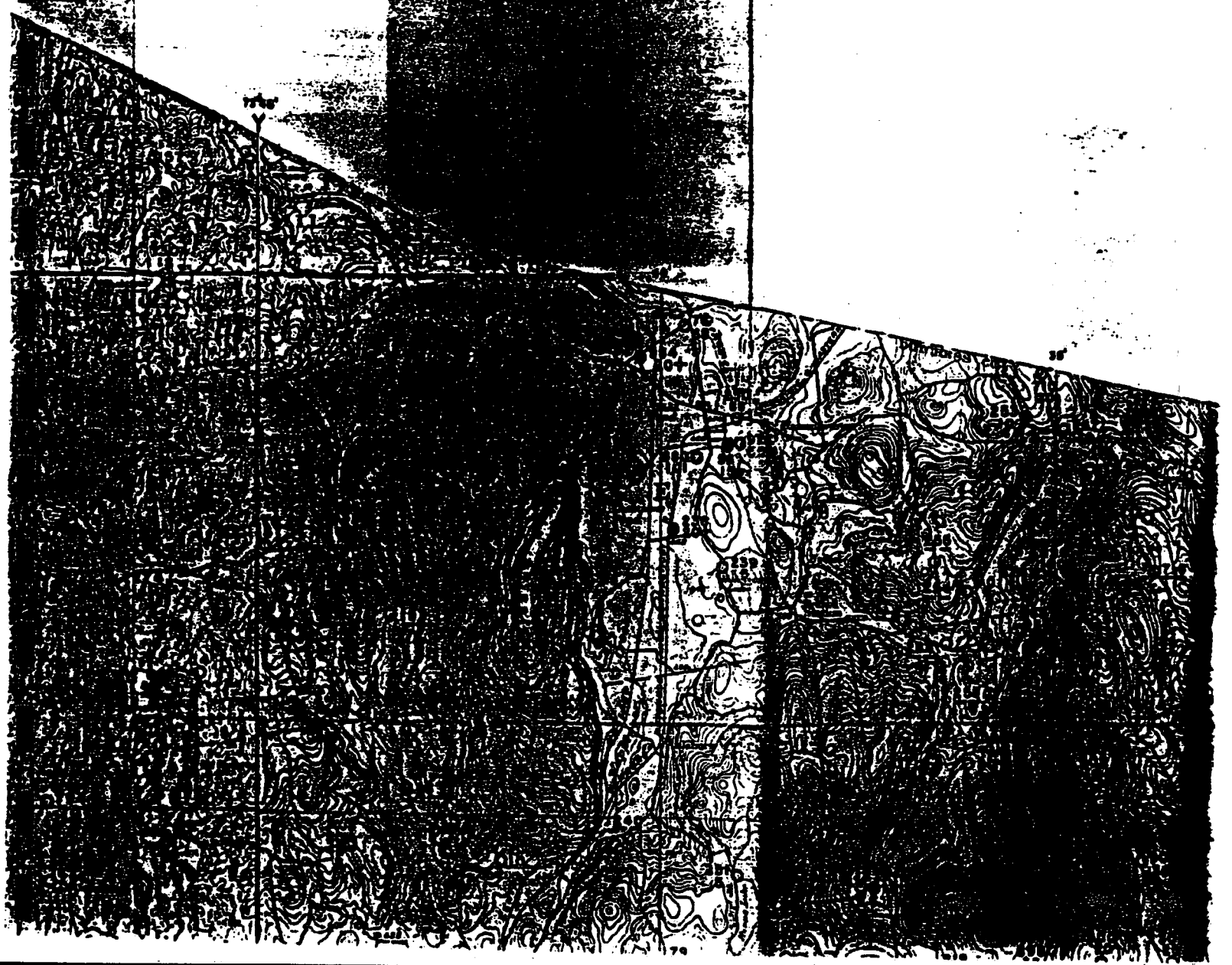
	Thickness (feet)	Depth (feet)
Du 14: 13Y, 4.1N, 8.0W; drilled by Feller Bros. in 1939.		
Clay, brown	8	8
Clay, yellow	26	34
"Hardpan" 1/	3	37
Shale and "bluestone" 2/ (Hudson River formation)	23	60
Yield 60 gpm.		
Du 25: 13Y, 1.0N, 6.7W; drilled by Wallace Rockefeller in 1946.		
Sand and gravel	16	16
"Hardpan"	3	19
Slate	2	21
"Bluestone"	9	30
Slate and "bluestone"	107	137
Yield about 10 gpm.		
Du 64: 14Y, 12.4N, 7.1W; driller unknown; drilled about 1899.		
Gravel	20	20
"Hardpan"	5	25
Shale and "bluestone" (Hudson River formation)	275	300
Yield 135 gpm.		
Du 69: 15Y, 15.9N, 8.4W; drilled by Feller Bros. in 1947.		
Shale	26	26
"Bluestone"	199	225
Shale	10	235
"Bluestone"	15	250
Yield 12 gpm.		
Du 77: 13Y, 12.5N, 1.9W; drilled by T. J. Philipber in 1946.		
Gravel	2	2
Unknown	8	10
Sand	15	25
Clay	32	57
Limestone (Stockbridge limestone).	63	120
Yield 5 gpm.		
Du 78: 15Y, 10.6N, 9.6W; drilled by Sloat & Rutledge Co.; date unknown.		
Sand	10	20
"Hardpan" and boulders	10	20
"Hardpan"	14	34
"Bluestone," fractured near top (Stockbridge limestone)	366	400
Yield 40 gpm.		
Du 83: 14Y, 16.0N, 2.4W; drilled by Ernest Sigler in 1946.		
Soil	3	3
Shale	12	15
Shale and "bluestone"	6	21
"Bluestone" and white quartz	94	115
Yield 18 gpm.		
Du 87: 13Y, 4.4N, 7.9W; drilled by Hugh McLean & Sons in 1947.		
Clay, yellow	6	6
Clay, blue	24	30
Gravel (main water-bearing zone)	6	36
Shale and "bluestone"	4	40
Yield 20 gpm.		
Du 90: 13Y, 15.2S, 10.3E; driller unknown; drilled in 1931.		
Sand, fine	34	34
Sand, fine, and clay	10	44
Sand	36	80
Sand, and clay, blue	4	84
Sand, coarse (main water-bearing zone)	22	106
Yield unknown.		
Du 99: 13Y, 10.8S, 10.1E; drilled by George LaFarge in 1937.		
Clay, blue	22	22
Gravel	6	28
Clay, blue	14	42
Gravel with cobbles (main water-bearing zone)	28	70
Yield 180 gpm.		
Du 104: 13Y, 1.3N, 9.6W; drilled by Feller Bros. in 1948.		
Sand and gravel	25	25
Clay, blue	50	75
"Hardpan"	8	83
"Bluestone" (Hudson River formation)	317	400
Yield 15 gpm.		
Du 128: 14Y, 16.0N, 7.1W; drilled by Feller Bros. in 1948.		
Clay and sand	20	20
Sand, fine, clay, blue, and "hardpan"	70	90
Shale, white quartz, and "bluestone" (Hudson River formation)	39	129
Yield 5 gpm.		
Du 167: 13Y, 3.0S, 12.1E; drilled by Ralph Carter in 1930.		
Clay	2	2
Sand, fine	8	10
Clay	3	13
Sand and gravel (main water-bearing zone)	35	48
Yield 250 gpm.		
Du 215: 15Y, 1.0N, 5.9W; drilled by Frank Cross in 1936.		
Clay, yellow	150	150
Gravel and boulders	50	200
Clay, yellow, and pea gravel	204	404
Granite	376	780
Yield 25 gpm.		
Du 224: 14Y, 1.1N, 1.5W; drilled by T. J. Philipber in 1948.		
Shale, broken	15	15
Shale, red and gray, and sandstone (Hudson River formation).	131	146
Yield 5 gpm.		
Du 247: 13Y, 9.1S, 2.0E; drilled by Warren Feller; date unknown.		
Gravel, coarse	30	30
Clay "hardpan"	6	36
Gravel, coarse (main water-bearing zone)	3	39
Yield 18 gpm.		
Du 266: 13Y, 6.7S, 5.6E; drilled by R. Irish in 1948.		
Clay and boulders	100	100
Shale (Hudson River formation)	121	221
Yield about 5 gpm.		
Du 405: 15Y, 8.9N, 1.1W; drilled by Vincent Harris in 1939.		
Loam and sand	14	14
Shale (Hudson River formation)	101	115
Yield 4 gpm.		
Du 410: 15Y, 11.4N, 3.4W; dug by G. C. Rossway in 1941.		
Topsoil	2	2
Clay, blue	4	6
"Hardpan"	4	10
Gravel, medium	2	12
Yield 3 gpm.		

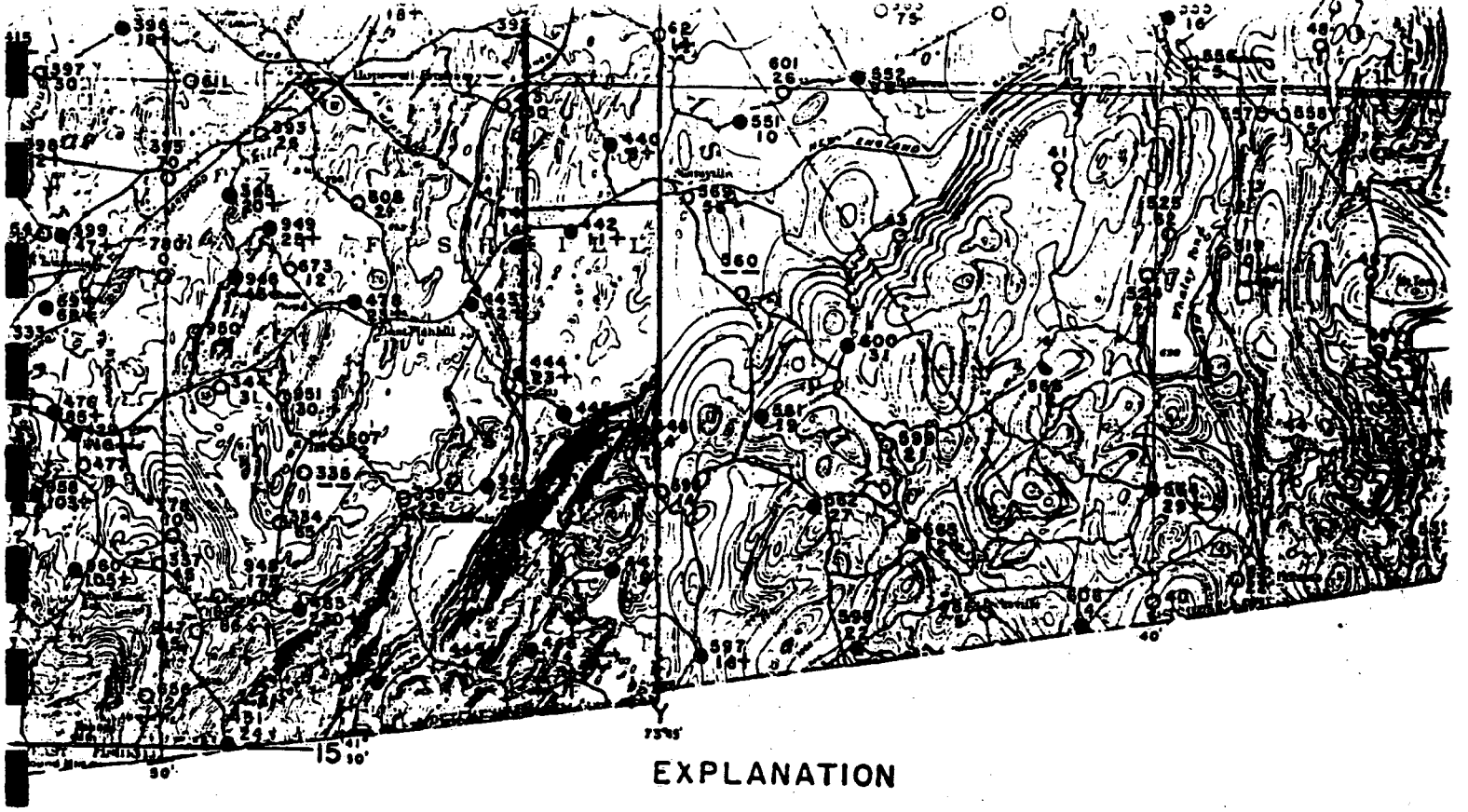
1/ "Hardpan" as used in most of these logs presumably refers to glacial till.

2/ "Bluestone" as used in most of these logs presumably refers to sandy beds in the Hudson River formation.

MAP OF DUTCHESS COUNTY, NEW YORK

HOWING LOCATION OF SELECTED WELLS AND SPRINGS





EXPLANATION

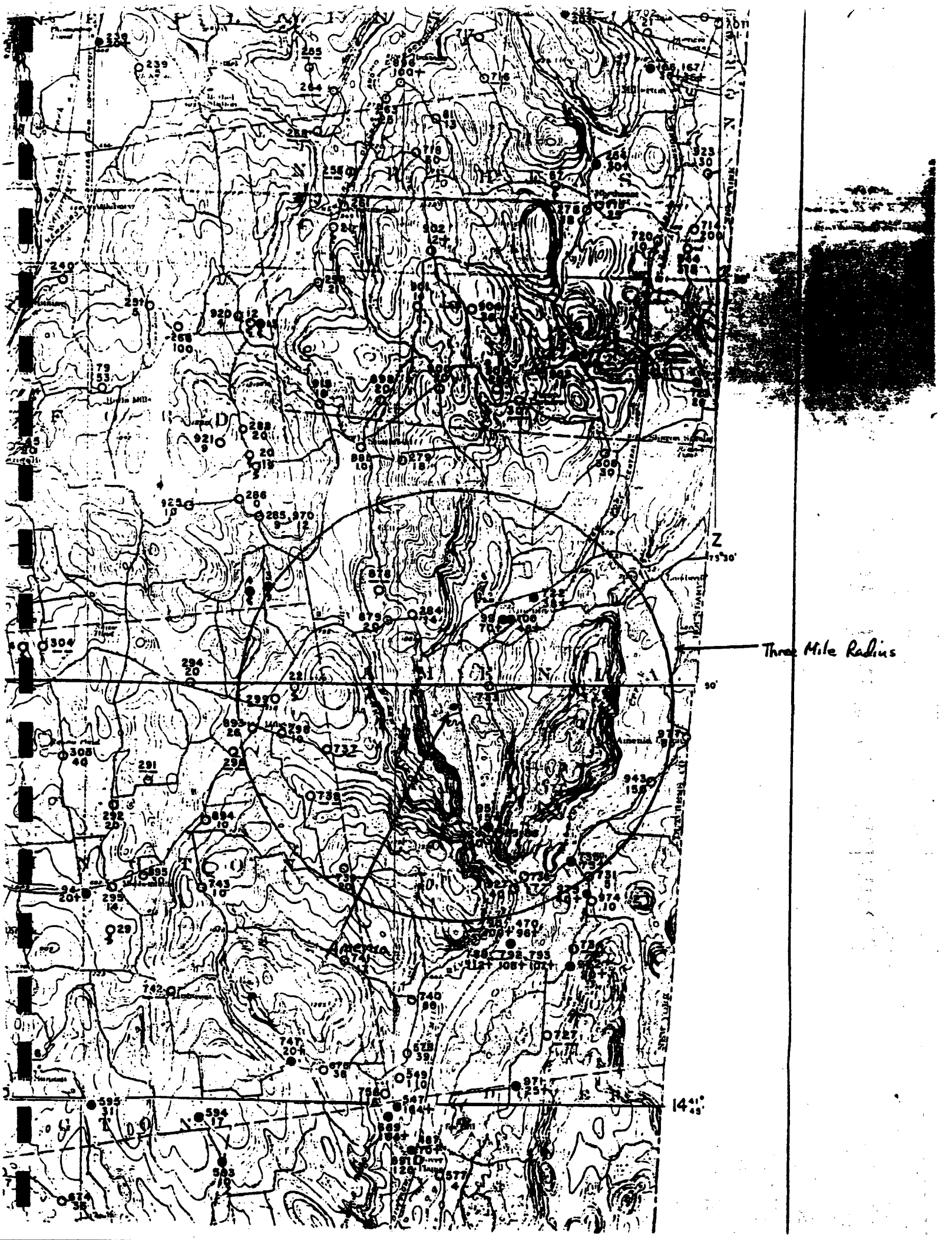
SPRINGS	WELLS	WATER-BEARING MATERIAL
○	○	Bedrock
●	●	Unconsolidated deposits
●	●	Bedrock and unconsolidated deposits
●	●	Unknown

Symbol indicates type of water-bearing material. Upper figure is well or spring number with prefix "Du" omitted; suffix "Sp" also omitted in spring numbers. Lower figure is thickness, in feet, of unconsolidated deposits. Plus sign (+) following lower figure indicates that thickness of unconsolidated deposits is unknown but is greater than figure given.

SCALE

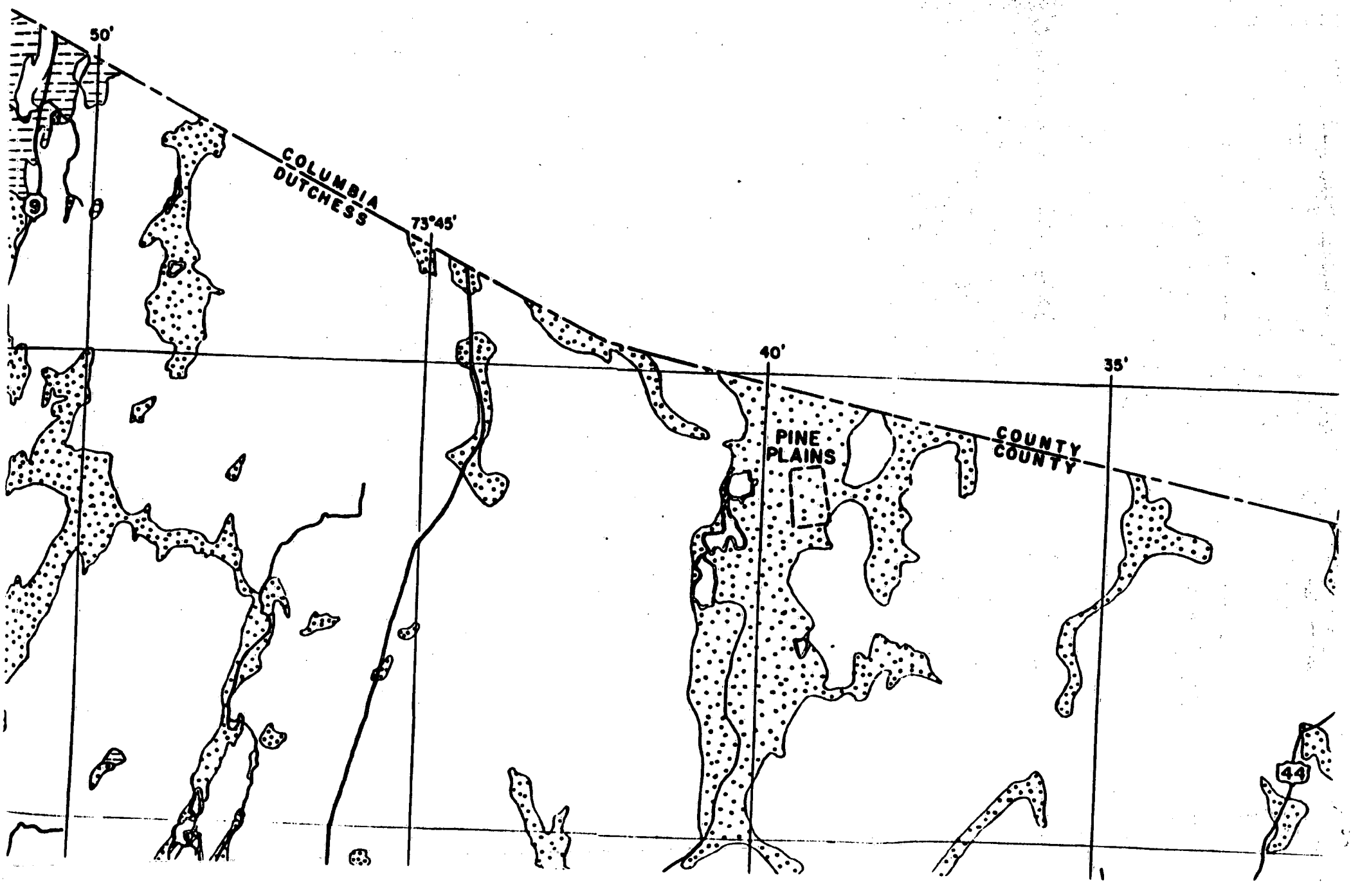
1 0 1 2 Miles

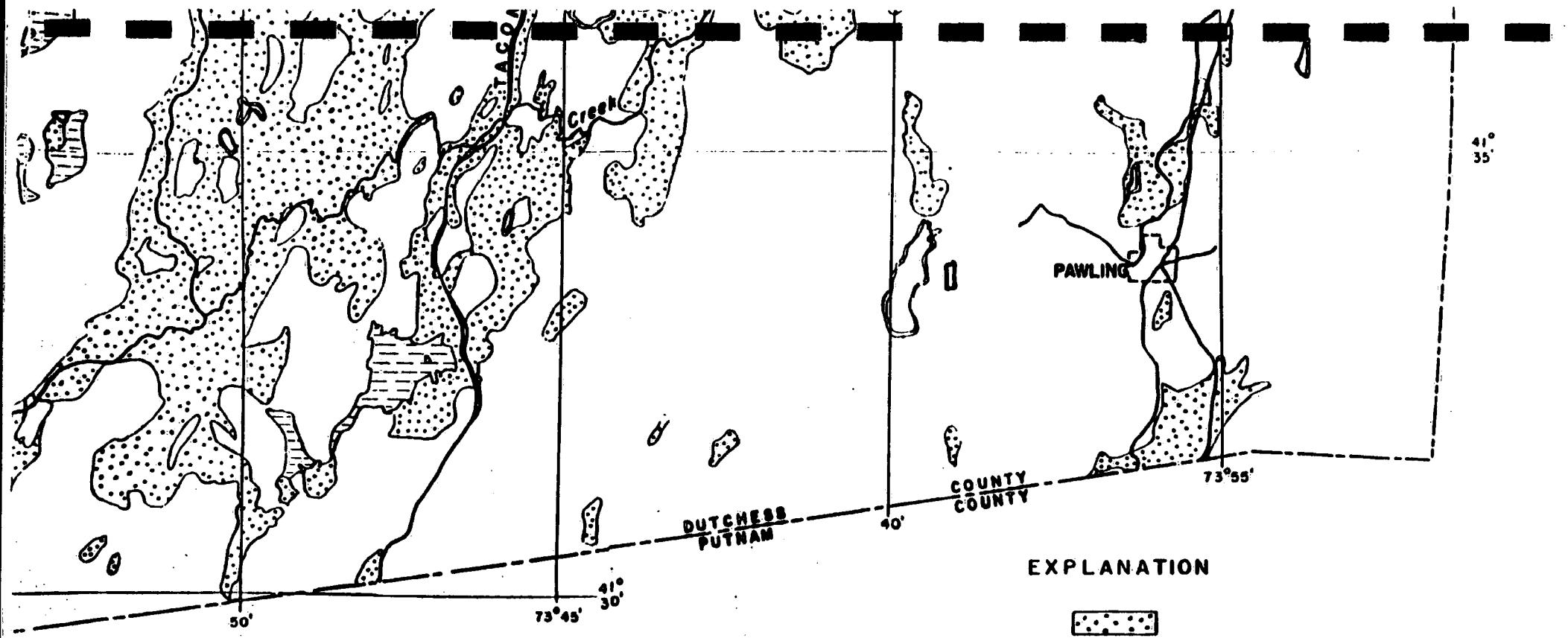
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL


Three Mile Radius
Z
73°30'
50'
14 41° 45'
Amenia

MAP OF DUTCHESS COUNTY, NEW YORK

SHOWING PRINCIPAL UNCONSOLIDATED DEPOSITS





EXPLANATION

Sand and gravel

Principally stratified deposits laid down in lowland areas by glacial melt waters. Yields moderate to large supplies of water.

Lacustrine deposits

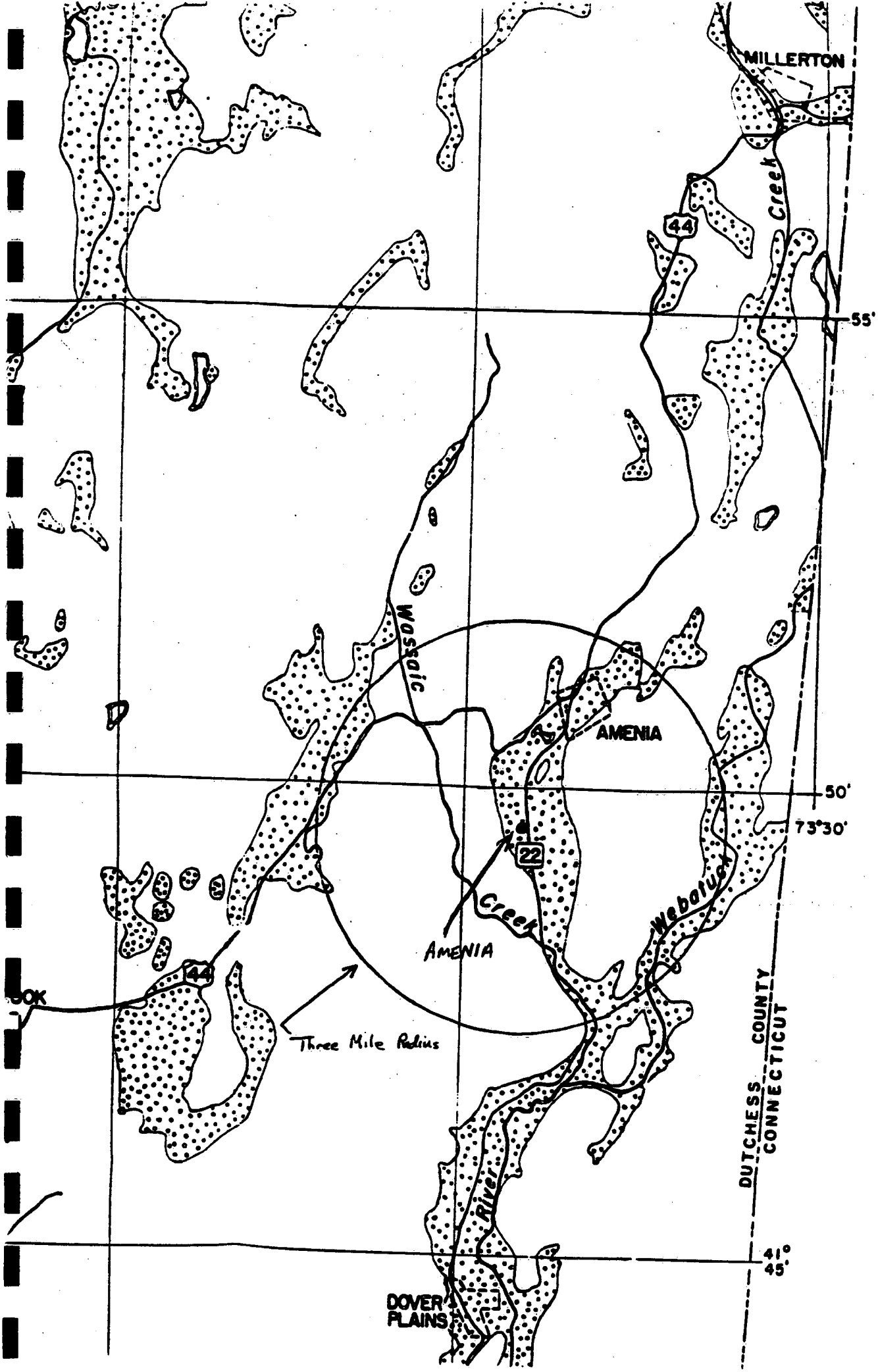
Fine-grained stratified deposits laid down in glacial lakes. Yields little or no water. Generally acts as a confining bed where underlain by permeable deposits.

Till

Chiefly unstratified mixture of clay, sand, gravel, and boulders. Widespread on steep slopes and hilltops. Yields small supplies of water to large-diameter dug wells.

SCALE

1 ½ 0 1 2 3 4 Miles


MILLERTON
Creek
44
55'
Wassaic
AMENIA
50'
73°30'
22
Creek
Webatuck
AMENIA
44
Three Mile Radius
DUTCHESS COUNTY
CONNECTICUT
River
41°
45'
DOVER PLAINS

REFERENCE NO. 9

NUS CORPORATION

110 TELECON/VCT.

CONTROL NO: 02-8612-11

DATE: 08/25/87

TIME: 1505

DISTRIBUTION: Amenia Landfill - COR.

BETWEEN: MR. CHARLES SHAW

OF: Dutchess County Environmental Management Council

PHONE: (914) 677-3488

AND: Tom VARNER

DISCUSSION:

NUS

Mr. Shaw said that Amenia Landfill - Rt 22 South has been closed for some time and that their office has not conducted any recent activities concerning the site. He said it was used for municipal garbage and other types of waste including some drums, which may or may not have been full. He said there still may be some drums visible there. All of the geological and hydrological information he has there is not readily accessible, TV and said a visit to the office by NUS personnel would be TV necessary, although the file on the landfill itself is not extensive.

ACTION ITEMS:

NUS 087 REVISED 0881

111

REFERENCE NO. 10

112 TELECON NO

CONTROL NO: 02-8612-11

DATE: ~~NY66~~ TV 05/27/87

TIME: 1608

DISTRIBUTION: Amenia (Rt. 22 South) - COR

BETWEEN: Dave Ruff

OF: Dutchess County Dept. of Health

PHONE: 914 431-2015 ~~(431) 2044~~ TV

AND: Tom Varner

DISCUSSION:

Mr. Ruff was contacted in order to obtain information concerning Amenia Landfill (Rt 22 South). He said an inspection in 1970 observed several hundred drums on approx 1 acre. Soil was stained nearby and drums were punctured. ~~Waste had~~ TV Municipal waste had ~~been~~ previously been burned there. He also said TV ~~all~~ groundwater is used for drinking in Amenia. He is sending the file to NUS.

ACTION ITEMS:

NUS 087 REVISED 0581

REFERENCE NO. 11

114

NUS CORPORATION

TELECON NOTE

CONTROL NO.	DATE:	TIME:
02-8612-11	12/8/87	1130

DISTRIBUTION:

AMENIA LANDFILL FILES (COR)

BETWEEN:	OF:	PHONE:
MR. DAVID RUFF	Dutchess County Health Dept.	(914) 431-2015

AND:

TOM VARNER

DISCUSSION: (NUS)

Mr. Ruff was contacted concerning groundwater use in the area (3-mile radius) of the site. He said 3 public supply wells are used within three miles of the site. They have about 300 connections and serve approximately 1700 people. These wells are completed in the sand and gravel aquifer.

He said that 615 people in trailer parks also use community water supplies.

He said the balance of the population is uses private wells (to the best of his knowledge surface water was not used). TAV 12/8/87

Groundwater flow in the Tenmile Creek drainage basin, in which TAV 12/8/87 lies Amenia Landfill, is from north to south.

ACTION ITEMS:

He said to contact either Norm Benson, Dutchess County Soil & Water Dept., or Allison Silkworth, who he thinks is with the Dutchess County Planning Board. Mr. Benson has done a detailed study of the water resources in the area. The Planning Board's phone number is 431-2480.

TAV 12/8/87

NUS 287 REV:SEP 0581

REFERENCE NO. 12

NUS CORPORATION 0011.C 02.8612-11 1/6

TELECON NOTE

CONTROL NO:	DATE: 5/20/87.	TIME: 10:50 AM.

DISTRIBUTION:

AMENIA LANDFILL 02-8612-11

BETWEEN: HARRY NORBIN	OF: AMENIA TOWN HALL. TOWN SUPERVISOR	PHONE: (914) 373-4147

AND: P. DOHERTY

DISCUSSION: (NUS)

Mr. Norbin stated that (1) he did not know when operation of the Amenia Landfill began.

(2) The site does not have a liner

(3) P.D.

ACTION ITEMS:

NUS 067 REVISED 0581

REFERENCE NO. 13

118 00026-C
02-8612-11

NUS CORPORATION

TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-8612-11	12/8/87	1630.

DISTRIBUTION:

Amenia Landfill Files (COR)

BETWEEN:	OF:	PHONE:
Mr. Norm Benson	Dutchess County Soil and Water Department	(914) 677-8011

AND: Tom Varner

DISCUSSION: (NUS)

Mr. Benson said that within a three-mile radius of the site, about 50% of the population drinks water from wells completed in sand and gravel deposits, and 50% drinks water from wells completed in bedrock under till. He said surface water is not used for drinking, irrigation, or commercial/industrial purposes. He said that groundwater is used for orchards and dairy farms not farms which produce crops. TAV 12/8/87

ACTION ITEMS:

NUS 067 REVISED 2581

REFERENCE NO. 14

NUS CORPORATION

TELECON NOTE

CONTROL NO. 02-8612-11

DATE: 12/9/87

TIME: 1630.

DISTRIBUTION: Amenia Landfill Files (COR)

BETWEEN: Mr. Norm Benson

OF: Dutchess County Soil and Water Dept

PHONE: (914) 677-8011

AND: Tom Varner (NUS)

DISCUSSION:

Mr. Benson was contacted in order to determine if any hydraulic connection existed between the sand and gravel aquifer in the valley area of Amenia and the bedrock aquifer which is used in the hilly areas of Amenia. He said the bedrock utilized is Stockbridge limestone, and that ~~there~~ TAV 12/9/87 the geology of the area does not indicate any existence of a formation which would prevent water from being transferred from the bedrock in the hills to the sand and gravel aquifer in the intervening valley and vice versa. He said the sand and gravel is free of any silt or clay which ~~wk~~ TAV 12/9/87 would prevent this interconnection from transmitting water between these two aquifers. This, he said, can be ~~to~~ TAV 12/9/87 seen first hand, since there are enough quarries in the area which carry on gravel mining.

ACTION ITEMS:

TAV 12/9/87

NUS 067 REVISED 0581

REFERENCE NO. 15

122

STATE OF NEW YORK

OFFICIAL COMPILATION

OF

CODES, RULES AND REGULATIONS

MARIO M. CUOMO
Governor

GAIL S. SHAFFER
Secretary of State

Published by
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1/83

ARTICLE 6

Housatonic River Drainage Basin

PART

825 Housatonic River Drainage Basin

124

PART 825

HOUSATONIC RIVER DRAINAGE BASIN

(Statutory authority: Environmental Conservation Law, § 17-0301)

Sec.
825.1 Adopting order
825.2 Designated waters
825.3 Definitions
825.4 Special conditions
825.5 Assigned classifications and standards of quality and purity
825.6 Table I
825.7 Map 1
825.8 Map 2
825.9 Quadrangle maps

Historical Note
Part amd. filed April 18, 1986 eff. 30 days after filing. Amended statutory authority.

Section 825.1 Adopting order. (a) Pursuant to article 12 of the Public Health Law, the Water Resources Commission, after proper study and following public hearings conducted by the commission, held on due notice, hereby adopts and assigns the following classifications and standards of quality and purity to all surface waters within the Housatonic River drainage basin, as hereinafter defined. Said drainage basin includes all land and surface water areas of the Housatonic River drainage basin within New York State.

(b) This adoption and assignment of standards of quality and purity to the above designated waters shall be effective September 22, 1965.

825.2 Designated waters. The designated waters are located in the Housatonic River drainage basin within New York State, as outlined on map 1, section 825.7, *infra*, and as contained within the topographical limit line shown on the reproduced topographical reference maps in section 825.9, *infra*.

825.3 Definitions. The several terms, words or phrases hereinafter mentioned shall be construed as follows:

(a) *Item No.* In table I an item number is assigned consecutively to each specifically designated waters.

(b) *Waters index numbers* as appearing in table I shall mean that number assigned to any designated waters for the purpose of identification.

(1) The numbering or index system used to identify specific waters of New York State was adapted from that used by the New York State Conservation Department in its biological survey series of reports on the watersheds of the State. The primary waters of a drainage basin, a stream or large lake, is referred to by name or abbreviation. Ponds and lakes are numbered consecutively as they are encountered, such number being preceded by the letter P. This system also involves the consecutive numbering of tributaries as they enter a stream, progressing upstream from the mouth. Tributaries of lakes or ponds are numbered consecutively as they enter, progressing clockwise around the lake or pond from its outlet or mouth. Isolated lakes and ponds are referenced by a waters index number merely for convenience of their identification and location within a subdrainage basin, and it is not necessarily indicative of their being tributary to any waters to which no surface connection is shown on the reference maps.

(2) This system was applied to the basin under consideration by the Conservation Department in its report, *A Biological Survey of the Lower Hudson Watershed—1936*, and has been closely followed in connection with the identification of the waters with the following exceptions: Some of the stream numbers do not run consecutively due to the omission of streams originally shown on the older maps employed by the Conservation Department at the time of its survey but not shown on newer maps reproduced herein. Conversely, a few streams not shown on the older maps but appearing on the new maps are designated by the letters a, b, c, etc.

(3) The system as applied to the identification of waters in the Housatonic River drainage basin may be illustrated as follows:

Waters index number	*Name of waters*	*Explanation*
Mass.		Streams with headwaters in New York State which traverse the New York-Massachusetts boundary numbered consecutively from south to north.
Mass. 5	Green River	The 5th stream flowing into Massachusetts across the New York-Massachusetts boundary
Mass. 5-4	Crause Creek	The 4th tributary of Green River within New York State.
Mass.5-P1137	No Bottom Pond	The 1137th pond encountered in the lower Hudson watershed.
Conn.		Streams with headwaters in New York State which traverse the New York-Connecticut boundary, numbered consecutively from south to north.
Conn. 15	Tenmile River	The 15th stream flowing into Connecticut across the New York-Connecticut boundary.
Conn. 15-12	Webatuck Creek	The 12th tributary of Tenmile River within New York State.
Conn. 15-12-21	Tributary of Webatuck Creek	The 21st tributary of Webatuck Creek.
Conn. 15-12-21-P1134	Rudd Pond	The 1134th pond encountered in the lower Hudson watershed.
Conn. 15-12-21-P1134-1	Tributary of Rudd Pond	The 1st tributary of Rudd Pond.

(c) The abbreviation *trib* and *tribs* indicating tributary and tributaries, and the terms *subtributary* and *subtributaries* shall mean any stream, pond or other body of surface water which flows into any other stream, pond or other body of surface water; where no tributary, tributaries, subtributary or subtributaries are mentioned, the specifically designated waters shall include only the stream, pond, or other body of water referenced by such waters index number; where a tributary, tributaries, subtributary or subtributaries are mentioned after the waters index number, the specifically designated waters shall include the stream, pond, or other body of water referenced by such waters index number and all tributaries and subtributaries thereof, which are shown on the reference maps, excluding numbered ponds, unless exceptions are expressly stated.

(d) *Name* as appearing in table I shall mean the name by which the specifically designated waters are known and which name may appear on the reference maps. In cases of specifically designated waters which have no name, the named waters to which the unnamed waters are tributary are identified as far as possible.

(e) *Comments.* The column headed "Comments" contains designations or segments or sections of waters under consideration to which a particular assignment of a class and standards shall apply. Also included in this column is any useful information pertinent to the classification or standards.

(f) *Map Ref. No.* as appearing in table I means map reference number and indicates one or more of the following numbered maps reproduced herein completely or in part in section 825.9, *infra*, on which maps the specifically designated waters and their index numbers are shown within the topographical limit line of the described drainage basin. The following maps were produced from the original maps which may be procured through the Washington Distribution Section, Geological Survey, Silver Spring, Maryland.

Map Ref. No.	*Quadrangle name*	*Edition*	*Published by*
L-25se	Chatham	1953	U.S. Geological Survey
L-26nw	Canaan	1946	U.S. Geological Survey
L-26sw	State Line	1959	U.S. Geological Survey
M-25se	Copake	1953	U.S. Geological Survey
M-26nw	Egremont	1958	U.S. Geological Survey
M-26sw	Bashbish Falls	1958	U.S. Geological Survey
N-25ne	Millerton	1955	U.S. Geological Survey
N-25se	Amenia	1958	U.S. Geological Survey
N-25sw	Millbrook	1944	U.S. Geological Survey
N-26nw	Pine Plains	1945	U.S. Geological Survey
N-26nw	Sharon	1956	U.S. Geological Survey
O-25ne	Dover Plains	1958	U.S. Geological Survey
O-25se	Pawling	1958	U.S. Geological Survey
O-25sw	Poughquag	1945	U.S. Geological Survey
O-25nw	Verbank	1944	U.S. Geological Survey

(g) *Class* as appearing in table I and denoted by the letter A, B, C or D opposite each specifically designated waters, shall mean class A, B, C or D, as the case may be, as set forth in Part 701, *supra*.

(h) *Standards* as appearing in table I and denoted by the letter A, B, C or D opposite each specifically designated waters, shall mean the quality standards for class A, B, C or D, as the case may be, as set forth in Part 701, *supra*. The symbol (T) appearing after any

class designation shall mean that the designated waters are trout waters and that the dissolved oxygen specification for trout waters shall apply thereto. The symbol (TS) after any class designation shall mean that the designated waters are suitable for trout spawning and that the dissolved oxygen specification for trout spawning waters shall apply thereto.

(i) The term *trout* as used in this Part means any fish in the following genera or family: *Coregonus, Oncorhyncus, Prosopium, Salmo, Salvelinus* and *Thymallus.*

Historical Note

Sec. amd. filed April 18, 1986 eff. 30 days after filing. Amended (h) and added (i).

825.4 Special conditions. (a) All streams or other bodies of water which appear as black lines with accompanying waters index numbers on the reference maps herein, or which appear as blue continuous or dotted lines to indicate natural waters on the original published maps listed above, and which natural waters are not specifically designated in table I, shall be assigned the same classes and standards of quality and purity as the specifically designated waters to which they are directly tributary.

(b) All streams, rivulets, and other collections of natural surface waters within the basins as above defined, which waters are not shown on the original published maps listed above, shall be assigned to class D with standards of quality and purity for class D assigned thereto; provided, however, that any continuous flowing natural stream which is not shown on the reference maps shall have the same classification and assigned standards as the waters to which it is directly tributary.

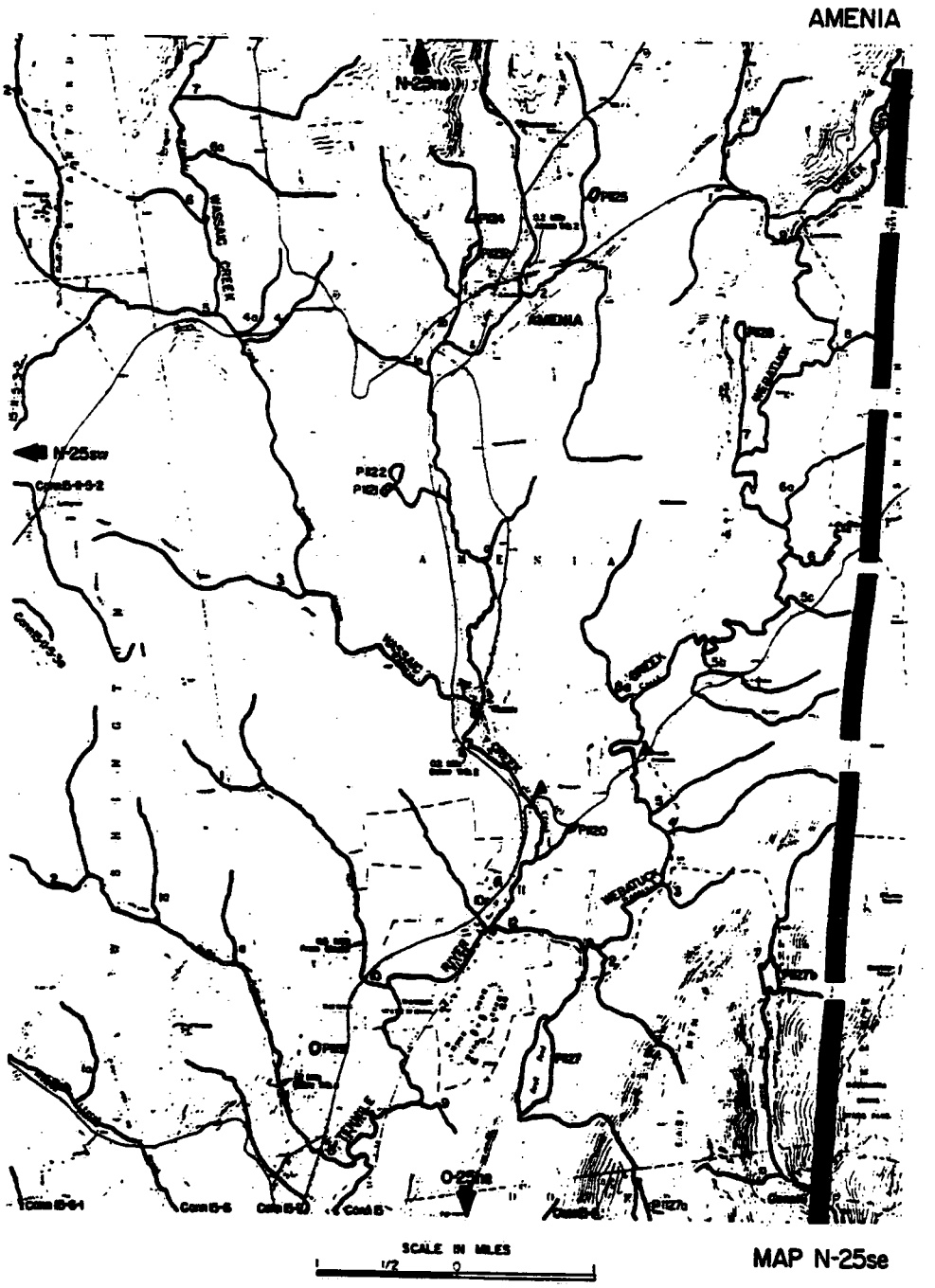
825.5 Assigned classifications and standards of quality and purity. The classifications and standards of quality and purity assigned to the surface waters specifically designated and described herein are set forth in table I subject to the definitions and conditions stated above.

TABLE I (*con'td.*)

Item No.	Waters Index Number	Name	Comments	Map Ref. No.	Class	Standards
84	Conn. 15-10-1	Subtributary of Tenmile River		N-25se	C	C
85	Conn. 15-10a	Tributary of Tenmile River		N-25se	C	C
86	Conn. 15-11 portion	Wassaic Creek	From mouth to 0.2 mile below trib. 2	N-25se	C	C(T)
87	Conn. 15-11 portion	Wassaic Creek	From 0.2 mile below trib. 2 to trib. 5.	N-25se	C	C(T)
88	Conn. 15-11 portion	Wassaic Creek	From trib. 5 to source.	N-25se N-25ne	C	C
89	Conn. 15-11-1	Tributary of Wassaic Creek		N-25se	D	D
89.1	Conn. 15-11-1-P 1120	Subtributary of Wassaic Creek		N-25se	C	C
90	Conn. 15-11-2 portion	Amenia Brook	From mouth to trib. 1.	N-25se	C	C(T)
91	Conn. 15-11-2 portion	Amenia Brook	From trib. 1 to trib. 1b.	N-25se	C	C(TS)
92	Conn. 15-11-2	Cascade Brook	From trib. 1b to 0.2 mile above trib. 2.	N-25se	C	C(TS)
93	Conn. 15-11-2	Cascade Brook	From 0.2 mile above trib. 2 to trib. 3.	N-25se	C	C(T)
94	Conn. 15-11-2	Cascade Brook	From trib. 3 to source.	N-25se N-25ne	C	C(T)

TABLE I (*con'td.*)

Item No.	Waters Index Number	Name	Comments	Map Ref. No.	Class	Standards
95	Conn. 15-11-2-a, 1, 1a, 5, P 1125a and tribs. 1-P 1121, 1-P 1122, 1b-1, 1b-1-P 1123a, 1b-1-P 1124, 2-1, 2-P 1125	Tributaries of Cascade Brook and subtributaries		N-25se N-25ne	C	C
95.1	Conn. 15-11-2-1b	Tributary of Cascade Brook		N-25se	C	C(TS)
95.2	Conn. 15-11-2-2	Tributary of Cascade Brook		N-25se	C	C(T)
96	Conn. 15-11-3	Tributary of Wassaic Creek		N-25se	C	C(TS)
96.1	Conn. 15-11-4, 4a	Tributaries of Wassaic Creek		N-25se	C	C
97	Conn. 15-11-5 portion	Tributary of Wassaic Creek	From mouth to trib. 3.	N-25se N-25sw	C	C(T)



MAP N-25se

WATER QUALITY REGULATIONS

SURFACE WATER AND GROUNDWATER CLASSIFICATIONS AND STANDARDS

New York State
Codes, Rules and Regulations
Title 6, Chapter X
Parts 700-705

131

New York State Department of Environmental Conservation

CLASS "B"

Best usage of waters. Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

Quality Standards for Class "B" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "C"

Best usage of waters. The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose.

Quality Standards for Class "C" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "D"

Best usage of waters. The waters are suitable for fishing. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support fish propagation.

Conditions related to best usage of waters. The waters must be suitable for fish survival.

Quality Standards for Class "D" Waters

Items	*Specifications*
1. pH	Shall be between 6.0 and 9.5.
2. Dissolved oxygen.	Shall not be less than 3 milligrams per liter at any time.
3. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Historical Note

Sec. added by renum. and amd. 701.4, filed July 3, 1985; amd. filed Sept. 20, 1985 eff. 30 days after filing.

701.20 Classes and standards for saline surface waters. The following items and specifications shall be the standards applicable to all New York saline surface waters which are assigned the classification of SA, SB, SC or SD, in addition to the specific standards which are found in this section under the heading of each such classification.

132

REFERENCE NO. 16.

134

Uncontrolled Hazardous Waste Site Ranking System

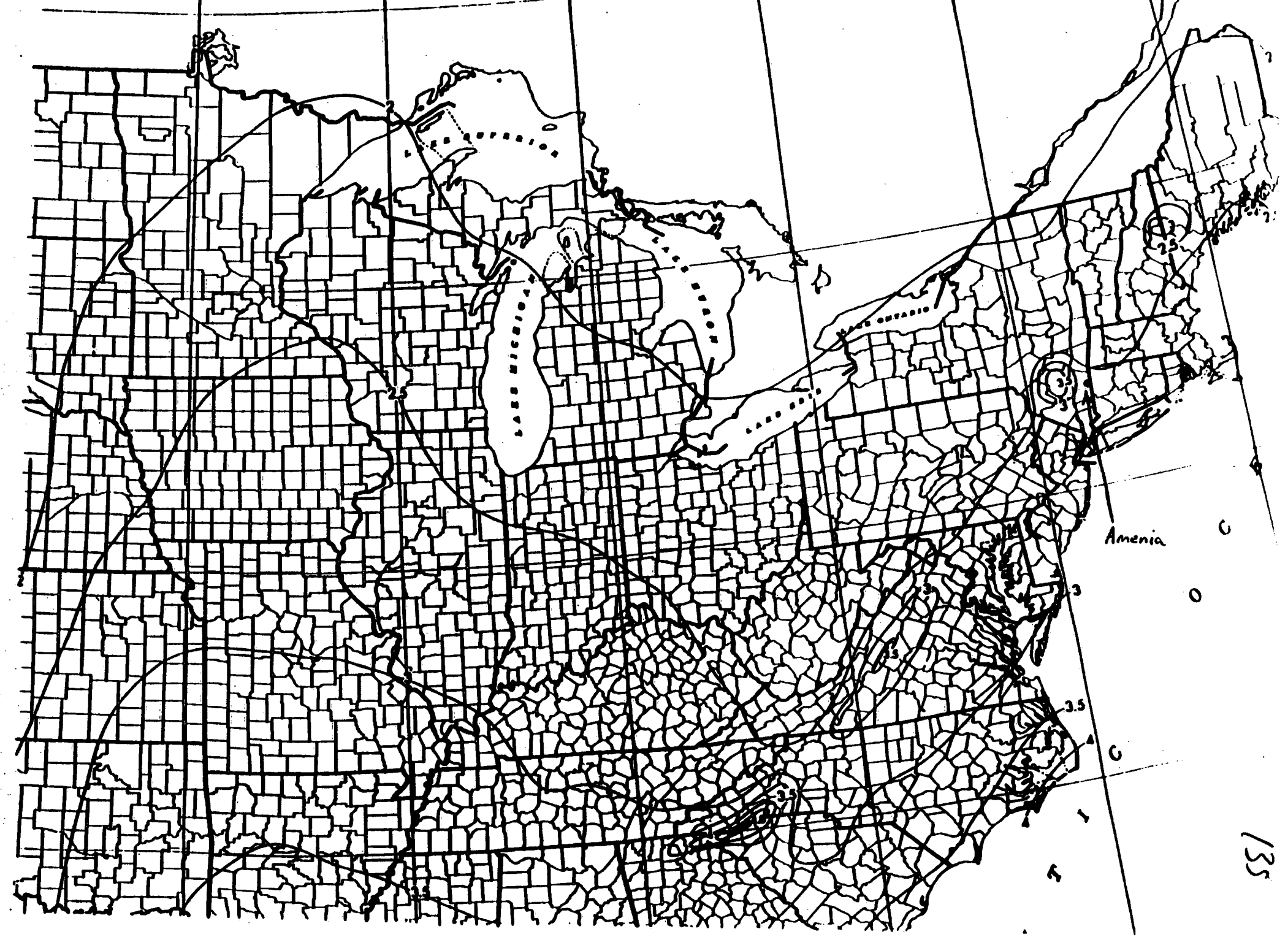
A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

1 YEAR 24-HOUR RAINFALL (inches)



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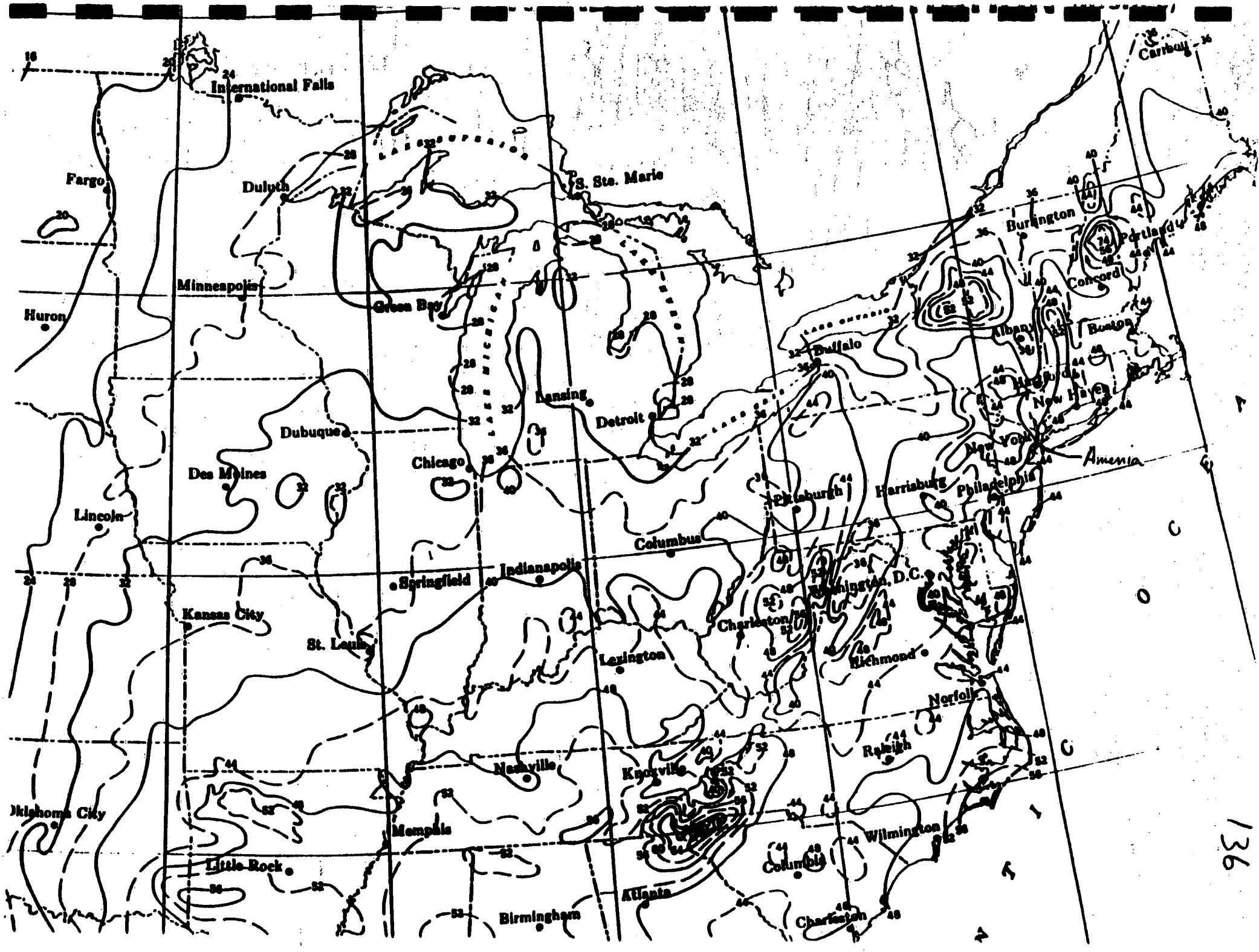
International Falls
Fargo
Duluth
S. Ste. Marie
Minneapolis
Huron
Green Bay
Lansing
Detroit
Dubuque
Chicago
Des Moines
Lincoln
Springfield
Indianapolis
Kansas City
St. Louis
Columbus
Lexington
Nashville
Knoxville
Memphis
Little Rock
Birmingham
Atlanta
Oklahoma City
Pittsburgh
Harrisburg
Philadelphia
Washington, D.C.
Charleston
Richmond
Norfolk
Raleigh
Wilmington
Columbia
Charleston
Buffalo
Albany
Burlington
Portland
Concord
Boston
New Haven
New York
Caribou
Amenia

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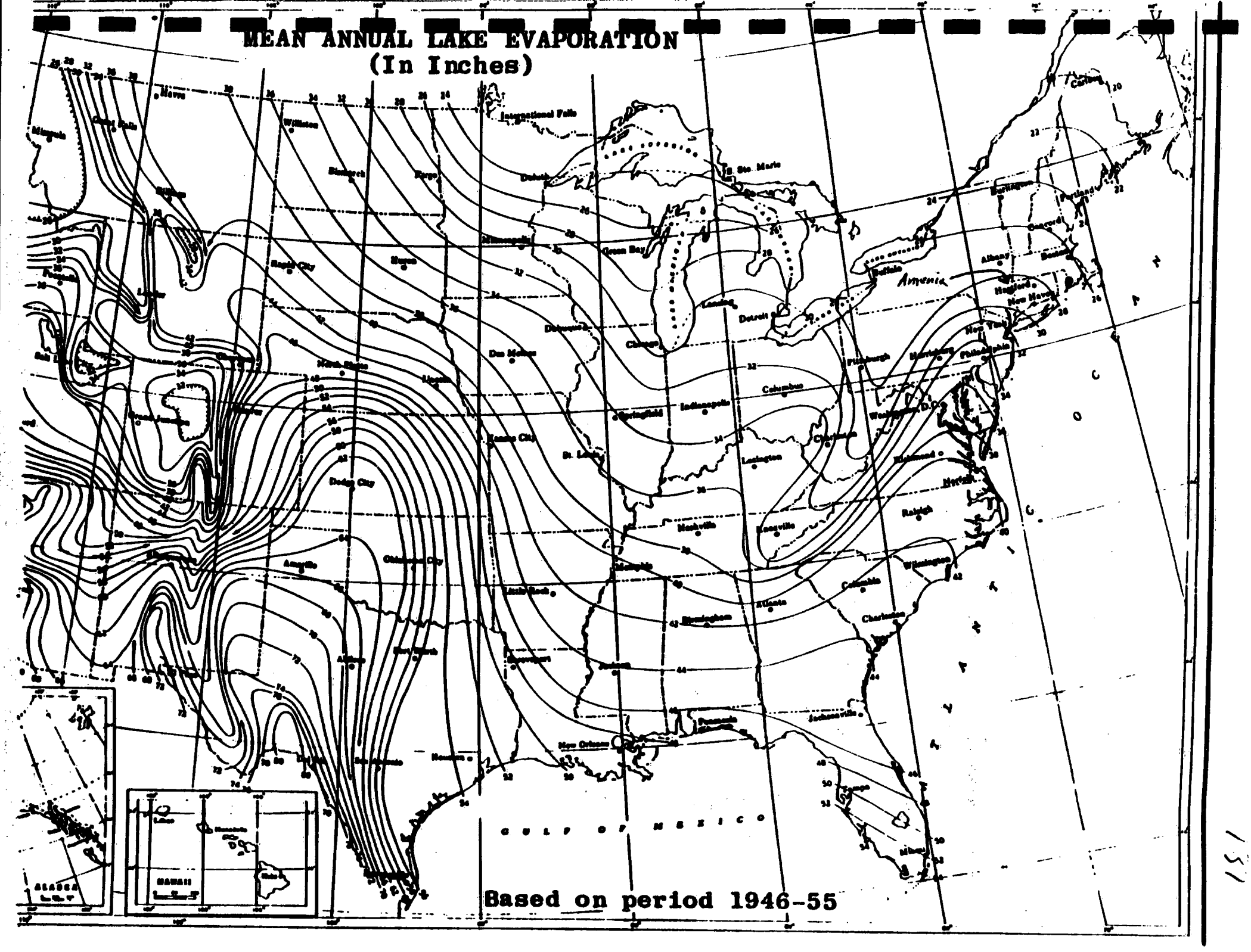
MEAN ANNUAL LAKE EVAPORATION
(In Inches)



Based on period 1946-55

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TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

Type of Material	Approximate Range of Hydraulic Conductivity	Assigned Value
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$>10^{-3}$ cm/sec	3

*Derived from:

Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWest ed., Academic Press, New York, 1969

Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

REFERENCE NO. 1

REFERENCE NO. 18

ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

VOLATILES

SAMPLE NUMBER	NY66-GW1	NY66-GW2	NY66-GW3	NY66-SW1	NY66-SW2	NY66-SW3	NY66-BL1	NY66-S1	NY66-S2	NY66-S3	NY66-S4	NY66-SED1	NY66-SED2	NY66-SED3
TRAFFIC REPORT NUMBER	BI 994	BI 995	BI 996	BI 997	BI 998	BI 999	BI 587	BI 987	BI 988	BI 989	BI 990	BK 102	BK 103	BK 104
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CONC./DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chloromethane														
Bromomethane														
Vinyl Chloride														
Chloroethane														
Methylene Chloride	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Acetone	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	390B	250B	Q
Carbon Disulfide				J		J								
1,1-Dichloroethene														
1,1-Dichloroethane														
Trans-1,2-Dichloroethene														
Chloroform														
1,2-Dichloroethane														
2-Butanone														
1,1,1-Trichloroethane												34	54	36
Carbon Tetrachloride											J			
Vinyl Acetate														
Bromodichloromethane														
1,1,2,2-Tetrachloroethane														
1,2-Dichloropropane														
Trans-1,3-Dichloropropene														
Trichloroethene			J	J		J								
Dibromochloromethane														J
1,1,2-Trichloroethane														
Benzene														
Cis-1,3-Dichloropropene														
2-Chloroethylvinylether														
Bromoform														
2-Hexanone														
4-Methyl-2-Pentanone														
Tetrachloroethene														
Toluene														
Chlorobenzene														
Ethylbenzene														
Styrene														
Total Xylenes														

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
J - compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination

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ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

SEMI-VOLATILES

SAMPLE NUMBER	NY66-GW1	NY66-GW2	NY66-GW3	NY66-SW1	NY66-SW2	NY66-SW3	NY66-BL1	NY66-S1	NY66-S2	NY66-S3	NY66-S4	NY66-SED1	NY66-SED2	NY66-SED3
TRAFFIC REPORT NUMBER	BI 994	BI 995	BI 996	BI 997	BI 998	BI 999	BI 587	BI 987	BI 988	BI 989	BI 990	BK 102	BK 103	BK 104
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CONC./DILUTION FACTOR	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Phenol											0			
Bis(2-Chloroethyl)Ether											0			
2-Chlorophenol											0			
1,3-Dichlorobenzene											0			
1,4-Dichlorobenzene											0			
Benzyl Alcohol											0			
1,2-Dichlorobenzene											0			
2-Methylphenol											0			
Bis(2-Chloroisopropyl)Ether											0			
4-Methylphenol											0			
N-Nitroso-Di-n-Propylamine											0			
Hexachloroethane											0			
Nitrobenzene											0			
Isophorone											0			
2-Nitrophenol											0			
2,4-Dimethylphenol											0			
Benzoic Acid									670J	1200J	0			
Bis(2-Chloroethoxy)Methane											0			
2,4-Dichlorophenol											0			
1,2,4-Trichlorobenzene											0			
Naphthalene											0			
4-Chloroaniline											0			
Hexachlorobutadiene											0			
4-Chloro-3-Methylphenol											0			
2-Methylnaphthalene											0			
Hexachlorocyclopentadiene											0			
2,4,6-Trichlorophenol											0			
2,4,5-Trichlorophenol											0			
2-Chloronaphthalene											0			
2-Nitroaniline											0			
Dimethyl Phthalate											0			
Acenaphthylene											0			
3-Nitroaniline											0			
Acenaphthene											0			
2,4-Dinitrophenol											0			
4-Nitrophenol											0			
Dibenzofuran											0			
2,4-Dinitrotoluene											0			
2,6-Dinitrotoluene											0			
Diethylphthalate	J										0			7400
4-Chlorophenylphenyl ether											0			
Fluorene											0			

ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

SEMI-VOLATILES

SAMPLE NUMBER	NY66-GW1	NY66-GW2	NY66-GW3	NY66-SW1	NY66-SW2	NY66-SW3	NY66-BL1	NY66-S1	NY66-S2	NY66-S3	NY66-S4	NY66-SED1	NY66-SED2	NY66-SED3
TRAFFIC REPORT NUMBER	BI 994	BI 995	BI 996	BI 997	BI 998	BI 999	BI 587	BI 987	BI 988	BI 989	BI 990	BK 102	BK 103	BK 104
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CONC./DILUTION FACTOR	1	1	1	1	1	1	1	2	2	2	2	2	2	2
4-Nitroaniline														
4,6-Dinitro-2-Methylphenol											Q			
N-Nitrosodiphenylamine											Q			
4-Bromophenylphenyl ether											Q			
Hexachlorobenzene											Q			
Pentachlorophenol											Q			
Phenanthrene											Q			
Anthracene											Q			
Di-n-Butylphthalate					15		J				Q			
Fluoranthene									540J		Q			
Pyrene											Q			
Butylbenzylphthalate											Q			
3,3'-Dichlorobenzidine											Q			
Benzo(a)Anthracene											Q			
Bis(2-Ethylhexyl)Phthalate			220						1600		Q			730J
Chrysene											Q			
Di-n-Octyl Phthalate											Q			
Benzo(b)Fluoranthene											Q			
Benzo(k)Fluoranthene											Q			
Benzo(a)Pyrene											Q			
Indeno(1,2,3-cd)Pyrene											Q			
Dibenzo(a,h)Anthracene											Q			
Benzo(ghi)Perylene											Q			

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
J - compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
NR - analysis not required

ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

PESTICIDES/PCBs														
SAMPLE NUMBER	NY66-GW1	NY66-GW2	NY66-GW3	NY66-SW1	NY66-SW2	NY66-SW3	NY66-BL1	NY66-S1	NY66-S2	NY66-S3	NY66-S4	NY66-SED1	NY66-SED2	NY66-SED3
TRAFFIC REPORT NUMBER	BI 994	BI 995	BI 996	BI 997	BI 998	BI 999	BI 587	BI 987	BI 988	BI 989	BI 990	BK 102	BK 103	BK 104
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CONC./DILUTION FACTOR	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Alpha-BHC								Q		Q	Q	Q	Q	Q
Beta-BHC								Q		Q	Q	Q	Q	Q
Delta-BHC								Q		Q	Q	Q	Q	Q
Gamma-BHC (Lindane)								Q		Q	Q	Q	Q	Q
Heptachlor								Q		Q	Q	Q	Q	Q
Aldrin								Q		Q	Q	Q	Q	Q
Heptachlor Epoxide								Q		Q	Q	Q	Q	Q
Endosulfan I								Q		Q	Q	Q	Q	Q
Dieldrin								Q		Q	Q	Q	Q	Q
4,4'-DDE								Q		Q	Q	Q	Q	Q
Endrin								Q		Q	Q	Q	Q	Q
Endosulfan II								Q		Q	Q	Q	Q	Q
4,4'-DDD								Q		Q	Q	Q	Q	Q
Endosulfan sulfate								Q		Q	Q	Q	Q	Q
Endrin Aldehyde								Q		Q	Q	Q	Q	Q
4,4'-DDT								Q		Q	Q	Q	Q	Q
Methoxychlor								Q		Q	Q	Q	Q	Q
Endrin Ketone								Q		Q	Q	Q	Q	Q
Chlordane								Q		Q	Q	Q	Q	Q
Toxaphene								Q		Q	Q	Q	Q	Q
Aroclor-1016								Q		Q	Q	Q	Q	Q
Aroclor-1221								Q		Q	Q	Q	Q	Q
Aroclor-1232								Q		Q	Q	Q	Q	Q
Aroclor-1242								Q		Q	Q	Q	Q	Q
Aroclor-1248								Q		Q	Q	Q	Q	Q
Aroclor-1254								14000J	170000	13000J	Q	3700J	Q	Q
Aroclor-1260								Q		Q	Q	Q	Q	Q

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
J - compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
NR - analysis not required

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ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

INORGANICS

SAMPLE NUMBER	NY66-GW1	NY66-GW2	NY66-GW3	NY66-SW1	NY66-SW2	NY66-SW3	NY66-BL1	NY66-S1	NY66-S2	NY66-S3	NY66-S4	NY66-SED1	NY66-SED2	NY66-SED3
TRAFFIC REPORT NUMBER	MBI 493	MBI 494	MBI 495	MBI 496	MBI 497	MBI 498	MBI 504	MBI 486	MBI 487	MBI 488	MBI 489	MBI 500	MBI 501	MBI 502
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Aluminum	[37]			[68]	[159]	[63]	[51]	6600	10200	12800	20600	9100	7050	12000
Antimony														
Arsenic								6.4	10					
Barium	0	0	0	0	0	0	[4.4]	0	[62]	[74]	[84]	[36]	[37]	[37]
Beryllium											[1.1]	[2.2]	13E	
Cadmium														
Calcium	48300	67100	77000	47100	49500	39900	[649]	0	0	0	0	0	0	0
Chromium								8.6	18	17	24	[8.1]		17
Cobalt								[12]	[22]	[14]	[12]	[28]	[59]	[8.9]
Copper								22	36	50		[16]		
Iron	0	0	0	902	1860	0	[67]	20000	40900	33300	30600	58000	175000	18400
Lead		9.6						14	134	80	43	24	32	36
Magnesium	24400	28100	23100	14800	16000	12800	[193]	10800	14400	14300	6700	8520	[3890]	5410
Manganese		188	[2.6]	310	590	175		663	793	573	387	1380	1170	132
Mercury														
Nickel								26E	52E	29E	[31]	76E	193E	[24]
Potassium	[1420]	[2330]	[1620]	[1430]	[1250]	[1270]		[1100]	[1470]	[1350]	[984]	[1530]	[1440]	[732]
Selenium								2.9						
Silver														
Sodium	6250	20800	45900	5360	5300	0	[346]	0	0	0	0	0	0	0
Thallium						11								
Tin										[7.8]				
Vanadium														NR
Zinc	28	[19]	160	[7.5]	[13]	[9.9]	[18]	0	0	0	0	0	0	0
								49	179	224	97	165	510	72

NOTES TO INORGANICS DATA:

Blank space - compound analyzed for but not detected
0 - analysis did not pass EPA QA/QC requirements
[]- compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample and indicates possible/probable blank contamination
E - value estimated due to laboratory interference
NR- analysis not required

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02-8612-11

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02-8612-11-STR

SAMPLING TRIP REPORT

SITE NAME: Amenia Site (Route 22 South)

TDD #: 02-8612-11

SAMPLING DATE: February 25, 1987

EPA CASE NO: 6888

1. Site Location: See Figure 1
2. Sampling Locations: See Figure 2
3. Sample Descriptions: See Table 1
4. Laboratories Receiving Samples:

Sample Type	Name and Address of Laboratory
Organics (Aqueous and Soil)	Clayton Environmental Consultants, Inc. 22345 Roethel Drive Novi, Michigan 48050
Inorganics (Aqueous and Soil)	Versar, Inc. 6850 Versar Center Springfield, VA 22151

5. Sample Dispatch Data:

Organic soil and aqueous samples were shipped by FIT personnel via Federal Express under Airbill No. 495160702 to Clayton Environmental Consultants, Inc. on 2/25/87 at 1830 hours.

