GROUNDWATER INVESTIGATION REPORT
DYNO-NOBEL INC. SITE
PORT EWEN, NEW YORK
VOLUME I
TEXT - APPENDICES A Through E

Prepared for:

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Prepared by:

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January 1996

9596.08

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January 29, 1996

Mr. Eugene Galper
NYS Department of Environmental Conservation
Div. Of Solid and Hazardous Materials
21 South Putt Corners Rd.
New Paltz, NY 12561

RE: Dyno Nobel, Port Ewen, New York Facility
Groundwater Investigation Report

Dear Mr. Eugene Galper:

Please find attached the Groundwater Investigation Report for the above referenced facility. We submit this report for your comments and approval.

Do not hesitate to call with any questions or comments. My telephone number is 914-334-3205.

Sincerely,

Kevin Kirkpatrick
Environmental Manager

bcc: R. Aldrich - NYSDEC, New Paltz, New York
L. Whitbeck - NYSDEC, Albany, New York
G. Schmiesing - Hercules Incorporated
N. Olsen - DYNO-Nobel, Inc., Salt Lake City, Utah
S. Fein - Whiteman, Osterman & Hanna

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EXECUTIVE SUMMARY

Geology

The site is located in the center of a shale and graywacke bedrock valley, which runs north-south. The bedrock is overlain by a layer of undetermined thickness of sand and gravel that ranges from less than one to over 23 feet thick. The sand and gravel is overlain by a layer of silt and clay that is between three and 68 feet thick.

Hydrogeology

Groundwater flows from the east and west and discharges to surface wetlands on the eastern border of the site.

Receptors

The population downgradient of the site and within a mile radius of the site is served by a municipal water utility. There is little health risk to neighboring residents due to groundwater migration from the site.

Groundwater Quality

The groundwater data indicate that the site activities have not had a significant impact on groundwater quality across the site. The inorganic results of filtered groundwater samples did not exceed standards, except for a few minor instances. The results of metal analyses of unfiltered samples exceeded standards upgradient, as well as downgradient of the areas of concern.

Elevated concentrations of volatile organic compounds (VOCs) were observed in the vicinity of the Shell Plant, the most prevalent of which was trichloroethylene (TCE). The concentration of VOCs increased with depth. One sample exhibited concentrations greater than 1 percent of the solubility limit of TCE. Further investigation should be made into the potential presence of a dense non-aqueous phase liquid (DNAPL) layer.

ECKENFELDER INC. recommends the installation of three monitoring well couplets in the vicinity of the Shell Plant. Each couplet will consist of one well in the bedrock and one in the sand and gravel layer immediately above the bedrock. Interim corrective measures are not recommended.

1.0 INTRODUCTION

A groundwater investigation was conducted at the DYNO-NOBEL INC. (DNI) Plant in Port Ewen, New York. This investigation was completed as a precursor to a Resource Conservation and Recovery Act (RCRA) Facility Assessment - Sampling Visit (RFA-SV) and a RCRA Facility Investigation (RFI). The work plan for the RFA-SV has been submitted to and approved by the New York State Department of Environmental Conservation (NYSDEC). The RFA-SV will be conducted upon completion of Interim Corrective Measures (ICM) for Explosives. The work plan for the ICM for Explosives has been submitted and is awaiting approval from the NYSDEC.

1.1 OBJECTIVES

The goals of this investigation consisted of the following:

- Obtain a better understanding of the hydrogeologic conditions at the facility; including groundwater flow direction, hydraulic conductivity, and vertical and horizontal gradients;

- Collect additional information with respect to potential contaminant distribution in the vicinity of the Detonation Pond;

- Document groundwater quality at the perimeter of the site;

- Assess the potential for groundwater related health concerns to neighboring residents;

- Determine groundwater use in the vicinity of the site, including the use and location of private wells, as well as the availability of public water supplies;

- Evaluate the horizontal and vertical extent of groundwater impacts in the vicinity of the Shell Plant;

- Based on data obtained from this investigation, recommend locations for the installation of monitoring wells associated with the Shell Plant.

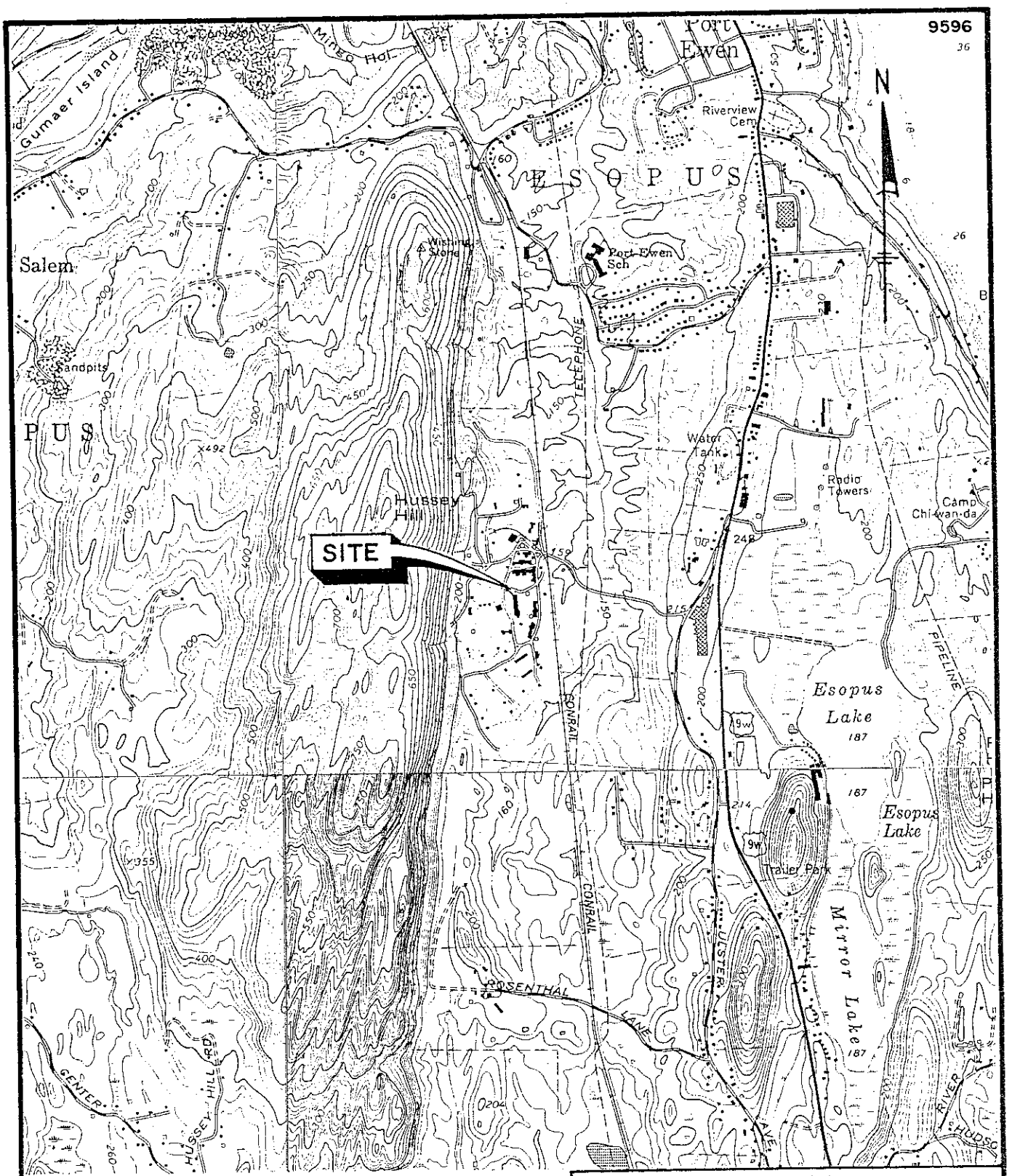
1.2 SITE LOCATION AND HISTORY

The DNI, Port Ewen Plant is located approximately one mile south of the village of Port Ewen in Ulster County, New York (Figure 1-1). The site is currently active and manufactures explosives, primers, and igniters. The entire property encompasses approximately 350 acres, 100 of which are developed. The site has been actively employed in the manufacture of explosive primers and igniters since 1912 when the facility was built by Brewster Explosives Co. The plant was purchased by Hercules Incorporated (Hercules) in 1922. Hercules owned and operated the facility until 1985. IRECO Inc. purchased the facility in June of 1985 and is the current owner and operator. In July of 1993, IRECO changed their name to DYNO-NOBEL INC. Additional details regarding site operations may be found in the RFA Report (ECKENFELDER INC., December, 1994).

1.3 SITE TOPOGRAPHY

The site is located in a small valley bordered on the west by Hussey Hill and on the east by a low lying ridge adjacent to the Hudson River. Hussey Hill rises to an elevation in excess of 900 feet (above the National Geodetic Vertical Datum of 1929 (NGVD)) and drops steeply to the western edge of the developed property of the facility to an elevation of approximately 200 feet above NGVD. The developed property then drops gently to the valley floor, over a distance of approximately 1,600 feet, to an elevation of approximately 150 feet above NGVD. The land east of the site then gently rises again to the ridge overlooking the Hudson River, at an elevation of approximately 250 feet above NGVD. The Hudson River is located approximately 1.5 miles east of the site, at an elevation of approximately five feet above NGVD. Esopus Lake, another major feature of the area surrounding the site, is located approximately one mile east of the site at an elevation of 185 feet above NGVD.

The center of the valley gently slopes to the north. Wetlands are located to the east, northeast, and southeast of the developed property, at an elevation of approximately 145 feet above NGVD. These wetlands drain to the north to several unnamed tributaries of Plantasie Creek, which continues northward into Roundout Creek. Roundout Creek discharges into the Hudson River north of Port Ewen. The former



SOURCE: KINGSTON WEST, N.Y.
(1964) REVISED 1980
KINGSTON EAST, N.Y.
(1963) REVISED 1980
ROSENDALE, N.Y.
(1964) REVISED 1980
HYDE PARK, N.Y.
(1963) REVISED 1980
7.5' QUADRANGLE

2000 0 2000
scale feet

FIGURE 1-1

SITE LOCATION MAP

HERCULES/DYNO NOBEL
PORT EWEN, NEW YORK

ECKENFELDER INC.
Nashville, Tennessee
Mahwah, New Jersey

Detonation Pond is the only body of water located within the developed area of the facility. There are no visible streams or channels entering or exiting the pond.

The area surrounding the facility is predominantly rural with the closest off-site building a commercial establishment along Route 9W. The nearest residential building is approximately 1,000 feet from the site. It is estimated that there are approximately 270 residences with 1,026 people within a one-mile radius of the site (Gibbs & Hill, 1990).

1.4 PREVIOUS INVESTIGATIONS

Previous investigations of the facility have been conducted under two independent programs: the RCRA Program and the New York State Superfund Program. The reports generated from these investigations are summarized in Table 1-1.

An RFA was conducted under the RCRA Program, which consisted of a Preliminary Review (PR) of available relevant documents and a Visual Site Inspection (VSI). The PR and VSI were completed by A.T. Kearney Inc., under contract to the U.S. Environmental Protection Agency (U.S. EPA). The results can be found in the RFA Report, which was completed by A.T. Kearney in October, 1993. At the request of NYSDEC, this report was revised by ECKENFELDER INC. in December, 1994, on behalf of Hercules and DNI, to correct various factual errors.

Investigations completed under the New York State program have consisted of Phase I and II site investigations. The preliminary investigation (Phase I) was completed by EA Science and Technology. The final report for this work was issued in December of 1993. A Phase II investigation was completed by Gibbs & Hill Inc., with a final report issued in July of 1990. The purpose of this investigation was to collect information necessary to classify the site for further action and to develop a final Hazard Ranking System (HRS) score.

The RFA Report presents a detailed description of the site history and operation and identifies individual Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) which potentially resulted in a release to the environment. These areas were identified through a review of file materials and visual inspections. The SWMUs and AOCs were evaluated as to their potential to release hazardous waste

TABLE 1-1

SUMMARY OF PREVIOUS INVESTIGATIONS AND REPORTS

Name of Investigation	Investigation Conducted By	Final Report Date
New York State Superfund Program		
Phase I Investigation	EA Science and Technology	December 1983
Phase II Investigation	Gibbs and Hill Inc.	July 1990
USEPA Resource Conservation and Recovery Act		
RCRA Facility Assessment (RFA)[a]	A.T. Kearney Inc.	October 1993
	ECKENFELDER INC.	December 1994[b]

a Includes a Preliminary Review (PR) and Visual Site Inspection (VSI).
b The A.T. Kearney report was revised and finalized, at the request of NYSDEC, by ECKENFELDER INC., on behalf of Hercules and DYNO Nobel.

or constituents to the environment. Based on this evaluation, the RFA Report documents those SWMUs and/or AOCs which either; 1) require no further action; 2) require confirmatory sampling (i.e., an RFA-SV); 3) require an RFI to collect information on a known or suspected release to the environment; or 4) require that an ICM be implemented on an expedited basis.

The Phase II investigation built upon the information obtained from the Phase I preliminary investigation. The work conducted during Phase II consisted of the installation of 12 monitoring wells in groups of three, at four locations within the facility. These areas are scattered across the facility and include the Burning Pad Area (SWMU Nos. 6 and 7), the Old Discharge Area (Shell Plant) (SWMU No. 30), the Old Dump Area (SWMU No. 23), and the Detonation Pond Area (SWMU No. 1). Discussion of the results of this investigation can be found in the Phase II Report (Gibbs and Hill, 1990).

2.0 METHODS AND PROCEDURES

The groundwater investigation was conducted in accordance with the approved Work Plan (Groundwater Investigation Work Plan, ECKENFELDER INC., April, 1995). The following sections describe the methods and procedures used during this investigation.

2.1 OLD DISCHARGE AREA (SHELL PLANT, BUILDING NO. 2036)

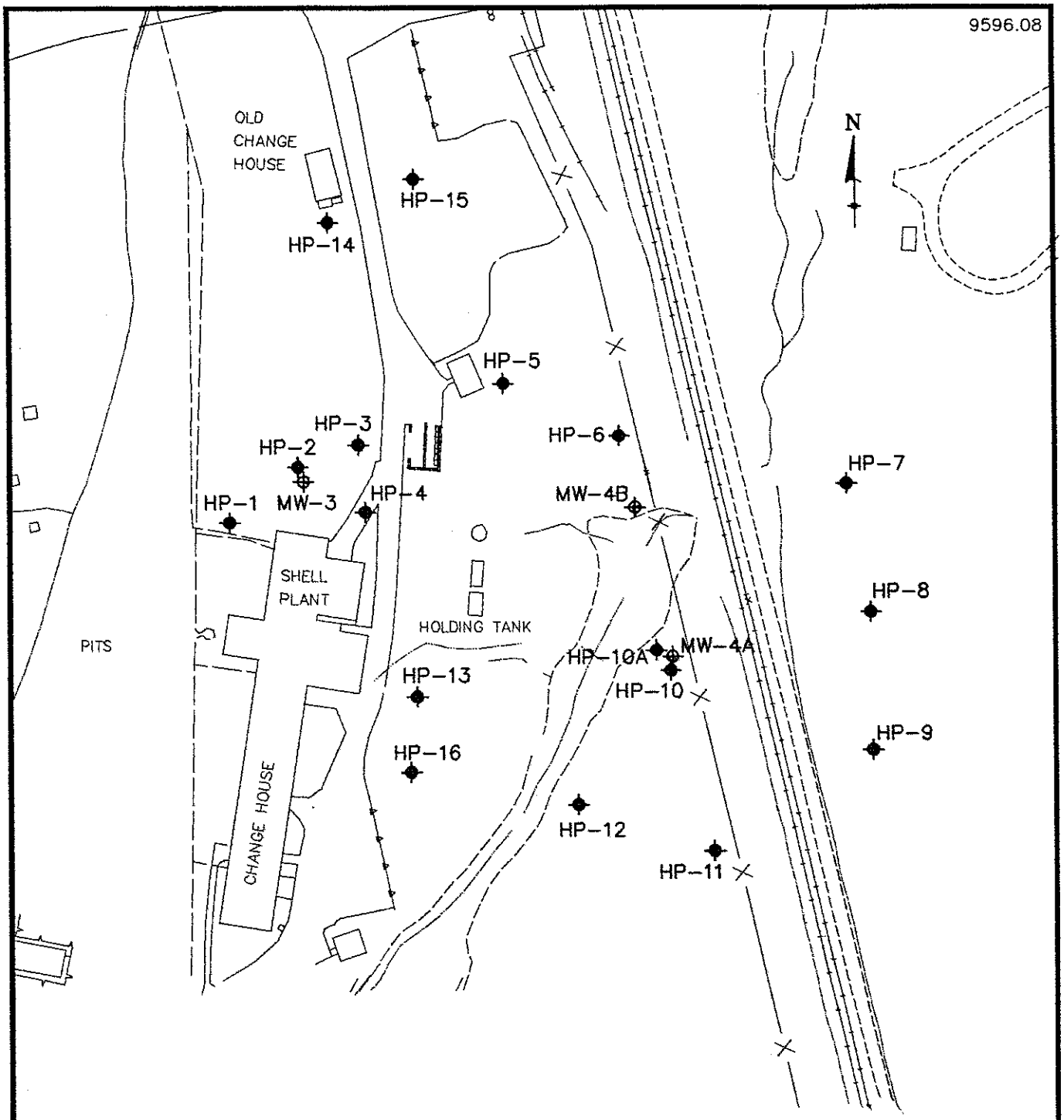
The area surrounding the Shell Plant was investigated to estimate the vertical and horizontal extent of impacts to the groundwater quality, and to aid in the placement of future monitoring wells and remedial strategies. Groundwater samples were collected with the use of a HydroPunch® borehole sampler. Samples were collected and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs).

2.1.1 HydroPunch® Boring Locations

Sixteen borings were completed in the vicinity of the Shell Plant. Their locations are depicted on Figure 2-1. Two borings (HP-14 and HP-15) were completed adjacent to SWMU No. 18 (Former Waste Degreaser Storage Building Area) to evaluate the potential impact to groundwater quality associated with this SMWU. These borings were completed during this investigation, rather than during the RFA-SV, because of the limited amount of information available regarding the operation of this unit. In addition, SMWU No. 18 is located within close proximity to the Shell Plant, allowing for the completion of these borings without having to remobilize the drilling equipment. The remaining fourteen locations were chosen to evaluate the extent of horizontal migration of the contaminants associated with the Shell Plant.

2.1.2 HydroPunch® Sampling Procedures

The HydroPunch® borings were advanced with a truck-mounted or track-mounted drill rig (depending on the location and surface conditions) equipped with 4 1/4-inch inside diameter hollow-stem augers. Soil samples were collected every five feet with a two-inch diameter split-spoon sampler in accordance with the Standard Penetration Test (ASTM Method D-1586). The soil borings were completed by



LEGEND:

MW-3 ⊕ MONITORING WELL LOCATION

HP-5 ◆ HYDROPUNCH® BORING LOCATION

100 0 100

scale: feet

FIGURE 2-1

LOCATION OF HYDROPUNCH® BORINGS

HERCULES/DYNO-NOBEL INC.
DYNO-NOBEL INC. SITE
PORT EWEN, NEW YORK

ECKENFELDER INC.

Nashville, Tennessee
Mahwah, New Jersey

9596-09 01/30/96 PLOT 1=100

tremie grouting the borehole with a cement/bentonite grout mixture per ASTM D-5299. The locations of the borings were staked to be surveyed by a New York State licensed land surveyor for ground surface elevation (relative to NGVD) and location (relative to New York State Plane Coordinate System) at a later time. A summary of the survey data is presented in Table 2-1.

Soil samples were visually classified and described in accordance with a modified Burmister Soils Classification System (1958) and the Unified Soil Classification System (ASTM D-2488). A representative portion of the split-spoon sample was placed in a glass jar, sealed with aluminum foil and the jar lid, and properly labeled. The samples were allowed to equilibrate to room temperature, and were then subjected to field-screening for volatile organics with an HNu Systems Model PI-101 Photoionization Detector. The samples were then placed in boxes and stored on-site for future reference. The soil description and classification, along with information such as boring depth, length of recovered portion of the sample interval, blow counts for split-spoon samples, depth to saturation, head space results, depth of the HydroPunch® sample collected for laboratory analyses, and other distinguishing characteristics of the soil (e.g., odor, color, etc.), if present, were recorded. These observations are contained in the boring logs presented in Appendix A.

A minimum of one groundwater sample was collected at each HydroPunch® boring location. The shallowest sample was collected approximately 25 feet below ground surface, or a minimum of five feet below saturation. This depth corresponds with the ten-foot screened interval in the existing monitoring wells adjacent to the Shell Plant (MW-3, MW-4A, and MW-4B). One of the HydroPunch® borings (HP-10) was located adjacent to existing well MW-4A, for which analytical data is available, as a control location to provide a comparison of the data obtained from the HydroPunch® investigation (see Section 3.3).

Upon reaching the target groundwater sample depth, the HydroPunch® sampler, equipped with a dedicated five-foot screen and drive point, was attached to the drilling rods and lowered through the augers to the bottom of the boring. The device was then pushed or driven approximately five-feet into the underlying undisturbed soils. The HydroPunch® sheath was then retracted between one to four feet, exposing the screen to the soils. The clay deposits into which the HydroPunch® sampler was driven were so dense, that many times the drive point detached from

TABLE 2-1

SUMMARY OF SURVEY DATA (a)

Well Name	Northing (b)	Easting (b)	Ground Surface Elevation (c) (feet)	PVC Elevation (c) (feet)	Protective Casing Elevation (c) (feet)
HP- 1	685,400.08	594,246.34	163.4	NA	NA
HP- 2	685,422.24	594,300.63	164.7	NA	NA
HP- 3	685,424.48	594,343.99	164.4	NA	NA
HP- 4	685,380.71	594,335.46	164.6	NA	NA
HP- 5	685,435.55	594,448.56	161.1	NA	NA
HP- 6	685,379.73	594,512.92	157.8	NA	NA
HP- 7	685,305.36	594,648.93	157.8	NA	NA
HP- 8	685,218.76	594,639.62	162.7	NA	NA
HP- 9	685,130.17	594,614.45	164.0	NA	NA
HP-10	685,220.05	594,500.02	156.8	NA	NA
HP-11	685,096.79	594,493.05	161.8	NA	NA
HP-12	685,152.73	594,414.82	158.9	NA	NA
HP-13	685,252.57	594,332.84	163.0	NA	NA
HP-14	685,571.49	594,367.79	163.4	NA	NA
HP-15	685,582.15	594,431.75	163.2	NA	NA
HP-16	NA	NA	NA	NA	NA
MW- 1	687,426.38	593,758.90	225.0	227.4	227.5
MW- 2A	687,564.88	594,159.27	168.0	170.7	170.5
MW- 2B	687,375.03	594,108.02	169.8	171.7	172.2
MW- 3	685,411.64	594,301.54	164.8	167.2	167.2
MW- 4A	685,228.85	594,503.99	156.3	158.9	158.7
MW- 4B	685,331.12	594,509.19	155.9	158.3	158.4
MW- 5	684,812.44	593,169.68	190.9	193.1	193.2
MW- 6	684,818.49	593,459.17	178.4	180.9	181.1
MW- 7	684,959.21	593,432.38	170.5	172.8	173.0
MW- 8	686,345.55	595,000.63	151.4	153.9	153.9
MW- 9	686,124.60	595,532.96	146.0	148.0	148.0
MW-10	685,933.75	595,565.33	146.9	149.0	149.3
MW-11S	683,792.33	593,680.59	162.1	164.4	164.6
MW-11D	683,789.62	593,686.64	161.4	163.9	164.0
MW-12S	685,004.95	593,902.75	166.5	168.9	169.0
MW-12D	685,000.73	593,908.21	166.0	168.4	168.6
MW-13S	686,130.09	594,562.13	160.1	162.5	162.6
MW-13D	686,123.89	594,562.05	160.2	162.4	162.6
MW-14S	686,268.37	593,685.26	173.1	175.6	175.8
MW-14D	686,262.84	593,680.99	173.7	176.1	176.4

TABLE 2-1

SUMMARY OF SURVEY DATA (a) (Continued)

Well Name	Northing (b)	Easting (b)	Ground Surface Elevation (c) (feet)	PVC Elevation (c) (feet)	Protective Casing Elevation (c) (feet)
MW-15S	687,490.56	594,477.68	159.6	162.0	162.2
MW-15D	687,485.21	594,477.51	159.2	162.0	161.6
MW-16S	686,949.23	595,108.94	157.3	159.3	159.5
MW-16D	686,942.93	595,107.68	157.4	159.9	160.1
MW-17S	686,934.03	595,603.13	140.8	143.9	144.0
MW-18S	686,601.13	595,237.84	144.4	146.8	147.0
SG- 1	686,037.20	594,934.18	NA	147.5	NA

(a) Survey performed by North and Houston Land Surveyors, November - December, 1995. NA indicates data not available

(b) Northing and easting based on NYS Plane Coordinate System.

(c) Elevations relative to National Geodetic Vertical Datum of 1929.

the screen. Thus, only a small portion of the screen was exposed to the soils. This, coupled with the low rate of recharge into the sampler, required that many of the HydroPunch® samplers had to be left in the borehole overnight to allow enough water to enter the screened interval to collect a minimum of 40 mL for the analyses for VOCs. The groundwater samples were collected with a very small diameter bailer, manufactured specifically for use with the HydroPunch® sampler. Dedicated nylon cord was used to lower the bailer through the drilling rods and into the sample chamber. The bailer was retrieved and the sample was transferred to the sample containers in a manner that limited the amount of volatilization of the sample.

The boring was then advanced to a depth of 40 feet below ground surface, with soil samples collected at five-foot intervals. A second HydroPunch® sample was collected at this depth. This second groundwater sample was analyzed only if any VOCs were detected in the shallowest groundwater sample within that boring. An exception to the above procedure was employed at HP-10, where the second groundwater sample was collected at a depth of 37 to 37.5 feet below ground surface because bedrock was encountered at 37.5 feet. Further, an additional groundwater sample (HP-10A, 32 to 34 feet) was collected from a boring adjacent to this location to allow for a larger length of screen exposed to the soils. A final exception occurred at HP-9, where a second HydroPunch® sample was not collected because the analytical results for the shallow sample were obtained prior to completion of the borehole and indicated no detected values for VOCs.

A final soil sample was collected approximately five feet below the depth from which the HydroPunch® sample was pushed or driven, to characterize the soils associated with the HydroPunch® sample. A split-spoon sample could not be collected from the same depth interval as the groundwater sample, as indicated in the Work Plan, because the screen and drive point remained in the borehole. Split-spoon samples collected above the second groundwater sample did not indicate that the sand and gravel unit had been penetrated, thus, no temporary casing was necessary.

The HydroPunch® sampler and bailers, employed above, were cleaned prior to each use via the following procedures:

- The sampler and bailer were decontaminated with a high-pressure hot water jet spray, followed by a laboratory detergent wash and potable water rinse;

- The screen, o-rings, and drive-point of the HydroPunch® sampler were replaced after each use. It is not possible to recover the screen and drive-point from the borehole; and

- A final distilled/deionized water rinse was conducted after the sampler and bailer were reassembled.

2.1.3 HydroPunch® Sample Analysis

Thirty-two groundwater samples were collected from 16 soil borings, in accordance with the approved Work Plan. It was not necessary to analyze seven of the deeper samples, because no values were detected in the shallow sample from the same boring. The samples were shipped via overnight express to the ECKENFELDER INC. laboratory in Nashville, Tennessee, which is certified by the New York State Department of Health (NYSDOH). The analyses were conducted in accordance with the ECKENFELDER INC. Laboratory Quality Assurance Manual, contained in Appendix C of the Work Plan.

Trip blank, equipment blank, and replicate samples were collected and analyzed for quality control and to provide a quantitative basis for validating the analytical data. One trip blank sample was collected per sample shipment. The trip blank consisted of an analyte-free water sample prepared by the laboratory. The trip blank sample accompanied the sample container shipment from the laboratory, to the field, and back. The trip blank samples were labeled with a "TB" prefix, followed by the six digit sample date. A total of 14 trip blank samples were analyzed.

Two equipment blank samples (EB062295 and EB071795) were collected as part of the HydroPunch® sampling. The equipment blanks consisted of analyte-free water, obtained from the ECKENFELDER INC. laboratory, poured over the cleaned HydroPunch® sampler and bailer, and collected into the appropriate sample containers.

Blind replicate samples were collected at HP-8, 23 to 24 feet, and HP-10, 21 to 24 feet (DUP071395 and DUP060895, respectively). The replicate samples were collected from borings where a considerable amount of water had entered the sample chamber. The replicate samples were evenly split from the same bailer.

2.2 SITE-WIDE GROUNDWATER INVESTIGATION

The groundwater investigation was conducted to gain a better understanding of the hydrogeologic conditions at the facility. The objectives of this phase of the investigation included obtaining a better understanding of the groundwater flow direction, hydraulic conductivity, the vertical and horizontal gradients, and the potential for off-site migration of contaminants.

2.2.1 Monitoring Well Installation

The technical approach for evaluating the site hydrogeology included the installation of well couplets at six locations throughout the facility, plus two additional wells associated with the Detonation Pond area. A total of fourteen wells were installed and their locations are depicted on Drawing 9596-01. The distribution of the well locations throughout the facility and the use of couplets allows for a better understanding of the horizontal and vertical flow components present at the site. The Work Plan called for the installation of a well couplet downgradient of the Detonation Pond; however, because bedrock was encountered at a depth of 10.8 feet, only one well (MW-17S) was installed at this location. MW-17S was installed a month after the other wells were completed because of difficulties obtaining permission from the property owner. All the monitoring wells were screened within the overburden deposits; the underlying bedrock deposits were not targeted for investigation during this phase of work. In addition, one staff gauge (SG-1) was installed to evaluate the relationship between the surface and groundwater.

Each couplet location consists of one well screened within the unconfined silt and clay deposits (shallow overburden) and one in the confined sand and gravel unit (deep overburden). The shallow monitoring wells were generally screened between 15 to 20 feet below ground surface. The deep monitoring wells were installed on the top of bedrock, with the exception of MW-11D, which was screened within the upper 15 feet of the sand and gravel unit. Bedrock was not encountered at this location.

In addition, only a thin layer of silt and clay deposits were encountered at two locations, MW-17S and MW-18S; thus, these wells are screened on the top of bedrock within the sand and gravel unit.

The borings into which the monitoring wells were installed were advanced with a truck-mounted or track-mounted drill rig (depending on the location and surface conditions) equipped with 4 1/4-inch inside diameter hollow-stem augers. Soil samples were collected every five feet with a two-inch diameter split-spoon sampler in accordance with the Standard Penetration Test (ASTM Method D-1586). The samples were classified and subjected to head space analysis as described in Section 2.1.2, HydroPunch® Sampling Procedures. The monitoring wells were installed in accordance with ASTM D-5092. They consist of two-inch diameter Schedule 40 PVC, with a ten-foot long, 0.010-inch slot-size PVC screen. The shallow depth to bedrock at two locations (MW-15D and MW-17S), mandated the use of a five-foot long PVC screen, with the same slot size. This was necessary at the MW-15 cluster to eliminate the possibility of overlap in the screen lengths for the shallow and deep wells.

Once the borehole was advanced to the designated depth, the well screen and riser pipe were placed in the borehole. A primary filter pack was then emplaced into the annular space to a height approximately two to three feet above the top of the screen. A secondary filter pack, consisting of one to two feet of fine silica sand, was then placed above the primary filter pack. The depth to the top of each of the filter packs was tamped and measured with a weighted tape. A bentonite pellet or slurry seal three to five feet in thickness was then placed on top of the secondary filter pack. A cement/bentonite grout mixture, consisting of eight gallons of water and five pounds of high-grade bentonite per 94-pound bag of Portland cement (Type I or II), was then tremied into the remaining annular space. The monitoring well was completed with a lockable, steel protective casing that extends approximately 2.5 feet above ground surface. The casing was secured in concrete in the form of a well pad four to six inches above ground surface, angled to direct surface water away from the well. The well construction details can be found on the boring logs presented in Appendix A.

All existing and newly installed monitoring wells were surveyed by a New York State-licensed land surveyor for location and elevation. The survey included location

coordinates (referenced to NYS Plane Coordinate System), ground surface elevation, top of PVC elevation, and top of protective casing elevation for each monitoring well (elevations relative to NGVD). A summary of the survey information is provided on Table 2-1.

2.2.2 Well Development

Following the well construction and after the cement/bentonite grout had set (a minimum of 24 hours), each monitoring well was developed to remove fine-grained particles from the filter pack in accordance with the following procedures:

- Surge Block - A surge block with an outside diameter slightly smaller than the inside diameter of the well was placed in the well and manually moved up and down to produce a surging action. The use of the surge block was alternated with one of the following methods to remove the accumulated sediments within the well screen.

- Dual Line Air Development (airlift pumping) - Dual line air development is a method where two pipes, an air supply line and an air and water discharge line, are placed in the well. The air supply line was then connected to an air compressor, equipped with an in-line oil filter. The compressed air was turned on, and air was jetted into the air discharge line from the supply line. This creates a pressure differential that pushes the water into the air discharge line, where it is collected in a drum at the ground surface. This method generally allows the purging of water at a relatively slow rate and does not inject air into the formation.

- Bailer - A bailer was used in conjunction with the surge block on the shallow wells that had very low recovery rates. In general, the wells were bailed dry four times during the course of development and allowed to fully recover between bailing episodes.

2.2.3 In-Situ Hydraulic Conductivity Testing

Following development, in-situ hydraulic conductivity tests (slug tests) were conducted at each of the newly installed wells and five of the existing monitoring

wells (MW-1, MW-2B, MW-3, MW-4B, and MW-8) because existing hydraulic conductivity data could not be located. Slug tests involve lowering the water level in the well by instantaneously removing a quantity of water from the well and measuring the rate at which the water level recovers to initial static conditions.

In wells that recover slowly (i.e., the wells screened in the shallow overburden), the recovery rate was recorded manually. Wells that recover too quickly for this method were measured by means of a pressure transducer and electronic data logging system. Measurements were also collected with a data logger in many of the slow recovery wells to allow the tests to run overnight or over the period of a few days (a weekend). If the test had not reached 90 percent recovery at this point, the test was stopped at the discretion of the hydrogeologist. The methods for conducting slug tests can be found in Appendix A of the Work Plan.

The data collected from the slug tests were evaluated using the AQTESOLV software program (Geraghty & Miller, Inc., October, 1994). The program utilizes two separate methods for analyzing slug test data, depending upon whether the aquifer is confined or unconfined. The data collected from those wells under apparent unconfined conditions (i.e., the wells screened within the shallow overburden deposits) were evaluated using the method of Bouwer and Rice (1976). The data from wells under apparent confining conditions (i.e., wells screened within the deep overburden deposits) were evaluated utilizing the method of Cooper, et al. (1967) and Bouwer and Rice. The Bouwer and Rice method supports solutions for wells screened in both confined and unconfined aquifers. The values calculated using the Bouwer and Rice method were, generally, an order of magnitude larger than the values calculated by the Cooper, et al. method. The more conservative values (i.e., the higher values) are reported in this document. A summary of the hydraulic conductivity data is presented in Table 2-2. The slug test solutions can be found in Appendix B.

2.2.4 Water Level Measurements

Three rounds of water level measurements were obtained from all the new and existing monitoring wells and staff gauges. The depth to groundwater was measured with an electronic water level indicator. The probe was lowered into the well until the meter indicated the water was reached. The probe was then raised

TABLE 2-2

SUMMARY OF IN-SITU HYDRAULIC CONDUCTIVITY DATA

Well Name	Date	Screened Interval (a)	Hydraulic Conductivity (cm/sec)
MW- 2A	1989	S	3.4E-06
MW- 3	10/27/95	S	5.0E-05
MW- 4A	1989	S	3.4E-06
MW- 4B	10/27/95	S	1.7E-05
MW- 8	10/27/95	S	8.1E-04
MW- 9	1989	S	3.0E-05
MW-10	1989	S	1.9E-05
MW-11S	10/26/95	S	3.6E-06
MW-12S	10/27/95	S	7.4E-06
MW-13S	10/27/95	S	4.3E-07
MW-14S	10/30/95	S	1.8E-05
MW-15S	10/30/95	S	6.9E-04
MW-16S	10/26/95	S	5.0E-06
Geometric Mean (Shallow overburden):			**1.6E-05**
MW- 2B	10/26/95	D	2.5E-04
MW- 5	1989	D	2.3E-04
MW- 6	1989	D	8.6E-04
MW- 7	1989	D	2.9E-03
MW-11D	10/27/95	D	8.8E-03
MW-12D	10/26/95	D	9.9E-04
MW-13D	10/30/95	D	1.9E-02
MW-14D	10/30/95	D	1.4E-03
MW-15D	10/30/95	D	1.4E-02
MW-16D	10/26/95	D	9.2E-03
MW-17S	10/30/95	D	7.8E-03
Geometric Mean (Deep overburden):			**2.6E-03**
MW- 1	10/26/95	R	7.8E-05

(a) S indicates well screened in shallow overburden;
D indicates well screened in deep overburden;
R indicates well screened in bedrock

above the water level and slowly lowered, until the water was again indicated. The cable was held against the side of the inner well at the point designated for water level measurements and a depth reading taken. This procedure was followed three times or until a consistent value was obtained. The value was recorded to the nearest 0.01 feet in a field notebook. The probe was then decontaminated with a distilled water rinse as it was raised to the surface. A summary of the water level measurements is presented in Table 2-3.

2.2.5 Surface and Groundwater Sampling and Analysis

Groundwater samples were collected from each of the existing and newly installed monitoring wells. Well MW-5 was not sampled because it was dry when the sampling was conducted. MW-17S was sampled at a later date because it had not yet been installed when the initial sampling occurred. The existing monitoring wells were sampled previously as a part of the Phase II Investigation. This sampling event thus provides confirmation of these initial sampling results. The locations of the new wells are distributed across the site and, in many cases, are near an identified SWMU or AOC. There is no previous information regarding groundwater quality in these areas. Well cluster MW-11 is located upgradient of the facility and provides background water quality conditions.

Two surface water samples (SW-2 and SW-3) were collected from the wetlands bordering the eastern boundary of the site. The surface water sampling occurred at the same time MW-17S was sampled, because all the surface water sample locations were dry during the initial sampling event. A surface water sample could not be collected from the background location, SW-1, as this location was dry during the sampling event. SW-2 was collected from an area directly downgradient of the Shell Plant area, while SW-3 was collected from a downstream location. The location of SW-3 was chosen to be representative of the surface water quality leaving the general wetlands area, closest to the site and adjacent to the area of immediate concern. It is located at an area removed from the Shell Plant before the stream forks. The locations of the surface water samples are depicted on Drawing 9596-01. The surface and groundwater sampling field data sheets are presented in Appendix C. The chain-of-custody forms are presented in Appendix D.

TABLE 2-3

GROUNDWATER ELEVATION DATA (a)

Well Name	Screened Interval (b)	Reference Elevation (c)	09/11/95 Depth to Groundwater (d)	09/11/95 Groundwater Elevation	10/04/95 Depth to Groundwater	10/04/95 Groundwater Elevation	10/16/95 Depth to Groundwater	10/16/95 Groundwater Elevation
MW- 1	R	227.4	23.02	204.4	23.59	203.8	21.53	205.9
MW- 2A	S	170.7	15.34	155.4	14.91	155.8	9.78	160.9
MW- 2B	D	171.7	14.63	157.1	15.00	156.7	11.75	160.0
MW- 3	S	167.2	10.53	156.7	10.42	156.8	8.48	158.7
MW- 4A	S	158.9	9.76	149.1	17.11	141.8	7.95	151.0
MW- 4B	S	158.3	10.81	147.5	10.43	147.9	9.71	148.6
MW- 5	D	193.1	DRY	DRY	DRY	DRY	DRY	DRY
MW- 6	D	180.9	32.00	148.9	32.51	148.4	31.58	149.3
MW- 7	D	172.8	35.55	137.3	36.03	136.8	35.31	137.5
MW- 8	S	153.9	15.68	138.2	14.88	139.0	12.41	141.5
MW- 9	S	148.0	7.55	140.5	7.65	140.4	5.57	142.4
MW-10	S	149.0	8.68	140.3	8.94	140.1	7.01	142.0
MW-11S	S	164.4	8.78	155.6	9.98	154.4	7.06	157.3
MW-11D	D	163.9	8.84	155.1	9.28	154.6	8.43	155.5
MW-12S	S	168.9	8.18	160.7	8.51	160.4	8.24	160.7
MW-12D	D	168.4	18.43	150.0	18.89	149.5	17.71	150.7
MW-13S	S	162.5	11.01	151.5	8.98	153.5	7.09	155.4
MW-13D	D	162.4	24.32	138.1	23.75	138.7	21.22	141.2
MW-14S	S	175.6	8.03	167.6	7.97	167.6	5.58	170.0
MW-14D	D	176.1	18.82	157.3	19.66	156.4	15.25	160.9
MW-15S	S	162.0	8.73	153.3	8.18	153.8	6.57	155.4
MW-15D	D	162.0	8.32	153.7	7.79	154.2	6.25	155.8
MW-16S	S	159.3	20.21	139.1	22.08	137.2	20.63	138.7
MW-16D	D	159.9	21.52	138.4	21.91	138.0	18.93	141.0
MW-17S	D	143.9	NM	NM	4.66	139.2	3.86	140.0
MW-18S	D	146.8	8.09	138.7	6.69	140.1	5.13	141.7
SG- 1	S	147.5	NM	NM	NM	NM	1.47	146.0

(a) All elevations and depths measured in feet. Elevations are relative to National Geodetic Vertical Datum of 1929.
NM indicates water level measurement not taken.

(b) S indicates well screened in shallow overburden; D indicates well screened in deep overburden; Rock indicates well screened in bedrock.

(c) Survey performed by North and Houston Land Surveyors, Kingston, N.Y.

(d) Depth to groundwater measurement taken from top of PVC well casing.

2.2.5.1 Surface and Groundwater Sampling Procedures. Procedures for the collection of surface and groundwater samples are presented in Sections 6.3 and 6.1, respectively of the Work Plan. The monitoring wells were purged of three well volumes of water or completely evacuated, depending on recharge rates, prior to sampling. Purging was performed by bailing with a pre-cleaned PVC bailer for the monitoring wells with low recharge rates, or with a small diameter Grundfos Redi-Flo2® submersible pump. Dedicated high density polyethylene (HDPE) tubing was used in conjunction with the pumps and dedicated polyethylene cord was used to suspend the bailers into the wells. Groundwater samples were collected using either the pump or a disposable Teflon® bailer with nylon bailer cord.

Nearly all the equipment used to collect the surface and groundwater samples was dedicated to a given monitoring well. The only exceptions were the PVC bailers used for purging, the Grundfos Redi-Flo 2® submersible pumps, and the filtration vessel used to filter the samples for soluble metals analysis. This equipment was decontaminated prior to each use according to the following procedures:

- A laboratory detergent wash followed by a potable water rinse. These solutions were flushed through the pump for approximately five minutes;
- A 10 percent nitric acid solution rinse; and
- A final rinse with analyte-free deionized water.

2.2.5.2 Surface and Groundwater Sample Analysis. Twenty-five groundwater samples and two surface water samples were collected and shipped via overnight express to the ECKENFELDER INC. laboratory in Nashville, Tennessee. The groundwater samples were analyzed for TCL Organics (volatiles and semivolatiles) and total and soluble metals. The surface water samples were analyzed for TCL Organics and total metals. The list of metals are summarized on Table 2-4. The analyses were conducted in accordance with the ECKENFELDER INC. Laboratory Quality Assurance Manual, contained in Appendix C of the Work Plan.

Trip blank, equipment blank, and replicate samples were collected and analyzed for quality control and to provide a quantitative basis for validating the analytical data. One trip blank sample was collected per sample shipment. The trip blank samples

TABLE 2-4

SUMMARY OF METAL ANALYTES AND METHODS

Parameter	Method # (SW-846)
Aluminum	6010
Antimony	6010
Arsenic	7060
Barium	6010
Cadmium	6010
Chromium	6010
Cobalt	6010
Copper	6010
Lead	7421
Mercury	7470
Potassium	6010
Selenium	7740
Silver	6010
Zinc	6010

were analyzed only for VOCs. The trip blank samples were labeled with a "TB" prefix, followed by the six digit sample date. A total of three trip blank samples were analyzed.

Two equipment blank samples (EB091295 and EB091395) were collected as part of the groundwater sampling. One of the equipment blank samples consisted of analyte-free water, obtained from the ECKENFELDER INC. laboratory, poured over the equipment used when collecting the samples with the submersible pump; and the other for the samples collected with bailers. One equipment blank sample (EB091495SUR) was collected as part of the surface water sampling. Two blind replicate samples were also collected (REP091495 for well MW-8, and REP091595 for well MW-11D).

3.0 INVESTIGATIVE FINDINGS

3.1 SITE GEOLOGY

3.1.1 Bedrock Geology

There has been limited work conducted to identify and describe the bedrock geology of this area, and this phase of work did not include any investigation into the these deposits. The site lies within the Hudson River Lowlands, located between the Hudson River to the east, and the Marlboro Mountains to the west. The Hudson Valley fold and thrust belt, located to the west, is the prominent structure of this area and has been studied in great detail. The bedrock deposits underlying the facility consist of the Ordovician Austin Glen Formation of the Normanskill unit. This formation is composed of graywacke that grades up into shale (ECKENFELDER INC., December, 1994).

Bedrock was encountered in nine of the borings conducted during this investigation. Five of the existing monitoring wells had also been sampled to the top of bedrock. Bedrock elevations across the site ranged from a high of 223.5 feet above NGVD in well MW-1, to 80.0 feet above NGVD in well MW-12D, located at the center of the facility. Elevations of the top of bedrock then rise beneath the wetland area east of the developed portion of the site to an elevation of 130.0 feet above NGVD in well MW-17S. The bedrock valley is oriented in a northeastward direction in the northern reaches of the site, and is offset to the western side of the topographic valley occupied by the wetlands. Bedrock is observed to outcrop in the western portion of the facility along the edge of Hussey Hill. A structural contour map of the top of bedrock is depicted on Drawing 9596-02. The bedrock surface is also shown in three cross-sections depicted on Drawing 9596-03.

3.1.2 Overburden Deposits

Ulster County was completely covered by a continental glacier, which reached its estimated maximum thickness about 27,000 years ago. The depth of glacial erosion by abrasion, scouring, and plucking is notable in only some areas of the county. Most soils in the county formed directly in glacial or glacial-related deposits during

the past 14,000 years. As a consequence, some of the soils found in the county appear unrelated to the underlying bedrock (ECKENFELDER INC., 1994).

The facility is located in a transitional area between two soil associations. To the north and east of the facility, the soil association is Bath-Nassau. This consists of deep to shallow, well-drained and somewhat excessively drained, dominantly hilly, medium-textured soils underlain by shale deposits. To the south and west of the facility, the soil association is Stockbridge-Farmington-Bath. These soils consist of deep to shallow, well-drained and somewhat excessively drained, predominately hilly, medium-textured soils underlain by limestones. The soil beneath the facility is primarily Rhinebeck silt loam, as well as, Canandaigua silt loam and Hudson silt loam, with slopes of three to eight percent and eight to 15 percent (ECKENFELDER INC., 1994).

Descriptions of the overburden materials encountered in each soil boring conducted during this investigation are presented in the soil boring logs in Appendix A. Soil boring logs for the existing monitoring wells are also included in Appendix A. The nature of the overburden deposits is described in the following sections based on the findings from both this investigation and those presented in the Phase II Report.

The overburden deposits consist of a "moist, brown Silty CLAY, trace f Sand" within the upper 15 feet. At approximately 15 feet, the deposits grade to a "wet, gray Silty CLAY to CLAY, trace to no f Sand". The silt and clay layer ranges in thickness from 3.5 feet in MW-17S to 66.8 feet in MW-12D. A sand and gravel layer was encountered beneath the silt and clay deposits in 22 borings, including six of the existing soil borings. The sand and gravel layer ranges from 3.5 feet below ground in MW-17S to 66.8 feet below ground surface in MW-12D. In the borings where a thickness could be determined, the thickness of sand and gravel layer ranges from less than one foot thick in HP-10 to greater than 23 feet in MW-11D.

The combined thickness of the overburden deposits ranges from 1.5 feet in MW-1 to 85.1 feet in MW-12D, and is depicted on the isopachous map presented on Drawing 9596-04. The thickness contours are consistent with the contours presented on the structural contour map discussed above, and exhibit a similar northeast orientation. The overburden deposits are thin along the western edge of the facility bordering Hussey Hill, thicken in the center of the bedrock valley (i.e.,

the central portion of the site), and thin in the eastern portion of the facility in the vicinity of the wetlands. The overburden deposits, including relative portions of the silt and clay layer and the sand and gravel layer, are depicted in the three cross-sections on Drawing 9596-03.

3.2 SITE HYDROGEOLOGY

In the following sections, the findings of the site wide groundwater investigation are presented. Section 3.2.1 provides a description of the hydrogeologic character of the overburden deposits. Section 3.2.2 describes the site-wide groundwater quality. Finally, Section 3.2.3 discusses potential receptors.

3.2.1 Overburden Water-Bearing Zone

Groundwater flow within the overburden deposits has been subdivided based upon the grain size of the encountered soils, as described previously in Section 3.1.2. Two groundwater contour maps (for the shallow overburden and deep overburden deposits) were generated using water level measurements collected on October 4, 1995. Potentiometric surface contours (i.e., the water table) for the shallow overburden deposits are depicted on Drawing 9596-05. Drawing 9596-06 illustrates the piezometric surface contours for the deep overburden deposits. The data used in the preparation of these maps is presented in Table 2-3.

The potentiometric surface map of the shallow overburden (Drawing 9596-05) indicates, in general, that the groundwater in these deposits flows from Hussey Hill towards the wetlands in the eastern portion of the site. The groundwater flow direction then turns to the north-northeast, mimicking the surface water flow patterns. Groundwater flow in the deep overburden deposits (Drawing 9596-06) flows toward the low in the bedrock valley described in Section 3.1.1 (i.e., the center of the site) from both the east and west, and continues towards the northeast, similar to the flow in the shallow overburden deposits.

It should be noted that the groundwater flow maps for both the shallow and deep overburden deposits indicate a groundwater low associated with the wetlands northeast of the active facility. This results in converging groundwater flow lines and precludes the migration of potential contaminants from the facility east of the

wetlands. As discussed further in Section 3.2.3, private wells screened within the sand and gravel deposits east of the wetland area are located upgradient of any potential plume which may migrate from the facility, and are thus not considered potential receptors.

Groundwater occurs in the shallow overburden deposits under unconfined (i.e., water table) conditions. The lateral hydraulic conductivity of the shallow overburden deposits can be estimated using the results of the slug tests. Slug tests were conducted on the thirteen wells screened within these deposits, and ranged from 8.1×10^{-4} cm/sec at MW-8 to 4.3×10^{-7} cm/sec in MW-13S. The geometric mean lateral hydraulic conductivity is 1.6×10^{-5} cm/sec. These data are summarized on Table 2-2 and the solutions for the slug tests conducted during this investigation are presented in Appendix B.

A comparison of the water level data collected at the various couplet locations installed across the site indicates that the hydraulic gradients are downward in the vicinity of the active portion of the site and, generally, upward at the perimeter of the site. The vertical hydraulic gradients are summarized in Table 3-1. On the basis of these gradients, and the relatively low hydraulic conductivity of the shallow overburden deposits as compared with the higher hydraulic conductivity of the deep overburden deposits (discussed below), groundwater flow within the shallow overburden is anticipated to be predominately vertical. This assumption is supported by the Tangent Law for the refraction of groundwater flow lines between two units with different values of hydraulic conductivity (Freeze and Cherry, 1979).