Inorganic soil and aqueous samples were shipped by FIT personnel via Federal Express under Airbill No. 495164353 to Versar, Inc. on 2/25/87 at 1830 hours.

6. Sampling Personnel

Name	Organization	Duties on Site
Gary Bielen	NUS Corp. - FIT II	Project Manager, Documentation
Jane Bullis	NUS Corp. - FIT II	Site Safety Officer
John Ducar	NUS Corp. - FIT II	Sample Management
Dan deBruijn	NUS Corp. - FIT II	Sampler
Roberta Riccio	NUS Corp. - FIT II	Sampler/Decon

7. Weather Conditions:

Sunny, 35°F, wind 0-2 mph.

8. Additional Comments:

All samples collected during this investigation will be analyzed for Hazardous Substance List (HSL) Parameters. A total of thirteen (13) environmental samples were collected from the site. Four (4) soil, three (3) surface water and three (3) sediment samples were collected onsite. Three (3) groundwater tap samples were collected off-site. One aqueous QA/QC blank was obtained from the EPA laboratory in Edison, New Jersey and was shipped with the environmental samples. Sample packaging and shipping was performed in accordance with NUS OGM 4.19.

9. Report Prepared By: Gary Bielen Date: 3/3/87

10. Approved By: RM Norman Date: 3/16/87

(QUAD) AMENIA, N.Y.

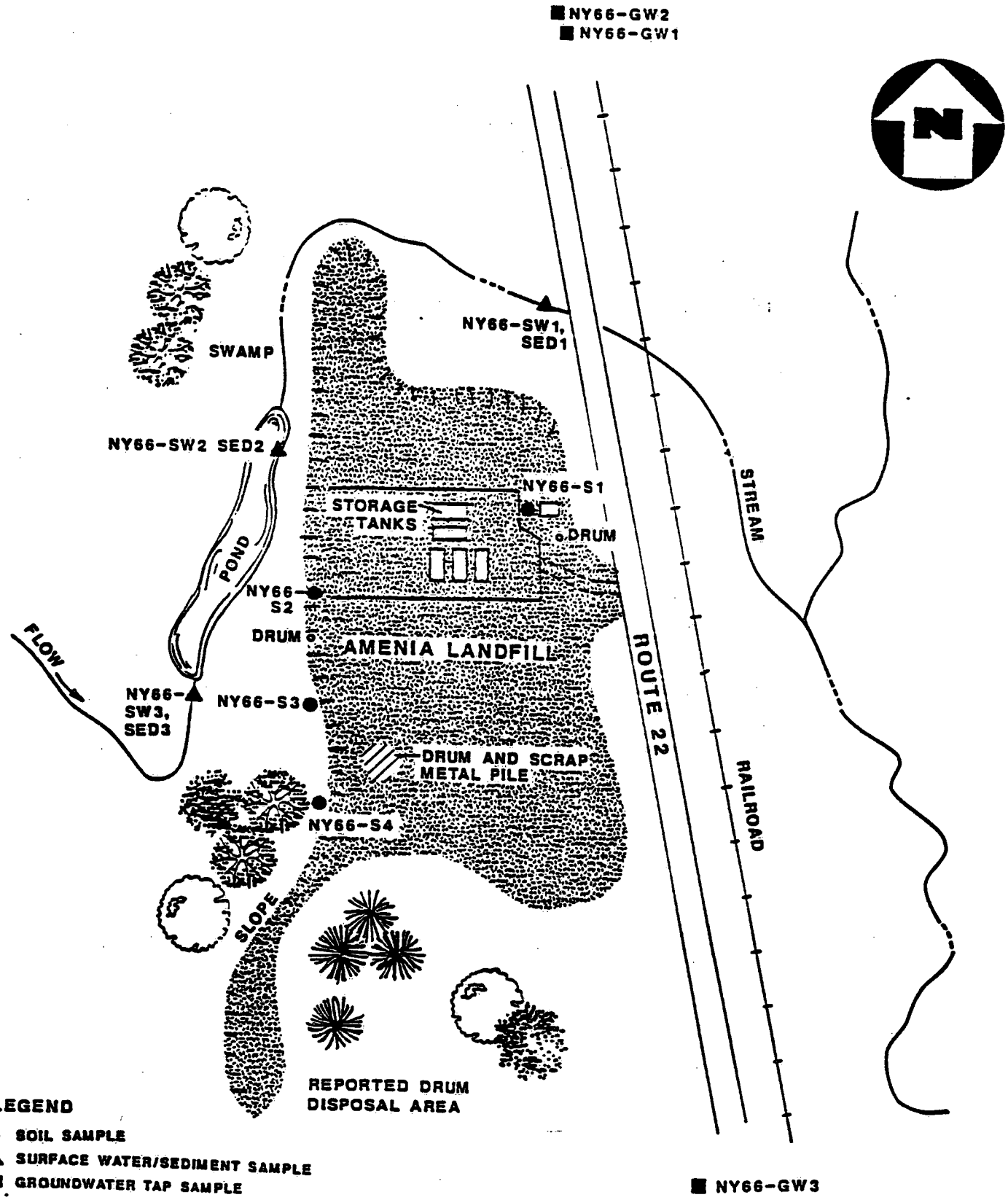
FIGURE 1

SITE LOCATION MAP

AMENIA SITE, (ROUTE 22 SOUTH), AMENIA, N.Y.

SCALE; 1" = 2000'

NUS CORPORATION
A Halliburton Company



LEGEND

- ● SOIL SAMPLE
- ▲ SURFACE WATER/SEDIMENT SAMPLE
- ■ GROUNDWATER TAP SAMPLE

SAMPLE LOCATION MAP

AMENIA SITE, (ROUTE 22 SOUTH), AMENIA, N.Y.

(NOT TO SCALE)

FIGURE 2

NUS CORPORATION
A Halliburton Company

TABLE 1

SAMPLE DESCRIPTIONS
AMENIA SITE (ROUTE 22 SOUTH)
AMENIA, NEW YORK
CASE #6888
02/25/87

Sample ID Number	Organic Traffic Report Number	Inorganic Traffic Report Number	Time (Hours)	Sample Type	Sample Location
NY66-GW1	BI994	MBI493	1010	Groundwater	Sample taken from spigot of Amenia's town well #4. Well located off Route 22 in Amenia.
NY66-GW2	BI995	MBI494	1021	Groundwater	Sample taken from spigot of Amenia's town well #3. Well located off Main Street (Route 343).
NY66-GW3	BI996	MBI495	1110	Groundwater	Sample taken from faucet of private residence. Mr. Schiffer's home is located approximately one to two miles south of the site.
NY66-S1	BI987	MBI486	1400	Soil	Sample taken 25 feet from fence that surrounds oil storage tanks. Fifteen feet from storage tank which is located outside the fenced area. Sample depth is 0-6 inches.
NY66-S2	BI988	MBI487	1420	Soil	Sample taken six feet from end of fence that surrounds the oil storage area. Sample depth 0-6 inches.

TABLE 1 (CONT'D)

SAMPLE DESCRIPTIONS
AMENIA SITE (ROUTE 22 SOUTH)
AMENIA, NEW YORK
CASE #6888
02/25/87

Sample ID Number	Organic Traffic Report Number	Inorganic Traffic Report Number	Time (Hours)	Sample Type	Sample Location
NY66-SW2	BI998	MBI497	1440	Surface Water	Sample taken approximately 100 feet from west side of landfill in pond.
NY66-SED2	BK103	MBI501	1445	Sediment	Sample taken at same location as NY66-SW2.
NY66-S3	BI989	MBI488	1455	Soil	Sample taken on west side of landfill approximately 25 feet from pond. Sample depth is 0-6 inches.
NY66-SW3	BI999	MBI498	1530	Surface Water	Sample taken approximately 40 feet from S3, up-gradient from pond.
NY66-SED3	BK104	MBI502	1540	Sediment	Sample taken at same location as NY66-SW3.
NY66-S4	BI990	MBI489	1605	Soil	Sample taken on west side of landfill, approximately 10 feet from pond. Sample depth is 0-6 inches.
NY66-SW1	BI997	MBI~~497~~ 497c	1620	Surface Water	Sample taken approximately 40 feet from Route 22 on west side of road.

TABLE 1 (CONT'D)

SAMPLE DESCRIPTIONS
AMENIA SITE (ROUTE 22 SOUTH)
AMENIA, NEW YORK
CASE #6888
02/25/87

Sample ID Number	Organic Traffic Report Number	Inorganic Traffic Report Number	Time (Hours)	Sample Type	Sample Location
NY66-SED1	BK102	MBI500	1630	Sediment	Sample taken at same location as SW1.
NY66-BL1	BI587	MBI504	N/A	Aqueous	Collected from EPA Labs, Edison, N.J.

ORGANIC DATA REPORTING QUALIFIERS

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of such flags must be explicit.

Value -If the result is a value greater than or equal to the detection limit, report the value.

U -Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J -Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J)

C -This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides $\geq$10 ng/ul in the final extract should be confirmed by GC/MS.

B -This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other -Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Date: 18 APR 1987
Number: HW-4
Revision: 1

Title: Attachment 4 - CLP Data Assessment Checklist
(GC and GC/MS Analysis)
PART II: MMB Review
DOCUMENTED RISK REVIEW

CASE # 6888 LAB Clayton SITE Amenia

.0 Conclusions: (NOTE: Reviewers must red-line unacceptable data on sample data sheets; red-line data does not imply the compound is not present) Only the MMB reviewer has the authority to red-line unacceptable data.

3.1 Data Assessment Method blank measures laboratory contamination caused by dirty glassware, etc. In order to be valid, the concentration of an analyte in a sample must be at least 5 or 10 times(depending on the analyte) the concentration of that analyte present in the method blank. The following compounds were red-lined as method blank contamination: Methylene chloride and acetone in BI587, BI987-990, BI994-999. Methylene chloride in BK102-104.

Trip blank consists of analyte free water that are taken into the field during sampling. Trip blank contamination is caused by contamination of samples in the field. In order to be valid, the concentration of an analyte in a sample must be at least 5 or 10 times(depending on the analyte) the concentration of that analyte present in the trip blank. Acetone in BK194 was red-lined as trip blank contamination.

The amount of analytes in a sample changes with time. If specified contract holding times are exceeded, the data may not be accurate. Red-lined all semi-volatiles and pesticide/PCB except for positive values(hits) which were flagged with "J" (estimate) for exceeding holding time in BI987, BI989-990, BK102-104.

.2 Contract Problems/Non-compliance The laboratory overlooked the presence of Aroclor 1254 in BI989 (correctly identified and confirmed the presence of Aroclor 1248).

3.3 Contractor Review Problems/Errors

Reviewer's Signature: George Karras Date: 10/10/87

Verified By: Jon Ly Date: 10/12/87

In Reference to Case No(s):
6888
[redacted]

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 8/12/87

Laboratory Name: CLayton

Lab Contact: DARYL Strandbergh 313-344-1770

Region: II

Regional Contact: Stelios Gerazounis For George Karras

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):
1. BI 989 RE (Pest/PCB) 2. Surrogate missing in BNA method blank

Summary of Questions/Issues Discussed: ok (below DL)
1. Suspect Aroclor 1254 to be present beside reported value for Aroclor 1248. Check sample chromatogram (page 274) with standard Aroclor 1254 (page 704)
2. Narrative indicates blank + sample be re-extracted by Mr. Emile Boulos. Did he approve extending holding time for BNA + pest/PCB ??
3. We requested the shipment of the data of original analysis if they are still available.

Summary of Resolution:
1. Mr. Stranbergh will check to see whether the BNA data of the original analysis is still available and also he will examine the sample chromatograms for Aroclor 1254. He will call back. Called back - found original data + will mail it as soon as they "put everything together" (approx 1-2 wks) BI 989 has Ar 1254 but below DL (Will recalculate and sent results to us.

George Karras
Signature

8/12/87
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

10/10/87: Have not received above data G.K.

BI 989-90, BK102-104 as narrative (6th paragraph)

Clayton Environmental Consultants, Inc.

22345 Roethel Drive • Novi, Michigan 48050 • (313) 344-1770

CASE NARRATIVE
Case No.: 6888, Region II
SMO No.: BI 587, 987-990, BI 994-999, BK 102-104
Contract No.: 68-01-7100

Case Summary

Seven low-level soil samplels and seven low-level water samples were received on February 26, 1987 for full organic analysis.

Bis(2-ethylhexyl)phthalate was detected in the BNA fraction of the matrix spike water sample BI 999 at 800 ug/kg; however, the matrix spike duplicate of this sample contained only 80 ug/kg of bis(2-ethylhexyl)phthalate and the sample fraction of BI 999 did not contain any. Mr. Emile Boulos, Organic Project Officer, was contacted on March 3, 1987. He advised us to make sure that injection carryover did not occur during the analysis.

The spike compounds in the pesticide matrix spike and matrix spike duplicate of soil sample BI 988RE were diluted out due to a high concentration of Aroclor 1248.

Gel permeation chromatography cleanup (GPC) was performed on the soil samples. This procedure resulted in a dilution factor of two for the BNA and pesticide fractions, since only one-half of the extract was prepared.

Failure of the pump during the gel permeation cleanup (GPC) on March 2, 1987, caused samples BI 988, BI 988MS, and BI 988MSD to be lost, therefore these samples had to be re-extracted. They were re-extracted on March 4.

During GC/MS analysis of the BNA soil sample fractions on March 11, it was determined that there were no surrogates in the method blank. Mr. Emile Boulos was contacted on March 12, and he advised us to re-extract the method blank, and all soil samples related to it, which included samples BI 987,989, 990, and BK 102-104. Samples were re-extracted on March 13.

Aroclor 1248 was detected in the pesticide analysis of samples BI 987, 988, 988MS, 988MSD, 989, and BK 102. Aroclor 1248 was confirmed by GC/MS analysis in samples BI 987, 988, 989. Confirmation was unnecessary on the matrix spike and the matrix spike duplicate of sample BI 988 as the compound had already been confirmed in the unspiked sample. Aroclor 1248 was not detected by GC/MS in sample BK 102.

The number labeled "dilution factor" on the quantitation reports for the VOA and BNA analyses is a calculation factor which takes into account, based on the sample matrix: percent moisture, sample size, unit conversions, and dilutions, to derive the final concentration.

Branch Offices: Los Angeles, CA • Atlanta, GA • Edison, NJ • Toronto, Ontario • Windsor, Ontario • London, U.K.
A Marsh & McLennan Company

Case #6888

The Hewlett Packard GC/MS data system used by Clayton has a combined NBS/WILEY library. The data system prints the mass spectra for all tentatively identified compounds (TIC's) and the top three library matches. When no library matches are found, the data system prints "NO DATA BASE ENTRIES RETRIEVED".

Standards

The instrument was tuned to meet the abundance criteria for BFB and DFTPP before any standards, blanks, or samples were analyzed. Initial and continuing calibration data for VOA's and BNA's are within the contract-required QC limits.

Percent-difference and retention time shifts for all pesticide compounds were within contract-required criteria for the primary run which was used for quantitation.

Pesticide Linearity and Degradation

Linearity and degradation criteria are within the contract-required QC limits for the packed column run which was used for quantitation.

Surrogate Recoveries

Surrogate recoveries are within QC limits for the blanks and samples except for the pesticide fraction of water sample BI 997. Dibutyl chlorendate was diluted out due to co-elution with an interference peak.

Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate recovery data for water sample BI 999 and soil sample BI 988 are within QC requirements for all compounds except:

	Compound	% Rec	QC Range
BI 999 MS L/W	2,4-dinitrotoluene	100	24-96
	4-chloro-3-methylphenol	120	23-97
BI 999 MSD L/W	2,4-dinitrotoluene	99	24-96
	pyrene	130	26-127
BI 988 MS L/S	2,4-dinitrotoluene	98	28-89

	Compound	RPD	QC Limit
BI 999 MS/MSD L/W	4-nitrophenol	70	50

Case #6888

Blanks

Blank results are recorded on the Method Blank Summary form for all compounds; the following HSL compound was detected above the contract-required detection limit (CRDL).

	Compound	Concentration (ug/kg)	CRDL (ug/kg)
MBlank I L/S	Acetone	15	10
MBlank II L/S	Acetone	14	10

	Compound	Concentration (ug/L)	CRDL (ug/L)
MBlank II L/W	Acetone	13	10

Additional Flags

The following are laboratory flags which are used in addition to those identified by the EPA:

N= Instrument detection limit exceeded the CRDL, therefore instrument detection limit was used

M= Matrix spike compound.

A= Indicates a pesticide value less than the dilution-corrected limit of detection but greater than the CRDL.

Daryl Strandbergh
Project Manager, CLP

Date: 3/31/87

Sample Number
BI-587

Organics Analysis Data Sheet
(Page 1)

6888 • 2-028-01

Laboratory Name: CLAYTON ENVIRONMENTAL
Case No: 6888
Sample ID No: 86757 (528401)
QC Report No: NA
Sample Matrix: WATER
Contract No: 68-01-7100
Data Release Authorized By: [signature]
Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/2/87
Date Analyzed: 3/2/87
Conc/Dil Factor 1 pH 6.0
Percent Moisture: (Not Decanted) NA

CAS Number		ug/l or ug/Kg (Circle One)
-87-3	Chloromethane	10 U
-83-9	Bromomethane	10 U
75-01-4	Vinyl Chloride	10 U
-00-3	Chloroethane	10 U
-09-2	Methylene Chloride	~~3~~ B ~~3~~
67-64-1	Acetone	~~23~~ B
-15-0	Carbon Disulfide	6N
-35-4	1, 1-Dichloroethene	5 U
5-34-3	1, 1-Dichloroethane	5 U
56-60-5	Trans-1, 2-Dichloroethene	5 U
-66-3	Chloroform	5 U
07-06-2	1, 2-Dichloroethane	5 U
8-93-3	2-Butanone	10 U
-55-6	1, 1, 1-Trichloroethane	5 U
-23-5	Carbon Tetrachloride	5 U
08-05-4	Vinyl Acetate	10 U
27-4	Bromodichloromethane	5 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	7 N
10061-02-6	Trans-1, 3-Dichloropropene	5 U
79-01-6	Trichloroethene	5 U
124-48-1	Dibromochloromethane	5 U
79-00-5	1, 1, 2-Trichloroethane	5 U
71-43-2	Benzene	5 U
10061-01-5	cis-1, 3-Dichloropropene	5 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	5 U
108-10-1	4-Methyl-2-Pentanone	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	5 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5 U
108-88-3	Toluene	5 U
108-90-7	Chlorobenzene	5 U
100-41-4	Ethylbenzene	5 U
100-42-5	Styrene	5 U
	Total Xylenes	5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

If the result is a value greater than or equal to the detection limit, report the value

Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the summary report

M Matrix spike compound

N Instrument limit of detection was used because it was higher than the CRDL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

Form I 11/85

...ory Name [illegible] Environmental

...No: [illegible]

Sample Number
BI-587

8888-2-028-02

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

...ration: Low Medium (Circle One)

...tracted/Prepared: 2/27/87

...Analyzed: 3/6/87 (A7390)

...il Factor: 1

...ent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

...S ...mber		ug/l or ug/Kg (Circle One)
...-96-2	Phenol	10 u
...-4[illegible]4	bis(-2-Chloroethyl)Ether	10 u
...57[illegible]	2-Chlorophenol	10 u
...-73-1	1, 3-Dichlorobenzene	10 u
...-46-7	1, 4-Dichlorobenzene	10 u
...-[illegible]6	Benzyl Alcohol	10 u
...0-1	1, 2-Dichlorobenzene	10 u
...8-7	2-Methylphenol	10 u
...2-9	bis(2-chloroisopropyl)Ether	10 u
...-44-5	4-Methylphenol	10 u
...-64-7	N-Nitroso-Di-n-Propylamine	10 u
...72[illegible]	Hexachloroethane	10 u
...5-3	Nitrobenzene	10 u
...9-1	Isophorone	10 u
...5[illegible]	2-Nitrophenol	10 u
...-67-9	2, 4-Dimethylphenol	10 u
...5-0	Benzoic Acid	50 u
...-9[illegible]	bis(-2-Chloroethoxy)Methane	10 u
...-8[illegible]2	2, 4-Dichlorophenol	10 u
...-82-1	1, 2, 4-Trichlorobenzene	10 u
...0[illegible]	Naphthalene	10 u
...-4[illegible]	4-Chloroaniline	10 u
...8-3	Hexachlorobutadiene	10 u
...0-[illegible]	4-Chloro-3-Methylphenol	10 u
...7-[illegible]	2-Methylnaphthalene	10 u
...7-4	Hexachlorocyclopentadiene	10 u
...6-[illegible]	2, 4, 6-Trichlorophenol	10 u
...6-[illegible]	2, 4, 5-Trichlorophenol	50 u
...8-7	2-Chloronaphthalene	10 u
...4-4	2-Nitroaniline	50 u
...1[illegible]	Dimethyl Phthalate	10 u
...96-8	Acenaphthylene	10 u
...9-2	3-Nitroaniline	50 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	10 u
51-28-5	2, 4-Dinitrophenol	50 u
100-02-7	4-Nitrophenol	50 u
132-64-9	Dibenzofuran	10 u
121-14-2	2, 4-Dinitrotoluene	10 u
606-20-2	2, 6-Dinitrotoluene	10 u
84-66-2	Diethylphthalate	10 u
7005-72-3	4-Chlorophenyl-phenylether	10 u
86-73-7	Fluorene	10 u
100-01-6	4-Nitroaniline	50 u
534-52-1	4, 6-Dinitro-2-Methylphenol	50 u
86-30-6	N-Nitrosodiphenylamine (1)	10 u
101-55-3	4-Bromophenyl-phenylether	10 u
118-74-1	Hexachlorobenzene	10 u
87-86-5	Pentachlorophenol	50 u
85-01-8	Phenanthrene	10 u
120-12-7	Anthracene	10 u
84-74-2	Di-n-Butylphthalate	10 u
206-44-0	Fluoranthene	10 u
129-00-0	Pyrene	10 u
85-68-7	Butylbenzylphthalate	10 u
91-94-1	3, 3'-Dichlorobenzidine	28 N
56-55-3	Benzo(a)Anthracene	10 u
117-81-7	bis(2-Ethylhexyl)Phthalate	10 u
218-01-9	Chrysene	10 u
117-84-0	Di-n-Octyl Phthalate	10 u
205-99-2	Benzo(b)Fluoranthene	11 N
207-08-9	Benzo(k)Fluoranthene	10 u
50-32-8	Benzo(a)Pyrene	10 u
193-39-5	Indeno(1, 2, 3-cd)Pyrene	13 N
53-70-3	Dibenz(a, h)Anthracene	16 N
191-24-2	Benzo(g, h, i)Perylene	17 N

(1)-Cannot be separated from diphenylamine

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oratory Name [illegible]

ase No [illegible]

Sample Number
BI-58[illegible]

6888 · 2 -028-03

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

ncentration (Low) Medium (Circle One)

Extracted/Prepared 27 Feb. 1987

te Analyzed 12 March 1987

(Dil) Factor 1

ent Moisture (decanted) —

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l) or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.05 u
319-85-7	Beta-BHC	0.05 u
319-86-8	Delta-BHC	0.05 u
58-89-9	Gamma-BHC (Lindane)	0.05 u
76-44-8	Heptachlor	0.05 u
309-00-2	Aldrin	0.05 u
1024-57-3	Heptachlor Epoxide	0.05 u
959-98-8	Endosulfan I	0.05 u
60-57-1	Dieldrin	0.10 u
72-55-9	4, 4'-DDE	0.10 u
72-20-8	Endrin	0.10 u
33213-65-9	Endosulfan II	0.10 u
72-54-8	4, 4'-DDD	0.10 u
1031-07-8	Endosulfan Sulfate	0.10 u
50-29-3	4, 4'-DDT	0.10 u
72-43-5	Methoxychlor	0.5 u
53494-70-5	Endrin Ketone	0.10 u
57-74-9	Chlordane	0.5 u
8001-35-2	Toxaphene	1.0 u
12674-11-2	Aroclor-1016	0.5 u
11104-28-2	Aroclor-1221	0.5 u
11141-16-5	Aroclor-1232	0.5 u
53469-21-9	Aroclor-1242	0.5 u
12672-29-6	Aroclor-1248	0.5 u
11097-69-1	Aroclor-1254	1.0 u
11096-82-5	Aroclor-1260	1.0 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s — V_t 10000 ul V_i 1.0 ul

9.0. 3-16-87
R.H. 3-20-87

Form 1

7/85

6888 · 2-[illegible]

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Laboratory Name [illegible] Environmental

No 6888

Sample Number BI-587

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
—	No Volatile compounds detected	VOA	—	—
10123	5-methyl-2-Hexanone	BNA	5.89	20 JB
—	unknown compound	BNA	35.59	9 J

Sample Number
BI-987

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Organics Analysis Data Sheet
(Page 1)

6888 • 2-028-04

oratory Name: Clayton Environmental
ample ID No: 136760 (528414)
mple Matrix: SOIL
Release Authorized By: [signature]

Case No: 6888
QC Report No: NA
Contract No: 68-01-7100
Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/2/87
Date Analyzed: 3/2/87
Conc/Dil Factor: 1 pH 7.0
Percent Moisture: (Not Decanted) 19.25 %

AS mber		ug/l or ug/Kg (Circle One)
-3	Chloromethane	12 u
83-9	Bromomethane	12 u
01-4	Vinyl Chloride	12 u
-3	Chloroethane	12 u
-2	Methylene Chloride	[redacted] B
64-1	Acetone	[redacted] B
-0	Carbon Disulfide	7 N
-4	1, 1-Dichloroethene	6 u
34-3	1, 1-Dichloroethane	6 u
0-5	Trans-1, 2-Dichloroethene	6 u
-3	Chloroform	6 u
7-06-2	1, 2-Dichloroethane	6 u
-3	2-Butanone	12 u
-6	1, 1, 1-Trichloroethane	6 u
23-5	Carbon Tetrachloride	6 u
05-4	Vinyl Acetate	12 u
-4	Bromodichloromethane	6 u

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	7 N
10061-02-6	Trans-1, 3-Dichloropropene	6 u
79-01-6	Trichloroethene	6 u
124-48-1	Dibromochloromethane	6 u
79-00-5	1, 1, 2-Trichloroethane	6 u
71-43-2	Benzene	6 u
10061-01-5	cis-1, 3-Dichloropropene	6 u
110-75-8	2-Chloroethylvinylether	12 u
75-25-2	Bromoform	6 u
108-10-1	4-Methyl-2-Pentanone	12 u
591-78-6	2-Hexanone	12 u
127-18-4	Tetrachloroethene	6 u
79-34-5	1, 1, 2, 2-Tetrachloroethane	6 u
108-88-3	Toluene	6 u
108-90-7	Chlorobenzene	6 u
100-41-4	Ethylbenzene	6 u
100-42-5	Styrene	6 u
	Total Xylenes	6 u

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

If the result is a value greater than or equal to the detection limit, report the value

Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

M Matrix spike compound

N Instrument limit of detection was used because it was higher than the CRDL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

Laboratory Name Clayton Environmental

Case No -888

Sample Number BI-987RE

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Organics Analysis Data Sheet
(Page 2)

8888 · 2-028-05

Semivolatile Compounds

Concentration Low Medium 13 (Circle One)

Date Extracted/Prepared 3-~~14~~-87

Date Analyzed 3/21/87 (A7584)

Conc. Dil Factor 0.5 (FOR GPC CLEANUP)

Percent Moisture (Decanted) 19.25

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

use initial analysis

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	830 u
1-44-4	bis(-2-Chloroethyl)Ether	830 u
-57-8	2-Chlorophenol	830 u
541-73-1	1 3-Dichlorobenzene	830 u
06-46-7	1 4-Dichlorobenzene	830 u
0-51-6	Benzyl Alcohol	830 u
-50-1	1 2-Dichlorobenzene	830 u
-48-7	2-Methylphenol	830 u
638-32-9	bis(2-chloroisopropyl)Ether	830 u
6-44-5	4-Methylphenol	830 u
21-64-7	N-Nitroso-Di-n-Propylamine	830 u
72-1	Hexachloroethane	830 u
95-3	Nitrobenzene	830 u
78-59-1	Isophorone	830 u
75-5	2-Nitrophenol	830 u
-67-9	2, 4-Dimethylphenol	830 u
65-85-0	Benzoic Acid	4100 u
-91-1	bis(2-Chloroethoxy)Methane	830 u
-83-2	2 4-Dichlorophenol	830 u
120-82-1	1 2, 4-Trichlorobenzene	830 u
20-3	Naphthalene	830 u
-47-8	4-Chloroaniline	830 u
7-68-3	Hexachlorobutadiene	830 u
50-7	4-Chloro-3-Methylphenol	830 u
7-6	2-Methylnaphthalene	830 u
7-47-4	Hexachlorocyclopentadiene	830 u
06-2	2, 4 6-Trichlorophenol	830 u
5-4	2 4 5-Trichlorophenol	4100 u
8-7	2-Chloronaphthalene	830 u
-74-4	2-Nitroaniline	4100 u
11-3	Dimethyl Phthalate	830 u
96-8	Acenaphthylene	830 u
-09-2	3-Nitroaniline	4100 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	830 u
51-28-5	2, 4-Dinitrophenol	4100 u
100-02-7	4-Nitrophenol	4100 u
132-64-9	Dibenzofuran	830 u
121-14-2	2 4-Dinitrotoluene	830 u
606-20-2	2, 6-Dinitrotoluene	830 u
84-66-2	Diethylphthalate	830 u
7005-72-3	4-Chlorophenyl-phenylether	830 u
86-73-7	Fluorene	830 u
100-01-6	4-Nitroaniline	4100 u
534-52-1	4 6-Dinitro-2-Methylphenol	4100 u
86-30-6	N-Nitrosodiphenylamine (1)	830 u
101-55-3	4-Bromophenyl-phenylether	830 u
118-74-1	Hexachlorobenzene	830 u
87-86-5	Pentachlorophenol	4100 u
85-01-8	Phenanthrene	830 u
120-12-7	Anthracene	830 u
84-74-2	Di-n-Butylphthalate	830 u
206-44-0	Fluoranthene	830 u
129-00-0	Pyrene	830 u
85-68-7	Butylbenzylphthalate	830 u
91-94-1	3, 3 -Dichlorobenzidine	2300 N
56-55-3	Benzo(a)Anthracene	830 u
117-81-7	bis(2-Ethylhexyl)Phthalate	830 u
218-01-9	Chrysene	830 u
117-84-0	Di-n-Octyl Phthalate	830 u
205-99-2	Benzo(b)Fluoranthene	910 N
207-08-9	Benzo(k)Fluoranthene	830 u
50-32-8	Benzo(a)Pyrene	830 u
193-39-5	Indeno(1 2, 3-cd)Pyrene	1100 N
53-70-3	Dibenz(a h)Anthracene	1300 N
191-24-2	Benzo(g, h i)Perylene	1400 N

(1)-Cannot be separated from diphenylamine

1u

Name Clayton
-333

Sample Number
BI-987

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6888 · 2-028A-04

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

ion Low Medium (Circle One)
ected Prepared 2/28/87
zed 3/7/87 (A7403)
Factor 0.5 (GPC CLEANUP)
Moisture (Decanted) 19.25 %

GPC Cleanup ☒Yes ☐No
Separatory Funnel Extraction ☐Yes
Continuous Liquid - Liquid Extraction ☐Yes

		ug/l or ug/Kg (Circle One)
	Phenol	830 u
	bis-2-Chloroethyl Ether	830 u
	2-Chlorophenol	830 u
	1 3-Dichlorobenzene	830 u
	1 4-Dichlorobenzene	830 u
	Benzyl Alcohol	830 u
	1 2-Dichlorobenzene	830 u
	2-Methylphenol	830 u
	bis(2-chloroisopropyl)Ether	830 u
	4-Methylpheno	830 u
	N-Nitroso-Di-n-Propylamine	830 u
	Hexachloroethane	830 u
	Nitrobenzene	830 u
	Isophorone	830 u
	2-Nitrophenol	830 u
	2. 4-Dimethylphenol	830 u
	Benzoic Acid	4100 u
	bis(-2-Chloroethoxy)Methane	830 u
	2 4-Dichlorophenol	830 u
	1. 2. 4-Trichlorobenzene	830 u
	Naphthalene	830 u
	4-Chloroaniline	830 u
	Hexachlorobutadiene	830 u
	4-Chloro-3-Methylphenol	830 u
	2-Methylnaphthalene	830 u
	Hexachlorocyclopentadiene	830 u
	2. 4 6-Trichlorophenol	830 u
	2. 4. 5-Trichlorophenol	4100 u
	2-Chloronaphthalene	830 u
	2-Nitroaniline	4100 u
	Dimethyl Phthalate	830 u
	Acenaphthylene	830 u
	3-Nitroaniline	4100 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	830 u
51-28-5	2. 4-Dinitrophenol	4100 u
100-02-7	4-Nitrophenol	4100 u
132-64-9	Dibenzofuran	830 u
121-14-2	2. 4-Dinitrotoluene	830 u
606-20-2	2. 6-Dinitrotoluene	830 u
84-66-2	Diethylphthalate	830 u
7005-72-3	4-Chlorophenyl-phenylether	830 u
86-73-7	Fluorene	830 u
100-01-6	4-Nitroaniline	4100 u
534-52-1	4. 6-Dinitro-2-Methylphenol	4100 u
86-30-6	N-Nitrosodiphenylamine (1)	830 u
101-55-3	4-Bromophenyl-phenylether	830 u
118-74-1	Hexachlorobenzene	830 u
87-86-5	Pentachlorophenol	4100 u
85-01-8	Phenanthrene	830 u
120-12-7	Anthracene	830 u
84-74-2	Di-n-Butylphthalate	830 u
206-44-0	Fluoranthene	830 u
129-00-0	Pyrene	830 u
85-68-7	Butylbenzylphthalate	830 u
91-94-1	3. 3 -Dichlorobenzidine	1700 u
56-55-3	Benzo(a)Anthracene	830 u
117-81-7	bis(2-Ethylhexyl)Phthalate	830 u
218-01-9	Chrysene	830 u
117-84-0	Di-n-Octyl Phthalate	830 u
205-99-2	Benzo(b)Fluoranthene	830 u
207-08-9	Benzo(k)Fluoranthene	830 u
50-32-8	Benzo(a)Pyrene	830 u
193-39-5	Indeno(1 2. 3-cd)Pyrene	830 u
53-70-3	Dibenz(a h)Anthracene	830 u
191-24-2	Benzo(g. h. i)Perylene	830 u

(1)-Cannot be separated from diphenylamine

...ory Name [illegible]

...No 888

Sample Number
BI-987-RE

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Organics Analysis Data Sheet
(Page 3)

8888 · 2-028-06

Pesticide/PCBs

...entration (Low) Medium (Circle One) MC, 3/26/87

...Extracted Prepared 13 14 March 1987

Analyzed 14 March 1987

...Factor 0.5 (GPC Effect) x 0.02

...ent Moisture (decanted) 19.25

GPC Cleanup ☑Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	990 u
319-85-7	Beta-BHC	990 u
319-86-8	Delta-BHC	990 u
58-89-9	Gamma-BHC (Lindane)	990 u
76-44-8	Heptachlor	990 u
309-00-2	Aldrin	990 u
1024-57-3	Heptachlor Epoxide	990 u
959-98-8	Endosulfan I	990 u
60-57-1	Dieldrin	2000 u
72-55-9	4, 4'-DDE	2000 u
72-20-8	Endrin	2000 u
33213-65-9	Endosulfan II	2000 u
72-54-8	4, 4'-DDD	2000 u
1031-07-8	Endosulfan Sulfate	2000 u
50-29-3	4, 4'-DDT	2000 u
72-43-5	Methoxychlor	9900 u
53494-70-5	Endrin Ketone	2000 u
57-74-9	Chlordane	9900 u
8001-35-2	Toxaphene	20000 u
12674-11-2	Aroclor-1016	9900 u
11104-28-2	Aroclor-1221	9900 u
11141-16-5	Aroclor-1232	9900 u
53469-21-9	Aroclor-1242	9900 u
12672-29-6	Aroclor-1248	14000 J
11097-69-1	Aroclor-1254	20000 u
11096-82-5	Aroclor-1260	20000 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s — or W_s 30 g V_t 20000 ul V_i 1.0 ul

20000 ul - due to GPC and 1/20 ...

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C.O. 3-16-87
R.H 3-26-87

Form 1

7/85

8888 • 2-229-02

Laboratory Name Hauton Environmental

Case No -555

Sample Number
BI-987
BI-987RE

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)	
	—	BACCHARIDIN (2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE)	VOA	2.29	8	J
1	4175	ETHANOL	VOA	4.77	8	J
2	80565	ALPHA-PINENE	VOA	25.88	30	J
3	127913	2-BETA-PINENE	VOA	26.00	[illegible]	J
4	—	UNKNOWN COMPOUND	BNA	5.22	500	JB
5	—	UNKNOWN COMPOUND	BNA	5.67	700	J
6	123422	4-HYDROXY-4-METHYL-2-PENTANONE *	BNA	5.80	10000	JB
7	110430	2-HEPTANONE	BNA	6.20	7000	JB
8	2216344	4-METHYL OCTANE	BNA	6.34	3000	JB
9	2216333	3-METHYL OCTANE	BNA	6.51	4000	JB
10	—	UNKNOWN COMPOUND	BNA	7.88	300	J
12	23758272	1-METHYL-2-CYCLOHEXEN-1-OL	BNA	8.33	500	J
13	—	UNKNOWN COMPOUND	BNA	~~9.32~~ 8.44	500	J
14	—	UNKNOWN COMPOUND	BNA	~~10.57~~ 9.32	700	J
15	—	UNKNOWN COMPOUND	BNA	10.52	2000	J
16	25323686	TRICHLORO-1,1'-BIPHENYL ISOMER	BNA	24.57	500	J
17	26914330	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	26.33	500	J
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

* possible aldol condensation product

5-26-87

Sample Number
BI-988

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Organics Analysis Data Sheet
(Page 1)

6888 • 2-028-07

Laboratory Name: Clayton Environmental
Sample ID No: 186779 (528415)
Sample Matrix: Soil
Release Authorized By: [signature]

Case No: 6888
QC Report No: NA
Contract No: 68-01-7100
Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/3/87
Date Analyzed: 3/3/87
Cond/Dil Factor: 1 pH 7.1
Percent Moisture: (Not Decanted) 25.58 %

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	13	u
74-83-9	Bromomethane	13	u
75-01-4	Vinyl Chloride	13	u
75-00-3	Chloroethane	13	u
75-09-2	Methylene Chloride	13	
67-64-1	Acetone	[illegible]	u
75-15-0	Carbon Disulfide	8	N
75-35-4	1, 1-Dichloroethene	7	u
75-34-3	1, 1-Dichloroethane	7	u
156-60-5	Trans-1, 2-Dichloroethene	7	u
67-66-3	Chloroform	7	u
107-06-2	1, 2-Dichloroethane	7	u
78-93-3	2-Butanone	13	u
71-55-6	1, 1, 1-Trichloroethane	7	u
56-23-5	Carbon Tetrachloride	7	u
108-05-4	Vinyl Acetate	13	u
75-27-4	Bromodichloromethane	7	u

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	9	N
10061-02-6	Trans-1, 3-Dichloropropene	7	u
79-01-6	Trichloroethene	7	u
124-48-1	Dibromochloromethane	7	u
79-00-5	1, 1, 2-Trichloroethane	7	u
71-43-2	Benzene	7	u
10061-01-5	cis-1, 3-Dichloropropene	7	u
110-75-8	2-Chloroethylvinylether	13	u
75-25-2	Bromoform	7	u
108-10-1	4-Methyl-2-Pentanone	13	u
591-78-6	2-Hexanone	13	u
127-18-4	Tetrachloroethene	7	u
79-34-5	1, 1, 2, 2-Tetrachloroethane	7	u
108-88-3	Toluene	7	u
108-90-7	Chlorobenzene	7	u
100-41-4	Ethylbenzene	7	u
100-42-5	Styrene	7	u
	Total Xylenes	7	u

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value — If the result is a value greater than or equal to the detection limit, report the value

U — Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C — This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B — This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other — Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

N — Matrix spike compound

N — Instrument limit of detection was used because it was higher than the CRDL

A — Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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Laboratory Name Clayton Environmental
Lab No. 6888

Sample Number
BI-988RE

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Organics Analysis Data Sheet
(Page 2)

6888 • 2-028-08

Semivolatile Compounds

Concentration (Low) Medium (Circle One)
Date Extracted/Prepared 3/4/87
Date Analyzed 3/10/87 (A7440)
Dilution Factor 0.5 (FOR GPC CLEANUP)
Percent Moisture (Decanted) 25.58 %

GPC Cleanup ☒ Yes ☐ No
Separatory Funnel Extraction ☐ Yes
Continuous Liquid - Liquid Extraction ☐ Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	900	U
111-44-4	bis(-2-Chloroethyl)Ether	900	U
95-57-8	2-Chlorophenol	900	U
541-73-1	1 3-Dichlorobenzene	900	U
106-46-7	1 4-Dichlorobenzene	900	U
100-51-6	Benzyl Alcohol	900	U
95-50-1	1 2-Dichlorobenzene	900	U
95-48-7	2-Methylphenol	900	U
108-60-1	bis(2-chloroisopropyl)Ether	900	U
106-44-5	4-Methylphenol	900	U
621-64-7	N-Nitroso-Di-n-Propylamine	900	U
67-72-1	Hexachloroethane	900	U
98-95-3	Nitrobenzene	900	U
78-59-1	Isophorone	900	U
88-75-5	2-Nitrophenol	900	U
105-67-9	2 4-Dimethylphenol	900	U
65-85-0	Benzoic Acid	670	J
111-91-1	bis(-2-Chloroethoxy)Methane	900	U
120-83-2	2 4-Dichlorophenol	900	U
120-82-1	1 2 4-Trichlorobenzene	900	U
91-20-3	Naphthalene	900	U
106-47-8	4-Chloroaniline	900	U
87-68-3	Hexachlorobutadiene	900	U
59-50-7	4-Chloro-3-Methylphenol	900	U
91-57-6	2-Methylnaphthalene	900	U
77-47-4	Hexachlorocyclopentadiene	900	U
88-06-2	2 4 6-Trichlorophenol	900	U
95-95-4	2 4 5-Trichlorophenol	4500	U
91-58-7	2-Chloronaphthalene	900	U
88-74-4	2-Nitroaniline	4500	U
131-11-3	Dimethyl Phthalate	900	U
208-96-8	Acenaphthylene	900	U
99-09-2	3-Nitroaniline	4500	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	900	U
51-28-5	2 4-Dinitrophenol	4500	U
100-02-7	4-Nitrophenol	4500	U
132-64-9	Dibenzofuran	900	U
121-14-2	2 4-Dinitrotoluene	900	U
606-20-2	2 6-Dinitrotoluene	900	U
84-66-2	Diethylphthalate	900	U
7005-72-3	4-Chlorophenyl-phenylether	900	U
86-73-7	Fluorene	900	U
100-01-6	4-Nitroaniline	4500	U
534-52-1	4 6-Dinitro-2-Methylphenol	4500	U
86-30-6	N-Nitrosodiphenylamine (1)	900	U
101-55-3	4-Bromophenyl-phenylether	900	U
118-74-1	Hexachlorobenzene	900	U
87-86-5	Pentachlorophenol	4500	U
85-01-8	Phenanthrene	900	U
120-12-7	Anthracene	900	U
84-74-2	Di-n-Butylphthalate	540	J
206-44-0	Fluoranthene	900	U
129-00-0	Pyrene	900	U
85-68-7	Butylbenzylphthalate	900	U
91-94-1	3 3 -Dichlorobenzidine	2500	N
56-55-3	Benzo(a)Anthracene	900	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1600	
218-01-9	Chrysene	900	U
117-84-0	Di-n-Octyl Phthalate	900	U
205-99-2	Benzo(b)Fluoranthene	990	N
207-08-9	Benzo(k)Fluoranthene	900	U
50-32-8	Benzo(a)Pyrene	900	U
193-39-5	Indeno(1 2 3-cd)Pyrene	1200	N
53-70-3	Dibenz(a h)Anthracene	1400	N
191-24-2	Benzo(g h i)Perylene	1500	N

(1)-Cannot be separated from diphenylamine

...ory Name [illegible]

...No 888

Sample Number
BI-088 - RE

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Organics Analysis Data Sheet
(Page 3)

8888 • 2-028-09

Pesticide/PCBs

...entration (Low) Medium (Circle One)

...Extracted/Prepared 4 March 1987

Analyzed 13 March 1987

...Factor: 0.5 (GPC Effect) x 0.004

...ent Moisture (decanted) 25.58

GPC Cleanup ☑Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or (ug/Kg) (Circle One)
319-84-6	Alpha-BHC	5400 u
319-85-7	Beta-BHC	5400 u
319-86-8	Delta-BHC	5400 u
58-89-9	Gamma-BHC (Lindane)	5400 u
76-44-8	Heptachlor	5400 u
309-00-2	Aldrin	5400 u
1024-57-3	Heptachlor Epoxide	5400 u
959-98-8	Endosulfan I	5400 u
60-57-1	Dieldrin	11000 u
72-55-9	4, 4'-DDE	11000 u
72-20-8	Endrin	11000 u
33213-65-9	Endosulfan II	11000 u
72-54-8	4, 4'-DDD	11000 u
1031-07-8	Endosulfan Sulfate	11000 u
50-29-3	4, 4'-DDT	11000 u
72-43-5	Methoxychlor	54000 u
53494-70-5	Endrin Ketone	11000 u
57-74-9	Chlordane	54000 u
8001-35-2	Toxaphene	110000 u
12674-11-2	Aroclor-1016	54000 u
11104-28-2	Aroclor-1221	54000 u
11141-16-5	Aroclor-1232	54000 u
53469-21-9	Aroclor-1242	54000 u
12672-29-6	Aroclor-1248	170000
11097-69-1	Aroclor-1254	110000 u
11096-82-5	Aroclor-1260	110000 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s — or W_s 30g V_t 20000 ul V_i 1.0 ul

10000000 ul - due to GPC and 1/200 dil.

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T.O. 3-16-87
R.H 3-20-87

Form 1

7/85

Name Clayton Environmental
0588

8888 • 2-029-03

Sample Number
BI-988
BI-988RE

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
39	3-CARENE	VOA	31 54	8 J
22	4-HYDROXY-4-METHYL-2-PENTANONE	BNA	5.49	10000 J B
0	2-HEPTANONE	BNA	5.85	4000 J B
544	4-METHYLOCTANE	BNA	5.98	3000 J B
33	3-METHYL OCTANE	BNA	6.15	4000 J B
586	TRICHLORO-1,1'-BIPHENYL ISOMER	BNA	24.06	8000 J
3686	TRICHLORO-1,1'-BIPHENYL ISOMER	BNA	24.51	3000 J
30	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	24.95	5000 J
30	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	25.07	4000 J
330	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	25.50	4000 J
330	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	25.58	3000 J
330	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	25.81	5000 J
336	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	26.38	3000 J
30	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	26.48	4000 J
336	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	26.58	6000 J
330	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	27.01	20000 J
92	PENTACHLORO-1,1'-BIPHENYL ISOMER	BNA	27.16	10000 J
292	PENTACHLORO-1,1'-BIPHENYL ISOMER	BNA	27.29	3000 J
2	PENTACHLORO-1,1'-BIPHENYL ISOMER	BNA	27.70	3000 J
92	PENTACHLORO-1,1'-BIPHENYL ISOMER	BNA	27.83	4000 J
292	PENTACHLORO-1,1'-BIPHENYL ISOMER	BNA	28.06	8000 J
92	PENTACHLORO-1,1'-BIPHENYL ISOMER	BNA	28.69	7000 J
92	PENTACHLORO-1,1'-BIPHENYL ISOMER	BNA	29.34	3000 J
49	HEXACHLORO-1,1'-BIPHENYL ISOMER	BNA	29.90	2000 J

sible aldol condensation product

Sample Number
BI-984

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Organics Analysis Data Sheet
(Page 1)

6888 • 2-028-10

Laboratory Name: Clayton Environmental
Lab Sample ID No: 106761 (528416)
Sample Matrix: Soil
Data Release Authorized By: [signature]

Case No: 6888
QC Report No: NA
Contract No: 68-01-7100
Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/2/87
Date Analyzed: 3/2/87
Conc/Dil Factor: 1 pH 7.0
Percent Moisture: (Not Decanted) 35.74 %

CAS Number		ug/l or ug/Kg (Circle One)
74-87-3	Chloromethane	16 u
74-83-9	Bromomethane	16 u
75-01-4	Vinyl Chloride	16 u
75-00-3	Chloroethane	16 u
75-09-2	Methylene Chloride	8 B
67-64-1	Acetone	13 B
75-15-0	Carbon Disulfide	5 N
75-35-4	1, 1-Dichloroethene	8 u
75-34-3	1, 1-Dichloroethane	8 u
156-60-5	Trans-1, 2-Dichloroethene	8 u
67-66-3	Chloroform	8 u
107-06-2	1, 2-Dichloroethane	8 u
78-93-3	2-Butanone	16 u
71-55-6	1, 1, 1-Trichloroethane	8 u
56-23-5	Carbon Tetrachloride	8 u
108-05-4	Vinyl Acetate	16 u
75-27-4	Bromodichloromethane	8 u

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	11 N
10061-02-6	Trans-1, 3-Dichloropropene	8 u
79-01-6	Trichloroethene	8 u
124-48-1	Dibromochloromethane	8 u
79-00-5	1, 1, 2-Trichloroethane	8 u
71-43-2	Benzene	8 u
10061-01-5	cis-1, 3-Dichloropropene	8 u
110-75-8	2-Chloroethylvinylether	16 u
75-25-2	Bromoform	8 u
108-10-1	4-Methyl-2-Pentanone	16 u
591-78-6	2-Hexanone	16 u
127-18-4	Tetrachloroethene	8 u
79-34-5	1, 1, 2, 2-Tetrachloroethane	8 u
108-88-3	Toluene	8 u
108-90-7	Chlorobenzene	8 u
100-41-4	Ethylbenzene	8 u
100-42-5	Styrene	8 u
	Total Xylenes	8 u

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

	If the result is a value greater than or equal to the detection limit, report the value
U	Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.
C	This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS
B	This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action
Other	Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report
N	Matrix spike compound
M	Instrument limit of detection was used because it was higher than the CRDL
A	Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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Name Clayton Environmental
.358

Sample Number
BI-989RE

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Organics Analysis Data Sheet
(Page 2)

8888 • 2-028-11

Semivolatile Compounds

tion (Low) Medium (Circle One)

ed Prepared 3-13-87

zed 3/21/87 (A7585)

ctor 0.5 (FOR GPC CLEANUP)

isture (Decanted) 35.79 %

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

use data from initial analysis

	ug/l or ug/Kg (Circle One)
Phenol	1000 u
bis(-2-Chloroethyl)Ether	1000 u
2-Chlorophenol	1000 u
1 3-Dichlorobenzene	1000 u
1 4-Dichlorobenzene	1000 u
Benzyl Alcohol	1000 u
1 2-Dichlorobenzene	1000 u
2-Methylphenol	1000 u
3 bis(2-chloroisopropyl)Ether	1000 u
4-Methylphenol	1000 u
N-Nitroso-Di-n-Propylamine	1000 u
Hexachloroethane	1000 u
Nitrobenzene	1000 u
Isophorone	1000 u
2-Nitrophenol	1000 u
2, 4-Dimethylphenol	1000 u
Benzoic Acid	5200 u
bis(-2-Chloroethoxy)Methane	1000 u
2 4-Dichlorophenol	1000 u
1 2, 4-Trichlorobenzene	1000 u
Naphthalene	1000 u
4-Chloroaniline	1000 u
Hexachlorobutadiene	1000 u
4-Chloro-3-Methylphenol	1000 u
2-Methylnaphthalene	1000 u
Hexachlorocyclopentadiene	1000 u
2, 4 6-Trichlorophenol	1000 u
2 4 5-Trichlorophenol	5200 u
2-Chloronaphthalene	1000 u
2-Nitroaniline	5200 u
Dimethyl Phthalate	1000 u
Acenaphthylene	1000 u
3-Nitroaniline	5200 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1000 u
51-28-5	2, 4-Dinitrophenol	5200 u
100-02-7	4-Nitrophenol	5200 u
132-64-9	Dibenzofuran	1000 u
121-14-2	2 4-Dinitrotoluene	1000 u
606-20-2	2, 6-Dinitrotoluene	1000 u
84-66-2	Diethylphthalate	1000 u
7005-72-3	4-Chlorophenyl-phenylether	1000 u
86-73-7	Fluorene	1000 u
100-01-6	4-Nitroaniline	5200 u
534-52-1	4 6-Dinitro-2-Methylphenol	5200 u
86-30-6	N-Nitrosodiphenylamine (1)	1000 u
101-55-3	4-Bromophenyl-phenylether	1000 u
118-74-1	Hexachlorobenzene	1000 u
87-86-5	Pentachlorophenol	5200 u
85-01-8	Phenanthrene	1000 u
120-12-7	Anthracene	~~1000 u~~
84-74-2	Di-n-Butylphthalate	840 J
206-44-0	Fluoranthene	~~1000 u~~
129-00-0	Pyrene	1000 u
85-68-7	Butylbenzylphthalate	1000 u
91-94-1	3, 3 -Dichlorobenzidine	2900 N
56-55-3	Benzo(a)Anthracene	1000 u
117-81-7	bis(2-Ethylhexyl)Phthalate	1000 u
218-01-9	Chrysene	1000 u
117-84-0	Di-n-Octyl Phthalate	1000 u
205-99-2	Benzo(b)Fluoranthene	1100 N
207-08-9	Benzo(k)Fluoranthene	1000 u
50-32-8	Benzo(a)Pyrene	1000 u
193-39-5	Indeno(1 2, 3-cd)Pyrene	1300 N
53-70-3	Dibenzo(a,h)Anthracene	1700 N
191-24-2	Benzo(g, h, i)Perylene	1800 N

(1)-Cannot be separated from diphenylamine

Form I 244

7 85

1/4

6 8 8 8 ' 2-028 A-06

Name Clayton

No 6888

Sample Number BI-989

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Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration Low Medium (Circle One)

Extracted/Prepared 2/28/87

Analyzed 3/10/87

Dil Factor 0.5 (FOR GPC CLEANUP)

Percent Moisture (Decanted) 35.79 %

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
95-2	Phenol	1000 u
11-44-4	bis(-2-Chloroethyl)Ether	1000 u
57-8	2-Chlorophenol	1000 u
73-1	1, 3-Dichlorobenzene	1000 u
46-7	1, 4-Dichlorobenzene	1000 u
51-6	Benzyl Alcohol	1000 u
0-1	1, 2-Dichlorobenzene	1000 u
8-7	2-Methylphenol	1000 u
38-32-9	bis(2-chloroisopropyl)Ether	1000 u
44-5	4-Methylphenol	1000 u
64-7	N-Nitroso-Di-n-Propylamine	1000 u
72-1	Hexachloroethane	1000 u
5-3	Nitrobenzene	1000 u
9-1	Isophorone	1000 u
75-5	2-Nitrophenol	1000 u
67-9	2, 4-Dimethylphenol	1000 u
5-0	Benzoic Acid	1200 J
91-1	bis(-2-Chloroethoxy)Methane	1000 u
83-2	2, 4-Dichlorophenol	1000 u
82-1	1, 2, 4-Trichlorobenzene	1000 u
0-3	Naphthalene	1000 u
47-8	4-Chloroaniline	1000 u
8-3	Hexachlorobutadiene	1000 u
0-7	4-Chloro-3-Methylphenol	1000 u
67-6	2-Methylnaphthalene	1000 u
47-4	Hexachlorocyclopentadiene	1000 u
6-2	2, 4, 6-Trichlorophenol	1000 u
5-4	2, 4, 5-Trichlorophenol	5200 u
58-7	2-Chloronaphthalene	1000 u
4-4	2-Nitroaniline	5200 u
11-3	Dimethyl Phthalate	1000 u
96-8	Acenaphthylene	1000 u
0-2	3-Nitroaniline	5200 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1000 u
51-28-5	2, 4-Dinitrophenol	5200 u
100-02-7	4-Nitrophenol	5200 u
132-64-9	Dibenzofuran	1000 u
121-14-2	2, 4-Dinitrotoluene	1000 u
606-20-2	2, 6-Dinitrotoluene	1000 u
84-66-2	Diethylphthalate	1000 u
7005-72-3	4-Chlorophenyl-phenylether	1000 u
86-73-7	Fluorene	1000 u
100-01-6	4-Nitroaniline	5200 u
534-52-1	4, 6-Dinitro-2-Methylphenol	5200 u
86-30-6	N-Nitrosodiphenylamine (1)	1000 u
101-55-3	4-Bromophenyl-phenylether	1000 u
118-74-1	Hexachlorobenzene	1000 u
87-86-5	Pentachlorophenol	5200 u
85-01-8	Phenanthrene	1000 u
120-12-7	Anthracene	1000 u
84-74-2	Di-n-Butylphthalate	1000 u
206-44-0	Fluoranthene	1000 u
129-00-0	Pyrene	1000 u
85-68-7	Butylbenzylphthalate	1000 u
91-94-1	3, 3'-Dichlorobenzidine	2100 u
56-55-3	Benzo(a)Anthracene	1000 u
117-81-7	bis(2-Ethylhexyl)Phthalate	1000 u
218-01-9	Chrysene	1000 u
117-84-0	Di-n-Octyl Phthalate	1000 u
205-99-2	Benzo(b)Fluoranthene	1000 u
207-08-9	Benzo(k)Fluoranthene	1000 u
50-32-8	Benzo(a)Pyrene	1000 u
193-39-5	Indeno(1, 2, 3-cd)Pyrene	1000 u
53-70-3	Dibenz(a, h)Anthracene	1000 u
191-24-2	Benzo(g, h, i)Perylene	1000 u

(1)-Cannot be separated from diphenylamine

...ratory Name Clayton Environmental

...e No 3888

Sample Number
BI-989-RE

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Organics Analysis Data Sheet
(Page 3)

8888 • 2-028-12

Pesticide/PCBs

...centration Low Medium 3/26/87 (Circle One)

Extracted/Prepared 13 March 1987

...e Analyzed 14 March 1987

Dil Factor 0.5 (GPC Effect) x 0.05

...ent Moisture (decanted) 35.79

GPC Cleanup ☑Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	500 u
319-85-7	Beta-BHC	500 u
319-86-8	Delta-BHC	500 u
58-89-9	Gamma-BHC (Lindane)	500 u
76-44-8	Heptachlor	500 u
309-00-2	Aldrin	500 u
1024-57-3	Heptachlor Epoxide	500 u
959-98-8	Endosulfan I	500 u
60-57-1	Dieldrin	1000 u
72-55-9	4, 4'-DDE	1000 u
72-20-8	Endrin	1000 u
33213-65-9	Endosulfan II	1000 u
72-54-8	4, 4'-DDD	1000 u
1031-07-8	Endosulfan Sulfate	1000 u
50-29-3	4, 4'-DDT	1000 u
72-43-5	Methoxychlor	5000 u
53494-70-5	Endrin Ketone	1000 u
57-74-9	Chlordane	5000 u
8001-35-2	Toxaphene	10000 u
12674-11-2	Aroclor-1016	5000 u
11104-28-2	Aroclor-1221	5000 u
11141-16-5	Aroclor-1232	5000 u
53469-21-9	Aroclor-1242	5000 u
12672-29-6	Aroclor-1248	13000 J
11097-69-1	Aroclor-1254	10000 u
11096-82-5	Aroclor-1260	10000 u

7200 J

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s — or W_s 30 g V_t 20000 ml V_i 10 ml

800000 ml - due to GPC and 1/100 DIL

T.O. 3-16-87
R.H 3-20-87

Form 1

7/85

6888 • 2-029-04

Name Clayton Environmental

No 6888

Sample Number
BI-189
BI-987RE

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
—	BACKGROUND COL + ARGON (SYSTEM ARTIFACT)	VOA	2.17	9 J
38563	L-MONONE	VOA	25.76	50 J
—	UNKNOWN COMPOUND	BNA	5.21	600 JB
23422	4-HYDROXY-4-METHYL-2-PENTANONE *	BNA	5.79	10000 JB
0430	2-HEPTANONE	BNA	6.17	5000 JB
216344	4-METHYL OCTANE	BNA	6.34	2000 JB
2.6333	3-METHYL OCTANE	BNA	6.50	4000 JB
—	UNKNOWN COMPOUND	BNA	8.32	500 J
—	UNKNOWN COMPOUND	BNA	9.31	2000 J
96479	TETRAHYDRO-2-METHYL FURAN	BNA	10.52	2000 J
71645	2H-1-BENZOPYRAN-2-ONE	BNA	18.03	500 J
5323686	TRICHLORO-1,1'-BIPHENYL ISOMER	BNA	24.58	800 J
6914330	TETRACHLORO-1,1'-BIPHENYL ISOMER	BNA	25.49	700 J
—	UNKNOWN COMPOUND	BNA	32.24	1000 J
—	UNKNOWN COMPOUND	BNA	34.95	2000 J
39945	~~UNKNOWN COMPOUND~~ 87 3/25/87 NONADECANE	BNA	35.48	2000 J
—	UNKNOWN SILOXANE	BNA	40.95	3000 J

* possible aldol condensation product

AM 3-25-87

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Sample Number
BI-990

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6888 • 2-028-13

Organics Analysis Data Sheet
(Page 1)

ratory Name: Clayton Environmental

mple ID No: 56762 (528417)

ple Matrix: Soil

Release Authorized By: [signature]