The seepage velocity (V_s), or the average speed at which a particle of water will move in the subsurface, is given by the following relationship:

$$V_s = ki/\eta_e$$

Where: k = hydraulic conductivity
i = hydraulic gradient
η_e = effective porosity

For the purpose of these calculations, the effective porosity for the shallow overburden deposits was assigned a value of 0.50, which is within the range of

TABLE 3-1

SUMMARY OF VERTICAL HYDRAULIC GRADIENTS

Well Cluster	Water Level Elevation		Vertical Difference (a) (feet)	Head Difference (feet)	Vertical Hydraulic Gradient
	Shallow Well (feet)	Deep Well (feet)			
MW-11	154.4	154.6	41.2	-0.2	-0.005
MW-12	160.4	149.5	59.8	10.9	0.182
MW-13	153.5	138.7	20.4	14.8	0.725
MW-14	167.6	156.4	39.1	11.2	0.286
MW-15	153.8	154.2	11.5	-0.4	-0.035
MW-16	137.2	138.0	23.9	-0.8	-0.033
				ARITHMETIC MEAN:	**0.187**

(a) The vertical distance is the difference between the midpoints of the shallow and deep well screens.

typical porosities for silt and clay deposits (Freeze and Cherry, 1979). The hydraulic gradient is the average vertical gradient measured from the well clusters located across the site and is calculated on Table 3-1. The value for the vertical hydraulic conductivity used in this calculation was estimated from the geometric mean of the lateral hydraulic conductivity value calculated from the slug tests. Freeze & Cherry (1979) report values of horizontal hydraulic conductivity are typically two to ten times larger than values of vertical hydraulic conductivity. Hence, a vertical hydraulic conductivity value of 4.5×10^{-3} ft/day was used in the following calculation. The vertical seepage velocity may be calculated as:

$$V_s = \frac{4.5 \times 10^{-3} \text{ ft/day} \times 0.19}{0.50} = 1.7 \times 10^{-3} \text{ ft/day}$$

The vertical seepage velocity is, thus, on the order of 1.7×10^{-3} feet/day or 0.61 feet/year.

The values of hydraulic conductivity for the wells screened within the deep overburden deposits ranged from a high of 1.9×10^{-2} cm/sec in MW-13D, to a low of 2.3×10^{-4} cm/sec in MW-5. The geometric mean lateral hydraulic conductivity was calculated at 2.6×10^{-3} cm/sec. As discussed above, the hydraulic conductivity contrast between the shallow and deep overburden deposits suggests a predominantly horizontal flow path within the deep overburden. The seepage velocity in these deposits was calculated using an effective porosity of 0.35 which is consistent with the typical range of values for these deposits (Freeze and Cherry, 1979). The hydraulic gradient is defined as the average horizontal gradient as measured on the piezometric surface map for the deep overburden, Drawing 9596-06. The lateral seepage velocity for the deep overburden deposits may be calculated as:

$$V_s = \frac{7.4 \text{ ft/day} \times 0.02}{0.35} = 0.45 \text{ ft/day}$$

The lateral seepage velocity within the deep sand and gravel deposits is, thus, on the order of 0.45 feet/day or 163 feet/year.

3.2.2 Site-Wide Groundwater Quality

In this section, the results of the site-wide groundwater and surface water samples are evaluated. The results of the groundwater quality samples collected in the vicinity of the Shell Plant are discussed in greater detail in Section 3.3. The results of the groundwater samples are compared with Class GA water quality standards (NYSDEC Water Quality Standards, Table 1, Section 703.5) and EPA primary drinking water standards. Detections of organic (volatile and semivolatile organic compounds) and inorganic compounds are summarized on Tables 3-2 and 3-3, respectively. Complete analytical results for the surface and groundwater samples are presented in Appendix E. The laboratory report forms, including the report narrative, are presented in Appendix F, Volume II.

3.2.2.1 Organic Compounds. A total of eight VOCs were detected in nine wells throughout the entire site. No VOCs were detected in the upgradient wells (MW-11S and MW-11D), the surface water samples (SW-2 and SW-3), or the wells located downgradient of the detonation pond (MW-17S and MW-18S).

Methylene chloride was detected in wells MW-1 and MW-14D at concentrations of 1J and 1.2J µg/L, respectively. The J qualifier indicates the compound is estimated. Methylene chloride is a common laboratory contaminant; therefore, these detections are not attributed to any source at the facility.

The analytical results for the organic compounds were compared with NYS Class GA water quality standards and the EPA primary drinking water standards (maximum contaminant levels (MCLs)). No exceedances of NYS water quality standards were observed. Exceedances of the MCLs were observed for 1,1-dichloroethene, cis-1,2-dichloroethene, 1,1,1-trichloroethane (1,1,1-TCA), and trichloroethene (TCE). All of the exceedances were in the three wells located near the Shell Plant Area (MW-3, MW-4A, and MW-4B), with the exception of TCE in well MW-13S. The TCE value of 8.5J µg/L in MW-13S is estimated and only slightly above the standard of 5 µg/L. The detected values and the standards are summarized on Table 3-2.

TCE was detected in four wells outside of the Shell Plant Area (1.1J in MW-2B, 4.3J µg/L in MW-8, 8.5J µg/L in MW-13S, and 2.9J µg/l in MW-16D). MW-16D is located adjacent to the Old Waste Burning Grounds (SWMU No. 34). MW-8 is

TABLE 3-2

SUMMARY OF DETECTED CONCENTRATIONS OF ORGANIC COMPOUNDS SURFACE AND GROUNDWATER SAMPLES

Compound	Units	Water Quality Standard (a)	MW- 1	MW- 2A	MW- 2B	MW- 3	MW- 4A	MW- 4B	MW- 6
Volatiles									
1,2-Dichlorobenzene	µg/L	4.7(600)	-- (b)	--	--	--	0.7 J	--	--
Dichlorodifluoromethane	µg/L		--	--	--	--	--	--	--
1,1-Dichloroethane	µg/L		--	--	--	450 JD	--	--	--
1,1-Dichloroethene	µg/L	(7)	--	--	--	6,500 D	--	3.7 JD	--
cis-1,2-Dichloroethene	µg/L	(70)	--	--	--	--	--	110	--
Methylene Chloride	µg/L		1 J	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/L	(200)	--	--	1.8 J	24,000 D	--	--	--
Trichloroethene	µg/L	(5)	--	--	1.1 J	42,000 D	990,000 D	68,000 D	--
Semivolatiles									
Acenaphthene	µg/L	20	--	--	--	--	0.47 J	--	--
Anthracene	µg/L		--	--	--	--	0.26 J	--	--
Butyl benzyl phthalate	µg/L		--	--	--	--	--	--	--
Di-n-butyl phthalate	µg/L	50	0.99 JB	0.35 JB	0.61 JB	1.3 JB	0.79 JB	0.46 JB	0.27 JB
Dibenzofuran	µg/L		0.42 J	--	--	--	0.42 J	--	--
Diethyl phthalate	µg/L		0.29 J	--	--	0.45 J	0.19 J	0.15 J	--
Bis(2-ethylhexyl)phthalate	µg/L	50	1.4 J	1.3 J	1.7 J	0.68 JB	3.4 J	0.34 JB	4.5 J
Fluoranthene	µg/L		--	--	--	--	0.54 J	--	--
Fluorene	µg/L		--	--	--	--	0.71 J	--	--
2-Methylnaphthalene	µg/L		--	--	--	--	1.9 J	--	--
N-Nitrosodiphenylamine	µg/L		--	--	--	--	0.5 J	--	0.31 J
Naphthalene	µg/L	10	--	--	--	--	5.6 J	--	--
Phenanthrene	µg/L		--	--	--	--	2.9 J	--	--
Pyrene	µg/L		--	--	--	--	0.38 J	--	--
1,2,4-Trichlorobenzene	µg/L	10(70)	--	--	--	--	2.3 J	--	--

J - an estimated value; B - present in the method blank; D - diluted sample

TABLE 3-2 (Continued)

SUMMARY OF DETECTED CONCENTRATIONS OF ORGANIC COMPOUNDS GROUNDWATER SAMPLES

Compound	Units	MW- 7	MW- 8	MW- 9	MW-10	MW-11S	MW-11D	MW-12S	MW-12D	MW-13S
Volatiles										
1,2-Dichlorobenzene	µg/L	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	µg/L	--	--	--	--	--	--	--	--	2.4 J
1,1-Dichloroethane	µg/L	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	µg/L	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	µg/L	--	--	--	--	--	--	--	--	3.4 J
Methylene Chloride	µg/L	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/L	--	--	--	--	--	--	--	--	--
Trichloroethene	µg/L	--	4.3 J	--	--	--	--	--	--	8.5 J
Semivolatiles										
Acenaphthene	µg/L	--	--	--	--	--	--	--	--	--
Anthracene	µg/L	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	µg/L	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	µg/L	0.38 JB	0.57 JB	0.68 JB	0.36 JB	2 JB	0.27 JB	0.41 JB	0.37 JB	0.67 JB
Dibenzofuran	µg/L	--	--	--	--	--	--	--	--	--
Diethyl phthalate	µg/L	--	--	--	--	--	--	0.26 J	--	--
Bis(2-ethylhexyl)phthalate	µg/L	1.2 JB	0.88 JB	0.9 JB	0.44 JB	10 J	0.21 JB	0.66 JB	0.36 JB	1 JB
Fluoranthene	µg/L	--	--	--	--	--	--	--	--	--
Fluorene	µg/L	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	µg/L	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	µg/L	--	--	--	--	--	--	--	--	--
Naphthalene	µg/L	--	--	--	--	--	--	--	--	--
Phenanthrene	µg/L	--	--	--	--	--	--	--	--	--
Pyrene	µg/L	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	µg/L	--	--	--	--	--	--	--	--	--

J - an estimated value; B - present in the method blank; D - diluted sample

TABLE 3-2 (Continued)

SUMMARY OF DETECTED CONCENTRATIONS OF ORGANIC COMPOUNDS
GROUNDWATER SAMPLES

Compound	Units	MW-13D	MW-14S	MW-14D	MW-15S	MW-15D	MW-16S	MW-16D	MW-17S	MW-18S
Volatiles										
1,2-Dichlorobenzene	µg/L	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	µg/L	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	µg/L	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	µg/L	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	µg/L	--	--	--	--	--	--	--	--	--
Methylene Chloride	µg/L	--	--	1.2 J	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/L	--	--	--	--	--	--	--	--	--
Trichloroethene	µg/L	--	--	--	--	--	--	2.9 J	--	--
Semivolatiles										
Acenaphthene	µg/L	--	--	--	--	--	--	--	--	--
Anthracene	µg/L	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	µg/L	--	0.55 J	--	--	--	--	--	--	--
Di-n-butyl phthalate	µg/L	1.9 JB	1.2 JB	1.1 JB	0.57 JB	0.61 JB	0.84 JB	0.56 JB	0.42 J	0.35 JB
Dibenzofuran	µg/L	--	--	--	--	--	--	--	--	--
Diethyl phthalate	µg/L	--	--	--	--	--	--	--	--	0.16 J
Bis(2-ethylhexyl)phthalate	µg/L	0.76 JB	6.9 J	0.25 JB	3.7 J	0.65 JB	2.5 J	0.79 JB	1.2 JB	3.5 J
Fluoranthene	µg/L	--	--	--	--	--	--	--	--	--
Fluorene	µg/L	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	µg/L	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	µg/L	--	--	--	--	--	--	0.27 J	--	--
Naphthalene	µg/L	--	--	0.3 J	--	--	--	--	--	--
Phenanthrene	µg/L	--	--	--	--	--	--	--	--	--
Pyrene	µg/L	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	µg/L	--	--	--	--	--	--	--	--	--

J - an estimated value; B - present in the method blank; D - diluted sample

TABLE 3-2 (Continued)

SUMMARY OF DETECTED CONCENTRATIONS OF ORGANIC COMPOUNDS GROUNDWATER SAMPLES

Compound	Units	SW- 2	SW- 3	EB091295	EB091395	EB091495SUR	REP091495	REP091595
Volatiles								
1,2-Dichlorobenzene	µg/L	--	--	--	--	--	--	--
Dichlorodifluoromethane	µg/L	--	--	--	--	--	--	--
1,1-Dichloroethane	µg/L	--	--	--	--	--	--	--
1,1-Dichloroethene	µg/L	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	µg/L	--	--	--	--	--	--	--
Methylene Chloride	µg/L	--	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/L	--	--	--	--	--	--	--
Trichloroethene	µg/L	--	--	--	--	--	4 J	--
Semivolatiles								
Acenaphthene	µg/L	--	--	--	--	--	--	--
Anthracene	µg/L	--	--	--	--	--	--	--
Butyl benzyl phthalate	µg/L	--	--	--	--	--	--	--
Di-n-butyl phthalate	µg/L	0.26 J	0.33 J	1.8 JB	0.35 JB	0.29 JB	0.49 JB	0.2 JB
Dibenzofuran	µg/L	--	--	--	--	--	--	--
Diethyl phthalate	µg/L	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	µg/L	0.23 JB	0.2 JB	1.1 JB	0.23 JB	0.24 JB	0.9 JB	0.21 JB
Fluoranthene	µg/L	--	--	--	--	--	--	--
Fluorene	µg/L	--	--	--	--	--	--	--
2-Methylnaphthalene	µg/L	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	µg/L	--	--	--	--	--	--	--
Naphthalene	µg/L	--	--	--	--	--	--	--
Phenanthrene	µg/L	--	--	--	--	--	--	--
Pyrene	µg/L	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	µg/L	--	--	--	--	--	--	--

(a) Water quality standards taken from NYSDEC Water Quality Standards, Table 1, Section 703.5. Where no standard is given, standard was not listed on table. EPA Primary Drinking Water Standards (Maximum Contaminant Levels (MCLs)) given in parentheses, if applicable.

(b) -- indicates compound not detected

J - an estimated value; B - present in the method blank; D - diluted sample

TABLE 3-3

SUMMARY OF DETECTED CONCENTRATIONS OF INORGANIC COMPOUNDS SURFACE AND GROUNDWATER SAMPLES

Compound	Units	Water Quality Standard (a)	MW- 1	MW- 2A	MW- 2B	MW- 3	MW- 4A	MW- 4B	MW- 6	MW- 7	MW- 8	MW- 9	MW-10
Aluminum, soluble	µg/L		-- (b)	--	--	--	--	--	86	53	--	52	--
Aluminum, total	µg/L		800	51,000	92,000	72,000	3,500	31,000	200,000	120,000	34,000	54,000	65,000
Antimony, soluble	µg/L		--	--	--	--	--	--	5.7	--	--	--	--
Antimony, total	µg/L		--	--	--	--	--	--	--	--	--	--	--
Arsenic, soluble	µg/L		--	--	--	--	--	9.7	--	--	--	--	--
Arsenic, total	µg/L	25	--	25	80	40	--	35	88	100	77	44	64
Barium, soluble	µg/L		180	110	140	79	78	44	86	96	78	100	120
Barium, total	µg/L	1,000	250	450	1,100	540	100	190	1,500	1,300	360	1,100	640
Cadmium, soluble	µg/L		--	--	--	--	--	--	--	--	--	--	--
Cadmium, total	µg/L	10	--	--	1.1	--	--	--	2.6	2.4	--	1.4	--
Chromium, total	µg/L	50	10	71	140	100	6.1	43	300	190	50	76	98
Cobalt, soluble	µg/L		3.1	--	--	--	--	1.1	--	--	--	--	--
Cobalt, total	µg/L	5	15	38	84	47	2.1	24	140	110	28	66	49
Copper, total	µg/L	200	18	70	200	100	6.4	56	470	330	57	150	110
Lead, total	µg/L	25	--	32	110	44	--	26	140	110	26	46	60
Mercury, total	µg/L	2	--	0.31	--	0.52	--	--	0.72	0.6	--	--	0.32
Potassium, soluble	µg/L		1.8	1.2	2.2	--	2.7	2.2	5	--	1	1.3	--
Potassium, total	µg/L		2.1	11	25	16	3.6	9.2	53	25	8.3	13	14
Selenium, soluble	µg/L		--	--	77	--	--	--	--	--	--	--	--
Selenium, total	µg/L	10	--	--	80	--	--	--	--	--	--	--	--
Silver, total	µg/L	50	--	--	--	--	--	--	1	1.2	--	1.5	--
Zinc, soluble	µg/L		--	--	--	21	22	--	--	30	24	24	22
Zinc, total	µg/L	300	36	250	580	330	37	160	810	640	190	320	320

TABLE 3-3 (Continued)

SUMMARY OF DETECTED CONCENTRATIONS OF INORGANIC COMPOUNDS
SURFACE AND GROUNDWATER SAMPLES

Compound	Units	MW-11S	MW-11D	MW-12S	MW-12D	MW-13S	MW-13D	MW-14S	MW-14D	MW-15S	MW-15D
Aluminum, soluble	µg/L	69	64	57	--	--	--	--	--	--	--
Aluminum, total	µg/L	81,000	5,700	90,000	2,500	27,000	49,000	94,000	32,000	55,000	29,000
Antimony, soluble	µg/L	--	--	--	5.5	--	--	--	--	--	--
Antimony, total	µg/L	--	--	--	--	--	--	--	--	--	--
Arsenic, soluble	µg/L	--	--	--	8.7	--	12	--	--	--	--
Arsenic, total	µg/L	46	--	33	7.9	17	56	47	16	26	23
Barium, soluble	µg/L	91	180	150	120	61	60	46	51	150	59
Barium, total	µg/L	700	220	600	140	190	420	710	270	490	300
Cadmium, soluble	µg/L	--	--	--	--	--	--	--	--	--	--
Cadmium, total	µg/L	--	--	2.5	--	--	--	--	--	--	--
Chromium, total	µg/L	110	11	130	5.4	38	71	130	62	76	49
Cobalt, soluble	µg/L	--	--	--	--	--	--	--	--	--	2
Cobalt, total	µg/L	51	3.1	73	1.6	20	43	66	26	37	27
Copper, total	µg/L	120	9.6	160	--	43	120	140	62	110	81
Lead, total	µg/L	60	--	130	--	26	50	77	32	43	30
Mercury, total	µg/L	--	--	--	--	--	--	--	--	--	0.33
Potassium, soluble	µg/L	1.8	1.8	1.6	1.7	--	2.5	2.4	1.2	--	2.8
Potassium, total	µg/L	22	3.8	18	2.6	7.4	14	20	9.1	16	12
Selenium, soluble	µg/L	--	--	--	--	--	--	--	--	150	220
Selenium, total	µg/L	--	--	--	--	--	--	--	--	150	250
Silver, total	µg/L	--	--	--	--	--	--	--	--	--	--
Zinc, soluble	µg/L	22	--	48	--	24	--	--	22	25	23
Zinc, total	µg/L	310	35	470	23	140	280	420	170	270	170

TABLE 3-3 (Continued)

SUMMARY OF DETECTED CONCENTRATIONS OF INORGANIC COMPOUNDS
SURFACE AND GROUNDWATER SAMPLES

Compound	Units	MW-16S	MW-16D	MW-17S	MW-18S	SW- 2	SW- 3	EB091395	REP091495	REP091595
Aluminum, soluble	µg/L	--	64	66	--	NA (c)	NA	--	--	--
Aluminum, total	µg/L	860	24,000	35,000	77,000	180	290	--	33,000	5,400
Antimony, soluble	µg/L	5.4	--	--	--	NA	NA	--	--	--
Antimony, total	µg/L	--	--	--	--	--	--	--	--	--
Arsenic, soluble	µg/L	--	13	--	--	NA	NA	--	--	--
Arsenic, total	µg/L	--	27	20	38	--	--	--	66	--
Barium, soluble	µg/L	1,100	120	190	170	NA	NA	--	78	180
Barium, total	µg/L	1,100	300	600	800	100	120	--	340	220
Cadmium, soluble	µg/L	9	--	--	--	NA	NA	--	--	--
Cadmium, total	µg/L	12	--	1.1	--	--	--	--	--	--
Chromium, total	µg/L	--	80	50	120	--	--	--	47	11
Cobalt, soluble	µg/L	--	2.1	--	--	NA	NA	--	--	--
Cobalt, total	µg/L	1.5	31	20	40	--	--	--	25	3.1
Copper, total	µg/L	15	41	76	170	130	35	--	50	7.8
Lead, total	µg/L	14	17	27	42	--	--	--	22	--
Mercury, total	µg/L	0.46	--	--	--	--	--	--	--	--
Potassium, soluble	µg/L	3.7	4.1	2.2	8.7	NA	NA	--	1	1.8
Potassium, total	µg/L	4.4	11	13	33	2.9	2.7	--	9.2	3.8
Selenium, soluble	µg/L	11	--	--	--	NA	NA	--	--	--
Selenium, total	µg/L	26	--	--	--	160	10	--	--	--
Silver, total	µg/L	1.6	--	--	--	--	--	--	--	--
Zinc, soluble	µg/L	39	62	20	21	NA	NA	24	--	--
Zinc, total	µg/L	64	110	150	220	68	74	--	170	34

(a) Water quality standards taken from NYSDEC Water Quality Standards, Table 1, Section 703.5. Where no standard is given, standard was not listed on table.
(b) -- indicates compound not detected
(c) NA indicates compound not analyzed

located downgradient of the Old Dump Area (SWMU No. 23). TCE detected in these wells could be attributed to these SWMUs. In addition to TCE, cis-1,2-dichloroethene and dichlorodifluormethane were detected, as estimated values, in MW-13S. The source of these compounds in well MW-13S is not readily apparent at this time. MW-2B is located downgradient of the Open Burning Pads (SWMU Nos. 6 and 7). The two compounds (TCE, 1.1J µg/l and 1,1,1-TCA, 1.8J µg/l) detected in the sample collected from this well are estimated values and are most likely associated with this SWMU. 1,1,1-TCA was detected in this well previously at a value of 6 µg/L. The values of TCE detected throughout the entire facility during the sampling event conducted as part of the Phase II investigation, and its assumed "prevalence across the site", are thus, not confirmed by this sampling.

Fifteen semivolatile compounds were detected in the surface and groundwater samples; however, no water quality standard exceedances were noted. Two compounds (di-n-butyl phthalate and bis-2-ethylhexyl phthalate) were detected at low level concentrations in every sample analyzed. In most cases, these detections were qualified with a B, indicating that they were also detected in the method blank samples. These compounds are common laboratory contaminants.

Most of the semivolatile compounds were detected in samples collected from wells located in the Shell Plant Area (MW-3, MW-4A, and MW-4B). No semivolatile compounds were detected in the upgradient monitoring wells (MW-11S and MW-11D). Other detected compounds included dibenzofuran in MW-1; N-nitrosodiphenylamine in wells MW-6 and MW-16D; and naphthalene in MW-14D.

3.2.2.2 Inorganic Compounds. As a result of the presence of clay deposits located across the site, a wide range of metals were detected in the groundwater samples collected during this investigation. As expected, the groundwater samples collected from wells screened within the shallow overburden clays were, generally, very turbid and the concentration of the detected metals varied significantly between filtered and unfiltered samples. As noted in the Work Plan, this variation was anticipated given that the samples collected during the Phase II Investigation were reported as being very turbid. The Work Plan, thus, called for the collection of both filtered (i.e., soluble) and unfiltered (i.e., total) samples to further evaluate the impact of turbidity on the inorganic sample results.

A review of the soluble metals results indicates that only selenium (at MW-2B, MW-15S, and MW-15D) and barium (at MW-16S) exceeded NYS water quality standards. The remaining analytes were either "not detected" or below the water quality standard, where available. In comparison, the total metals analyses indicated an exceedance of water quality standard, with the exception of mercury and silver, in at least one location for all the analyzed metals. Given that the only difference between the total and soluble metals analysis is the turbidity of the sample, it can be concluded that the turbidity has a significant impact upon the reported metals results. This impact is most readily seen when comparing the total and soluble aluminum results. Clay minerals, which are responsible for the turbidity of the sample, are comprised of hydrous aluminosilicates and other metallic ions. The presence of these clay minerals within the turbid samples allows the aluminum to leach into solution, such that reported aluminum concentrations are up to four orders of magnitude higher in the unfiltered samples versus the filtered sample. This same process occurs with the other metallic ions as well; however, the predominance of aluminum is a clear indicator of the impact of the suspended clay minerals on the analytical results. It should be noted that the turbidity of the samples is elevated to the extent that the unfiltered samples contain significantly more than just colloidal solids. Although it is recognized that the NYSDEC generally requires the analysis of total metals for comparison to water quality standards, the disparity between total and soluble reported values cannot be ignored, and must be taken into consideration when evaluating the collected data.

An alternative method of evaluating the data is to compare both the total and soluble metal results from the downgradient wells with the results from the upgradient well cluster. As described previously, well cluster MW-11 was installed upgradient of the active portion of the site and is intended to represent naturally-occurring background conditions. A comparison of the downgradient metals data to that collected at MW-11 indicates that the metals concentrations range both above and below the background values. Further, those concentrations that do exceed background, generally do so by less than a factor of two, or within the anticipated range of spatial variability. This generalization is not consistent with a comparison of many of the results from MW-11D, screened within the sand and gravel, to the downgradient wells also screened within the sand and gravel. In fact, the downgradient deep wells are generally more consistent with the results from MW-11S. This apparent discrepancy is attributable to the very low percentage of

silt and clay within the sand and gravel deposits in MW-11D, versus the percentage of silt and clay in the deposits screened by the remaining deep wells. Given the significant variation in the grain size and thickness of the sand and gravel at MW-11D, versus the other deep well locations, a direct comparison of water quality results is likely not applicable.

An evaluation of the site wide inorganic water quality results indicates that the naturally-occurring metals concentrations generally exceed NYS Class GA water quality standards. The inorganic results were not compared with MCLs as the NYS water quality standards are generally more conservative and include the same compounds. The elevated total metals concentrations are likely attributable to the significant clay deposits underlying the site, and the associated turbidity of the samples collected for groundwater analysis. However, the comparison of upgradient versus downgradient concentrations does not suggest that the site operations have impacted the inorganic water quality on a site wide basis. We are, thus, not in agreement with the conclusions presented by Gibbs and Hill (1990); and suggest that the reported concentrations are consistent with naturally-occurring conditions.

3.2.3 Identification of Potential Receptors

An evaluation of groundwater and surface water use within a one-mile radius of the site was conducted to provide information regarding the potential impact to human population by a release from the facility. Groundwater use in the vicinity of the site was evaluated by comparing tax maps with customer billing records from the Port Ewen Water Supply Company. It was determined that there are approximately 288 lots owned by 191 families, individuals, companies, or groups within a one-mile radius of the site. Of these, 76 lots, owned by 62 families, individuals, companies, or groups are not connected to Port Ewen Water Supply. The area supplied by the Port Ewen Water Supply is depicted on Figure 3-1. This figure indicates that all potential receptors (i.e., properties located downgradient of the facility) are located within the area served by Port Ewen Water Supply. The area identified as not having access to public water supply is located upgradient of the facility. On the basis of the groundwater flow directions discussed in Section 3.2.1, and to a lesser degree, the availability of public water, there is little possibility for groundwater-related health concerns to neighboring residents.

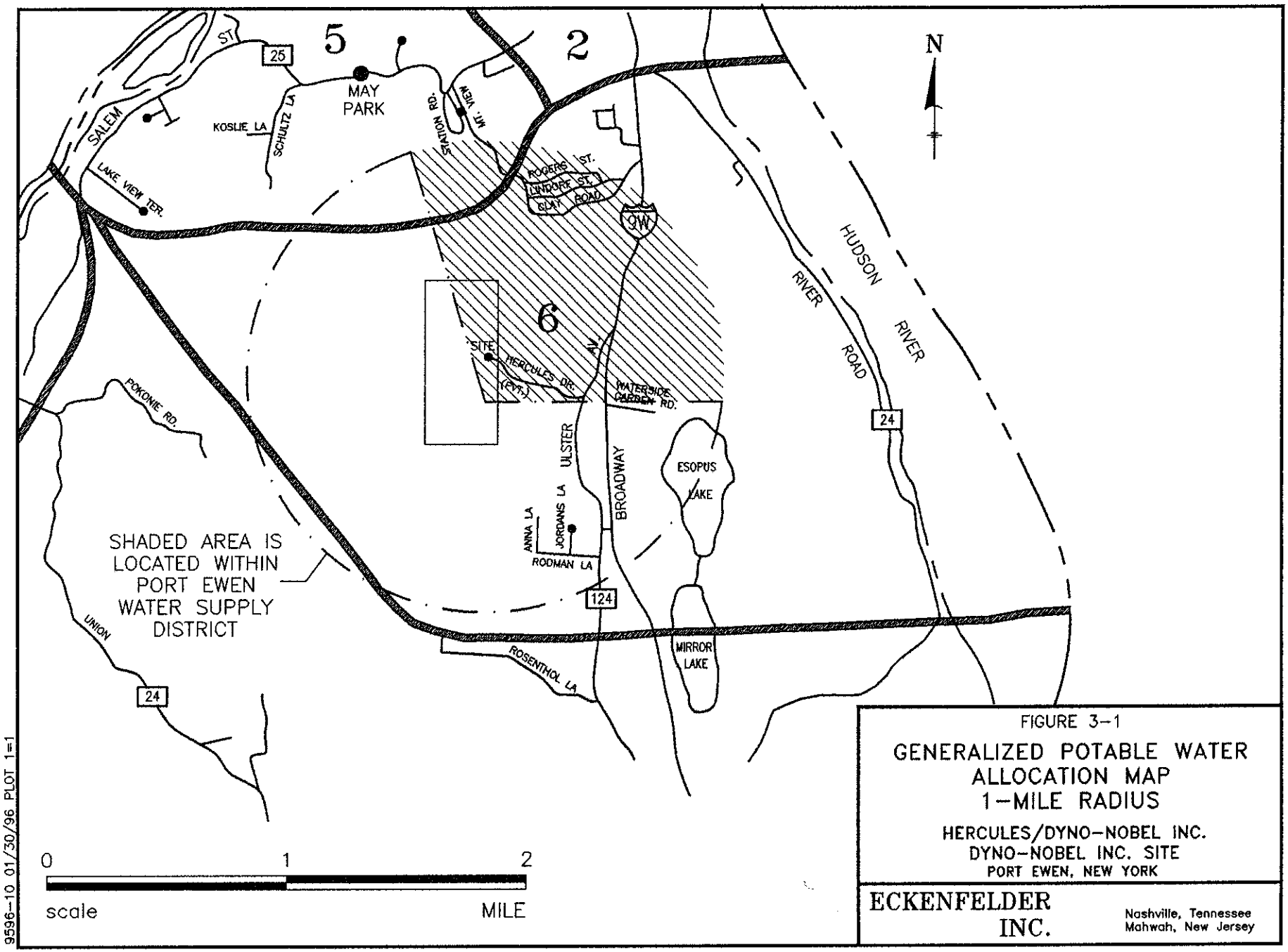


FIGURE 3-1

GENERALIZED POTABLE WATER ALLOCATION MAP
1-MILE RADIUS

HERCULES/DYNO-NOBEL INC.
DYNO-NOBEL INC. SITE
PORT EWEN, NEW YORK

ECKENFELDER INC.

Nashville, Tennessee
Mahwah, New Jersey

9596-10 01/30/96 PLOT 1=1

3.3 HYDROPUNCH® INVESTIGATION

The area surrounding the Shell Plant was investigated to estimate the vertical and horizontal extent of impacts to groundwater quality, and to aid in the placement and evaluation of future monitoring wells and remedial strategies. Groundwater samples were collected with the use of a HydroPunch® borehole sampler and analyzed for TCL VOCs. A summary of the detected compounds is presented in Table 3-4. All of the analytical results for the HydroPunch® samples are presented in Appendix E. The laboratory report forms, including the report narrative are presented in Appendix F, contained in Volume II.

Thirteen volatile organic compounds were detected in twelve of the HydroPunch® samples and one of the replicate samples. The compounds include: acetone, chloroethane, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 4-methyl-2-pentanone, methylene chloride, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene (TCE), and vinyl chloride. In addition, methylene chloride was detected in two of the trip blank samples (TB061295 and TB062195). TCE was the most detected analyte, found in eight samples, ranging in detected concentrations from 8.3J µg/L (in HP-13, 22 to 22.5 feet) to 46,000 µg/L (in HP-10, 37 to 37.5 feet).

The comparison of the analytical results in HP-10 (21-24 feet) with prior analytical results from MW-4A indicates that TCE was detected in both samples. However, the reported concentrations were not consistent (1,300 µg/L in HP-10 (21-24 feet) and 11,000,000 µg/L in MW-4A). In addition, cis-1,2-dichloroethene was detected in HP-10 (21-24 feet) (39 µg/L). The following compounds were detected previously in MW-4A; acetone, tetrachloroethene, and bis-2-ethylhexyl phthalate. The difference in the reported values is likely due to the differences in the groundwater sampling interval.

The deep sample from HP-10 was collected between 37 and 37.5 feet, because bedrock was encountered shallower than the estimated depth. As such, only a small length of the HydroPunch® sampler was open to the adjacent overburden deposits immediately above bedrock. As a result, HP-10A was drilled adjacent to HP-10 to collect a sample from a larger open interval within the overburden. The analytical results from the samples collected from these two borings, however, do not correlate

TABLE 3-4

SUMMARY OF DETECTED CONCENTRATIONS
HYDROPUNCH® SAMPLES

Compound	Units	HP- 1 (28-29')	HP- 2 (26-29')	HP- 3 (23-24')	HP- 4 (27.5-28.5')	HP- 4 (42-43')	HP-10 (21-24')	HP-10 (37-37.5')	HP-10A (32-34')	HP-12 (42-43')
Acetone	µg/L	7.6 J	--	30 J	--	--	--	--	--	--
Chloroethane	µg/L	-- (a)	--	--	--	--	--	--	--	--
1,1-Dichloroethane	µg/L	--	--	--	39 JD	--	--	--	--	--
1,1-Dichloroethene	µg/L	--	--	--	170 D	31 JD	--	--	--	--
cis-1,2-Dichloroethene	µg/L	--	--	100	560 D	270 JD	39	240 JD	15	--
trans-1,2-Dichloroethene	µg/L	--	--	--	--	--	--	--	--	--
4-Methyl-2-Pentanone	µg/L	--	--	--	--	--	--	--	--	2.9 J
Methylene Chloride	µg/L	1 J	2.9 JB	--	14 JD	--	--	39 DB	--	--
Toluene	µg/L	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/L	--	--	--	490 D	140 JD	--	--	--	--
1,1,2-Trichloroethane	µg/L	--	--	--	--	--	--	--	--	--
Trichloroethene	µg/L	--	--	150	1,600 D	900 D	1,300 D	46,000 D	560 D	--
Vinyl Chloride	µg/L	--	--	9.9 J	24 JD	--	--	--	--	--

J - an estimated value; B - present in the method blank; E - exceeds intrument calibration limit; D - diluted sample.

TABLE 3-4 (Continued)

SUMMARY OF DETECTED CONCENTRATIONS
HYDROPUNCH® SAMPLES

Compound	Units	HP-13 (22-22.5')	HP-13 (43-44')	HP-15 (28-29')	DUP060895 (HP-10, 21-24')	TB061295	TB062195	TB062995
Acetone	µg/L	--	--	--	--	--	--	--
Chloroethane	µg/L	--	200 E	--	--	--	--	--
1,1-Dichloroethane	µg/L	--	850 D	--	--	--	--	--
1,1-Dichloroethene	µg/L	--	8.5 J	--	--	--	--	--
cis-1,2-Dichloroethene	µg/L	--	800 D	--	12	--	--	--
trans-1,2-Dichloroethene	µg/L	--	5.9 J	--	--	--	--	--
4-Methyl-2-Pentanone	µg/L	--	--	2.9 J	--	--	--	2 J
Methylene Chloride	µg/L	--	--	--	--	0.7 J	1.1 J	--
Toluene	µg/L	--	2.1 J	--	--	--	--	--
1,1,1-Trichloroethane	µg/L	--	930 D	--	--	--	--	--
1,1,2-Trichloroethane	µg/L	--	2.9 J	--	--	--	--	--
Trichloroethene	µg/L	8.3 J	6,900 D	--	2,100 D	--	--	--
Vinyl Chloride	µg/L	--	84	--	--	--	--	--

(a) -- indicates compound not detected

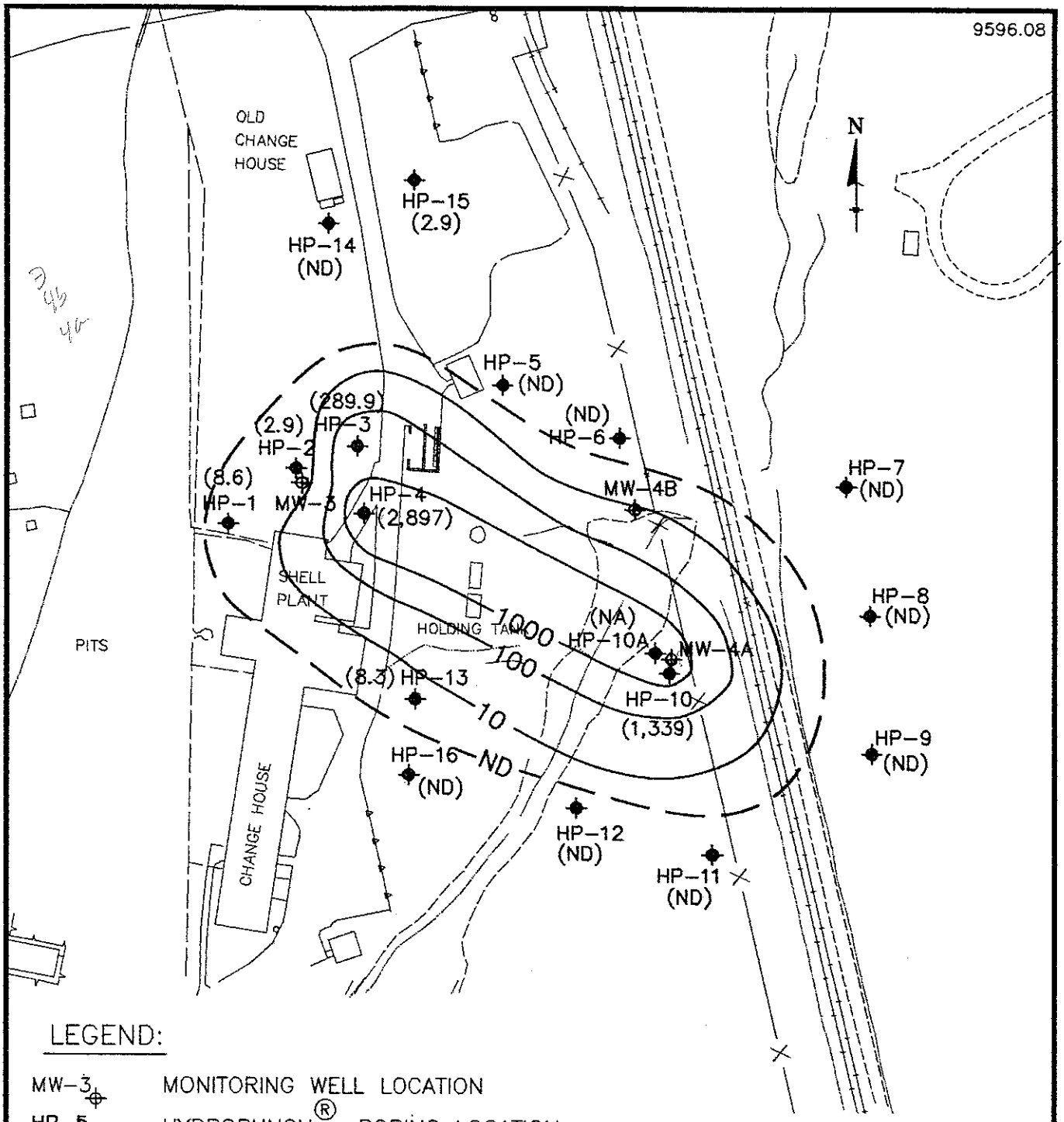
J - an estimated value; B - present in the method blank; E - exceeds intrument calibration limit; D - diluted sample.

well. The concentration of TCE detected in HP-10, 37 to 37.5 feet, was 46,000 μg/L and in HP-10A, 32 to 34 feet was 560 μg/L. The groundwater sample from HP-10A was collected predominately from the clay deposits, while the sample from HP-10 was collected from clay and sand deposits immediately above the top of bedrock. The higher concentrations in the sample collected from the soils at the top of bedrock suggests that the VOCs have migrated through the silt and clay to the bedrock surface.

The USEPA's guidance (USEPA, 1992) suggests that if a compound's measured concentration in groundwater is greater than one percent of its upper solubility limit, then a non-aqueous phase liquid (NAPL) source may be present at the site. The 46,000 μg/L concentration of TCE in HP-10, 37 to 37.5 feet, is greater than one percent of the solubility limit of 1,000,000 μg/L for this compound (i.e., one percent of the solubility limit for TCE is 10,000 μg/L). Thus, the possibility exists that a source of dense non-aqueous phase liquid (DNAPL) may exist in this area.

Isoconcentration maps for total volatile organics (TVOs) were prepared for both shallow and deep overburden deposits and are presented in Figures 3-2 and 3-3, respectively. The TVO values were determined by adding the measured values of the volatile compounds detected. The isoconcentration contours (isocons) were drawn using a logarithmic interval beginning with 10 μg/L. The overall distribution of the TVOs in the vicinity of the Shell Plant is consistent on both maps as depicted with a "not detected" (ND) isocon. A 10,000 μg/L isocon is depicted on the map for the deep overburden deposits, however, TVO concentrations of this magnitude were not observed in the shallow overburden. Higher concentrations of TVOs were observed in the deeper samples from borings HP-4, HP-10, HP-12, and HP-13, supporting the possibility of downward migration of the organic compounds. The TVO concentration for HP-10A, 32 to 34 feet, is represented on Figure 3-3, however, this value was not used in the contouring. The value detected in this sample is more representative of the TVO concentrations present in the silt and clay layer.

A concentration of 2.9 μg/L was detected in HP-15, 28 to 29 feet for 4-methyl-2-pentanone. This value is located outside the "ND" line on Figure 3-2 because it is believed this compound is not attributed to the Shell Plant. This compound is likely attributable to SWMU No. 18. No values of VOCs were detected in the deep sample (HP-15, 43 to 44 feet) collected from this boring.



LEGEND:

MW-3	MONITORING WELL LOCATION
HP-5	HYDROPUNCH® BORING LOCATION
(8.6)	TVO CONCENTRATION (ppb)
—100—	ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL= LOGARITHMIC
--ND--	APPROXIMATE EXTENT OF TVO CONTAMINATION ASSOCIATED WITH SHELL PLANT
(NA)	SAMPLE NOT ANALYZED
(ND)	NOT DETECTED

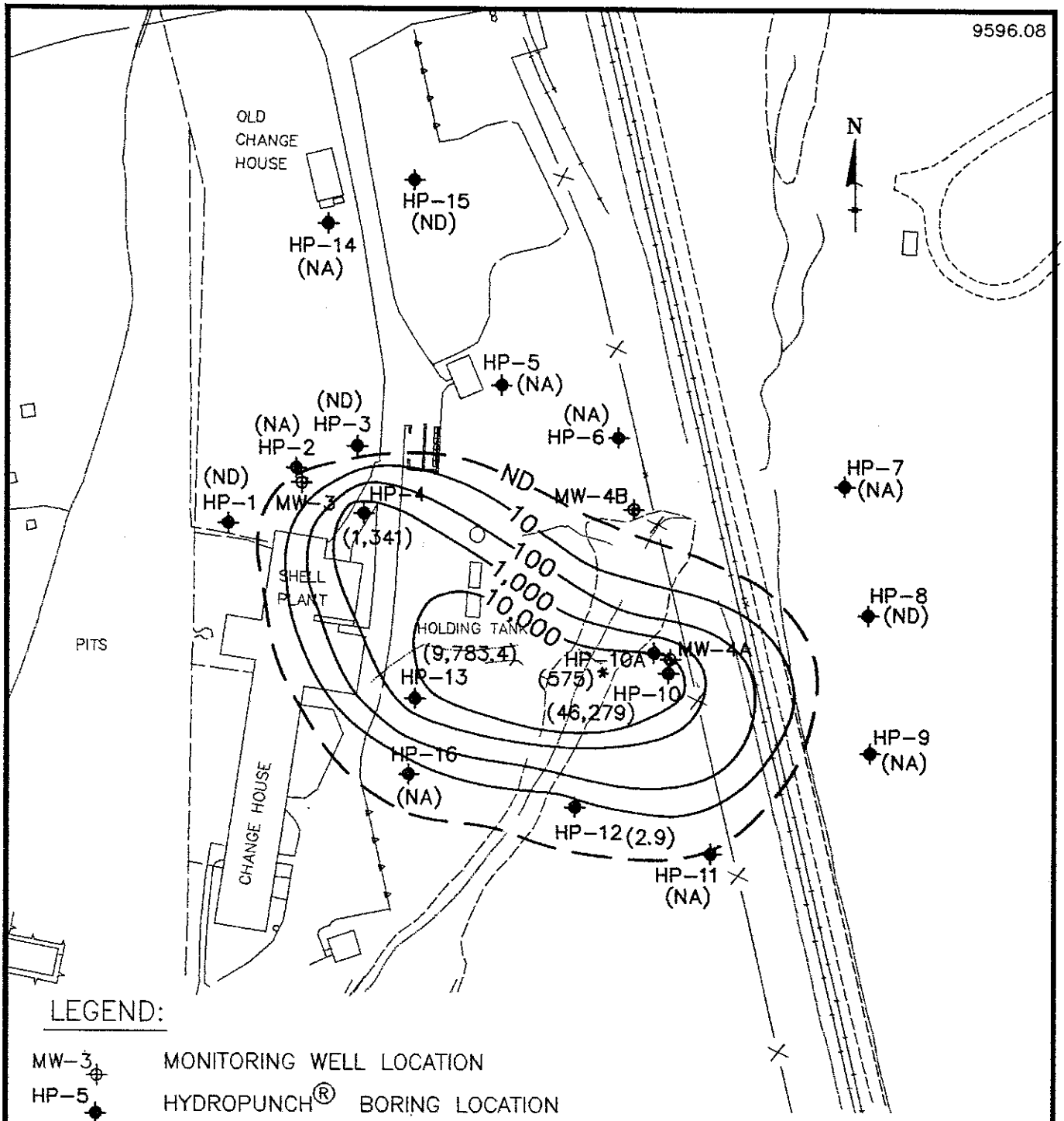
FIGURE 3-2

ISOCONCENTRATION MAP OF TOTAL VOLATILE ORGANICS (TVO) IN GROUNDWATER-SHALLOW OVERBURDEN

HERCULES/DYNO-NOBEL INC.
DYNO-NOBEL INC. SITE
PORT EWEN, NEW YORK

ECKENFELDER INC.
Nashville,Tennessee
Mahwah,New Jersey

9596-06 01/30/96 PLOT 1=100



LEGEND:

MW-3	MONITORING WELL LOCATION
HP-5	HYDROPUNCH® BORING LOCATION
(2.9)	TVO CONCENTRATION (ppb)
—100—	ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL= LOGARITHMIC
--ND--	APPROXIMATE EXTENT OF TVO CONTAMINATION ASSOCIATED WITH SHELL PLANT
(NA)	SAMPLE NOT ANALYZED
(ND)	NOT DETECTED
*	VALUE FOR HP-10A NOT CONTOURED. REFER TO SECTION 3.3 IN TEXT.

FIGURE 3-3

ISOCONCENTRATION MAP OF TOTAL VOLATILE ORGANICS (TVO) IN GROUNDWATER – DEEP OVERBURDEN

HERCULES/DYNO-NOBEL INC.
DYNO-NOBEL INC. SITE
PORT EWEN, NEW YORK

ECKENFELDER INC.
Nashville, Tennessee
Mahwah, New Jersey

9596-08 01/30/96 PLOT 1=100

4.0 CONCLUSIONS AND RECOMMENDATIONS

The activities described in this document are designed as a first phase of investigation for the upcoming RFA-SV and RFI. The resulting data will be used to focus future work, and the conclusions and recommendations developed on the basis of this investigation will be refined as the work proceeds. The information obtained from this investigation is presented below with respect to the site wide geologic and hydrogeologic conditions and the more focused investigation associated with the Shell Plant. Please note that the following conclusions and recommendations should be considered preliminary until further data becomes available.

4.1 SITE-WIDE GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

The active portion of the facility is underlain by 27 to 67 feet of low permeability silty clay to clay, which is subsequently underlain by a layer of sand and gravel over shale bedrock. Groundwater flow paths are believed to be predominantly vertical within the low permeability silt and clay deposits and primarily horizontal within the higher permeability sand and gravel deposits. A potential groundwater flow zone within the underlying bedrock has not been identified to date. However, given the reported depth of the on-site production wells, on the order of 60 to 80 feet, and the results of this investigation, suggesting the overburden thickness immediately east of the developed portion of the site is only on the order of 30 feet, we suspect that the site production wells are screened within the underlying bedrock (there are no available well logs). In addition, weathering of the shale and graywacke in this area typically results in a zone of increased transmissivity within the top of rock. Therefore, we believe that a flow zone within the upper ten to twenty feet of the bedrock is likely present, and it is recommended that a limited investigation of the bedrock be undertaken as discussed below in Section 4.2

In most cases, the presence of thick sequences of low permeability silt and clay beneath the active portion of the site provides a barrier to the migration of potential contaminants to the underlying sand and gravel deposits and bedrock. However, as observed in the Shell Plant Area, sufficient contaminant loading has the potential to overcome this barrier. Nonetheless, it is likely that the extent of potential contaminants associated with many of the SWMUs and AOCs will be limited by

these geologic deposits. Additional data with respect to the effectiveness of this clay layer in limiting the migration of potential contaminants will be obtained as part of the on-going work.

The available data are sufficient to evaluate the overall groundwater flow direction in the overburden deposits within the vicinity of the site. These data clearly indicate that the wetlands area located to the east of the active portion of the facility is the local discharge point for groundwater flow, both in the shallow and deep overburden deposits. This is significant in that any potential groundwater contaminants associated with the site will not migrate east of the wetlands. Further, the converging of the groundwater flow lines will tend to limit the extent of any potential contaminant plume and focus any potential remedial measures. As discussed previously in Section 3.2.3, the combination of the groundwater flow paths, the location of potential receptors, and the availability of public water, suggests there is little probability for groundwater related health concerns to neighboring residents. This is further supported by the groundwater quality data, discussed below, which does not provide any evidence to suggest that potential contaminants are migrating off site.

The collected groundwater quality data does not provide any evidence to suggest that the site activities are impacting the inorganic groundwater quality across the site. A review of these data indicates that the total metals concentrations generally exceed NYS Class GA water quality standards throughout the area. However, these exceedances are attributed to the high turbidity of the samples collected, in that the concentrations of soluble metals, with a few exceptions, are generally below the respective standards. The comparison of water quality values across the site is, thus, most appropriately done by comparing downgradient to upgradient conditions.

With the exception of the Shell Plant Area discussed below, organic constituents detected across the site were limited and sporadic. As discussed in Section 3.2.2.1, those constituents detected are likely associated with an adjacent SWMU. These SWMUs will be more fully evaluated during subsequent phases of investigation. It is noteworthy that the data do not support a pervasive site wide presence of TCE as suggested by Gibbs and Hill (1990). Further, many of the organic constituents reported in the NYSDEC Phase II Report were not confirmed during this round of sampling (excluding the Shell Plant Area).