Case No: 6888

QC Report No: NA

Contract No: 68-01-7100

Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 3/2/87

Date Analyzed: 3/2/87

Conc/Dil Factor: 1 pH 5.9

Percent Moisture: (Not Decanted) 43.63

CAS Number		ug/l or ug/Kg (Circle One)
	Chloromethane	18 u
	Bromomethane	18 u
	Vinyl Chloride	18 u
	Chloroethane	18 u
	Methylene Chloride	B
	Acetone	B
	Carbon Disulfide	11 N
	1, 1-Dichloroethene	9 u
	1, 1-Dichloroethane	9 u
	Trans-1, 2-Dichloroethene	9 u
	Chloroform	9 u
	1, 2-Dichloroethane	9 u
	2-Butanone	18 u
	1, 1, 1-Trichloroethane	2 J
	Carbon Tetrachloride	9 u
	Vinyl Acetate	18 u
	Bromodichloromethane	9 u

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	12 N
10061-02-6	Trans-1, 3-Dichloropropene	9 u
79-01-6	Trichloroethene	9 u
124-48-1	Dibromochloromethane	9 u
79-00-5	1, 1, 2-Trichloroethane	9 u
71-43-2	Benzene	9 u
10061-01-5	cis-1, 3-Dichloropropene	9 u
110-75-8	2-Chloroethylvinylether	18 u
75-25-2	Bromoform	9 u
108-10-1	4-Methyl-2-Pentanone	18 u
591-78-6	2-Hexanone	18 u
127-18-4	Tetrachloroethene	9 u
79-34-5	1, 1, 2, 2-Tetrachloroethane	9 u
108-88-3	Toluene	9 u
108-90-7	Chlorobenzene	9 u
100-41-4	Ethylbenzene	9 u
100-42-5	Styrene	9 u
	Total Xylenes	9 u

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

he result is a value greater than or equal to the detection limit. port the value

ndicates compound was analyzed for but not detected. Report the nimum detection limit for the sample with the U (e.g., 10U) based necessary concentration/dilution action. (This is not necessarily instrument detection limit.) The footnote should read: U- Compound was analyzed for but not detected. The number is the nimum attainable detection limit for the sample

icates an estimated value. This flag is used either when imating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data ndicated the presence of a compound that meets the identification ria but the result is less than the specified detection limit but ater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC-MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

N Matrix spike compound

H Instrument limit of detection was used because it was higher than the CRDL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

Name Clayton Environmental
.888

Sample Number
BI-990RE

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8888 • 2-028-14

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Low Medium (Circle One)

Date Prepared 3-13-87

Date Analyzed 3/21/87 (A7586)

Dilution Factor 0.5 (FOR GPC CLEANUP)

% Moisture (Decanted) 43.63

GPC Cleanup ☒ Yes ☐ No

Separatory Funnel Extraction ☐ Yes

Continuous Liquid - Liquid Extraction ☐ Yes

Made from initial analysis

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	1200	U
[illegible]	bis-2-Chloroethyl Ether	1200	U
[illegible]	2-Chlorophenol	1200	U
[illegible]	1,3-Dichlorobenzene	1200	U
[illegible]	1,4-Dichlorobenzene	1200	U
[illegible]	Benzyl Alcohol	1200	U
[illegible]	1,2-Dichlorobenzene	1200	U
[illegible]	2-Methylphenol	1200	U
[illegible]	bis(2-chloroisopropyl)Ether	1200	U
[illegible]	4-Methylphenol	1200	U
[illegible]	N-Nitroso-Di-n-Propylamine	1200	U
[illegible]	Hexachloroethane	1200	U
[illegible]	Nitrobenzene	1200	U
[illegible]	Isophorone	1200	U
[illegible]	2-Nitrophenol	1200	U
[illegible]	2,4-Dimethylphenol	1200	U
[illegible]	Benzoic Acid	5900	U
[illegible]	bis-2-Chloroethoxy Methane	1200	U
[illegible]	2,4-Dichlorophenol	1200	U
[illegible]	1,2,4-Trichlorobenzene	1200	U
[illegible]	Naphthalene	1200	U
[illegible]	4-Chloroaniline	1200	U
[illegible]	Hexachlorobutadiene	1200	U
[illegible]	4-Chloro-3-Methylphenol	1200	U
[illegible]	2-Methylnaphthalene	1200	U
[illegible]	Hexachlorocyclopentadiene	1200	U
[illegible]	2,4,6-Trichlorophenol	1200	U
[illegible]	2,4,5-Trichlorophenol	5900	U
[illegible]	2-Chloronaphthalene	1200	U
[illegible]	2-Nitroaniline	5900	U
[illegible]	Dimethyl Phthalate	1200	U
[illegible]	Acenaphthylene	1200	U
[illegible]	3-Nitroaniline	5900	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	1200	U
51-28-5	2,4-Dinitrophenol	5900	U
100-02-7	4-Nitrophenol	5900	U
132-64-9	Dibenzofuran	1200	U
121-14-2	2,4-Dinitrotoluene	1200	U
606-20-2	2,6-Dinitrotoluene	1200	U
84-66-2	Diethylphthalate	1200	U
7005-72-3	4-Chlorophenyl-phenylether	1200	U
86-73-7	Fluorene	1200	U
100-01-6	4-Nitroaniline	5900	U
534-52-1	4,6-Dinitro-2-Methylphenol	5900	U
86-30-6	N-Nitrosodiphenylamine (1)	1200	U
101-55-3	4-Bromophenyl-phenylether	1200	U
118-74-1	Hexachlorobenzene	1200	U
87-86-5	Pentachlorophenol	5900	U
85-01-8	Phenanthrene	1200	U
120-12-7	Anthracene	1200	U
84-74-2	Di-n-Butylphthalate	1200	U
206-44-0	Fluoranthene	1200	U
129-00-0	Pyrene	1200	U
85-68-7	Butylbenzylphthalate	1200	U
91-94-1	3,3'-Dichlorobenzidine	3300	N
56-55-3	Benzo(a)Anthracene	1200	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1200	U
218-01-9	Chrysene	1200	U
117-84-0	Di-n-Octyl Phthalate	1200	U
205-99-2	Benzo(b)Fluoranthene	1200	U
207-08-9	Benzo(k)Fluoranthene	1200	U
50-32-8	Benzo(a)Pyrene	1200	U
193-39-5	Indeno(1,2,3-cd)Pyrene	1200	N
53-70-3	Dibenzo(a,h)Anthracene	1200	N
191-24-2	Benzo(g,h,i)Perylene	1200	N

(1)-Cannot be separated from diphenylamine

6888 • 2-028A-02

Sample Number
BI-990

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Laboratory Name Clayton

Case No 6888

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration Low Medium (Circle One)

Date Extracted/Prepared 2/28/87

Date Analyzed 3/10/87 (A7443)

Dil Factor 0.5 (FOR GPC CLEANUP)

Percent Moisture (Decanted) 43.63 %

GPC Cleanup ☒ Yes ☐ No

Separatory Funnel Extraction ☐ Yes

Continuous Liquid - Liquid Extraction ☐ Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	1200	U
111-44-4	bis(-2-Chloroethyl)Ether	1200	U
95-57-8	2-Chlorophenol	1200	U
541-73-1	1,3-Dichlorobenzene	1200	U
106-46-7	1,4-Dichlorobenzene	1200	U
100-51-6	Benzyl Alcohol	1200	U
95-50-1	1,2-Dichlorobenzene	1200	U
95-48-7	2-Methylphenol	1200	U
39638-32-9	bis(2-chloroisopropyl)Ether	1200	U
106-44-5	4-Methylphenol	1200	U
621-64-7	N-Nitroso-Di-n-Propylamine	1200	U
67-72-1	Hexachloroethane	1200	U
98-95-3	Nitrobenzene	1200	U
78-59-1	Isophorone	1200	U
88-75-5	2-Nitrophenol	1200	U
105-67-9	2,4-Dimethylphenol	1200	U
65-85-0	Benzoic Acid	5900	U
111-91-1	bis(-2-Chloroethoxy)Methane	1200	U
120-83-2	2,4-Dichlorophenol	1200	U
120-82-1	1,2,4-Trichlorobenzene	1200	U
91-20-3	Naphthalene	1200	U
106-47-8	4-Chloroaniline	1200	U
87-68-3	Hexachlorobutadiene	1200	U
59-50-7	4-Chloro-3-Methylphenol	1200	U
91-57-6	2-Methylnaphthalene	1200	U
77-47-4	Hexachlorocyclopentadiene	1200	U
88-06-2	2,4,6-Trichlorophenol	1200	U
95-95-4	2,4,5-Trichlorophenol	5900	U
91-58-7	2-Chloronaphthalene	1200	U
88-74-4	2-Nitroaniline	5900	U
131-11-3	Dimethyl Phthalate	1200	U
208-96-8	Acenaphthylene	1200	U
99-09-2	3-Nitroaniline	5900	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	1200	U
51-28-5	2,4-Dinitrophenol	5900	U
100-02-7	4-Nitrophenol	5900	U
132-64-9	Dibenzofuran	1200	U
121-14-2	2,4-Dinitrotoluene	1200	U
606-20-2	2,6-Dinitrotoluene	1200	U
84-66-2	Diethylphthalate	1200	U
7005-72-3	4-Chlorophenyl-phenylether	1200	U
86-73-7	Fluorene	1200	U
100-01-6	4-Nitroaniline	5900	U
534-52-1	4,6-Dinitro-2-Methylphenol	5900	U
86-30-6	N-Nitrosodiphenylamine (1)	1200	U
101-55-3	4-Bromophenyl-phenylether	1200	U
118-74-1	Hexachlorobenzene	1200	U
87-86-5	Pentachlorophenol	5900	U
85-01-8	Phenanthrene	1200	U
120-12-7	Anthracene	1200	U
84-74-2	Di-n-Butylphthalate	1200	U
206-44-0	Fluoranthene	1200	U
129-00-0	Pyrene	1200	U
85-68-7	Butylbenzylphthalate	1200	U
91-94-1	3,3'-Dichlorobenzidine	2400	U
56-55-3	Benzo(a)Anthracene	1200	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1200	U
218-01-9	Chrysene	1200	U
117-84-0	Di-n-Octyl Phthalate	1200	U
205-99-2	Benzo(b)Fluoranthene	1200	U
207-08-9	Benzo(k)Fluoranthene	1200	U
50-32-8	Benzo(a)Pyrene	1200	U
193-39-5	Indeno(1,2,3-cd)Pyrene	1200	U
53-70-3	Dibenzo(a,h)Anthracene	1200	U
191-24-2	Benzo(g,h,i)Perylene	1200	U

(1)-Cannot be separated from diphenylamine

Laboratory Name Clayton Environmental

Case No 6888

Sample Number
BI-990-DE

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Organics Analysis Data Sheet
(Page 3)

6888 • 2-028-15

Pesticide/PCBs

Concentration Low Medium 1 2 4 x 7 (Circle One)

Date Extracted/Prepared 13 March 1987

Date Analyzed 14 March 1987

Conc Dil Factor: 0.5 (GPC Effect)

Percent Moisture (decanted) 43.63

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	28.
319-85-7	Beta-BHC	28.
319-86-8	Delta-BHC	28.
58-89-9	Gamma-BHC (Lindane)	28.
76-44-8	Heptachlor	28.
309-00-2	Aldrin	28.
1024-57-3	Heptachlor Epoxide	28.
959-98-8	Endosulfan I	28.
60-57-1	Dieldrin	57.
72-55-9	4, 4'-DDE	57.
72-20-8	Endrin	57.
33213-65-9	Endosulfan II	57.
72-54-8	4, 4'-DDD	57.
1031-07-8	Endosulfan Sulfate	57.
50-29-3	4, 4'-DDT	57.
72-43-5	Methoxychlor	280
53494-70-5	Endrin Ketone	57.
57-74-9	Chlordane	280
8001-35-2	Toxaphene	570
12674-11-2	Aroclor-1016	280
11104-28-2	Aroclor-1221	280
11141-16-5	Aroclor-1232	280
53469-21-9	Aroclor-1242	280
12672-29-6	Aroclor-1248	280
11097-69-1	Aroclor-1254	570
11096-82-5	Aroclor-1260	570

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s ——— or W_s 38g V_t 20000 ul 40000 ul - due to GPC V_i 10 ul

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T.O. 3-16-87
R.H 3-20-87

Form 1

7/85

Name Clayton Environmental

No. 6888

6888 • 2-029-05

Sample Number
BI-990
BI-990RE

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
—	NO VOLATILE COMPOUNDS FOUND	VOA	—	—
—	UNKNOWN COMPOUND	BNA	5.18	900 JB
—	POSSIBLE ~~DIETHYL PENTANE~~ 1,3,4,6,7 ISOOCTANE	BNA	5.63	500 J
23422	4-HYDROXY-4-METHYL-2-PENTANONE *	BNA	5.80	10000 JB
4130	OCTANAL	BNA	6.13	1000 J
430	2-HEPTANONE	BNA	6.18	3000 JB
316344	4-METHYL OCTANE	BNA	6.33	2000 JB
6333	3-METHYL OCTANE	BNA	6.51	3000 JB
—	UNKNOWN COMPOUND	BNA	8.31	1000 J
—	UNKNOWN COMPOUND	BNA	9.30	1000 J
—	UNKNOWN COMPOUND	BNA	10.52	1000 J
544500	MOL. SULFUR	BNA	26.82	3000 J

* possible aldol condensation product

HYC 3-25-87

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Sample Number
BI-994

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6888 • 2-028-16

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Clayton Environmental
Sample ID No: B6756 (578403)
Sample Matrix: Water
Release Authorized By: [signature]

Case No: 6888
QC Report No: NA
Contract No: 68-01-7100
Date Sample Received: 1/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/2/87
Date Analyzed: 3/2/87
Conc/Dil Factor: 1 pH 6.0
Percent Moisture: (Not Decanted) NA

CAS Number		ug/l or ug/Kg (Circle One)
[illegible]	Chloromethane	10 U
[illegible]43-9	Bromomethane	10 U
[illegible]	Vinyl Chloride	10 U
[illegible]	Chloroethane	10 U
[illegible]-2	Methylene Chloride	~~[illegible]~~ 8 B
[illegible]-1	Acetone	~~[illegible]~~ 8 B
[illegible]	Carbon Disulfide	6 N
[illegible]	1, 1-Dichloroethene	5 U
[illegible]34-3	1, 1-Dichloroethane	5 U
[illegible]-5	Trans-1, 2-Dichloroethene	5 U
[illegible]	Chloroform	5 U
[illegible]7-08-2	1, 2-Dichloroethane	5 U
[illegible]	2-Butanone	10 U
[illegible]	1, 1, 1-Trichloroethane	5 U
[illegible]23-5	Carbon Tetrachloride	5 U
[illegible]	Vinyl Acetate	10 U
[illegible]	Bromodichloromethane	5 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	7 N
10061-02-6	Trans-1, 3-Dichloropropene	5 U
79-01-6	Trichloroethene	5 U
124-48-1	Dibromochloromethane	5 U
79-00-5	1, 1, 2-Trichloroethane	5 U
71-43-2	Benzene	5 U
10061-01-5	cis-1, 3-Dichloropropene	5 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	5 U
108-10-1	4-Methyl-2-Pentanone	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	5 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5 U
108-88-3	Toluene	5 U
108-90-7	Chlorobenzene	5 U
100-41-4	Ethylbenzene	5 U
100-42-5	Styrene	5 U
	Total Xylenes	5 U

Data Reporting Qualifiers

For reporting results to EPA the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

- [illegible] the result is a value greater than or equal to the detection limit. Report the value

Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

[illegible]dicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

N Matrix spike compound

H Instrument limit of detection was used because it was higher than the CRQL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRQL

Laboratory Name: Chauton Environmental

Lab No: 6888

Sample Number: BI-994

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6888 • 2-028-17

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/27/87

Date Analyzed: 3/9/87 (A7411)

Dilution Factor: 1

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	10 U
111-44-4	bis(-2-Chloroethyl)Ether	10 U
95-57-8	2-Chlorophenol	10 U
541-73-1	1, 3-Dichlorobenzene	10 U
106-46-7	1, 4-Dichlorobenzene	10 U
100-51-6	Benzyl Alcohol	10 U
95-50-1	1, 2-Dichlorobenzene	10 U
95-48-7	2-Methylphenol	10 U
108-60-1	bis(2-chloroisopropyl)Ether	10 U
106-44-5	4-Methylphenol	10 U
621-64-7	N-Nitroso-Di-n-Propylamine	10 U
67-72-1	Hexachloroethane	10 U
98-95-3	Nitrobenzene	10 U
78-59-1	Isophorone	10 U
88-75-5	2-Nitrophenol	10 U
105-67-9	2, 4-Dimethylphenol	10 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(-2-Chloroethoxy)Methane	10 U
120-83-2	2, 4-Dichlorophenol	10 U
120-82-1	1, 2, 4-Trichlorobenzene	10 U
91-20-3	Naphthalene	10 U
106-47-8	4-Chloroaniline	10 U
87-68-3	Hexachlorobutadiene	10 U
59-50-7	4-Chloro-3-Methylphenol	10 U
91-57-6	2-Methylnaphthalene	10 U
77-47-4	Hexachlorocyclopentadiene	10 U
88-06-2	2, 4, 6-Trichlorophenol	10 U
95-95-4	2, 4, 5-Trichlorophenol	50 U
91-58-7	2-Chloronaphthalene	10 U
88-74-4	2-Nitroaniline	50 U
131-11-3	Dimethyl Phthalate	10 U
208-96-8	Acenaphthylene	10 U
99-09-2	3-Nitroaniline	50 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	10 U
51-28-5	2, 4-Dinitrophenol	50 U
100-02-7	4-Nitrophenol	50 U
132-64-9	Dibenzofuran	10 U
121-14-2	2, 4-Dinitrotoluene	10 U
606-20-2	2, 6-Dinitrotoluene	10 U
84-66-2	Diethylphthalate	3 J
7005-72-3	4-Chlorophenyl-phenylether	10 U
86-73-7	Fluorene	10 U
100-01-6	4-Nitroaniline	50 U
534-52-1	4, 6-Dinitro-2-Methylphenol	50 U
86-30-6	N-Nitrosodiphenylamine (1)	10 U
101-55-3	4-Bromophenyl-phenylether	10 U
118-74-1	Hexachlorobenzene	10 U
87-86-5	Pentachlorophenol	50 U
85-01-8	Phenanthrene	10 U
120-12-7	Anthracene	10 U
84-74-2	Di-n-Butylphthalate	10 U
206-44-0	Fluoranthene	10 U
129-00-0	Pyrene	10 U
85-68-7	Butylbenzylphthalate	10 U
91-94-1	3, 3'-Dichlorobenzidine	28 N
56-55-3	Benzo(a)Anthracene	10 U
117-81-7	bis(2-Ethylhexyl)Phthalate	10 U
218-01-9	Chrysene	10 U
117-84-0	Di-n-Octyl Phthalate	10 U
205-99-2	Benzo(b)Fluoranthene	11 N
207-08-9	Benzo(k)Fluoranthene	10 U
50-32-8	Benzo(a)Pyrene	10 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	13 N
53-70-3	Dibenzo(a, h)Anthracene	16 N
191-24-2	Benzo(g, h, i)Perylene	17 N

(1)-Cannot be separated from diphenylamine

Form I

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Laboratory Name Clayton Environmental

Case No 6888

Sample Number
BI-994

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Organics Analysis Data Sheet
(Page 3)

6888 • 2-035 28-18

JG 3-24-87

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 27 Feb. 1987

Date Analyzed 13 March 1987

Conc. (Dil) Factor: 1

Percent Moisture (decanted) —

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l) or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.05 u
319-85-7	Beta-BHC	0.05 u
319-86-8	Delta-BHC	0.05 u
58-89-9	Gamma-BHC (Lindane)	0.05 u
76-44-8	Heptachlor	0.05 u
309-00-2	Aldrin	0.05 u
1024-57-3	Heptachlor Epoxide	0.05 u
959-98-8	Endosulfan I	0.05 u
60-57-1	Dieldrin	0.10 u
72-55-9	4, 4'-DDE	0.10 u
72-20-8	Endrin	0.10 u
33213-65-9	Endosulfan II	0.10 u
72-54-8	4, 4'-DDD	0.10 u
1031-07-8	Endosulfan Sulfate	0.10 u
50-29-3	4, 4'-DDT	0.10 u
72-43-5	Methoxychlor	0.5 u
53494-70-5	Endrin Ketone	0.10 u
57-74-9	Chlordane	0.5 u
8001-35-2	Toxaphene	1.0 u
12674-11-2	Aroclor-1016	0.5 u
11104-28-2	Aroclor-1221	0.5 u
11141-16-5	Aroclor-1232	0.5 u
53469-21-9	Aroclor-1242	0.5 u
12672-29-6	Aroclor-1248	0.5 u
11097-69-1	Aroclor-1254	1.0 u
11096-82-5	Aroclor-1260	1.0 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s — V_t 10000 ml V_i 1.0 ml

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T.O. 3-16-87
R.H 3-20-87

Name Clayton Environmental
6888

6888 • 2-029-06

Sample Number
BI-994

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Organics Analysis Data Sheet
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Tentatively Identified Compounds

	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
	No Volatile compounds detected	VOA	—	—
+22	4-hydroxy-4-methyl-2-pentanone *	BNA	5.55	10J
23	5-methyl-2-hexanone	BNA	5.93	20JB

* possible aldol condensation product
3/19/87

Sample Number
BI-995

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6800 · 2-028-19

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Clayton Environmental
Sample ID No: 36742 (528400)
Sample Matrix: Water
Release Authorized By: [signature]

Case No: 6888
QC Report No: N/A
Contract No: 68-01-7100
Date Sample Received: 2/20/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/1/87
Date Analyzed: 3/1/87
Conc/Dil Factor: 1 pH 6.5
Percent Moisture: (Not Decanted) NA

CAS Number		ug/l or ug/Kg (Circle One)
74-87-3	Chloromethane	10 U
74-83-9	Bromomethane	10 U
75-01-4	Vinyl Chloride	10 U
75-00-3	Chloroethane	10 U
75-09-2	Methylene Chloride	~~3~~ 3 J
67-64-1	Acetone	~~3~~ 3
75-15-0	Carbon Disulfide	6 N
75-35-4	1, 1-Dichloroethene	5 U
75-34-3	1, 1-Dichloroethane	5 U
156-60-5	Trans-1, 2-Dichloroethene	5 U
67-66-3	Chloroform	5 U
107-06-2	1, 2-Dichloroethane	5 U
78-93-3	2-Butanone	10 U
71-55-6	1, 1, 1-Trichloroethane	5 U
56-23-5	Carbon Tetrachloride	5 U
108-05-4	Vinyl Acetate	10 U
75-27-4	Bromodichloromethane	5 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	7 N
10061-02-6	Trans-1, 3-Dichloropropene	5 U
79-01-6	Trichloroethene	5 U
124-48-1	Dibromochloromethane	5 U
79-00-5	1, 1, 2-Trichloroethane	5 U
71-43-2	Benzene	5 U
10061-01-5	cis-1, 3-Dichloropropene	5 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	5 U
108-10-1	4-Methyl-2-Pentanone	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	5 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5 U
108-88-3	Toluene	5 U
108-90-7	Chlorobenzene	5 U
100-41-4	Ethylbenzene	5 U
100-42-5	Styrene	5 U
	Total Xylenes	5 U

Data Reporting Qualifiers

For reporting results to EPA the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value	If the result is a value greater than or equal to the detection limit report the value
U	Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.
C	This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS
B	This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action
Other	Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report
N	Matrix spike compound
H	Instrument limit of detection was used because it was higher than the CRDL.
Q	Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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...tory Name: [illegible] Environmental
...No: 6888

Sample Number
BI-995

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6888 • 2-028-20

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

...ntration: Low Medium (Circle One)
...xtracted/Prepared: 2/27/87
...nalyzed: 3/10/87 (A7427)
...Dil Factor: 1
...t Moisture (Decanted) NA

GPC Cleanup ☐Yes ☒No
Separatory Funnel Extraction ☒Yes
Continuous Liquid - Liquid Extraction ☐Yes

...ber		ug/l or ug/Kg (Circle One)
...-2	Phenol	10 u
...-4	bis(-2-Chloroethyl)Ether	10 u
...-8	2-Chlorophenol	10 u
...-1	1, 3-Dichlorobenzene	10 u
...-7	1, 4-Dichlorobenzene	10 u
...-6	Benzyl Alcohol	10 u
...1	1, 2-Dichlorobenzene	10 u
...7	2-Methylphenol	10 u
...-32-9	bis(2-chloroisopropyl)Ether	10 u
...-5	4-Methylphenol	10 u
...-7	N-Nitroso-Di-n-Propylamine	10 u
...-1	Hexachloroethane	10 u
...3	Nitrobenzene	10 u
...	Isophorone	10 u
...-5	2-Nitrophenol	10 u
...-9	2, 4-Dimethylphenol	10 u
...	Benzoic Acid	50 u
...-1	bis(-2-Chloroethoxy)Methane	10 u
...-2	2, 4-Dichlorophenol	10 u
...-1	1, 2, 4-Trichlorobenzene	10 u
...-3	Naphthalene	10 u
...-8	4-Chloroaniline	10 u
...	Hexachlorobutadiene	10 u
...-7	4-Chloro-3-Methylphenol	10 u
...-6	2-Methylnaphthalene	10 u
...	Hexachlorocyclopentadiene	10 u
...	2, 4, 6-Trichlorophenol	10 u
...-4	2, 4, 5-Trichlorophenol	50 u
...	2-Chloronaphthalene	10 u
...	2-Nitroaniline	50 u
...-3	Dimethyl Phthalate	10 u
...3	Acenaphthylene	10 u
...	3-Nitroaniline	50 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	10 u
51-28-5	2, 4-Dinitrophenol	50 u
100-02-7	4-Nitrophenol	50 u
132-64-9	Dibenzofuran	10 u
121-14-2	2, 4-Dinitrotoluene	10 u
606-20-2	2, 6-Dinitrotoluene	10 u
84-66-2	Diethylphthalate	10 u
7005-72-3	4-Chlorophenyl-phenylether	10 u
86-73-7	Fluorene	10 u
100-01-6	4-Nitroaniline	50 u
534-52-1	4, 6-Dinitro-2-Methylphenol	50 u
86-30-6	N-Nitrosodiphenylamine (1)	10 u
101-55-3	4-Bromophenyl-phenylether	10 u
118-74-1	Hexachlorobenzene	10 u
87-86-5	Pentachlorophenol	50 u
85-01-8	Phenanthrene	10 u
120-12-7	Anthracene	10 u
84-74-2	Di-n-Butylphthalate	10 u
206-44-0	Fluoranthene	10 u
129-00-0	Pyrene	10 u
85-68-7	Butylbenzylphthalate	10 u
91-94-1	3, 3'-Dichlorobenzidine	28 N
56-55-3	Benzo(a)Anthracene	10 u
117-81-7	bis(2-Ethylhexyl)Phthalate	10 u
218-01-9	Chrysene	10 u
117-84-0	Di-n-Octyl Phthalate	10 u
205-99-2	Benzo(b)Fluoranthene	11 N
207-08-9	Benzo(k)Fluoranthene	10 u
50-32-8	Benzo(a)Pyrene	10 u
193-39-5	Indeno(1, 2, 3-cd)Pyrene	13 N
53-70-3	Dibenz(a, h)Anthracene	16 N
191-24-2	Benzo(g, h, i)Perylene	17 N

(1)-Cannot be separated from diphenylamine

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Form I

7/85

Laboratory Name [illegible]

Case No 6888

Sample Number
BI-995

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Organics Analysis Data Sheet
(Page 3)

6888-2-028-21

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 27 Feb. 1987

Date Analyzed 13 March 1987

Dilution Factor: 1

Percent Moisture (decanted) ——

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l) or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.05 u
319-85-7	Beta-BHC	0.05 u
319-86-8	Delta-BHC	0.05 u
58-89-9	Gamma-BHC (Lindane)	0.05 u
76-44-8	Heptachlor	0.05 u
309-00-2	Aldrin	0.05 u
1024-57-3	Heptachlor Epoxide	0.05 u
959-98-8	Endosulfan I	0.05 u
60-57-1	Dieldrin	0.10 u
72-55-9	4, 4'-DDE	0.10 u
72-20-8	Endrin	0.10 u
33213-65-9	Endosulfan II	0.10 u
72-54-8	4, 4'-DDD	0.10 u
1031-07-8	Endosulfan Sulfate	0.10 u
50-29-3	4, 4'-DDT	0.10 u
72-43-5	Methoxychlor	0.5 u
53494-70-5	Endrin Ketone	0.10 u
57-74-9	Chlordane	0.5 u
8001-35-2	Toxaphene	1.0 u
12674-11-2	Aroclor-1016	0.5 u
11104-28-2	Aroclor-1221	0.5 u
11141-16-5	Aroclor-1232	0.5 u
53469-21-9	Aroclor-1242	0.5 u
12672-29-6	Aroclor-1248	0.5 u
11097-69-1	Aroclor-1254	1.0 u
11096-82-5	Aroclor-1260	1.0 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s —— V_t 10000 ml V_i 1.0 ml

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SO. 3-16-87
RH - 3-20-87

6888 • 2 [illegible]-07

e [illegible] Environmental
[illegible]x8

Sample Number
BI-995

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
2-methoxy-2-methyl Propane	VOA	13.46	10 J
4-hydroxy-4-methyl-2-pentanone*	BNA	5.52	70 J
5-methyl-2-hexanone	BNA	5.90	20 JB

* possible aldol condensation product

3/14/87

Sample Number
BI-996

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Organics Analysis Data Sheet
(Page 1)

6888 • 2-028-22

Laboratory Name: Clayton Environmental
Case No: 6888
Sample ID No: B6743 (528406)
QC Report No: NA
Sample Matrix: Water
Contract No: 68-01-7100
Release Authorized By: [signature]
Date Sample Received: 3/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/1/87
Date Analyzed: 3/1/87
Conc/Dil Factor: 1 pH 5.5
Percent Moisture: (Not Decanted) NA

CAS Number		ug/l or ug/Kg (Circle One)
74-87-3	Chloromethane	10 U
74-83-9	Bromomethane	10 U
75-01-4	Vinyl Chloride	10 U
75-00-3	Chloroethane	10 U
75-09-2	Methylene Chloride	5 B
67-64-1	Acetone	4 B
75-15-0	Carbon Disulfide	6 N
75-35-4	1, 1-Dichloroethene	5 U
75-34-3	1, 1-Dichloroethane	5 U
156-60-5	Trans-1, 2-Dichloroethene	5 U
67-66-3	Chloroform	5 U
107-06-2	1, 2-Dichloroethane	5 U
78-93-3	2-Butanone	10 U
71-55-6	1, 1, 1-Trichloroethane	5 U
56-23-5	Carbon Tetrachloride	5 U
108-05-4	Vinyl Acetate	10 U
75-27-4	Bromodichloromethane	5 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	7 N
10061-02-6	Trans-1, 3-Dichloropropene	5 U
79-01-6	Trichloroethene	2 T
124-48-1	Dibromochloromethane	5 U
79-00-5	1, 1, 2-Trichloroethane	5 U
71-43-2	Benzene	5 U
10061-01-5	cis-1, 3-Dichloropropene	5 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	5 U
108-10-1	4-Methyl-2-Pentanone	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	5 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5 U
108-88-3	Toluene	5 U
108-90-7	Chlorobenzene	5 U
100-41-4	Ethylbenzene	5 U
100-42-5	Styrene	5 U
	Total Xylenes	5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

	If the result is a value greater than or equal to the detection limit, report the value
U	Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J.
C	This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS
B	This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action
Other	Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report
N	Matrix spike compound
N	Instrument limit of detection was used because it was higher than the CRDL
A	Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

Name: Clayton Environmental
6888

Sample Number
BI-996

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6888 • 2-028-23

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

on: Low Medium (Circle One)
d/Prepared: 2/27/87
ed: 3/18/87 (A7531)
tor: 1
isture (Decanted) NA

GPC Cleanup ☐Yes ☒No
Separatory Funnel Extraction ☒Yes
Continuous Liquid - Liquid Extraction ☐Yes

	ug/l or ug/Kg (Circle One)
Phenol	10 u
bis(-2-Chloroethyl)Ether	10 u
2-Chlorophenol	10 u
1 3-Dichlorobenzene	10 u
1, 4-Dichlorobenzene	10 u
Benzyl Alcohol	10 u
1, 2-Dichlorobenzene	10 u
2-Methylphenol	10 u
bis(2-chloroisopropyl)Ether	10 u
4-Methylphenol	10 u
N-Nitroso-Di-n-Propylamine	10 u
Hexachloroethane	10 u
Nitrobenzene	10 u
Isophorone	10 u
2-Nitrophenol	10 u
2, 4-Dimethylphenol	10 u
Benzoic Acid	50 u
bis(-2-Chloroethoxy)Methane	10 u
2, 4-Dichlorophenol	10 u
1, 2, 4-Trichlorobenzene	10 u
Naphthalene	10 u
4-Chloroaniline	10 u
Hexachlorobutadiene	10 u
4-Chloro-3-Methylphenol	10 u
2-Methylnaphthalene	10 u
Hexachlorocyclopentadiene	10 u
2, 4, 6-Trichlorophenol	10 u
2, 4, 5-Trichlorophenol	50 u
2-Chloronaphthalene	10 u
2-Nitroaniline	50 u
Dimethyl Phthalate	10 u
Acenaphthylene	10 u
3-Nitroaniline	50 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	10 u
51-28-5	2, 4-Dinitrophenol	50 u
100-02-7	4-Nitrophenol	50 u
132-64-9	Dibenzofuran	10 u
121-14-2	2, 4-Dinitrotoluene	10 u
606-20-2	2, 6-Dinitrotoluene	10 u
84-66-2	Diethylphthalate	10 u
7005-72-3	4-Chlorophenyl-phenylether	10 u
86-73-7	Fluorene	10 u
100-01-6	4-Nitroaniline	50 u
534-52-1	4, 6-Dinitro-2-Methylphenol	50 u
86-30-6	N-Nitrosodiphenylamine (1)	10 u
101-55-3	4-Bromophenyl-phenylether	10 u
118-74-1	Hexachlorobenzene	10 u
87-86-5	Pentachlorophenol	50 u
85-01-8	Phenanthrene	10 u
120-12-7	Anthracene	10 u
84-74-2	Di-n-Butylphthalate	10 u
206-44-0	Fluoranthene	10 u
129-00-0	Pyrene	10 u
85-68-7	Butylbenzylphthalate	10 u
91-94-1	3, 3'-Dichlorobenzidine	28 N
56-55-3	Benzo(a)Anthracene	10 u
117-81-7	bis(2-Ethylhexyl)Phthalate	220
218-01-9	Chrysene	10 u
117-84-0	Di-n-Octyl Phthalate	10 u
205-99-2	Benzo(b)Fluoranthene	11 N
207-08-9	Benzo(k)Fluoranthene	10 u
50-32-8	Benzo(a)Pyrene	10 u
193-39-5	Indeno(1, 2, 3-cd)Pyrene	13 N
53-70-3	Dibenz(a, h)Anthracene	16 N
191-24-2	Benzo(g, h, i)Perylene	17 N

(1)-Cannot be separated from diphenylamine

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Form I

7/85

oratory Name Clayton Environmental

ie No 6888

Sample Number
BI-996

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Organics Analysis Data Sheet
(Page 3)

6888 · 2-028-24

Pesticide/PCBs

centration Low Medium (Circle One)

Extracted/Prepared: 27 Feb. 1987

Analyzed: 13 March 1987

c/Dil Factor: 1

cent Moisture (decanted) —

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.05 u
319-85-7	Beta-BHC	0.05 u
319-86-8	Delta-BHC	0.05 u
58-89-9	Gamma-BHC (Lindane)	0.05 u
76-44-8	Heptachlor	0.05 u
309-00-2	Aldrin	0.05 u
1024-57-3	Heptachlor Epoxide	0.05 u
959-98-8	Endosulfan I	0.05 u
60-57-1	Dieldrin	0.10 u
72-55-9	4, 4'-DDE	0.10 u
72-20-8	Endrin	0.10 u
33213-65-9	Endosulfan II	0.10 u
72-54-8	4, 4'-DDD	0.10 u
1031-07-8	Endosulfan Sulfate	0.10 u
50-29-3	4, 4'-DDT	0.10 u
72-43-5	Methoxychlor	0.5 u
53494-70-5	Endrin Ketone	0.10 u
57-74-9	Chlordane	0.5 u
8001-35-2	Toxaphene	1.0 u
12674-11-2	Aroclor-1016	0.5 u
11104-28-2	Aroclor-1221	0.5 u
11141-16-5	Aroclor-1232	0.5 u
53469-21-9	Aroclor-1242	0.5 u
12672-29-6	Aroclor-1248	0.5 u
11097-69-1	Aroclor-1254	1.0 u
11096-82-5	Aroclor-1260	1.0 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000ml or W_s — V_t 10000ml V_i 1.0ml

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TD.3-16-87
R.H 3 20.87

Laboratory Name: Clayton Environmental

Case No: 6888

6888 • 2-029-08

Sample Number: BI-996

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
—	No Volatile compounds detected	VOA	—	—
123422	4-hydroxy-4-methyl-2-pentanone*	BNA	5.86	60 J
110430	2-heptanone	BNA	6.25	20 J
123795	Hexanedioic acid, dioctylester	BNA	30.66	200 J
—	Unknown compound	BNA	34.94	20 J

* possible aldol condensation product

[illegible] 3/19/87

Form 1, Part B

7/85

Sample Number
BI-997

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6888 • 2-028-25

Organics Analysis Data Sheet
(Page 1)

Clayton Environmental
B6744 (528408)
Water
...horized By: Daryl Strandberg

Case No: 6888
QC Report No: N/A
Contract No: 68-01-7100
Date Sample Received: 3/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/1/87
Date Analyzed: 3/1/87
Conc/Dil Factor: 1 pH 6.0
Percent Moisture: (Not Decanted) NA

		ug/l or ug/Kg (Circle One)
	Chloromethane	10 U
	Bromomethane	10 U
	Vinyl Chloride	10 U
	Chloroethane	10 U
	Methylene Chloride	~~[illegible]~~ 3 B
	Acetone	~~[illegible]~~ 3 B
	Carbon Disulfide	2 J
	1, 1-Dichloroethene	5 U
	1, 1-Dichloroethane	5 U
	Trans-1, 2-Dichloroethene	5 U
	Chloroform	5 U
	1, 2-Dichloroethane	5 U
	2-Butanone	10 U
	1, 1, 1-Trichloroethane	5 U
	Carbon Tetrachloride	5 U
	Vinyl Acetate	10 U
	Bromodichloromethane	5 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	7 N
10061-02-6	Trans-1, 3-Dichloropropene	5 U
79-01-6	Trichloroethene	1 J
124-48-1	Dibromochloromethane	5 U
79-00-5	1, 1, 2-Trichloroethane	5 U
71-43-2	Benzene	5 U
10061-01-5	cis-1, 3-Dichloropropene	5 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	5 U
108-10-1	4-Methyl-2-Pentanone	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	5 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5 U
108-88-3	Toluene	5 U
108-90-7	Chlorobenzene	5 U
100-41-4	Ethylbenzene	5 U
100-42-5	Styrene	5 U
	Total Xylenes	5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

If the result is a value greater than or equal to the detection limit, report the value

Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

M Matrix spike compound

N Instrument limit of detection was used because it was higher than the CRDL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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Sample Number
BI-997

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Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Low Medium (Circle One)

Prepared: 2/27/87

13/6/87 (A7394)

1

(Decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

	ug/l or ug/Kg (Circle One)
Phenol	10 U
bis-2-Chloroethyl Ether	10 U
2-Chlorophenol	10 U
1,3-Dichlorobenzene	10 U
1,4-Dichlorobenzene	10 U
Benzyl Alcohol	10 U
1,2-Dichlorobenzene	10 U
2-Methylphenol	10 U
bis-2-chloroisopropyl Ether	10 U
4-Methylphenol	10 U
N-Nitroso-Di-n-Propylamine	10 U
Hexachloroethane	10 U
Nitrobenzene	10 U
Isophorone	10 U
2-Nitrophenol	10 U
2,4-Dimethylphenol	10 U
Benzoic Acid	50 U
bis-2-Chloroethoxymethane	10 U
2,4-Dichlorophenol	10 U
1,2,4-Trichlorobenzene	10 U
Naphthalene	10 U
4-Chloroaniline	10 U
Hexachlorobutadiene	10 U
4-Chloro-3-Methylphenol	10 U
2-Methylnaphthalene	10 U
Hexachlorocyclopentadiene	10 U
2,4,6-Trichlorophenol	10 U
2,4,5-Trichlorophenol	50 U
2-Chloronaphthalene	10 U
2-Nitroaniline	50 U
Dimethyl Phthalate	10 U
Acenaphthylene	10 U
3-Nitroaniline	50 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	10 U
51-28-5	2,4-Dinitrophenol	50 U
100-02-7	4-Nitrophenol	50 U
132-64-9	Dibenzofuran	10 U
121-14-2	2,4-Dinitrotoluene	10 U
606-20-2	2,6-Dinitrotoluene	10 U
84-66-2	Diethylphthalate	10 U
7005-72-3	4-Chlorophenyl-phenylether	10 U
86-73-7	Fluorene	10 U
100-01-6	4-Nitroaniline	50 U
534-52-1	4,6-Dinitro-2-Methylphenol	50 U
86-30-6	N-Nitrosodiphenylamine (1)	10 U
101-55-3	4-Bromophenyl-phenylether	10 U
118-74-1	Hexachlorobenzene	10 U
87-86-5	Pentachlorophenol	50 U
85-01-8	Phenanthrene	10 U
120-12-7	Anthracene	10 U
84-74-2	Di-n-Butylphthalate	15
206-44-0	Fluoranthene	10 U
129-00-0	Pyrene	10 U
85-68-7	Butylbenzylphthalate	10 U
91-94-1	3,3'-Dichlorobenzidine	28 N
56-55-3	Benzo(a)Anthracene	10 U
117-81-7	bis(2-Ethylhexyl)Phthalate	10 U
218-01-9	Chrysene	10 U
117-84-0	Di-n-Octyl Phthalate	10 U
205-99-2	Benzo(b)Fluoranthene	11 N
207-08-9	Benzo(k)Fluoranthene	10 U
50-32-8	Benzo(a)Pyrene	10 U
193-39-5	Indeno(1,2,3-cd)Pyrene	13 N
53-70-3	Dibenzo(a,h)Anthracene	16 N
191-24-2	Benzo(g,h,i)Perylene	17 N

(1)-Cannot be separated from diphenylamine

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Sample Number
BI-997

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Organics Analysis Data Sheet
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Pesticide/PCBs

Low Medium (Circle One)

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

Prepared: 27 Feb. 1987

13 March 1987

1

(decanted) —

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.05 u
319-85-7	Beta-BHC	0.05 u
319-86-8	Delta-BHC	0.05 u
58-89-9	Gamma-BHC (Lindane)	0.05 u
76-44-8	Heptachlor	0.05 u
309-00-2	Aldrin	0.05 u
1024-57-3	Heptachlor Epoxide	0.05 u
959-98-8	Endosulfan I	0.05 u
60-57-1	Dieldrin	0.10 u
72-55-9	4, 4'-DDE	0.10 u
72-20-8	Endrin	0.10 u
33213-65-9	Endosulfan II	0.10 u
72-54-8	4, 4'-DDD	0.10 u
1031-07-8	Endosulfan Sulfate	0.10 u
50-29-3	4, 4'-DDT	0.10 u
72-43-5	Methoxychlor	0.5 u
53494-70-5	Endrin Ketone	0.10 u
57-74-9	Chlordane	0.5 u
8001-35-2	Toxaphene	1.0 u
12674-11-2	Aroclor-1016	0.5 u
11104-28-2	Aroclor-1221	0.5 u
11141-16-5	Aroclor-1232	0.5 u
53469-21-9	Aroclor-1242	0.5 u
12672-29-6	Aroclor-1248	0.5 u
11097-69-1	Aroclor-1254	1.0 u
11096-82-5	Aroclor-1260	1.0 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s — V_t 10000 ml V_i 1.0 ml

T.O. 3-16-87
R.H 3-20-87

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Environmental

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Sample Number
BI-997

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Organics Analysis Data Sheet
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Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
Volatile compounds detected	VOA	—	—
methyl-2-hexanone	BNA	5.89	20 JB

Sample Number
BI-998

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Organics Analysis Data Sheet
(Page 1)

6888 · 2-028-28

me: Clayton Environmental
D No: B6745 (52840)
: Water
Authorized By: [signature]

Case No: 6888
QC Report No: N/A
Contract No: 68-01-7100
Date Sample Received: 3/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/1/87
Date Analyzed: 3/1/87
Conc/Dil Factor: 1 pH 6.0
Percent Moisture: (Not Decanted) NA

	ug/l or ug/Kg (Circle One)
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	~~3~~ P
Acetone	~~4~~ B
Carbon Disulfide	6 N
1, 1-Dichloroethene	5 U
1, 1-Dichloroethane	5 U
Trans-1, 2-Dichloroethene	5 U
Chloroform	5 U
1, 2-Dichloroethane	5 U
2-Butanone	10 U
1, 1, 1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Vinyl Acetate	10 U
Bromodichloromethane	5 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	7 N
10061-02-6	Trans-1, 3-Dichloropropene	5 U
79-01-6	Trichloroethene	5 U
124-48-1	Dibromochloromethane	5 U
79-00-5	1, 1, 2-Trichloroethane	5 U
71-43-2	Benzene	5 U
10061-01-5	cis-1, 3-Dichloropropene	5 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	5 U
108-10-1	4-Methyl-2-Pentanone	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	5 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5 U
108-88-3	Toluene	5 U
108-90-7	Chlorobenzene	5 U
100-41-4	Ethylbenzene	5 U
100-42-5	Styrene	5 U
	Total Xylenes	5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

If the result is a value greater than or equal to the detection limit, report the value

Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

M Matrix spike compound

N Instrument limit of detection was used because it was higher than the CRDL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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Clayton Environmental
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Sample Number
BI-998

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Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Medium (Circle One)
2/27/87
3/6/87 (A7395)
1
(Concentrated) NA

GPC Cleanup ☐Yes ☒No
Separatory Funnel Extraction ☒Yes
Continuous Liquid - Liquid Extraction ☐Yes

	ug/l or ug/Kg (Circle One)
[illegible]	10 u
[illegible]Chloroethyl)Ether	10 u
[illegible]phenol	10 u
[illegible]chlorobenzene	10 u
[illegible]chlorobenzene	10 u
[illegible]Alcohol	10 u
[illegible]chlorobenzene	10 u
[illegible]hylphenol	10 u
[illegible]chloroisopropyl)Ether	10 u
[illegible]hylphenol	10 u
[illegible]-Di-n-Propylamine	10 u
[illegible]chloroethane	10 u
[illegible]benzene	10 u
[illegible]phorone	10 u
[illegible]Nitrophenol	10 u
[illegible]4-Dimethylphenol	10 u
[illegible] Acid	50 u
[illegible]-2-Chloroethoxy)Methane	10 u
[illegible]4-Dichlorophenol	10 u
[illegible]2, 4-Trichlorobenzene	10 u
[illegible]phthalene	10 u
[illegible]Chloroaniline	10 u
Hexachlorobutadiene	10 u
4-Chloro-3-Methylphenol	10 u
2-Methylnaphthalene	10 u
Hexachlorocyclopentadiene	10 u
2, 4, 6-Trichlorophenol	10 u
2, 4, 5-Trichlorophenol	50 u
2-Chloronaphthalene	10 u
2-Nitroaniline	50 u
Dimethyl Phthalate	10 u
Acenaphthylene	10 u
3-Nitroaniline	50 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	10 u
51-28-5	2, 4-Dinitrophenol	50 u
100-02-7	4-Nitrophenol	50 u
132-64-9	Dibenzofuran	10 u
121-14-2	2, 4-Dinitrotoluene	10 u
606-20-2	2, 6-Dinitrotoluene	10 u
84-66-2	Diethylphthalate	10 u
7005-72-3	4-Chlorophenyl-phenylether	10 u
86-73-7	Fluorene	10 u
100-01-6	4-Nitroaniline	50 u
534-52-1	4, 6-Dinitro-2-Methylphenol	50 u
86-30-6	N-Nitrosodiphenylamine (1)	10 u
101-55-3	4-Bromophenyl-phenylether	10 u
118-74-1	Hexachlorobenzene	10 u
87-86-5	Pentachlorophenol	50 u
85-01-8	Phenanthrene	10 u
120-12-7	Anthracene	10 u
84-74-2	Di-n-Butylphthalate	10 u
206-44-0	Fluoranthene	10 u
129-00-0	Pyrene	10 u
85-68-7	Butylbenzylphthalate	10 u
91-94-1	3, 3'-Dichlorobenzidine	28 N
56-55-3	Benzo(a)Anthracene	10 u
117-81-7	bis(2-Ethylhexyl)Phthalate	10 u
218-01-9	Chrysene	10 u
117-84-0	Di-n-Octyl Phthalate	10 u
205-99-2	Benzo(b)Fluoranthene	11 N
207-08-9	Benzo(k)Fluoranthene	10 u
50-32-8	Benzo(a)Pyrene	10 u
193-39-5	Indeno(1, 2, 3-cd)Pyrene	13 N
53-70-3	Dibenz(a, h)Anthracene	16 N
191-24-2	Benzo(g, h, i)Perylene	17 N

(1)-Cannot be separated from diphenylamine

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[illegible] Environmental

Sample Number
BI-998

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Organics Analysis Data Sheet
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Pesticide/PCBs

Low Medium (Circle One)

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

[illegible]pared: 27 Feb. 1987

[illegible] March 1987

[illegible] 1

[illegible] (decanted) —

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.05 u
319-85-7	Beta-BHC	0.05 u
319-86-8	Delta-BHC	0.05 u
58-89-9	Gamma-BHC (Lindane)	0.05 u
76-44-8	Heptachlor	0.05 u
309-00-2	Aldrin	0.05 u
1024-57-3	Heptachlor Epoxide	0.05 u
959-98-8	Endosulfan I	0.05 u
60-57-1	Dieldrin	0.10 u
72-55-9	4, 4'-DDE	0.10 u
72-20-8	Endrin	0.10 u
33213-65-9	Endosulfan II	0.10 u
72-54-8	4, 4'-DDD	0.10 u
1031-07-8	Endosulfan Sulfate	0.10 u
50-29-3	4, 4'-DDT	0.10 u
72-43-5	Methoxychlor	0.5 u
53494-70-5	Endrin Ketone	0.10 u
57-74-9	Chlordane	0.5 u
8001-35-2	Toxaphene	1.0 u
12674-11-2	Aroclor-1016	0.5 u
11104-28-2	Aroclor-1221	0.5 u
11141-16-5	Aroclor-1232	0.5 u
53469-21-9	Aroclor-1242	0.5 u
12672-29-6	Aroclor-1248	0.5 u
11097-69-1	Aroclor-1254	1.0 u
11096-82-5	Aroclor-1260	1.0 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000ml or W_s — V_t 10000ul V_i 1.0ul

375

T.O. 3-16-87
R.H 3-20-87

Clayton Environmental

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Sample Number
BI-998

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
No volatile compounds detected	VOA	—	—
4-hydroxy-4-methyl-2-pentanone*	BNA	5.50	50 J
5-methyl-2-hexanone	BNA	5.87	20 JB
unknown compound	BNA	35.64	20 J

* possible aldol condensation product
tl 3/19/87

Sample Number
BI-999

203

Organics Analysis Data Sheet
(Page 1)

6888 • 2-028-31

Name: Clayton Environmental
No: B6737 (528412)
Water
Authorized By: [signature]

Case No: 6888
QC Report No: N/A
Contract No: 68-01-7100
Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/1/87
Date Analyzed: 3/1/87
Conc/Dil Factor: 1 pH 6.0
Percent Moisture: (Not Decanted) NA

	ug/l or ug/Kg (Circle One)
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	~~3~~ B
Acetone	~~5~~ B
Carbon Disulfide	0.6 J
1, 1-Dichloroethene	5 U
1, 1-Dichloroethane	5 U
Trans-1, 2-Dichloroethene	5 U
Chloroform	5 U
1, 2-Dichloroethane	5 U
2-Butanone	10 U
1, 1, 1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Vinyl Acetate	10 U
Bromodichloromethane	5 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	7 N
10061-02-6	Trans-1, 3-Dichloropropene	5 U
79-01-6	Trichloroethene	1 J
124-48-1	Dibromochloromethane	5 U
79-00-5	1, 1, 2-Trichloroethane	5 U
71-43-2	Benzene	5 U
10061-01-5	cis-1, 3-Dichloropropene	5 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	5 U
108-10-1	4-Methyl-2-Pentanone	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	5 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5 U
108-88-3	Toluene	5 U
108-90-7	Chlorobenzene	5 U
100-41-4	Ethylbenzene	5 U
100-42-5	Styrene	5 U
	Total Xylenes	5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

[illegible] result is a value greater than or equal to the detection limit. Report the value

[illegible] indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

[illegible] indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

N Matrix spike compound

H Instrument limit of detection was used because it was higher than the CRDL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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Clayton Environmental

Sample Number
BI-999

204

Organics Analysis Data Sheet
(Page 2)

6888 • 2-028-32

Semivolatile Compounds

(Low) Medium (Circle One)

Extracted: 2/27/87

Date Analyzed: 3/6/87 (A7396)

Dilution Factor: 1

Volume (Decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

	(ug/l) or ug/Kg (Circle One)
Phenol	10 u
bis-2-Chloroethyl Ether	10 u
2-Chlorophenol	10 u
1,3-Dichlorobenzene	10 u
1,4-Dichlorobenzene	10 u
Benzyl Alcohol	10 u
1,2-Dichlorobenzene	10 u
2-Methylphenol	10 u
bis-2-Chloroisopropyl Ether	10 u
4-Methylphenol	10 u
N-Nitroso-Di-n-Propylamine	10 u
Hexachloroethane	10 u
Nitrobenzene	10 u
Isophorone	10 u
2-Nitrophenol	10 u
2,4-Dimethylphenol	10 u
Benzoic Acid	50 u
bis-2-Chloroethoxy Methane	10 u
2,4-Dichlorophenol	10 u
1,2,4-Trichlorobenzene	10 u
Naphthalene	10 u
4-Chloroaniline	10 u
Hexachlorobutadiene	10 u
4-Chloro-3-Methylphenol	10 u
2-Methylnaphthalene	10 u
Hexachlorocyclopentadiene	10 u
2,4,6-Trichlorophenol	10 u
2,4,5-Trichlorophenol	50 u
2-Chloronaphthalene	10 u
2-Nitroaniline	50 u
Dimethyl Phthalate	10 u
Acenaphthylene	10 u
3-Nitroaniline	50 u

CAS Number		(ug/l) or ug/Kg (Circle One)
83-32-9	Acenaphthene	10 u
51-28-5	2,4-Dinitrophenol	50 u
100-02-7	4-Nitrophenol	50 u
132-64-9	Dibenzofuran	10 u
121-14-2	2,4-Dinitrotoluene	10 u
606-20-2	2,6-Dinitrotoluene	10 u
84-66-2	Diethylphthalate	10 u
7005-72-3	4-Chlorophenyl-phenylether	10 u
86-73-7	Fluorene	10 u
100-01-6	4-Nitroaniline	50 u
534-52-1	4,6-Dinitro-2-Methylphenol	50 u
86-30-6	N-Nitrosodiphenylamine (1)	10 u
101-55-3	4-Bromophenyl-phenylether	10 u
118-74-1	Hexachlorobenzene	10 u
87-86-5	Pentachlorophenol	50 u
85-01-8	Phenanthrene	10 u
120-12-7	Anthracene	10 u
84-74-2	Di-n-Butylphthalate	2-J.
206-44-0	Fluoranthene	10 u
129-00-0	Pyrene	10 u
85-68-7	Butylbenzylphthalate	10 u
91-94-1	3,3'-Dichlorobenzidine	28 N
56-55-3	Benzo(a)Anthracene	10 u
117-81-7	bis(2-Ethylhexyl)Phthalate	10 u
218-01-9	Chrysene	10 u
117-84-0	Di-n-Octyl Phthalate	10 u
205-99-2	Benzo(b)Fluoranthene	11 N
207-08-9	Benzo(k)Fluoranthene	10 u
50-32-8	Benzo(a)Pyrene	10 u
193-39-5	Indeno(1,2,3-cd)Pyrene	13 N
53-70-3	Dibenzo(a,h)Anthracene	16 N
191-24-2	Benzo(g,h,i)Perylene	17 N

(1)-Cannot be separated from diphenylamine

390

Clayton Environmental

Sample Number
BI-999

205

Organics Analysis Data Sheet
(Page 3)

6888-2-028-33

Pesticide/PCBs

Low Medium (Circle One)

Prepared: 27 Feb. 1987

3 March 1987

.1

(decanted) —

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.05 u
319-85-7	Beta-BHC	0.05 u
319-86-8	Delta-BHC	0.05 u
58-89-9	Gamma-BHC (Lindane)	0.05 u
76-44-8	Heptachlor	0.05 u
309-00-2	Aldrin	0.05 u
1024-57-3	Heptachlor Epoxide	0.05 u
959-98-8	Endosulfan I	0.05 u
60-57-1	Dieldrin	0.10 u
72-55-9	4, 4'-DDE	0.10 u
72-20-8	Endrin	0.10 u
33213-65-9	Endosulfan II	0.10 u
72-54-8	4, 4'-DDD	0.10 u
1031-07-8	Endosulfan Sulfate	0.10 u
50-29-3	4, 4'-DDT	0.10 u
72-43-5	Methoxychlor	0.5 u
53494-70-5	Endrin Ketone	0.10 u
57-74-9	Chlordane	0.5 u
8001-35-2	Toxaphene	1.0 u
12674-11-2	Aroclor-1016	0.5 u
11104-28-2	Aroclor-1221	0.5 u
11141-16-5	Aroclor-1232	0.5 u
53469-21-9	Aroclor-1242	0.5 u
12672-29-6	Aroclor-1248	0.5 u
11097-69-1	Aroclor-1254	1.0 u
11096-82-5	Aroclor-1260	1.0 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s — V_t 10000 ml V_i 1.0 ml

TD 3-16-87
R.H 3-20-87

Form 1

7/85

Clayton Environmental
888

6888 • 2-029-11

Sample Number
BI-999

206

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
No volatile compounds detected	VOA	—	—
5-methyl-2-hexanone	BNA	5.90	20 JB
unknown compound (background siloxane)	BNA	34.42	10 J

Sample Number
BK-102

207

Organics Analysis Data Sheet
(Page 1)

6888 · 2-028-34

Name: Clayton Environmental
Case No: 6888
No: B6775 (528418)
QC Report No: NA
Soil
Contract No: 68-01-7100
Authorized By: [signature]
Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 3/3/87

Date Analyzed: 3/3/87

Conc/Dil Factor: 1 pH 6.3

Percent Moisture: (Not Decanted) 56.50 %

		ug/l or ug/Kg (Circle One)	
	Chloromethane	23	U
	Bromomethane	23	U
	Vinyl Chloride	23	U
	Chloroethane	23	U
	Methylene Chloride	[illegible]	B
	Acetone	39	B
	Carbon Disulfide	14	N
	1, 1-Dichloroethene	11	U
	1, 1-Dichloroethane	11	U
	Trans-1, 2-Dichloroethene	11	U
	Chloroform	11	U
	1, 2-Dichloroethane	11	U
	2-Butanone	34	
	1, 1, 1-Trichloroethane	11	U
	Carbon Tetrachloride	11	U
	Vinyl Acetate	23	U
	Bromodichloromethane	11	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	16	N
10061-02-6	Trans-1, 3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1, 1, 2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-01-5	cis-1, 3-Dichloropropene	11	U
110-75-8	2-Chloroethylvinylether	23	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	23	U
591-78-6	2-Hexanone	23	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
	Total Xylenes	11	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

If the result is a value greater than or equal to the detection limit, report the value

Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC-MS. Single component pesticides ≥10 ng/µl in the final extract should be confirmed by GC-MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

M Matrix spike compound

N Instrument limit of detection was used because it was higher than the CRDL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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Form I

11/85

1/4

...ton Environmental

Sample Number
BK-102RE

208

6888 • 2-028-35

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

...Medium ~~(Circle One)~~ 13 3-14-87

...21/87 (A 1581)

...S (FOR GPC CLEANUP)

...nted) 56.50 %

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

use data from initial analysis

	ug/l or ug/Kg (Circle One)
...	1500 U
...Chloroethyl)Ether	1500 U
...rophenol	1500 U
...chlorobenzene	1500 U
...Dichlorobenzene	1500 U
...Alcohol	1500 U
...Dichlorobenzene	1500 U
...hylphenol	1500 U
...chloroisopropyl)Ether	1500 U
...thylpheno	1500 U
...itroso-Di-n-Propylamine	1500 U
...xachloroethane	1500 U
...robenzene	1500 U
...phorone	1500 U
...Nitrophenol	1500 U
...4-Dimethylphenol	1500 U
...enzoic Acid	7700 U
...bis-2-Chloroethoxy)Methane	1500 U
...2, 4-Dichlorophenol	1500 U
...1, 2, 4-Trichlorobenzene	1500 U
Naphthalene	1500 U
4-Chloroaniline	1500 U
Hexachlorobutadiene	1500 U
4-Chloro-3-Methylphenol	1500 U
2-Methylnaphthalene	1500 U
Hexachlorocyclopentadiene	1500 U
2, 4, 6-Trichlorophenol	1500 U
2, 4, 5-Trichlorophenol	7700 U
2-Chloronaphthalene	1500 U
2-Nitroaniline	7700 U
Dimethyl Phthalate	1500 U
Acenaphthylene	1500 U
3-Nitroaniline	7700 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1500 U
51-28-5	2, 4-Dinitrophenol	7700 U
100-02-7	4-Nitrophenol	7700 U
132-64-9	Dibenzofuran	1500 U
121-14-2	2, 4-Dinitrotoluene	1500 U
606-20-2	2, 6-Dinitrotoluene	1500 U
84-66-2	Diethylphthalate	1500 U
7005-72-3	4-Chlorophenyl-phenylether	1500 U
86-73-7	Fluorene	1500 U
100-01-6	4-Nitroaniline	7700 U
534-52-1	4, 6-Dinitro-2-Methylphenol	7700 U
86-30-6	N-Nitrosodiphenylamine (1)	1500 U
101-55-3	4-Bromophenyl-phenylether	1500 U
118-74-1	Hexachlorobenzene	1500 U
87-86-5	Pentachlorophenol	7700 U
85-01-8	Phenanthrene	1500 U
120-12-7	Anthracene	1500 U
84-74-2	Di-n-Butylphthalate	1500 U
206-44-0	Fluoranthene	1500 U
129-00-0	Pyrene	1500 U
85-68-7	Butylbenzylphthalate	1500 U
91-94-1	3, 3'-Dichlorobenzidine	4300 N
56-55-3	Benzo(a)Anthracene	1500 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1500 U
218-01-9	Chrysene	1500 U
117-84-0	Di-n-Octyl Phthalate	1500 U
205-99-2	Benzo(b)Fluoranthene	1700 N
207-08-9	Benzo(k)Fluoranthene	1500 U
50-32-8	Benzo(a)Pyrene	1500 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	2000 N
53-70-3	Dibenz(a, h)Anthracene	2500 N
191-24-2	Benzo(g, h, i)Perylene	2600 N

(1)-Cannot be separated from diphenylamine

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Form I

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Name Clayton
6888

6888 · 2-028A-07

Sample Number
BK-102

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Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Low Medium (Circle One)

Prepared: 2/28/87

3/7/87 (A 7406)

0.5 (GPC CLEANUP)

Moisture (Decanted) 56.50%

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

		ug/l or ug/Kg (Circle One)
	Phenol	1500 U
	bis(-2-Chloroethyl)Ether	1500 U
	2-Chlorophenol	1500 U
	1 3-Dichlorobenzene	1500 U
	1 4-Dichlorobenzene	1500 U
	Benzyl Alcohol	1500 U
	1 2-Dichlorobenzene	1500 U
	2-Methylphenol	1500 U
	bis(2-chloroisopropyl)Ether	1500 U
	4-Methylpheno	1500 U
	N-Nitroso-Di-n-Propylamine	1500 U
	Hexachloroethane	1500 U
	Nitrobenzene	1500 U
	Isophorone	1500 U
	2-Nitrophenol	1500 U
	2. 4-Dimethylphenol	1500 U
	Benzoic Acid	7700 U
	bis(-2-Chloroethoxy)Methane	1500 U
	2 4-Dichlorophenol	1500 U
	1 2. 4-Trichlorobenzene	1500 U
	Naphthalene	1500 U
	4-Chloroaniline	1500 U
	Hexachlorobutadiene	1500 U
	4-Chloro-3-Methylphenol	1500 U
	2-Methylnaphthalene	1500 U
	Hexachlorocyclopentadiene	1500 U
	2. 4 6-Trichlorophenol	1500 U
	2 4 5-Trichlorophenol	7700 U
	2-Chloronaphthalene	1500 U
	2-Nitroaniline	7700 U
	Dimethyl Phthalate	1500 U
	Acenaphthylene	1500 U
	3-Nitroaniline	7700 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1500 U
51-28-5	2. 4-Dinitrophenol	7700 U
100-02-7	4-Nitrophenol	7700 U
132-64-9	Dibenzofuran	1500 U
121-14-2	2. 4-Dinitrotoluene	1500 U
606-20-2	2. 6-Dinitrotoluene	1500 U
84-66-2	Diethylphthalate	1500 U
7005-72-3	4-Chlorophenyl-phenylether	1500 U
86-73-7	Fluorene	1500 U
100-01-6	4-Nitroaniline	7700 U
534-52-1	4. 6-Dinitro-2-Methylphenol	7700 U
86-30-6	N-Nitrosodiphenylamine (1)	1500 U
101-55-3	4-Bromophenyl-phenylether	1500 U
118-74-1	Hexachlorobenzene	1500 U
87-86-5	Pentachlorophenol	7700 U
85-01-8	Phenanthrene	1500 U
120-12-7	Anthracene	1500 U
84-74-2	Di-n-Butylphthalate	1500 U
206-44-0	Fluoranthene	1500 U
129-00-0	Pyrene	1500 U
85-68-7	Butylbenzylphthalate	1500 U
91-94-1	3. 3 -Dichlorobenzidine	3100 U
56-55-3	Benzo(a)Anthracene	1500 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1500 U
218-01-9	Chrysene	1500 U
117-84-0	Di-n-Octyl Phthalate	1500 U
205-99-2	Benzo(b)Fluoranthene	1500 U
207-08-9	Benzo(k)Fluoranthene	1500 U
50-32-8	Benzo(a)Pyrene	1500 U
193-39-5	Indeno(1 2. 3-cd)Pyrene	1500 U
53-70-3	Dibenz(a h)Anthracene	1500 U
191-24-2	Benzo(g. h. i)Perylene	1500 U

(1)-Cannot be separated from diphenylamine

Environmental

Sample Number
BK-102-RE

210

Organics Analysis Data Sheet
(Page 3)

6888 • 2-028-36

Pesticide/PCBs

Medium (Circle One)
March 1987
March 1987
Low Effluent x 0.1
Diluted) SG 50

GPC Cleanup ☒Yes ☐No
Separatory Funnel Extraction ☐Yes
Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/kg (Circle One)
319-84-6	Alpha-BHC	370
319-85-7	Beta-BHC	370
319-86-8	Delta-BHC	370
58-89-9	Gamma-BHC (Lindane)	370
76-44-8	Heptachlor	370
309-00-2	Aldrin	370
1024-57-3	Heptachlor Epoxide	370
959-98-8	Endosulfan I	370
60-57-1	Dieldrin	740
72-55-9	4, 4'-DDE	740
72-20-8	Endrin	740
33213-65-9	Endosulfan II	740
72-54-8	4, 4'-DDD	740
1031-07-8	Endosulfan Sulfate	740
50-29-3	4, 4'-DDT	740
72-43-5	Methoxychlor	3700
53494-70-5	Endrin Ketone	740
57-74-9	Chlordane	3700
8001-35-2	Toxaphene	7400
12674-11-2	Aroclor-1016	3700
11104-28-2	Aroclor-1221	3700
11141-16-5	Aroclor-1232	~~3700~~
53469-21-9	Aroclor-1242	~~3700~~
12672-29-6	Aroclor-1248	~~3700~~
11097-69-1	Aroclor-1254	~~7400~~
11096-82-5	Aroclor-1260	~~7400~~

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s ——— or W_s 30g V_t ~~20000ul~~ 40000ul - due to concent 1/2 ml. V_i 1.0ml

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T.O. 5-16-82
R.H 3-20-87

Sample Number
BK-103

211

6888 · 2-028-37

Organics Analysis Data Sheet
(Page 1)

Clayton Environmental
B6766 (538419)
Soil
Authorized By: [signature]

Case No: 6858
QC Report No: NA
Contract No: 68-01-7100
Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/3/87
Date Analyzed: 3/3/87
Conc/Dil Factor: 1 pH 6.5
Percent Moisture: (Not Decanted) 71.17 %

		ug/l or ug/Kg (Circle One)
	Chloromethane	35 U
	Bromomethane	35 U
	Vinyl Chloride	35 U
	Chloroethane	35 U
	Methylene Chloride	~~35~~ B
	Acetone	250 B
	Carbon Disulfide	21 N
	1,1-Dichloroethene	17 U
	1,1-Dichloroethane	17 U
	Trans-1,2-Dichloroethene	17 U
	Chloroform	17 U
	1,2-Dichloroethane	17 U
	2-Butanone	54
	1,1,1-Trichloroethane	17 U
	Carbon Tetrachloride	17 U
	Vinyl Acetate	35 U
	Bromodichloromethane	17 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1,2-Dichloropropane	24 N
10061-02-6	Trans-1,3-Dichloropropene	17 U
79-01-6	Trichloroethene	17 U
124-48-1	Dibromochloromethane	17 U
79-00-5	1,1,2-Trichloroethane	17 U
71-43-2	Benzene	17 U
10061-01-5	cis-1,3-Dichloropropene	17 U
110-75-8	2-Chloroethylvinylether	35 U
75-25-2	Bromoform	17 U
108-10-1	4-Methyl-2-Pentanone	35 U
591-78-6	2-Hexanone	35 U
127-18-4	Tetrachloroethene	17 U
79-34-5	1,1,2,2-Tetrachloroethane	17 U
108-88-3	Toluene	17 U
108-90-7	Chlorobenzene	17 U
100-41-4	Ethylbenzene	17 U
100-42-5	Styrene	17 U
	Total Xylenes	17 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

If the result is a value greater than or equal to the detection limit, report the value

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

M Matrix spike compound

N Instrument limit of detection was used because it was higher than the CRDL

A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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Form I

11/85

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...ayton Environmental

Sample Number
BK-103 RE

212

Organics Analysis Data Sheet
(Page 2)

8888 • 2-028-38

Semivolatile Compounds

...Low Medium (Circle One) 03/26/87

...ered: 3/13/87

...3/28/87 (A7633)

...0.5 (FOR GPC CLEANUP)

...Decanted) 71.17%

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

use data from initial analyses

		ug/l or ug/Kg (Circle One)
	...enol	2300 U
	...2-Chloroethyl)Ether	2300 U
	...Chlorophenol	2300 U
	...3-Dichlorobenzene	2300 U
	...4-Dichlorobenzene	2300 U
	...nzyl Alcohol	2300 U
	...2-Dichlorobenzene	2300 U
	...Methylphenol	2300 U
	...(2-chloroisopropyl)Ether	2300 U
	...Methylpheno	2300 U
	...Nitroso-Di-n-Propylamine	2300 U
	Hexachloroethane	2300 U
	Nitrobenzene	2300 U
	Isophorone	2300 U
	2-Nitrophenol	2300 U
	2, 4-Dimethylphenol	2300 U
	Benzoic Acid	12000 U
	bis(-2-Chloroethoxy)Methane	2300 U
	2, 4-Dichlorophenol	2300 U
	1, 2, 4-Trichlorobenzene	2300 U
	Naphthalene	2300 U
	4-Chloroaniline	2300 U
	Hexachlorobutadiene	2300 U
	4-Chloro-3-Methylphenol	2300 U
	2-Methylnaphthalene	2300 U
	Hexachlorocyclopentadiene	2300 U
	2, 4, 6-Trichlorophenol	2300 U
	2, 4, 5-Trichlorophenol	12000 U
	2-Chloronaphthalene	2300 U
	2-Nitroaniline	12000 U
...3	Dimethyl Phthalate	2300 U
...8	Acenaphthylene	2300 U
...2	3-Nitroaniline	12000 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	2300 U
51-28-5	2, 4-Dinitrophenol	12000 U
100-02-7	4-Nitrophenol	12000 U
132-64-9	Dibenzofuran	2300 U
121-14-2	2, 4-Dinitrotoluene	2300 U
606-20-2	2, 6-Dinitrotoluene	2300 U
84-66-2	Diethylphthalate	2300 U
7005-72-3	4-Chlorophenyl-phenylether	2300 U
86-73-7	Fluorene	2300 U
100-01-6	4-Nitroaniline	12000 U
534-52-1	4, 6-Dinitro-2-Methylphenol	12000 U
86-30-6	N-Nitrosodiphenylamine (1)	2300 U
101-55-3	4-Bromophenyl-phenylether	2300 U
118-74-1	Hexachlorobenzene	2300 U
87-86-5	Pentachlorophenol	12000 U
85-01-8	Phenanthrene	2300 U
120-12-7	Anthracene	2300 U
84-74-2	Di-n-Butylphthalate	2300 U
206-44-0	Fluoranthene	2300 U
129-00-0	Pyrene	2300 U
85-68-7	Butylbenzylphthalate	2300 U
91-94-1	3, 3'-Dichlorobenzidine	6500 N
56-55-3	Benzo(a)Anthracene	2300 U
117-81-7	bis(2-Ethylhexyl)Phthalate	2300 U
218-01-9	Chrysene	2300 U
117-84-0	Di-n-Octyl Phthalate	2300 U
205-99-2	Benzo(b)Fluoranthene	2500 N
207-08-9	Benzo(k)Fluoranthene	2300 U
50-32-8	Benzo(a)Pyrene	2300 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3000 N
53-70-3	Dibenz(a, h)Anthracene	3700 N
191-24-2	Benzo(g, h, i)Perylene	3900 N

(1)-Cannot be separated from diphenylamine

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Form I

7 85

...atory Name Clayton
...No 6888

Sample Number
BK-103

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6888 · 2-028A-11

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

...ntration: Low Medium (Circle One)
...Extracted/Prepared: 2/28/87
...Analyzed: 3/7/87 (A7407)
...Dil Factor: 0.5 (GPC CLEANUP)
...nt Moisture (Decanted) 71.17%

GPC Cleanup ☒Yes ☐No
Separatory Funnel Extraction ☐Yes
Continuous Liquid - Liquid Extraction ☐Yes

...S Number		ug/l or ug/Kg (Circle One)
...5-2	Phenol	2300 U
...-44-4	bis(-2-Chloroethyl)Ether	2300 U
...-8	2-Chlorophenol	2300 U
...-73-1	1 3-Dichlorobenzene	2300 U
...-46-7	1 4-Dichlorobenzene	2300 U
...-51-6	Benzyl Alcohol	2300 U
...-1	1 2-Dichlorobenzene	2300 U
...-7	2-Methylphenol	2300 U
...-32-9	bis(2-chloroisopropyl)Ether	2300 U
...-5	4-Methylpheno	2300 U
...-7	N-Nitroso-Di-n-Propylamine	2300 U
...-1	Hexachloroethane	2300 U
...-3	Nitrobenzene	2300 U
...-1	Isophorone	2300 U
...-5	2-Nitrophenol	2300 U
...-9	2. 4-Dimethylphenol	2300 U
...-0	Benzoic Acid	12000 U
...-1	bis(-2-Chloroethoxy)Methane	2300 U
...-2	2. 4-Dichlorophenol	2300 U
...-1	1. 2. 4-Trichlorobenzene	2300 U
...-3	Naphthalene	2300 U
...-8	4-Chloroaniline	2300 U
...-3	Hexachlorobutadiene	2300 U
...-7	4-Chloro-3-Methylphenol	2300 U
...-8	2-Methylnaphthalene	2300 U
...-4	Hexachlorocyclopentadiene	2300 U
...-2	2. 4. 6-Trichlorophenol	2300 U
...-4	2. 4 5-Trichlorophenol	12000 U
...-7	2-Chloronaphthalene	2300 U
...-4	2-Nitroaniline	12000 U
...-11-3	Dimethyl Phthalate	2300 U
...-8	Acenaphthylene	2300 U
...-2	3-Nitroaniline	12000 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	2300 U
51-28-5	2. 4-Dinitrophenol	12000 U
100-02-7	4-Nitrophenol	12000 U
132-64-9	Dibenzofuran	2300 U
121-14-2	2. 4-Dinitrotoluene	2300 U
606-20-2	2. 6-Dinitrotoluene	2300 U
84-66-2	Diethylphthalate	2300 U
7005-72-3	4-Chlorophenyl-phenylether	2300 U
86-73-7	Fluorene	2300 U
100-01-6	4-Nitroaniline	12000 U
534-52-1	4. 6-Dinitro-2-Methylphenol	12000 U
86-30-6	N-Nitrosodiphenylamine (1)	2300 U
101-55-3	4-Bromophenyl-phenylether	2300 U
118-74-1	Hexachlorobenzene	2300 U
87-86-5	Pentachlorophenol	12000 U
85-01-8	Phenanthrene	2300 U
120-12-7	Anthracene	2300 U
84-74-2	Di-n-Butylphthalate	2300 U
206-44-0	Fluoranthene	2300 U
129-00-0	Pyrene	2300 U
85-68-7	Butylbenzylphthalate	2300 U
91-94-1	3. 3 -Dichlorobenzidine	4600 U
56-55-3	Benzo(a)Anthracene	2300 U
117-81-7	bis(2-Ethylhexyl)Phthalate	2300 U
218-01-9	Chrysene	2300 U
117-84-0	Di-n-Octyl Phthalate	2300 U
205-99-2	Benzo(b)Fluoranthene	2300 U
207-08-9	Benzo(k)Fluoranthene	2300 U
50-32-8	Benzo(a)Pyrene	2300 U
193-39-5	Indeno(1. 2. 3-cd)Pyrene	2300 U
53-70-3	Dibenz(a h)Anthracene	2300 U
191-24-2	Benzo(g. h. i)Perylene	2300 U

(1)-Cannot be separated from diphenylamine

Form I

7 85

ame: Clayton Environmental

888

Sample Number
BK-103-RE

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Organics Analysis Data Sheet
(Page 3)

6888 • 2-028-39

Pesticide/PCBs

n: Low Medium (Circle One)

d/Prepared: 13 [illegible] 3/24 14 March 1987

14 March 1987

or: 0.5 (GPC Effect) x 0.02

ture (decanted) 71.17

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	2800 u
319-85-7	Beta-BHC	2800 u
319-86-8	Delta-BHC	2800 u
58-89-9	Gamma-BHC (Lindane)	2800 u
76-44-8	Heptachlor	2800 u
309-00-2	Aldrin	2800 u
1024-57-3	Heptachlor Epoxide	2800 u
959-98-8	Endosulfan I	2800 u
60-57-1	Dieldrin	5500 u
72-55-9	4, 4'-DDE	5500 u
72-20-8	Endrin	5500 u
33213-65-9	Endosulfan II	5500 u
72-54-8	4, 4'-DDD	5500 u
1031-07-8	Endosulfan Sulfate	5500 u
50-29-3	4, 4'-DDT	5500 u
72-43-5	Methoxychlor	28000 u
53494-70-5	Endrin Ketone	5500 u
57-74-9	Chlordane	28000 u
8001-35-2	Toxaphene	55000 u
12674-11-2	Aroclor-1016	28000 u
11104-28-2	Aroclor-1221	28000 u
11141-16-5	Aroclor-1232	28000 u
53469-21-9	Aroclor-1242	28000 u
12672-29-6	Aroclor-1248	28000 u
11097-69-1	Aroclor-1254	55000 u
11096-82-5	Aroclor-1260	55000 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

or W_s 30g V_t 20000 ul V_i 1.0 ul

20000 ul - due to GPC and 1/2 [illegible]

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T.O. 3-16-87
R.H 3-20-87

Form 1

7/85

Name: Clayton Environmental
6888

6888 • 2-029-13

Sample Number
BK-103RE
BK-103

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
	NO VOLATILE COMPOUNDS FOUND	VOA	—	—
	UNKNOWN COMPOUND	BNA	5.27	3000 J
13452	4-HYDROXY-4-METHYL-2-PENTANONE	BNA	5.87	60000 J,B*
74773	2,3-DIMETHYL HEPTANE	BNA	6.18	4000 J,B
6430	2-HEPTANONE	BNA	6.23	10000 J,B
54344	4-METHYL OCTANE	BNA	6.38	6000 J,B
216833	3-METHYL OCTANE	BNA	6.54	10000 J,B
	UNKNOWN COMPOUND	BNA	8.33	4000 J
	UNKNOWN COMPOUND	BNA	9.31	3000 J
	UNKNOWN COMPOUND	BNA	10.52	5000 J
629935	NONADECANE	BNA	21.92	2000 J
	UNKNOWN COMPOUND - Sulfur S_7	BNA	23.39	2000 J
10544700	MOL. SULFUR	BNA	26.89	90000 J
	UNKNOWN (POSSIBLE HYDROCARBON)	BNA	26.97	2000 J
	UNKNOWN (POSSIBLE HYDROCARBON)	BNA	33.59	3000 J
	POSSIBLE TETRAMETHYLHEXADECATRIENOL	BNA	34.89	2000 J
629970	DOCOSANE	BNA	35.43	6000 J
638675	TRICOSANE	BNA	37.36	3000 J
	UNKNOWN COMPOUND	BNA	40.88	20000 J
	UNKNOWN COMPOUND	BNA	41.08	10000 J
	UNKNOWN COMPOUND	BNA	41.33	4000 J
	UNKNOWN COMPOUND	BNA	41.79	3000 J
	UNKNOWN COMPOUND	BNA	41.99	20000 J
	UNKNOWN COMPOUND	BNA	42.45	10000 J

* Possible aldol condensation product.

Sample Number
BK-104

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6888 • 2-028-40

Organics Analysis Data Sheet
(Page 1)

Name: Clayton Environmental
ID No: B6765 (528420)
Matrix: Soil
Authorized By: [signature]

Case No: 6888
QC Report No: NA
Contract No: 68-01-7100
Date Sample Received: 2/26/87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 3/3/87
Date Analyzed: 3/3/87
Cond/Dil Factor: 1 pH 6.5
Percent Moisture: (Not Decanted) 63.26 %

		ug/l or ug/Kg (Circle One)
	Chloromethane	27 U
	Bromomethane	27 U
	Vinyl Chloride	3 J
	Chloroethane	~~27~~ U
	Methylene Chloride	~~38~~ B
	Acetone	~~[illegible]~~ B
	Carbon Disulfide	16 N
	1, 1-Dichloroethene	14 U
	1, 1-Dichloroethane	14 U
	Trans-1, 2-Dichloroethene	14 U
	Chloroform	14 U
	1, 2-Dichloroethane	14 U
	2-Butanone	36
	1, 1, 1-Trichloroethane	14 U
	Carbon Tetrachloride	14 U
	Vinyl Acetate	27 U
	Bromodichloromethane	14 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	19 N
10061-02-6	Trans-1, 3-Dichloropropene	14 U
79-01-6	Trichloroethene	4 J
124-48-1	Dibromochloromethane	14 U
79-00-5	1, 1, 2-Trichloroethane	14 U
71-43-2	Benzene	14 U
10061-01-5	cis-1, 3-Dichloropropene	14 U
110-75-8	2-Chloroethylvinylether	27 U
75-25-2	Bromoform	14 U
108-10-1	4-Methyl-2-Pentanone	27 U
591-78-6	2-Hexanone	27 U
127-18-4	Tetrachloroethene	14 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	14 U
108-88-3	Toluene	14 U
108-90-7	Chlorobenzene	14 U
100-41-4	Ethylbenzene	14 U
100-42-5	Styrene	14 U
	Total Xylenes	14 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

- If the result is a value greater than or equal to the detection limit, report the value
- U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample
- J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.
- C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS
- B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action
- Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report
- N Matrix spike compound
- H Instrument limit of detection was used because it was higher than the CRDL
- A Indicates a value less than the dilution corrected limit of detection but greater than the CRDL

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Clayton Environmental

Sample Number
BK-104 RE

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Organics Analysis Data Sheet
(Page 2)

8888 • 2-028-41

Semivolatile Compounds

Low Medium (Circle One) 03/20/87

Prepared: 3/13/87

13/28/87 (#7632)

: 0.5 (FOR GPC CLEANUP)

(Decanted) 63.26 %

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

use data from initial analysis

		ug/l or ug/Kg (Circle One)
	enol	1800 u
	(-2-Chloroethyl)Ether	1800 u
	Chlorophenol	1800 u
	3-Dichlorobenzene	1800 u
	4-Dichlorobenzene	1800 u
	Benzyl Alcohol	1800 u
	2-Dichlorobenzene	1800 u
	2-Methylphenol	1800 u
	bis(2-chloroisopropyl)Ether	1800 u
	4-Methylpheno	1800 u
	N-Nitroso-Di-n-Propylamine	1800 u
	Hexachloroethane	1800 u
	Nitrobenzene	1800 u
	Isophorone	1800 u
	2-Nitrophenol	1800 u
	2, 4-Dimethylphenol	1800 u
	Benzoic Acid	9100 u
	bis(-2-Chloroethoxy)Methane	1800 u
	2, 4-Dichlorophenol	1800 u
	1, 2, 4-Trichlorobenzene	1800 u
	Naphthalene	1800 u
	4-Chloroaniline	1800 u
	Hexachlorobutadiene	1800 u
	4-Chloro-3-Methylphenol	1800 u
	2-Methylnaphthalene	1800 u
	Hexachlorocyclopentadiene	1800 u
	2, 4, 6-Trichlorophenol	1800 u
	2, 4, 5-Trichlorophenol	9100 u
7	2-Chloronaphthalene	1800 u
4	2-Nitroaniline	9100 u
1-3	Dimethyl Phthalate	1800 u
6-8	Acenaphthylene	1800 u
-2	3-Nitroaniline	9100 u

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1800 u
51-28-5	2, 4-Dinitrophenol	9100 u
100-02-7	4-Nitrophenol	9100 u
132-64-9	Dibenzofuran	1800 u
121-14-2	2, 4-Dinitrotoluene	1800 u
606-20-2	2, 6-Dinitrotoluene	1800 u
84-66-2	Diethylphthalate	1800 u
7005-72-3	4-Chlorophenyl-phenylether	1800 u
86-73-7	Fluorene	1800 u
100-01-6	4-Nitroaniline	9100 u
534-52-1	4, 6-Dinitro-2-Methylphenol	9100 u
86-30-6	N-Nitrosodiphenylamine (1)	1800 u
101-55-3	4-Bromophenyl-phenylether	1800 u
118-74-1	Hexachlorobenzene	1800 u
87-86-5	Pentachlorophenol	9100 u
85-01-8	Phenanthrene	1800 u
120-12-7	Anthracene	1800 u
84-74-2	Di-n-Butylphthalate	1800 u
206-44-0	Fluoranthene	1800 u
129-00-0	Pyrene	1800 u
85-68-7	Butylbenzylphthalate	1800 u
91-94-1	3, 3'-Dichlorobenzidine	5100 N
56-55-3	Benzo(a)Anthracene	1800 u
117-81-7	bis(2-Ethylhexyl)Phthalate	1800 u
218-01-9	Chrysene	1800 u
117-84-0	Di-n-Octyl Phthalate	1800 u
205-99-2	Benzo(b)Fluoranthene	12000 N
207-08-9	Benzo(k)Fluoranthene	1800 u
50-32-8	Benzo(a)Pyrene	1800 u
193-39-5	Indeno(1, 2, 3-cd)Pyrene	2400 N
53-70-3	Dibenz(a, h)Anthracene	2900 N
191-24-2	Benzo(g, h, i)Perylene	3100 N

(1)-Cannot be separated from diphenylamine

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Form I

7 85

1.6

Laboratory Name Clayton

Case No. 6888

6888 • 2-028A-13

Sample Number BK-104

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Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared 2/28/87

Date Analyzed 3/10/87 (A7444)

Dilution Factor 0.5 (FOR GPC CLEANUP)

Percent Moisture (Decanted) 63.26 %

GPC Cleanup ☒Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	1800	U
111-44-4	bis(2-Chloroethyl)Ether	1800	U
95-57-8	2-Chlorophenol	1800	U
541-73-1	1,3-Dichlorobenzene	1800	U
106-46-7	1,4-Dichlorobenzene	1800	U
100-51-6	Benzyl Alcohol	1800	U
95-50-1	1,2-Dichlorobenzene	1800	U
95-48-7	2-Methylphenol	1800	U
108-60-1	bis(2-chloroisopropyl)Ether	1800	U
106-44-5	4-Methylphenol	1800	U
621-64-7	N-Nitroso-Di-n-Propylamine	1800	U
67-72-1	Hexachloroethane	1800	U
98-95-3	Nitrobenzene	1800	U
78-59-1	Isophorone	1800	U
88-75-5	2-Nitrophenol	1800	U
105-67-9	2,4-Dimethylphenol	1800	U
65-85-0	Benzoic Acid	9100	U
111-91-1	bis(2-Chloroethoxy)Methane	1800	U
120-83-2	2,4-Dichlorophenol	1800	U
120-82-1	1,2,4-Trichlorobenzene	1800	U
91-20-3	Naphthalene	1800	U
106-47-8	4-Chloroaniline	1800	U
87-68-3	Hexachlorobutadiene	1800	U
59-50-7	4-Chloro-3-Methylphenol	1800	U
91-57-6	2-Methylnaphthalene	1800	U
77-47-4	Hexachlorocyclopentadiene	1800	U
88-06-2	2,4,6-Trichlorophenol	1800	U
95-95-4	2,4,5-Trichlorophenol	9100	U
91-58-7	2-Chloronaphthalene	1800	U
88-74-4	2-Nitroaniline	9100	U
131-11-3	Dimethyl Phthalate	1800	U
208-96-8	Acenaphthylene	1800	U
99-09-2	3-Nitroaniline	9100	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	1800	U
51-28-5	2,4-Dinitrophenol	9100	U
100-02-7	4-Nitrophenol	9100	U
132-64-9	Dibenzofuran	1800	U
121-14-2	2,4-Dinitrotoluene	1800	U
606-20-2	2,6-Dinitrotoluene	1800	U
84-66-2	Diethylphthalate	7400	
7005-72-3	4-Chlorophenyl-phenylether	1800	U
86-73-7	Fluorene	1800	U
100-01-6	4-Nitroaniline	9100	U
534-52-1	4,6-Dinitro-2-Methylphenol	9100	U
86-30-6	N-Nitrosodiphenylamine (1)	1800	U
101-55-3	4-Bromophenyl-phenylether	1800	U
118-74-1	Hexachlorobenzene	1800	U
87-86-5	Pentachlorophenol	9100	U
85-01-8	Phenanthrene	1800	U
120-12-7	Anthracene	1800	U
84-74-2	Di-n-Butylphthalate	1800	U
206-44-0	Fluoranthene	1800	U
129-00-0	Pyrene	1800	U
85-68-7	Butylbenzylphthalate	1800	U
91-94-1	3,3'-Dichlorobenzidine	3600	U
56-55-3	Benzo(a)Anthracene	1800	U
117-81-7	bis(2-Ethylhexyl)Phthalate	730	J
218-01-9	Chrysene	1800	U
117-84-0	Di-n-Octyl Phthalate	1800	U
205-99-2	Benzo(b)Fluoranthene	1800	U
207-08-9	Benzo(k)Fluoranthene	1800	U
50-32-8	Benzo(a)Pyrene	1800	U
193-39-5	Indeno(1,2,3-cd)Pyrene	1800	U
53-70-3	Dibenz(a,h)Anthracene	1800	U
191-24-2	Benzo(g,h,i)Perylene	1800	U

(1)-Cannot be separated from diphenylamine

e: Clayton Environmental

Sample Number
BK-1AH-RE

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Organics Analysis Data Sheet
(Page 3)

8888 • 2-028-42

Pesticide/PCBs

Low Medium (Circle One)

/Prepared: 13 M 3/20/87 14 March 1987

15 March 1987

or: 0.5 (GPC Effect) x 0.02

ure (decanted) 63.26

GPC Cleanup ☑Yes ☐No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	2200 u
319-85-7	Beta-BHC	2200 u
319-86-8	Delta-BHC	2200 u
58-89-9	Gamma-BHC (Lindane)	2200 u
76-44-8	Heptachlor	2200 u
309-00-2	Aldrin	2200 u
1024-57-3	Heptachlor Epoxide	2200 u
959-98-8	Endosulfan I	2200 u
60-57-1	Dieldrin	4400 u
72-55-9	4, 4'-DDE	4400 u
72-20-8	Endrin	4400 u
33213-65-9	Endosulfan II	4400 u
72-54-8	4, 4'-DDD	4400 u
1031-07-8	Endosulfan Sulfate	4400 u
50-29-3	4, 4'-DDT	4400 u
72-43-5	Methoxychlor	22000 u
53494-70-5	Endrin Ketone	4400 u
57-74-9	Chlordane	22000 u
8001-35-2	Toxaphene	44000 u
12674-11-2	Aroclor-1016	22000 u
11104-28-2	Aroclor-1221	22000 u
11141-16-5	Aroclor-1232	22000 u
53469-21-9	Aroclor-1242	22000 u
12672-29-6	Aroclor-1248	22000 u
11097-69-1	Aroclor-1254	44000 u
11096-82-5	Aroclor-1260	44000 u

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s — or W_s 30 g V_t 20000 ul V_i 1.0 ul

20000 ul - Same to GPC and 1/20 dil

... 477

T.O. 3-16-87
R.H 3-20-87

Form 1

7/85

6888 · 2-029-14

...ton Environmental

Sample Number
BK-104
BK-104RE

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
VOLATILE COMPOUNDS FOUND	VOA	—	—
UNKNOWN COMPOUND	BNA	5.27	2000 J
ETHYDILEY-4-METHYL-2-PENTANONE*	BNA	5.55	30000 JB
2,3-DIMETHYL HEPTANE	BNA	6.14	2000 JB
2-HEPTANONE	BNA	6.23	8000 JB
4-METHYL OCTANE	BNA	6.38	4000 JB
3-METHYL OCTANE	BNA	6.54	6000 JB
UNKNOWN COMPOUND	BNA	8.33	3000 J
UNKNOWN COMPOUND	BNA	9.31	3000 J
UNKNOWN COMPOUND	BNA	10.52	2000 J
ETHYL SULFUR	BNA	26.83	20000 J
UNKNOWN COMPOUND	BNA	31.38	1000 J
UNKNOWN COMPOUND	BNA	33.40	1000 J
UNKNOWN (POSSIBLE HYDROCARBON)	BNA	33.60	2000 J
UNKNOWN COMPOUND	BNA	34.89	2000 J
POSSIBLE DOCOSANE	BNA	35.45	5000 J
POSSIBLE TRICOSANE	BNA	37.36	3000 J
UNKNOWN (POSSIBLE HYDROCARBON+SILOXANE)	BNA	39.97	900 J
UNKNOWN COMPOUND	BNA	40.89	10000 J
UNKNOWN COMPOUND	BNA	41.09	2000 J
UNKNOWN COMPOUND	BNA	41.63	1000 J
UNKNOWN COMPOUND	BNA	42.00	9000 J
UNKNOWN COMPOUND	BNA	42.46	4000 J
UNKNOWN COMPOUND	BNA	43.33	3000 J

* Possible aldol condensation product.

INORGANIC DATA QUALIFIER

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Footnotes:

NR - not required by contract at this time.

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]. Indicate the analytical method used with P (for ICP/Flame AA) or F (for furnace).

U - Indicates elemant was analyzed for but not detected. Report with the detection limit value (e.g., 10U).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

S - Indicates value determined by Method of Standard Addition.

R - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis in not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995

222

0034-SAR
02-8612-11

STANDARD OPERATING PROCEDURE

Date: Sep-3 1986
Number: HW-2
Revision: 5

Title: Appendix A.3: Data Acceptability Narrative

Case# 6888 Site AMENIA
Lab VERSAR INC.

A.3.1 Are all data of acceptable quality? Yes ___ No ✓

If no, list exceptions with reason(s) for rejection of qualification as estimated value (J).

① Ba; Samples MB1 486, 493-498
Fe; Samples MB1 493-495, 498
Na; Samples MB1 486-489, 498, 500-502
V; Samples MB1 486-489, 500-502
: Concentration of field blank does not falls below two (2) times IDL for all aqueous parameters. Data rejected (red-lined) for all aqueous data, except field blank, that has a concentration less than ten (10) times the field blank value but not flagged with 'u'.

② Ca; Samples MB1 486-489, 500-502
: Data rejected (red-lined); RPD value is outside the control limit; the difference between the sample and duplicate concentrations is greater than two (2) times CRDL where the sample and/or duplicate is less than five (5) times CRDL but greater than CRDL.

MMB Reviewer: Frank J. Merino Date: 09-16-87
Signature

Verified by: Harif Sheikh Date: 9/25/87
Signature

5266b

A.3.1 (Continuation)

③ Tl; Sample 498 ⇒ Value for concentration reported incorrectly; changed from 10u to 11u (ug/L)
: Data acceptable

④ FORM IX: SERIAL DILUTION

Be; Ni; Na; Samples 486-489, 500-502 (soil)
: Data flagged as estimated 'J', RPD values greater than 10% but less than 100%.

A.3.2 Contract Problems/Non-compliance

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA 22313
703/557-2490 FTS:8-557-2490

224

DATE 3/17/87

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

LAB NAME: VERSAR, INC.
SOW 784

QC REPORT: 40
CASE NO. 6888
PROJECT NO.: 957.0000

SAMPLE NUMBERS

EPA NO.	LAB ID NO.	EPA NO.	LAB ID NO.
B I 493	23870	M B I 486	23877
B I 494	23871	M B I 487	23878
M B I 495	23872	M B I 488	23879
M B I 496	23873	M B I 489	23880
B I 497	23874	M B I 500	23881
M B I 498	23875	M B I 501	23882
M B I 504	23876	M B I 502	23883

COMMENTS:

ICP INTERELEMENT AND BACKGROUND CORRECTION APPLIED? YES.
CORRECTIONS APPLIED BEFORE GENERATION OF RAW DATA.

FOOTNOTES:

NR - NOT REQUIRED BY CONTRACT AT THIS TIME
FORM I:

VALUE - IF THE RESULT IS A VALUE GREATER THAN OR EQUAL TO THE INSTRUMENT DETECTION LIMIT BUT LESS THAN THE CONTRACT REQUIRED DETECTION LIMIT. REPORT THE VALUE IN BRACKETS (I.E., [10]). INDICATE THE ANALYTICAL METHOD USED WITH P (FOR ICP/FLAME AA) OR F (FOR FURNACE).
U - INDICATES ELEMENT WAS ANALYZED FOR BUT NOT DETECTED. REPORT WITH THE DETECTION LIMIT VALUE (E.G., 10U).
E - INDICATES A VALUE ESTIMATED OR NOT REPORTED DUE TO THE PRESENCE OF INTERFERENCE. EXPLANATORY NOTE INCLUDED ON COVER PAGE.
S - INDICATES VALUE DETERMINED BY METHOD OF STANDARD ADDITION
R - INDICATES SPIKE SAMPLE RECOVERY IS NOT WITHIN CONTROL LIMITS.
* - INDICATES DUPLICATE ANALYSIS IS NOT WITHIN CONTROL LIMITS.
+ - INDICATES THE CORRELATION COEFFICIENT FOR METHOD OF STANDARD ADDITION IS LESS THAN 0.995
DF - DILUTION FACTOR
SD - SAMPLE USED FOR ICP SERIAL DILUTION

6888-2

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MBI 486

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SDW NO. 784

LAB SAMPLE ID. NO. 23877

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

See reanalyzed

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	6600.	P	13.	MAGNESIUM	10800.	* P
2.	ANTIMONY	22. UR	P	14.	MANGANESE	663.	P
3.	ARSENIC	6.4	F	15.	MERCURY	0.11U	
4.	BARIUM	[18.]	P	16.	NICKEL	26.	P
5.	BERYLLIUM	.58 UR	P	17.	POTASSIUM	[1100.]	P
6.	CADMIUM	1.7 U	P	18.	SELENIUM	2.9	F
7.	CALCIUM	21300.	* P	19.	SILVER	2.9 U	P
8.	CHROMIUM	8.6	P	20.	SODIUM	[92.]	P
9.	COBALT	[12.]	P	21.	THALLIUM	5.8U	F
10.	COPPER	22.	P	22.	TIN	6.4 U	P
11.	IRON	20000.	P	23.	VANADIUM	[11.]	P
12.	LEAD		F	24.	ZINC	49.	P
	CYANIDE				PERCENT SOLIDS	86.4	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

FORM I

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U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MBI 487

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

LOW NO. 784

LAB SAMPLE ID. NO. 23878

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	10200.	P	13.	MAGNESIUM	14400.	P
2.	ANTIMONY	24. U	P	14.	MANGANESE	793.	P
3.	ARSENIC	10.	F	15.	MERCURY	0.12 U	
4.	BARIUM	[62.]	P	16.	NICKEL	52.	P
5.	BERYLLIUM	.62 U	P	17.	POTASSIUM	[1470.]	P
6.	CADMIUM	1.9 U	P	18.	SELENIUM	3.1 U	F
7.	CALCIUM	23400.	P	19.	SILVER	3.1 U	P
8.	CHROMIUM	18.	P	20.	SODIUM	[111.]	P
9.	COBALT	[22.]	P	21.	THALLIUM	6.2 U	F
10.	COPPER	36.	P	22.	TIN	6.8 U	P
11.	IRON	40900.	P	23.	VANADIUM	[18.]	P
12.	LEAD	134.	F	24.	ZINC	179.	P
	CYANIDE				PERCENT SOLIDS	80.8	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

FORM I

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

227

SAMPLE NO.
MBI 487

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SDW NO. 784

LAB SAMPLE ID. NO. 23878

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

See Illustration

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL OIL X

MG/KG DRY WEIGHT

1.	ALUMINUM	10200.	P
2.	ANTIMONY	24. UR	P
3.	ARSENIC	10.	F
4.	BARIUM	[62.]	P
5.	BERYLLIUM	.62 UR	P
6.	CADMIUM	1.9 U	P
7.	CALCIUM	23400.	P
8.	CHROMIUM	18.	P
9.	COBALT	[22.]	P
10.	COPPER	36.	P
11.	IRON	40900.	P
12.	LEAD	134.	F
	CYANIDE		
13.	MAGNESIUM	14400.	P
14.	MANGANESE	793.	P
15.	MERCURY	0.12 U	
16.	NICKEL	52.	P
17.	POTASSIUM	[1470.]	P
18.	SELENIUM	3.1 U	F
19.	SILVER	3.1 U	P
20.	SODIUM	[111.]	P
21.	THALLIUM	6.2 U	F
22.	TIN	6.8 U	P
23.	VANADIUM	[18.]	P
24.	ZINC	179.	P
	PERCENT SOLIDS	80.8	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAYFIELD

FORM I

228

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MBI 488

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SDW NO. 784

LAB SAMPLE ID. NO. 23879

QC REPORT NO: 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

Rel — Resubmittal

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	12800.	P	13.	MAGNESIUM	14300.	P
2.	ANTIMONY	27. UR	P	14.	MANGANESE	573.	P
3.	ARSENIC	7.0U	F	15.	MERCURY	0.14U	
4.	BARIUM	[74.]	P	16.	NICKEL	29.	P
5.	BERYLLIUM	.70 UR	P	17.	POTASSIUM	[1350.]	P
6.	CADMIUM	2.1 U	P	18.	SELENIUM	3.5U	F
7.	CALCIUM	18900.	P	19.	SILVER	3.5 U	P
8.	CHROMIUM	17.	P	20.	SODIUM	[113.]	P
9.	COBALT	[14.]	P	21.	THALLIUM	7.0U	F
10.	COPPER	50.	P	22.	TIN	[7.8]	P
11.	IRON	33300.	P	23.	VANADIUM	[20.]	P
12.	LEAD	80.	F	24.	ZINC	224.	P
	CYANIDE				PERCENT SOLIDS	71.5	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

FORM -

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

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SAMPLE NO.
MBI 489

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SOW NO. 784

LAB SAMPLE ID. NO. 23880

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

See [illegible]

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	20600.	P	13.	MAGNESIUM	6700.	P
2.	ANTIMONY	33. UR	P	14.	MANGANESE	387.	P
3.	ARSENIC	8.6U	F	15.	MERCURY	0.17U	
4.	BARIUM	[84.]	P	16.	NICKEL	[31.]	P
5.	BERYLLIUM	[1.1] R	P	17.	POTASSIUM	[984.]	P
6.	CADMIUM	2.6 U	P	18.	SELENIUM	4.3U	F
7.	CALCIUM	[3590.]	P	19.	SILVER	4.3 U	P
8.	CHROMIUM	24.	P	20.	SODIUM	[163.]	P
9.	COBALT	[12.]	P	21.	THALLIUM	8.6U	F
10.	COPPER	6.9 U	P	22.	TIN	9.5 U	P
11.	IRON	30600.	P	23.	VANADIUM	[32.]	P
12.	LEAD	43	F S	24.	ZINC	97.	P
	CYANIDE				PERCENT SOLIDS	57.8	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

FORM I

S. EPA CONTRACT LABORATORY PROGRAM
MPLE MANAGEMENT OFFICE
.O. BOX 818 - ALEXANDRIA, VA. 22313
3/557-2490 FTS: 8-557-2490

230

SAMPLE NO.
MBI 489

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

AB NAME VERSAR INC.

CASE NO. 6888

W NO. 784

AB SAMPLE ID. NO. 23880

QC REPORT NO. 40

ROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

NCENTRATION: LOW X MEDIUM

TRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	20600.	P	13.	MAGNESIUM	6700.	P
2.	ANTIMONY	33. U	P	14.	MANGANESE	387.	P
3.	ARSENIC	8.6U	F	15.	MERCURY	0.17U	
4.	BARIUM	[84.]	P	16.	NICKEL	[31.]	P
5.	BERYLLIUM	[1.1]	P	17.	POTASSIUM	[984.]	P
6.	CADMIUM	2.6 U	P	18.	SELENIUM	4.3U	F
7.	CALCIUM	[3590.]	P	19.	SILVER	4.3 U	P
8.	CHROMIUM	24.	P	20.	SODIUM	[163.]	P
9.	COBALT	[12.]	P	21.	THALLIUM	8.6U	F
10.	COPPER	6.9 U	P	22.	TIN	9.5 U	P
11.	IRON	30600.	P	23.	VANADIUM	[32.]	P
12.	LEAD	43	F S	24.	ZINC	97.	P
	CYANIDE				PERCENT SOLIDS	57.8	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

FORM I

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

231

SAMPLE NO.
MBI 500

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SDW NO. 784

LAB SAMPLE ID. NO. 23881

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	9100.	P	13.	MAGNESIUM	8520.	P
2.	ANTIMONY	50. UR	P	14.	MANGANESE	1380.	P
3.	ARSENIC	13.U	F	15.	MERCURY	0.26U	
4.	BARIUM	[36.]	P	16.	NICKEL	76.	P
5.	BERYLLIUM	[2.2] R	P	17.	POTASSIUM	[1530.]	P
6.	CADMIUM	3.9 U	P	18.	SELENIUM	6.5U	F
7.	CALCIUM	9890.	P	19.	SILVER	6.5 U	P
8.	CHROMIUM	[8.1]	P	20.	SODIUM	[160.]	P
9.	COBALT	[28.]	P	21.	THALLIUM	13.U	F
10.	COPPER	[16.]	P	22.	TIN	14. U	P
11.	IRON	58000.	P	23.	VANADIUM	[16.]	P
12.	LEAD	24.	F	24.	ZINC	165.	P
	CYANIDE				PERCENT SOLIDS	38.4	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

FORM I

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U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MBI 501

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SDW NO. 784

LAB SAMPLE ID. NO. 23882

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	7050.	P
2.	ANTIMONY	304. U	P
3.	ARSENIC	10.U	F
4.	BARIUM	[37.]	P
5.	BERYLLIUM	13.	P
6.	CADMIUM	4.8 U	P
7.	CALCIUM	[5660.]	P
8.	CHROMIUM	9.6 U	P
9.	COBALT	[59.]	P
10.	COPPER	13. U	P
11.	IRON	175000.	P
12.	LEAD	32.	F S
	CYANIDE		
13.	MAGNESIUM	[3890.]	P
14.	MANGANESE	1170.	P
15.	MERCURY	0.32U	
16.	NICKEL	193.	P
17.	POTASSIUM	[1440.]	P
18.	SELENIUM	8.0U	F
19.	SILVER	8.0 U	P
20.	SODIUM	[375.]	P
21.	THALLIUM	16.U	F
22.	TIN	18. U	P
23.	VANADIUM	[28.]	P
24.	ZINC	510.	P
	PERCENT SOLIDS	312	

FOOTNOTES: SEE COVER PAGE.

COMMENTS: SD

LAB MANAGER

ROBERT E. MAXFIELD

FORM I

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U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MBI 501

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

ROW NO. 784

LAB SAMPLE ID. NO. 23882

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	7050.	P	13.	MAGNESIUM	[3890.]	P
2.	ANTIMONY	304. UR	P	14.	MANGANESE	1170.	P
3.	ARSENIC	16.U	F	15.	MERCURY	0.32U	
4.	BARIUM	[37.]	P	16.	NICKEL	193.	P
5.	BERYLLIUM	13. R	P	17.	POTASSIUM	[1440.]	P
6.	CADMIUM	4.8 U	P	18.	SELENIUM	8.0U	F
7.	CALCIUM	[5660.]	P	19.	SILVER	8.0 U	P
8.	CHROMIUM	9.6 U	P	20.	SODIUM	[375.]	P
9.	COBALT	[59.]	P	21.	THALLIUM	16.U	F
10.	COPPER	13. U	P	22.	TIN	18. U	P
11.	IRON	175000.	P	23.	VANADIUM	[28.]	P
12.	LEAD	32.	F S	24.	ZINC	510.	P
	CYANIDE				PERCENT SOLIDS	31.2	

FOOTNOTES: SEE COVER PAGE.

COMMENTS: SD

LAB MANAGER

ROBERT E. MAXFIELD

S. EPA CONTRACT LABORATORY PROGRAM
MPLE MANAGEMENT OFFICE
O. BOX 818 - ALEXANDRIA, VA. 22313
03/557-2490 FTS: 8-557-2490

C54

SAMPLE NO.
MBI 502

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

OW NO. 784

AB SAMPLE ID. NO. 23883

QC REPORT NO. 40

OJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

ONCENTRATION: LOW X MEDIUM

ATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	12000.	P	13.	MAGNESIUM	5410.	P
2.	ANTIMONY	41. UR	P	14.	MANGANESE	132.	P
3.	ARSENIC	N.U	F	15.	MERCURY	0.21U	
4.	BARIUM	[37.]	P	16.	NICKEL	[24.]	P
5.	BERYLLIUM	1.1 UR	P	17.	POTASSIUM	[732.]	P
6.	CADMIUM	3.2 U	P	18.	SELENIUM	5.4U	F
7.	CALCIUM	6500.	P	19.	SILVER	5.4 U	P
8.	CHROMIUM	17.	P	20.	SODIUM	[151.]	P
9.	COBALT	[8.9]	P	21.	THALLIUM	11.U	F
10.	COPPER	8.6 U	P	22.	TIN	NR	P
11.	IRON	18400.	P	23.	VANADIUM	[16.]	P
12.	LEAD	36.	F S	24.	ZINC	72.	P
	CYANIDE				PERCENT SOLIDS	46.6	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

FORM I

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U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
M3I 426

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SDG NO. 784

LAB SAMPLE ID. NO. 23877

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	6600.	P	13.	MAGNESIUM	10800. *	P
2.	ANTIMONY	22. U	P	14.	MANGANESE	663.	P
3.	ARSENIC	6.4	F	15.	MERCURY	0.11 U	
4.	BARIUM	~~[illegible]~~	P	16.	NICKEL	26. J	P
5.	BERYLLIUM	.58 U J	P	17.	POTASSIUM	[1100.]	P
6.	CADMIUM	1.7 U	P	18.	SELENIUM	2.9	F
7.	CALCIUM	~~21000.~~ *	P	19.	SILVER	2.9 U	P
8.	CHROMIUM	8.6	P	20.	SODIUM	~~[92.]~~ J	P
9.	COBALT	[12.]	P	21.	THALLIUM	5.8 U	F
10.	COPPER	22.	P	22.	TIN	6.4 U	P
11.	IRON	20000.	P	23.	VANADIUM	~~[illegible]~~	P
12.	LEAD	14.	F S	24.	ZINC	49.	P
	CYANIDE				PERCENT SOLIDS	86.4	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

FORM I

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U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MBI 487

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SDW NO. 794

LAB SAMPLE ID. NO. 23878

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	10200.	P
2.	ANTIMONY	24. U	P
3.	ARSENIC	10.	F
4.	BARIUM	[62.]	P
5.	BERYLLIUM	.62 U J	P
6.	CADMIUM	1.9 U	P
7.	CALCIUM	~~28400.~~ *	P
8.	CHROMIUM	18.	P
9.	COBALT	[22.]	P
10.	COPPER	36.	P
11.	IRON	40900.	P
12.	LEAD	134.	F
	CYANIDE		
13.	MAGNESIUM	14400.	P
14.	MANGANESE	793.	P
15.	MERCURY	0.12 U	
16.	NICKEL	52. J	P
17.	POTASSIUM	[1470.]	P
18.	SELENIUM	3.1 U	F
19.	SILVER	3.1 U	P
20.	SODIUM	~~[143.]~~ J	P
21.	THALLIUM	6.2 U	F
22.	TIN	6.8 U	P
23.	VANADIUM	~~[28.]~~	P
24.	ZINC	179.	P
	PERCENT SOLIDS	80.8	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

C57

SAMPLE NO.
M3I 428

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6882

SDW NO. 784

LAB SAMPLE ID. NO. 23879

GC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	12800.	P
2.	ANTIMONY	27. U	P
3.	ARSENIC	7.0 U	F
4.	BARIUM	[74.]	P
5.	BERYLLIUM	.70 U J	P
6.	CADMIUM	2.1 U	P
7.	CALCIUM	~~[illegible]~~ *	P
8.	CHROMIUM	17.	P
9.	COBALT	[14.]	P
10.	COPPER	50.	P
11.	IRON	33300.	P
12.	LEAD	80.	F
	CYANIDE		
13.	MAGNESIUM	14300.	P
14.	MANGANESE	573.	P
15.	MERCURY	0.14 U	
16.	NICKEL	29. J	P
17.	POTASSIUM	[1350.]	P
18.	SELENIUM	3.5 U	F
19.	SILVER	3.5 U	P
20.	SODIUM	~~[illegible]~~ J	P
21.	THALLIUM	7.0 U	F
22.	TIN	[7.8]	P
23.	VANADIUM	~~[illegible]~~	P
24.	ZINC	224.	P
	PERCENT SOLIDS	71.5	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

.S. EPA CONTRACT LABORATORY PROGRAM
MPLE MANAGEMENT OFFICE
C. BOX 818 - ALEXANDRIA, VA. 22313
03/557-2490 FTS: 8-557-2490

238

SAMPLE NO.
M3I 489

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

S NAME VERSAR INC.

CASE NO. 6888

W NO. 784

B SAMPLE ID. NO. 23880

QC REPORT NO. 40

OJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

NCENTRATION: LOW X MEDIUM

TRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	20600.	P
2.	ANTIMONY	33. U	P
3.	ARSENIC	8.6U	F
4.	BARIUM	[84.]	P
5.	BERYLLIUM	[1.1] J	P
6.	CADMIUM	2.6 U	P
7.	CALCIUM	[~~[illegible]~~]	P
8.	CHROMIUM	24.	P
9.	COBALT	[12.]	P
10.	COPPER	6.9 U	P
11.	IRON	30600.	P
12.	LEAD	43	F S
	CYANIDE		
13.	MAGNESIUM	6700.	P
14.	MANGANESE	387.	P
15.	MERCURY	0.17U	
16.	NICKEL	[31.] J	P
17.	POTASSIUM	[984.]	P
18.	SELENIUM	4.3U	F
19.	SILVER	4.3 U	P
20.	SODIUM	~~[183.]~~ J	P
21.	THALLIUM	8.6U	F
22.	TIN	9.5 U	P
23.	VANADIUM	~~[[illegible]~~	P
24.	ZINC	97.	P
	PERCENT SOLIDS	57.8	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

C57

SAMPLE NO.
MBI 500

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME VERSAR INC.

CASE NO. 6888

SDW NO. 784

LAB SAMPLE ID. NO. 23881

GC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	9100.	P
2.	ANTIMONY	50. U	P
3.	ARSENIC	13.U	F
4.	BARIUM	[36.]	P
5.	BERYLLIUM	[2.2] J	P
6.	CADMIUM	3.9 U	P
7.	CALCIUM	~~[illegible]~~ *	P
8.	CHROMIUM	[8.1]	P
9.	COBALT	[28.]	P
10.	COPPER	[16.]	P
11.	IRON	56000.	P
12.	LEAD	24.	F
	CYANIDE		
13.	MAGNESIUM	8520.	P
14.	MANGANESE	1380.	P
15.	MERCURY	0.26U	
16.	NICKEL	76. J	P
17.	POTASSIUM	[1530.]	P
18.	SELENIUM	6.5U	F
19.	SILVER	6.5 U	P
20.	SODIUM	~~[166.]~~ J	P
21.	THALLIUM	13.U	F
22.	TIN	14. U	P
23.	VANADIUM	~~[illegible]~~	P
24.	ZINC	165.	P
	PERCENT SOLIDS	37.4	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

. EPA CONTRACT LABORATORY PROGRAM
E MANAGEMENT OFFICE
BOX 318 - ALEXANDRIA, VA. 22313
/557-2490 FTS: 8-557-2490

290

: SAMPLE NO. :
: MBI 501 :

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

NO. 784

SAMPLE ID. NO. 23882

QC REPORT NO. 40

JECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

ENTRATION: LOW X MEDIUM

IX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	7050.	P	13.	MAGNESIUM	[3890.]	P
2.	ANTIMONY	304. U	P	14.	MANGANESE	1170.	P
3.	ARSENIC	16. U	F	15.	MERCURY	0.32U	
4.	BARIUM	[37.]	P	16.	NICKEL	193. J	P
5.	BERYLLIUM	13. J	P	17.	POTASSIUM	[1440.]	P
6.	CADMIUM	4.8 U	P	18.	SELENIUM	8.0 U	F
7.	CALCIUM	~~[6660.]~~ *	P	19.	SILVER	8.0 U	P
8.	CHROMIUM	9.6 U	P	20.	SODIUM	~~[670.]~~ J	P
9.	COBALT	[59.]	P	21.	THALLIUM	16. U	F
10.	COPPER	13. U	P	22.	TIN	18. U	P
11.	IRON	175000.	P	23.	VANADIUM	~~[90.]~~	P
12.	LEAD	32.	F S	24.	ZINC	510.	P
	CYANIDE				PERCENT SOLIDS	31.2	

FOOTNOTES: SEE COVER PAGE.

COMMENTS: SD

LAB MANAGER

F[illegible] MANAGEMENT OFFICE
. BOX 818 - ALEXANDRIA, VA. 22313
/557-2490 FTS: 8-557-2490

: SAMPLE NO. : 241
: MBI SO2 :

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

NO. 784

SAMPLE ID. NO. 23883

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER SOIL X OIL

MG/KG DRY WEIGHT

1.	ALUMINUM	12000.	P	13.	MAGNESIUM	5410.	P
2.	ANTIMONY	41. U	P	14.	MANGANESE	132.	P
3.	ARSENIC	11. U	F	15.	MERCURY	0.21 U	
4.	BARIUM	[37.]	P	16.	NICKEL	[24.] J	P
5.	BERYLLIUM	1.1 U J	P	17.	POTASSIUM	[732.]	P
6.	CADMIUM	3.2 U	P	18.	SELENIUM	5.4 U	F
7.	CALCIUM	~~6500~~ *	P	19.	SILVER	5.4 U	P
8.	CHROMIUM	17.	P	20.	SODIUM	~~[131.]~~ J	P
9.	COBALT	[8.9]	P	21.	THALLIUM	11. U	F
10.	COPPER	8.6 U	P	22.	TIN	NR	P
11.	IRON	18400.	P	23.	VANADIUM	~~[18.]~~	P
12.	LEAD	36.	F S	24.	ZINC	72.	P
	CYANIDE				PERCENT SOLIDS	46.6	

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO. MBI 493 242

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

SOW NO. 784

LAB SAMPLE ID. NO. 23870

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER X SOIL SLUDGE

UG/L

1.	ALUMINUM	[37.]	P	13.	MAGNESIUM	24400.	P
2.	ANTIMONY	38. U	P	14.	MANGANESE	2.0 U	P
3.	ARSENIC	10. U	F	15.	MERCURY	0.2U	
4.	BARIUM	[illegible]	P	16.	NICKEL	13. U	P
5.	BERYLLIUM	1.0 U	P	17.	POTASSIUM	[1420.]	P
6.	CADMIUM	3.0 U	P	18.	SELENIUM	5.0U	F
7.	CALCIUM	48300.	P	19.	SILVER	5.0 U	P
8.	CHROMIUM	6.0 U	P	20.	SODIUM	6250.	P
9.	COBALT	8.0 U	P	21.	THALLIUM	10.U R	F
10.	COPPER	8.0 U	P	22.	TIN	11.U	P
11.	IRON	[illegible]	P	23.	VANADIUM	4.0 U	P
12.	LEAD	5.0U	F	24.	ZINC	28.	P
	CYANIDE				PERCENT SOLIDS		

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
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703/557-2490 FTS: 8-557-2490

SAMPLE NO. MBI 494 24

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

SOW NO. 784

LAB SAMPLE ID. NO. 23871

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER X SOIL SLUDGE

UG/L

1.	ALUMINUM	35. U	P	13.	MAGNESIUM	28100.	P
2.	ANTIMONY	38. U	P	14.	MANGANESE	188.	P
3.	ARSENIC	10.U	F	15.	MERCURY	0.2U	
4.	BARIUM	[illegible]	P	16.	NICKEL	13. U	P
5.	BERYLLIUM	1.0 U	P	17.	POTASSIUM	[2330.]	P
6.	CADMIUM	3.0 U	P	18.	SELENIUM	5.0U	F
7.	CALCIUM	67100.	P	19.	SILVER	5.0 U	P
8.	CHROMIUM	6.0 U	P	20.	SODIUM	20800.	P
9.	COBALT	8.0 U	P	21.	THALLIUM	10.U	R F
10.	COPPER	8.0 U	P	22.	TIN	11.U	P
11.	IRON	[illegible]	P	23.	VANADIUM	4.0 U	P
12.	LEAD	9.6	F S	24.	ZINC	[19.]	P
	CYANIDE				PERCENT SOLIDS		

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
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703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MBI 495

244

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

SOW NO. 784

LAB SAMPLE ID. NO. 23872

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER X SOIL SLUDGE

UG/L

1.	ALUMINUM	35. U	P	13.	MAGNESIUM	23100.	P
2.	ANTIMONY	38. U	P	14.	MANGANESE	[2.6]	P
3.	ARSENIC	10. U	F	15.	MERCURY	0.2 U	
4.	BARIUM	[redacted]	P	16.	NICKEL	13. U	P
5.	BERYLLIUM	1.0 U	P	17.	POTASSIUM	[1620.]	P
6.	CADMIUM	3.0 U	P	18.	SELENIUM	5.0 U	F
7.	CALCIUM	77000.	P	19.	SILVER	5.0 U	P
8.	CHROMIUM	6.0 U	P	20.	SODIUM	45900.	P
9.	COBALT	8.0 U	P	21.	THALLIUM	100. U R	F
10.	COPPER	8.0 U	P	22.	TIN	11.U	P
11.	IRON	[redacted]	P	23.	VANADIUM	4.0 U	P
12.	LEAD	5.0 U	F	24.	ZINC	160.	P
	CYANIDE				PERCENT SOLIDS		

FOOTNOTES: SEE COVER PAGE.

COMMENTS: DF of 10 for Tl because of interference

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
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703/557-2490 FTS: 8-557-2490

SAMPLE NO.
MBI 496

24S

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

SOW NO. 784

LAB SAMPLE ID. NO. 23873

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER X SOIL SLUDGE

UG/L

1.	ALUMINUM	[68.]	P	13.	MAGNESIUM	14800.	P
2.	ANTIMONY	38. U	P	14.	MANGANESE	310.	P
3.	ARSENIC	10.U	F	15.	MERCURY	0.2U	
4.	BARIUM	[illegible]	P	16.	NICKEL	13. U	P
5.	BERYLLIUM	1.0 U	P	17.	POTASSIUM	[1430.]	P
6.	CADMIUM	3.0 U	P	18.	SELENIUM	5.0U	F
7.	CALCIUM	47100.	P	19.	SILVER	5.0 U	P
8.	CHROMIUM	6.0 U	P	20.	SODIUM	5360.	P
9.	COBALT	8.0 U	P	21.	THALLIUM	10.U	R F
10.	COPPER	8.0 U	P	22.	TIN	11.U	P
11.	IRON	902.	P	23.	VANADIUM	4.0 U	P
12.	LEAD	5.0U	F	24.	ZINC	[7.5]	P
	CYANIDE				PERCENT SOLIDS		

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO. MBI 498 246

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

SOW NO. 784

LAB SAMPLE ID. NO. 23875

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER X SOIL SLUDGE

UG/L

1.	ALUMINUM	[63.]	P	13.	MAGNESIUM	12800.	P
2.	ANTIMONY	38. U	P	14.	MANGANESE	175.	P
3.	ARSENIC	10. U	F	15.	MERCURY	0.2U	
4.	BARIUM	[illegible]	P	16.	NICKEL	13. U	P
5.	BERYLLIUM	1.0 U	P	17.	POTASSIUM	[1270.]	P
6.	CADMIUM	3.0 U	P	18.	SELENIUM	5.0 U	F
7.	CALCIUM	39900.	P	19.	SILVER	5.0 U	P
8.	CHROMIUM	6.0 U	P	20.	SODIUM	[illegible]	P
9.	COBALT	8.0 U	P	21.	THALLIUM	11 ~~10.U~~ R	F *
10.	COPPER	8.0 U	P	22.	TIN	11.U	P
11.	IRON	[illegible]	P	23.	VANADIUM	4.0 U	P
12.	LEAD	5.0U	F	24.	ZINC	[9.9]	P
	CYANIDE				PERCENT SOLIDS		

FOOTNOTES: SEE COVER PAGE.

* SEE MANDATORY

COMMENTS: SD

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO. MBI 497 247

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

SOW NO. 784

LAB SAMPLE ID. NO. 23874

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER X SOIL SLUDGE

UG/L

1.	ALUMINUM	[159.]	P	13.	MAGNESIUM	16000.	P
2.	ANTIMONY	38. U	P	14.	MANGANESE	590.	P
3.	ARSENIC	10. U	F	15.	MERCURY	0.2U	
4.	BARIUM	[redacted]	P	16.	NICKEL	13. U	P
5.	BERYLLIUM	1.0 U	P	17.	POTASSIUM	[1250.]	P
6.	CADMIUM	3.0 U	P	18.	SELENIUM	5.0U	F
7.	CALCIUM	49500.	P	19.	SILVER	5.0 U	P
8.	CHROMIUM	6.0 U	P	20.	SODIUM	5300.	P
9.	COBALT	8.0 U	P	21.	THALLIUM	10.U R	F
10.	COPPER	8.0 U	P	22.	TIN	11.U	P
11.	IRON	1860.	P	23.	VANADIUM	4.0 U	P
12.	LEAD	5.0U	F	24.	ZINC	[13.]	P
	CYANIDE				PERCENT SOLIDS		

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

U.S. EPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 - ALEXANDRIA, VA. 22313
703/557-2490 FTS: 8-557-2490

SAMPLE NO. MBI 504 248

DATE 3/17/87

INORGANIC ANALYSIS DATA SHEET

NAME VERSAR INC.

CASE NO. 6888

SOW NO. 784

LAB SAMPLE ID. NO. 23876

QC REPORT NO. 40

PROJECT-TASK 957.0000

BATCH 40

ELEMENTS IDENTIFIED AND MEASURED

CONCENTRATION: LOW X MEDIUM

MATRIX: WATER X SOIL SLUDGE

UG/L

1.	ALUMINUM	[51.]	P	13.	MAGNESIUM	[193.]	P
2.	ANTIMONY	38. U	P	14.	MANGANESE	2.0 U	P
3.	ARSENIC	10. U	F	15.	MERCURY	0.2U	
4.	BARIUM	[4.4]	P	16.	NICKEL	13. U	P
5.	BERYLLIUM	1.0 U	P	17.	POTASSIUM	515. U	P
6.	CADMIUM	3.0 U	P	18.	SELENIUM	5.0 U	F
7.	CALCIUM	[649.]	P	19.	SILVER	5.0 U	P
8.	CHROMIUM	6.0 U	P	20.	SODIUM	[346.]	P
9.	COBALT	8.0 U	P	21.	THALLIUM	10.U	R F
10.	COPPER	8.0 U	P	22.	TIN	11.U	P
11.	IRON	[67.]	P	23.	VANADIUM	4.0 U	P
12.	LEAD	5.0U	F	24.	ZINC	[18.]	P
	CYANIDE				PERCENT SOLIDS		

FOOTNOTES: SEE COVER PAGE.

COMMENTS:

LAB MANAGER

ROBERT E. MAXFIELD

REFERENCE NO. 19

EPA

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION: II

SITE NUMBER (to be assigned by HQ): N[illegible]

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II *(Preliminary Assessment)*. File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force *(EN-335)*; 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME: [illegible]

B. STREET *(or other identifier)*: [illegible]

C. CITY: [illegible]

D. STATE: NY

E. ZIP CODE: [illegible]

F. COUNTY NAME: [illegible]

G. OWNER/OPERATOR *(if known)*

1. NAME: [illegible] and [illegible] party.

2. TELEPHONE NUMBER:

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☒ 4. MUNICIPAL ☐ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION: [illegible] dr[illegible] southwest [illegible].

J. HOW IDENTIFIED *(i.e., citizen's complaints, OSHA citations, etc.)*:

K. DATE IDENTIFIED *(mo., day, & yr.)*:

L. PRINCIPAL STATE CONTACT

1. NAME: Jar[illegible] NYS DEC White Plains

2. TELEPHONE NUMBER: (212-[illegible]-5487

II. PRELIMINARY ASSESSMENT *(complete this section last)*

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☒ 3. LOW ☐ 4. NONE ☐ 5. UNKNOWN

B. RECOMMENDATION

☐ 1. NO ACTION NEEDED *(no hazard)*

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☒ 4. SITE INSPECTION NEEDED *(low priority)*

C. PREPARER INFORMATION

1. NAME: [illegible]

2. TELEPHONE NUMBER: (212) 261-1575

3. DATE *(mo., day, & yr.)*: 8-2[illegible]-81

III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE *(Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)*

☒ 2. INACTIVE *(Those sites which no longer receive wastes.)*

☐ 3. OTHER *(specify)*: *(Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)*

B. IS GENERATOR ON SITE?

☐ 1. NO ☐ 2. YES *(specify generator's four-digit SIC Code)*:

C. AREA OF SITE *(in acres)*: 8-10

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES

1. LATITUDE *(deg.-min.-sec.)*:

2. LONGITUDE *(deg.-min.-sec.)*:

E. ARE THERE BUILDINGS ON THE SITE?

☒ 1. NO ☐ 2. YES *(specify)*:

Continue On Reverse

Continued From Front

IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

'X'	A. TRANSPORTER	'X'	B. STORER	'X'	C. TREATER	'X'	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION	X	1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS. TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY		8. OTHER (specify):
					9. OTHER (specify):		

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

V. WASTE RELATED INFORMATION

A. WASTE TYPE

[X] 1. UNKNOWN [ ] 2. LIQUID [ ] 3. SOLID [ ] 4. SLUDGE [ ] 5. GAS

B. WASTE CHARACTERISTICS

[X] 1. UNKNOWN [ ] 2. CORROSIVE [ ] 3. IGNITABLE [ ] 4. RADIOACTIVE [ ] 5. HIGHLY VOLATILE
[ ] 6. TOXIC [ ] 7. REACTIVE [ ] 8. INERT [ ] 9. FLAMMABLE

[ ] 10. OTHER (specify):

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
'X' (1) PAINT, PIGMENTS	'X' (1) OILY WASTES	'X' (1) HALOGENATED SOLVENTS	'X' (1) ACIDS	'X' (1) FLYASH	'X' (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER (specify):	(2) NON-HALOGNTD. SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER (specify):	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	(4) MUNICIPAL
(5) OTHER (specify):			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER (specify):
			(6) CYANIDE	(6) OTHER (specify):	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER (specify)		

Continue On Page 3

Continued From Page 2

V. WASTE RELATED INFORMATION (continued)

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (place in descending order of hazard).

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

[illegible] swamp adjacent - [illegible] near fill.

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD (mark 'X')	C. ALLEGED INCIDENT (mark 'X')	D. DATE OF INCIDENT (mo., day, yr.)	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL				
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER (specify):				

Continue On Reverse

Continued From Front

VII. PERMIT INFORMATION

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

- [ ] 1. NPDES PERMIT
- [ ] 2. SPCC PLAN
- [ ] 3. STATE PERMIT *(specify)*: _____
- [ ] 4. AIR PERMITS
- [ ] 5. LOCAL PERMIT
- [ ] 6. RCRA TRANSPORTER
- [ ] 7. RCRA STORER
- [ ] 8. RCRA TREATER
- [ ] 9. RCRA DISPOSER
- [x] 10. OTHER *(specify)*: [illegible]

B. IN COMPLIANCE?

- [ ] 1. YES
- [ ] 2. NO
- [x] 3. UNKNOWN
- 4. WITH RESPECT TO *(list regulation name & number)*: _____

VIII. PAST REGULATORY ACTIONS

- [ ] A. NONE
- [ ] B. YES *(summarize below)*

IX. INSPECTION ACTIVITY *(past or on-going)*

- [ ] A. NONE
- [x] B. YES *(complete items 1,2,3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION (mo., day, & yr.)	3. PERFORMED BY: (EPA/State)	4. DESCRIPTION
[illegible]	[illegible]	State	

X. REMEDIAL ACTIVITY *(past or on-going)*

- [ ] A. NONE
- [ ] B. YES *(complete items 1, 2, 3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION (mo., day, & yr.)	3. PERFORMED BY: (EPA/State)	4. DESCRIPTION

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment *(Section II)* information on the first page of this form.