The available data suggests potential impacts to groundwater are limited to the vicinity of the source areas (SWMUs, AOCs, etc.) and there is no site wide impact to groundwater. There is, thus, no basis for implementation of any interim corrective measures (ICMs) at this time. This preliminary conclusion will be further evaluated during subsequent phases of work.

4.2 SHELL PLANT INVESTIGATION

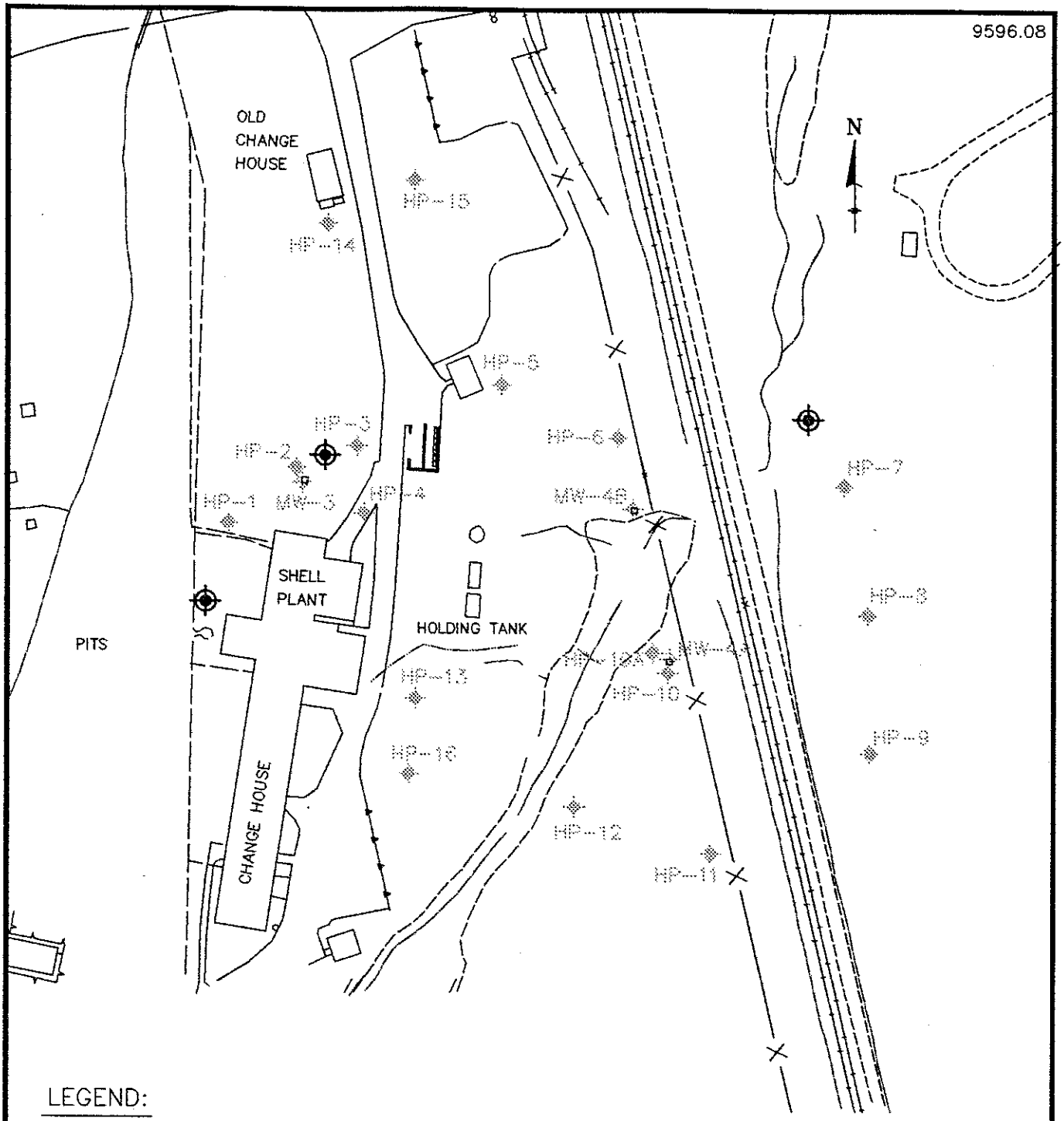
Groundwater sampling in the vicinity of the Shell Plant confirmed the presence of elevated concentrations of volatile organics in this area; the most prevalent of which is TCE. The collected data further indicates that the volatile organic concentrations tend to increase with depth and the highest concentrations are potentially located immediately above the bedrock. In addition, the detected concentration of TCE in one HydroPunch® boring (HP-10, 37-37.5 feet) is in excess of one percent of solubility limit for TCE, which suggests the presence of DNAPL within this area.

On the basis of the HydroPunch® data, the extent of the impacted area is generally limited to the area east of the Shell Plant and west of the Conrail railroad tracks. There is currently no data to suggest that contaminants are migrating off site. However, given the high concentrations of TCE detected in the sample collected immediately above the bedrock in HP-10, there is the potential for contaminants to have migrated to a water-bearing zone within the bedrock. Accordingly, additional work is recommended in this area as discussed below.

A review of the water quality data associated with the Shell Plant Area, in conjunction with the site wide hydrogeologic data, suggests that the volatile organic compounds detected in the vicinity of the Shell Plant will migrate predominantly downward, with an eastward component of flow, through the shallow overburden. Upon reaching the underlying sand and gravel, however, the direction of groundwater flow is likely more lateral and in a west-northwest direction. This indicates the most significant pathway for further lateral migration of a dissolved contaminant plume would be expected to be in a west-northwest direction towards the central portion of the site. In addition, in the event that DNAPL may be present at the top of rock, it may migrate towards the west, in the direction of the slope of the bedrock surface.

In light of the above discussion, the installation of three stainless steel well couplets at the locations illustrated in Figure 4-1 is recommended. Each couplet would consist of a well screened in the sand and gravel deposits immediately above bedrock, and a well screened within the upper 20 to 25 feet of rock. The bedrock wells would be completed with a steel casing grouted into the upper three to five feet of rock to minimize potential contaminant migration during drilling activities. We recommend the placement of three wells within the bedrock, such that a preliminary indication of the direction of groundwater flow within this water-bearing unit may be obtained. In addition, the location of the well cluster east of the Conrail tracks will act as a monitoring well for the nearby site production wells. Although the data does not currently suggest that contaminant migration would occur in this direction, we feel it is prudent to locate a monitoring well between the source area and the production wells until further information is obtained to determine the direction of groundwater flow in the bedrock. It is also advised to initiate periodic water quality monitoring of the production wells. The remaining monitoring well cluster locations have been located around the perimeter of the identified area, as we do not recommend the placement of bedrock monitoring wells within the source area.

As noted above, there is currently no information regarding a potential flow zone within the top of rock. It is assumed, however, that the direction of groundwater flow will be generally consistent with that mapped for the deep sand and gravel deposits. Accordingly, two of the proposed well clusters have been located in the anticipated downgradient flow direction. Subsequent groundwater sampling and analyses, as well as water level measurements, will provide the additional data needed to evaluate the need for and configuration of additional monitoring well locations.



LEGEND:

MW-3 MONITORING WELL LOCATION

HP-5 HYDROPUNCH® BORING LOCATION

PROPOSED MONITORING WELL CLUSTER

100 0 100

scale: feet

FIGURE 4-1

LOCATION OF PROPOSED MONITORING WELL CLUSTERS

HERCULES/DYNO-NOBEL INC.
DYNO-NOBEL INC. SITE
PORT EWEN, NEW YORK

ECKENFELDER INC.

Nashville, Tennessee
Mahwah, New Jersey

9596-11 01/30/96 PLOT 1=100

REFERENCES

ASTM D-1586, 1986. "Standard Method for Penetration Test and Split-Barrel Sampling of Soils", ASTM Vol. 04.08, pp. 298-303.

ASTM D-2488, 1986. "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)", ASTM Vol. 04.08, pp. 411-425.

ASTM D-5092, 1994. "Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers", ASTM Vol. 04.09, pp. 162-173.

ASTM D-5299, 1994. "Standard Guide for Decommissioning of Ground Water Wells, Vandose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities", ASTM vol. 04.09, pp. 270-285.

A.T. Kearney, Inc., October 1993. "RCRA Facility Assessment Report for the IRECO/DYNO, Inc. Port Ewen Facility, Port Ewen, New York", USEPA Contract 68-W9-0040.

Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, Vol. 12, No. 3, pp. 423-428.

Burmister, D.M., 1958. "Suggested Methods of Tests for Identification of Soils". Procedures for Testing Soils, American Society of Testing Materials.

Cooper, H.H., J.D. Bredehoeft and S.S. Papadopulos, 1967. Response of a finite-diameter well to an instantaneous charge of water, Water Resources Research, Vol. 3, No. 1, pp. 263-269.

Duffield, G.M., October 1994. AQTESOLV™ Geraghty & Miller, Inc. pp. 132.

ECKENFELDER INC., December 1994. "RCRA Facility Assessment Report for the IRECO/DYNO, Inc. Port Ewen, New York (Revised)", USEPA Contract 68-W9-0040.

ECKENFELDER INC., April, 1995. "Groundwater Investigation Work Plan, DYNO-Nobel, Port Ewen, New York".

Freeze, R.A. and J.A. Cherry, 1979. Groundwater. Prentice-Hall. Englewood Cliffs, New Jersey, pp. 604.

Gibbs & Hill, Inc., July, 1990. "Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York Phase II Investigation".

REFERENCES (CONTINUED)

Huling, S G., and J W. Weaver, 1991. Dense Non-Aqueous Phase Liquids, EPA/540/4-91-002.

NYSDEC Water Quality Standards, New York State Code of Rules and Regulations, Table 1, Section 703.5.

APPENDIX A

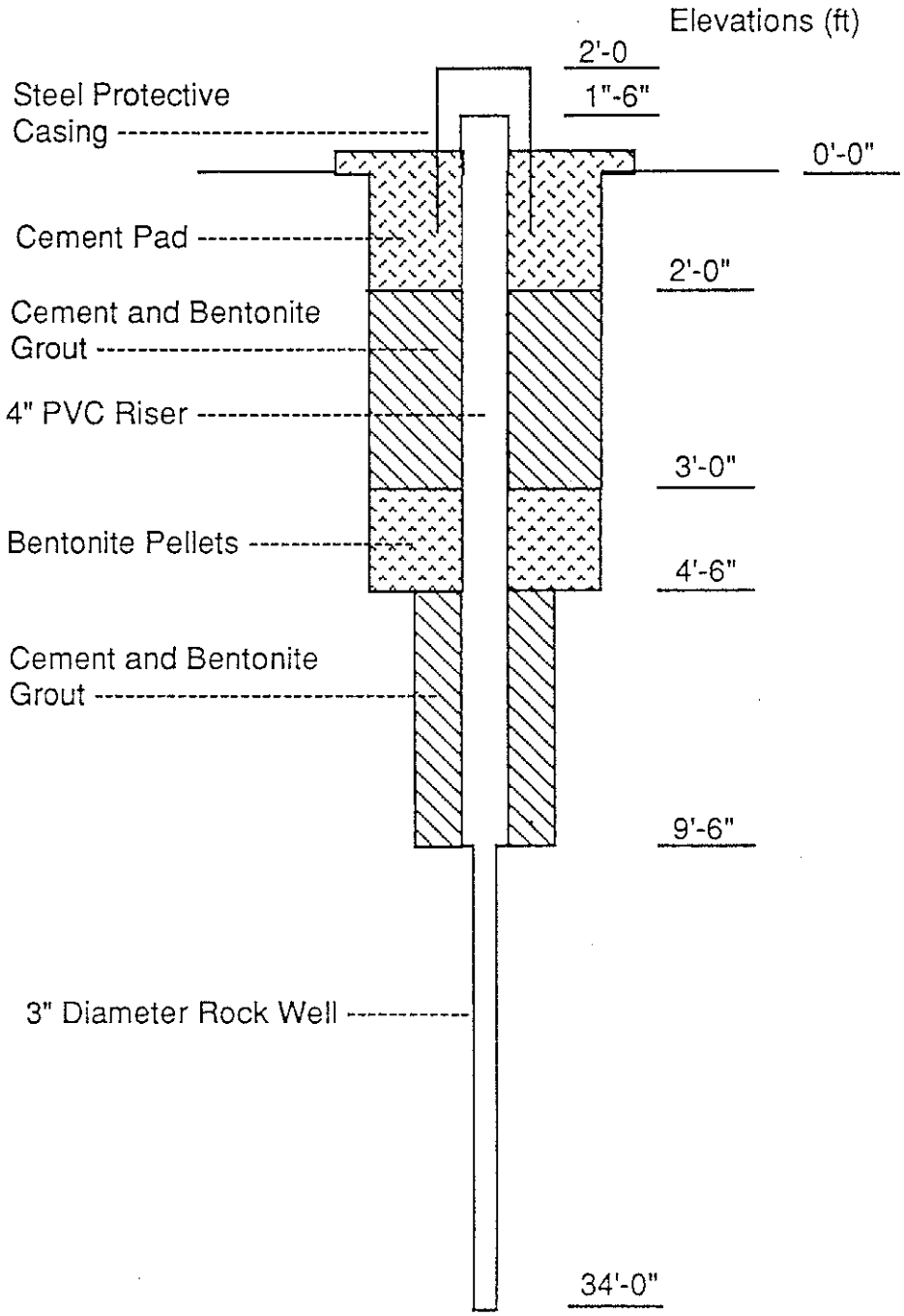
SOIL BORING LOGS AND WELL CONSTRUCTION DETAILS

EXISTING BORING LOGS AND MONITORING WELL CONSTRUCTION DETAILS

OVERBURDEN/BEDROCK WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-1
Date Installed 2/24/89

Water Level from
Top of Casing 21'61/2"
Date 3/22/89 Time 10:30 AM



Gibbs & Hill, Inc.

6001243

BORING LOG

Sheet 1 of 1

PROJECT: NYSDEC	PROJECT NO. 5583		BORING NO. MW-1
Location: HERCULES	Coord:		Ground Elev:
Contractor: EMPIRE	Date Started: 2/15/89	G.W.L.	Hour: Date:
Inspector: J. SANGHVI	Date Completed:	G.W.L.	Hour: Date:
Notes:			

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	HNu	Graphic Symbol	Description and Remarks
0		SS-1			4	4	14"		0	CL	Brown - gray, silt clay Shale fragments
					52	100					
5											
10											
15											BEDROCK
20											
25											
30											
35											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	6001255
Sample & Test Notations		

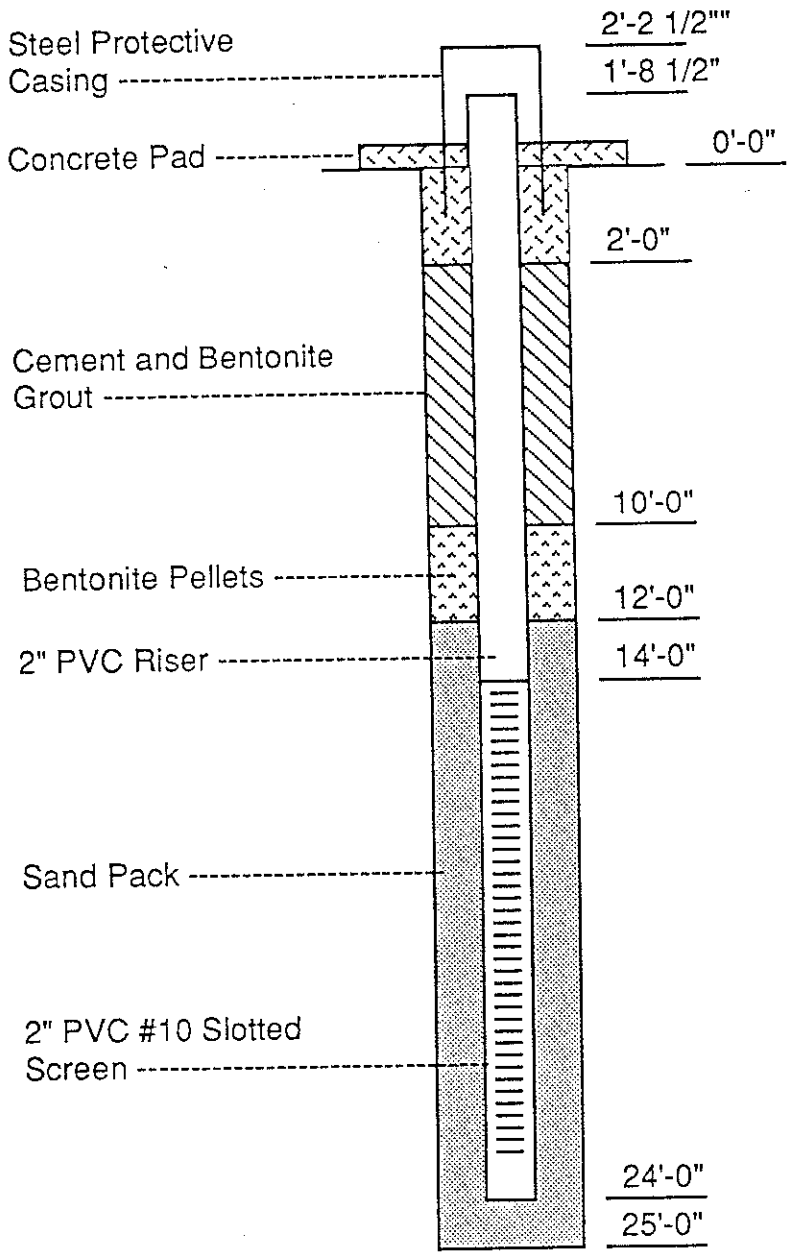
Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-2A
Date Installed 2/21/89

Water Level from
Top of Casing 10'9 1/2"
Date 3/22/89 Time 11:15 AM

Elevations (ft)



Gibbs & Hill, Inc.

6001244

BORING LOG

Sheet 1 of 1

PROJECT: NYSDEC Phase II | PROJECT NO. 5583 | BORING NO. MW-2A

Location: Hercules, Inc | Coord: | Ground Elev:

Contractor: Empire | Date Started: 02/01/89 | G.W.L. | Hour: | Date:

Inspector: Jayesh Sanghvi | Date Completed: 02/2/89 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery "	HNu	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0											
2											
5		SS-1			9	15	14"	0		OL	Brown tanish orange clay some silt.
7					16	20					
10											
12		SS-2			7	9	14"	.2		OL	Brown orange tanish clay Organics, grey wet clay
					10	12					
15											
17		SS-3			2	3	11"	.1		OL	Mixture of brown and gray clay wet. Mostly gray, low plasticity.
					3	4					
20											
22		SS-4			0	2	12"	0		CL	Gray clay low to medium plasticity Sandy and silty clay.
					3	3					
25											
27		SS-5			1	3	10"	.2		SM	Silty sand, Sand silt mixtures.
					6	12					
0											
5											
0											

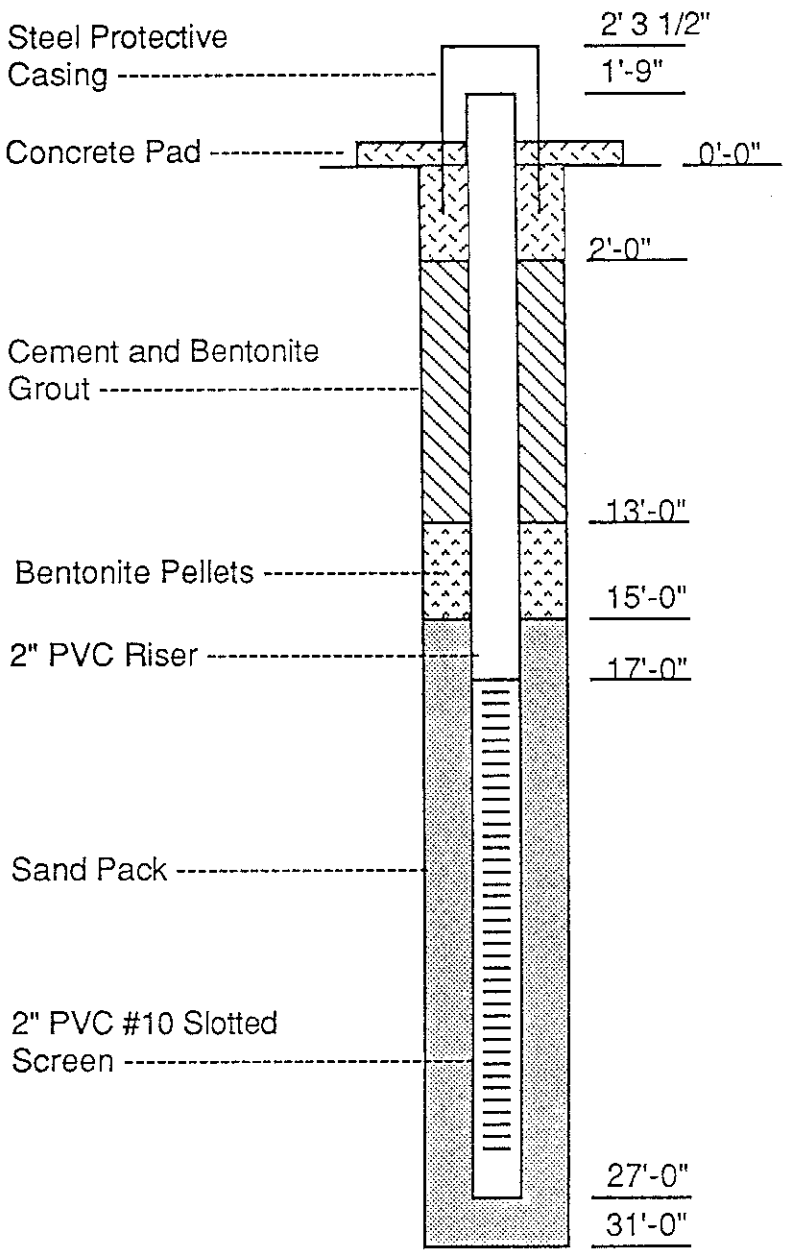
I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	6001256
Sample & Test Notations		

Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-2B
Date Installed 2/20/89

Water Level from
Top of Casing 12'-7 1/2"
Date 3/22/89 Time 12:10 PM



Gibbs & Hill, Inc.

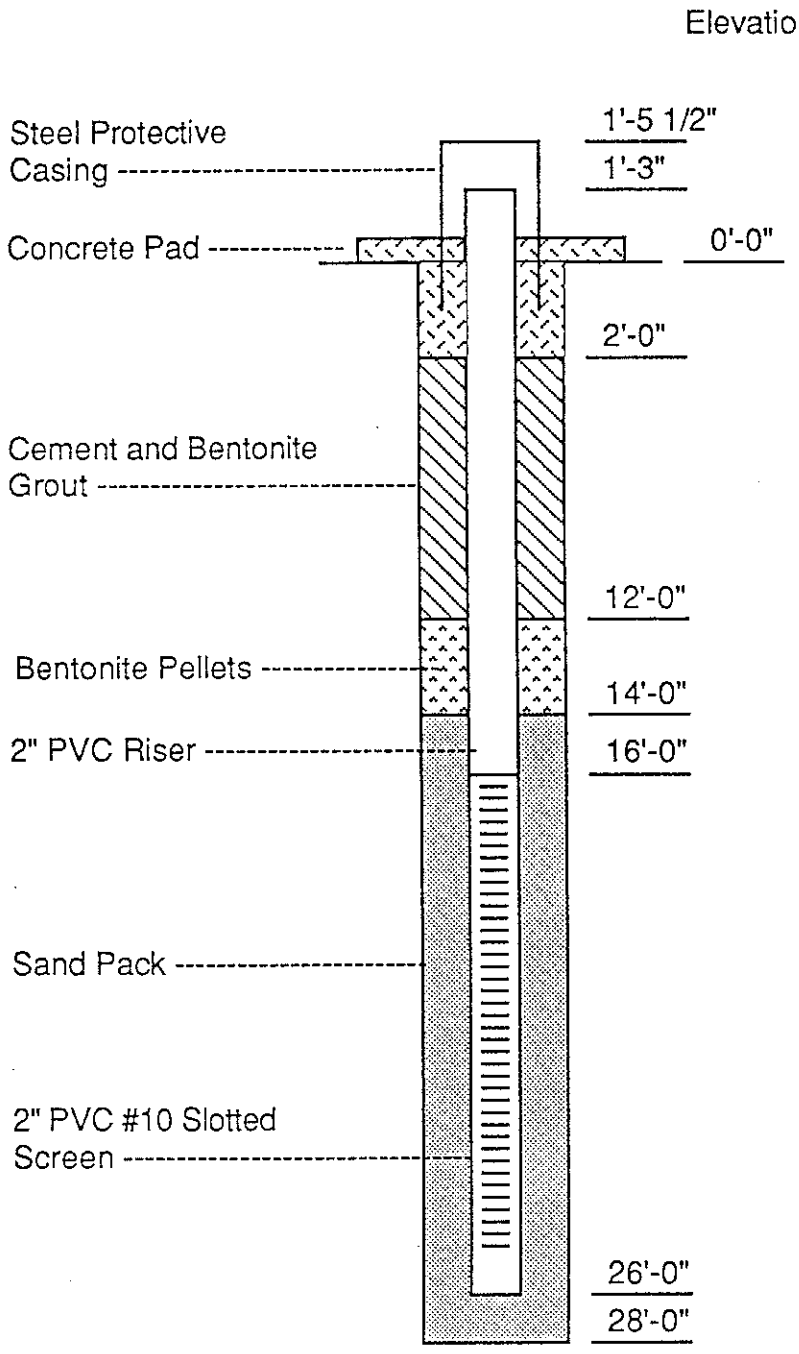
B-13

600125

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-3
Date Installed 3/1/89

Water Level from
Top of Casing 7'- 1 3/4"
Date 3/22/89 Time 1:30 PM



Gibbs & Hill, Inc.