REFERENCE NO. 20

Explanation of well log data [illegible]
USGS


```
*****************************************************************************************************************
*****************************************************************************************************************

W     W   W  WWW   WWW  W   W WWWWW WWWW
W     W   W W   W W   W W  W W     W   W
W     W W W W   W W     W W W W     W   W
W     W W W WWWWW W     W W W WWWW  WWWW
W     W W W W   W W   WW W W W W     W W
W     WW WW W   W W   W W  WW W     W  W
WWWWW W   W W   W  WWWW W   W WWWWW W   W


WWWWW W   W WWWW  W      WWW  W   W  WWW  WWWWW  WWW   WWW  W   W
W     W   W W   W W     W   W WW  W W   W    W    W   W   W WW  W
W      W W  W   W W     W   W W W W W   W    W    W   W   W W W W
WWWW    W   WWWW  W     WWWWW W W W WWWWW    W    W   W   W W W W
W      W W  W     W     W   W W W W W   W    W    W   W   W W W W
W     W   W W     W     W   W W  WW W   W    W    W   W   W W  WW
WWWWW W   W W     WWWWW W   W W   W W   W    W    WWW  WWW  W   W

*****************************************************************************************************************
*****************************************************************************************************************
```

Label: PRTO37 -form

Pathname: <ADMIN1>DISTRICT.USERS>LWAGNER>GW.REQUEST>EXPLANATION
File last modified: 87-05-21.10:15:40.Thu

Spooled: 87-11-10.14:12:04.Tue [Spooler rev 1.4.5]
Started: 87-11-10.14:14:04.Tue on: PRO by: PRO

1.2 SITE ID

** (SIO/C) - MANDATORY PRIMARY-KEY CHAR ((15) in 5-20):
For ground water sites, this is a 15-digit identification number assigned to the site, and contains no blanks or alphanetic characters. It is used primarily as an internal control number within the computer files. Although the site identification number is formed initially from the latitude and longitude of a point believed to represent the location of the site, the number is an IDENTIFIER and not a LOCATOR.

It cannot be too strongly emphasized that the site identification number, once assigned, is a pure number and HAS NO LOCATIONAL SIGNIFICANCE.

The site identification number is assigned as follows:
Spot the site on the best available map as accurately as possible.

IF	SPOT
a tunnel	the mouth of the tunnel
a drain	discharge point of the drain
a pond or a multiple well field	center of the pond or well field.

Using an appropriate scaling aid, determine the latitude and longitude of the point on the map. The location of this point is always scaled to the nearest second of latitude and longitude, even if there is doubt about the exact location of the site or the accuracy of the map.

The first six digits of the identification number are the value of latitude, the seventh through thirteenth digits are the value of longitude, and the fourteenth and fifteenth digits are a sequence number used to distinguish between sites at the same location.

Use leading zeros if the value of latitude is less than 10 degrees, the value of longitude is less than 100 degrees, or the sequence number is less than 10. The site identification number is a mandatory entry. Data will not be stored for the site if the identification number is missing or invalid.

For surface water sites, an eight to 14-digit downstream order number is usually used for onmstream sites where records are systematically collected. Examples of sites that meet these criteria are:

- Regular surface-water stations

- o Partial-record (surface-water and water-quality stations)
- o Regular water-quality sites
- o Spring stations where discharge measurements are made

When downstream order is used, the first eight to 14 positions of the field must contain digits. The remaining positions are blank.

A latitude-longitude-sequence number identifier may be assigned to on-stream sites where there is difficulty in assigning a meaningful downstream order number, or where data are obtained intermittently. Examples of surface-water sites that meet these criteria are:

- o Water-quality grab sample sites
- o Surface-water sites at which miscellaneous measurements are made
- o Within large open-water areas (lakes, reservoirs, bays)

1.8 LOCAL NUMBER or STATION NAME

** Ground water site(SNAME/C12 - MANDATORY SECONDARY-KEY CHAR X(24) in 21-44); Surface water site(SNAME/C900 - MANDATORY SECONDARY-KEY CHAR X(50) in 21-70):

For ground water sites, if a district well-numbering system is used, enter the system's number for the site here. The local number should be entered as it is to be printed; include all edit characters to be used in printing the local number. Note: This is a text field.

For surface-water stations, enter the station name and location or local identifier. This field contains 50 characters including spaces and punctuation. It should take a form similiar to:

PENDLETON HILL BK NR LITTLETON FALLS PA

Meaningful and approved abbreviations may be used.

1.9 COUNTY

** (SCNTY/C2 - MANDATORY SECONDARY-KEY CHAR X(3) in 92-94):

Enter the FIPS numeric code for the county or county equivalent in which the site is located. County code is a mandatory entry (combined with SSTATE for secondary key); include leading and trailing zeros if appropiate; data will not be stored if this field is blank.

001 ALBANY
003 ALLEGANY
005 BRONX
007 BROOME
009 CATTARAUGUS
011 CAYUGA
013 CHAUTAUQUA
015 CHEMUNG
017 CHENANGO
019 CLINTON
021 COLUMBIA
023 CORTLAND
025 DELAWARE
027 DUTCHESS
029 ERIE
031 ESSEX
033 FRANKLIN
035 FULTON

037 GENESEE
039 GREENE
041 HAMILTON
043 HERKIMER
045 JEFFERSON
047 KINGS
049 LEWIS
051 LIVINGSTON
053 MADISON
055 MONROE
057 MONTGOMERY
059 NASSAU
061 NEW YORK
063 NIAGARA
065 ONEIDA
067 ONONDAGA
069 ONTARIO
071 ORANGE
073 ORLEANS
075 OSWEGO
077 OTSEGO
079 PUTNAM
081 QUEENS
083 RENSSELAER
085 RICHMOND
087 ROCKLAND
089 ST LAWRENCE
091 SARATOGA
093 SCHENECTADY
095 SCHOHARIE
097 SCHUYLER
099 SENECA
101 STEUBEN
103 SUFFOLK
105 SULLIVAN
107 TIOGA
109 TOMPKINS
111 ULSTER
113 WARREN
115 WASHINGTON
117 WAYNE
119 WESTCHESTER
121 WYOMING
123 YATES

1.4 LATITUDE

** (SLAT/C9 - MANDATORY SECONDARY-KEY CHAR X(7) in 71-77):

Enter the best available value for the latitude of the site in degrees minutes, and seconds, right justified in the field. Use leading zeros if needed. Six digits must be coded. If latitude of the site is south of the Equator, precede the numbers with a minus sign (-) (the first position of the field is reserved for the sign, if required). Latitude is a mandatory entry. Data will not be stored for the site if the field is blank.

1.5 LONGITUDE

** (SLONG/C10 - MANDATORY SECONDARY-KEY CHAR X(9) IN 78-85):

Enter the best available value for the longitude of the site, in degrees, minutes and seconds, right justified in the field. Use leading zeros if needed. Seven digits must be coded. If longi- tude of the site is east of the Greenwich Meridian, precede the numbers with a minus sign (-) (the first position of the field is reserved for the sign, if required).

The values of latitude and longitude entered in these fields are LOCATORS: they should represent the best available information about the location of the site. The location should be entered as precisely as it is known, and the accuracy of the location should be indicated by a suitable entry in the next field. Longitude is a mandatory entry; data will not be stored if this field is blank.

1.6 LAT-LONG ACCURACY

** (SCORAC/C11 - CHAR X in 86):

Enter the appropriate code on the schedule to indicate the accuracy of the latitude-longitude values. The codes and their meanings are:

S - the measurement is accurate to + 1 second
F - the measurement is accurate to + 5 seconds
T - the measurement is accurate to + 10 seconds
M - the measurement is accurate to + 1 minute

No value (blank field) indicates that the accuracy is unknown and is, therefore, assumed to be greater than one minute.

1.13 ALTITUDE

** (SDATUM/C16 - CHAR X(8) in 145-152):

For ground water sites, enter the altitude of the land surface at the site, in feet NGVD. For surface water sites, enter the altitude of the floor of the gage house or the point of zero flow in the stream channel, in feet NGVD. Precision to two decimal places can be coded if available. Altitudes below NGVD should be preceded by a minus sign (-).

1.15 TOPOGRAPHIC SETTING

** (STOPO/C19 - CHAR X in 175):

Enter the code that best describes the topographic setting in which the site is located. Topographic setting refers to the geomorphic features in the vicinity of the site. Allowable codes are:

A - alluvial fan
B - playa
C - stream channel
D - local depression
E - dunes
F - flat surface
G - flood plain
H - hilltop

[redacted] - s[redacted]ble [redacted]
L - lake, swamp or marsh
M - mangrove swamp
L - offshore (estuary)
P - pediment
S - hillside (slope)
T - alluvial or marine terrace
U - undulating
V - valley flat (valleys of all sizes)
W - upland drainage

(A) Alluvial fan refers to a loose, outspread, relatively flat to gentlysloping, mass of loose rock material, shaped like an open fan or a segment of a cone, deposited by a stream at a place where it issues from a narrow mountain valley upon a plain or broad valley.

(B) Playa refers to a dried-up, vegetation-free, flat-floored area composed of thin, evenly stratified sheets of fine clay, silt or sand, and representing the bottom part of a shallow, completely closed or undrained desert lake basin in which water accumulates and is quickly evaporated, usually leaving deposits of soluble salts.

(C) Stream channel refers to the bed in which a natural stream of water runs. It is the trench or depression washed or cut into the surface of the earth by the moving water that it periodically or continuously contains. This term includes washes, arroyos, and coulees.

(D) A local depression is an area that has no external surface drainage. Some depressions, such as those in the High Plains, are only a few acres in extent, but others may cover a square mile. Do not use this designation for small 'interdune depressions' or those on an undulating surface of glacial drift (use undulating). Do not use for large closed basins, such as those on the Basin and Range province (use local features).

(E) Dunes refers to mounds and ridges of windblown, or eolian, sand. This term should not be used for an isolated mound unless it has a rather extensive area and is of hydrologic significance to the site.

(F) A flat surface may be part of a larger feature, such as an upland flat, mesa or plateau, coastal plain, lake plain, or pediment terrace and valley flat, which are special varieties of flat surfaces, and are classified separately.

(G) Flood plain refers to the surface or strip of relatively smooth land adjacent to a river channel, constructed by the present river in its existing regimen and covered with water when the river overflows its banks at times of high water.

(H) A hilltop is the upper part of a hill or ridge above a well-defined break in slope. A site on the crest of an escarpment or top of a cuesta slope (diagram) should be in this category. Use this category for hills of significant height (such as drumlins) above a generally flat area, but not for small 'swells' a few feet high on an undulating surface such as a till plain or valley flat.

(K) A sinkhole is a special type of depression that results from the dissolving of soluble rocks (salt, gypsum, limestone) and the subsequent collapse of the earth into the solution cavity. As such, it has special significance to the understanding of the hydrology in the vicinity of the site.

(L) Lake refers to a body of inland water. However, this code also may be used for swampy or marshy areas where the ground may be saturated, or water may stand above the land surface for a significant period of time.

(M) Mangrove swamp a tropical or subtropical marine swamp characterized by abundant mangrove trees.

(O) Offshore refers to a site along a coast or estuary that is continuously submerged.

(P) Pediment refers to a plain of combined erosion and deposition that forms at the foot of a mountain range.

(S) A hillside is the sloping side of a hill--that is, the area between a hilltop and valley flat. The important factor is the general aspect of the site. The steepness of the slope or height of the hill are not significant.

(T) An alluvial or marine terrace is generally a flat surface usually parallel to, but elevated above, a stream valley or coast line. Characteristically, steep slopes or escarpments separate the terrace from an adjacent upland on one side, and a lowland (coast or valley) on the other. Due to the effects of erosion, the terrace surface may not be as smooth as a valley flat, and within the general terrace area, there may be undulating areas of dune sand or hill slopes.

(U) Undulating topography is characteristic of areas which have many small depressions and low mounds. An undulating surface is primarily a depositional feature, not an erosional one. The term should not be misused for areas that have slightly irregular surfaces resulting from erosion.

(V) A valley flat is a low flat area between valley walls and bordering a stream channel. It includes the flood plain and, generally, is the flatest area in the valley. The surface may have a slight slope toward the main stream, toward the valley walls, or may be marked by valleys or smaller streams. Generally, the valley flat is separated from alluvial terraces, or from the upland, by a pronounced break in slope.
Sometimes, however, the erosion of adjacent upland and the deposition of colluvium may make the outer edge of the alluvial flat. If the site maps alluvium or the valley situation has hydrologic significance, use code for sites in small valleys on a plain.

(W) An upland draw is a small natural drainageway or depression, usually dry, on a hillside or upland.

1.4[illegible] WELL DEPTH
** (SWDEPT/C2[illegible] - Chap V(8) in 425-4[illegible]):
Enter the depth of the finished well, in feet below land surface datum. The depth of the well is the greatest depth to which the well can be sounded if measurement is not practicable, enter the reported depth at which the well was

finished.

1.41 USE OF WATER

** (SWUSE1/F24 - SECONDARY-KEY CHAR X in 41!):

Enter the code indicating the principal use of water from the site. If water from the site is used for more than one purpose, enter the principal use here and enter the subordinate uses in the following two fields. The codes and their meanings are:

A - air conditioning	I - irrigation	P - recreation
B - bottling	J - industrial (cooling)	S - stock
C - commercial	K - mining	T - institution
D - dewater	M - medicinal	U - unused
E - power	N - industrial	V - desalination
F - fire	P - public supply	Z - other (explain in remarks)
H - domestic	S - aquaculture	

(A) Air conditioning refers to water supply used solely or principally for heating or cooling a building. Water used to cool industrial machinery belongs in the industrial category, not in the air-conditioning category.

(B) Bottling refers to the storage of water in bottles and use of the water for potable purposes (see Medicinal).

(C) Commercial use refers to use by a business establishment that does not fabricate or produce a product. Filling stations and motels are examples of commercial establishments. If some product is manufactured, assembled, remodeled, or otherwise fabricated, use of water for that plant should be considered industrial, even though the water is not used directly in the product or in the manufacturing of the product.

(D) Dewatering means the water is pumped for dewatering a construction or mining site, or to lower the water table for agricultural purposes. In this respect, it differs from a drainage well that is used to drain surface water underground. If the main purpose for which the water is withdrawn is to provide drainage, dewatering should be indicated even though the water may be discharged into an irrigation ditch and subsequently used to irrigate land.

(E) Power generation refers to use of water for generation of any type of power.

(F) Fire protection refers to the principal use of the water and should be indicated if the site was constructed principally for this purpose even though the water may be used at times to supplement an industrial or defense supply, to irrigate a golf course, fill a swimming pool, or for other use.

(H) Domestic use is water used to supply household needs, principally for drinking, cooking, washing, and sanitary purposes, but including watering a lawn and caring for a few pets. Most domestic wells will be at suburban or farm homes, but wells supplying small quantities of water for domestic purposes for one-classroom schools, turnpike gates, and similar installations, should be in the domestic category.

(I) Irrigation refers to the use of water to irrigate cultivated

plants. Most irrigation sites will supply water for farm crops, but the category should include wells used to water the grounds of schools, industrial plants, or cemeteries, if more than a small amount of water is pumped and that is the sole use of the water.

(J) Industrial (cooling) refers to a water supply used solely for industrial cooling.

(K) Mining refers to a water supply used solely for mining purposes.

(M) Medicinal refers to water purported to have therapeutic value. Water may be used for bathing and/or drinking. If use of water is mainly because of its claimed therapeutic value, use this category even though the water is bottled.

(N) Industrial use is within a plant that manufactures or fabricates a product. The water may or may not be incorporated into the product being manufactured. Industrial water may be used to cool machinery, to provide sanitary facilities for employees, to air-condition the plant, and to irrigate the ground at the plant.

(P) Public supply use is water that is pumped and distributed to several homes. Such supplies may be owned by a municipality or community, a water district, or a private concern. In most States, public supplies are regulated by departments of health which enforce minimum safety and sanitary requirements. If the system supplies five or more homes, it should be considered a public supply, as four or less classify use as domestic. Water supplies for trailer or summer camps with five or more living units should be in this category, but motels and hotels are classified as commercial. Most public supply systems also furnish water for a variety of other uses, such as industrial, institutional, and commercial.

(Q) Aquaculture refers to a water supply used solely for aquaculture, such as fish farms.

(R) Recreation refers to water discharged into pools, or channels which are dammed downstream to form pools, for swimming, boating, fishing, ice rinks, and other recreational uses.

(S) Stock supply refers to the watering of livestock.

(T) Institutional refers to water used in the maintenance and operation of institutions such as large schools, universities, hospitals, rest homes, or similar installations. Owners of institutions may be individuals, corporations, churches, or governmental units.

(U) Unused means water is not being removed from the site for one of the purposes described above. A test hole, oil or gas well, recharge, drainage, observation, or waste-disposal well will be in this category.

Do not use this classification for an irrigation, domestic, stock, or other well during "off season" or temporary periods of nonuse. The use of water from a newly constructed site should be considered as the use for which it is intended even though it may not yet be in use when inventoried.

(Y) Desalination refers to water used in a desalting process whereby dissolved solids are removed to make water potable or suitable for other uses. Enter the type of use of the desalinated water in the next column, "Secondary Water Use".

(Z) Other refers to miscellaneous uses not included in the listed categories.

5.6.7.4 TYPE OF ANALYSES

** (MGDNTY/C120 - CHAR X(2) in 46-47):

Enter the code that indicates the type of water-quality data generally collected at the site. The codes and their meanings are:

A - physical properties
B - common ions
C - trace elements
D - pesticides
E - nutrients
F - sanitary analysis (organisms)
G - pesticides and common ions
H - nutrients and common ions
I - common ions/trace elements
J - sanitary analysis and common ions
K - pesticides and nutrients
L - trace elements, pesticides, and nutrients
M - all or most of the above
N - common ions, trace elements and radioactive
P - common, trace, and physical
Z - other (explain in remarks)

1.50 INVENTORY WATER LEVEL

** (SINVWL/C30 - CHAR X(7) in 454-460):

Enter the water level at the ground water site, in feet below land surface. Precision can be carried to two decimal places. If the water level is above land surface, enter the water level in feet above land surface preceded by a minus sign (-). If the site flows but the head is not known, the site is dry, the level cannot be measured, measurement has been discontinued, or the well destroyed, leave this space blank and see SITE STATUS.

1.51 DATE MEASURED

** (SIWLDT/C31 - MANDATORY (SINVWL) CHAR X(8) in 461-468):

This date is 'mandatory' only if an 'inventory water level' or 'site status' was entered for the ground water site. Enter the date on which the water level was measured. Show month, day, and year in the spaces indicated. If the day or month are not known, code the appropriate field with 00. Use leading zeros for values of month and day that are less than 10, and provide all four digits of the year.

5.6.6.1 TYPE OF LOG

** (MGDLTY/C199 - MANDATORY SECONDARY-KEY CHAR X in 36):

Enter the code that best describes the log type. This field is mandatory. The codes are:

A - drilling time
B - casing collar
C - caliper
D - drillers
E - electric
F - fluid-conductivity
G - geologists or sample
H - magnetic
I - induction
J - gamma ray
M - microlog
N - neutron
O - microlateral log
P - photographic
Q - radioactive-tracer
S - sonic
T - temperature
U - gamma-gamma
V - fluid velocity
X - core

K - dipmeter survey Z - other (explain in remarks)
L - lateral log

6.7.1.3 UNIT IDENTIFIER

** (LGA.FR/C93 - MANDATORY SECONDARY-KEY CHAR X(8) in 55-62):
Enter the 8-character code identifying the lithologic unit (see app. F). (The terms BASEMENT and BEDROCK will be accepted as legal values.) The unit identifier is mandatory.

100CNZC CENOZOIC ERATHEM
110QRNR QUATERNARY SYSTEM
111ALVM HOLOCENE ALLUVIUM
111BBTM BAY-BOTTOM DEPOSITS
111BECH BEACH DEPOSITS
111DUNE DUNE (AEOLIAN) DEPOSITS
111FILL FILL
111HLCN HOLOCENE SERIES
111LAKE LAKE DEPOSITS
111SLMR SALT-MARSH DEPOSITS
111TRRC TERRACE DEPOSITS
112200L 20-FOOT CLAY
112GLCD GLACIAL DELTA DEPOSITS
112GLCLU GLACIAL AQUIFER,UPPER
112GRER GARDINERS CLAY
112HBHD HARBOR HILL DRIFT
112HBHO HARBOR HILL OUTWASH
112HBHT HARBOR HILL TILL
112HHGM HARBOR HILL GROUND MORAINE
112HHTM HARBOR HILL TERMINAL MORAINE
112ICNC ICE-CONTACT DEPOSITS
112JMCO JAMECO AQUIFER
112KMTC KAME TERRACE DEPOSITS
112LAKE LAKE DEPOSITS
112OTSH OUTWASH
112PGFG PORT WASHINGTON CONFINING UNIT
112PGOF PORT WASHINGTON AQUIFER
112RKGM RONKONKOMA GROUND MORAINE
112RKKD RONKONKOMA DRIFT
112RKKO RONKONKOMA OUTWASH
112RKKT RONKONKOMA TILL
112RKTM RONKONKOMA TERMINAL MORAINE
112SAND SAND
112SDGV SAND AND GRAVEL
112SMTN SMITHTOWN CLAY
112TILL TILL
121MNNT MANNETTO GRAVEL
200MSZC MESOZOIC ERATHEM
210CRCS CRETACEOUS SYSTEM
211CRCSU UPPER CRETACEOUS SERIES
211LLYD LLOYD AQUIFER
211MGTY MAGOTHY AQUIFER
211MMGD MONMOUTH GREENSAND
211MNMG MATAWAN GROUP-MAGOTHY FORMATION
211MNMT MONMOUTH GROUP
211MNMT MONMOUTH GROUP
211MTWN MATAWAN FORMATION
211RCNF RARITAN CONFINING UNIT
211RRTN RARITAN FORMATION
220TRSC TRIASSIC SYSTEM
231[illegible] [illegible] - [illegible]

231NWRK NEWARK GROUP
231PLST PALISADES DIABASE
231STCN STOCKTON FORMATION
231TRSCU UPPER TRIASSIC SERIES
300PLZC PALEOZOIC ERATHEM
320PSLV PENNSYLVANIAN SYSTEM
324PSVL POTTSVILLE FORMATION
330MISP MISSISSIPPIAN SYSTEM
337POCN POCONO GROUP
340DVNN DEVONIAN SYSTEM
341CNDY CANADAWAY GROUP
341CNNG CONEWANGO GROUP
341CNNT CONNEAUT GROUP
341DVNNU DEVONIAN, UPPER
341GENS GENESEE FORMATION
341JVWF JAVA-WEST FALLS FORMATION
341SONY SONYEA FORMATION
344DVNNM DEVONIAN, MIDDLE
344ESPS ESOPUS SHALE
344HMLN HAMILTON GROUP
344ONDG ONONDAGA LIMESTONE
344TLLY TULLY LIMESTONE
347DVNNL DEVONIAN, LOWER
347HDSC HELDERBERG GROUP
347ORSK ORISKANY SANDSTONE
350GRPS GREEN POND CONGLOMERATE
350SLRN SILURIAN SYSTEM
351ACBS AKRON-COBLESKILL-BERTIE FORMATIONS,UNDIFFERENTIATED
351AKRN AKRON DOLOMITE
351BNTC BINNEWATER SANDSTONE
351BRTI BERTIE LIMESTONE
351CBLK COBLESKILL LIMESTONE
351CMLS CAMILLUS SHALE
351LNGD LONGWOOD SHALE
351SLIN SALINA GROUP
351SLRNU SILURIAN, UPPER
351SRCS SYRACUSE SALT
351VRNN VERNON SHALE
354CLNN CLINTON GROUP
354SLRNM SILURIAN, MIDDLE
354SNGK SHAWANGUNK CONGLOMERATE
355LCKP LOCKPORT DOLOMITE
357ALBN ALBION GROUP
357SLRNL SILURIAN, LOWER
360ORDVC ORDOVICIAN SYSTEM
361LRAN LORAINE SHALE
361ORDVCU ORDOVICIAN, UPPER
361OSWG OSWEGO SANDSTONE
361QNSN QUEENSTON SHALE
361UTIC UTICA SHALE
364BRKR BERKSHIRE SCHIST
364CHZY CHAZY GROUP
364CNJH CANAJOHARIE SHALE
364NMNL NEWMANSKILL FORMATION
364ORDVCM ORDOVICIAN, MIDDLE
364SKHL SNAKE HILL FORMATION
364TRNV TRENTON-BLACK RIVER GROUP
364TRNN TRENTON GROUP
364WLMC WALLOOMSAC SLATE
367BKMN BEEKMANTOWN GROUP

357DVCLORDOVICIAN, LOWER
367PLTN POULTNEY SLATE
367TSHL TRIBES HILL LIMESTONE
370CMBP CAMBRIAN SYSTEM
371CMBRMMIDDLE CAMBRIAN SERIES
371CMBRUCAMBRIAN, UPPER
371LLFL LITTLE FALLS DOLOMITE
371PSDM POTSDAM SANDSTONE
371TCSQ TACONIC SEQUENCE
371THRS THERESA DOLOMITE
374CMBRMCAMBRIAN, MIDDLE
374SKBG STOCKBRIDGE GROUP
377BULL BULL SLATE
377CMBRLLOWER CAMBRIAN SERIES
377DLTN DALTON FORMATION
377EDV. ELIZAVILLE AND BERKSHIRE FORMATIONS
377NGSU NASSAU FORMATION
377PGQY ROUGHQUAY QUARTZITE
377SCCK SCHODACK FORMATION
377SSNG STISSING DOLOMITE
400BCPX BASEMENT COMPLEX
400PCMB PRECAMBRIAN ERATHEM

5.7.1.4 LITHOLOGY

** (LGLITH/C96 - SECONDARY-KEY CHAR X(4) in 63-66):

Enter the code indicating the principal lithology of this unit. The codes are:

Rock Term	Abbreviation
Alluvimum	ALVM
Anhydrite	ANDR
Anorthosite	ANPS
Arkose	ARKS
Basalt	BSLT
Bentonite	BNTN
Boulders	BLDR
Boulders and sand	BLSD
Boulders, silt, and clay	BLSC
Breccia	BRCC
Calcite	CLCT
Caliche (hard pan)	CLCH
Chalk	CHLK
Chert	CHRT
Clay	CLAY
Clay, some sand	CLSD
Claystone	CLSN
Coal	COAL
Cobbles	COBB
Cobbles and sand	COSD
Cobbles, silt, and clay	COSC
Colluvium	CLVM
Conglomerate	CGLM
Coquina	CQUN
Diabase	DIBS
Diorite	DORT
Dolomite	DLMT
Drift	DRFT
	EVAP
	GBBR

[redacted]lac[redacted](un[redacted]ren[redacted]ed)	[redacted]L
Gneiss	GNSS
Granite	GRNT
Granite, gneiss	GRGN
Gravel	GRVL
Gravel and Clay	GRCL
Gravel, cemented	GRCM
Gravel, sand, and silt	GRDS
Gravel, silt and clay	GRSC
Graywacke	GRCK
Greenstone	GNST
Gypsum	GPSM
Hard pan	HRDP
Igneous (undifferentiated)	IGNS
Lignite	LGNT
Limestone	LMSN
Limestone and Dolomite	LMDM
Loam	LOAM
Loess	LOSS
Marble	MRBL
Marl	MARL
Marlstone	MRLS
Metamorphis (undifferentiated)	MMPC
Muck	MUCK
Mud	MUD
Mudstone	MDSN
Other	OTHR
Outwash	OTSH
Overburden	OBDN
Peat	PEAT
Quartzite	QRTZ
Residium	RSDM
Rhyolite	RYLT
Rock	ROCK
Rubble	RUBL
Sand	SAND
Sand and clay	SDCL
Sand and gravel	SDGL
Sand and silt	SDST
Sand, gravel, and clay	SGVC
Sand, some clay	SNCL
Sandstone	SNDS
Sandstone and shale	SDSL
Saprolite	SAPL
Schist	SCST
Sedimentary (undifferentiated)	SDMN
Serpentine	SRPN
Shale	SHLE
Silt	SILT
Silt and clay	STCL
Siltstone	SLTN
Slate	SLTE
Soil	SOIL
Syenite	SYNT
Till	TILL
Travertine	TRVP
Tuff	TUFF
Volcanic (undifferentiated)	VLCC

6.7.1.1 DEPTH TO TOP OF UNIT

** (LGTOP/CP1 - CHAR X(*) in 39-44):
Enter the depth to the top of this lithologic unit, in feet below land surface.

2.6.2.4 METHOD OF CONSTRUCTION
** (CDCOME/CoS - CHAR X in 57):
Enter the code that best indicates the method by which the site was constructed. Allowable codes are:

A - air-rotary	P - air percussion
B - bored or augered	R - reverse rotary
C - cable-tool	T - trenching
D - dug	V - driven
H - hydraulic rotary	W - drive and wash
J - jetted	Z - other (explain in remarks)

(A) Air-rotary method is one in which a stream of air is used to cool the bit and bring the rock cuttings to the surface.

(B) A bored or augered hole is one in which the earth materials are cut and removed from the hole with an auger. The auger may be powered by hand or machinery.

(C) Cable-tool refers to a well drilled by the familiar "percussion" or "churn-drill" method whereby a heavy drilling tool is raised and lowered with enough force to pulverize the rock. The rock debris is commonly removed from the hole with a bailer. The California mud-scow method is a special variation of the cable-tool method.

(D) Dug holes are excavated by hand tools or power-driven digging equipment. Caissons, Ranney-type collectors, and galleries belong in this classification even though they may have laterals that are driven or jetted. Tunnels would also be in this category.

(H) The hydraulic-rotary well is constructed by rotating a length of pipe (drill stem) equipped with a bit that cuts or grinds the rocks. Water or drilling mud is pumped down the drilling stem. Cuttings are carried to the surface in the annular space between the drilling stem and the wall of the hole. Note that separate categories are provided for air-rotary and reverse-rotary.

(J) Jetted wells are excavated by using high velocity streams of water pumped through a pipe having a restricted opening or "jetting" nozzle. For some types of earth materials a cutting bit is attached to the end of the jetting pipe. The material cut or washed from the hole is carried to the surface in the annular space outside the pipe as by the hydraulic-rotary method. This method is most suitable for construction of small-diameter wells in unconsolidated material.

(P) An air-percussion drill is a cutting tool powered by compressed air. It uses a rapid percussion effect, coupled with rotary action, to drill hard rocks. Compressed air also is used to blow the cuttings from the hole. Air-percussion drills are generally used in conjunction with air-rotary drilling rigs.

(R) Reverse rotary is similar to the hydraulic rotary except that the water or drilling mud flows down the annular space between the

drilling stem and the wall of the hole and the cuttings are pumped out through the drill stem.

(T) Trenching refers to the construction of a sump or open pit from which ground water may be pumped. Trenching may be done by hand but more commonly power equipment, such as a bulldozer, dragline power shovel, or a backhoe is used. Ponds and drains belong in this category of construction.

(V) Driven wells are constructed by driving a length of pipe, usually of small diameter and generally equipped with a sand point, to the desired depth. The wells may be driven by hand or with air hammer or other power equipment. An essential feature of a driven well is that no earth material is removed as the well is constructed.

(W) Drive and wash wells are constructed by driving a small diameter open-end casing a few feet into the earth, then washing out the material from inside the casing with a jet of water. The process is repeated until the well has penetrated a sufficient depth into the aquifer.

2.6.2.5 TYPE OF FINISH
** (CDCOFI/C56 - CHAR X in 56):

Enter the code indicating the method of finish or the nature of the openings that allow water to enter the well. Allowable codes are:

C - porous concrete
F - gravel pack w/perforations
G - gravel pack w/screen
H - horizontal gallery
O - open end
P - perforated or slotted
S - screen
T - sand point
W - walled
X - open hole
Z - other (explain in remarks)

(C) Porous concrete is concrete casing that is pervious enough to allow ground water to seep into the well.

(F & G) A gravel pack well is a drilled or dug well that has a gravel envelope opposite the part through which water enters. Commonly, these wells will be finished either with commercial screen or with slotted casing.

(H) A horizontal gallery or collector essentially is a horizontal type well in which the screen, slotted pipe, or gravel-filled trench is horizontal. All horizontal wells should be in this class, including Ranney collectors and infiltration galleries.

(O) An open-end well is one that is cased to the bottom of the hole so that water can enter the well only through the bottom of the hole.

(P) Perforated or slotted casing is well pipe that has had holes punched or slots cut in it to admit water. Do not use this designation if the well has a gravel pack. Use "F" instead.

(S) Screen refers to commercial well screen manufactured for the purpose of admitting water to a well. Common types of screen are wire mesh, wrapped trapezoidal wire, and shutter screen. Do not use this designation if the well also has a gravel pack. Use "G" instead.

(T) A sand point is the screen part of a drive point and usually is

part of a driven well.

(W) A walled or shored well is usually a dug well in which the walls have been shored-up with open-jointed fieldstone, brick, tile, concrete blocks, wood cribbing, or other material. A few wells of this type may have gravel walls, however, they should be placed in this category instead of F or G. A dug well that is mostly open hole but has even a few feet of cribbing, corrugated pipe, or other shoring to prevent caving, should be in this category.

(X) An open hole well is one that has a finished open hole in the aquifer. A well belongs in this class even if the casing does not actually extend to the geologic unit or zone from which the water is obtained.

2.6.4.3 DEPTH TO BOTTOM OF CASING
** (CDCSBT/C76 - CHAR X(4) in 47-54):
Enter the depth to the bottom of this section of casing, in feet below land surface.

2.6.4.4 DIAMETER OF CASING
** (CDCSDI/C79 - CHAR X(5) in 55-59):
Enter the diameter of this section of casing, in inches. Two decimal places are provided for fraction sizes (1 1/4 = 1.25).

2.6.4.5 CASING MATERIAL
** (CDCSMT/C80 - CHAR X in 60):
Enter the code indicating the material from which the casing is made. The codes and their meanings are:

B - brick	R - rock or stone
C - concrete	S - steel
D - copper	T - tile
G - galvanized iron	U - coated steel
I - wrought iron	W - wood
M - other metal	Z - other material (explain in remarks)
P - PVC, fiberglass, other plastic	

4.7 DISCHARGE
** (DIVAL/C153 - MANDATORY SECONDARY-KEY CHAR X(10) in 41-50):
Enter the discharge from the site in gallons per minute. If discharge is determined in other units (such as cfs or metric units), convert to gallons per minute. Two decimal places are provided for very small discharges. Discharge is a mandatory entry. Production data will not be stored if this field is blank.

5.0.1.2 OWNERS NAME
** (MGOONM/C151, C152, C153 - MANDATORY CHAR X(42) in 44-85):
Enter the last name of the owner. This is a mandatory entry. Ownership data will not be stored if a last name is not specified.

5.0.11.2 REMARKS
** (MGORMK/C155 - CHAR X(44) in 44-87):
The REMARKS record is provided for entering meaningful data for which no

specific field is available. Data in this field will be stored exactly as punched, together with the date of entry and sequence number. Use this space to explain entries of 'other' for coded fields on the schedule, to describe the measuring point of observation wells, and any other pertinent comments about the site.

For each comment, a 5-digit sequence number is required (MGDSEQ) so that individual comments in the remarks record may be deleted or modified without affecting other entries. This field is mandatory.

Establish a local procedure for formatting remarks so that they may be more useable. For instance,

1. Start each remark with the number of the field it relates to in the first three or four positions of its remark.

2. Follow this with the values which uniquely identify the appropriate record occurrence, if applicable.

3. Continue the remark to subsequent entries, indenting several spaces on continuations to highlight remark beginnings.

Amenia (Rte. 22 south).

User: LWAGNER -at

<ADMIN1>DISTRICT.USERS>LWAGNER>GW.REQUEST>QUADRANGLE>TVARNER-3

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*****************************************************************************************************************
*****************************************************************************************************************

W     W   W  WWW   WWW  W   W WWWWW WWWW
W     W   W W   W W   W WW  W W     W   W
W     W W W W   W W     W W W W     W   W
W     W W W WWWWW W     W W W WWWW  WWWW
W     W W W W   W W  W. W W W W     W W
W     WW WW W   W W   W W  WW W     W  W
WWWWW W   W W   W  WWWW W   W WWWWW W   W


WWWWW W   W  WWW  WWWW  W   W WWWWW WWWW        WWW
  W   W   W W   W W   W WW  W W     W   W       W   W
  W   W   W W   W W   W W W W W     W   W           W
  W   W   W WWWWW WWWW  W W W WWWW  WWWW  WWWWW   WW
  W   W   W W   W W W   W W W W     W W             W
  W    W W  W   W W  W  W  WW W     W  W        W   W
  W     W   W   W W   W W   W WWWWW W   W        WWW
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41 45 00 73 30 00
41 53 00 73 38 00

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Label: PRT03o -form

Pathname: <ADMIN1>DISTRICT.USERS>LWAGNER>GW.REQUEST>QUADRANGLE>TVARNER-3
File last modified: 87-11-10.14:23:38.Tue

Spooled: 87-11-10.14:25:56.Tue [Spooler rev 19.4.5]
Started: 87-11-10.14:31:48.Tue on: PRO by: PRO

SITE-ID	LOCAL WELL NUMBER	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	LAT LONG ACCURACY CODE	ALTITUDE OF LAND SURFACE (FEET)	TOPO-GRAPHIC SETTING	DEPTH OF WELL (FEET)	PRIMARY USE OF WATER	TYPE OF ANALYSES
414505073350201	DU 755	027	414505	0733508	T	460.00	-	160	H	--
										--
										--
414511073330301	DU 671	027	414511	0733309	T	570.00	-	25.0	H	--
414516073350101	DU 1739	027	414516	0733501	T	435	-	40.00	H	--
										--
										--
414519073334501	DU 3116	027	414519	0733345	T	99999.99	-	--	U	--
414519073334502	DU 3117	027	414519	0733345	T	--	-	--	U	--
414516073343501	DU 549	027	414520	0733457	T	400.00	-	155	H	--
										--
414521073360601	DU 675	027	414524	0733610	T	840.00	-	135	H	--
										--
										--
414525073333701	DU 2116	027	414525	0733337	T	99999.99	-	--	U	--
414529073364101	DU 747	027	414529	0733641	T	345.00	-	20.0	H	--
414529073344401	DU 1392	027	414529	0733444	T	445	-	255.00	H	--
										--
414530073344901	DU 78	027	414537	0733447	T	470.00	-	55.0	H	--
										--
414541073310901	DU 1028	027	414541	0733109	T	535.00	-	14.0	H	--
414549073323301	DU 727	027	414549	0733233	T	575.00	-	401	H	--
414554073342101	DU 1031	027	414554	0733421	-	430.00	-	50.0	H	--
414614073344201	DU 743	027	414614	0733442	T	440.00	-	111	H	--
414533073343301	DU 1374	027	414533	0733433	T	450.00	-	135	H	--
414635073343001	DU 1373	027	414635	0733430	T	530.00	-	150	C	--
414636073324701	DU 1372	027	414636	0733247	-	530.00	-	222	P	--
414639073321601	DU 972	027	414639	0733216	T	460.00	-	20.0	U	--
414641073324701	DU 1371	027	414641	0733247	-	520.00	-	247	P	--
414641073322501	DU 1915	027	414641	0733225	T	440	-	115.00	H	--
										--
414642073354801	DU 741	027	414642	0733548	T	500.00	-	260	H	--
										--
414651073321101	DU 734	027	414651	0733211	T	560.00	-	104	H	--
										--
414654073331101	DU 90	027	414654	0733311	T	460.00	-	100	U	--
										--
414654073331201	DU 739	027	414654	0733312	T	500.00	-	112	H	--
										--

SITE-ID	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	TYPE OF LOG AVAILABLE	AQUIFER CODE	LITH-OLOGY CODE	DEPTH TO TOP (FEET)	METHOD CONST-RUCTED	TYPE OF FINISH	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DISCHARGE (GPM)
414505073350801	34.00	01-01-59	-	374SKBG	LMSN	116.00	C	-	--	6.00	1.00
			-	--	--	--	-	-	--	--	--
			-	--	--	--	-	-	--	--	--
414511073330801	16.00	01-01-59	-	112TILL	TILL	--	D	-	--	36.00	3.00
414516073350101	15.00	05-15-85	-	112SDGV	GRVL	0.00	P	F	40.00	6.00	25.00
			-	112LAKE	CLAY	10.00	-	-	--	--	--
			-	112SDGV	GRVL	35.00	-	-	--	--	--
414519073334501	--	--	-	--	--	--	-	-	--	--	--
414519073334502	--	--	-	--	--	--	-	-	--	--	--
414516073345501	38.00	01-01-59	-	374SKBG	LMSN	110.00	C	-	--	6.00	40.00
			-	--	--	--	-	-	--	--	--
414521073360801	15.00	01-01-59	D	360CDVC	SLTE	38.00	C	-	--	6.00	14.00
			-	--	--	--	-	-	--	--	--
			-	--	--	--	-	-	--	--	--
414525073333701	--	--	-	--	--	--	-	-	--	--	--
414529073364101	16.00	01-01-59	-	112TILL	TILL	--	D	-	--	30.00	--
414529073344401	40.00	05-22-85	-	112SDGV	GRVL	0.00	P	X	19.00	6.00	6.00
			-	BEDROCK	GRNT	11.00	-	-	--	--	--
414536073344901	19.00	01-01-59	-	374SKBG	LMSN	39.00	C	-	--	6.00	12.00
			-	--	--	--	-	-	--	--	--
414541073310901	3.00	03-01-83	-	--	--	--	D	-	--	--	5.00
414549073323601	--	--	-	374SKBG	LMSN	--	C	-	--	6.00	30.00
414554073342101	16.00	01-01-65	-	--	--	--	-	-	--	--	200.00
414614073344201	27.00	01-01-59	-	360CDVC	SLTE	80.00	C	-	--	6.00	8.00
414633073343901	--	--	-	--	--	--	-	-	--	--	--
414635073343001	22.00	05-01-77	-	--	--	--	-	-	--	--	--
414639073324701	57.00	10-17-68	-	--	--	--	-	-	--	--	15.00
414639073321601	4.00	01-01-59	-	112TILL	TILL	--	D	-	--	24.00	4.00
414641073324701	60.00	10-17-68	-	--	--	--	-	-	--	--	11.00
414641073322501	-0.10	10-08-85	-	112LAKE	CLAY	10.00	P	X	47.00	5.00	10.00
			-	112SAND	SAND	36.00	-	-	--	--	--
			-	BEDROCK	LMSN	46.00	-	-	--	--	--
414642073354801	--	--	-	360CDVC	SLTE	17.00	C	-	--	6.00	5.00
			-	--	--	--	-	-	--	--	--
414651073321101	14.00	01-01-59	-	374SKBG	LMSN	--	C	-	--	6.00	--
414654073331101	5.00	01-01-59	D	112SDGV	SDGL	--	C	-	--	8.00	--
			-	--	--	--	-	-	--	--	--
			-	--	--	--	-	-	--	--	--
414654073331201	6.00	01-01-59	D	112SDGV	GRVL	--	C	-	--	9.00	430.00
			-	--	--	--	-	-	--	--	--

SITE-ID	OWNER	REMARK
414505073350801	MARGARET JOHNSON	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	DRDN 110FT AFT PUMP 16GPM FOR 4HRS
	--	TEMP 51F 11/49
414511073330301	EMERSON FANNING	WELL LOCATION FROM BULLETIN GW-43 MAP
414516073350101	DANNY AND MARY PRATER	--
	--	--
	--	--
414519073334501	ARTHUR SARNEY	--
414519073334502	ARTHUR SARNEY	--
414516073345501	F. SCHEON	WELL LOCATION FROM BULLETIN GW-43 MAP
	G. TAYLOR	--
414521073360301	CARL TOBIAS	WELL LOCATION FROM BULLETIN GW-43 MAP
	J. BOULANGER	DRDN 60FT AFT PUMP 12GPM FOR 24HRS
	--	TEMP 53F 5/49
414525073333701	ARTHUR SARNEY	--
414529073364101	OSCAR OBERG	WELL LOCATION FROM BULLETIN GW-43 MAP
414529073344401	ROSAIELLA SHOOK	--
	--	--
414536073344901	CHARLES WEBSTER	WELL LOCATION FROM BULLETIN GW-43 MAP
	L. MASELLO	--
414541073310901	WILLIAM SCHNEIDER	--
414549073323801	W.E. ALBIG	WELL LOCATION FROM BULLETIN GW-43 MAP
414554073342101	JEWEL EQUITIES	--
414614073344201	W.J. ARNOLD	WELL LOCATION FROM BULLETIN GW-43 MAP
414633073343801	RAY ROBERT	--
414635073343001	GEORGE PHILLIPS	--
414638073324701	PLEASAN	--
414639073321601	W.E. BENTON	WELL LOCATION FROM BULLETIN GW-43 MAP
414641073324701	PLEASANT VIEW MOBILE HOME PARK	--
414641073322501	JAMES NARDELLI	--
	--	--
	--	--
414642073354901	J. REISER	--
	--	WELL LOCATION FROM BULLETIN GW-43 MAP
414651073321101	GEORGE VAN COTT	PCT OF WELL DYNAMITED WITH NO CHG IN YLD
		WELL LOCATION FROM BULLETIN GW-43 MAP
414654073331101	WASSAIC STATE SCHOOL	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	WELL FINISHED WITH SCREEN
	--	ABANDONED BECAUSE OF A DECREASE IN YIELD
414654073331201	WASSAIC STATE SCHOOL	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	WELL FIN WTH 15FT SCRN FROM 97TO112FT

SITE-ID	LOCAL WELL NUMBER	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	LAT LONG ACCURACY CODE	ALTITUDE OF LAND SURFACE (FEET)	TOPO-GRAPHIC SETTING	DEPTH OF WELL (FEET)	PRIMARY USE OF WATER	TYPE OF ANALYSES
414654073331201	DU 739	027	414654	0733312	T	500.00	-	112	H	--
414654073331202	DU 742	027	414654	0733312	T	500.00	-	108	H	--
										--
414654073331203	DU 743	027	414654	0733312	T	500.00	-	107	H	--
										--
414659073331501	DU 1367	027	414659	0733315	-	420.00	-	100	T	--
414659073331502	DU 1368	027	414659	0733315	-	420.00	-	100	T	--
414659073331503	DU 1369	027	414659	0733315	-	420.00	-	100	T	--
414659073331504	DU 1370	027	414659	0733315	-	420.00	-	100	T	--
414724073315301	DU 974	027	414724	0733153	T	450.00	-	80.0	H	--
414730073331301	DU 1030	027	414730	0733313	T	470.00	-	15.00	C	--
414731073320001	DU 975	027	414731	0733200	T	440.00	-	40.0	H	--
414734073330901	DU 927	027	414734	0733309	T	440.00	-	125	C	--
414742073301101	DU 736	027	414742	0733301	T	500.00	-	179	H	--
414743073315901	DU 731	027	414743	0733159	T	510.00	-	125	H	--
414747073354801	DU 739	027	414747	0733548	T	1040.00	-	200	H	--
414754073321601	DU 735	027	414754	0733216	T	460.00	-	75.0	H	--
414757073353501	DU 1393	027	414757	0733535	T	1030	-	395.00	H	--
414809073333401	DU 924	027	414809	0733334	T	460.00	-	250	C	--
414810073333201	DU 1727	027	414810	0733332	T	440	-	40.00	H	--
414818073333401	DU 595	027	414818	0733334	T	460.00	-	15.0	P	--
414821073321201	DU 1074	027	414821	0733212	-	440.00	-	62.5	-	--
414822073333301	DU 1079	027	414822	0733333	-	510.00	-	--	P	--
414840073362101	DU 739	027	414840	0733621	T	1140.00	-	117	H	--
414851073305901	DU 943	027	414851	0733059	T	480.00	-	215	H	--
414851073305902	DU 1728	027	414851	0733059	T	515	-	157.00	H	--
414910073373901	DU 296	027	414909	0733737	T	340.00	-	378	H	--
414913073360601	DU 737	027	414913	0733606	T	900.00	-	246	H	--
414924073302501	DU 977	027	414924	0733025	T	480.00	-	119	H	--
414927073365001	DU 298	027	414927	0733651	T	900.00	-	102	H	--

Nearest well drawing from aquifer of concern for which water level data are available

SITE-ID	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	TYPE OF LOG AVAILABLE	AQUIFER CODE	LITH-OLOGY CODE	DEPTH TO TOP (FEET)	METHOD CONST-RUCTED	TYPE OF FINISH	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DISCHARGE (GPM)
414654073331201	6.00	01-01-59	-	--	--	--	-	-	--	--	--
414654073331202	5.00	01-01-59	D	112SDGV	GRVL	--	C	-	--	6.00	225.00
			-	--	--	--	-	-	--	--	--
			-	--	--	--	-	-	--	--	--
414654073331203	6.00	01-01-59	D	112SDGV	GRVL	--	C	-	--	8.00	625.00
			-	--	--	--	-	-	--	--	--
			-	--	--	--	-	-	--	--	--
414659073331501	8.00	06-01-79	-	--	--	--	-	-	--	--	600.00
414659073331502	6.00	06-01-79	-	--	--	--	-	-	--	--	600.00
414659073331503	10.00	06-01-79	-	--	--	--	-	-	--	--	500.00
414659073331504	4.00	06-01-79	-	--	--	--	-	-	--	--	300.00
414724073315501	10.00	01-01-59	-	BEDROCK	GRSN	10.00	C	-	--	6.00	5.00
414730073331301	--	--	-	--	--	--	-	-	--	--	--
414731073320001	10.00	01-01-59	-	112SDGV	GRVL	--	C	-	--	6.00	5.00
414734073330901	--	--	-	3400DVC	SLTE	40.00	C	-	--	6.00	40.00
414742073330101	--	--	-	3600DVC	SLTE	--	C	-	--	6.00	--
			-	--	--	--	-	-	--	--	--
414743073315901	--	--	-	374SKBG	LMSN	5.00	C	-	--	6.00	7.00
414747073354801	--	--	-	3600DVC	SLTE	20.00	C	-	--	6.00	15.00
414754073321601	--	--	-	112SDGV	GRVL	--	C	-	--	6.00	30.00
414757073353501	30.00	03-20-85	-	BEDROCK	SHLE	5.00	P	X	19.00	6.00	2.00
414809073333401	--	--	-	374SKBG	LMSN	140.00	C	-	--	6.00	5.00
414810073333201	15.00	05-15-85	-	112LAKE	CLAY	0.00	P	F	40.00	6.00	20.00
			-	112SDGV	GRVL	35.00	-	-	--	--	--
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	D	-	--	60.00	26.00
			-	--	--	--	-	-	--	--	--
414821073321201	3.60	05-14-71	-	112SDGV	GRVL	28.00	-	S	57.50	--	90.00
414822073333301	1.00	01-01-74	-	--	--	--	D	-	--	--	--
414840073362101	10.00	01-01-59	-	3600DVC	SLTE	--	C	-	--	6.00	--
414851073305901	--	--	-	374SKBG	LMSN	150.00	C	-	--	6.00	40.00
			-	--	--	--	-	-	--	--	--
414851073305902	40.00	05-14-85	-	112LAKE	CLAY	0.00	P	X	69.00	6.00	12.00
			-	BEDROCK	LMSN	65.00	-	-	--	--	--
414910073373901	--	--	-	374SKBG	LMSN	--	C	-	--	6.00	5.00
			-	--	--	--	-	-	--	--	--
414913073360601	--	--	-	3600DVC	SLTE	--	C	-	--	6.00	--
			-	--	--	--	-	-	--	--	--
414924073302501	6.00	01-01-59	-	374SKBG	LMSN	85.00	C	-	--	--	5.00
			-	--	--	--	-	-	--	--	--
414924073365001	11.00	01-01-59	-	3600DVC	SLTE	10.00	C	-	--	6.00	15.00

SITE-ID	OWNER	REMARK
414654073331201	--	DRDN 9FT AFT PUMP 430GPM 24HR T=51F6/49
414654073331202	WASSAIC STATE SCHOOL	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	DRDN 4FT AFT PUMP 225GPM FOR 24HRS
	--	TEMP 49F 10/48
414654073331203	WASSAIC STATE SCHOOL	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	DRDN 4FT AFT PUMP 525GPM FOR 24HR
	--	FIN WT416FTGFSCRN FR91T0109FT T51F6/49
414659073331501	WASSAIC DEVELOPMENT CENTER	--
414659073331502	WASSAIC DEVELOPMENT CENTER	--
414659073331503	WASSAIC DEVELOPMENT CENTER	--
414659073331504	WASSAIC DEVELOPMENT CENTER	--
414724073315501	RAYMOND MCENROE	WELL LOCATION FROM BULLETIN GW-43 MAP
414730073331301	D.C. MCMILLAN	--
414731073320301	JOSEPH FLOYD	WELL LOCATION FROM BULLETIN GW-43 MAP
414734073330901	MORSE STEVENS AND SMITH, INC.	WELL LOCATION FROM BULLETIN GW-43 MAP
414742073330101	HADLEY BENSON	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	WELL SUP THREE HOMES AND FARM
414743073315901	L. HULST	WELL LOCATION FROM BULLETIN GW-43 MAP
414747073354801	J.B. MOORE	WELL LOCATION FROM BULLETIN GW-43 MAP
414754073321601	SOUTH AMENIA CHURCH	WELL LOCATION FROM BULLETIN GW-43 MAP
414757073353501	ROBERT WESTRA	--
414809073333401	KAYS FILLING STATION	WELL LOCATION FROM BULLETIN GW-43 MAP
414810073333201	BILLY PRATER	--
	--	--
414818073333601	WASSAIC WATER CO.	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	WELL DRY IN SUMMER
414821073321201	KENT HILLCO INC.	--
414822073333301	WASSAIC WATER CO.	--
414840073362101	R.J. PETTY	WELL LOCATION FROM BULLETIN GW-43 MAP
414851073305901	HENRY BARLOW	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	WELL FLOWS
414851073305902	MARY LOU BARNHAM	--
	--	--
414910073373901	A. T. JOHNSON	WELL LOCATION FROM BULLETIN GW-43 MAP
	C. COGSWELL	--
414913073360601	J.W. DONALDSON	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	WELL SUP THREE FAM AND FARM
414924073302501	BERT PECK	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	"MUD POCKET" PENTD IN BORK AT DPTH 110FT
414924073365001	H. E. WHEATON	WELL LOCATION FROM BULLETIN GW-43 MAP

SITE-ID	LOCAL WELL NUMBER	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	LAT LONG ACCURACY CODE	ALTITUDE OF LAND SURFACE (FEET)	TOPO-GRAPHIC SETTING	DEPTH OF WELL (FEET)	PRIMARY USE OF WATER	TYPE OF ANALYSES
414924073365001	DU 298	027	414927	0733651	T	900.00	-	102	H	--
414927073371801	DU 993	027	414927	0733718	T	860.00	-	95.0	H	--
414948073365701	DU 249	027	414950	0733657	T	860.00	-	122	H	--
nearest well drawing from aquifer of concern										--
[redacted]	[redacted]	[redacted]	414959	[redacted]	T	540.00	[redacted]	150	[redacted]	[redacted]
415044073331701	DU 1019	027	415044	0733317	S	550	G	--	P	--
415046073351001	DU 379	027	415046	0733510	T	930.00	-	125	H	--
415046073332201	DU 97	027	415046	0733322	T	540.00	G	70.0	U	--
										--
										--
415046073331401	DU 100	027	415046	0733314	T	630.00	G	46.0	U	--
415050073344601	DU 224	027	415050	0733446	T	920.00	-	128	H	--
										--
415050073322501	DU 1729	027	415050	0733225	T	667	-	135.00	H	--
415055073332601	DU 1732	027	415055	0733328	T	560	-	30.00	U	--
										--
415055073332602	DU 1733	027	415055	0733328	T	560	-	30.00	U	--
										--
415055073332603	DU 1734	027	415055	0733328	T	560	-	40.00	U	--
										--
415055073332604	DU 1735	027	415055	0733328	T	560	-	40.00	U	--
										--
415055073332605	DU 1736	027	415055	0733328	T	560	-	40.00	U	--
										--
415057073331601	DU 1076	027	415057	0733316	F	550.00	G	200.	P	--
415057073331602	DU 1077	027	415057	0733316	F	550.00	G	45.0	P	--
415057073331603	DU 1078	027	415057	0733316	F	550.00	G	47.0	P	--
415059073303601	DU 1694	027	415059	0733036	T	501	-	255.00	H	--
415103073325501	DU 722	027	415103	0733255	T	570.00	-	38.0	C	--
415104073310901	DU 1711	027	415104	0733109	T	535	-	395.00	H	--

SITE-ID	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	TYPE OF LOG AVAILABLE	AQUIFER CODE	LITHOLOGY CODE	DEPTH TO TOP (FEET)	METHOD CONSTRUCTED	TYPE OF FINISH	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DISCHARGE (GPM)
414924073365001	11.00	01-01-59	-	--	--	--	-	-	--	--	--
414927073371901	18.00	01-01-59	-	360DDVC	SLTE	26.00	C	-	--	6.00	18.00
414949073365701	--	--	-	374SKBG	LMSN	--	C	-	--	6.00	30.00
			-	--	--	--	-	-	--	--	--
414959073333401	[illegible]	[illegible]	[illegible]	374SKBG	LMSN	7.00	C	-	--	6.00	15.00
			-	--	--	--	-	-	--	--	--
415044073351701	--	--	-	--	--	--	-	-	--	--	--
415046073351001	4.00	01-01-59	-	374SKBC	LMSN	20.00	C	-	--	--	30.8
415046073332201	1.00	01-01-59	D	112SDGV	GRVL	42.	C	-	--	6.00	3.00
			-	112LAKE	CLAY	0.0	-	-	--	8.00	180.00
			-	112SDGV	GRVL	22.	-	-	--	--	--
			-	112LAKE	CLAY	28.	-	-	--	--	--
415046073331401	1.00	01-01-59	-	112SDGV	GRVL	--	C	-	--	--	--
415050073344601	0.00	01-01-59	-	360DDVC	SLTE	14.00	C	-	--	8.00	100.00
			-	--	--	--	-	-	--	6.00	5.00
415050073322501	40.00	06-21-95	-	BEDROCK	LMSN	12.00	P	X	19.00	--	--
415055073332801	26.29	03-23-95	-	112SAND	SAND	0.00	B	G	10.00	6.00	10.00
			-	112SAND	SDST	11.00	-	-	--	4.00	--
			-	BEDROCK	SLTE	27.00	-	-	--	--	--
415055073332802	23.75	03-23-95	-	112SAND	SAND	0.00	B	G	10.00	--	--
			-	112SAND	SDST	12.00	-	-	--	4.00	--
			-	BEDROCK	SLTE	27.00	-	-	--	--	--
415055073332803	25.33	03-23-95	-	112SAND	SDST	0.00	P	G	15.00	--	--
			-	112SDGV	GRCL	34.00	-	-	--	4.00	--
			-	BEDROCK	SLTE	36.00	-	-	--	--	--
415055073332304	25.92	03-23-95	-	112SAND	SDST	6	B	G	15.00	--	--
			-	112SDGV	GRCL	32.00	-	-	--	4.00	--
			-	BEDROCK	SLTE	38.00	-	-	--	--	--
415055073332305	25.63	03-23-95	-	112SAND	SDST	8	B	G	15.00	--	--
			-	112SDGV	GRCL	30.00	-	-	--	4.00	--
			-	BEDROCK	SLTE	38.00	-	-	--	--	--
415057073331601	--	--	-	112SDGV	GRVL	43.00	-	C	45.00	--	--
			-	--	--	--	-	-	--	8.00	50.00
415057073331602	--	--	-	112SDGV	GRVL	43.00	-	D	45.00	--	66.
415057073331603	--	--	-	112SDGV	GRVL	43.00	-	D	60.00	8.00	50.00
			-	--	--	--	-	-	--	8.00	50.00
415059073302601	25.00	08-26-95	-	BEDROCK	LMSN	5.00	P	X	19.00	--	31.0
415103073325501	3.00	01-01-59	D	112SDGV	GRVL	--	C	-	--	6.00	10.00
			-	--	--	--	-	-	--	8.00	100.00
415104073310901	50.00	08-24-95	-	112SDGV	GRVL	0.00	P	X	29.00	--	--
										6.00	--

SITE-ID	OWNER	REMARK
414924073365001	F. PREMATNEY	--
414927073371301	HARRY CREAMER	WELL LOCATION FROM BULLETIN GW-43 MAP
414948073365701	M. E. WHEATON	WELL LOCATION FROM BULLETIN GW-43 MAP
	E. CLARKE	--
415959073333401	[redacted]	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	WELL SUP TWO HOMES AND FARM
415044073331701	AMENIA WATER DISTRICT NO. 1.	YIELD DATA FROM HAYWARD & PAKAN ASSOC.JAN.85
415046073351001	ALVY LAKE	WELL LOCATION FROM BULLETIN GW-43 MAP
415046073332201	AMENIA WATER CO.	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	DRAWDOWN 9FT AFTER PUMP 130GMP 8 HRS
	--	--
	--	--
415046073331401	AMENIA WATER CO.	WELL LOCATION FROM BULLETIN GW-43 MAP
415050073344601	LEWIS CAVANNA	WELL LOCATION FROM BULLETIN GW-43 MAP
	L. WHALEN	--
415050073322501	LEON, VINCENT, AND SUZANNE LONG	--
415055073332801	ARCO CORP.	--
	--	--
	--	--
415055073332802	ARCO CORP.	--
	--	--
	--	--
415055073332803	ARCO CORP.	--
	--	--
	--	--
415055073332804	ARCO CORP.	--
	--	--
	--	--
415055073332805	ARCO CORP.	--
	--	--
	--	--
415057073331601	AMENIA WATER CO.	RECORD FROM SWUDS
	--	--
415057073331602	AMENIA WATER CO.	RECORD FROM SWUDS
415057073331603	AMENIA WATER CO.	RECORD FROM SWUDS, PS USER ID 2971
	--	--
415059073303601	ROBINSON	--
415103073325501	BROOKSIDE RESTAURANT	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	SUP WATER FOR AIR COND
415104073310901	TROUTBECK	--

SITE-ID	LOCAL WELL NUMBER	COUNTY	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	LAT LONG ACCURACY CODE	ALTITUDE OF LAND SURFACE (FEET)	TOPO-GRAPHIC SETTING	DEPTH OF WELL (FEET)	PRIMARY USE OF WATER	TYPE OF ANALYSES
415104073310901	DU 1731	027	415104	0733109	T	535	-	395.00	H	--
415108073351801	DU 875	027	415108	0733518	T	950.00	-	140	H	--
415123073332401	DU 1891	027	415123	0733324	T	653	-	395.00	H	--
415131073330501	DU 1075	027	415131	0733305	T	550.00	-	--	H	--
415159073371401	DU 973	027	415159	0733714	T	890.00	-	151	H	--
415159073371402	DU 285	027	415159	0733714	T	900.00	-	180	H	--
415211073373301	DU 286	027	415214	0733730	T	900.00	-	263	H	--
415232073341101	DU 1730	027	415232	0733411	T	1309	-	295.00	H	--
415245073345701	DU 279	027	415245	0733455	T	1090.00	-	147	H	--
415250073314701	DU 308	027	415253	0733147	T	680.00	-	89.0	H	--
415254073353501	DU 881	027	415254	0733535	T	800.00	-	110	H	--
415255073375201	DU 921	027	415255	0733752	T	1030.00	-	117	C	--

SITE-ID	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	TYPE OF LOG AVAILABLE	AQUIFER CODE	LITH-OLOGY CODE	DEPTH TO TOP (FEET)	METHOD CONST-RUCTED	TYPE OF FINISH	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DISCHARGE (GPM)
415104073310901	50.00	03-24-85	-	BEDROCK	LMSN	20.00	-	-	--	--	--
415108073351801	10.00	01-01-59	-	374SKBG	LMSN	--	C	-	--	8.00	38.00
			-	--	--	--	-	-	--	--	--
415123073332401	20.00	09-20-85	-	112LAKE	CLAY	0.00	P	X	19.00	6.00	1.50
			-	BEDROCK	LMSN	11.00	-	-	--	--	--
415131073330501	--	--	-	--	--	--	-	-	--	--	--
415159073371401	7.00	01-01-59	-	3600DVC	SLTE	12.00	C	-	--	6.00	5.00
			-	--	--	--	-	-	--	--	--
			-	--	--	--	-	-	--	--	--
415159073371402	8.00	01-01-59	-	3600DVC	SLTE	9.00	C	-	--	6.00	4.00
415211073373301	--	--	D	3600DVC	SLTE	--	C	-	--	6.00	7.00
			-	--	--	--	-	-	--	--	--
415232073341101	30.00	06-23-85	-	BEDROCK	SHLE	2.50	P	X	19.00	6.00	1.00
415245073345701	14.00	01-01-59	-	3600DVC	SLTE	18.00	C	-	--	6.00	12.00
			-	--	--	--	-	-	--	--	--
415250073314701	20.00	01-01-59	-	374SKBG	LMSN	30.00	C	-	--	6.00	--
			-	--	--	--	-	-	--	--	--
415254073353501	16.00	01-01-59	-	3600DVC	SLTE	10.00	C	-	--	6.00	7.00
415255073375201	1.00	01-01-59	-	3600DVC	SLTE	9.00	C	-	--	8.00	14.00

SITE-ID	OWNER	REMARK
415104073310901	--	--
415103073351901	G.W. WOLF	WELL LOCATION FROM BULLETIN GW-43 MAP
415123073332401	STANLEY AVY	TWO OTHER UNUSED WELLS ON PROP
	--	--
	--	--
415131073330501	K. AND P. MANAGEMENT	--
415159073371401	WILLIAM SHELDON	WELL LOCATION FROM BULLETIN GW-43 MAP
	--	ORIG DRILD TO DEPTH OF 224FT
	--	WELL PART FILLED BY CAVING
415159073371402	WILLIAM SHELDON	WELL LOCATION FROM BULLETIN GW-43 MAP
415211073373301	S.W. BURKE	WELL LOCATION FROM BULLETIN GW-43 MAP
	R. YOUNG	--
415232073341101	WILLIAM CARROLL	--
415245073345701	D.J. FLINT	WELL LOCATION FROM BULLETIN GW-43 MAP
	J. PARK	--
415250073314701	WILLIAM FOLAN	WELL LOCATION FROM BULLETIN GW-43 MAP
	J. KAIN	--
415254073353501	ARTHUR JAMES	WELL LOCATION FROM BULLETIN GW-43 MAP
415255073375201	WETHERSFIELD FARM	WELL LOCATION FROM BULLETIN GW-43 MAP

REFERENCE NO. 21

GSC-TR8645

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 2. MODELING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

MASTER AREA REFERENCE FILE (MARF) OF THE 1980 CENSUS

Source

The Master Area Reference File (MARF) is a proprietary product of Donnelly Marketing, Inc., a subsidiary of Dunn and Bradstreet, and is available only to EPA users and to contractors engaged in EPA projects.

Description

The complete corrected MARF of the 1980 Census, with geographic coordinates for small geographic areas, is installed for GEMS on a separate disk pack. It consists of four subfiles, one for each major census geographic region, and is available to users when that disk pack is mounted. The file has a variety of location identification information, including region, state, county, place, census tracts and enumeration districts or block groups (See Figure C-1 for illustrations). It also contains population count by race, the number of occupied and owner-occupied housing units, group quarters, and number of families for all the enumeration districts/block groups for the continental United States, Hawaii, and Alaska.

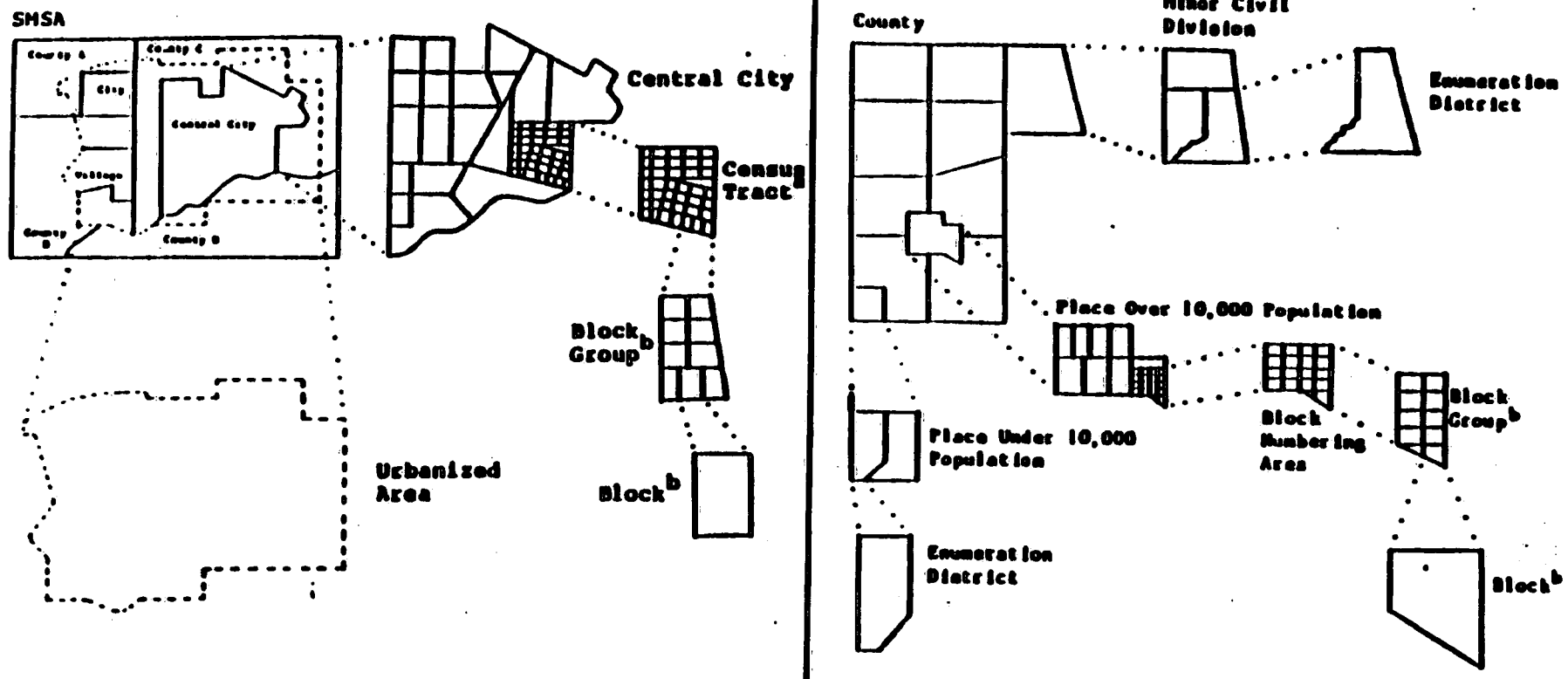
CEDPOP, a subset of the MARF of the 1980 Census, is accessible through GEMS. In addition to total population and household counts, the file includes geographic coordinates for the population-weighted centroid of each census block group or enumeration district (BG/ED) in the file.

Use

The complete MARF 80 Census file, installed in GEMS on a separate disk, is expected to be used heavily by GEMS users to identify household and population by racial groups at any required geographic level. County aggregate populations have already been created from this file.

CEDPOP was interfaced with ATM80 in GEMS to provide estimates of population sizes exposed to concentrations of airborne chemicals around a release site and with BOXMOD80 to provide population estimates within area source regions. The population centroids are identified, and populations are accumulated in sectors (typically the sixteen wind direction sectors) surrounding the center point within a user-specified number of radial distances out from the center.

The CEDPOP file also is accessed by CENSUS DATA and RADII-5 procedures under the GEODATA HANDLING operation in GEMS. CENSUS DATA accumulates population and housing counts by up to ten user-specified radial distances and from one-to-sixteen sectors. The RADII-5 program tabulates the same information (except housing counts) and displays the centroid locations for user-specified circular distances around a center point.



Inside Urbanized Area

Outside Urbanized Area

[a]The entire SMSA is subdivided into census tracts.

[b]Blocks and block groups do not have symbolized boundaries as do the other areas, but are identified by number.

Figure C-1. Geographic Hierarchy Inside and Outside Urbanized Areas (UA's)

Amenia
02-8612-11/NY66$I
Amenia, New York

GEMS> I

AMENIA
LATITUDE 41:49:30 LONGITUDE 73:34: 3 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	(0) 0	(15) 0	2640	1183	(836) 0	1965	(6631) 5788
RING TOTALS	0	0	2640	1183	0	1965	5788
Cumulative Totals	0	15	2,655	3,838	4,674	6,639	

GEMS> I

AMENIA
LATITUDE 41:49:30 LONGITUDE 73:34: 3 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	(0) 0	(4) 0	853	433	(220) 0	45	(1555) 1331
RING TOTALS	0	0	853	433	0	45	1331
Cumulative Totals	0	4	857	1290	1,510	1,555	

Housing values in parentheses are derived from USGS Topographic Map, 7.5 minute series, "Amenia Quadrangle, NY-Conn.", 1958.

Population values in parentheses were calculated by multiplying the corresponding housing value by 3.8 and rounding to the nearest integer.

Sector totals are a combination of GEMS data and calculated values.

REFERENCE NO. 22

REFERENCE NO. 23

REFERENCE NO. 24

SOIL SURVEY

Dutchess County New York

Series 1939, No. 23

Issued December 1955

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION

TABLE 7.—*Quality, management needs, and suitability of selected crops for the soils of Dutchess County, N. Y.*

GROUP 1.—GOOD TO EXCELLENT SOILS FOR CROPS, PASTURE, OR FOREST

Management group and soil	Rotations [1]	Lime requirement [2]	Nitrogen requirement [3]	Phosphorus requirement [4]	Potassium requirement [5]	Erodibility [6]	Suitability [7] for— Silage corn	Oats	Alfalfa [8]	Ladino clover	Apples
1A. Neutral to strongly acid well-drained soils of first bottoms:											
Genesee fine sandy loam	R continuously. R-R-G-H 1 year or more. R-G-H 1 year or more.	Low	Low	Medium	Low	Low	Good	Fair	Good	Good	Poor.
Chagrin silt loam		Medium	do	do	do	do	do	do	do	do	Do.
Chagrin gravelly loam, alluvial fan phase.		do	Medium	do	do	do	do	do	do	do	Do.
Poultney silt loam		High	do	do	Medium	do	do	do	do	do	Do.
Poultney loam		do	do	do	do	do	do	do	do	do	Do.
Ondawa gravelly loam, alluvial fan phase.		do	do	do	do	do	do	do	do	do	Do.
1B. Nearly level to gently sloping neutral to strongly acid well-drained soils of terraces and uplands:											
Palmyra gravelly loam, nearly level and undulating phases.	R-R-G-H 2 years or more. R-G-H 2 years or more. R-G-G-H 2 years or more. G-H 1 year or more.	Low	do	do	Medium	do	do	do	do	do	Do.
Copake fine sandy loam, nearly level and undulating phases.		Medium	do	do	do	do	do	do	do	do	Do.
Copake gravelly loam, nearly level and undulating phases.		do	do	do	do	do	do	do	do	do	Do.
Troy gravelly loam, gently sloping phase.		do	do	do	do	do	do	do	do	do	Do.
Hoosic fine sandy loam, nearly level and undulating phases.		High	do	do	High	do	do	do	do	do	Do.
Hoosic loam, nearly level and undulating phases.		do	do	do	do	do	do	do	do	do	Do.
Hoosic gravelly loam, nearly level and undulating phases.		do	do	do	do	do	do	do	do	do	Do.
Colonie fine sandy loam, nearly level phase.		do	do	do	do	do	do	do	do	do	Do.

GROUP 2.—FAIR TO GOOD SOILS FOR CROPS: GOOD TO EXCELLENT SOILS FOR PASTURE OR FOREST

Management group and soil	Rotations [1]	Lime requirement [2]	Nitrogen requirement [3]	Phosphorus requirement [4]	Potassium requirement [5]	Erodibility [6]	Suitability [7] for— Silage corn	Oats	Alfalfa [8]	Ladino clover	Apples
2A. Neutral to strongly acid moderately well to imperfectly drained soils of first bottoms:											
Eel and Lobdell silt loams, undifferentiated.	R continuously. R-R-G-H 1 year or more. R-G-H 1 year or more.	Low	Low	Medium	Low	Low	Fair	Poor	Poor	Good	Very poor.
Pawlet silt loam		High	Medium	do	Medium	do	do	do	do	do	Do.
2B. Neutral to slightly acid well-drained moderately deep to deep rolling and sloping soils of uplands:											
Pittsfield gravelly loam, sloping phase.	R-R-G-H 2 years or more. R-G-G-H 2 years or more. G-H 2 years or more.	Low	do	do	do	Medium	do	Good	Good	do	Good.
Pittsfield-Wassaic gravelly loams, undulating and rolling phases.		do	do	do	do	do	do	do	do	do	Fair.
Dover fine sandy loam, rolling phase.		do	do	do	do	do	do	Fair	do	do	Do.
2C. Medium to strongly acid well-drained moderately deep to deep rolling and sloping soils of uplands and terraces:											
Copake gravelly loam, rolling phase.	R-R-G-H 2 years or more. R-G-G-H 2 years or more. G-H 2 years or more.	Medium	do	do	do	do	do	do	do	Fair	Good.
Hudson fine sandy loam, gently sloping phase.		do	do	do	do	do	do	do	do	Good	Do.
Stockbridge gravelly loam, gently sloping and sloping phases.		do	do	do	do	do	do	Good	do	do	Do.
Troy gravelly loam, sloping phase.		do	do	do	do	do	do	do	do	do	Do.
Cossayuna gravelly loam, undulating and rolling phases.		do	do	do	do	do	do	do	do	do	Do.
Cossayuna fine sandy loam, undulating and rolling phases.		do	do	do	do	do	do	Fair	do	do	Do.
Albia gravelly silt loam, sloping phase.		do	do	do	do	do	do	do	Fair	do	Poor.
Colonie fine sandy loam, rolling phase.		High	do	do	High	do	do	do	do	Fair	Good.
Hoosic gravelly loam, rolling phase.		do	do	do	do	do	do	do	Good	do	Do.
Bernardston gravelly silt loam, sloping phase.		do	do	do	do	do	do	Good	do	Good	Do.
Dutchess gravelly silt loam, undulating and rolling phases.		do	do	do	do	do	do	do	Fair	do	Do.

See footnotes at end of table.

TABLE 7.—*Quality, management needs, and suitability of selected crops for the soils of Dutchess County, N. Y.*—Continued

GROUP 2.—FAIR TO GOOD SOILS FOR CROPS; GOOD TO EXCELLENT SOILS FOR PASTURE OR FOREST—Continued

Management group and soil	Rotations [1]	Lime requirement [2]	Nitrogen requirement [3]	Phosphorus requirement [4]	Potassium requirement [5]	Erodibility [6]	Suitability [7] for— Silage corn	Oats	Alfalfa	Ladino clover	Apples
2D. Very strongly acid well-drained moderately deep to deep rolling and sloping soils of uplands:											
Paxton gravelly loam, gently sloping and sloping phases.	R–G–H 2 years or more.	High	Medium	Medium	High	Medium	Fair	Fair	Poor	Fair	Poor.
Charlton gravelly loam, undulating and sloping phases.	R–G–G–H 2 years or more.	do	High	do	do	do	do	do	do	do	Do.
Gloucester gravelly loam, rolling phase.	G–H 2 years or more.	do	do	do	do	Low	do	do	do	do	Do.
2E. Neutral to strongly acid, moderately well to imperfectly drained level to sloping soils of uplands and terraces:											
Amenia silt loam	R–R–G–H 2 years or more.	Low	Medium	do	Medium	do	do	do	Fair	Good	Do.
Albia gravelly silt loam, gently sloping phase.		Medium	do	do	do	do	do	do	do	do	Do.
Claverack gravelly loam		do	do	do	do	do	do	do	do	do	Do.
Elmwood fine sandy loam		High	do	do	High	do	do	do	do	do	Do.
Bracoville, Hero, and Phelps silt loams, undifferentiated.	R–G–H 2 years or more.	do	do	do	do	do	do	do	do	do	Do.
Pittstown gravelly silt loam, nearly level and gently sloping phases.	G–H 2 years or more.	do	do	do	do	do	do	do	do	do	Do.
Woodbridge silt loam		do	do	do	do	do	do	do	Poor	do	Do.
2F. Heavy-textured well-drained medium acid level to gently sloping soils:											
Hudson silt loam, gently sloping phase.	R–G–H 2 years or more.	Medium	do	do	Low	Medium	do	Good	Good	do	Fair.
Hudson silty clay loam, gently sloping phase.	R–G–G–H 2 years or more. G–H 2 years or more.	do	do	do	do	do	do	Fair	do	do	Poor.
2G. Heavy-textured imperfectly drained medium acid nearly level soils:											
Rhinebeck silt loam	R–G–H 2 years or more.	do	do	do	do	do	do	do	do	do	Very poor.
Rhinebeck silty clay loam	R–G–G–H 2 years or more. G–H 2 years or more.	do	do	do	do	do	do	do	do	do	Do.

GROUP 3.—POOR TO FAIR SOILS FOR CROPS; POOR TO GOOD SOILS FOR PASTURE; FAIR TO GOOD SOILS FOR FOREST

Management group and soil	Rotations [1]	Lime requirement [2]	Nitrogen requirement [3]	Phosphorus requirement [4]	Potassium requirement [5]	Erodibility [6]	Silage corn	Oats	Alfalfa	Ladino clover	Apples
3A. Neutral to slightly acid well-drained deep to moderately deep hilly soils of uplands and terraces:											
Palmyra gravelly loam, hilly phase.	R–G–H 4 years or more.	Low	Medium	Medium	Medium	Medium	Poor	Poor	Fair	Poor	Good.
Pittsfield gravelly loam, moderately steep phase.	G–H 4 years or more.	do	do	do	do	High	do	Fair	do	Fair	Do.
Pittsfield-Wassaic gravelly loams, hilly phases.		do	do	do	do	do	do	do	do	do	Do.
Dover fine sandy loam, hilly phase.		do	do	do	do	do	do	do	do	do	Do.
3B. Medium to strongly acid well-drained deep to moderately deep normally eroded hilly soils of uplands and terraces:											
Copake gravelly loam, hilly phase.	R–G–H 4 years or more.	Medium	do	do	do	Medium	do	Poor	do	Poor	Do.
Stockbridge gravelly loam, moderately steep phase.	G–H 4 years or more.	do	do	do	do	High	do	Fair	do	Fair	Do.
Troy gravelly loam, moderately steep phase.		do	do	do	do	do	do	do	do	do	Do.
Cossayuna gravelly loam, hilly phase.		do	do	do	do	do	do	do	do	do	Do.
Hoosic gravelly loam, hilly phase.		High	do	do	High	Medium	do	Poor	do	Poor	Do.
Bernardston gravelly silt loam, moderately steep phase.		do	do	do	do	High	do	Fair	do	Fair	Do.
Dutchess gravelly silt loam, hilly phase.		do	do	do	do	do	do	do	do	do	Do.

See footnotes at end of table.

TABLE 7.—*Quality, management needs, and suitability of selected crops for the soils of Dutchess County, N. Y.*—Continued

GROUP 2.—FAIR TO GOOD SOILS FOR CROPS; GOOD TO EXCELLENT SOILS FOR PASTURE OR FOREST—Continued

Management group and soil	Rotations [1]	Lime requirement [2]	Nitrogen requirement [3]	Phosphorus requirement [4]	Potassium requirement [5]	Erodibility [6]	Suitability [7] for— Silage corn	Oats	Alfalfa	Ladino clover	Apples
2D. Very strongly acid well-drained moderately deep to deep rolling and sloping soils of uplands:											
Paxton gravelly loam, gently sloping and sloping phases.	R-G-H 2 years or more.	High	Medium	Medium	High	Medium	Fair	Fair	Poor	Fair	Poor.
Charlton gravelly loam, undulating and sloping phases.	R-G-G-H 2 years or more.	do	High	do	do	do	do	do	do	do	Do.
Gloucester gravelly loam, rolling phase.	G-H 2 years or more.	do	do	do	do	Low	do	do	do	do	Do.
2E. Neutral to strongly acid, moderately well to imperfectly drained level to sloping soils of uplands and terraces:											
Amenia silt loam	R-R-G-H 2 years or more.	Low	Medium	do	Medium	do	do	do	Fair	Good	Do.
Albia gravelly silt loam, gently sloping phase.	R-G-H 2 years or more.	Medium	do	do	do	do	do	do	do	do	Do.
Claverack gravelly loam	G-H 2 years or more.	do	do	do	do	do	do	do	do	do	Do.
Elmwood fine sandy loam		High	do	do	High	do	do	do	do	do	Do.
Bracsville, Hero, and Phelps silt loams, undifferentiated.		do	do	do	do	do	do	do	do	do	Do.
Pittstown gravelly silt loam, nearly level and gently sloping phases.		do	do	do	do	do	do	do	do	do	Do.
Woodbridge silt loam		do	do	do	do	do	do	do	Poor	do	Do.
2F. Heavy-textured well-drained medium acid level to gently sloping soils:											
Hudson silt loam, gently sloping phase.	R-G-H 2 years or more.	Medium	do	do	Low	Medium	do	Good	Good	do	Fair.
Hudson silty clay loam, gently sloping phase.	R-G-G-H 2 years or more.	do	do	do	do	do	do	Fair	do	do	Poor.
2G. Heavy-textured imperfectly drained medium acid nearly level soils:											
Rhinebeck silt loam	R-G-H 2 years or more.	do	do	do	do	do	do	do	do	do	Very poor.
Rhinebeck silty clay loam	R-G-G-H 2 years or more.	do	do	do	do	do	do	do	do	do	Do.
	G-H 2 years or more.										

GROUP 3.—POOR TO FAIR SOILS FOR CROPS; POOR TO GOOD SOILS FOR PASTURE; FAIR TO GOOD SOILS FOR FOREST

Management group and soil	Rotations [1]	Lime requirement [2]	Nitrogen requirement [3]	Phosphorus requirement [4]	Potassium requirement [5]	Erodibility [6]	Silage corn	Oats	Alfalfa	Ladino clover	Apples
3A. Neutral to slightly acid well-drained deep to moderately deep hilly soils of uplands and terraces:											
Palmyra gravelly loam, hilly phase.	R-G-H 4 years or more.	Low	Medium	Medium	Medium	Medium	Poor	Poor	Fair	Poor	Good.
Pittsfield gravelly loam, moderately steep phase.	G-H 4 years or more.	do	do	do	do	High	do	Fair	do	Fair	Do.
Pittsfield-Wassaic gravelly loams, hilly phases.		do	do	do	do	do	do	do	do	do	Do.
Dover fine sandy loam, hilly phase.		do	do	do	do	do	do	do	do	do	Do.
3B. Medium to strongly acid well-drained deep to moderately deep normally eroded hilly soils of uplands and terraces:											
Copake gravelly loam, hilly phase.	R-G-H 4 years or more.	Medium	do	do	do	Medium	do	Poor	do	Poor	Do.
Stockbridge gravelly loam, moderately steep phase.	G-H 4 years or more.	do	do	do	do	High	do	Fair	do	Fair	Do.
Troy gravelly loam, moderately steep phase.		do	do	do	do	do	do	do	do	do	Do.
Cossayuna gravelly loam, hilly phase.		do	do	do	do	do	do	do	do	do	Do.
Hoosic gravelly loam, hilly phase.		High	do	do	High	Medium	do	Poor	do	Poor	Do.
Bernardston gravelly silt loam, moderately steep phase.		do	do	do	do	High	do	Fair	do	Fair	Do.
Dutchess gravelly silt loam, hilly phase.		do	do	do	do	do	do	do	do	do	Do.

See footnotes at end of table.

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-8612-11	Nov. 27, 1990	~~14:27~~ 16:26 TV 11/27/90

DISTRIBUTION:

— Amenia file (COR)

BETWEEN:	OF:	PHONE:
Ron Pierce	NYSDEC Reg. 3 — Fisheries	(914) 255-5453

AND: Thomas Varner (NUS)

DISCUSSION:

I told RP I was interested in finding out the significance of the surface water classifications C(T) and C(TS). He said that waters classified as C(T) must meet more stringent standards as a trout stream and those classified as C(TS) are used as trout spawning areas and must meet even stricter standards. He TV 11/27/90 I told him I was concerned with the Wassaic Creek and Amenia Brook. He said they are both stocked with trout and fished recreationally. He said wild trout also exist there. He said DEC stocks Wassaic Creek from the Webatuck Creek, up through Wassaic Village, to just upstream of Route 22 crossing. He said that Amenia Brook, which is also known as Mill Pond Brook, is stocked from ½ mile upstream of Wassaic Creek to about where Route 22 crosses the stream. I asked if there was a publication available that I could get containing information like he just gave me. He said he could send me copies of their stocking maps and lists for Region 3. The maps use the tributary numbering system used by DEC to classify streams. I told him we have that in the NYCRR and the maps showing the numbers/streams. I gave him my name and address.

ACTION ITEMS:

TAV 11/27/90

NUS 057 REVISED 0685

REFERENCE NO. 25

Document Control No.:

REFERENCE NO. 3

REFERENCE NO. 4

W.O.# 04200-022-081-0018

Doc. Control. No. #4200-22-ADWW

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WESTON WAY
WEST CHESTER, PA 19380

AMENIA

June 20, 1994 Sunny 70's
Located entrance to Amenia Landfill, on Rt 22 in Dutchess County just of the town of Amenia (across street from Allen Sand & Gravel) Area is vegetated with no signs of recent dumping. There is no fence stopping public access the grounds are posted. Located the unnamed tributary that runs north of site it is small & shallow running through a wetland (Photos 1 & 2) Amenia brook on EAST SIDE of road is larger & flowing. Photo 3 Tanks - (just north of original dump area) owned by Sharon GAS Photo 4 & 5 "original" dump area (when town of Amenia ran dump). Appears to be a helicopter landing pad, located between Sharon GAS & original dump area (photo 6). Photo 7 Sharon GAS sign. Golf course is visible west of site. 1/2 mile south of first entrance there is a second with gate (photo 8) but no continuous fence (photo 9) Area is sparsely vegetated with a lot of sand & gravel patches. (photo 10 & 11). House Approx 1/8 mile south photo 12. Golf course west photo 13.

6/20/94

REFERENCE NO. 5

STATE OF NEW YORK
DEPARTMENT OF CONSERVATION
WATER RESOURCES COMMISSION

Ground-Water Resourses of Dutchess County, New York

By

E. T. SIMMONS, I. G. GROSSMAN, AND R. C. HEATH
Geologists, U. S. Geological Survey

Prepared by the
U. S. GEOLOGICAL SURVEY
in cooperation with the
NEW YORK WATER RESOURCES COMMISSION

BULLETIN GW-43
ALBANY, N. Y.
1961

The Cheshire is not important as a source of ground water because of its small areal extent and because it underlies steeply sloping hillsides which are sparsely settled. Only five wells in the county are known to tap quartzite; these are listed in table 13.

Stockbridge limestone.--Over the Cheshire quartzite is a thick sequence of carbonate rocks, which underlie a much greater part of the county than the quartzite. In the east, carbonate rocks lie beneath the broad Harlem Valley, which contains Tenmile River and its principal tributaries and which extends almost without interruption from the Putnam County line to the Columbia County line. In the south, the valley of Fishkill Creek is underlain by limestone which extends from Beacon northeastward to the head of the creek. Other areas in the western and central parts of the county also are underlain by elongate masses of carbonate rocks (pl. 2).

Several different names have been applied to the carbonate rocks in different parts of the county, including Barnegat limestone (Mather, 1843, p. 410), Fishkill limestone (Gordon, 1911, p. 70), and Wappinger limestone (Gordon, p. 48). Knopf (1956, p. 1817) found that the carbonate rocks near Stissing Mountain range in age from Early Cambrian to Early Ordovician and divided them into the Stissing dolomite, Pine Plains formation, Briarcliff, dolomite, Halcyon Lake formation, and Rochdale limestone. Because there appear to be no essential differences in the water-bearing properties of the carbonate rocks, all are included in this report under the Stockbridge limestone, after the locality in Massachusetts where they were first described (Emmons, 1842, p. 154-156).

The carbonate rocks range in composition from almost pure calcium carbonate (limestone) to almost pure calcium-magnesium carbonate (dolomite). Limestone is more abundant in the upper part of the sequence and dolomite is more common in the lower part. Table 3 lists an analysis of a typical sample of dolomite from the Stockbridge limestone.

This analysis shows that more than 10 percent of the dolomite consists of impurities, chiefly silica and alumina. In some localities these impurities are abundant enough to form sandy and shaly beds in the Stockbridge.

Table 3.--Chemical composition of dolomite 1/ from the Stockbridge limestone

Determination	Percent by weight
Lime (CaO).....	29.07
Magnesia (MgO).....	16.29
Carbonic acid (H_2CO_3).....	40.76
Alumina (Al_2O_3).....	2.33
Ferric oxide (Fe_2O_3).....	.47
Silica (SiO_2).....	10.17
Total.....	99.09

1/ Collected at the Stoneco quarry of the Clinton Point Stone Co. about 4 miles south of Poughkeepsie. Analysis from Ries (1901, p. 779).

The metamorphism of the Stockbridge limestone generally increases in intensity from northwest to southeast. In the northwest and west, the formation is relatively undisturbed and original bedding is easily visible. Fossils have been found in the formation as far south as Clove Valley. Farther east, however, as in the Valley of Swamp River, the formation has been metamorphosed to a marble and the beds are severely folded. Balk note that the folding is greater in the thin layers than in the thicker ones anc that it is greatest near thrust faults. In the southeastern part of the county, the marble has been so severely deformed by plastic flow that it appears to be wrapped around stronger rocks. South of Pawling, the marble contains masses of schist that are folded and faulted into the limestone.

The deformation of the Stockbridge limestone makes it difficult to determine its thickness. In southwestern Putnam County, where the formatic is relatively undisturbed, the thickness is about 1,000 feet. At Stissing Mountain, near Pine Plains in the north-central part of Dutchess County, th thickness of the different limestones and dolomites measured by Knopf (1946, p. 1211) totals 2,800 feet. The thickness of the carbonate rocks is

probably about 1,000 feet in most places in the county. The Stockbridge limestone weathers readily and commonly forms valley and lowland areas. In the valley of Fishkill Creek, solution cavities filled with clay and sand have been reported.

Hudson River formation.--The Hudson River formation is the most extensive bedrock unit in the county. As may be seen from plate 2, it extends from the Hudson River in the west to the Connecticut State line in the east, interrupted by only a few relatively narrow limestone belts. The name "Hudson River slate group" was first used by Mather (1840, p. 212, 256-258) for the slaty rocks in the southeastern part of the State. Gordon (1911) mapped these rocks in the Poughkeepsie quadrangle as the "Hudson River group." Berkey and Rice (1921) mapped the same rocks in southwestern Dutchess County as "Hudson River shales and phyllites." In the southeastern part of the county these rocks are referred to as "Hudson River pelite" in publications by Balk (1936) and Barth (1936). In the Copake quadrangle in southeastern Columbia County, the names Elizaville shale (mainly Cambrian, possibly including some Lower Ordovician), Berkshire schist (Ordovician), and Trenton black slate (Ordovician) have been used by Weaver (1957, pl. 1) for rocks that extend southward into northeastern Dutchess County. Ruedemann (1942) divided the predominantly argillaceous rocks in the Catskill quadrangle, in northwestern Dutchess County, into the Nassau beds and Schodack shale (including Bomoseen grit) of Cambrian age, and the Deepkill shale and Normanskill shale (including the Mount Merino member and the Austin Glen member) of Ordovician age. As used in this report, the Hudson River formation includes all the argillaceous and schistose rocks in Dutchess County.

Although the Hudson River formation is preponderantly argillaceous, it includes a large variety of rock types. The lower part of the unit contains much sandstone ("grit") and is locally called bluestone by some well drillers. The unit also contains chert and beds of sandstone, limestone, and conglomerate. Quartz veins are very abundant. The shale itself is locally black, gray, red, or green.

The metamorphism of the Hudson River formation increases in intensity from northwest to southeast, just as in the Stockbridge limestone. At Red Hook, in the northwestern part of the county, the unit is a shale. The shale grades imperceptibly southeastward into a slate and then into a lustrous phyllite. Between the valley of Wappinger Creek and the headwaters of Fishkill Creek, it is chiefly a phyllite. Farther southeast, between Fishkill Creek and the Harlem Valley it is predominantly a garnet-bearing schist. In the extreme southeastern part of the county, east of Pawling, it is a gneissic schist. The gneissic schist in this area contains amphibolite lenses and pegmatite intrusions.

Unconsolidated Deposits

Unconsolidated material deposited chiefly by glaciers and glacial melt water in Pleistocene time, lies on the bedrock in Dutchess County. Minor amounts of stream-laid material of Recent age mantle the Pleistocene deposits in a few narrow, discontinuous valley areas and in some lakes and swamps. The unconsolidated deposits are widespread and relatively thick, at least in lowland areas. The greatest thickness occurs in the gorge of the Hudson River, where borings for the Catskill Aqueduct of New York City penetrated several hundred feet of fill, most of which is probably of glacial origin. The deepest boring was at the Storm King crossing, near the Putnam County line, where bedrock reportedly was encountered at a depth of 608 feet below river level. If this reported depth is correct, the deepest part of the bedrock gorge probably is somewhat below 608 feet because it is unlikely that the drill was situated at exactly the deepest point. The layers penetrated by these borings ranged in composition from a mixture of clay and boulders to sand and gravel.

The Pleistocene drift is divided into three units, shown on plate 3: (1) till (unstratified drift), consisting of a mixture of rock materials deposited directly by the ice; (2) lacustrine deposits, consisting of silt and clay laid down in lakes; and (3) sand and gravel deposited in lowlands and in lakes from glacial melt water.

Till.--Till consists of a heterogeneous mixture of rock fragments of all sizes from microscopic particles of clay to large boulders several feet in diameter. As may be seen on plate 3, it is the most widespread of the Pleistocene deposits.

The till was laid down directly from the glacial ice, which was thick enough to pass over the highest peaks in the county, as well as the highest peaks of the Catskill and Taconic Mountains. The ice moved in a southerly direction, as indicated by the alinement of grooves and striations on exposed rock surfaces. Erosion was the dominant process in upland areas. Thus, the present-day cover of glacial debris in these areas is generally thin (less than 30 feet thick) or absent. Exceptions exist where thick deposits of till were laid down beneath the ice in the form of elliptical hills known as drumlins. These hills may contain as much as 200 feet of clay till. In lowland areas, the dominant process was that of deposition and the glacial deposits in these areas are relatively thick. For example, well Du 758, about 2 miles southwest of Wappingers Falls, penetrated 140 feet of unconsolidated material before reaching the Hudson River formation.

The rock fragments composing the till were derived mainly from the bedrock in the immediate area. In areas underlain by shale, slate, phyllite, and schist, the till consists largely of clay. In areas underlain by limestone, dolomite, or marble, the till contains numerous calcareous pebbles. Six mechanical analyses were made by the U.S. Department of Agriculture (Secor and others, 1955, p. 128) of samples of soil in the county

derived from glacial till. These samples consisted mainly of calcareous sandstone and some admixed shale, slate, limestone, and igneous erratics. The samples were collected from progressively greater depths. The analyse show that more than half of each sample consisted of silt and clay, and that the content of sand and fine gravel increased slightly from a low of 36.3 percent (by weight), at a depth of 0 to 10 inches, to a high of 43.0 percent, at a depth of 68 to 144 inches. In some areas, lenses of relatively clean sand may occur in till. However, sand lenses in till are generally thin and of small areal extent. Most of the till is clayey and some of it may even be cemented or compacted to form a tough aggregate referred to as "hardpan" by local drillers.

Lacustrine deposits.--Stratified drift deposited in glacial lakes underlies several areas in the county, notably along the Hudson River and in the lowland north of the Hudson Highlands in the southwestern part of the county. The approximate extent of these deposits where they compose the uppermost unconsolidated deposit is shown on plate 3. As may be seen from the plate, they underlie an irregularly shaped and relatively extensive area in the northwestern corner of the county, from the mouth of Crum Elbow Creek north to the county line. In the southwestern part of the county, they underlie numerous small areas from Poughkeepsie south to the Highlands.

Woodworth (1905, p. 175) believed that the lacustrine deposits along the Hudson River were laid down in one large lake, called glacial Lake Albany, which was dammed by a single tongue of stagnant ice. Cook (1942, p. 192) suggests, on the other hand, that the deposits were laid down in a complex series of small lakes rather than in a single lake. These lakes were largely restricted to the area adjacent to the Hudson River in the western part of the county. Thus, lacustrine deposits either are not present in the eastern part of the county or, if present, occupy relatively small areas and are covered by other unconsolidated deposits which obscure their presence.

The lacustrine deposits in the western part of the county contain layers of silt and clay that were deposited in those parts of the lakes in which the water was relatively quiet. The deposits also contain interbedded layers of sand and silt that were laid down near the mouths of streams entering the lakes. At the time the lakes drained, the lacustrine deposit formed a terrace that sloped westward toward the present channel of the Hudson River. The altitude of the terrace ranges from about 220 feet near its eastern margin to about 120 feet near the river. This terrace has been considerably modified by postglacial stream erosion.

Sand and gravel.--Stratified drift consisting principally of sand and gravel underlies extensive areas in the major stream valleys and in some tributary valleys. As shown in plate 3, the most extensive deposits are in the valleys drained by Fishkill Creek, Sprout Creek, Swamp River, Tenmile River, and Wappinger Creek.

Most of the sand and gravel consists of stream-laid deposits, called outwash, laid down by melt water streams. The deposits range from layers of relatively clean sand to layers composed of a mixture of sand and gravel. The alternation of layers of coarse and fine material reflect changes in the conditions under which the beds were laid down.

Stratified sand and gravel in the county occurs in four principal forms: kames, kame terraces, valley trains, and deltas. Kames, in the form of small conical hills, are relatively common in the extreme southern part of the county at the northern margin of the Hudson Highlands. They are present also between the Hudson River and U.S. Highway 9, about 3 miles south of Poughkeepsie. Kame terraces, relatively flat topped deposits of sand and gravel on the sides of valleys are prominent in the valley of Swamp River. They have also been observed by Woodworth (1905, p. 121) along the Hudson River between Poughkeepsie and the mouth of Wappinger Creek. Valley-train deposits are long and narrow deposits of sand and gravel underlying valley floors. These deposits underlie parts of many of the principal stream valleys, including those of Wappinger Creek, Fishkill Creek, Webatuck Creek, Crum Elbow Creek, and Tenmile River (pl. 3). Delta deposits laid down where melt water streams entered glacial lakes, have been mapped at New Hamburg, at the mouth of Wappinger Creek, by Woodworth (p. 119) and have been observed also in the Valley of Swamp River. There are large deltas also at Rhinebeck and Red Hook. Deposits of sand and gravel in the principal stream valleys of the county are discussed in greater detail in the section devoted to the occurrence of water in unconsolidated deposits.

GROUND WATER

Source and Movement

Ground water occurs in all the consolidated and unconsolidated deposits of Dutchess County. Records of 675 wells (table 13) and about 50 springs (table 9) provide information on its occurrence in the different deposits.

Practically all ground water in the county is derived from local precipitation. An inch of rain, or snow having a water content equivalent to 1 inch of rain, falling on an area of 1 square mile yields about 17 million gallons of water. The average annual precipitation is about 45 inches, or about 1.6 billion gallons per day, on the 816 square miles of the county.

A large part of the precipitation returns to the atmosphere by evaporation, is transpired by vegetation, or runs off to streams. The remainder percolates into the ground. The amount of precipitation entering the ground depends chiefly on (1) the porosity, permeability, and water content of the surficial deposits, (2) the slope of the land, (3) the amount and kind of vegetal cover, and (4) the intensity and amount of precipitation. It is

Table 13.--Records of selected wells in Dutchess County (Continued)

Well number	Location	Owner or occupant	Altitude above sea level (feet)	Type of well	Depth below land surface (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing formation	Water level below land surface (feet)	Method of lift	Yield (gallons per minute)	Use	Remarks
Du 94	13V, 14.4S, 4.4E	Town of Millbrook	660	Dug	20	48	--	Pleistocene gravel	--	Centrifugal	--	PS	Well drawn water through bottom and from 2 lines of open-jointed tile 18 inches in diameter. One line extends 75 ft. to the east and the other extends 100 feet to the north. Each tile is surrounded by a layer of gravel.
Du 95	13V, 13.6S, 10.0E	Wappoo Water Co.	460	Dug	15	60	--	Pleistocene sand and gravel	7	Suction	26	PS	Well dry in summer.
Du 96	13V, 1.9S, 5.0E	Pine Plains Water Co.	480	Dug	15	108	--	do.	--	Centrifugal	50	PS	
Du 97	13V, 1.0S, 5.2E	do.	560	Drl	375	8	50+	Stockbridge limestone	30	Force	50.	PS	(a).
Du 98	13V, 5.5S, 1.6E	H. H. Leavitt	500	Drl	300	--	--	Hudson River formation	--	do.	55	Dom	Well flowed when drilled. Supplies swimming pool.
Du 99	13V, 10.0S, 10.1E	Amenia Water Co.	540	Drl	70	8	--	Pleistocene gravel	+1	Turbine	150	PS	Drawdown 9 ft after pumping 130 gpm for 8 hrs. Average consumption is 100,000 gpd. (a) (b).
Du 100	13V, 10.0S, 10.2E	do.	600	Drl	46	8	--	do.	+1	do.	100	PS	Well is auxiliary supply. Temperature 51°F, June 1946. (a).
Du 101	14V, 16.7N, 6.3W	Village of Red Hook	227	Drl	277	10	40	Hudson River formation	22	do.	100	PS	Drawdown 80 ft after pumping 100 gpm for 24 hrs. Yield diminished considerably during dry period in 1949. Two other similar wells at this location. (a).
Du 104	14V, 1.3N, 9.6W	F. D. Roosevelt National Historic Site	170	Drl	400	6	83	do.	--	--	15	Dom	(a) (b).
Du 105	14V, 1.3N, 9.6W	do.	180	Drl	212	6	80	do.	--	Turbine	10	Dom	Well has been pumped at 10 gpm for 24 hrs.
Du 106	15V, 15.7N, 8.7W	Schatz Manufacturing Co.	260	Drl	555	6	23	do.	--	Force	11	Ind	Temperature 54°F, July 1949.
Du 107	14V, 16.1N, 3.4W	John Juranic	520	Drl	60	6	4	do.	30	Jet	12	Dom	
Du 109	14V, 15.3N, 3.3W	F. W. Bottenfield & Son	380	Drl	125	6	20	do.	30	do.	3	Dom	
Du 110	14V, 14.4N, 7.5W	Joseph Chord	163	Drl	60	6	16	do.	0.5	Suction	20	Dom	Well flows during periods of heavy precipitation. Temperature 51°F, May 1948.
Du 111	14V, 14.4N, 7.6W	Rhinebeck Block Co.	160	Drl	100	6	18	do.	9	Jet	10	Ind	
Du 112	14V, 13.9N, 5.4W	H. H. Weaver	320	Dru	18	1½	--	Pleistocene gravel	--	Suction	3	Dom	Temperature 50°F, May 1948. Average consumption is 500 gpd.
Du 114	14V, 13.6N, 5.2W	Rhinebeck School Dist. 9	320	Drl	90	6	18	Hudson River formation	--	do.	3	Dom	Temperature 50°F, May 1948.
Du 115	14V, 14.2N, 3.2W	Cyrus McCormick	600	Drl	150	6	--	do.	--	Force	--	Dom	
Du 116	14V, 14.0N, 3.2W	W. F. Pink	435	Drl	50	6	10	do.	--	do.	--	Dom	Temperature 50°F, May 1948.
Du 117	14V, 10.5N, 6.3W	W. Achert	300	Drl	175	6	8	do.	18	--	3	Dom	
Du 121	14V, 6.5N, 7.7W	R. Mattson	200	Drl	105	6	11	do.	14	Jet	8	Dom	
Du 122	14V, 5.4N, 7.5W	A. T. Haines	200	Dug	20	36	--	Pleistocene till	16	Suction	1	Farm	Average consumption is 1,000 gpd.
Du 124	14V, 4.6N, 8.1W	Strever's Garage	250	Dru	18	1½	--	Pleistocene sand and gravel	--	do.	3	Com	Average consumption exceeds 500 gpd.
Du 126	14V, 3.6N, 8.5W	Howard Valle	240	Dru	15	1½	--	do.	--	do.	2	Dom	
Du 127	14V, 3.0N, 8.6W	G. Wrenn	240	Drl	90	6	21	Hudson River formation	18	do.	--	Dom	
Du 128	14V, 16.0N, 7.1W	Edwin DuBois	200	Drl	129	6	90	do.	14	do.	5	Dom	(b).
Du 129	14V, 7.1S, 2.5E	D. McKinney	400	Drl	65	6	2	do.	18	do.	--	Farm	
Du 130	13V, 0.1S, 1.0W	R. Campbell	670	Drl	45	6	12	do.	6	--	3	Dom	
Du 131	14V, 16.4N, 7.6W	Louis Weaver	200	Drl	73	6	24	do.	10	Suction	15	Dom	
Du 132	14V, 16.3N, 7.6W	Russell Leavy	200	Drl	92	6	--	Pleistocene gravel	--	--	30	Dom	
Du 134	14V, 15.3N, 7.0W	Ralph Pitcher	180	Drl	195	10 to 8	5	Hudson River formation	--	--	30	Com	Average consumption is 5,000 to 10,000 gpd.
Du 135	14V, 15.2N, 7.6W	Elmer Wilbur	180	Drl	110	6	60	do.	--	Force	50	Farm	Well supplies water for irrigation.
Du 136	14V, 15.4N, 5.2W	William Grande	405	Drl	160	6	21	do.	--	--	2	Dom	
Du 137	14V, 13.1N, 9.4W	Vincent Astor	150	Drl	60	6	10	do.	--	--	5	Dom	

Document Control No.:

REFERENCE NO. 6

nk(sk)\siteinsp\amenia

WESTON

Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Harold Kinney

Company Amenia Tax Assessor

Address

Phone 518-373-9334

Date 8/23/94

Time 130 ~~AM~~/PM

☒ Originator Placed Call

☐ Originator Received Call

W.O. NO. 04200-022-081-0018

Subject Current ownership of ~~Aen~~ Amenia Landfill

Notes: Requested information regarding current ownership of the Amenia Landfill - The southern section of the Landfill is owned by Karl Salitri of Jackson Hill Rd in Sharon Connecticut. The northern section is owned by John Segalla of the Harlem Valley Landfill Corporation, Route 22, Amenia N.Y.

☒ File Amenia

☐ Tickle File ___/___/___

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials SL

RFW 110-4-83

REFERENCE NO. 7

[redacted]

Project ID: DISTRICT

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Using Despooler Environment: PRO
Print Request Attributes: PRO
Spool Options: -FTN
Total Size: 5 Records

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Spooled: 94-06-01.10:52:20.Wed
Started: 94-06-01.10:52:20.Wed

LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DISCHARGE (GPM)	PRIMARY USE OF WATER	OTHER IDENTIFIER
414614	0733442	8.00	H	DU 740
414633	0733433	--	H	DU 1374
414635	0733430	--	C	DU 1373
414638	0733247	15.0	P	WELL 1
		--		DU 1372
414639	0733216	4.00	U	DU 972
414641	0733225	10.0	H	DU 1915
		--		--
		--		--
414641	0733247	11.0	P	WELL 2
		--		DU 1371
414642	0733543	5.00	H	DU 741
414651	0733211	--	H	DU 734
414654	0733311	--	U	DU 90
414654	0733312	430	H	DU 739
414654	0733312	225	H	DU 792
414654	0733312	625	H	DU 793
414659	0733315	600	T	DU 1367
414659	0733315	600	T	DU 1368
414659	0733315	500	T	DU 1369
414659	0733315	300	T	DU 1370
414723	0733206	--	U	--
		--		--
		--		--
414724	0733155	5.00	H	DU 974
414730	0733313	--	C	DU 1080
414731	0733200	5.00	H	DU 975
414734	0733309	40.0	C	DU 927
414742	0733301	--	H	DU 736
414743	0733159	7.00	H	DU 731
414747	0733548	15.0	H	DU 739
414754	0733216	30.0	H	DU 735
414757	0733535	2.00	H	DU 1393
414809	0733334	5.00	C	DU 924
414810	0733332	20.0	H	DU 1727
		--		--
414818	0733334	26.0	P	DU 95
414821	0733212	90.0	-	WELL 13 Kent Hollow
		--		DU 1074
414822	0733333	--	P	DU 1079

LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DISCHARGE (GPM)	PRIMARY USE OF WATER	OTHER IDENTIFIER
414822	0733804	10.0	H	DU 894
414840	0733621	--	H	DU 738
414851	0733059	40.0	H	DU 943
414851	0733059	12.0	H	DU 1728
		--		--
414909	0733737	5.00	H	DU 296
		--		--
414913	0733606	--	H	DU 737
414924	0733025	5.00	H	DU 977
414927	0733651	15.0	H	DU 298
		--		--
414927	0733718	18.0	H	DU 893
414950	0733657	80.0	H	DU 299
		--		--
x 414959	0733334	15.0	H	DU 733
414958	0733816	10.0	H	DU 294
		--		--
415044	0733317	30.8	P	WELL 4
		--		DU 1019
415046	0733314	100	U	DU 100
415046	0733322	180	U	DU 99
		--		--
		--		--
		--		--
415046	0733510	3.00	H	DU 879
415050	0733225	10.0	H	DU 1729
415050	0733446	5.00	H	DU 284
		--		--
415055	0733323	--	U	DU 1732
		--		--
		--		--
415055	0733329	--	U	DU 1733
		--		--
		--		--
415055	0733329	--	U	DU 1734
		--		--
		--		--
415055	0733328	--	U	WELL 4
		--		DU 1735
		--		--

LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DISCHARGE (GPM)	PRIMARY USE OF WATER	OTHER IDENTIFIER
415055	0733328	--	U	WELL 5
		--		DU 1736
		--		--
12 415057	0733316	50.0	P	WELL 1
		66		DU 1076
13 415057	0733316	50.0	P	WELL 2
		--		DU 1077
14 415057	0733316	50.0	P	WELL 3
		31.0		DU 1078
415057	0733329	--	-	--
415059	0733036	10.0	H	DU 1394
415103	0733255	100	C	DU 722
415104	0733109	--	H	DU 1731
		--		--
415108	0733518	38.0	H	DU 878
415123	0733324	1.50	H	DU 1391
		--		--
415131	0733305	--	H	DU 1075
15 415156	0733250	15	T	DU 1363
16 415156	0733250	--	T	DU 1364
415156	0733250	--	T	DU 1365
415232	0733411	1.00	H	DU 1730
415245	0733455	12.0	H	DU 279
		--		--

REFERENCE NO. 8

WESTON

PROJECT NOTE

TO: File

DATE: 6-30-94

FROM: S Klepacki

W.O. NO.: C4200-022-081-001

SUBJECT: Drinking water supply for four mile radius of Amenia Site ~~and site Hydro geology~~

Phone calls were made to the townships of Amenia, Washington, Stanford, and Sharon, Ct to ascertain if the towns had public water supplies. Only the town of Amenia has a public water supply (Amenia Water District #1). It has 268 connections providing water to approximately 1000 people. There are four wells (3 in use, and 1 standby) all located with the 1-2 mile radius of site. Also a call was placed to the Dutchess County ~~Dept~~ Department of Health, Mr. McDougal provided information on community water supplies in the area of the Amenia site.

WESTON

S. Klepacky
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Irene Deputy Town Clerk
Company Town of Washington
Address
Phone 677-3419
Subject Drinking Water Supply

Date 5/18/94
Time 230 AM/PM

☒ Originator Placed Call
☐ Originator Received Call
W.O. NO.

Notes: Contacted the town of Washington - Deputy Town Clerk regarding Public Water Supply's in the Township. She stated the village of Millbrook was on a public water supply as well as three Rds.
- Halycon Rd
- Maple Hill Drive
- County Rd

All other parts of the township were private wells.

☐ File
☐ Tickle File / /
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

WESTON

S. Kupski
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Margaric Willis - Town Clerk
Company Town of Stanford
Address
Phone 914-868-1366
Subject Drinking Water Supplies

Date 5/18/94
Time 1200 ~~AM~~/PM

☒ Originator Placed Call
☐ Originator Received Call
W.O. NO. 04200-022-051-0018

Notes: Contacted the town of Stanford, town clerk regarding public drinking water supplies in the township. Ms. Willis stated that the entire township uses on ~~private~~ private wells.

☐ File
☐ Tickle File ___/___/___
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

WESTON

S. Klapacki
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name Peggy Haegele
~~Company~~ Deputy Town Clerk
Address Amenia Township

Phone 373-8118

Date 5/18/94
Time 300 ~~AM~~/PM

☒ Originator Placed Call
☐ Originator Received Call
W.O. NO. 04200-022-081-0018

Subject Drinking Water Supply in Amenia Township

Notes: Contacted Amenia Township regarding their Drinking Water supply. Questioned whether it was public or private. Peggy Haegele, Deputy Town Clerk informed me that the area has both public & private water sources. Public water is supplied by Amenia Water District #1 which is Town owned. There are four wells - two on Labell Road which is the main supply and two on Rt. 343 and Mechanic St (there used to be three wells but one is no longer used). The Rt. 343 wells are supplemental wells to the Labell Rd wells.

- Asked Ms. Haegele if there was anyone in the Amenia Water District that I could speak with regarding the public water supply. She suggested Walter Bates and gave his home number 373-9140 and Beeper number 745-5613.
- Also ~~#~~ asked how many svc. connections - 268
- Is water blended prior to distribution - yes
- Aquifer tapped by wells - did not know

☐ File
☐ Tickle File ___/___/___
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials SK

RFW 110-4-83

WESTON

Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Tina Pitcher

Company Town Secretary

Address Sharon Township

Phone ~~364~~ 203-364-5224

Subject

Date 5, 20, 94

Time 1015 AM/~~PM~~

☒ Originator Placed Call

☐ Originator Received Call

W.O. NO. 04200-022-081-0018

Notes: Contacted Sharon, Conn Township regarding townships drinking water supply. Ms Pitcher advised that a small portion of the town (300 connections) are served by the Sharon sewer & water supply Company. Their source is a pond/lake northeast of Sharon, all others are served by private wells. Portion of town served by public water supply falls outside 4-mile radius ring.

☐ File

☐ Tickle File ___/___/___

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

WESTON

Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Mr McDougal

Company Dutchess Cnty DOH

Address

Phone 431-1500

Date 5 / 20 / 94

Time 900 AM/~~PM~~

☒ Originator Placed Call

☐ Originator Received Call

W.O. NO. 04200-022-081-0018

Subject Drinking Water Supply around Amenia Landfill

Notes: Contacted Mr McDougal concerning drinking water supply in the area (4-mile radius) of the site. He confirm that Washington Township and Stanford Township are all private wells and that there are no surface water drinking supplies (to the best of his knowledge) in the area. He will check into public wells, number of connections and number of people served ~~to~~ and call back.

☐ File

☐ Tickle File / /

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

WESTON

S. Klepacki
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name M. McDougal
Company Dutchess County DOH
Address
Phone 914 431-1644

Date 5, 23, 94
Time 445 ~~AM~~/PM

☐ Originator Placed Call
☒ Originator Received Call
W.O. NO. 04200-022-001-0018

Subject Drinking Water Supply in 4 mile Radius of Amenia Site

Notes: Mr. McDougal returned my call of 5/20/94. He stated that there were five Community Water Supplies in the four mile radius of site (He couldn't locate the site exactly so he did a four mile radius of Rt 22 between Amenia Village & Wappinger). The five community water supplies are:
1 - Amenia Water District #1 serving ≈1000 people it has three wells, two of which it uses and one for backup. Two of the wells are located at 343 & Mechanic St, One well is located at Church St & Railroad Ave
2 - Maple Brook Schools serving ≈100 people it has five wells all on school property (He doesn't know where)
3 - Kent Hollow Apt serving ≈24 people and has one well
4 - Berkshire Apts serving ≈80 people has two wells on grounds
5 - Wappinger Development Center serving ≈2750 people with five wells all on the grounds - the development center is due to close by the year 2000.
Mr McDougal also stated that he had info. for non-community wells and I was welcome to come to the DOH with a foi request and view the documents. I asked him if he had a listing for the Millbrook Sch, he said he had one for Washington township serving about 225 people.

☒ File Amenia File
☐ Tickle File ___/___/___
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

ite Name: Amenia
Vork Order No.: 04200-022-081-0018

Date:_____

Page ___ of ___

Groundwater Population Worksheet No. 1

A Town/City	B Water Co./Dept. Supplying Town/City	C No. of Wells in System (incl. Standby Wells)	D Identify the Well No. and Location of Each Well (Landmarks, Cross Streets)	E Blended Prior to Distribution (Y/N)?	F Blended with Surface Water (Y/N); If Yes, Ratio (or %) of GW to SW	G If blended, does any 1 well or intake supply more than 40% to the system (Y/N)?	H Aquifer Tapped by Each Well	I No. of Service Connections For Entire System (or by each well if not blended)	J No. of Service Connections per Well for Blended Systems (divide column I by column C)	K Do Private Wells Exist in Town/City (Y/N)?	L No. or Percent of Private Wells in Town/City	M Identify Areas Within Town/City Served by Public Supply vs. Areas Supplied by Private Wells	N Aquifer Tapped by Private Wells
Amenia	Amenia Water District #1	4 (is Standby)	2 wells at 3 & 3 & Mechanic 2 wells at Church St Emil and more	Y	N	N	Pleistocene Gravel (3) Bedrock (1)	268 Connection	67	Y	10%	Outskirts of town	Fine sand/gravel & bedrock
Stanford											100		
Washington											100		
Sharon, Ct.											100		
Maplebrook School		5	on school property				Bedrock	100 people served	1				
Marisare Development Center		5	on schools property					2750 people served					

Site N[redacted]
Work Order No.:

Date:

Page ____ of ____

Groundwater Population Worksheet No. 2

Distance Ring	Water Co./Dept.	No. of Public Supply Wells in Ring	No. of Service Connections per Well	Population Served by Public Supply Wells in Ring*	Population Served by Private Wells in Ring**	Total Population Served by Wells in Ring
>0 to 0.25 mi.		Ø			13	13
>0.25 to 0.5 mi.		Ø			38	38
>0.5 to 1 mi.		Ø			247	247
>1 to 2 mi.	Ameriwa Water District #1	~~3~~ 4	67 ~~26 67 89~~	1000 Per DOH	118	1118
>2 to 3 mi.	Maplebrook Sch	5	1	100 Per DOH	1369 ~~2~~	1469
>3 to 4 mi.	Waissaic Sch Plan	5	1	2750	2368	5118

* Unless supplied by well owner, populations served by public supply wells in a particular distance ring were calculated by multiplying the number of wells in the distance ring (see 4-mile map) by the number of servic connections per well (see Groundwater Population Worksheet No. 1) and then multiplying that product by the county average population per household (see attached population data).

** Populations served by private wells were calculated by multiplying the number of private wells by the county average population per household (see attached population data).

Site Name: Date:

Work Order No.:

Page ___ of ___

Groundwater Population Worksheet No. 3

Population Supplied by the Aquifer of Concern and Overlying Aquifers Within 4 Miles of the Site

Distance Ring	Population Served by Public Supply Wells	Population Served by Private Wells	Total Population Supplied
>0 to 0.25 mi.		13	13
>0.25 to 0.5 mi.		38	38
>0.5 to 1 mi.		247	247
>1 to 2 mi.	1000	118	1118
>2 to 3 mi.	100	1369	1469
>3 to 4 mi.	2750	2368	5118

Total = 8003

90-GU8

10/91

1990 CENSUS POPULATION AND GROUP QUARTERS COUNTS, VACANCY STATUS, AND PERSONS PER UNIT

FOR

ALL GOVERNMENTAL UNITS

Prepared by: New York State, Dept. of Economic Development, State Data Center

1990 Census Population and Group Quarter Counts, Vacancy Status and Persons Per Occupied Housing Units
For
New York State Minor Civil Divisions by County and Places.

Area Name	Total Population	Total Group Quarters Population	Insitutional Group Quarters Population	Percent Total Group Quarters Population	Total Housing Units	Total Vacant Housing Units	Percent Vacant Housing Units	Persons Per Occupied Housing Units
Truxton town	1,064	0	0	0.00	407	40	9.83	2.90
Virgil town	2,172	0	0	0.00	893	157	17.58	2.95
Willet town	892	0	0	0.00	486	182	37.45	2.93
Delaware County	47,225	1,992	660	4.22	27,361	9,715	35.51	2.56
Andes town	1,291	0	0	0.00	1,337	813	60.81	2.46
Andes village	292	0	0	0.00	160	35	21.88	2.34
Bovina town	550	0	0	0.00	496	270	54.44	2.43
Colchester town	1,928	85	85	4.41	1,572	817	51.97	2.44
Davenport town	2,438	0	0	0.00	1,266	343	27.09	2.64
Delhi town	5,015	1,544	229	30.79	1,646	277	16.83	2.54
Delhi village	3,064	1,346	31	43.93	755	62	8.21	2.48
Deposit town	1,824	0	0	0.00	999	303	30.33	2.62
Deposit village (pt.)	999	0	0	0.00	427	25	5.85	2.49
Franklin town	2,471	0	0	0.00	1,223	297	24.28	2.67
Franklin village	409	0	0	0.00	196	29	14.80	2.45
Hamden town	1,144	0	0	0.00	681	241	35.39	2.60
Hancock town	3,384	0	0	0.00	2,259	1,005	44.49	2.70
Hancock village	1,330	0	0	0.00	587	86	14.65	2.65
Harpersfield town	1,450	68	68	4.69	888	357	40.20	2.60
Stamford village (pt.)	450	15	15	3.33	223	48	21.52	2.49
Kortright town	1,410	51	51	3.62	935	430	45.99	2.69
Masonville town	1,352	50	50	3.70	662	200	30.21	2.82
Meredith town	1,513	0	0	0.00	754	229	30.37	2.88
Middletown town	3,406	37	36	1.09	2,972	1,522	51.21	2.32
Fleischmanns village	351	0	0	0.00	297	139	46.80	2.22
Margaretville village	639	5	5	0.78	351	53	15.10	2.13
Roxbury town	2,388	14	14	0.59	1,978	1,050	53.08	2.56
Sidney town	6,667	61	45	0.91	2,995	354	11.82	2.50
Sidney village	4,720	56	40	1.19	2,038	128	6.28	2.44
Stamford town	2,047	41	41	2.00	1,143	354	30.97	2.54
Hobart village	385	0	0	0.00	191	29	15.18	2.38
Stamford village (pt.)	761	0	0	0.00	408	86	21.08	2.36
Tompkins town	994	0	0	0.00	717	353	49.23	2.73
Walton town	5,953	41	41	0.69	2,838	500	17.62	2.53
Walton village	3,326	29	29	0.87	1,496	129	8.62	2.41
Dutchess County	259,462	18,478	11,475	7.12	97,632	8,065	8.26	2.69
Amenia town	5,195	1,286	1,206	24.75	1,821	284	15.60	2.54
Amenia CDP	1,057	79	10	7.47	491	95	19.35	2.47
Dover Plains CDP (pt.)	437	0	0	0.00	244	32	13.11	2.06
Beacon city	13,243	596	495	4.50	5,039	318	6.31	2.68
Beekman town	10,447	2,088	2,081	19.99	3,176	432	13.60	3.05
Clinton town	3,760	47	10	1.25	1,544	222	14.38	2.81
Dover town	7,778	958	957	12.32	3,018	525	17.40	2.74
Dover Plains CDP (pt.)	1,366	0	0	0.00	596	47	7.89	2.49
East Fishkill town	22,101	75	13	0.34	7,265	469	6.46	3.24
Hillside Lake CDP	1,692	0	0	0.00	570	34	5.96	3.16
Hopewell Junction CDP	1,786	0	0	0.00	675	36	5.33	2.79
Fishkill town	17,655	3,452	3,443	19.55	5,991	281	4.69	2.49
Brinckerhoff CDP	2,756	0	0	0.00	850	21	2.47	3.32
Fishkill village	1,957	0	0	0.00	1,057	51	4.82	1.95
Hyde Park town	21,230	2,221	1,155	10.46	7,473	425	5.69	2.70
Fairview CDP (pt.)	1,474	0	0	0.00	605	22	3.64	2.53
Haviland CDP	3,605	8	0	0.22	1,343	30	2.23	2.74
La Grange town	13,274	75	10	0.57	4,553	168	3.69	3.01
Red Oaks Mill CDP (pt.)	2,120	0	0	0.00	729	24	3.29	3.01
Milan town	1,895	9	0	0.47	974	253	25.98	2.62
North East town	2,918	0	0	0.00	1,367	243	17.78	2.60
Millerton village	884	0	0	0.00	407	34	8.35	2.37
Pawling town	5,947	118	118	1.98	2,580	467	18.10	2.76
Pawling village	1,974	118	118	5.98	810	72	8.89	2.51
Pine Plains town	2,287	0	0	0.00	1,050	216	20.57	2.74
Pine Plains CDP	1,312	0	0	0.00	560	66	11.79	2.66
Pleasant Valley town	8,063	68	10	0.84	3,186	173	5.43	2.65
Pleasant Valley CDP	1,688	47	0	2.78	683	43	6.30	2.56

Prepared by: New York State Department of Economic Development, State Data Center.

REFERENCE NO. 9

WESTON

PROJECT NOTE

TO: Project File

DATE: 6-30-94

FROM: Sandra Kirpachi

W.O. NO.: 04200-022-001-0015

SUBJECT: Population Data

Population data for the 4-mile radius around site was determined utilizing the Frost Associates population data along with information provided from the Dutchess County Department of Health (DCDH). DCDH provided population figures for the Waissaic Development center, and Maplebrook School which do not appear to be included in the Frost data.

	FROST	DCDH	TOTAL
0 - 1/4	13	Ø	13
1/4 - 1/2	38	Ø	38
1/2 - 1	247	Ø	247
1 - 2	1118	Ø	1118
2 - 3	1369	100*	~~1369~~ 1469
3 - 4	2368	2750**	~~236~~ 5118

Total - 8003

* Maplebrook School

** Waissaic Development Center (residential school)

rr/RUDKO/PROJECTF.ORM

WESTON

S. Klepacki
Originator

PHONE CONVERSATION RECORD

Conversation with:
Name M. McDougal
Company Dutchess County DOH
Address
Phone 914 431-1644

Date 5, 23, 94
Time 445 ~~AM~~/PM

☐ Originator Placed Call
☒ Originator Received Call
W.O. NO. 04200-022-081-0018

Subject Drinking Water Supply in 4 mile Radius of Amenia Site

Notes: Mr. McDougal returned my call of 5/20/94. He stated that there were five Community Water Supplies in the four mile radius of site. (He couldn't locate the site exactly so he did a four mile radius of Rt 22 between Amenia Village & Wappinger). The five community water supplies are:
1 - Amenia Water District #1 serving ≈1000 people it has three wells, two of which it uses and one for backup. Two of the wells are located at 342 & Mechanic St, One well is located at Church St & Railroad Ave
2 - Maple Brook Schools serving ≈100 people it has five wells all on school property (He doesn't know where)
3 - Kent Hollow Apt serving ≈24 people and has one well
4 - Berkshire Apts serving ≈80 people has two wells on grounds
5 - Wappinger Development Center serving ≈2750 people with five wells all on the grounds - the development center is due to close by the year 2000.
Mr McDougal also stated that he had info. for non-community wells and I was welcome to come to the DOH with a foi request and view the documents. I asked him if he had a listing for the Millbrook Sch, he said he had one for Washington township serving about 225 people.

☒ File Amenia File
☐ Tickle File ____/____/____
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

FROST ASSOCIATES

P.O. Box 495, Essex, Connecticut 06426
(203) 767-7644 Fax (203) 767-7069

Jun 9, 1994

To: Jan Holderness
Roy F. Weston Inc
4th Floor Raritan Plaza
Edison, New Jersey 08837-3616

Fr: Bob Frost
Frost Associates
P.O. Box 495
Essex, Conn 06426

Tel: (203) 767-1254
Fax: (203) 767-7069

Sub: Amenia
Amenia, Dutchess County, NY

CERCLIS: NYD980641559

Job: 04200-0222-081-0018-02

Site Longitude: 73-33-58 73.566109
Site Latitude : 41-49-30 41.825001

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are than extracted from the respective county files to obtain all sides of the in cluded Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the pro ducts obtained by multiplying each X-coordinate by the difference between the adja cent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and E. The formula can be expressed:

Amenia
Amenia, Dutchess Co. NY
NYD980641559

========== Site Data ==========

Population:	5051.96
Households:	1722.58
Drilled Wells:	116.40
Dug Wells:	1176.76
Other Water Sources:	29.36

========== Partial (RING) data ==========

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population:	2267.27
Households:	576.38
Drilled Wells:	36.41
Dug Wells:	446.06
Other Wells:	13.01

** Population On Private Wells: 1897.86

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	1369.48
Households:	512.61
Drilled Wells:	35.06
Dug Wells:	354.46
Other Wells:	9.85

** Population On Private Wells: 1040.63

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	1118.40
Households:	502.47
Drilled Wells:	37.22
Dug Wells:	288.29
Other Wells:	5.45

** Population On Private Wells: 724.50

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	246.56
Households:	109.58
Drilled Wells:	7.02
Dug Wells:	69.18
Other Wells:	0.91

** Population On Private Wells: 171.46

Amenia
Amenia, Dutchess Co. NY
NYD980641559

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	37.69
Households:	16.16
Drilled Wells:	0.52
Dug Wells:	14.09
Other Wells:	0.11

** Population On Private Wells: 34.08

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	12.56
Households:	5.39
Drilled Wells:	0.17
Dug Wells:	4.70
Other Wells:	0.04

** Population On Private Wells: 11.36

FROST ASSOCIATES

P.O. Box 495, Essex, Connecticut 06426
(203) 767-7644 Fax (203) 767-7069

Jun 9, 1994

To: Jan Holderness
Roy F. Weston Inc
4th Floor Raritan Plaza
Edison, New Jersey 08837-3616

Fr: Bob Frost
Frost Associates
P.O. Box 495
Essex, Conn 06426

Tel: (203) 767-1254
Fax: (203) 767-7069

Sub: Amenia
Amenia, Dutchess County, NY CONNECTICUT PORTION

CERCLIS: NYD980641559

Job: 04200-0222-081-0018-02

Site Longitude: 73-33-58 73.566109
Site Latitude : 41-49-30 41.825001

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adjacent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and E. The formula can be expressed:

Amenia
Amenia, Dutchess Co. NY
NYD980641559

Connecticut portion

========== Site Data ==========

Population:	101.47
Households:	56.96
Drilled Wells:	44.88
Dug Wells:	1.82
Other Water Sources:	4.43

========== Partial (RING) data ==========

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population:	101.47
Households:	56.96
Drilled Wells:	44.88
Dug Wells:	1.82
Other Wells:	4.43

** Population On Private Wells: 83.19

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: Not Applicable

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: Not Applicable

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: Not Applicable

Amenia
Amenia, Dutchess Co. NY
NYD980641559

Connecticut Petition

--- Within Ring: .5 Mile(s) and .25 Mile(s) ---

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: Not Applicable

--- Within Ring: .25 Mile(s) and 0 Mile(s) ---

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: Not Applicable

REFERENCE NO. 10

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

SEP 27 1990

Honorable Mario M. Cuomo
Governor of the State of
New York
State Capitol
Executive Chamber
Albany, New York 12224

Dear Governor Cuomo:

In response to a letter from former EPA Administrator, Lee Thomas, you designated the New York State Department of Environmental Conservation (DEC) as the lead State agency for the development and implementation of New York's Wellhead Protection Program under Section 1428 of the Safe Drinking Water Act Amendments of 1986 (SDWA).