BORING LOG

Sheet 1 of 1

PROJECT: NYSDEC Phase II | PROJECT NO. | BORING NO. MW-2B

Location: Hercules, Inc | Coord: | Ground Elev:

Contractor: Empire | Date Started: 02/17/89 | G.W.L. | Hour: | Date:

Inspector: Jayesh Sanghvi/R. Capone | Date Completed: 02/20/89 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery "	HNu	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		SS-1	SS-1		6	4	6"	0		OL	Brown, silty clay
2					4	2					
5		SS-2			4	9	14"	0		OL	Brown tanish orange clay some silt
7					13	15					
10		SS-3			4	10	14"	0		OL	Brown-orange tanish clay organics, gray wet clay.
12					11	10					
15		SS-4			2	3	10"	0		OL	Grayish clay, graded into tanish brown wet silty clay
17					3	4					
20		SS-5			2	5	10"	0		SM	Brown silty sand some silt wet.
22					4	5					
25		SS-6			1	1	14"	0		GM	Brown tanish organics, some silt and sand wet.
27					3	4					
30		SS-7			19	47	10"	0		Bed-rock	Brown tanish gravel, some silt
32					57	90					shale, Gray, grayish white shale.
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

6001157

Gibbs & Hill, Inc.

BORING LOG

Sheet 1 of 1

PROJECT: NYSDEC Phase II | PROJECT NO. 5583 | BORING NO. MW-3

Location: Hercules Inc | Coord: | Ground Elev:

Contractor: Empire | Date Started: 03/01/89 G.W.L. | Hour: | Date:

Inspector: Jayesh Sanghvi | Date Completed: 03/01/89 G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery "	[redacted] HNU	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0											
2			SS-1		14	16	19"	0		OL	Brown silt and clay (very Hard) frozen.
					12	14					
5											
7			SS-2		4	8	23"	0		OL	Brown orange tanish clay with low plasticity.
					11	12					
10											
12			SS-3		4	6	23"	0		OL	Brown clay little wet. some silt.
					8	11					
15											
17			SS-4		2	3	22"	0		CL	Gray clay with low to medium plasticity also brown clay
					3	4					
20											
22			SS-5		0	1	28"	0		CL	Mostly Gray clay with medium plasticity with mixture of brown silt and clay.
					2	2					
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

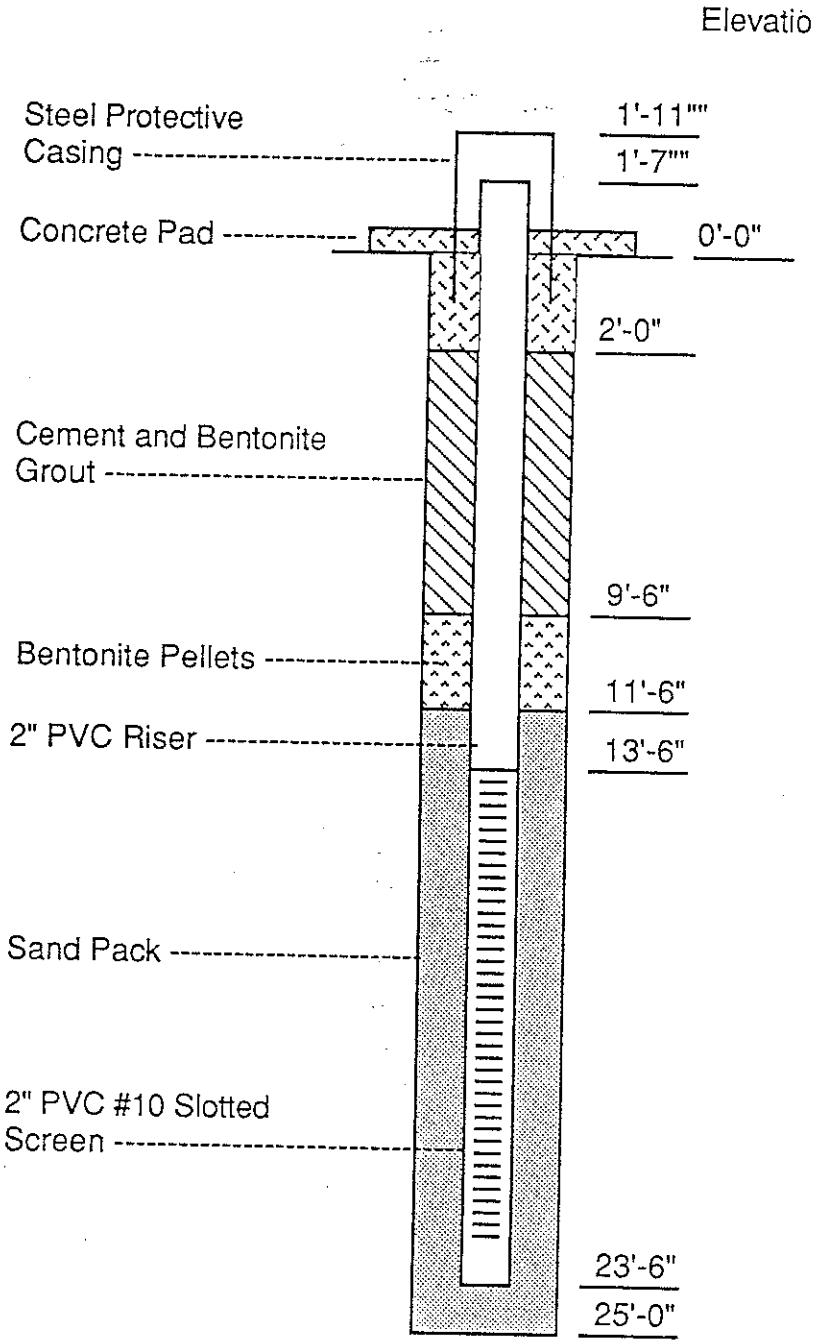
6001258

Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-4A
Date Installed 2/27/89

Water Level from
Top of Casing 5'-6 1/2"
Date 3/22/89 Time 2:00 PM



Gibbs & Hill, Inc.

6001247

BORING LOG

Sheet 1 of 1

PROJECT: NYSDEC Phase II | PROJECT NO. | BORING NO. MW-4A

Location: Hercules, Inc | Coord: | Ground Elev:

Contractor: Empire | Date Started: 02/27/89 | G.W.L. | Hour: | Date:

Inspector: T. Sanghvi | Date Completed: 02/27/89 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery "	HNU	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0											
2			SS-1		5	2	14"	0		OL	Mixture of silt and clay Mostly brown silty clay
					2	4					
5											
7			SS-2		3	6	20"	0		OL	Mixture of silt and clay Mostly brown clay with low plasticity.
					8	10					
10											
12			SS-3		2	4	24"	0		OL	Silt and clay Mostly brown clay (little wet).
					5	6					
15											
17			SS-4		0	1	12"	0		CL	Wet silt and clay Mostly clay with some very fine sand. Low to medium plasticity.
					2	3					
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

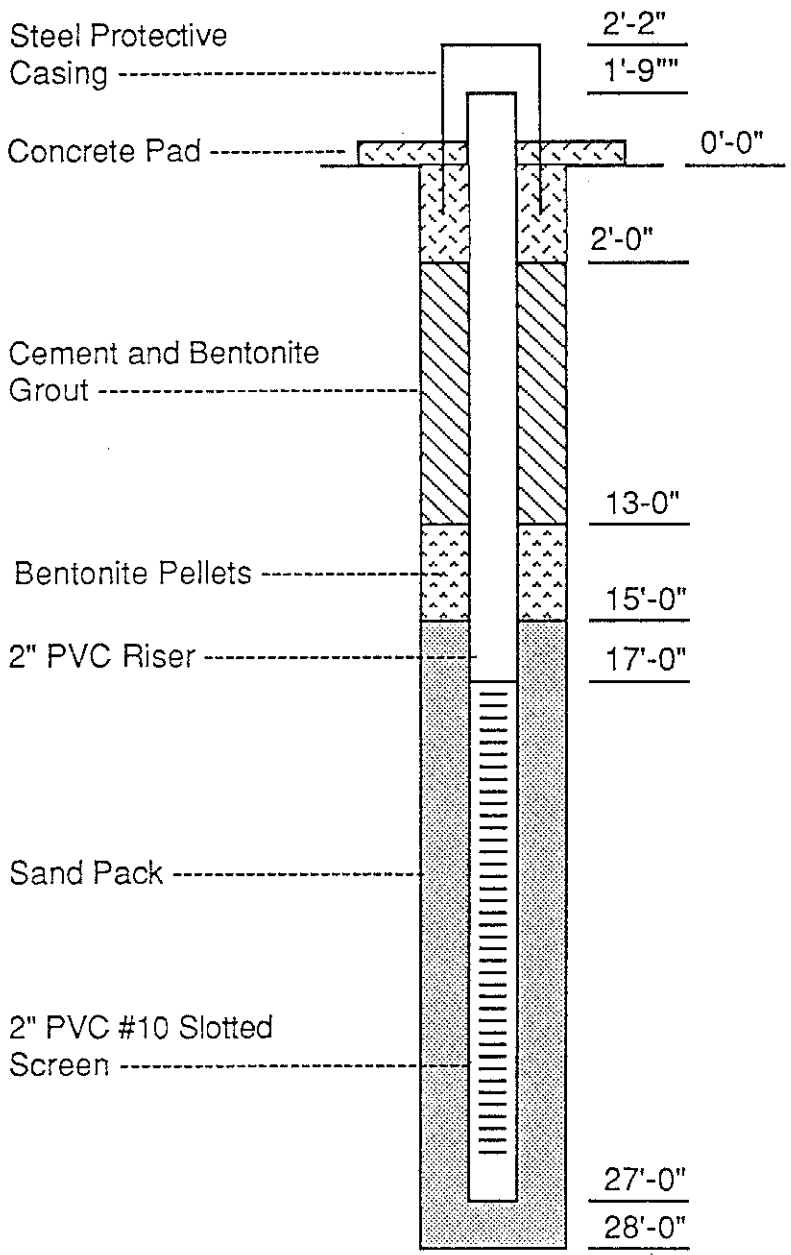
Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-4B
Date Installed 2/28/89

Water Level from
Top of Casing 6'-5"
Date 3/22/89 Time 2:45 PM

Elevations (ft)



Gibbs & Hill, Inc.

B-16

6001248

BORING LOG

Sheet 1 of 1

PROJECT: NYSDEC Phase II PROJECT NO. 5583 BORING NO. MW-4B

Location: Hercules, Inc Coord: Ground Elev:

Contractor: Empire Date Started: 02/28/89 G.W.L. Hour: Date:

Inspector: J. Sanghvi Date Completed: 02/28/89 G.W.L. Hour: Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery "	ROD "	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		SS-1			8	4	14"			OL	Mixture of silt and clay. Mostly brown clay.
2					3	3					
5		SS-2			7	8	18"			OL	Mostly brown clay with low plasticity and mixture of clay
7					10	14					
10		SS-3			5	4	24"			OL	Mostly brown silty clay very little wet.
12					5	6					
15		SS-4			1	2	23"			CL	Brown wet clay with low to medium plasticity.
17					2	1					
20		SS-5			0	0	18"			CL	Mixture of brown and gray clay wet. low to medium plasticity.
22					1	2					
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

6001260

Gibbs & Hill, Inc.

BORING LOG

Sheet 1 of 1

PROJECT: Hercules | PROJECT NO. | BORING NO. M-5-5

Location: Port Ewen, NY | Coord: | Ground Elev:

Contractor: Empire Drilling | Date Started: 3/14/89 | G.W.L. | Hour: | Date:

Inspector: Mr. Valentino | Date Completed: 3/14/89 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	~~RQD %~~ HNU	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		S1			8	6	18"	0		SM	Brown dry silty medium sand
					4	3					
5		S2			4	7	20"	0		ML	Brown dry clayey silt- two moist 1" clay seams present
					11	12					
10		S3			5	5	18"	0		ML	Brown moist clayey silt some gray silt in nose piece
					6	5					
15		S4			2	3	15"	0		CL	gray very moist silty clay becoming more silty toward bottom - some gravel is present at bottom
					3	5					
20		S5			2	2	12"	0		ML	gray wet clayey silt turning more clayey with some medium sand at bottom.
					4	4					
25		S6			3	3				CL	gray wet silty clay some pebbles at bottom
					3	3					
30					7	6				ML	gray wet clayey silt some very fine sand present
					~~5~~ 7	7					
35					100/2						refusal
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
O.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

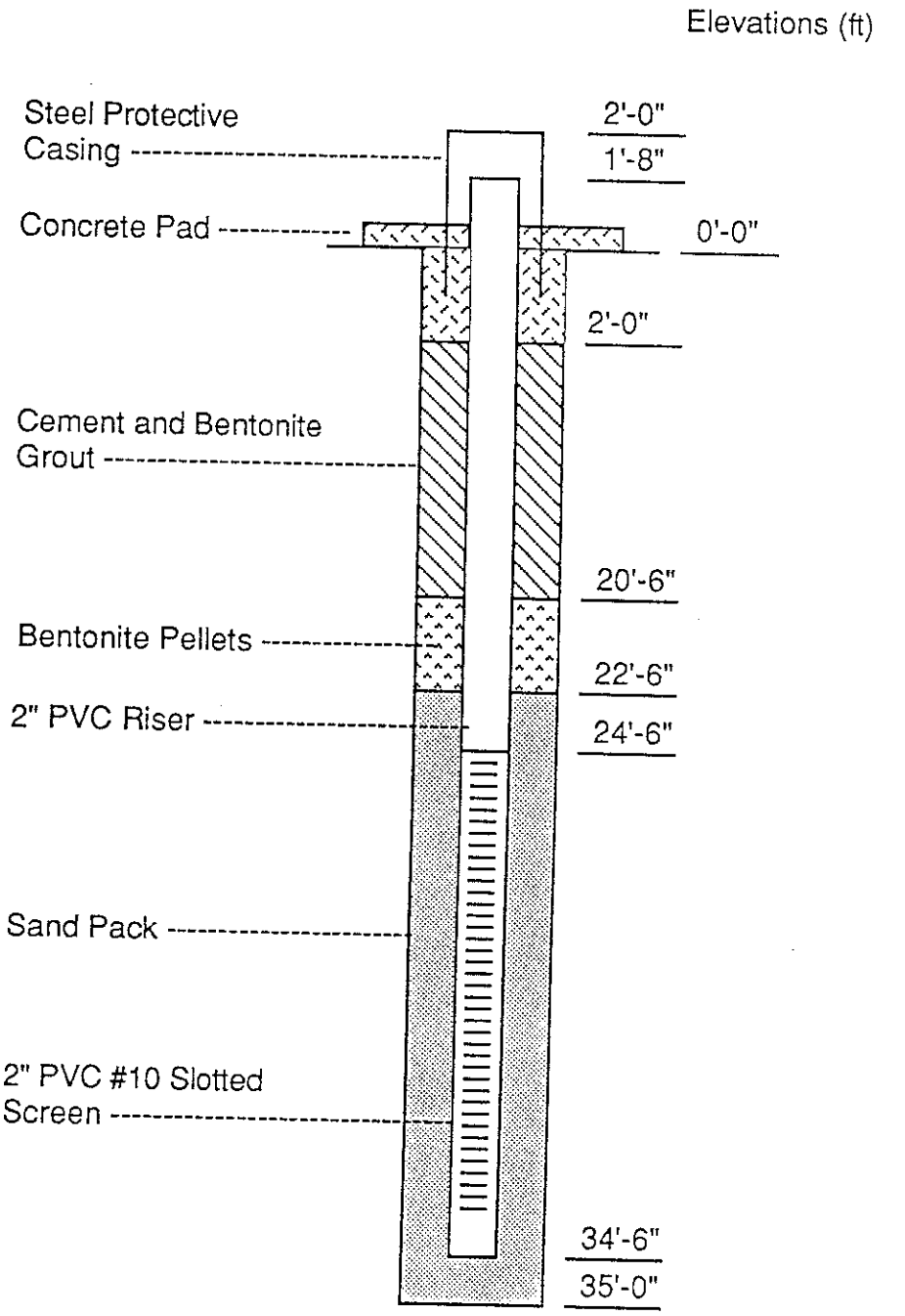
6001261

Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-5
Date Installed 3/15/89

Water Level from
Top of Casing 19'- 9 1/2"
Date 3/23/89 Time 10:00 AM



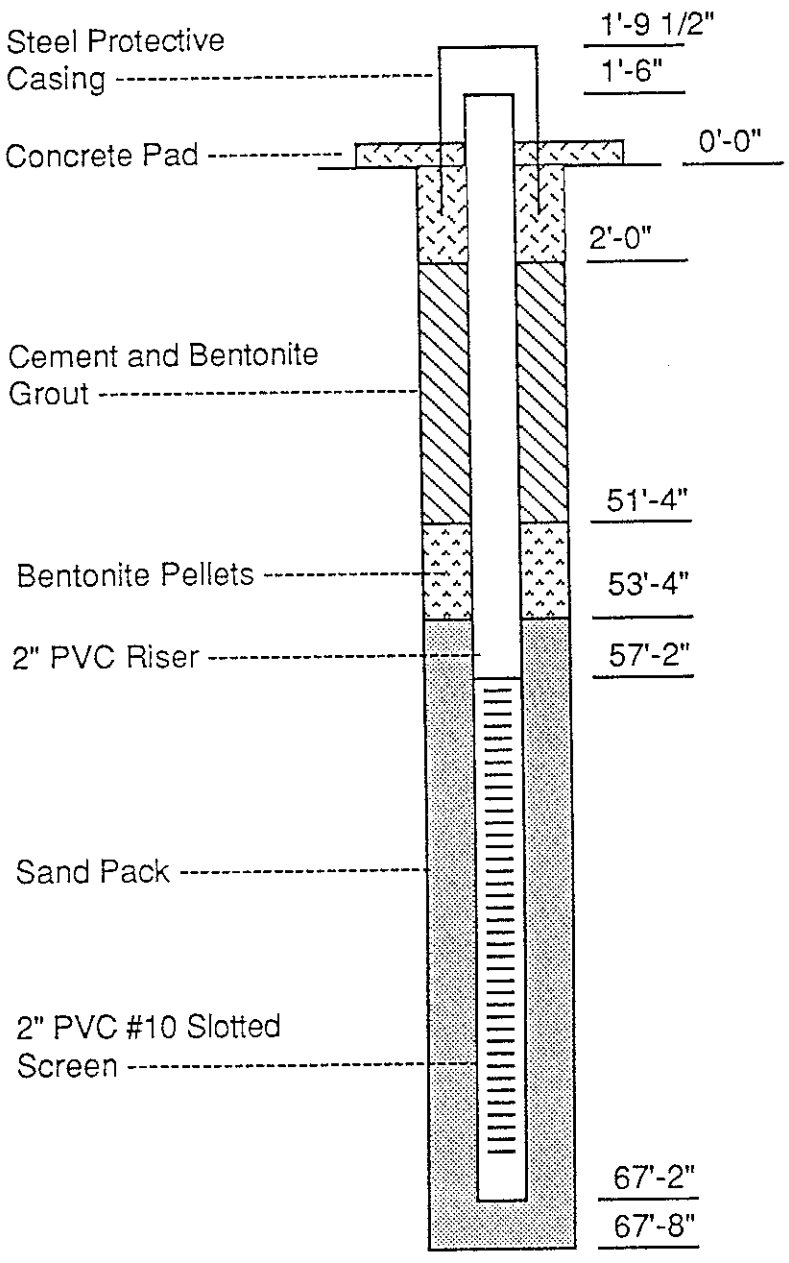
Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-6
Date Installed 3/10/89

Water Level from
Top of Casing 14'-5"
Date 3/23/89 Time 11:00 A M

Elevations (ft)



Gibbs & Hill, Inc.

6001250

BORING LOG

Sheet 1 of 2

PROJECT: Hercules | PROJECT NO. 5583-09 | BORING NO. MW-6

Location: Port Ewen, NY | Coord: | Ground Elev:

Contractor: Empire Drilling | Date Started: 3/8/89 | G.W.L. | Hour: | Date:

Inspector: Mike Valentino | Date Completed: 3/13/89 | G.W.L. | Hour: | Date:

Notes: HNU

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	ROD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		S1			16	7	18"	0		OL	Brown sandy clayey silt with organics
					5	6					
5		S2			7	17	16"	0		ML	Brown clayey dry silt
					19	20					
10		S3			7	15	18"	0		ML	Brown clayey dry silt
					18	22					
15		S4			4	7	18"	0		ML	Brown clayey moist silt
					13	9					
20		S5			1	2	20"	0		CL	Gray cohesive wet silty clay
					2	2					
25		S6			WOH	WOH	20"	0		CL	Gray cohesive wet silty clay
					1	2					
30		S7			WOR	WOR	24"	0		CL	Gray cohesive wet silty clay
					WOR	WOH					
35		S8			WOR	WOR	24"	0		CL	Gray cohesive wet silty clay
					WOR	WOH					
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

6001262

Gibbs & Hill, Inc

B-30

BORING LOG

Sheet 2 of 2

PROJECT: Hercules — PROJECT NO. 5583-09 — BORING NO. MW-6

Location: Port Ewen, NY — Coord: — Ground Elev:

Contractor: Empire Drilling — Date Started: 3/9/89 — G.W.L. — Hour: — Date:

Inspector: Mike Valentino — Date Completed: 3/13 — G.W.L. — Hour: — Date:

Notes:

Depth Ft.	Elev. FL	Sample Type & No.	Test Type & No.	Blows Casing Per FL	Blows Sampler 6"	Blows Sampler 6"	Recovery "	~~ROD %~~ HNU	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
40		S9			WOR	WOR	24"	0		CL	Gray cohesive wet silty clay
					WOR	WOH					
45		S10			WOR	WOR	24"	0		CL	Gray cohesive wet silty clay
					WOR	WOH					
50		S11			WOR	WOR	24"	0		ML	Gray wet clayey silt some fine sands at bottom
					WOH	4					
55		S12			WOR	WOR	24"	0		ML	Gray sandy clayey silt with some fine sand seams
					WOH	WOH					
60		S13			9	11	20"	0		SM	Gray clayey silty medium sands with gravel size fractured shale at bottom.
					27	28					
65											BOH
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

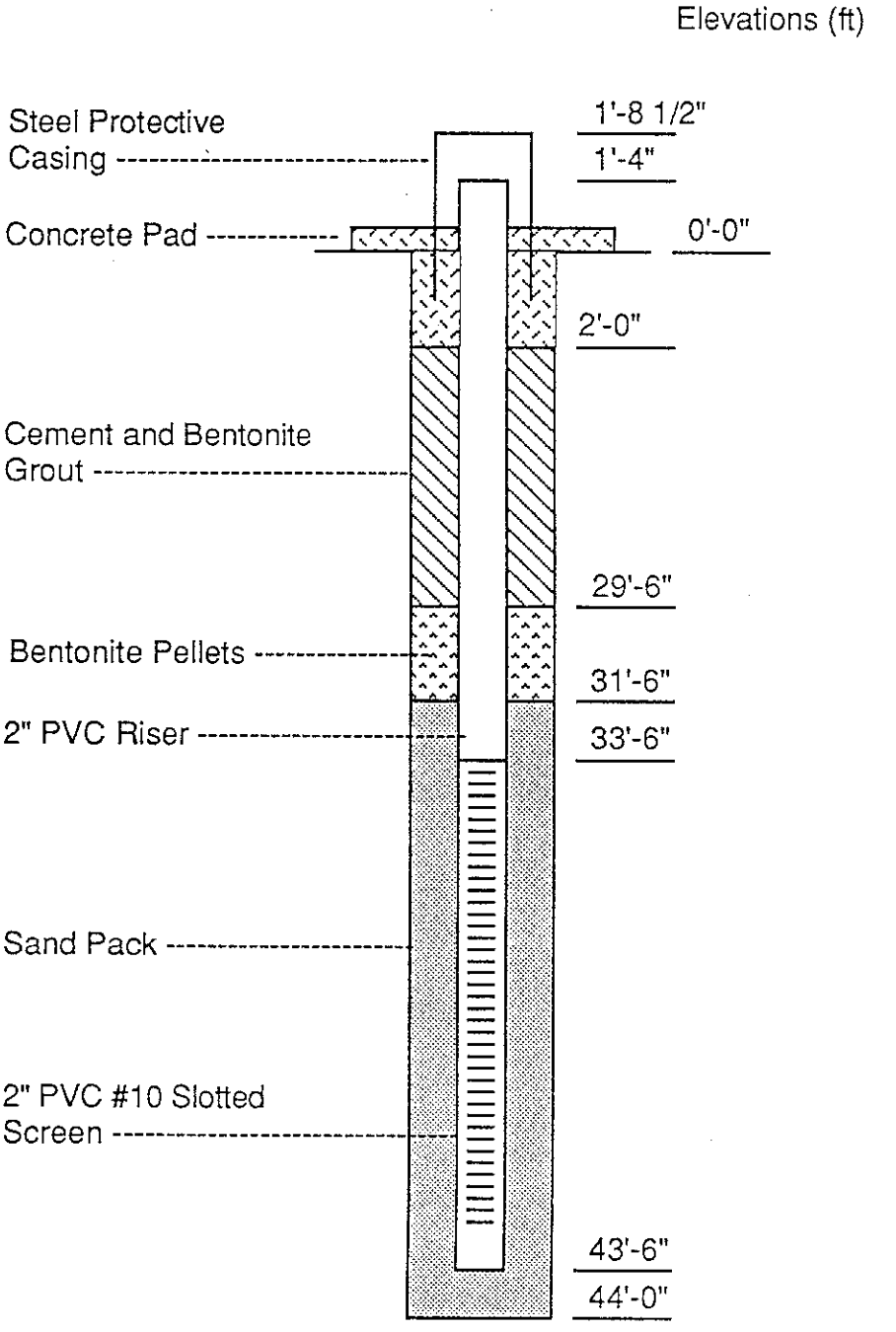
6001263

Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-7
Date Installed 3/17/89

Water Level from
Top of Casing 9'-7 1/4"
Date 3/23/89 Time 11:30 AM



Gibbs & Hill, Inc.