In accordance with the SDWA, the DEC submitted a draft Wellhead Protection (WHP) Program document to EPA, Region II, on June 19, 1989. Under Section 1428 of the SDWA, EPA must evaluate each State's Program document to determine whether the Program is fully adequate to protect public water supply systems from contaminants that may have an adverse effect on the public's health.

EPA Region II reviewed DEC's June 1989 submittal and subsequent addenda that were received over the next few weeks. Comments were sent to the State, and DEC revised its plan to address comments from EPA and the public. The revised documents, received in September 1990, responded to all comments sufficiently. Therefore, I am pleased to inform you that the New York Wellhead Protection Program document adequately addresses the requirements of Section 1428 of the Safe Drinking Water Act and the program is fully approved.

The level of activity and sense of commitment to Wellhead Protection on the part of New York State is impressive, especially considering the delays associated with Congressional appropriations for the WHP Program. It is a great credit to the Department of Environmental Conservation, and in particular to the staff of the Division of Water, to have successfully completed the Wellhead Protection Program document. New York State is one of twenty-seven states nationwide to have submitted a WHP Program document within the time frame specified by the SDWA and is one of the first states to receive EPA approval of its program. We recognize your continual efforts to improve upon the program, as reflected in the current revisions to New York's Wellhead Protection Program document.

New York has made major strides in ground water protection over the years, particularly with respect to the development of the State's Upstate and Long Island Ground Water Management Programs, the Nonpoint Source Management Program, and the Water Resources Management Strategy. The State has established itself as a national leader in ground water protection, and EPA looks forward to further advances in this area.

EPA continues to support New York State in the implementation of the Wellhead Protection Program. Federal funding is presently available under Section 106 of the Clean Water Act to support the Department of Environmental Conservation with this new program. Our Ground Water Management Section staff will assist DEC in preparing a WHP implementation workplan for the use of these funds in the coming fiscal year.

Again, congratulations on the accomplishments of your staff.

Sincerely,

Constantine Sidamon-Eristoff
Regional Administrator

cc: Thomas Jorling, NYSDEC
Sal Pagano, NYSDEC
Phil DeGaetano, NYSDEC
Al Tedrow, NYSDEC
Kevin Roberts, NYSDEC

PROPOSED
NEW YORK STATE
WELLHEAD PROTECTION PROGRAM

SUBMITTAL
TO
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
IN
APPLICATION FOR IMPLEMENTATION FUNDS

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
ALBANY, NY

MAY 1990

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with the overall wellhead protection objectives if they unduly diminish funds available for management program implementation or if the management program does not require great sophistication. Increased refinements of delineations are justifiable to the extent that corresponding refinements in management and enforcement are practical and possible.

1.4. Wellhead Protection Program Summary

This summary is an overview of material developed in more detail in Chapters 2 through 8.

1.4.1. Agency Responsibilities

The Department of Environmental Conservation (DEC) is the principal agency responsible for developing and implementing state-level aspects of the Wellhead Protection Program and for coordination. The Department of Health (DOH) is responsible for certain aspects related to public water supply well data, contingency planning, new well planning, and Watershed Rules and Regulations. Regional and county planning agencies and county governments are responsible for county-level planning, management and educational outreach elements in the overall program, in addition to any county-level ordinances developed for wellhead protection. Town, village and city governments are responsible for local land use control, local ordinances and other local-level aspects of wellhead protection. Water suppliers will have a role in developing local Watershed Rules and Regulations, education, land acquisition and other program aspects determined by DEC and DOH. The educational effort will be shared by all levels, including Cooperative Extension, the universities and the State Education Department. Federal agencies and other state agencies will participate as appropriate, as coordinated by DEC with the assistance of EPA for federal agencies.

1.4.2. Wellhead Protection Area Delineation

The Safe Drinking Water Act defines a Wellhead Protection Area (WHPA) as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfields." This definition is not specific because there is no time framework and because there is a requirement that contaminants be reasonably likely to reach the well, a condition that is very difficult to accurately predict. States are given flexibility by the Safe Drinking Water Act in determining delineation approaches.

New York State proposes that unconsolidated aquifer boundaries serve as the fundamental delineation of wellhead protection areas and that a multiple zone approach be used within the total WHPA for varying management relative to risk. This approach is modified for Long Island and for bedrock aquifers, as described in Chapter 3. New York's approach proposes to allow local flexibility in an evolutionary process of delineation refinements, and to allow utilization of previously delineated protection areas, where appropriate.

There are many distinct advantages in this overall approach. A very important advantage is that considerable aquifer characterization and mapping work has already been accomplished. Second, it is consistent with the evolution and principal policies of both the comprehensive New York State Groundwater Management Program (1987) and New York State Water Resources Management Strategy (1989), in addition to the New York State Watershed Rules and Regulation policies. Third, it focuses attention of local governments on the entire aquifer resource and facilitates contingency planning and new (or future) well protection. Finally, it provides a base within which more sophisticated delineations (e.g., subdividing the overall WHPA) can be made as programs require and funding permits.

A possible drawback of using aquifer boundaries—that aquifers may be broad regional systems—is not a major problem in most of New York State. In Upstate New York most public water supplies using groundwater are in unconsolidated aquifers of rather limited areal extent. Most important recharge areas are within the boundaries of the unconsolidated aquifers, another advantage of this approach.

Chapter 3 provides further details and background on wellhead protection area delineation.

CHAPTER 3

WELLHEAD PROTECTION AREA DELINEATION

3.1. Introduction and Institutional Processes

3.1.1. Introduction

The comprehensive New York State Groundwater Management Program, developed in the early 1980's and published in revised and final documents in 1986 (for Long Island) and 1987 (for Upstate), recommended key policies and program initiatives endorsing geographic targeting and critical area protection. These concepts were forerunners of the Safe Drinking Water Act's Wellhead Protection Program. Significant progress has been made in different aspects of geographic targeting of programs and in different parts of New York State. New York acknowledges these accomplishments as an integral part of its overall Wellhead Protection Program.

Delineation determines geographic areas for which different levels of groundwater protection activities are to be instituted. The Wellhead Protection Program in New York State is intended to accomplish a wider recognition of targeting objectives by all levels of government, by citizens in general, and to begin an evolutionary process toward improved targeting and protective program implementation.

The basic wellhead protection delineation approach in New York State recognizes aquifers as the fundamental geographic unit for targeting management efforts. This approach must be modified where aquifers are broad regional systems (DEC considers this case to occur only on Long Island), or where aquifers are not well characterized (considered to be the case for bedrock aquifers, in general). Elsewhere, the unconsolidated aquifers of New York tend to be of limited areal extent and they generally include the important recharge areas within their boundaries. These unconsolidated aquifers also are the source of the large majority of groundwater-derived public water supply systems.

The New York State Wellhead Protection Program proposes that unconsolidated aquifer boundaries (the land surface overlying the aquifer) serve as the baseline definition for the overall wellhead protection area (WHPA). For the baseline definition, both confined and unconfined unconsolidated aquifers are grouped together. Revisions are allowable based on site-specific evaluations. This aquifer boundary approach is proposed to be modified on Long Island and for wells in bedrock aquifers as described in Section 3.2. For all public water supply wells, specific proposed WHPA delineation policies are described in Section 3.2.

The aquifer boundary approach for the overall WHPA has several distinct advantages. It takes advantage of considerable recent and ongoing work in mapping and detailed assessments of aquifer boundaries. Incorporating this work directly into the Wellhead Protection Program provides a practical way for more effective targeting to move forward rapidly rather than being constrained by the need to perform modeling to delineate protection areas.

The aquifer approach also encompasses other non-public wells and potential future well sites, and places major focus on the high-yielding groundwater resources which are most important and most vulnerable. This last aspect is considered very important in the education component of wellhead protection, both for local officials and for the general public.

Wellhead protection area delineation is an evolutionary process. The first need for refinement is the further subdivision of the total wellhead protection area, as required for differentiated management objectives. A second area for potential refinement is delineation of the overall WHPA in the Glacial Aquifer on Long Island and in bedrock aquifers. Issues related to these topics are reviewed in both Sections 3.2 and 3.3. Flexibility for refinement or revision is very important due to the wide variability in

TABLE 3.1.
WELLHEAD PROTECTION AREA
DELINEATION SUMMARY

Geographic Region	Aquifer Area	Wellhead Protection Area Baseline Delineation
Long Island	Magothy & Lloyd Aquifers	Deep Flow Recharge Area
	Glacial Aquifer	Simplified Variable Shape: 1,500 ft. radius upgradient 500 ft. radius downgradient
Upstate	Unconsolidated Aquifers	Aquifer Boundaries (land surface)
	Bedrock Aquifers	Fixed Radius: 1,500 ft. radius

alternative site-specific delineations according to conditions stipulated through the Water Supply Permit Program (refer to Chapter 7).

The proposed WHPA delineations are described according to the following geographic and hydrogeologic settings. They are also summarized in Table 3.1.

- Unconsolidated Aquifers - Upstate New York

1. WHPA Definition:

The boundaries of wellhead protection areas for public water supplies in unconsolidated aquifers in Upstate New York are the land surface boundaries of the aquifers as illustrated on the five-aquifer sheet maps for Upstate published and distributed by the U.S. Geological Survey (see earlier reference). These boundaries may be revised in accordance with more detailed primary and principal aquifer maps and boundary determinations as approved by the Department of Environmental Conservation. The maps provide definition for both unconfined and confined aquifers. Revisions of these boundaries may be made, pending approval by the Department of Environmental Conservation.

2. Rationale:

The delineations proposed above are hydrogeologically-based and are consistent with the policies and goals of the Upstate Groundwater Management Program already adopted and certified by the Governor of New York as an element of the New York State Water Quality Management Plan.

3. Mapping and Case Studies:

Mapping of these areas is already completed and published. Case studies are not considered appropriate, as the maps have been reviewed and approved by the U.S. Geological Survey and the Department of Environmental Conservation as part of the publication process.

4. Public Water Supply Significance:

The large majority of public water supplies using groundwater, particularly for municipal and community systems, are located in unconsolidated aquifers. It is expected that a significant proportion of additional future supplies will also tap these systems.

- Bedrock Aquifers - Upstate New York

1. WHPA Definition:

The baseline boundaries of wellhead protection areas for public water supplies in bedrock aquifers are fixed radius areas with a radius of 1,500 feet from the wellhead. Revisions based on site-specific information are desirable, with the goals being to identify and delineate principal recharge areas. Revisions may be developed, pending approval by the Department of Environmental Conservation.

2. Rationale:

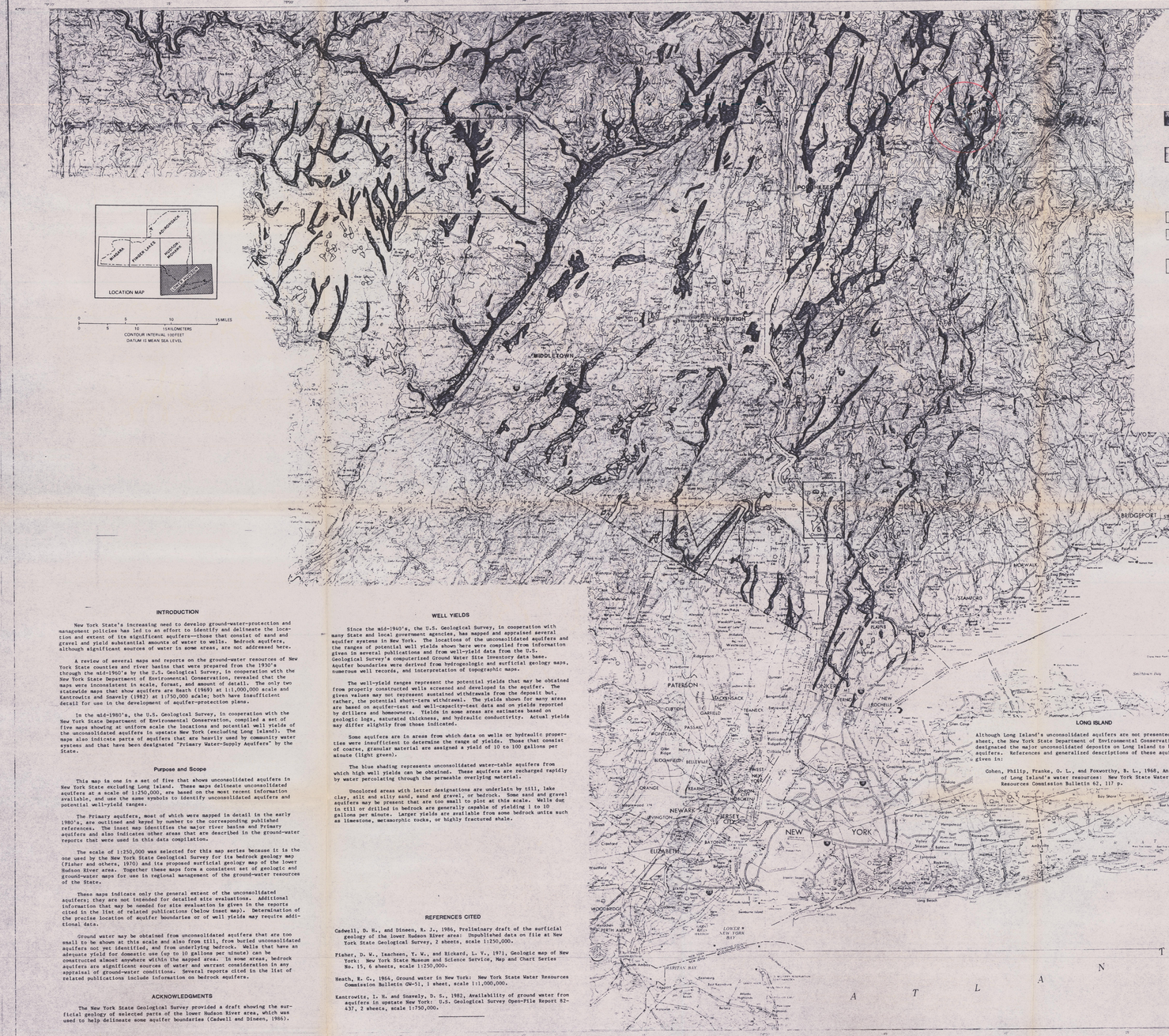
The fixed radius approach for the initial WHPA is not based on estimated times-of-travel or drawdown. It provides a substantial increase in protection over more commonly existing protection zones (typically 100 feet or 200 feet). The principal rationale is that the baseline delineation gives a basis for immediate action on wellfield management without requiring expensive site-specific delineations. Revisions based on local conditions are encouraged, particularly for municipal community systems, of which there are relatively few in the State. The geographic targeting benefits of uniformly delineating substantially larger fixed radius areas for all bedrock wells are very questionable. Many of the bedrock public water supply wells are among the approximately 10,000 non-community public wells (e.g., isolated public buildings, roadside rest areas, etc.). There will be little geographic targeting advantage for groundwater protection programs if

REFERENCE NO. 11

UNITED STATES DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

WATER-RESOURCES INVESTIGATIONS REPORT 87-4274
LOWER HUDSON SHEET



INTRODUCTION

New York State's increasing need to develop ground-water-protection and management policies has led to an effort to identify and delineate the location and extent of its significant aquifers--those that consist of sand and gravel and yield substantial amounts of water to wells. Bedrock aquifers, although significant sources of water in some areas, are not addressed here.

A review of several maps and reports on the ground-water resources of New York State counties and river basins that were prepared from the 1930's through the mid-1960's by the U.S. Geological Survey, in cooperation with the New York State Department of Environmental Conservation, revealed that the maps were inconsistent in scale, format, and amount of detail. The only two statewide maps that show aquifers are Heath (1969) at 1:1,000,000 scale and Kantrowitz and Snavely (1982) at 1:750,000 scale; both have insufficient detail for use in the development of aquifer-protection plans.

In the mid-1980's, the U.S. Geological Survey, in cooperation with the New York State Department of Environmental Conservation, compiled a set of five maps showing at uniform scale the locations and potential well yields of the unconsolidated aquifers in upstate New York (excluding Long Island). The maps also indicate parts of aquifers that are heavily used by community water systems and that have been designated "Primary Water-Supply Aquifers" by the State.

Purpose and Scope

This map is one in a set of five that shows unconsolidated aquifers in New York State excluding Long Island. These maps delineate unconsolidated aquifers at a scale of 1:250,000, are based on the most recent information available, and use the same symbols to identify unconsolidated aquifers and potential well-yield ranges.

The Primary aquifers, most of which were mapped in detail in the early 1980's, are outlined and keyed by number to the corresponding published references. The inset map identifies the major river basins and Primary aquifers and also indicates other areas that are described in the ground-water reports that were used in this data compilation.

The scale of 1:250,000 was selected for this map series because it is the one used by the New York State Geological Survey for its bedrock geology map (Fisher and others, 1970) and its proposed surficial geology map of the lower Hudson River area. Together these maps form a consistent set of geologic and ground-water maps for use in regional management of the ground-water resources of the State.

These maps indicate only the general extent of the unconsolidated aquifers; they are not intended for detailed site evaluations. Additional information that may be needed for site evaluation is given in the reports cited in the list of related publications (below inset map). Determination of the precise location of aquifer boundaries or of well yields may require additional data.

Ground water may be obtained from unconsolidated aquifers that are too small to be shown at this scale and also from till, from buried unconsolidated aquifers not yet identified, and from underlying bedrock. Wells that have an adequate yield for domestic use (up to 10 gallons per minute) can be constructed almost anywhere within the mapped area. In some areas, bedrock aquifers are significant sources of water and warrant consideration in any appraisal of ground-water conditions. Several reports cited in the list of related publications include information on bedrock aquifers.

ACKNOWLEDGMENTS

The New York State Geological Survey provided a draft showing the surficial geology of selected parts of the lower Hudson River area, which was used to help delineate some aquifer boundaries (Cadwell and Dineen, 1986).

WELL YIELDS

Since the mid-1940's, the U.S. Geological Survey, in cooperation with many State and local government agencies, has mapped and appraised several aquifer systems in New York. The locations of the unconsolidated aquifers and the ranges of potential well yields shown here were compiled from information given in several publications and from well-yield data from the U.S. Geological Survey's computerized Ground Water Site Inventory data base. Aquifer boundaries were derived from hydrogeologic and surficial geology maps, numerous well records, and interpretation of topographic maps.

The well-yield ranges represent the potential yields that may be obtained from properly constructed wells screened and developed in the aquifer. The given values may not represent sustained withdrawals from the deposit but, rather, the potential short-term withdrawal. The yields shown for many areas are based on aquifer-test and well-capacity-test data and on yields reported by drillers and homeowners. Yields in some areas are estimates based on geologic logs, saturated thickness, and hydraulic conductivity. Actual yields may differ slightly from those indicated.

Some aquifers are in areas from which data on wells or hydraulic properties were insufficient to determine the range of yields. Those that consist of coarse, granular material are assigned a yield of 10 to 100 gallons per minute (light green).

The blue shading represents unconsolidated water-table aquifers from which high well yields can be obtained. These aquifers are recharged rapidly by water percolating through the permeable overlying material.

Uncolored areas with letter designations are underlain by till, lake clay, silt and silty sand, sand and gravel, or bedrock. Some sand and gravel aquifers may be present that are too small to plot at this scale. Wells dug in till or drilled in bedrock are generally capable of yielding 1 to 10 gallons per minute. Larger yields are available from some bedrock units such as limestone, metamorphic rocks, or highly fractured shale.

REFERENCES CITED

Cadwell, D. H., and Dineen, R. J., 1986, Preliminary draft of the surficial geology of the lower Hudson River area: Unpublished data on file at New York State Geological Survey, 2 sheets, scale 1:250,000.

Fisher, D. W., Isachsen, Y. W., and Rickard, L. V., 1971, Geologic map of New York: New York State Museum and Science Service, Map and Chart Series No. 15, 6 sheets, scale 1:250,000.

Heath, R. C., 1964, Ground water in New York: New York State Water Resources Commission Bulletin GW-51, 1 sheet, scale 1:1,000,000.

Kantrowitz, I. H. and Snavely, D. S., 1982, Availability of ground water from aquifers in upstate New York: U.S. Geological Survey Open-File Report 82-437, 2 sheets, scale 1:750,000.

EXPLANATION

POTENTIAL YIELD OF WATER TO WELLS IN UNCONSOLIDATED AQUIFERS

UNCONFINED AQUIFERS, 10 to 100 GALLONS PER MINUTE--Sand and gravel with **saturated zone generally less than 10 ft thick, or thicker but with less permeable silty sand and gravel. Yields in areas** adjacent to streams may exceed 100 gal/min through pumping-induced infiltration, but these areas are too small to show at this scale.

UNCONFINED AQUIFERS, MORE THAN 100 GALLONS PER MINUTE--Sand and gravel of high transmissivity and with saturated thickness greater than 10 ft. Many such areas are associated with surface-water sources that can provide additional water through pumping-induced recharge.

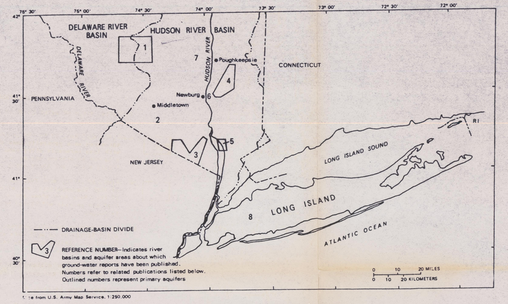
AQUIFER OF UNKNOWN POTENTIAL--Areas of sand or sand and gravel for which little or no well data are on file to determine yield potential. Letter symbols, explained below, indicate the type of deposit.

L — Lacustrine or eolian--Fine to medium sand that probably yields less than 10 gal/min.

G — Kame, kame terrace, kame moraine, outwash, or alluvium--Sand and gravel of unknown thickness or saturation. Yield potential is greater where streams are present.

1 — PRIMARY WATER-SUPPLY AQUIFER--A highly productive aquifer that is being used as a source of water supply by major public-supply systems. Number indicates name of aquifer area (see key below) and report number in list of related publications. Reports and maps cited describe these aquifers in detail.

Primary aquifer number	Aquifer area
1	South Fallsburg-Woodbourne area
3	Ramapo and Mahwah Rivers area
4	Fishkill and Sprout Creeks area
5	Croton-Osaining area



Drainage areas and reference numbers.

RELATED PUBLICATIONS

(Number at left corresponds to numbers on main map and inset map.)

1 Anderson, H. R., Dineen, R. J., and others, 1982, Geohydrology of the valley-fill aquifer in the South Fallsburg-Woodbourne area, Sullivan County, New York: U.S. Geological Survey Open-File Report 82-112, 6 sheets, scale 1:24,000.

2 Frimpter, M. H., 1972, Ground-water resources of Orange and Ulster counties, New York: U.S. Geological Survey, Water-Supply Paper 1972, 80 p.

3 Moore, R. B., Cadwell, D. H., Stelts, W. G., and Belli, J. L., 1982, Geohydrology of the valley-fill aquifer in the Ramapo and Mahwah Rivers area, Rockland County, New York: U.S. Geological Survey Open-File Report 82-114, 6 sheets, scale 1:24,000.

4 Moore, R. B., La Fleur, R. G., and others, 1982, Geohydrology of the valley-fill aquifer in the Sprout and Fishkill Creeks area, Dutchess County, New York: U.S. Geological Survey Open-File Report 82-81, 6 sheets, scale 1:24,000.

5 Reynolds, R. J., Hydrogeology of the Croton-Osaining area, Westchester County, New York: Water Resources Investigations Report 87-4159, 5 sheets, scale 1:24,000, in press.

6 Snavely, D. S., 1980, Ground-water appraisal of the Fishkill-Beacon area, Dutchess County, New York: U.S. Geological Survey Open-File Report 80-437, 14 p.

7 Wolcott, S. W., 1987, Potential well yields from unconsolidated deposits in the lower Hudson and Delaware River basins, New York: U.S. Geological Survey Water-Resources Investigations Report 87-4042, 1 sheet, scale 1:250,000.

LONG ISLAND

Although Long Island's unconsolidated aquifers are not presented on this sheet, the New York State Department of Environmental Conservation has designated the major unconsolidated deposits on Long Island to be Primary aquifers. References and generalized descriptions of these aquifers are given in:

Cohen, Philip, Franke, O. L., and Foxworthy, B. L., 1968, An atlas of Long Island's water resources: New York State Water Resources Commission Bulletin 62, 117 p.

Base from U.S. Army Map Service, 1:250,000 scale

Copies of this map can be purchased from U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225

POTENTIAL YIELDS OF WELLS IN UNCONSOLIDATED AQUIFERS IN UPSTATE NEW YORK--LOWER HUDSON SHEET

By
Edward F. Bugliosi and Ruth A. Trudell

REFERENCE NO. 12

New York State Department of Environmental Conservation
200 White Plains Road - 5th Floor
Tarrytown, New York 10591-5805
(914) 332-1835

Langdon Marsh
Acting
Commissioner

May 27, 1994

Ms. Sandra Klepacki
Roy F. Weston of New York, Inc.
Sutton Park, Suite 180
465 Columbus Avenue
Valhalla, New York 10595-1336

Dear Ms. Klepacki:

In response to your request please be advised as follows:

Tenmile River	-	B(T) Between tribs 6 and 7
	-	C(T) From trib 7 to source
Wassaic Creek and Trib 1	-	C(T)
Ponds P 1121 and P 1122	-	C
Fallkill Creek	-	C
Hudson River	-	A

I trust this information is helpful.

Very truly yours,

Joseph F. Marcogliese, P.E.
Environmental Engineer III
Division of Water
Region III

JFM:jm

printed on recycled paper

REFERENCE NO. 13

WESTON

PROJECT NOTE

TO: File

DATE: 6/30/94

FROM: S. Klepacki

W.O. NO.: 04200-022-051-0015

SUBJECT: Stream flow rates & Stream USC

BASED on stream flow rates obtained from Ed Hoxie from NYS Soil District it was determined that both the Amenia Brook & the unnamed tributary to the Amenia Brook would most likely have stream flow rates equal to or less than the Wassaic Creek which is about 5 cubic feet per second

Ed Hoxie also stated that while the streams are not used for drinking water, it is possible that Ten mile River is used for irrigation and Wassaic Creek for cattle watering

WESTON

Michelle Hunter
Originator

PHONE CONVERSATION RECORD

Conversation with:

Name Ed Horie

Company Dutchess County Soil and Water Dept.

Address

Phone (914) 677-8011

Date 6 / 3 / 94

Time 2:00 AM/PM

☑ Originator Placed Call

☐ Originator Received Call

W.O. NO.

Subject Alternate water usages & info on drinking water intakes for Tonnile & Wassaic Creeks.

Notes: Ed stated that the Tonnile River is used for irrigation purposes at various points along River. No water is taken (for drinking purposes) directly from River.

Wassaic Creek is used for cattle watering in its upper regions possibly depending on point of interest. No drinking water is taken from ~~sto~~ Creek.

Ed will fax stream flow data for each surface water body on Monday. Shelley will call him back on Monday to follow up.

fax was broken, Ed gave the data over the phone - data is in table on attached page

☐ File

☐ Tickle File / /

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

Date [redacted] 19[redacted]

Creek/River	Drainage Area (mi²)	Discharge ≥ for indicated % of time (cfs/mil gal/day/mi²) 10%	30%	50%	70%	90%	lowest ave flow for 7 days (cfs/millions gal/day/mi²)	low flow (cfs/millions gal/day/mi²) 2 yr 1 day	2 yr 7	2 yr 30	5 yr 1 day	5 yr 7	5 yr 30	10 yr 1 day	10 yr 7	10 yr 30
Ten Mile River	120	430 cfs	185	94	45	14.5	3.9 cfs	6.8	7.8	12.5	4.1	4.8	6.8	3.3	3.4	5.[illegible]
		2.32 mgal/day/mi²	1.0	.51	.24	.08	.019 (mil gal/day/mi²)	.037	.042	.068	.022	.026	.037	.018	.019	.0[illegible]
Wassaic Creek	36.8	–	50	24	12	4.7	1.2 cfs	2.5	2.9	4.3	1.3	1.6	2.5	1.0	1.2	1.[illegible]
		–	.89	.42	.21	.084	.019 (mil gal/day/mi²)	.043	.052	.076	.022	.027	.043	.016	.019	.0[illegible]
Fall Kill Creek	16.6	–	20 cfs	8.5	3.6	.90	.1	2.8	.4	.76	.1	.12	.28	0	.1	.1[illegible]
		–	.78 mil gal/day/mi²	.33	.14	.035	.004	.011	.016	.030	.004	.005	.011	0	.004	.0[illegible]

Station	No.	Location
Ten Mile River (Gaylordsville)	2000	CT where enters Housatonic
(Wassaic)	1994.2	near hamlet of Wassaic
Wassaic (–)	1994.1	at Wassaic where enters Tenmile River
Fall Kill Creek (–)	3720.5	at Poughkeepsie

Project note: for unknown flow rates at rivers.

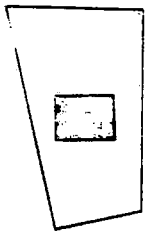
REFERENCE NO. 14

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
AMENIA, NEW YORK
DUTCHESS COUNTY

PANEL 9 OF 16
(SEE MAP INDEX FOR PANELS NOT PRINTED)



PANEL LOCATION

COMMUNITY-PANEL NUMBER
361332 0009 D

MAP REVISED:
NOVEMBER 15, 1989

Federal Emergency Management Agency

J

ZONE X

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding; velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone*

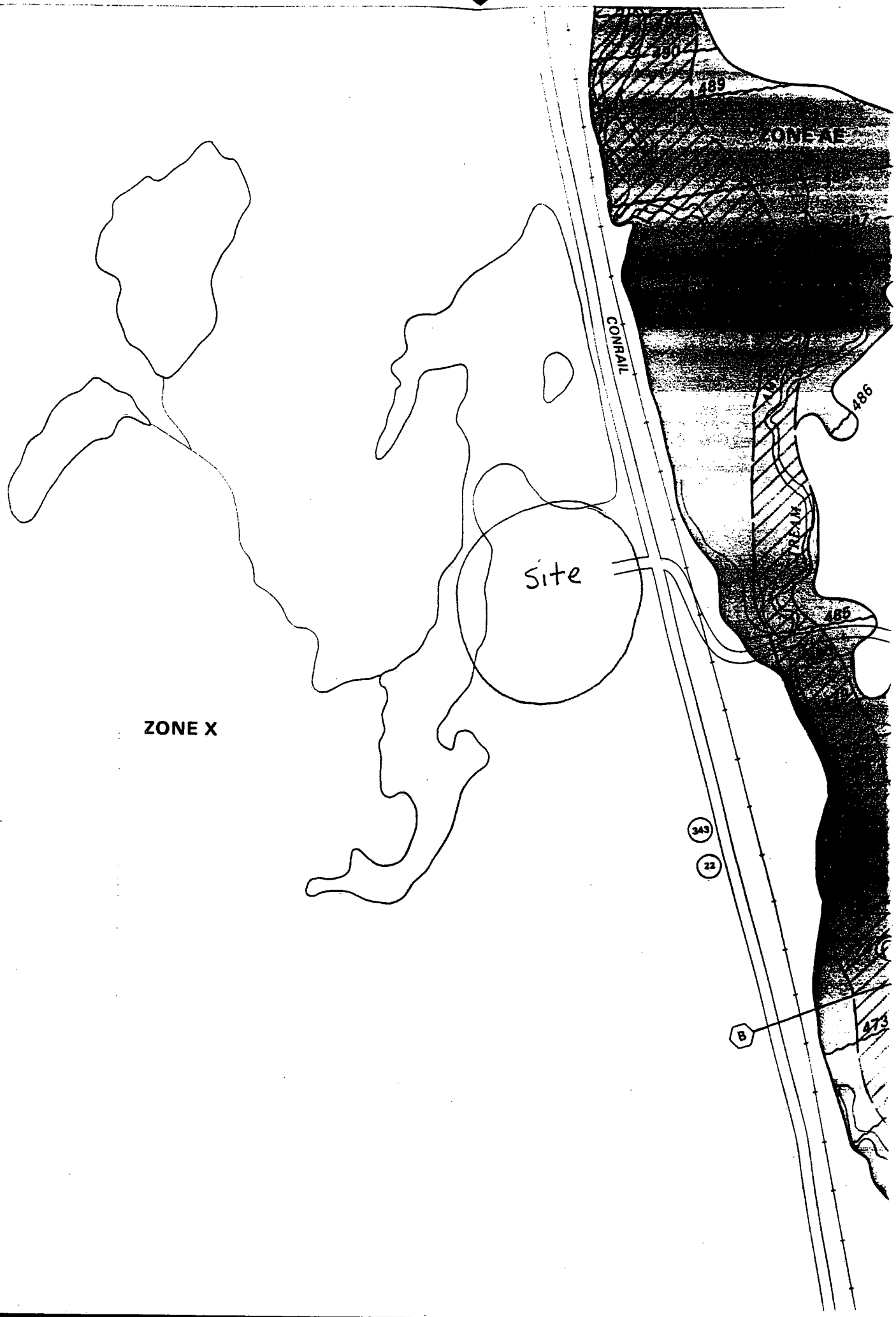
RM 7x — Elevation Reference Mark

•M1.5 — River Mile

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local


490
489
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Document Control No.:

REFERENCE NO. 15

nk(sk)\siteinsp\amenia

REFERENCE NO. 16

WESTON

Originator

PHONE CONVERSATION RECORD

Conversation with:

Name: Ron Pierce

Company: NYSDEC - Fish Division

Address: New Paltz, NY

Phone: (914) 255 - 5453

Subject: fishery info: fishing? consumption? stocked?

Date: 5 / 23 / 94

Time: 1 00 AM/PM

☐ Originator Placed Call

☐ Originator Received Call

W.O. NO.

Notes: Unnamed tributary no specific info. but as a general comment, if trib. is more than a mile long and has roads (accessible) then fishing + consumption are likely, probably not stocked.

Ameria Brook: stocked, fished, and consumed

Wassaic Creek: Stocked, fished, and consumed

Ten Mile River: Stocked, fished and consumed

☐ File

☐ Tickle File ___ / ___ / ___

☐ Follow-Up By:

☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials

RFW 110-4-83

REFERENCE NO. 17

WESTON

PROJECT NOTE

TO: File

DATE: 6-30-94

FROM: S. Klepacki

W.O. NO.: 04200-022-081-0018

SUBJECT: Sensitive environment information

Obtained sensitive environment information from the NYSDEC - Wildlife Resource Center. It stated that there is 9 sensitive environments within a four mile radius of the site. The information is summarized below:

0-1/4 mile:

0.2 miles from site, Hill's Pondweed listed as NYS threatened species

1-2 mile:

1.6 miles from site, Timber Rattlesnake listed as NYS threatened species

2-3 mile:

2.1 miles from site, Hill's Pondweed listed as NYS ~~Unprotected~~ threatened

2.1 miles from site, Smartweed listed as NYS unprotected species

3-4 mile:

3.4 miles from site, Argimony listed as NYS Rare species

3.1 miles from site, Sedge listed as NYS Rare species

3.2 miles from site, Bog turtle listed as NYS Endangered species

3.8 miles from site, false hop sedge listed as NYS Rare species

3.8 miles from site, Bog turtle listed as NYS Endangered species

New York State Department of Environmental Conservation

Wildlife Resources Center - (518) 783-3932
Information Services
700 Troy-Schenectady Road
Latham, New York 12110-2400

DCN: 4200-22-AEDL

Thomas C. Jorling
Commissioner

June 15, 1994

Richard M. Settino
Weston
Raritan Plaza 1, 4th floor,
Raritan Center
Edison, New Jersey 08837-2616

Dear Mr. Settino:

We have reviewed the New York Heritage Program files with respect to your recent request for biological information concerning your Hazardous Waste Investigation, USEPA Contract No. 68-W9-0022 covering 15 sites as listed in your letter of May 27, 1994. The enclosed printout covers the AMENIA SITE as indicated on your map, located in Richmond County, New York State.

Enclosed is a computer printout covering the area you requested to be reviewed by our staff. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be sutstituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals, plants and natural communities and/or significant wildlife habitats. You should contact our regional office, Division of Regulatory Affairs, at the address enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State Law.

If this proposed project is still active one year from now we recommend that you contact us again so that we can update this response.

Sincerely,

Nicholas B Conrad

Nicholas B. Conrad, Info. Data Asst.
NY Natural Heritage Program

Encs.
cc: Region 3, Wildlife Mgr.
Region 3, Fisheries Mgr.

printed on recycled paper

Document Control No.:

REFERENCE NO. 18

nk(sk)\siteinsp\amenia

SELECTION:
SEQUENCE: REGION, STATE, SITE NAME

EVENTS: ALL

EPA ID NO.	SITE NAME STREET CITY COUNTY CODE AND NAME	STATE CONG DIST.	ZIP	OPRBLE UNIT	EVENT TYPE	EVENT QUAL	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
NYD981184237	ALSY MANUFACTURING			00	DS1			03/25/86	STATE(FUND)
	270 DUFFY AVENUE				PA1			03/26/86	STATE(FUND)
	HICKSVILLE	NY	11801		SI1		08/25/87	09/02/87	EPA (FUND)
	059 NASSAU				ES1		05/06/92	09/30/93	EPA (FUND)
NYD000513713	ALTIFT REALTY			00	DS1			04/01/80	EPA (FUND)
	TIFFT ST				PA1			01/01/79	EPA (FUND)
	BUFFALO	NY	14220		HR1			06/01/82	OTHER
	029 ERIE				SI1		02/25/87	03/09/87	STATE(FUND)
NYD002108918	ALUMINUM MATCH PLATE			00	DS1			04/15/80	EPA (FUND)
	1500 MILITARY RD				PA1	NFA	03/01/86	03/07/86	STATE(FUND)
	TONAWANDA	NY	14150						
	029 ERIE								
NYD071478598	AMAX SPECIALTY METAL			00	DS1			11/01/79	EPA (FUND)
	CLARENCE CTTR & HALE RD				PA1			11/01/79	EPA (FUND)
	AKRON	NY	14001		SI1		01/01/91	03/28/91	EPA (FUND)
	029 ERIE								
NYD980641559	AMENIA			00	DS1			04/01/80	EPA (FUND)
	RTE 22 S				PA1			03/04/87	STATE(FUND)
	AMENIA	NY	12501		SI1		06/15/87	06/23/87	EPA (FUND)
	027 DUTCHESS								
NYD063951602	AMERICAN BRASS COMPANY			00	DS1			03/01/86	STATE(FUND)
	70 SAYRE ST BOX 981				PA1		03/01/86	03/07/86	STATE(FUND)
	BUFFALO	NY	14240		SI1	NFA		12/31/91	EPA (FUND)
	029 ERIE								
NYD048633614	AMERICAN LINEN SUPPLY			00	DS1			06/01/88	STATE(FUND)
	63 WEST MERRICK RD.				PA1		12/21/88	12/29/88	EPA (FUND)
	LINDENHURST	NY	11757		SI1	NFA		03/08/94	EPA (FUND)
	103 SUFFOLK								

SELECTION:
SEQUENCE: REGION, STATE, SITE NAME

SEQUENCE: REG, ST, SITE NAME
REGION: 02

EPA IDENTIFICATION NUMBER	SITE NAME/ALIAS NAME STREET/ALIAS STREET CITY/ALIAS CITY COUNTY NAME	STATE/ALIAS STATE COUNTY CODE	ZIP CODE	ALIAS SEQ. #	NAME SOURCE	FEDERAL FACILITY FLAG	CONGRESSIONAL DISTRICT (S)
NYD071478598	AMAX SPECIALTY METAL				STS	N	
	CLARENCE CTTR & HALE RD						
	AKRON	NY	14001				
	ERIE	029					
NYD980641559	AMENIA				STS	N	
	RTE 22 S						
	AMENIA	NY	12501				
	DUTCHESS	027					
NYD063951602	AMERICAN BRASS COMPANY				EPA	N	
	70 SAYRE ST BOX 981						
	BUFFALO	NY	14240				
	ERIE	029					
	ANACONDA CO.			01			
	AMERICAN BRASS COMPANY (NYD000632083)			02			
NYD048633614	AMERICAN LINEN SUPPLY					N	
	63 WEST MERRICK RD.						
	LINDENHURST	NY	11757				
	SUFFOLK	103					
NYD987001476	AMERICAN RADIUM INDUSTRIES					N	
	43 WEST 16 TH STREET						
	NEW YORK	NY	10011				
	NEW YORK	061					
NYD002066330	AMERICAN THERMOSTAT CO.				EPA	N	
	RTE 23 B						
	SOUTH CAIRO	NY	12482				
	GREENE	039					
	AMERICAN THERMOSTAT CO.			01			
	GREENE	NY					
NYD002069573	AMERICAN VALVE				STS	N	
	170 MANSION ST						
	COXSACKIE	NY	12051				
	GREENE	039					

REFERENCE NO. 19

New York State Department of Environmental Conservation

MEMORANDUM

TO: Regional Haz. Waste Remediation Engineers, Bureau Dirs. & Section Chiefs
FROM: Michael J. O'Toole, Jr., Director, Div. of Hazardous Waste Remediation
SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM: DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS
DATE: JAN 24 1994

Michael J. O'Toole Jr

The cleanup goal of the Department is to restore inactive hazardous waste sites to predisposal conditions, to the extent feasible and authorized by law. However, it is recognized that restoration to predisposal conditions will not always be feasible.

1. INTRODUCTION:

This TAGM provides a basis and procedure to determine soil cleanup levels at individual Federal Superfund, State Superfund, 1986 EQBA Title 3 and Responsible Party (RP) sites, when the Director of the DHWR determines that cleanup of a site to predisposal conditions is not possible or feasible.

The process starts with development of soil cleanup objectives by the Technology Section for the contaminants identified by the Project Managers. The Technology Section uses the procedure described in this TAGM to develop soil cleanup objectives. Attainment of these generic soil cleanup objectives will, at a minimum, eliminate all significant threats to human health and/or the environment posed by the inactive hazardous waste site. Project Managers should use these cleanup objectives in selecting alternatives in the Feasibility Study (FS). Based on the proposed selected remedial technology (outcome of FS), final site specific soil cleanup levels are established in the Record of Decision (ROD) for these sites.

It should be noted that even after soil cleanup levels are established in the ROD, these levels may prove to be unattainable when remedial construction begins. In that event, alternative remedial actions or institutional controls may be necessary to protect the environment.

2. BASIS FOR SOIL CLEANUP OBJECTIVES:

The following alternative bases are used to determine soil cleanup objectives:

(a) Human health based levels that correspond to excess lifetime

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TABLE 4

Recommended Soil Cleanup Objectives (mg/kg or ppm) for Heavy Metals

Contaminants	Protect Water Quality ppm	Eastern USA Background ppm	* CRDL mg/kg or ppm	***** Rec.soil Clnup Objct. (ppm)
Aluminum	N/A	33,000	2.0	SB
Antimony	N/A	N/A	0.6	SB
Arsenic	N/A	3-12 **	0.1	7.5 or SB
Barium	N/A	15-600	2.0	300 or SB
Beryllium	N/A	0-1.75	0.05	0.16(NEAST) or SB
Cadmium	N/A	0.1-1	0.05	1 or SB
Calcium	N/A	130 - 35,000 **	50.0	SB
Chromium	N/A	1.5-40 **	0.1	10 or SB
Cobalt	N/A	2.5-60 **	0.5	30 or SB
Copper	N/A	1-50	0.25	25 or SB
Cyanide	N/A	N/A	0.1	***
Iron	N/A	2,000 - 550,000	1.0	2,000 or SB
Lead	N/A	****	0.03	SB****
Magnesium	N/A	100 - 5,000	50.0	SB
Manganese	N/A	50 - 5,000	0.15	SB
Mercury	N/A	0.001-0.2	0.002	0.1
Nickel	N/A	0.5-25	0.4	13 or SB
Potassium	N/A	8,500 - 43,000 **	50.0	SB
Selenium	N/A	0.1-3.9	0.05	2 or SB
Silver	N/A	N/A	0.1	SB
Sodium	N/A	6,000 - 8,000	50.0	SB
Thallium	N/A	N/A	0.1	SB
Vanadium	N/A	1-300	0.5	150 or SB
Zinc	N/A	9-50	0.2	20 or SB

Note: Some forms of metal salts such as Aluminum Phosphide, Calcium Cyanide, Potassium Cyanide, Copper cyanide, Silver cyanide, Sodium cyanide, Zinc phosphide, Thallium salts, Vanadium pentoxide, and Chromium (VI) compounds are more toxic in nature. Please refer to the USEPA NEASTs database to find cleanup objectives if such metal salts are present in soil.

SB is site background
N/A is not available

* CRDL is contract required detection limit which is approx. 10 times the CRDL for water.
** New York State backgrond
*** Some forms of Cyanide are complex and very stable while other forms are pH dependent and hence are very unstable. Site-specific form(s) of Cyanide should be taken into consideration when establishing soil cleanup objective.
**** Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.
***** Recommended soil cleanup objectives are average background concentrations as reported in a 1984 survey of reference material by E. Carol McGovern, NYSDEC.

REFERENCE NO. 20

federal register

Friday
December 14, 1990

Part II

Environmental Protection Agency

40 CFR Part 300

Hazard Ranking System; [illegible]

02

TABLE 3-6.—HYDRAULIC CONDUCTIVITY OF GEOLOGIC MATERIALS

Type of material	Assigned hydraulic conductivity [a] (cm/sec)
Clay; low permeability till (compact unfractured till); shale; unfractured metamorphic and igneous rocks	10^{-8}
Silt; loesses; silty clays; sediments that are predominantly silts; moderately permeable till (fine-grained, unconsolidated till, or compact till with some fractures); low permeability limestones and dolomites (no karst); low permeability sandstone; low permeability fractured igneous and metamorphic rocks	10^{-6}
Sands; sandy silts; sediments that are predominantly sand; highly permeable till (coarse-grained, unconsolidated or compact and highly fractured); peat; moderately permeable limestones and dolomites (no karst); moderately permeable sandstone; moderately permeable fractured igneous and metamorphic rocks	10^{-4}
Gravel; clean sand; highly permeable fractured igneous and metamorphic rocks; permeable basalt; karst limestones and dolomites	10^{-2}

[a] Do not round to nearest integer.

TABLE 3-7.—TRAVEL TIME FACTOR VALUES [a]

Hydraulic conductivity (cm/sec)	Thickness of lowest hydraulic conductivity layer(s)[b] (feet)			
	Greater than 3 to 5	Greater than 5 to 100	Greater than 100 to 500	Greater than 500
Greater than or equal to 10^{-3}	35	35	35	25
Less than 10^{-3} to 10^{-5}	35	25	15	15
Less than 10^{-5} to 10^{-7}	15	15	5	5
Less than 10^{-7}	5	5	1	1

[a] If depth to aquifer is 10 feet or less or if, for the interval being evaluated, all layers that underlie a portion of the sources at the site are karst, assign a value of 35.

[b] Consider only layers at least 3 feet thick. Do not consider layers or portions of layers within the first 10 feet of the depth to the aquifer.

Determine travel time only at locations within 2 miles of the sources at the site, likelihood of release factor category value for that aquifer. Otherwise, assign the potential

3.2.1.1 *Toxicity.* Assign a toxicity factor value to each hazardous substance as

REFERENCE NO. 21

RECEIVED
OCT 29 1993
NYS - DEC
REGION 3 - NEW PALTZ

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK PHASE II INVESTIGATION

OLD AMENIA LANDFILL

Town of Amenia, Dutchess County, New York
NYSDEC I.D. No. 314006

STATE OF NEW YORK
THOMAS E. PEARE
LIC. No. 057131-1
LICENSED PROFESSIONAL ENGINEER

Report

STATE OF NEW YORK
EDWARD A. MAIKISH
No. 055116
LICENSED PROFESSIONAL ENGINEER

Prepared for

DIVISION OF HAZARDOUS WASTE REMEDIATION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, Commissioner

LMSE-93/0501&576/058

Prepared by

LAWLER, MATUSKY & SKELLY ENGINEERS
Environmental Science & Engineering Consultants
One Blue Hill Plaza
Pearl River, New York 10965

April 1993

CHAPTER 1

EXECUTIVE SUMMARY

The Old Amenia Landfill site is located on the west side of Route 22 in the Town of Amenia, Dutchess County, New York (Figure 1-1). Except for a period between the end of 1968 and April 1971, the town used the 10-acre site as a municipal dump from the late 1940s until 1976. The northern portion of the site, currently owned by Mr. Karl Saliter of Sharon, Connecticut, is occupied by the Sharon Oil & Gas Company fuel storage enclosure, which consists of a number of aboveground storage tanks within a fenced, bermed area (Figure 1-2). Mr. John Segalla of Amenia is the present owner of the southern portion of the site. With the exception of a small helipad and paved access road, the southern portion is a well-graded, maintained, grassy area. Photos 1-4, which depict the site, are oriented to Figure 1-2.

During the period of operation of the site as a landfill, the ownership of the property changed several times. The Town of Amenia rented the property from William and Mary Murphy for disposal of municipal wastes from approximately 1947 until December 1968, when the property was sold to Salvatore (Ben) Surico. The town discontinued dumping at the site and opened an emergency disposal area on the property immediately north of the site.

Industrial wastes were known to be present at the site during the time Mr. Surico operated the landfill, from 1969 until April 1971. Dutchess County Department of Health (DCDOH) inspection records, a local newspaper article, and an aerial photograph of the site dated April 1970 confirm the presence of a large number of 55-gal drums stored in a bermed area at the site. Industrial wastes were reportedly removed from the barrels and transported off-site in tanker trucks; the empty drums were sold or crushed and buried on-site. Local residents, however, noted oil on the surface of the water in the nearby wetlands area and oil-like odors emanating from the site. In addition, DCDOH inspection reports document that industrial wastes were leaking onto the ground surface from barrels stored at the site.

In 1971 the Town of Amenia assumed responsibility for the operation of the landfill when Mr. Surico filed for bankruptcy. The town continued to operate the landfill for the disposal

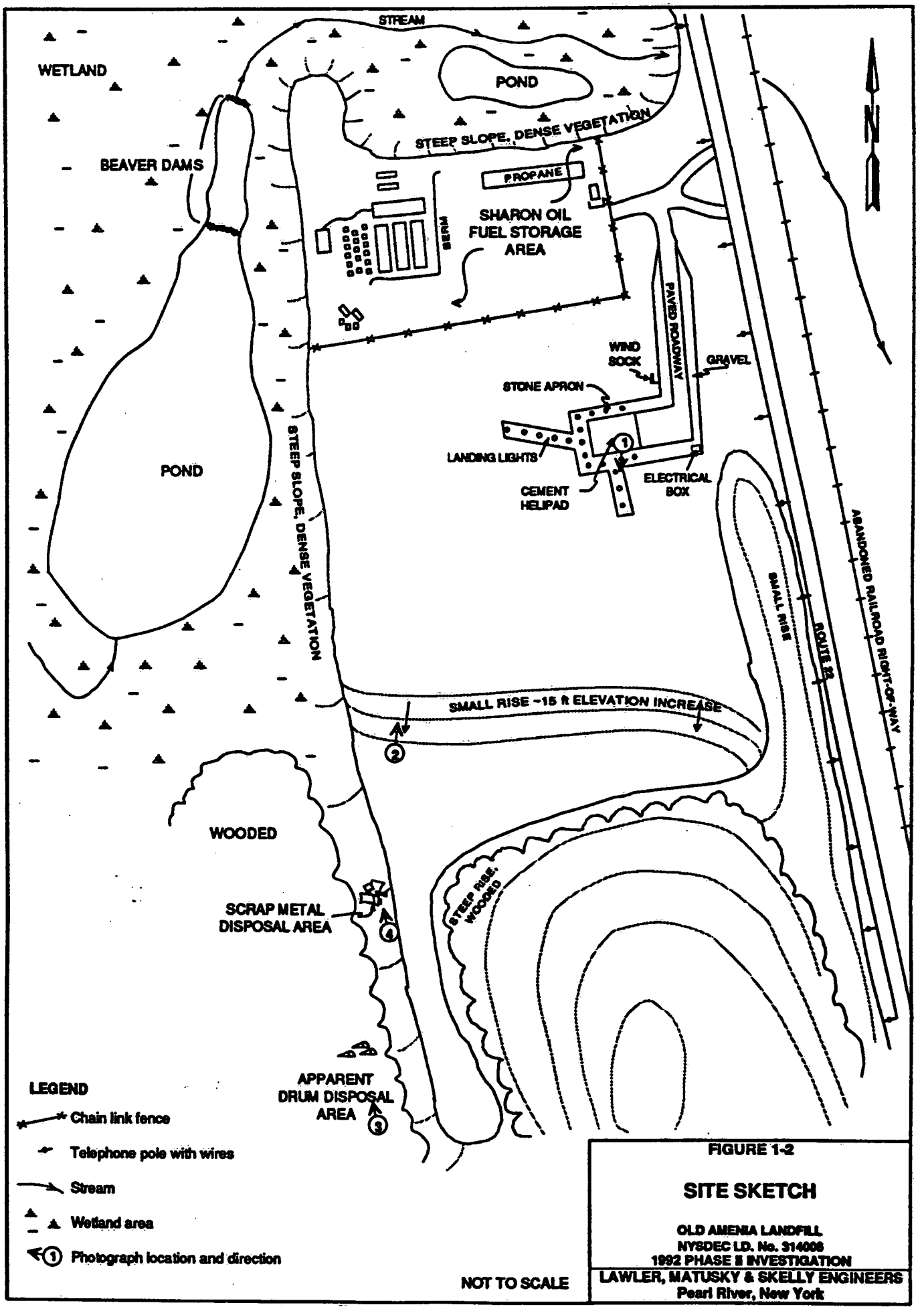

FIGURE 1-2

SITE SKETCH

OLD AMENIA LANDFILL
NYSDEC LD. No. 314008
1992 PHASE II INVESTIGATION

LAWLER, MATUSKY & SKELLY ENGINEERS
Pearl River, New York

of municipal wastes until it was officially closed on 16 April 1976. Closure of the dump involved application of a soil cover of unknown depth and grading of the site.

The landfill was listed with the New York State Department of Environmental Conservation (NYSDEC) as a Reported Hazardous Waste Site in 1980 based on a site inspection that revealed evidence of drums in the southwest corner of the site in an area with no vegetative growth. The U.S. Environmental Protection Agency (EPA) identified the Old Amenia Landfill as a Potential Hazardous Waste Site in 1981. A Phase I investigation in August 1986 concluded that a Phase II investigation was needed to confirm the presence of hazardous wastes at the site and to determine whether any contamination present poses a significant threat to human health or the environment. In 1987 EPA collected a soil sample along the western side of the landfill during a limited field investigation. The sample contained 170 ppm of polychlorinated biphenyls (PCBs) (Aroclor 1248).

Lawler, Matusky & Skelly Engineers (LMS) was retained by NYSDEC to perform the Phase II investigation, which consisted of a geophysical survey, soil gas survey, and sampling and analysis of site soils, surface waters, and sediments. In addition, a literature search and an interview with a local resident familiar with the site history were conducted to obtain any available information on past waste disposal practices at the site.

The geophysical survey located several areas of potentially large concentrations of buried metallic materials. The results correlated well with the soil gas survey data, which identified three areas of high volatile organic compound (VOC) contamination in close proximity to the location of the identified magnetic anomalies. Vinyl chloride concentrations as high as 340,000 $\mu g/m^3$ were detected in soil gas samples obtained from the central site area between the helipad and the Sharon Oil fuel storage enclosure. It is suspected that a relatively large mass of buried metallic materials may exist at this location.

Surface soil samples collected along the western slope of the landfill during the Phase II investigation were analyzed for PCBs using an on-site mobile laboratory. Fifteen of the 20 samples analyzed contained detectable levels of PCBs, with concentrations ranging from 2.3 to 250 mg/kg. The sample with the highest identified PCB concentration was obtained from

As part of the remedial investigation, LMS recommends the following field activities:

- *Soil Sampling*: Additional soil samples should be collected throughout the site to delineate the extent of PCB contamination. In addition, subsurface samples should be collected from soil borings installed at the site to determine whether PCB contamination exists below the surface.

- *Test Trenches*: LMS recommends the installation of approximately five test pits to locate - and immediately remove - any buried drums containing industrial or hazardous wastes. The test trenches should be excavated in areas that showed magnetic anomalies indicative of buried masses of metallic objects and had VOC concentrations in the soil gas samples, as determined during the Phase II investigation.

- *Groundwater Monitoring*: A groundwater monitoring program is recommended to assess the existence and migration of VOC or PCB contamination in the aquifer underlying the site. This program would involve the installation of at least one upgradient and three downgradient monitoring wells to obtain pertinent data on the site stratigraphy, groundwater flow regime, and water quality.

- *Biomonitoring*: LMS recommends a biomonitoring program to determine the extent of bioaccumulation of PCBs in aquatic organisms in the wetlands adjacent to the site. A two-stage program is the most cost-effective approach. Appropriate species for monitoring would be identified in the first stage, and an adequate number of organisms to provide statistically significant results for evaluating the impact of PCB contamination on aquatic species would be obtained and analyzed in the second stage.

CHAPTER 2

OBJECTIVES

Lawler, Matusky & Skelly Engineers (LMS), under contract to the New York State Department of Environmental Conservation (NYSDEC), conducted a Phase II investigation of the Old Amenia Landfill site located in the Town of Amenia, Dutchess County, New York. The investigation was targeted to (1) confirm the presence of hazardous wastes at the site; (2) adequately assess whether contaminants from the site have been released to the surrounding environment; (3) determine whether there is a significant threat to the environment or public health: (4) prepare final Hazard Ranking System (HRS) scores if directed to do so by NYSDEC; and (5) make recommendations for any appropriate future actions at the site.

Specific objectives of this Phase II investigation were to:

- Conduct a literature search to obtain any available information on past waste disposal practices at the site.
- Conduct a geophysics survey, a soil gas survey, and environmental sampling and analysis to identify and evaluate the presence, concentration, and nature of contamination and determine, to the extent limited by the scope of work, its release (if any) to the environment.
- Using information compiled in the study, determine the significance of any contaminant release and the degree to which it may threaten surrounding areas.
- Prepare a report documenting all findings, with a recommendation to classify or delist the site, if appropriate, or to proceed with additional site investigative work.

The Old Amenia Landfill Phase II investigation is discussed in detail in Chapters 3 and 4. This report includes the following appendices:

A - Data Usability Summary

B - Pertinent Files or Records

CHAPTER 3

DESCRIPTION OF PHASE II INVESTIGATION

3.1 LITERATURE REVIEW

Before initiating field activities, LMS reviewed relevant files on the Old Amenia Landfill at the Dutchess County Department of Health (DCDOH), the New York State Department of Health (NYSDOH), the NYSDEC Region 3 and Central offices, and EPA Region II offices. In addition, a local resident familiar with the history of the site was interviewed (Ref. 1). The literature review was performed to update the site history information presented in the Phase I report and to reevaluate it for completeness and accuracy. Site history details obtained in the literature review are presented in Section 4.1.

3.2 SITE RECONNAISSANCE

LMS personnel conducted a site reconnaissance on 9 October 1991 (Ref. 2). The objectives of the site visit were to confirm site conditions as described in the approved work plan, determine ease of equipment access, and perform air monitoring. Potential soil gas sampling and test trench locations were also identified during the reconnaissance. Results of the site reconnaissance are discussed in Section 4.4.1.

3.3 GEOPHYSICS SURVEY

A geophysics survey was performed to locate the best areas for test pit excavation as recommended in the work plan for the Old Amenia Landfill site. Results of the survey were reviewed in conjunction with the soil gas survey results to determine whether the two surveys agreed on the locations of potential areas of subsurface contamination.

Two methods of geophysical investigation were used at the site: a surface magnetometry survey and resistivity measurements. The magnetometer accurately records the total magnetic field at many individual locations. Thus, magnetometry surveys are most applicable for

are then used to assess the nature of subsurface conditions at the site. Limits of fill areas, depth to water table, and generalized stratigraphic layering can be determined by using vertical electrical soundings (VES). Results of the electrical resistivity survey are also included in Section 4.4.2.

3.4 SOIL GAS SURVEY

A soil gas survey was conducted at the Old Amenia Landfill site between 5 and 7 November 1991. The 24 soil gas points installed at the locations shown on Figure 3-1 were concentrated in areas identified during the site reconnaissance as potential locations for test trenches. Twelve points were installed south of the Sharon Oil fuel tank enclosure in the central landfill area; two points, immediately inside the fuel storage area fence; one point, in the peninsula north of the Sharon Oil enclosure; five points, around the unvegetated, slumped area on the southwest side of the central portion of the site; two points, at the northern end of the access road leading to the reported drum disposal area; and two points, near the drum disposal area in the southwest corner of the site. Soil gas samples were analyzed on-site for volatile organic compounds (VOCs) by Tetra•K Testing of Westfield, Massachusetts, using a mobile laboratory (Ref. 3).

To obtain the best results, soil gas points were installed 3 to 6 ft below grade to prevent groundwater from being introduced into the sampling system. A slam bar was used initially to drive the guide hole. Upon removal, the slam bar was inspected for moisture to determine whether the saturated zone had been penetrated. If the slam bar met refusal, a new hole was made 1 to 2 ft away.

The steel soil gas point was then assembled with Teflon tubing, inserted into the original hole, and driven to the desired depth. The hammer and rod assembly was subsequently removed from the hole, leaving the point and attached tubing in place. Sand was used to backfill around the tubing up to 1 ft above the point to provide a capture area for soil gases. Bentonite powder and water were then used to backfill the remainder of the hole, thus creating a seal above the point. A clay seal was installed around the tubing at grade level to prevent any inflow of ambient air during purging and sampling of the hole. Finally, a clay

plug was inserted at the end of the tube to prevent debris from entering the tubing prior to sampling. (The construction details of a typical soil gas point are shown in Figure 3-2.)

Measured soil gas samples were obtained using a portable pumping system. Samples can be obtained at any time after installation of a point except immediately after precipitation. Sampling is typically delayed for 24 hrs following a rainstorm to allow the saturated upper soil layer to reach equilibrium.

3.5 SAMPLING

3.5.1 Surface Soil Sampling

Surface soil sampling was conducted at the Old Amenia Landfill site on 7 and 8 November 1991 to confirm and quantify any PCB contamination present. Samples were analyzed in the on-site mobile laboratory so that if "hot spots" were found, additional soil samples could be collected from those locations for analysis at a fixed laboratory. Twenty surface soil samples were collected from a depth of 0-6 in. at the locations shown on Figure 3-3. Eight of these samples were taken from locations corresponding to sampling locations NY66-S1, -S2, -S3, and -S4 selected by NUS Corporation (under contract to EPA) during the 1987 field investigation of the site (Ref. 4). Samples were collected every 50 ft (total of 10) at the base of the western slope of the site beginning at the northern end of the Sharon Oil enclosure fence line. The remaining two samples were collected at the locations of highest observed PCB concentrations based on the on-site mobile laboratory analyses.

All soil samples were analyzed on-site for PCBs using the mobile laboratory. In addition, the 10 (of 20) soil samples with the highest levels of PCB contamination as determined by on-site analyses were analyzed for target compound list (TCL) VOCs.