6001251

BORING LOG

Sheet 1 of 2

PROJECT: Hercules — PROJECT NO. 5583-09 — BORING NO. MW-7

Location: Port Ewen, NY — Coord: — Ground Elev:

Contractor: Empire Drilling — Date Started: 3/16/89 — G.W.L. — Hour: — Date:

Inspector: Mike Valentino — Date Completed: 3/17/89 — G.W.L. — Hour: — Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery "	~~RQD %~~ HNU	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		S1			2	4	18"	0		SM	Dry brown silty gravelly fine sand
					6	5					
5		S2			3	5	18"	0		ML	Dry brown clayey silt
					7	7					
10		S3			3	4	22"	0		ML	Moist brown clayey silt becoming grayer toward bottom
					4	5					
15		S4			BOH	WOH	22"	0		CL	Wet gray silty clay
					1	2					
20		S5			WOR	WOH	24"	0		CL	Wet gray silty clay
					WOH	WOH					
25		S6			WOH	WOH	16"	0		CL	Wet gray silty clay
					2	2					
30		S7			WOH	WOH	24"	0		CL	Wet gray silty clay
					2	3					
35		S8			WOR	WOH	24"	0		CL	Wet gray silty clay some gravel at bottom
					WOH	1					
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

6001264

Gibbs & Hill, I

BORING LOG

Sheet 2 of 2

PROJECT: Hercules PROJECT NO. 5583-09 BORING NO. GB-7

Location: Port Ewen, NY Coord: Ground Elev:

Contractor: Empire Drilling Date Started: 3/16/89 G.W.L. Hour: Date:

Inspector: Mike Valentino Date Completed: 3/17/89 G.W.L. Hour: Date:

Notes:

Depth FL	Elev. FL	Sample Type & No.	Test Type & No.	Blows Casing Per FL	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./FL.	Graphic Symbol	Description and Remarks
40		SS			WOR	5	12"	0		GM	wet dark shale fragments in a gray clayey silty matrix
					7	5					
5					100/.3						Refusal at 45' BOH
0											
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

6001265

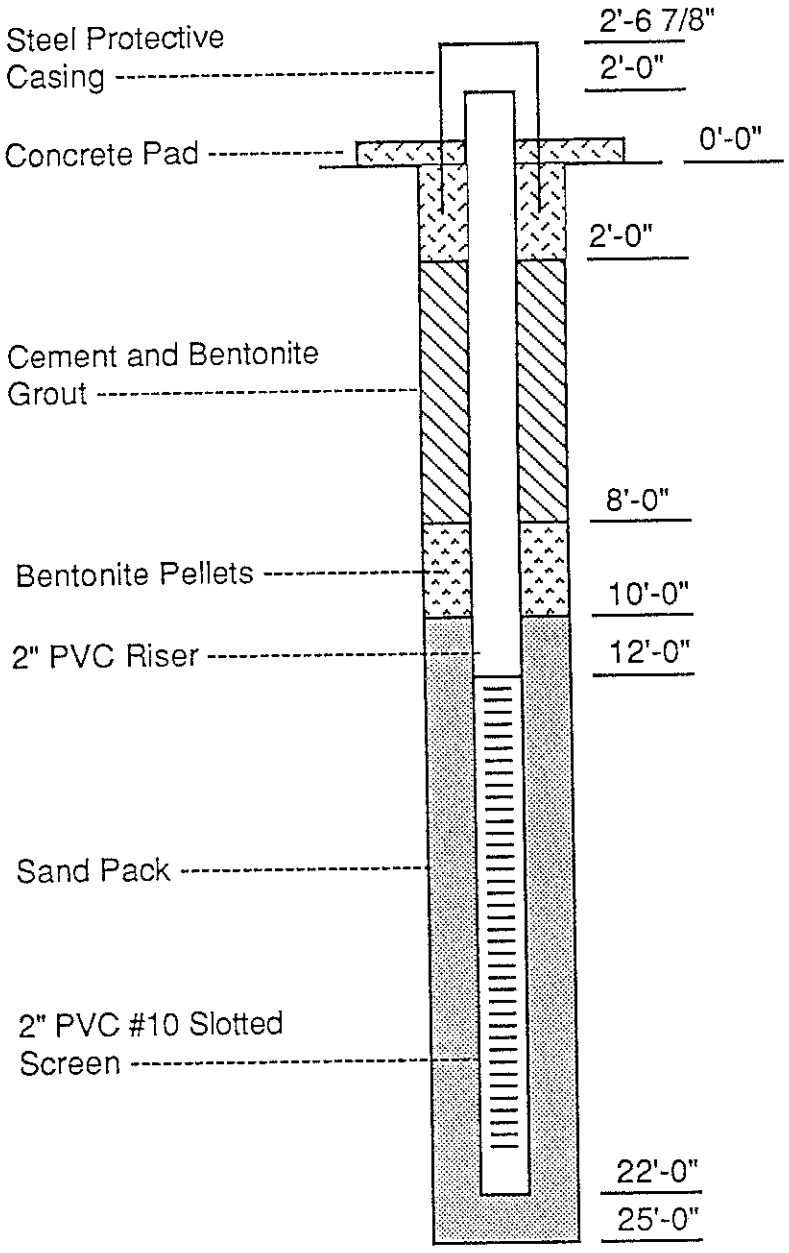
Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-8
Date Installed 3/8/89

Water Level from
Top of Casing 8'-5 1/4"
Date 3/23/89 Time 1:00 PM

Elevations (ft)



Gibbs & Hill, Inc.

6001252

BORING LOG

Sheet 1 of 1

PROJECT: Hercules — PROJECT NO. 5583-09 — BORING NO. MW-8

Location: Port Ewen, N.Y. — Coord: — Ground Elev:

Contractor: Empire Drilling — Date Started: 3/8/89 — G.W.L. — Hour: — Date:

Inspector: Mike Valentine — Date Completed: 3/8/89 — G.W.L. — Hour: — Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	~~ROD %~~ HNu	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0											N.o Sample
5					4 6	5 8	12"	0		ML	Yellowish brown moist clayey-silt.
0					6 7	6 8	12"	0		ML	yellowish brown more moist clayey silt
5					2 1	2 2	10"	0		ML	Gray wet clayey silt
0					0 0	0 1	2"	0		ML	Gray saturated clayey silt
5											BOH - 25 ft
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

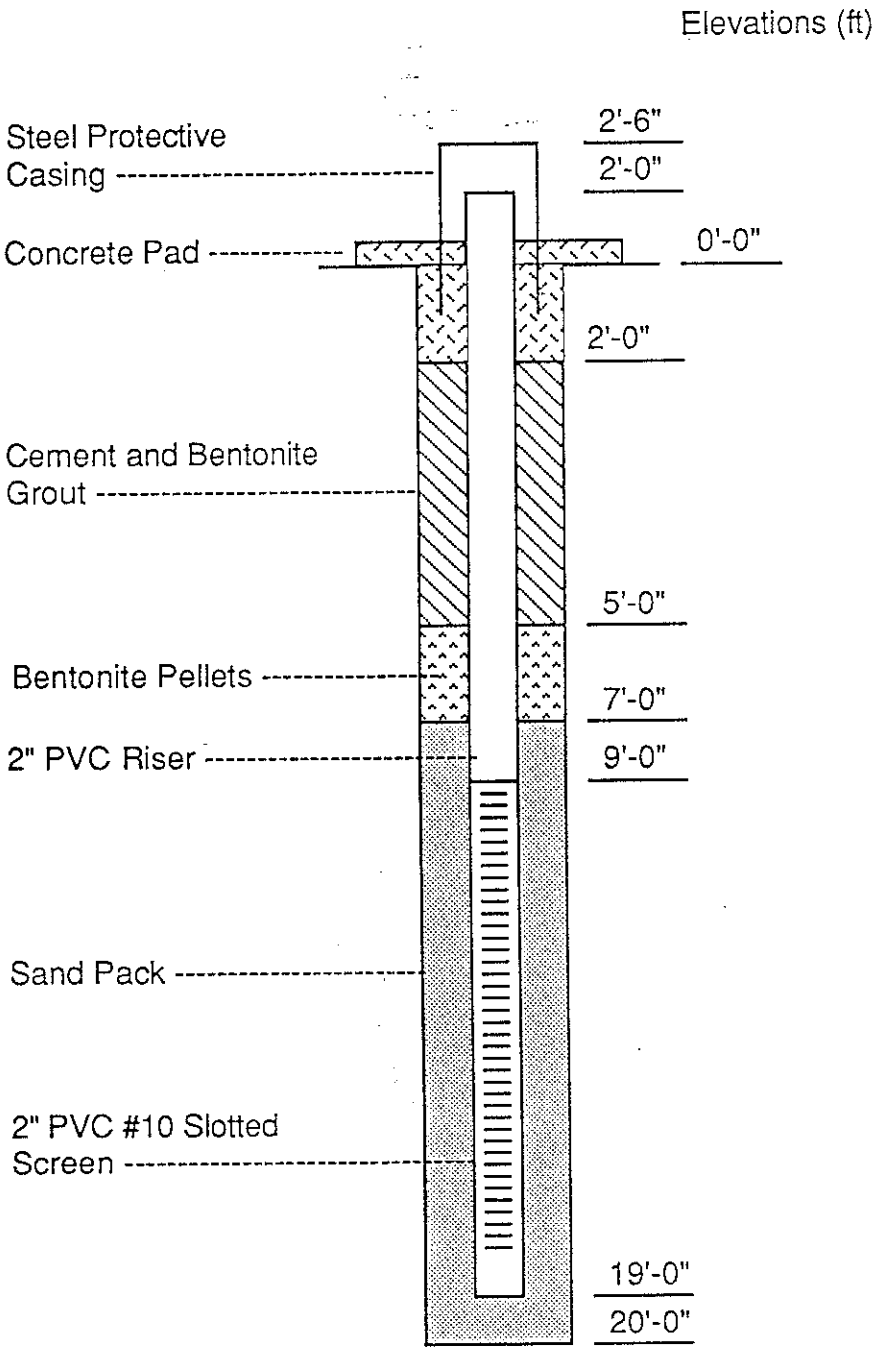
6001266

Gibbs & Hill, Inc

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-9
Date Installed 3/7/89

Water Level from
Top of Casing 2'- 7 1/2"
Date 3/23/89 Time 2:00 PM



Gibbs & Hill, Inc.

BORING LOG

Sheet 1 of 1

PROJECT: Hercules | PROJECT NO. 5583-09 | BORING NO. MW-9

Location: Port Ewen, NY | Coord: | Ground Elev:

Contractor: Empire Drilling | Date Started: 3/7/89 | G.W.L. 3' 6" S. Hour: 2:30P Date: 3/7

Inspector: Mike Valentino | Date Completed: 3/7/89 | G.W.L. 4'5" T Hour: 9:10A Date: 3/9

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	~~ROD %~~ HNU	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0					20	13	12"	0		ML	Dry brown clayey silt - 1st 3" frozen
					10	10					
5					3	7	18"	0		ML	Dry brown clayey silt becoming moist toward bottom of core
					4	7					
0					2	3	20"	0		ML	Moist brown clayey silt changing to gray clayey silt at 11' 8"
					3	4					
5					0	0	12"	0		ML	Wet. gray clayey silt
					2	2					
0					17	18	12"	0		GM	Weathered black shale in a silty matrix
					29	47					
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

6001267

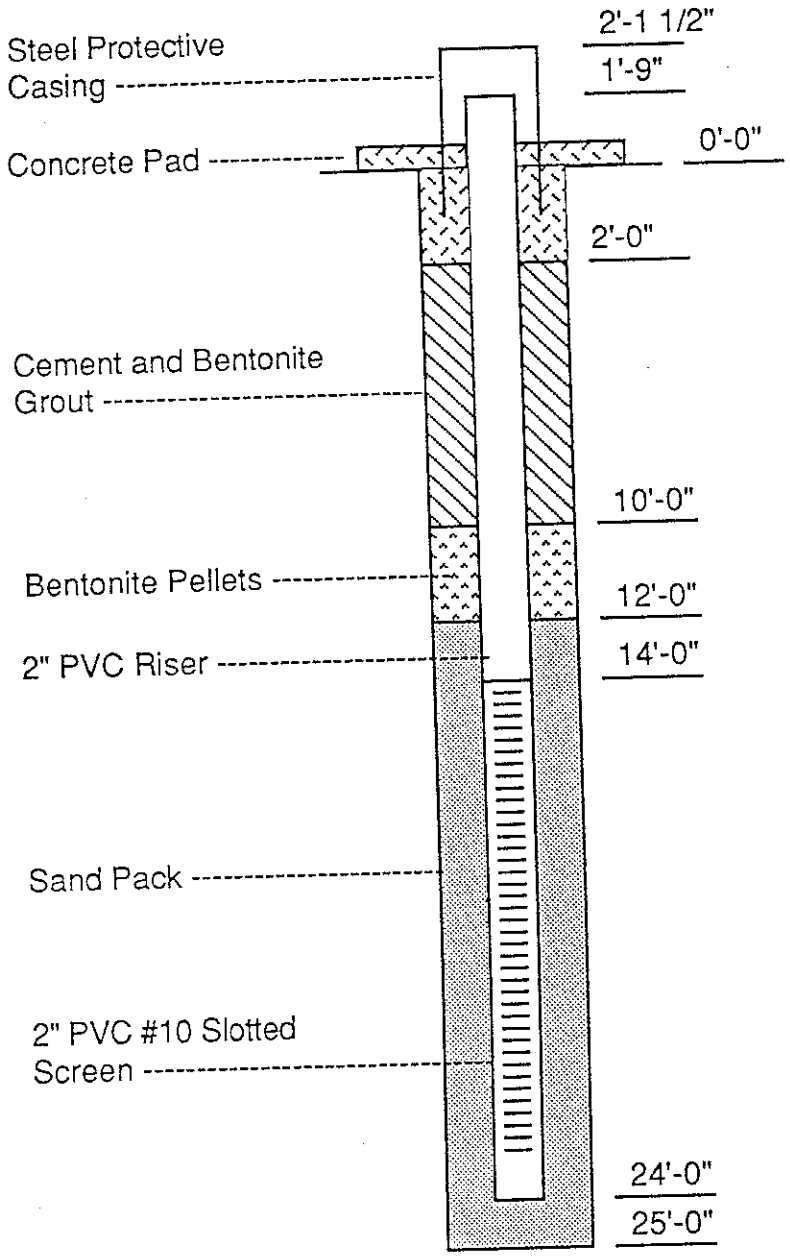
Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site Hercules
Well No. MW-10
Date Installed 3/6/89

Water Level from
Top of Casing 3'- 9"
Date 3/23/89 Time 2:45 PM

Elevations (ft)



Gibbs & Hill, Inc.

6001254

BORING LOG

Sheet 1 of 1

PROJECT: Hercules — PROJECT NO. 5583-09 — BORING NO. MW-10

Location: Port Ewen, N.Y. — Coord: — Ground Elev:

Contractor: Empire Drilling — Date Started: 3/6/89 G.W.L. 5' (TOC) Hour: 1:20P Date: 3/7/89

Inspector: Mr. Valentine — Date Completed: 3/7/89 G.W.L. Hour: Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	~~ROD %~~ HNU	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0					3	3	20"	0		ML	Brown. dry-moist clayey silt - top 3" frozen
					6	7					
5					5	6	23"	0			Clayey brown moist silt.
					8	9				ML	
0					1	2	24"	0			Clayey brown moist silt
					2	3				ML	changing to gray wet clayey silt at 11½'
5					2	4	18"	0		ML	wetter gray clayey silt
					2	2					
0					0	1	18"	0			Saturated gray clayey
					2	3				ML	silt.
5											BOH ↑
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample		

6001268

Gibbs & Hill, Inc.

HYDROPUNCH® BORING LOGS

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-1

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *06/22/95*
Finish Date: *06/23/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 850*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*
Duration: *NA*
Gals. Purged: *NA*
Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *163.4*
TWC: *NA*
TPC: *NA*
North: *685,400.08*
East: *594,246.34*

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	8" Borehole	soil	S-1	6-8-8-8	1.4'	SM / CH	0	LACUSTRINE DEPOSITS Light brown mf SAND, some Clayey Silt, with root hairs, dry @ 0.2' grading to brown Silty CLAY, trace f Sand, moist to wet	Borehole backfilled with cement/bentonite grout.
5	Cement/ Bentonite Grout	soil	S-2	6-7-7-9	1.5'	CH	0		
10		soil	S-3	6-5-5-8	1.8'	CH	34		
15		soil	S-4	6-3-3-4	2.0'	CH	144	@ 15.0' brown CLAY, trace f Sand, saturated @ 16.9' changing to gray CLAY, trace f SAND	
20		soil	S-5	3-1-2-2	2.0'	CH	0.4		
25									Hydropunch sample collected @ 28-29'
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-1

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/22/95*

Finish Date: *06/23/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-6	2-1-2-1	0.9'	CH	0		
35	Cement/ Bentonite Grout		S-7	2-2-1-1	2.0'	CH	0		
40									Hydropunch sample collected @ 42-43'
45			S-8	3-4-31-55	0.1'	GC	0	@ 45.0' gray mf GRAVEL and f SAND, some Silty Clay	
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **HP-2**

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *06/07/95*
Finish Date: *06/09/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 55*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*
Duration: *NA*
Gals. Purged: *NA*
Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *164.7*
TWC: *NA*
TPC: *NA*
North: *685,422.24*
East: *594,300.63*

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	8" Borehole		S-1	5-6-7-7	1.3'		CH	0	LACUSTRINE DEPOSITS Brown CLAY & SILT, trace f Sand, with root hairs, dry to moist	Borehole backfilled with cement/bentonite grout.
5	Cement/ Bentonite Grout		S-2	4-6-7-9	1.4'		CH	0.2		
10			S-3	6-5-6-7	1.4'		CH	30		
15			S-4	2-1-2-2	1.8'		CH	1	@ 15.0' gray Silty CLAY, trace f Sand, saturated	
20			S-5	WOR-1-3-2	2.0'		CH	0		
25			S-6	WOR/12"-1/12"	NR		CH	NA		Hydropunch sample collected @ 26-29'
30										

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-2

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/07/95*

Finish Date: *06/09/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-7	1-1-1-2	2.0'	CH	0	@ 30.0' gray CLAY, trace f Sand	
35	Cement/ Bentonite Grout		S-8	WOR/24"	2.0'	CH	0	@ 35.0' gray Silty CLAY, little f Sand	
40									
45			S-9	WOR/24"	NR	NA	NA		Hydropunch sample collected @ 46-49'
50			S-10	6-4-24-17	0.7'	GC	0	@ 49.0' gray Silty CLAY, some angular fm Gravel, little cmf Sand	
								End of Boring at 51.0 feet.	
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-3

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *06/22/95*
Finish Date: *07/07/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 850/Acker Soil Max*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*
Duration: *NA*
Gals. Purged: *NA*
Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *164.4*
TWC: *NA*
TPC: *NA*
North: *685,424.48*
East: *594,343.99*

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	8" Borehole		S-1	7-8-7-6	1.2'	SP / CH	24	FILL (0.8) Light brown to black fmc SAND, little Clayey Silt, little f Gravel, with roots & cinders, dry to moist	Borehole backfilled with cement/bentonite grout.
								LACUSTRINE DEPOSITS	
5	Cement/ Bentonite Grout		S-2	5-6-8-6	1.1'	CH	4.8	Gray-black Silty CLAY, trace f Sand, damp @ 5.0 brown & gray Silty CLAY, trace f Sand, moist to wet	
10			S-3	7-7-8-11	2.0'	CH	60		
15			S-4	3-4-3-5	2.0'	CH	12	@ 15.0' brown CLAY, trace (-) f Sand, saturated	
20			S-5	4-2-2-3	2.0	CH	0.2	@ 20.0' gray CLAY, trace (-) f Sand	Hydropunch sample collected @ 23-24'
25			S-6	4-3-4-5	1.2'	CH	1.2		
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-3

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/22/95*

Finish Date: *07/07/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-7	3-4-4-4	1.2'	CH	0		
35	Cement/ Bentonite Grout		S-8	WOH/24"	2.0'	CH	0	@ 35.0' gray CLAY, little f Sand	
40									Hydropunch sample collected @ 43-44'
45			S-9	5-5-4-3	2.0'	CH	0		
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-4

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *06/21/95*
Finish Date: *06/21/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 850*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*
Duration: *NA*
Gals. Purged: *NA*
Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *164.6*
TWC: *NA*
TPC: *NA*
North: *685,380.71*
East: *594,335.46*

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0			S-1	9-11-5-5	0.9'	GM	1.6	LACUSTRINE DEPOSITS Gray mf GRAVEL, some fmc Sand, little Clay & Silt, dry to moist @ 0.7'	Borehole backfilled with cement/bentonite grout.
5	8" Borehole Cement/ Bentonite Grout		S-2	4-6-9-12	1.7'	CH	0.8	@ 5.0' brown Silty CLAY, trace f Sand, moist to wet	
10			S-3	4-7-9-10	2.0'	CH	11.2		
15			S-4	2-4-4-5	2.0'	CH	40	@ 16.4' changing to red-brown Silty CLAY, trace f Sand, saturated	
20			S-5	WOH/18"-3	2.0'	CH	19.6	@ 20.0' gray CLAY, trace (-) f Sand	
25									Hydropunch sample collected @ 27.5-28.5'
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-4

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/21/95*

Finish Date: *06/21/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-6	1-2-1-1	1.2'	CH	0		
35	Cement/ Bentonite Grout		S-7	1-1-1-1	NR	NA	NA		
40									Hydropunch sample collected @ 42-43'
45			S-8	1-1-4-5	NR	CH	NA		
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-5

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/05/95*

Finish Date: *06/07/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 55*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *161.1*

TWC: *NA*

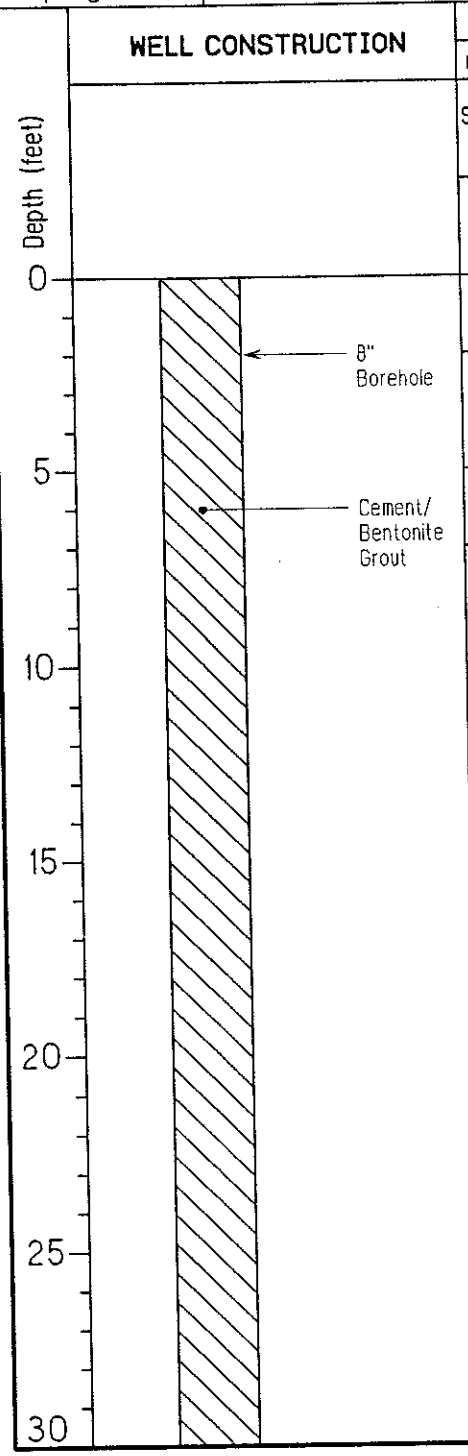
TPC: *NA*

North: *685,435.55*

East: *594,448.56*

Geophysical Log: ☐ yes ☒ no

Comments:



soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
soil	S-1	4-3-5-7	0.9'	CL	0	LACUSTRINE DEPOSITS Brown SILT & CLAY, trace f Sand, dry	Borehole backfilled with cement/bentonite grout.
soil	S-2	6-8-7-9	1.2'	CH	0	@ 5.0' brown Silty CLAY, trace f Sand, moist	
soil	S-3	4-7-8-12	1.7'	CH	2		
soil	S-4	3-4-3-3	2.0'	CH	0.6	@ 16.7' changing to gray Silty CLAY, trace f Sand, wet	
soil	S-5	WOH/12"-2-3	2.0'	CH	0	@ 20.0' gray Silty CLAY, trace (-) f Sand, saturated	
rock	S-6	1/24"	NR	NA	NA		Hydropunch sample collected @ 26-28'

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-5

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/05/95*

Finish Date: *06/07/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-7	1-1-1-1	2.0'	CH	0.1	@ 30.0' gray CLAY, trace (-) f SAND	
35	Cement/ Bentonite Grout		S-8	WOR/12"-1-3	2.0'	CH	0.1		
40			S-9	1-1-1-1	NR	NA	NA		Hydropunch sample collected @ 42-45'
45								End of Boring at 45.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **HP-6**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/15/95*

Finish Date: *06/19/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *157.8*

TWC: *NA*

TPC: *NA*

North: *685,379.73*

East: *594,512.92*

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	8" Borehole	soil	S-1	3-4-3-4	1.4'	CL	0	LACUSTRINE DEPOSITS Brown SILT & CLAY, little mf Sand, with reeds & roots, damp	Borehole backfilled with cement/bentonite grout.
5	Cement/Bentonite Grout	soil	S-2	4-6-7-8	2.0'	CH	0	@ 5.0' brown Silty CLAY, trace f Sand, moist to wet	
10		soil	S-3	3-5-7-7	2.0'	CH	0.1		
15		soil	S-4	3-2-3-3	1.0'	CH	0	@ 15.0' gray Silty CLAY, trace f Sand, saturated	
20									Hydropunch sample collected @ 23-24'
25		soil	S-5	2-4-4-3	1.5'	CH	0	@ 25.0' gray CLAY, trace (-) f Sand	
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-6