On 11 November 1991 four additional surface soil samples were collected for analysis at a fixed analytical laboratory. Two samples were collected from the locations with the highest field-measured PCB concentrations (SS-17 and -18, as shown on Figure 3-3). One sample was collected from the unvegetated bare spot in the southwestern portion of the central site area

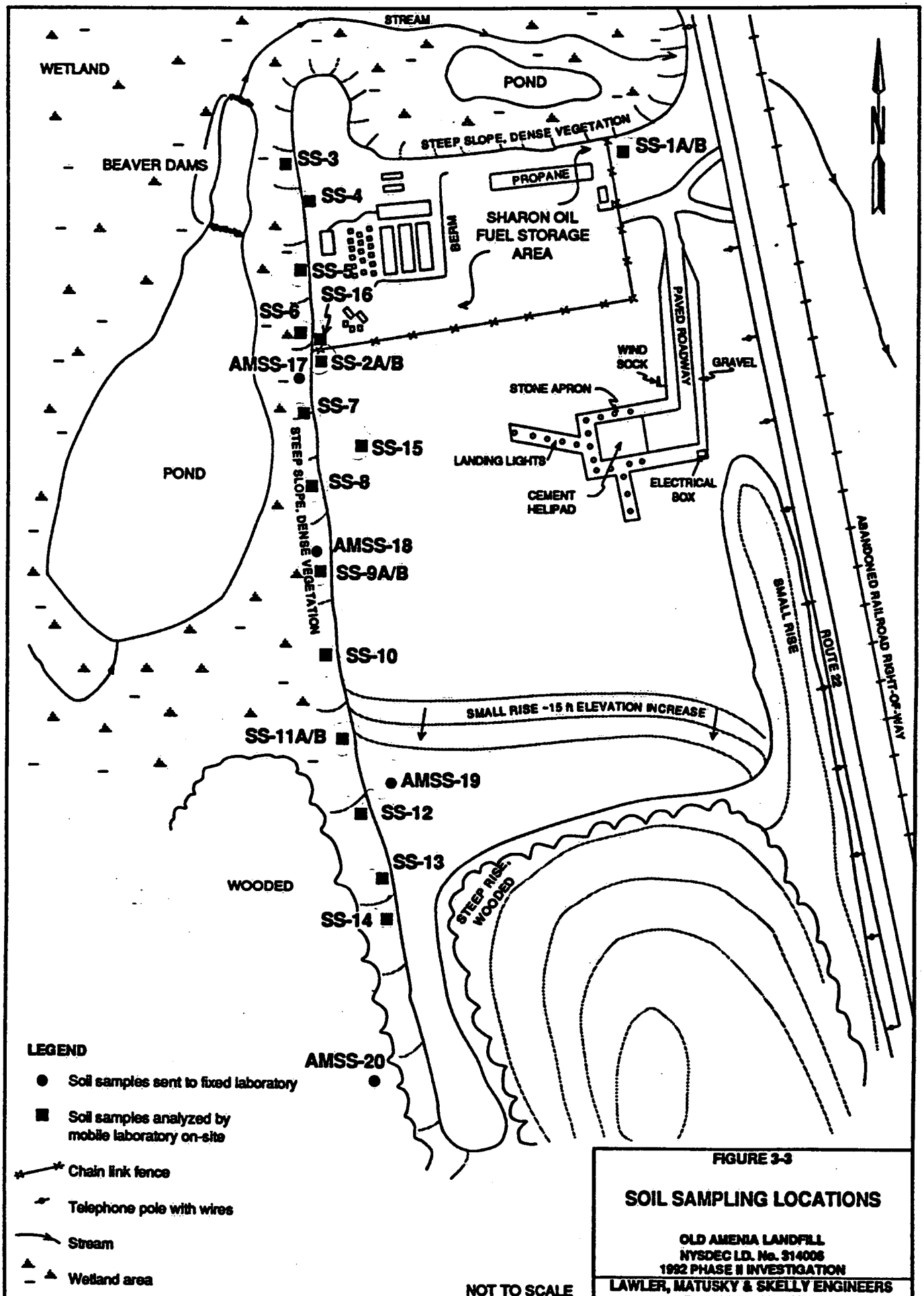

FIGURE 3-3

SOIL SAMPLING LOCATIONS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

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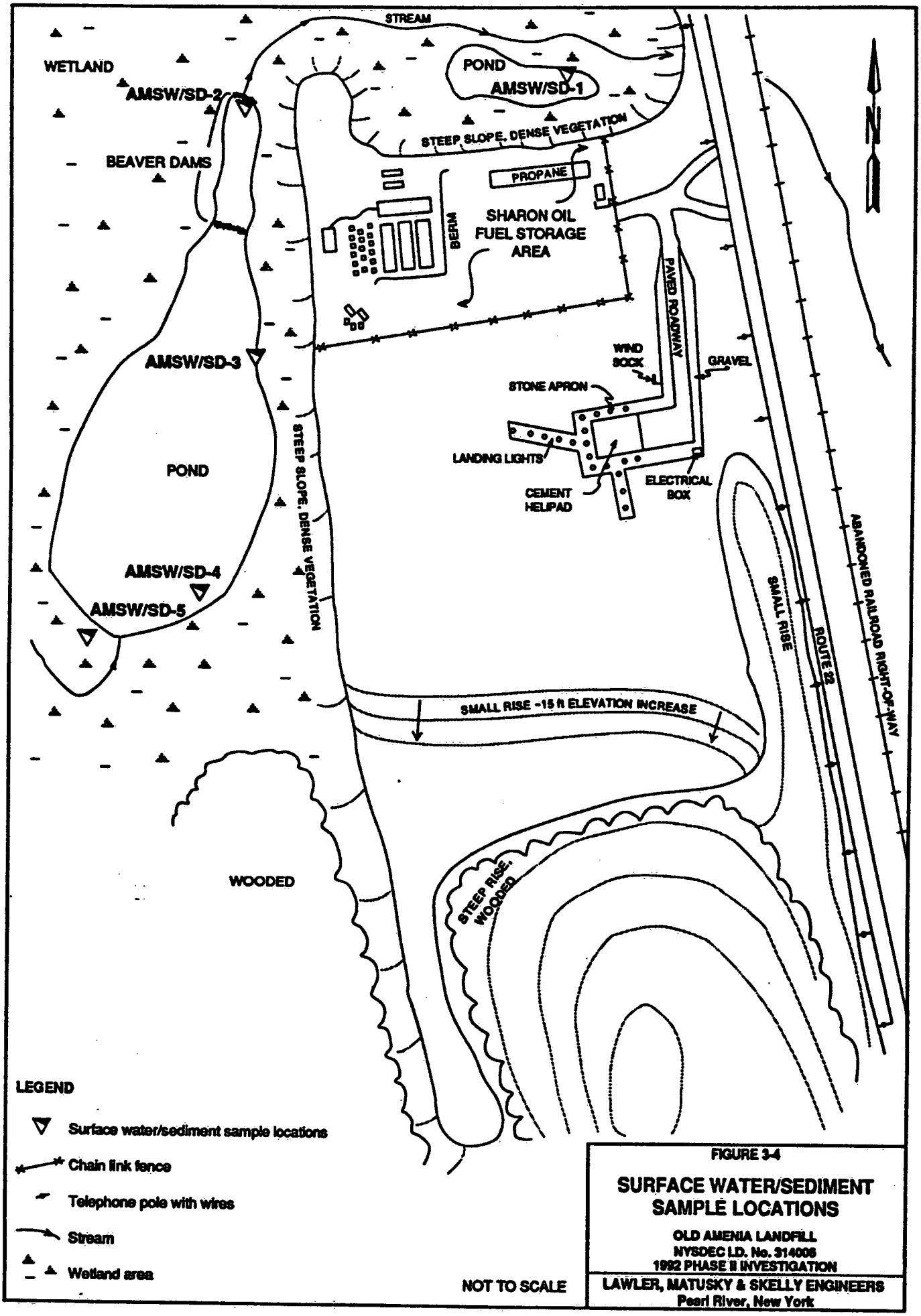

FIGURE 3-4

SURFACE WATER/SEDIMENT SAMPLE LOCATIONS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

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pesticide fractions. Identical sampling protocols were used to collect the second set of surface water samples, which were submitted to Nytest for analysis.

3.6 AIR MONITORING

During the site reconnaissance visit, an air monitoring program was conducted using an HNU photoionization detector (PID), an OVA flame ionization detector (FID), and an MSA combustible gas indicator (CGI) as discussed in the site inspection report (Ref. 2). Air monitoring, conducted in accordance with the NYSDEC-approved work plan, consisted of traverses of the site within the property boundaries. The survey objectives were to determine whether any previously unidentified sources of air contamination were present at the site and to confirm that the proposed level of personnel respiratory protection was appropriate.

Air monitoring was performed at ground level and within the breathing zone (4 to 5 ft above grade) (Ref. 2). This information was used to prepare the final site-specific health and safety plan (HASP) followed by LMS and subcontractor personnel during field investigation activities (Ref. 6). Based on site conditions, Level D personal protective equipment was specified for field activities. As a contingency safety measure, Level C equipment, including full-face, air-purifying respirators, was available at the site at all times.

CHAPTER 4

SITE ASSESSMENT

4.1 SITE HISTORY

The Old Amenia Landfill site is an inactive municipal dump located on the west side of Route 22 in the Town of Amenia, Dutchess County, New York. Operation of the site as a dump began in the late 1940s. A Dutchess County Department of Health (DCDOH) inspection report dated 24 October 1947 identified the site as a municipal dump and noted unsatisfactory conditions. The property was owned at that time by William and Mary Murphy, who purchased a 22-acre site, which includes the 10-acre parcel under investigation, from Anna Kaplan Paley in May 1945.

During the Murphys' ownership of the land, the town rented the property and operated the dump. A 26 April 1963 DCDOH inspection report states that the dump was jointly operated by the highway departments of Amenia and the Town of Sharon (Connecticut); users of the site were listed as the Town of Sharon and the Sharon Hospital. Additional site users were listed in an October 1966 DCDOH inspection report as the Town of Amenia, residents of the Town of Sharon, Tri-Wall Corporation, and two unnamed commercial haulers.

Operation of the landfill continued until December 1968, when William Murphy sold the 22-acre site to Salvatore (Ben) Surico. At this time the Town of Amenia discontinued dumping at the site and opened an emergency disposal area immediately north of the site on property owned by Walt and Eleanor Culver. This area (not included in this Phase II investigation) was operated for approximately one year, starting in January 1969.

In late 1968 Mr. Surico applied to Dutchess County and the Town of Amenia for permits to operate a landfill on the former Murphy property. The county health commissioner granted permission for the site to be used for the disposal of refuse in January 1969; the town, however, refused. Later in the year the town was forced to grant the permit as the result of an Article 78 proceeding.

Mr. Surico operated the landfill from 1969 until approximately April 1971. The landfill permit allowed for the disposal of household refuse only. Gerald Wilcox, a local resident interviewed as part of the Phase II investigation, indicated that it was common knowledge in Amenia at that time that industrial wastes were present at the site (Ref. 1). An article in the *Harlem Valley Times* dated 25 June 1970 states that at a Town Board meeting a local resident asked whether industrial wastes were being dumped at the Amenia Landfill site (Ref. 7). A town supervisor responded that cutting oil was being handled at the site in an area enclosed by a 6-ft embankment. The cutting oil, from manufacturing plants in Connecticut and Massachusetts, was held at the landfill; after a full tankerload was collected, it was trucked to New Jersey for resale. No oil or waste products were reported to have been disposed of at the landfill; however, oil was routinely applied at the site to keep the dust down. The resident noted that oil had been seen floating in the adjacent stream and that there had been reports of odors.

A DCDOH internal memoradum dated July 1970 notes the presence of drummed industrial wastes at the site (Ref. 8). An inspection report dated 23 October 1970 reported the spillage and accumulation of liquid industrial wastes on the ground, and a letter was subsequently sent to Salvatore Surico by DCDOH requesting that this condition be rectified (Ref. 9). A 26 October 1970 DCDOH memorandum reported the presence of several hundred barrels of industrial wastes at the site; some had been punctured and were discharging chemicals to the ground surface (Ref. 10). The report states that no industrial waste was observed in or near the surface waters at the site. The DCDOH inspector noted the following names of companies and contents listed on the barrels:

- Remington Rand Electric Shaving Division
  60 Main Street
  Bridgeport, Connecticut
  Contents: Crystoton [Crystolon?]

- U.S. Polymeric
  Contents: P.F. Etchant - Ferris [ferrous] chloride

- ALRAC Division Radiation Research
  649 Howe Street (P.O. Box 2109)
  Stamford, Connecticut
  Contents: 2 Pyorrolidone [2-pyrrolidone]

- The Hubbard Hall Chemical Co.
  Waterbury, Connecticut
  Contents: Mineral Spirits

The inspection report also notes that the chemicals were reportedly pumped out of the barrels for shipment to New Jersey. Undamaged empty barrels were sold; damaged barrels were crushed and buried on-site.

An aerial photograph dated 12 April 1970 obtained from the Dutchess County Real Property Tax Office shows approximately 200 drums lined up in a bermed area of the site (Plate). According to Mr. Wilcox, the bermed area was located behind a small ridge that obscured any view of the drums from passersby on Route 22. Mr. Wilcox stated that it was believed that solvents were being dumped into a pit located at the rear of the site and that the wastes being disposed of at the Old Amenia Landfill were similar to those disposed of at the Sarney site (Ref. 11).

The Sarney Farm is a National Priorities List (NPL) site consisting of a 5-acre former landfill located on Benson Hill Road in the Town of Amenia, approximately 5 miles south of the Old Amenia Landfill site. A Phase II investigation of the Sarney site was completed in June 1985, and a Record of Decision was issued by EPA in September 1990. Buried drums containing liquid solvents were found at the Sarney site. Wastes reported to be disposed of on-site included 55-gal drums of ethylene dichloride, cleaning solvents, inks, acids, water-based glues, and machine oils. Contaminants identified in the soils at this site included high concentrations of toluene, 2-butanone, 2-methyl-2-pentanone, trichloroethene, bis(2-ethylhexyl) phthalate, di-n-butylphthalate, naphthalene, and 2-methyl-naphthalene. Groundwater contaminants detected included 1,2-dichloroethane, vinyl chloride, bis(2-ethylhexyl)phthalate, and trace amounts of other organic chemicals. No pesticides or PCBs were identified in any contaminated media at the Sarney site.

In April 1971 a nearby resident filed a complaint with NYSDEC concerning odors similar to the smell of old oil emanating from the Old Amenia Landfill (Ref. 12). However, a DCDOH memorandum dated 27 April 1971 reported that the industrial waste storage area at the landfill was being dismantled and that the barrels were being removed (Ref. 13). In June of

1971, Mr. Surico transferred the property to the Tri-Town Landfill Corporation (Tri-Town), of which he was president. In August of 1971, 2 acres of the total 22-acre dump site were sold by Tri-Town to Thomas C. Romano, Peter J. Brevi, and Archie Deane, Jr., all of Amenia. This 2-acre portion of the site, currently owned by Karl Saliter of Sharon, Connecticut, is used by Sharon Oil for fuel storage; several aboveground tanks are located in this area in a bermed and fenced area. Mr. Saliter and his wife are the owners of the Sharon Oil & Gas Company.

Mr. Saliter stated that in October 1982, when the fuel oil storage area on the northern portion of the site was being constructed, he encountered approximately 10 ft of garbage and fill material during excavation. He also observed, on the northern bank of the site, three or four drums leaking a substance he believed to be fuel oil (Ref. 14).

A November 1971 DCDOH inspection report for the landfill states that Mr. Surico was in bankruptcy and that the Town of Amenia had assumed responsibility for operating the landfill. The town continued to operate the landfill until it was officially closed on 16 April 1976, although the property was transferred several times during this period. In July 1972 the 20-acre site formerly owned by Tri-Town was sold to Alistair Martin by the bankruptcy court. The property was then transferred by Mr. Martin to his wife, Edith Park Martin, in September 1972, then to the Curtiss-Wright Corporation by Mrs. Martin in June 1973.

Throughout the remaining period of operation of the landfill by the Town of Amenia (1971 to 1976), numerous violations were documented by DCDOH inspectors, including uncovered refuse, rodents, blowing papers, improper landfilling techniques (e.g., improper slope on completed areas), and unauthorized burning. In May 1974 the Curtiss-Wright Corporation (then owner of the property) was cited by the county for allowing the Town of Amenia to operate the dump in violation of NYSDEC regulations. A DCDOH inspection report dated February 1972 indicated that a fire had occurred at the site as a result of dumping of chemicals from the Sharon Hospital (Ref. 15). In July, September, and October 1973 DCDOH inspections reported the presence of barrels of liquid wastes at the rear of the site. A February 1974 DCDOH report indicated that the barrels had reportedly been removed (Ref. 15).

The town ceased operation of the landfill in 1976 at about the time that the Harlem Valley Landfill opened 0.25 mile southwest of the site. Closure of the dump involved application of a soil cover of unknown depth to the main fill area by a local contractor hired by the Town of Amenia. Following closure, the property remained under the ownership of the Curtiss-Wright Corporation until December 1982, when it was transferred to Metal Improvements Co., a wholly owned subsidiary of Curtiss-Wright. The property was then sold to the current owner, John Segalla, of Amenia, in July 1986.

The landfill was listed with NYSDEC as a Reported Hazardous Waste Site in April 1980. A 13 November 1979 inspection revealed evidence of drums in the southwest corner of the site in an area with no vegetative growth. A NYSDEC internal memorandum dated 14 November 1985 stated that an unknown number of 55-gal drums were stored at the site at the time of the landfill's closure and that some of the drums were later removed. No drums were observed during the 1986 Phase I site investigation. A NYSDEC/NYSDOH inspection in September 1990 did not reveal any drums at the site.

EPA identified the landfill as a Potential Hazardous Waste Site in 1981 and conducted a site inspection and limited field investigation in February 1987. Groundwater, surface water, soil, and sediment samples were collected by NUS Corporation. The analytical results of this investigation are included in Appendix B (Ref. 4). Analysis of a soil sample from the west side of the landfill, approximately 6 ft from the end of the fence that surrounds the Sharon Oil tank storage area, detected a PCB (Aroclor 1248) concentration of 170 ppm. In addition, phthalate compounds were identified in several of the soil, surface water, and sediment samples. The 1986 Phase I investigation concluded that a Phase II investigation was needed to determine the existence and extent of hazardous waste contamination at the site.

4.2 SITE TOPOGRAPHY

The Old Amenia Landfill site is approximately 10 acres in size. The former landfill area is well graded and relatively flat. The site is vegetated with grass and slopes to the north and west. The northern portion of the site is occupied by the Sharon Oil fuel storage enclosure.

The oil storage tanks are contained within a fenced, bermed area. A helipad in the center of the site is reached by a small paved road. Access to the site is unrestricted.

The site is adjacent to a wetland through which runs a permanent stream (an unnamed tributary of Wassaic Creek). The western and northern sides of the former landfill area are steeply sloped, dropping approximately 20 to 40 ft down to the wetland, and densely vegetated with bushes and trees. The southern portion of the site slopes gently upward to the top of a small rise, then climbs more steeply to the top of a densely wooded hill. A cleared access road (unpaved) runs from the top of the rise at the southern end of the site along the western edge of the wooded hill.

Two lakes upgradient (i.e., 20 ft higher in elevation) of the site are located approximately 1500 ft to the west. Both discharge to the permanent stream running through the wetland/pond area adjacent to the site. The nearest residence is approximately 1350 ft to the west. The nearest commercial building is about 2 miles northeast of the site. There are no national or state parks or forests within 2 miles.

4.3 SITE HYDROGEOLOGY

The site is directly underlain by glacial outwash sand and gravel deposits that are confined to the valley floor and are of limited areal extent. Approximately 1 mile north of the site, the sediments are at least 70 ft thick and comprise 28 ft of water-bearing gravel overlain by 42 ft of clay with a gravel lens (Ref. 16). There are no site-specific data to confirm the presence of this thick clay, however. The unconsolidated deposits that blanket the adjacent hillsides are composed of glacial till.

The glacial sediments are underlain by marble bedrock of the Cambrian-Ordovician Age Stockbridge Formation. There are several thrust faults related to the Taconic Orogeny within 1 to 2 miles of the site. The bedrock is present at or within 3 ft of the ground surface at several locations throughout the valley, including the hills north and south of the site (Ref. 17).

Both the glacial sediments and marble bedrock (designated as Aquifer No. 74 in Ref. 17) have been developed for domestic (rural area) and public (Town of Amenia) water supplies and are considered to constitute the aquifer of concern. The glacial sediment portion of the aquifer of includes the sand and gravel deposits that are bounded by the adjacent glacial till-covered mountains (Ref. 17). Based on the available literature, hydraulic connection between these two general aquifers cannot be confirmed. However, because bedrock is reportedly within 3 ft of the ground surface in the immediate vicinity of the site, both the bedrock aquifer and the glacial sediment aquifer may be affected by conditions at the site.

4.4 PHASE II RESULTS

4.4.1 Site Inspection

The results of the site inspection conducted on 9 October 1991 indicated that the vegetative cover over the main landfill area is well maintained (Ref. 2). Fill material, e.g., broken glass and rubber, was evident in only a few areas. A number of small bare spots were observed on the southern half of the site. Three slumped areas were seen along the western edge of the landfill and in the center of the site near the helipad. The vegetation adjacent to the Sharon Oil enclosure was stressed, and there was a small patch of standing water. Light leachate staining was noted on the soil in an area located in the southeastern corner of the site.

A small ditch on the western slope of the landfill near the end of the Sharon Oil enclosure fence contained exposed fill material, several rusted (empty) drums, a tire, and several brown bottles. A similar ditch with fill material and rubbish was also observed farther to the south on the western slope. An apparent scrap metal disposal area on the western slope near the beginning of the access road to the drum disposal area contained a topless empty drum; several other drums protruded from the ground. Other scrap metal, e.g., old appliances, was also piled in this area.

An apparent drum disposal area was located in the wooded area west of the access road near the southern end of the road. The ground surface in this area was hummocky, and 10 to 12 drums protruded from the ground. The drums did not appear to be crushed.

4.4.2 Geophysics Data

The results of the magnetometry survey conducted at the site showed a varied pattern of magnetic signatures (Ref. 18). Two areas exhibited relatively stable magnetic patterns, indicating that the fill materials do not extend into these areas. The first area was located at the northwestern corner of the site, north of the Sharon Oil fuel storage enclosure; the second area, at the southern end of the landfill along the base of the tree-covered hill. Several outcrops were noted in this area and field measurements ranged between 53,000 and 55,000 gammas, indicating a relatively uniform subsurface material at this location. It is believed that the fill does not extend into or beyond this area.

Several zones within the confines of the landfill exhibited a pattern consisting of a low anomaly to the north with a corresponding high to the south (Figure 4-1). The most prominent zone, located between the Sharon Oil enclosure and the helipad, had a relatively high magnetic field strength trending in an east-west direction across the site. A large area protrudes to the south along this anomaly near the western side. Because no measurements were taken on the Sharon Oil property, no correspondingly low anomaly could be associated with this area. The fencing and reinforcing rods within the concrete of the helipad could cause these magnetic variations; however, the high intensity of the data indicates a nearly linear east-west pattern approximately 360 ft long and 30 to 40 ft wide. Features of this type are generally more indicative of larger-scale disturbances, such as trenches, pipelines, or other buried metallic masses.

A second anomaly oriented in an east-west direction was recorded at the grade change in the southern portion of the central site area. This appears to be a lift of fill or cover material with an approximate 15-ft difference in elevation. Corresponding high and low anomalies were found on either side of this sloped area. These anomalies trended in an east-west direction across the width of the site.

A third area with a characteristic pattern of opposing anomalies was found along the base of the tree-covered hill at the southern end of the site. Although the strength and variation of the magnetic readings are characteristic of a magnetic structure or object, it is believed that

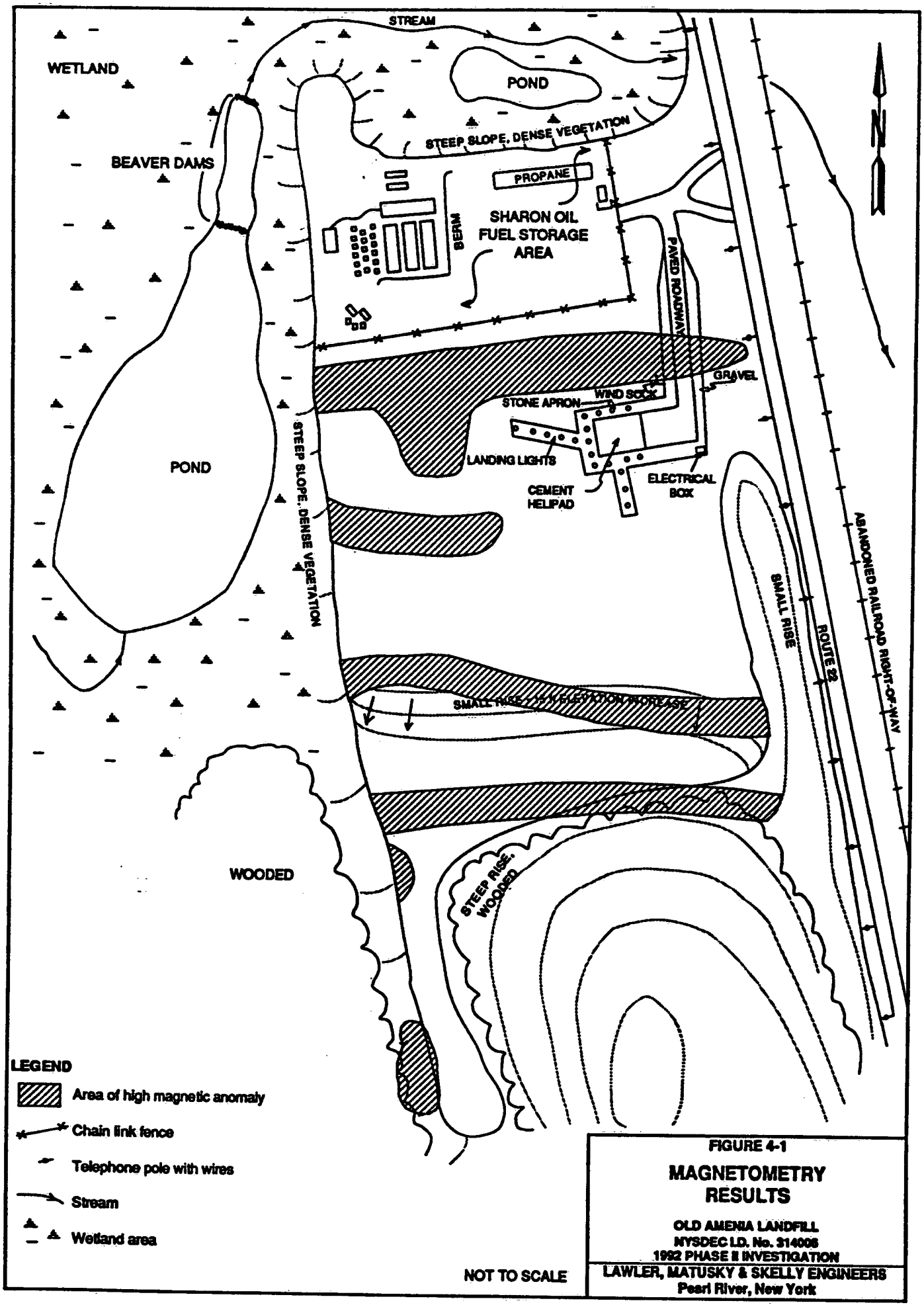

FIGURE 4-1

MAGNETOMETRY RESULTS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

LAWLER, MATUSKY & SKELLY ENGINEERS
Pearl River, New York

this pattern indicates the beginning of the fill zone. As stated previously, a very stable magnetic area believed to be associated with the presence of bedrock in this area was identified immediately south of this zone.

Two smaller areas had more localized signatures, indicating the presence of magnetic material. One area was located along the western side of the landfill at the beginning of the access road leading to the southern end of the landfill. This area was identified during the site reconnaissance as the apparent scrap metal depository area. Several car bodies, empty tanks, and drums are exposed at the edge of the fill area in this location. The concentration of metallic material is believed to be localized, as the contour interval from the magnetic survey is very steep and drops rapidly a short distance eastward. The second area, located along the access road near its southern end, was identified during the site inspection as the apparent drum disposal area. A significant number of partially exposed 55-gal drums were contained in the soil. No drums protruded from the several other mounds in the soil in this area.

Vertical electrical soundings (VES) were taken at five locations across the surface of the landfill (Table 4-1). VES 1 and VES 5 were taken along the eastern side of the landfill. VES 1 was located along the south side of the helipad; VES 5 was taken 200 ft farther south atop the elevated area. The results indicated the presence of three identifiable layers of comparable thicknesses in each location. The first two layers consisted of fill less than 10 ft thick with a layer of soil in between. The third layer was between 13 and 15 ft thick at both of the sounding locations. The dramatic increase in the resistivity values at the two sounding locations (three to five orders of magnitude) is believed to be caused by the bedrock surface. Outcrops were noted near VES 5, indicating that bedrock may be found at shallow depths in this area.

Sounding locations VES 2 and VES 4 were located in the central and western portions, respectively, of the landfill area south of the Sharon Oil fuel storage enclosure. These locations also consisted of three layers. Resistivity values of the materials at each sounding location decreased with depth. The thickness of the first identified layer was between 2.7 and 5.8 ft, which may be indicative of dry fill material or areas where less moisture is present in the upper zones. The second layer was more extensive and showed a marked decrease in

TABLE 4-1

GEOPHYSICAL RESULTS - VERTICAL ELECTRICAL SOUNDINGS

Old Amenia Landfill NYSDEC I.D. No. 314006

VES No.	LAYER	THICKNESS (ft)	APPARENT RESISTIVITY (ohm-m)
1	1 (surface)	6.1	8.12
	2	8.7	22.7
	3	-	5.6×10^3
2	1 (surface)	2.7	152
	2	22.8	18.4
	3	-	8.9
3	1 (surface)	9.0	55.5
	2	11.3	48.7
	3	-	15.2
4	1 (surface)	5.8	74.1
	2	38.0	17.8
	3	-	28.6
5	1 (surface)	8.6	22.6
	2	4.4	7.5
	3	-	1.81×10^5

resistivity at both locations. Thicknesses ranged between 22.8 and 38 ft for the second layer. This interval is believed to be composed of fill materials possibly moistened or saturated with conductive leachate. The third layer produced even lower resistivity values and had no identifiable maximum depth. There was nothing to distinguish the bottom of the fill area interface with unconsolidated materials or bedrock. The lower interval of the third layer, although difficult to determine, may be the lower limit of the fill materials at the site.

Although bedrock generally has greater resistivity (as encountered at sounding locations VES 1 and VES 5), the interface between fill and clay would be difficult to discern. Also, if unconsolidated materials beneath the fill are partially or fully saturated with low-conductivity leachate, resistivity values would decrease. The data indicate that this condition may exist at sounding locations VES 2 and VES 4.

VES 3 was located north of the Sharon Oil storage facility in the wooded peninsula area. Although the VES results indicated a three-layer system, the apparent resistivity measurements were similar for all layers. The upper layer was 9 ft thick and the second layer was 11.3 ft thick. The overall difference in resistivity between the two layers was less than 10 ohm-m. The decrease in resistivity may be a result of encountering unconsolidated materials with increasing moisture content.

4.4.3 Soil Gas Data

Soil gas points were installed throughout the site from the peninsula north of the Sharon Oil fuel storage area to the southernmost portion of the site along the access road leading to the drum disposal area. The sampling procedures employed for the soil gas survey are described in Section 3.4. The survey results generally indicate that VOCs were present at varying concentrations in the soil gas at a number of locations (Ref. 3). Results of the survey are summarized in Table 4-2 and areas of identified volatile organic contamination are shown in Figure 4-2.

The greatest concentration of contaminants was detected in samples obtained from the northeastern sector of the site in the area between the helipad and the Sharon Oil enclosure.

TABLE 4-2

SOIL GAS DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	SG-1	SG-2	SG-3	SG-4	SG-5	SG-6	SG-7	SG-8	SG-9	SG-10	SG-11	SG-12
VOLATILE ORGANICS (µg/m³)												
Vinyl chloride	8,400	ND	ND	ND	ND	ND	*	3,100	ND	ND	ND	ND
Benzene	1,500	4,800	ND	ND	ND	300	*	4,900	ND	5,600	2,200	ND
PCE	27,000	1,300	ND	ND	ND	ND	*	ND	ND	ND	ND	ND
Toluene	BDL	33,000	ND	ND	ND	1,400	*	3,300	5,400	15,000	3,700	2,000
Ethylbenzene	20,000	12,000	ND	ND	ND	6,700	*	7,900	ND	7,600	27,000	ND
m-Xylene	71,000	18,000	ND	ND	ND	11,000	*	15,000	ND	7,600	19,000	ND
o,p-Xylene	41,000	15,000	ND	ND	ND	7,600	*	19,000	ND	6,200	23,000	ND
Methylene chloride	ND	ND	ND	ND	ND	ND	*	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	*	ND	ND	ND	ND	ND
TCE	ND	ND	ND	ND	ND	ND	*	ND	ND	ND	ND	ND
cis/trans-1,2-Dichloroethe	1,000	ND	ND	ND	ND	ND	*	ND	ND	ND	ND	ND

PARAMETER	SG-13	SG-14	SG-15	SG-16	SG-17	SG-18	SG-19	SG-20	SG-21	SG-22	SG-23	SG-24
VOLATILE ORGANICS (µg/m³)												
Vinyl chloride	ND	340,000	6,000	ND	ND	1,700	17,000	ND	6,600	12,000	28,000	21,000
Benzene	ND	38,000	9,700	ND	ND	8,900	33,000	ND	700	4,200	30,000	2,300
PCE	ND	79,000	ND	ND	ND	ND	ND	ND	ND	13,000	ND	ND
Toluene	1,300	1,700,000	8,800	1,600	1,000	5,300	26,000	400	1,200	3,500	25,000	2,100
Ethylbenzene	ND	560,000	11,000	ND	ND	46,000	21,000	ND	2,600	16,000	35,000	ND
m-Xylene	ND	1,100,000	16,000	ND	ND	72,000	36,000	ND	6,100	12,000	68,000	ND
o,p-Xylene	ND	730,000	17,000	ND	ND	55,000	42,000	ND	ND	20,000	46,000	ND
Methylene chloride	ND	6,300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	14,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCE	ND	170,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis/trans-1,2-Dichloroethe	ND	440,000	ND	ND	ND	ND	67,000	ND	ND	8,500	ND	2,500
1,1-Dichloroethene	ND	3,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	5,700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	1,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

* - Not run, water encountered; no sample was obtained.
ND - Not detected at analytical detection limit (Ref. 3).
BD - Below detection limit

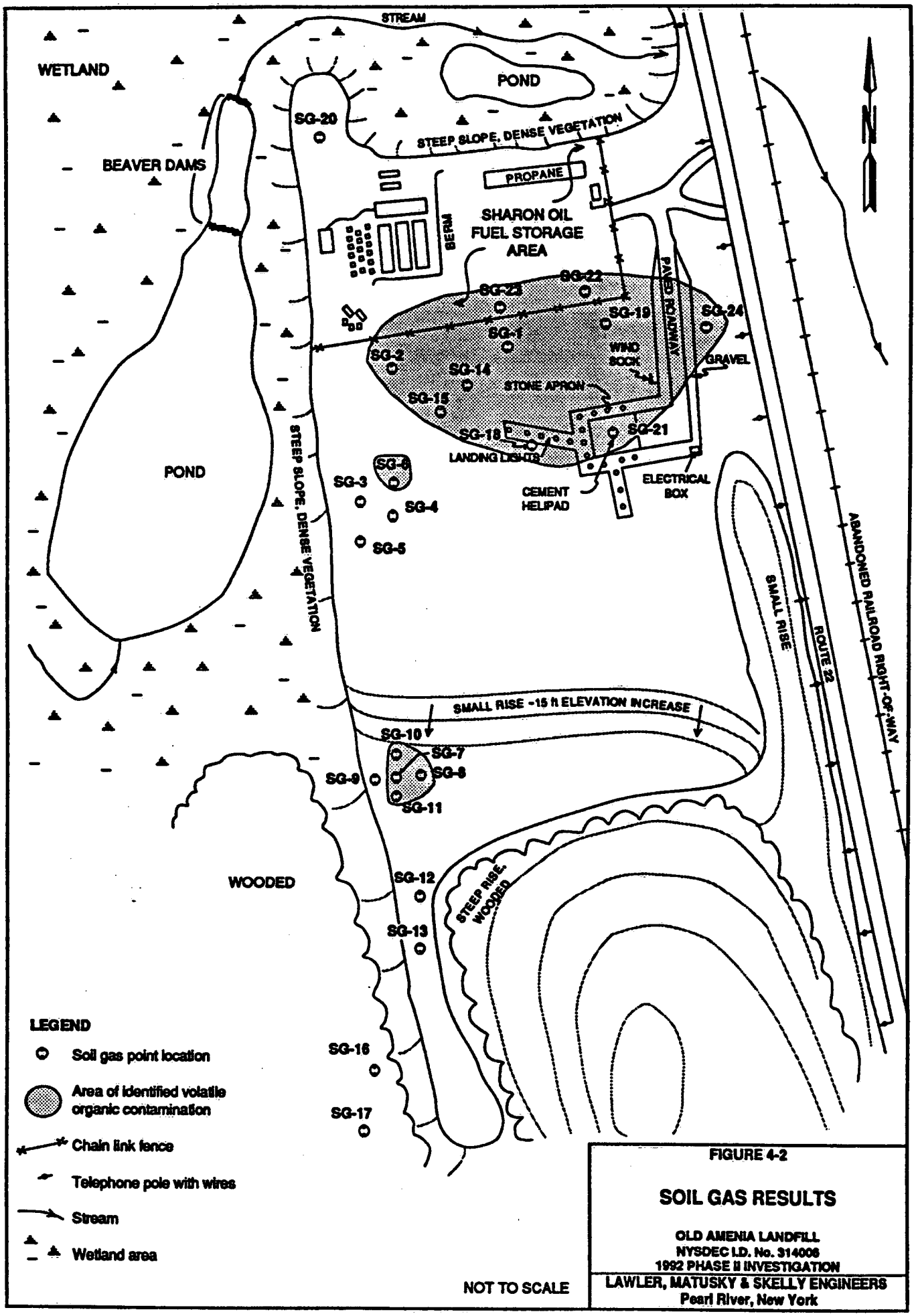

FIGURE 4-2

SOIL GAS RESULTS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

LAWLER, MATUSKY & SKELLY ENGINEERS
Pearl River, New York

Ten soil gas sampling points were installed in this area, which was approximately 100 to 150 ft in diameter. Soil gas samples collected from nine of these 10 locations contained vinyl chloride in concentrations ranging from 1700 to 340,000 $\mu g/m^3$. Benzene, toluene, ethylbenzene, and xylene compounds (BTEX) were detected in nearly every sample from this area. Concentrations of the BTEX compounds varied between 300 and 1,7000,000 $\mu g/m^3$. Tetrachloroethylene (PCE) was identified in four closely grouped samples in this area, with concentrations of 1300 to 79,000 $\mu g/m^3$. Methylene chloride, 1,1,1-trichloroethane, and trichloroethylene were identified at a single location in this area at concentrations of 6300, 14,000, and 170,000 $\mu g/m^3$, respectively.

Five other areas on the property, primarily along the western side of the site, were also investigated. The first area is the peninsula north of the Sharon Oil enclosure, where only one point was installed (SG-20); 400 $\mu g/m^3$ of toluene was detected in the sample. As toluene is a common component of petroleum products, its presence in this area is most likely due to its proximity to the fuel storage tanks rather than to underlying VOC contamination. Samples SG-3 through -6 were grouped in an area on the western side of the site approximately halfway from the northern end. The ground surface in this area was characterized by a moderate depression that showed evidence of possible periods when standing water may have been present. Moderate concentrations of the BTEX compounds were detected in sample SG-6 only.

Five soil gas points were installed on top of the rise in the southwestern portion of the central site area. This location was marked by a very pronounced depression with definite signs of recent stagnant water. Sample point SG-7, installed at the bottom of the depression, contained water and therefore could not be sampled. Three of the remaining four points showed moderate concentrations of BTEX compounds. Sample SG-8 also contained 3100 $\mu g/m^3$ of vinyl chloride.

Two soil gas points were located in the scrap metal disposal area and at the drum burial location at the southern end of the site. Low concentrations of toluene were detected in all four of these samples. No other VOCs were present above the detection limits in these samples.

4.4.4 Surface Soil Data - Mobile Laboratory

Twenty soil samples were collected at the locations shown on Figure 3-3 and analyzed for PCBs by Tetra•K Testing using the mobile laboratory. In addition, the 10 samples with the highest detected PCB concentrations were analyzed by the mobile laboratory for TCL VOCs. The chemical data obtained for these soil samples are summarized in Table 4-3 (Ref. 3).

4.4.4.1 *Volatile Organic Compounds.* Of the 10 surface soil samples analyzed at the site for VOCs, only one showed evidence of VOC contamination. Ethylbenzene was detected at a concentration of 0.22 mg/kg in sample SS-5. All other VOCs tested for in the analysis were below detection limits in this sample.

4.4.4.2 *PCBs.* PCBs were detected in 15 of the 20 surface soil samples collected at the site and analyzed by the mobile laboratory. Aroclor 1248 was the PCB identified in 13 of the samples; the remaining two samples contained Aroclor 1254. The PCB concentrations detected ranged from 2.3 to 250 ppm; only one sample contained a PCB concentration of greater than 50 ppm.

4.4.5 Surface Soil Data - Fixed Laboratory

Surface soil samples for analysis in a fixed analytical laboratory were collected at the four locations shown on Figure 3-3. Sampling was conducted as described in Section 3.5.1. The chemical data for these samples are summarized in Table 4-4 and are discussed below (Ref. 19). The validation and usability assessment for all data from the fixed laboratory is discussed in the Data Usability Summary (Ref. 22) based on the Data Validation Report (Ref. 23).

4.4.5.1 *Volatile Organic Compounds.* The surface soil samples were analyzed using EPA Method 624. All samples collected contained low levels of methylene chloride; however, methylene chloride was also found in the associated method and trip blanks, indicating that it may have been the result of laboratory contamination rather than actual site contamination. 1,1,1-Trichloroethane was detected in only one sample (AMSS-20) at a level of 0.006 mg/kg,

TABLE 4-3

SURFACE SOIL FIELD DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	SS-1A	SS-1B	SS-2A	SS-2B	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
VOLATILE ORGANICS (mg/kg)										
Ethylbenzene	ND	NR	ND	ND	NR	ND	0.220	ND	NR	NR
PCBs (mg/kg)										
Aroclor 1248	25	ND	12	250	ND	15	38	42	8.0	5.0
Aroclor 1254	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

PARAMETER	SS-9A	SS-9B	SS-10	SS-11A	SS-11B	SS-12	SS-13	SS14	SS15	SS16
VOLATILE ORGANICS (mg/kg)										
Ethylbenzene	ND	NR	ND	NR	NR	NR	NR	NR	ND	ND
PCBs (mg/kg)										
Aroclor 1248	35	6.0	10	4.5	ND	ND	ND	ND	8.2	46
Aroclor 1254	ND	4.2	ND	ND	2.3	ND	ND	ND	ND	ND

ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.

TABLE 4-4 (Page 3 of 5)

SURFACE SOIL DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSS-17	AMSS-18	AMSS-19	MS AMSS-19	MSD AMSS-19	AMSS-20
PESTICIDES/PCBs (mg/kg)						
gamma-BHC (lindane)	ND	ND	ND	0.026	0.030	ND
Heptachlor	ND	ND	ND	0.026	0.032	ND
Aldrin	ND	ND	ND	0.026	0.030	ND
Dieldrin	ND	ND	ND	0.068	0.083	ND
Endrin	ND	ND	ND	0.064	0.077	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	0.170
4,4'-DDT	ND	ND	ND	0.063	0.074	ND
Aroclor 1248	48.000 d	4.600 d	0.140	ND	ND	0.120

d - Concentration recovered from diluted sample (Ref. 19).
ND - Not detected at analytical detection limit (Ref. 19).
MS - Matrix spike.
MSD - Matrix spike duplicate.

TABLE 4-4 (Page 4 of 5)

SURFACE SOIL DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSS-17	AMSS-18	AMSS-19	DUP AMSS-19	AMSS-20	NATIVE SOIL CONCENTRATIONS TYPICAL RANGE (n)
METALS (mg/kg)						
Aluminum	11,200	13,400	17,900	17,051	23,100	10,000 - 300,000
Antimony	9.1 B	11.8 B	15.5	13.3 B	19.1	0.8 - 10
Arsenic	6.7 SA R	5.8 SA R	8.3 SA R	5.0 R	8.2 SA R	1.0 - 40
Barium	39.4 B	54.6	45.8	43.5 B	68.7	100 - 3,500
Beryllium	0.56 B	0.45 B	0.45 B	0.56 B	1.0 B	0.1 - 40
Cadmium	ND	ND	ND	ND	ND	0.01 - 7.0
Calcium	32,500	25,400	5,250	5,330	715 B	100 - 400,000
Chromium	13.2	16.1	19.6	17.9	59.6	5.0 - 3,000
Cobalt	16.5	19.2	23.4	20.6	18.9	1.0 - 40
Copper	35.7 E	35.3 E	32.8 E	30.1	62.6 E	2.0 - 100
Iron	34,800	40,300	38,500	39,000	41,700	7,000 - 550,000
Lead	60.6	91.1	38.6	37.6	164	2.0 - 200
Magnesium	18,700	20,400	12,700	11,400	8,400	600 - 6,000
Manganese	971 R	1,210 R	1,300 R	1,000 R	950 R	100 - 4,000
Mercury	ND	ND	ND	ND	ND	0.01 - 0.06
Nickel	41.6	33.9	39.3	40.3	41.6	5.0 - 1,000
Potassium	1,360	1,250	2,070	2,010	1,270 B	400 - 30,000
Selenium	ND N W	ND N W	ND N W	ND	ND N	0.1 - 2.0
Silver	ND N	ND N	ND N	ND	ND N	0.1 - 5.0
Sodium	ND	ND	ND	ND	ND	750 - 7,500
Thallium	ND N W	ND N W	ND N W	ND	ND N W	0.1 - 0.6 (q)
Vanadium	17.0	18.2	27.5	25.5	33.5	20 - 500
Zinc	137 E	204 E	93.7 E	86.7	119 E	10 - 300
Cyanide	90.0 N d	123.1 N d	2.8 N	2.8	1.5 N	

(n) - Ref. 20.
(q) - Ref. 21.
d - Concentration recovered from diluted sample (Ref. 19).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Indicates a high percent difference on serial dilution.
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
W - Post-digestion spike out of control limits; sample absorbance is less than 50% of spike absorbance.
ND - Not detected at analytical detection limit (Ref. 19).
SA - Value determined by the method of standard addition.
DUP - Duplicate sample analysis.

TABLE 4-4 (Page 5 of 5)

SURFACE SOIL DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSS-17	AMSS-18	AMSS-19	MS AMSS-19	MSD AMSS-19	AMSS-20	HAZARDOUS CRITERIA AND EP TOX STANDARDS
EP TOX ORGANICS (mg/l)							
Endrin	<0.01	<0.01	<0.01	NR	NR	<0.01	0.02
Lindane	<0.01	<0.01	<0.01	NR	NR	<0.01	0.4
Methoxychlor	<1.0	<1.0	<1.0	NR	NR	<1.0	10.0
Toxaphene	<0.01	<0.01	<0.01	NR	NR	<0.01	0.5
2,4-D	<1.0	<1.0	NU	NR	NR	<1.0	10.0
2,4,5-TP3 (Silvex)	<0.1	<0.1	NU	NR	NR	<0.1	1.0
EP TOX METALS (mg/l)							
Arsenic	ND	ND	ND	NA	ND	ND	5.0
Barium	0.176B	0.218 B	0.0664 B	NA	0.0664 B	0.401 B	100
Cadmium	ND	ND	ND	NA	ND	ND	1.0
Chromium	ND	ND	ND	NA	ND	ND	5.0
Lead	0.022 B	ND	ND	NA	ND	ND	5.0
Mercury	ND	ND	ND	NA	ND	ND	0.2
Selenium	ND	ND	ND	NA	ND	ND	1.0
Silver	ND N	ND N	ND N	NA	ND N	ND N	5.0
HAZARDOUS CHARACTERISTICS							
Corrosivity (inches/year)	<0.01	<0.01	<0.01	NR	NR	<0.01	0.25+
Flash point	>212	>212	>212	NR	NR	>212	-
Reactivity to cyanide (ppm)	<1	<1	<1	NR	NR	<1	250
Reactivity to sulfide (ppm)	<1	<1	<1	NR	NR	<1	500

\+ - The rate of corrosivity of steel at 131°F as determined by the NACE test.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
N - Spiked sample recovery is not within control limits.
MS - Matrix spike.
NA - Not applicable.
ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.
NU - Not usable; see Appendix A for explanation.
MSD - Matrix spike duplicate.

which is below the contract-required quantitation limit (CRQL). No other TCL VOCs or tentatively identified compounds (TICs) were detected in the soil samples collected at the site.

4.4.5.2 *Semivolatile Organic Compounds*. Several phthalate acid ester (PAE) compounds were identified in the soil samples. Di-n-butylphthalate was detected in AMSS-17 at a concentration of 0.37 mg/kg. The concentrations of this compound in the other three samples collected were estimated at 0.14 to 0.28 mg/kg, below the CRQL. Butylbenzylphthalate, detected in only one sample (AMSS-17), was found at a concentration below the CRQL. All four soil samples contained detectable concentrations of bis(2-ethylhexyl)phthalate; however, only one sample (AMSS-20) had a concentration of bis(2-ethylhexyl)phthalate above the CRQL.

TICs were most prevalent in sample AMSS-17. This sample contained an estimated concentration of 13.44 mg/kg of tetrachloro-biphenyl isomers as well as estimated concentrations of trichloro- (3.740 mg/kg), pentachloro- (6.910 mg/kg), and hexachloro- (0.75 mg/kg) biphenyl isomer compounds. Sample AMSS-18 also contained concentrations of these chlorinated biphenyls below the CRQL, except for the hexachloro-biphenyl isomer, which was not detected. Several unknown semivolatile organics were present in three of the four soil samples (AMSS-18, -19, and -20) at levels below the CRQL. Sample AMSS-20 contained three unknown aromatic compounds at an estimated total concentration of 1.04 mg/kg as well as an unknown acid compound and four unknown alkane compounds at estimated concentrations of 0.45 and 3.05 mg/kg, respectively, all below the CRQL.

4.4.5.3 *Pesticides/PCBs*. No pesticides were identified in any of the soil samples from the site with the exception of 0.17 mg/kg of endosulfan sulfate in sample AMSS-20. Aroclor 1248 was detected in all four soil samples at concentrations ranging from 0.12 to 48.0 mg/kg. However, the Aroclor 1248 concentrations in samples AMSS-17 and -18 (48.0 and 4.6 mg/kg, respectively) were obtained from the analysis of samples that were diluted 50:1 and 10:1, respectively.

4.4.5.4 *EP Toxicity*. Extraction procedure (EP) toxicity analyses for both metals and organics were performed on all four soil samples. The results indicated that the EP toxicity

concentrations for all organics tested were below compound detection limits. For metals, none of the samples had concentrations above the maximum allowable levels, i.e., 100 times the drinking water standard for that particular metal. The only metals detected in the EP toxicity test were present below the contract-required detection limit; barium was identified in all four samples and lead was present in sample AMSS-17. Silver was not detected in any of the samples; however, the matrix spike (MS) sample recovery for silver was 56%, indicating that the results may be biased slightly low.

4.4.5.5 *Hazardous Characteristics*. In addition to the chemical analyses, analyses for hazardous characteristics, including corrosivity, ignitability, reactivity to cyanide, and reactivity to sulfide, were conducted on the samples. According to the tests, none of the samples exhibited hazardous characteristics. Corrosivity and reactivity to cyanide and sulfide were below measurable levels for all four samples. The flash point of each of the four samples was greater than 212°F.

4.4.5.6 *Metals*. Metals concentrations were compared with typical concentration ranges for native soils. Soil samples AMSS-18, -19, and -20 contained slightly elevated levels of antimony; the antimony concentration determined for sample AMSS-18 was below the contract-required detection limit. All four samples had elevated levels of magnesium, with concentrations ranging from 8400 mg/kg to 20,400 mg/kg. Typical native soil concentrations for magnesium range from 600 to 6000 mg/kg. All other metals detected were within the typical concentration ranges for native soils.

4.4.6 Surface Water Data

Five surface water samples were collected at the locations shown on Figure 3-3. All sampling locations and methods were discussed with and approved by NYSDEC personnel before sampling proceeded, as discussed in Section 3.5.2. The samples were analyzed for VOCs, semivolatile organics, pesticides, PCBs, metals, cyanide, and conventional parameters, which included pH, specific conductance, chemical oxygen demand (COD), total dissolved solids (TDS), and total suspended solids (TSS). Five additional surface water samples were collected at each sampling location and submitted to Aquatec for low-level PCB analyses.

Table 4-5 summarizes the chemical data for the surface water samples obtained from the Old Amenia Landfill site (Ref. 19). The surface water samples were collected from the pond and stream located in the wetland area adjacent to the site, which has been designated as a Class C surface water body by NYSDEC. The standards applicable to Class C surface water bodies are included in Table 4-5, and the analytical data obtained were compared with these standards.

4.4.6.1 *Volatile Organic Compounds.* Methylene chloride was detected at low levels, i.e., below the CRQL, in three of the water samples; it was also detected in an associated blank, however, and is therefore attributed to laboratory contamination. Acetone was identified in three of the samples and in the associated blanks. No TICs were detected.

4.4.6.2 *Semivolatile Organic Compounds.* The only TCL semivolatile organics identified in the surface water samples were n-nitrosodiphenylamine and bis(2-ethylhexyl)phthalate. The former was detected in three samples at levels below the CRQL; however, it was also detected in the method blank, indicating laboratory contamination. bis(2-Ethylhexyl)phthalate was detected in only one sample, at a concentration of 1 µg/l, which is below the CRQL. bis-(2-Ethylhexyl)phthalate is a known laboratory contaminant and is not considered to be the result of environmental contamination at the site. Several unknown TICs were detected in samples AMSW-01, -03, and -05 at concentrations below the CRQL. However, the field blank associated with these samples also contained low levels (22.1 µg/l) of unknown TICs, indicating that they are not the result of environmental contamination at the site.

4.4.6.3 *Pesticides/PCBs.* No pesticides were detected in any of the surface water samples collected from the wetlands area adjacent to the site. PCBs were not detected in the samples analyzed by Nytest (detection limits of 0.5 µg/l for Aroclor 1254 and 1.0 µg/l for Aroclor 1260). Aquatec performed low-level PCB analyses of the surface water samples (detection limit is 0.05 µg/l for Aroclor 1242): a concentration of 0.06 µg/l was detected in sample AMSW-03; PCBs were not detected in the remainder of the samples.

4.4.6.4 *Metals.* Iron levels in all surface water samples except AMSW-04 exceeded the NYSDEC standard of 300 µg/l for Class C surface waters. Values ranged from 363 to 776

TABLE 4-5 (Page 1 of 3)

SURFACE WATER DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSW-0	AMSW-02	AMSW-03	AMSW-04	AMSW-06	MS AMSW-06	MSD AMSW-06	FIELD BLANK	TRIP BLANK	NYSDEC SW CLASS C STANDARDS (h) AQUATIC	NYSDEC SW CLASS C STANDARDS (h) HUMAN
VOLATILE ORGANICS (µg/l)											
Methylene chloride	ND	3 b j	26 j	ND	2 b j	4 b j	6 b	ND	2 j	NS	NS
Acetone	13 b	11 b	ND	ND	10 b	14 b	22 b	ND	ND	NS	NS
Tentatively Identified Compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
SEMIVOLATILE ORGANICS (µg/l)											
n-Nitrosodiphenylamine(¶)	2 b j	2 b j	2 b j	ND	ND	ND	ND	ND	NR	NS	NS
bis(2-Ethylhexyl)phthalate	ND	1 j	ND	ND	ND	ND	ND	ND	NR	0.6	NS
Benzo(b)fluoranthene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Benzo(k)fluoranthene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Benzo(a)pyrene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	0.0012 GV	NS
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Dibenz(a,h)anthracene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Benzo(g,h,i)perylene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Tentatively Identified Compounds											
Unknown	53.5 (2) j	ND	29 (2) j	ND	8.5 j	NR	NR	22.1 (2) j	NR	-	-
PESTICIDES/PCBs[1] (µg/l)	ND	ND	ND	ND	ND	ND	ND	ND	NR	-	-
CONVENTIONALS											
pH (standard units)	7.62	7.71	7.67	7.78	7.71	NR	NR	NR	NR	6.5 - 8.5	6.5 - 8.5
Specific conductance (µmhos/cm)	420	403	391	377	396	NR	NR	NR	NR	NS	NS
Chemical oxygen demand (mg/l)	17*	73	<3	17*	17*	NR	NR	NR	NR	NS	NS
Total dissolved solids (mg/l)	243	255	235	271	250	NR	NR	NR	NR	NS	NS
Total suspended solids (mg/l)	5	9	17	5	4	NR	NR	NR	NR	NS	NS

\# - Concentrations may exceed detection level; see Appendix A for complete discussion.
* - COD values should be considered estimates (biased high) as the absorbances for these values correlate with the 10 ppm standard.
(¶) - Cannot be separated from diphenylamine.
( ) - Number of compounds in total.
(h) - Hardness: 215 mg equivalent CaCO3/l.
1 - Nytest's analytical detection limits for PCB were 0.5 and 1.0 µg/l (Aroclors 1254 and 1260, respectively).

b - Found in associated blanks.
j - Estimated concentration; compound present below quantitation limit.
MS - Matrix spike.
ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.
NS - No standard.
GV - Guidance value.
MSD - Matrix spike duplicate.

TABLE 4-5 (Page 2 of 3)

SURFACE WATER DATA SUMMARY (NOVEMBER 1991)
Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSW-01	AMSW-02	AMSW-03	AMSW-04	AMSW-05	DUP AMSW-05	FIELD BLANK	NYSDEC SW CLASS C STANDARDS (h)
METALS (µg/l)								
Aluminum	78.2 B	86.2 B	57.4 B	ND	ND	45.6 B	ND	100(i)
Antimony	ND	ND	ND	ND	ND	ND	ND	NS
Arsenic	ND W	ND	ND	ND	ND	ND	ND	190
Barium	ND	ND	ND	ND	ND	ND	ND	NS
Beryllium	ND	ND	ND	ND	ND	ND	ND	1100
Cadmium	ND	ND	ND	ND	ND	ND	ND	2.07
Calcium	54,100	53,400	53,000	52,800	53,200	53,800	ND	NS
Chromium	ND	ND	ND	ND	ND	ND	ND	387
Cobalt	ND	ND	ND	ND	ND	ND	ND	5.0
Copper	ND	ND	2.8 B	ND	2.8 B	ND	ND	22.7
Iron	776	503	363	290	400	409	ND	300
Lead	ND	ND	ND	ND	ND	ND	ND	6.48
Magnesium	20,100	19,900	19,800	19,700	19,700	20,000	ND	NS
Manganese	134	86.7	101	62.7	81.2	81.6	ND	NS
Mercury	0.26	ND	ND	ND	ND	ND	ND	0.20 GV
Nickel	ND	ND	ND	ND	ND	ND	ND	171
Potassium	3,180 B	3,140 B	3,290 B	2,650 B	2,570 B	2,530 B	ND	NS
Selenium	ND	ND	ND	ND	ND	ND	ND	1.0
Silver	ND	ND	ND	ND	ND	ND	ND	0.1 (i)
Sodium	5,780	5,250	5,190	4,910 B	5,060	5,030	ND	NS
Thallium	ND W	ND W	ND W	ND W	ND W	ND	ND	8.0
Vanadium	ND	ND	ND	ND	ND	ND	ND	14
Zinc	4.5 B	8.4 B	ND	ND	ND	ND	ND	30
Cyanide	ND	ND	ND	ND	ND	ND	ND	5.2 (f)

(f) - Free cyanide, sum of HCN + CN^-.
(h) - Hardness: 215 mg equivalent CaCO3/l.
(i) - Ionic.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

W - Post-digestion spike out of control limits; sample absorbance is less than 50% of spike absorbance.
GV - Guidance value.
ND - Not detected at analytical detection limit (Ref. 19).
NS - No standard.
DUP - Duplicate sample analysis.

TABLE 4-5 (Page 3 of 3)

SURFACE WATER DATA SUMMARY (NOVEMBER 1991)
AQUATEC DATA RESULTS
Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSW-01	AMSW-02	AMSW-03	AMSW-04	AMSW-05	MS AMSW-05	MSD AMSW-05	NYSDEC SW CLASS C STANDARDS (h) AQUATIC	NYSDEC SW CLASS C STANDARDS (h) HUMAN
LOW-LEVEL PCBs (µg/l)									
Aroclor 1242	ND	ND	0.060	ND	ND	ND	ND	0.001	NS

(h) - Hardness: 215 mg equivalent CaCO3/l.
MS - Matrix spike.
ND - Not detected at analytical detection limit (Aquatec's low-level PCB analytical detection limit was 0.05 µg/l).
NS - No standard.
MSD - Matrix spike duplicate.

µg/l. No other metals were detected in the surface water samples at levels that exceeded the applicable NYSDEC standards.

4.4.7 Sediment Data

Sediment samples were collected at locations corresponding to each of the five surface water samples (Figure 3-4). These samples were analyzed for VOCs, semivolatile organics, metals, cyanide, pesticides, and PCBs. Table 4-6 summarizes the analytical data obtained for the sediment samples (Ref. 19).

4.4.7.1 *Volatile Organic Compounds.* Methylene chloride was found at low concentrations in all of the sediment samples collected. However, as it was also detected in the trip and method blanks associated with these samples, this compound was most likely introduced through laboratory contamination and is not related to site contamination. Acetone was identified in one sample, SD-05, at a concentration of 0.15 mg/kg. Although this compound was not detected in the field, trip, or method blanks, its presence is probably due to laboratory contamination as acetone is a common laboratory contaminant. There were no TICs detected in any of the sediment samples.

4.4.7.2 *Semivolatile Organic Compounds.* Nitrobenzene was detected in only one sample, SD-03, at a concentration of 4500 mg/kg. Although semivolatile organic compounds were not detected in any of the other sediment samples, actual concentrations of several semivolatile compounds may be biased low due to poor (low) internal standard recoveries for these compounds. Low levels of these contaminants may have been present in the samples analyzed, but none were detected.

All five sediment samples contained low levels (below the CRQL) of unknown TICs; however, several of these compounds are suspected aldol condensation products. Thus, the source of these compounds is most likely laboratory contamination rather than actual site contamination. The only other TICs detected were found in sample SD-03, which had 2.0 mg/kg of a chloro-biphenyl isomer and 7.4 mg/kg of two dichloro-biphenyl isomers.

TABLE 4-6 (Page 1 of 2)

SEDIMENT DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	SD-01	SD-02	SD-03	SD-04	SD-05	MS SD-05	MSD SD-05
VOLATILE ORGANICS (mg/kg)							
Methylene chloride	0.029 b	0.051 b	0.022 b	0.089 b	0.026 b	0.034 b	0.028 b
Acetone	ND	ND	ND	ND	0.150	0.200	0.120
Tentatively Identified Compo	ND	ND	ND	ND	ND	NR	NR
SEMIVOLATILE ORGANICS (mg/kg)							
Nitrobenzene	ND	ND	4,500	ND	ND	ND	ND
Benzo(b)fluoranthene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Benzo(k)fluoranthene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Benzo(a)pyrene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Indeno(1,2,3-cd)pyrene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Dibenz(a,h)anthracene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Benzo(g,h,i)perylene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Tentatively Identified Compounds							
Unknown	54.0 j a	92.0 j a	32.0 j a	150 j a	50.0 j a	NR	NR
Unknown	9.4 j	54.0 (2) j	ND	9.40 (2) j	3.20 (2) j	NR	NR
Chloro-biphenyl isomer	ND	ND	2.0 j	ND	ND	NR	NR
Dichloro-biphenyl isomer	ND	ND	7.4 (2) j	ND	ND	NR	NR
PESTICIDES/PCBs (mg/kg)							
Aroclor 1232	ND	ND	18.0	ND	ND	ND	ND
Aroclor 1248	0.510	1.80	5.20	ND	ND	ND	ND

\# - Concentrations may exceed detection level; see Appendix A for complete discussion.
( ) - Number of compounds in total.
a - Suspected aldol condensation product.
b - Found in associated blanks.
j - Estimated concentration; compound present below quantitation limit.

MS - Matrix spike.
ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.
MSD - Matrix spike duplicate.

TABLE 4-6 (Page 2 of 2)

SEDIMENT DATA SUMMARY (NOVEMBER 1991)
Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	SD-01	SD-02	SD-03	SD-04	SD-05	DUP SD-05
METALS (mg/kg)						
Aluminum	10,800	22,600	10,900	17,600	9,810	9,050
Antimony	48.4	24.5 B	22.3	60.3 B	25.7 B	21.1 B
Arsenic	8.4 N SA	8.2 N SA	5.3 N	16.7 N SA	4.7 N SA	6.4
Barium	74.8 B	118 B	44.3 B	105 B	51.3 B	47.5 B
Beryllium	3.6	2.2 B	0.60 B	ND	0.91 B	0.91 B
Cadmium	ND	ND	3.8	ND	ND	ND
Calcium	5,410	20,100	37,200	25,800	6,660	6,470
Chromium	9.7	25.6	15.7	25.9	13.4	11.1
Cobalt	64.3	38.5	17.7	43.4 B	26.9	27.5
Copper	ND	28.5	40.2	32.8 B	9.8 B	6.4 B
Iron	128,000	79,500	37,800	60,600	51,400	55,100
Lead ✓	23.4 SA	49.6 SA	71.4	70.8 SA	19.1 SA	22.8
Magnesium ✓	6,610	9,930	21,000	8,900	5,280	4,803
Manganese	2,890 R	1,170 R	692 R	969 R	1,320 R	973 R
Mercury	ND N	ND N	ND N	5.4 N	1.3 N	1.4
Nickel	144	88.5	43.8	81.8	53.5	62.5
Potassium	1,640 B	2,280 B	1,180 B	2,890 B	1,260 B	1,121 B
Selenium	ND	ND	ND W	ND W	ND W	ND
Silver	ND	ND	ND	ND	ND	ND
Sodium	ND	ND	ND	ND	ND	ND
Thallium	ND W	ND W	ND W	ND	ND W	ND
Vanadium	17.3 B	38.4	17.8	32.0 B	15.8 B	13.8 B
Zinc	347	284	253	245	142	145
Cyanide	ND N	ND N	ND N	ND N	ND N	ND N

B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
W - Post-digestion spike out of control limits; sample absorbance is less than 50% of spike absorbance.

ND - Not detected at analytical detection limit (Ref. 19).
SA - Value determined by the method of standard addition.
DUP - Duplicate sample analysis.

4.4.7.3 *Pesticides/PCBs*. Aroclor 1248 was detected in sediment samples SD-01, -02, and -03 at concentrations of 0.51, 1.8, and 5.2 mg/kg, respectively. In addition, Aroclor 1232 was identified in sample SD-03 at a concentration of 18.0 mg/kg. No other pesticides or PCBs were detected in the sediment samples.

4.4.7.4 *Metals*. A number of metals were detected in the sediment samples collected at the site. Native concentration ranges for metals in sediments are not available, and no standards applicable to sediments are currently available. Aluminum was present in all sediment samples at levels ranging from 9810 to 22,600 mg/kg. Antimony was detected from below the contract-required detection limit to 48.4 mg/kg. Arsenic was detected at concentrations of 4.7 to 16.7 mg/kg; however, the spiked sample recovery for these samples was not within control limits, indicating that these levels are estimated concentrations. A concentration of 3.6 mg/kg of beryllium was detected in sample SD-01; all other samples had beryllium concentrations lower than the contract-required detection limit. Only sample SD-03 contained cadmium, at a concentration of 3.8 mg/kg. Calcium was detected in the five samples at concentrations ranging from 5410 to 37,200 mg/kg. Chromium concentrations ranged from 9.7 to 25.9 mg/kg. Cobalt was present at levels from below the contract-required detection limit to 64.3 mg/kg.

Copper was detected in samples SD-02 and -03 at concentrations greater than the contract-required detection limit: 28.5 and 40.2 mg/kg, respectively. The iron levels in the sediment samples ranged from 37,800 to 128,000 mg/kg. Lead was also present in all five samples, at levels from 19.1 to 71.4 mg/kg. Manganese concentrations ranged from 692 to 2890 mg/kg. Mercury was detected in samples SD-04 and -05; however, the spiked sample recovery for these samples was not within control limits. All sediment samples contained nickel, at concentrations ranging from 43.8 to 144 mg/kg. Vanadium was present at concentrations above the contract-required detection limit in samples SD-02 and -03 only, with concentrations of 38.4 and 17.8 mg/kg, respectively. Zinc was present in all five samples at levels ranging from 142 to 347 mg/kg.

All other metals were present at levels below the contract-required detection limit or the instrument detection limit.

REFERENCE NO. 22

WATER QUALITY REGULATIONS

SURFACE WATER AND GROUNDWATER CLASSIFICATIONS AND STANDARDS

New York State
Codes, Rules and Regulations
Title 6, Chapter X
Parts 700-705

New York State Department of Environmental Conservation

701.7 Class B fresh surface waters. The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

Historical Note

Sec. filed July 3, 1985; repealed, new filed Aug. 2, 1991 eff. 30 days after filing.

701.8 Class C fresh surface waters. The best usage of Class C waters is fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Historical Note

Sec. filed July 3, 1985; repealed, new filed Aug. 2, 1991 eff. 30 days after filing.

701.9 Class D fresh surface waters. The best usage of Class D waters is fishing. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery, or stream bed conditions, the waters will not support fish propagation. These waters shall be suitable for fish survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Historical Note

Sec. filed July 3, 1985; repealed, new filed Aug. 2, 1991 eff. 30 days after filing.

SALINE SURFACE WATERS

701.10 Class SA saline surface waters. The best usages of Class SA waters are shellfishing for market purposes, primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

Historical Note

Sec. filed July 3, 1985; repealed, new filed Aug. 2, 1991 eff. 30 days after filing.

701.11 Class SB saline surface waters. The best usages of Class SB waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

Historical Note

Sec. filed July 3, 1985; repealed, new filed Aug. 2, 1991 eff. 30 days after filing.

701.12 Class SC saline surface waters. The best usage of Class SC waters is fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Historical Note

Sec. filed July 3, 1985; repealed, new filed Aug. 2, 1991 eff. 30 days after filing.

701.13 Class I saline surface waters. The best usages of Class I waters are secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

Historical Note

Sec. filed July 3, 1985; repealed, new filed Aug. 2, 1991 eff. 30 days after filing.