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/15/95*

Finish Date: *06/19/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-6	1-1-3-3	1.0'	CH	0	@ 30.0' gray CLAY, little f Sand	
35	Cement/ Bentonite Grout		S-7	2-1/12"-1	2.0'	CH	0		
40									Hydropunch sample collected @ 41-44'
45			S-8	32-34-65-100/0.1"	1.3'	GC	0	@ 45.0' gray mf GRAVEL, some Silty Clay, some fmc Sand Bedrock @ 46.6 feet. End of Boring at 46.6 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-7

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/13/95*

Finish Date: *07/14/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *157.8*

TWC: *NA*

TPC: *NA*

North: *685,305.36*

East: *594,648.93*

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0			S-1	3-5-9-10	2.0'	CH	0.2	LACUSTRINE DEPOSITS Brown Silty CLAY, trace f Sand, with roots, dry to wet	Borehole backfilled with cement/bentonite grout.
5	8" Borehole Cement/ Bentonite Grout		S-2	5-5-5-8	2.0'	CH	0		
10			S-3	4-6-5-6	NR	NA	NA		
15			S-4	4-2-3-1	2.0'	CH	0	@ 15.7' grading to gray Silty CLAY, trace f Sand, saturated	
20									
25			S-5	WOH/18"-2	1.2'	CH	0		Hydropunch sample collected @ 23-24'
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-7

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *07/13/95*

Finish Date: *07/14/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-6	1-1-1-2	1.8'	CH	0	@ 30.0' gray Silty CLAY, little (+) f Sand	
35	Cement/ Bentonite Grout		S-7	WOR/24"	1.8'	CH	0		
40									Hydropunch sample collected @ 42-44'
45			S-8	16-14-42-38	1.1'	GP	0	@ 45.0' gray fmc GRAVEL, some cmf Sand, little Silt & Clay	
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **HP-8**

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *07/12/95*
Finish Date: *07/15/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 850*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*
Duration: *NA*
Gals. Purged: *NA*
Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *162.7*
TWC: *NA*
TPC: *NA*
North: *685,218.76*
East: *594,639.62*

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0			S-1	2-4-6-10	1.5'	CH	0	LACUSTRINE DEPOSITS Dark brown to gray-brown Silty CLAY, trace f Sand, dry to wet	Borehole backfilled with cement/bentonite grout.
5	8" Borehole Cement/ Bentonite Grout		S-2	6-8-11-11	2.0'	CH	0		
10			S-3	7-5-8-11	2.0'	CH	0		
15			S-4	6-5-4-5	1.3'	CH	0	@ 15.0' gray Silty CLAY, trace f Sand, saturated	
20									Hydropunch sample collected @ 23-24' plus DUP071395
25			S-5	2-2-2-4	1.5'	CH	0	@ 25.0' gray Silty CLAY, little f Sand	
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-8

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/12/95*

Finish Date: *07/15/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-6	2-3-2-3	1.3'	CH	0	@ 30.0' gray Silty CLAY, some (-) f Sand	
35	Cement/ Bentonite Grout		S-7	1-2-1-1	1.5'	CH	0		
40									Hydropunch sample collected @ 42-43'
45			S-8	12-16-15-24	1.3'	SP	0	@ 45.0' gray cmf SAND, some fmc Gravel, little Silt & Clay	
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **HP-9**

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *07/12/95*
Finish Date: *07/12/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 850*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*
Duration: *NA*
Gals. Purged: *NA*
Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *164.0*
TWC: *NA*
TPC: *NA*
North: *685,130.17*
East: *594,614.45*

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0			S-1	2-5-9-12	1.5'	OL/CH	0	LACUSTRINE DEPOSITS Dark brown SILT, some f Sand, with roots, needles & leaf litter, dry @ 0.4' grading to brown Silty CLAY, trace to little f Sand, dry to moist	Borehole backfilled with cement/bentonite grout.
5	8" Borehole Cement/ Bentonite Grout		S-2	8-7-8-10	1.7'	CH	0		
10			S-3	6-5-4-4	1.8'	CH	0.2	@ 10.4' changing to gray Silty CLAY, trace f Sand, wet to saturated	
15			S-4	7-7-6-6	0.9'	CH	0		
20									Hydropunch sample collected @ 22-23'
25								End of Boring at 23.0 feet.	
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **HP-10**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/02/95*

Finish Date: *06/08/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *156.8*

TWC: *NA*

TPC: *NA*

North: *685,220.05*

East: *594,500.02*

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0			S-1	1-3-3-4	1.6'		CH	2.6	LACUSTRINE DEPOSITS Brown CLAY & SILT, trace to (-) f Sand, moist to saturated	Borehole backfilled with cement/bentonite grout.
5	8" Borehole Cement/ Bentonite Grout		S-2	2-3-5-7	1.8'		CH	200		
10			S-3	4-4-4-6	2.0'		CH	250		
15			S-4	1-2-2-2-	2.0'		CH	400	@ 15.3' changing to gray CLAY, trace (-) f Sand, saturated	
20			S-5	WOH/24"	NR		NA	NA		Hydropunch sample collected @ 21-24', plus DUP060895
25			S-6	1/12"-1/12"	0.7'		CH	1		
30										

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-10

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/02/95*

Finish Date: *06/08/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-7	1-1-1-2	2.0'	CH	0.4		Hydropunch sample, HP-10A, collected @ 32-34'
35	Cement/ Bentonite Grout		S-8	WOR/18"-40	2.0'	CH	0.5	@ 36.6' grading to gray CLAY, some fm Sand	
			S-9	100/2"	NR	CH	NA	37.5 Bedrock @ 37.5 feet.	Hydropunch sample collected @ 37-37.5'
								End of Boring at 37.5 feet.	
40									
45									
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-11

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/09/95*

Finish Date: *06/12/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *161.8*

TWC: *NA*

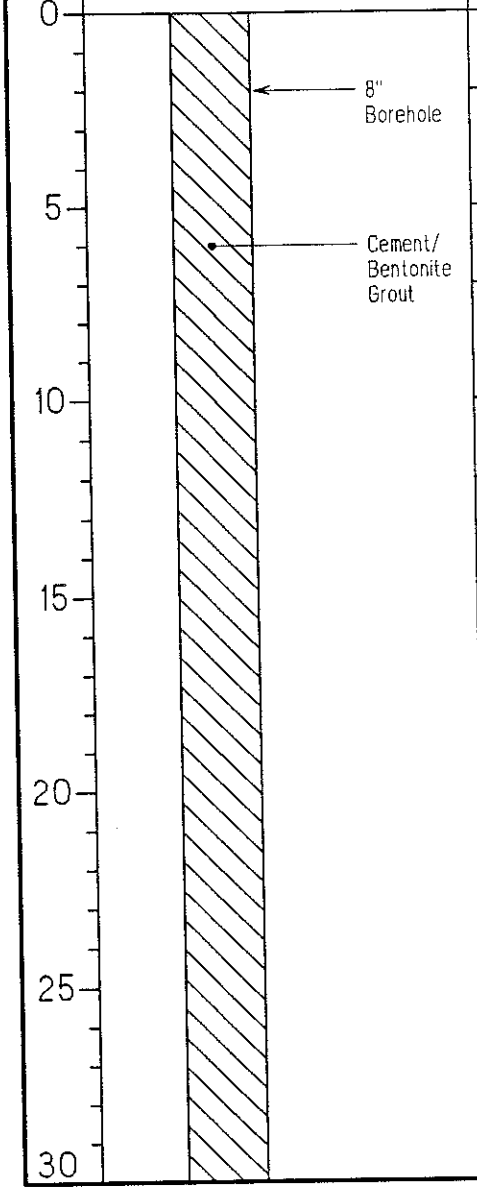
TPC: *NA*

North: *685,096.79*

East: *594,493.05*

Geophysical Log: ☐ yes ☒ no

Comments:



WELL CONSTRUCTION	soil / rock	Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	PID (ppm)	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD	VISUAL CLASSIFICATION	REMARKS
		S-1	2-8-9-9	1.2'	CH	0					LACUSTRINE DEPOSITS Brown Silty CLAY, trace f Sand, dry to moist	Borehole backfilled with cement/bentonite grout.
		S-2	6-4-7-10	1.6'	CH	0						
		S-3	6-4-5-5	1.8'	CH	0						
		S-4	6-4-3-2	1.5'	CH	0					@ 15.0' gray Silty CLAY, trace (-) f Sand, wet to saturated	
		S-5	5-3-1-2	1.4'	CH	0						Hydropunch sample collected @ 21-24'

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-11

Project: *Groundwater Investigation*

Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/09/95*

Finish Date: *06/12/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-6	4-3-2-1	NR	NA	NA		
35	Cement/ Bentonite Grout		S-7	3-2-1-1	1.7'	CH	0		
40									Hydropunch sample collected @ 41-43.5'
45			S-8	3-3-3-2	2.0'	CH	0		
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **HP-12**

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/12/95*

Finish Date: *06/28/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *158.9*

TWC: *NA*

TPC: *NA*

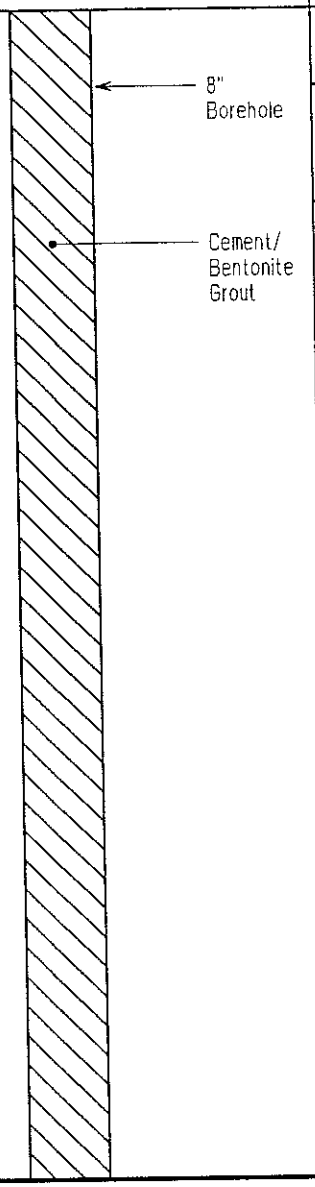
North: *685,152.73*

East: *594,414.82*

Geophysical Log: ☐ yes ☒ no

Comments:

WELL CONSTRUCTION



SAMPLE DATA

soil / rock	Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	PID (ppm)	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD
soil	S-1	2-4-4-5	1.7'	CH	0				
soil	S-2	3-6-7-8	1.9'	CH	0.8				
soil	S-3	2-3-2-2	2.0'	CH	120				
soil	S-4	1-1/12"-1	2.0'	CH	0.2				
soil	S-5	2-1-1-2	2.0'	CH	0				

VISUAL CLASSIFICATION

Depth (feet)

0 — LACUSTRINE DEPOSITS

Brown Silty CLAY, trace f Sand, with roots & reeds, moist

5 — @ 5.0' brown Silty CLAY, little f Sand, damp

10 — @ 11.2' grading to gray Silty CLAY, trace f Sand, moist to saturated

15 — @ 15.0' gray CLAY, trace (-) f Sand

20

25

30

REMARKS

Borehole backfilled with cement/bentonite grout.

Hydropunch sample collected @ 23-24'

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-12

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/12/95*

Finish Date: *06/28/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole; Cement/ Bentonite Grout		S-6	WOR/6"-WOH/18"	0.8'	CH	0		
35			S-7	3-1-1-3	1.9'	CH	0	@ 36.0' gray CLAY, little to some f Sand	
40									Hydropunch sample collected @ 42-43'
45			S-8	WOR/12"-1-2	2.0'	CH	0		
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **HP-13**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/14/95*

Finish Date: *06/16/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *163.0*

TWC: *NA*

TPC: *NA*

North: *685,252.57*

East: *594,332.84*

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	8" Borehole	S-1	2-5-5-13	0.5'	CH	1.5	FILL Brown Silty CLAY, some mf Sand, with black cinders, saturated	Borehole backfilled with cement/bentonite grout.
5	Cement/Bentonite Grout	S-2	7-5-7-10	1.3'	CH	270	LACUSTRINE DEPOSITS Brown Silty CLAY, trace f Sand, moist	
10		S-3	7-8-8-13	0.3'	CH	220		
15		S-4	3-2-2-4	2.0'	CH	220	@ 15.4' grading to gray Silty CLAY, trace f Sand, wet to saturated	
20		S-5	2-2-1-2	2.0'	CH	2	@ 20.0' gray CLAY, trace (-) f Sand	Hydropunch sample collected @ 22-22.5'
25		S-6	2-1-2-3	0.7'	CH	0.3		
30								

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-13

Project: *Groundwater Investigation*

Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/14/95*

Finish Date: *06/16/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-7	3-3-1-2	1.6'	CH	0.2		
35	Cement/ Bentonite Grout		S-8	WOH/18"-1	2.0'	CH	0		
40									Hydropunch sample collected @ 43-44'
45			S-9	1/12"-1/12"	NR	NA	NA		
50								End of Boring at 47.0 feet.	
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-14

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/01/95*

Finish Date: *06/06/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850/CME 55*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *163.4*

TWC: *NA*

TPC: *NA*

North: *685,571.49*

East: *594,367.79*

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	8" Borehole		S-1	2-2-3-6	1.3'	CH	0	LACUSTRINE DEPOSITS Brown CLAY & SILT, trace f Sand, with root hairs, moist to wet	Borehole backfilled with cement/bentonite grout.
5	Cement/ Bentonite Grout		S-2	2-3-6-7	2.0'	CH	0.1		
10			S-3	3-4-5-8	2.0'	CH	1.1		
15			S-4	2-2-2-3	2.0'	CH	0	@ 15.5' grading to gray Silty CLAY, trace to no f Sand, moist to saturated	
20			S-5	WOH-1-1-2	1.6'	CH	0		
25			S-6	WOH/18"-2	0.2'	CH	0		Hydropunch sample collected @ 25'
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-14

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/01/95*

Finish Date: *06/06/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-7	WOH/18"-3	2.0'	CH	0		
35	Cement/ Bentonite Grout		S-8	WOR/24"	2.0'	CH	0		
40			S-9	WOR/24"	2.0'	CH	0		Hydropunch sample collected @ 42-45'
45								End of Boring at 45.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **HP-15**

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *06/28/95*

Finish Date: *06/29/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*

Duration: *NA*

Gals. Purged: *NA*

Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *163.2*

TWC: *NA*

TPC: *NA*

North: *685,582.15*

East: *594,431.75*

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0								0.4 FILL Gray GRAVEL and black cinders, dry	Borehole backfilled with cement/bentonite grout.
	8" Borehole		S-1	15-21-12-14	1.5'	GW / CH	0		
								LACUSTRINE DEPOSITS Brown Silty CLAY, trace f Sand, dry to wet	
5	Cement/ Bentonite Grout		S-2	7-6-7-9	1.4'	CH	0		
			S-3	6-5-7-8	1.5'	CH	0.4	@ 10.0' brown Silty CLAY, little f Sand wet	
15			S-4	4-3-2-3	1.5'	CH	NM	@ 15.5' grading to gray CLAY, trace f Sand, wet to saturated	
20			S-5	2-1-2-3	1.7'	CH	NM		Hydropunch sample collected @ 28-29'
25									
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-15

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/28/95*

Finish Date: *06/29/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-6	2-2-1-1	1.5'	CH	0		
35	Cement/ Bentonite Grout		S-7	WOH/12"-1-2	NR	NA	NA		
40									Hydropunch sample collected @ 43-44'
45			S-8	WOH-2-1-4	1.6'	CH	0	@ 45.0' gray Silty CLAY and fmc SAND, trace f Gravel	
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-16

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *06/27/95*
Finish Date: *06/28/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 850*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*NA*	*NA*
Diameter (ID):	*NA*	*NA*
Coupling:	*NA*	*NA*

WELL DEVELOPMENT

Method: *NA*
Duration: *NA*
Gals. Purged: *NA*
Slug Test: *NA* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *163.0*
TWC: *NA*
TPC: *NA*
North: *685,205.71*
East: *594,314.34*

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	8" Borehole		S-1	4-3-2-2	0.2'	SP	0	LACUSTRINE DEPOSITS Brown & black cmf SAND, some fm Gravel, little Clay & Silt, with roots, dry	Borehole backfilled with cement/bentonite grout.
5	Cement/ Bentonite Grout		S-2	3-7-10-13	1.2'	CH	0	@ 5.0' brown Silty CLAY, trace f Sand, moist	
10			S-3	4-5-5-9	1.3'	CH	0		
15			S-4	4-3-2-2	1.5'	CH	0	@ 15.4' grading to gray CLAY, trace f Sand, saturated	
20									
25			S-5	2-1-1-1	2.0'	CH	0		Hydropunch sample collected @ 23-24'
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: HP-16

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *06/27/95*

Finish Date: *06/28/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-6	2/12"-1-1	0.8'	CH	0		
35	Cement/ Bentonite Grout		S-7	WOR/12"-WOH-2	2.0'	CH	0		
40									Hydropunch sample collected @ 43-44'
45			S-8	WOH/24"	2.0'	CH	0	@ 45.0' gray CLAY, little f SAND	
								End of Boring at 47.0 feet.	
50									
55									
60									
65									
70									

NEWLY INSTALLED MONITORING WELLS

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-11S**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/31/95*

Finish Date: *07/31/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Bailer*

Duration: *0.5 hours*

Gals. Purged: *14 gallons*

Slug Test: *3.6 x 10^{-6}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *162.1*

TWC: *164.4*

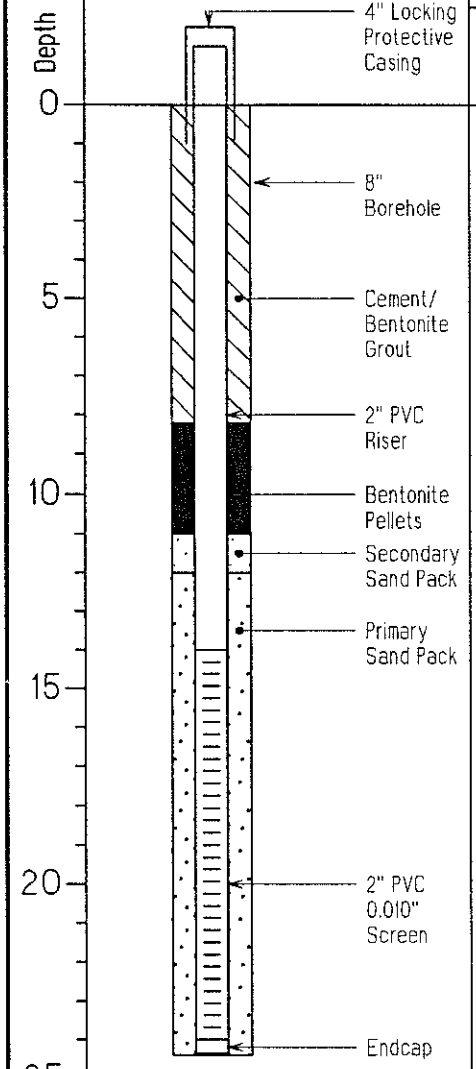
TPC: *164.6*

North: *683,792.33*

East: *593,680.59*

Geophysical Log: ☐ yes ☒ no

Comments:



WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
							See MW-11D for sample description.	
							End of Boring @ 24.4 feet.	

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-11D

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/26/95*

Finish Date: *07/28/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Dual Line Air*

Duration: *4.4 hours*

Gals. Purged: *125 gallons*

Slug Test: *8.8 x 10^{-3}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *161.4*

TWC: *163.9*

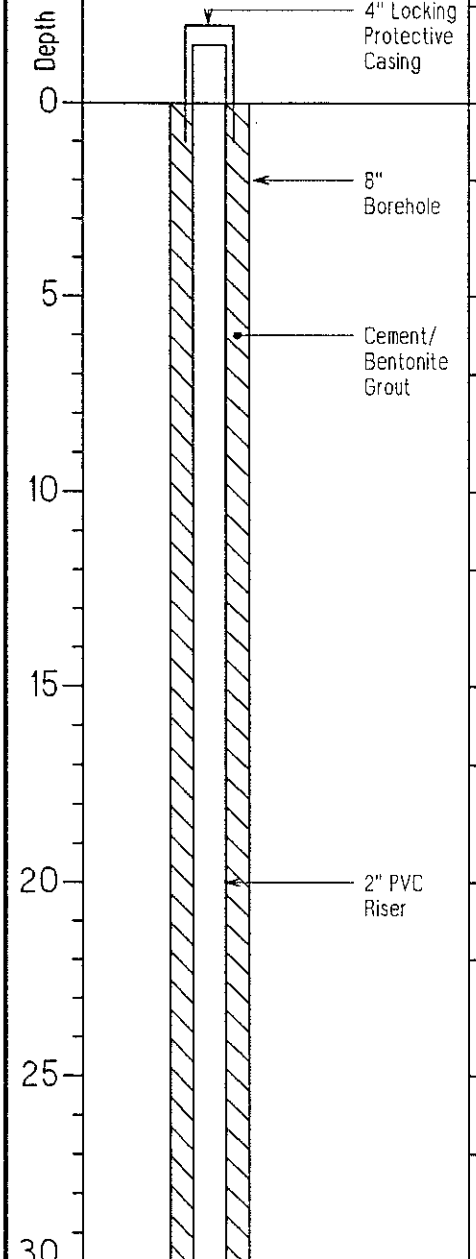
TPC: *164.0*

North: *683,789.62*

East: *593,686.64*

Geophysical Log: ☐ yes ☒ no

Comments:



soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
soil	S-1	2-5-8-11	1.6'	CL	0	LACUSTRINE DEPOSITS Brown CLAY & SILT, trace f Sand, with roots in top 0.2', damp to dry	
soil	S-2	2-7-8-15	1.8'	CH	0	@ 5.0' brown Silty CLAY, little f Sand, damp to wet	
soil	S-3	5-6-6-9	2.0'	CH	0		
soil	S-4	2-2-2-2	2.0'	CH	0	@ 15.0' gray Silty CLAY, trace f Sand, saturated	
soil	S-5	2-1-1-2	1.9'	CH	0		
soil	S-6	WOH/24"	1.8'	CH	0		

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-11D

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/26/95*

Finish Date: *07/28/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole		S-7	WOR/12"-WOH/12"	1.6'	CH	0		
35	Cement/Bentonite Grout		S-8	WOH/24"	1.7'	CH	0	@ 35.0' gray Silty CLAY, little to trace f Sand	
40	2" PVC Riser		S-9	WOR/18"-WOH/6"	1.6'	CH	0		
45	Bentonite Pellets		S-10	WOR-5-10-7	0.4'	SC	0	@ 45.0' gray cmf SAND, some Clay & Silt, little fm Gravel	
50	Secondary Sand Pack		S-11	12-12-8-12	0.6'	GM	0	@ 50.0' gray GRAVEL and cmf SAND, little Clay & Silt	
55	Primary Sand Pack		S-12	9-12-11-13	1.3'	GM	0	@ 55.0' gray mf GRAVEL, some fmc Sand, trace (-) Clayey Silt	
60	2" PVC 0.010" Screen		S-13	36-51-35-30	2.0'	GP	0	@ 60.0' gray cmf SAND and fmc GRAVEL, trace Clayey Silt	
65	Endcap		S-14	13-63-104-74	1.6'	GP	0		
70								End of Boring at 67.0 feet.	

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-12S

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *05/18/95*
Finish Date: *05/18/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 55*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

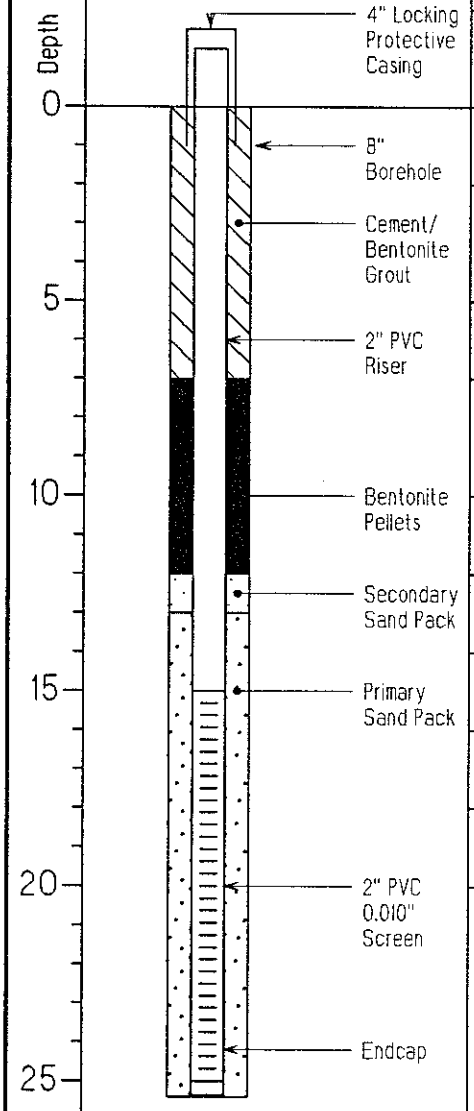
Method: *Surge Block/Bailer*
Duration: *0.5 hours*
Gals. Purged: *27 gallons*
Slug Test: *7.4 x 10^{-6}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *166.5*
TWC: *168.9*
TPC: *169.0*
North: *685,004.95*
East: *593,902.75*

Geophysical Log: ☐ yes ☒ no
Comments:



soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
soil	S-1	12-12-15-14	1.1'	SM / CH	0	LACUSTRINE DEPOSITS Brown fm SAND, some Clayey Silt, little (-) f Gravel, dry @ 0.5' brown Silty CLAY, trace f Sand, dense, dry to wet	
soil	S-2	6-8-10-13	1.6'	CH	0		
soil	S-3	2-4-5-6	1.9'	CH	0		
soil	S-4	7-5-7-7	1.4'	CH	0	@ 12.9' grading to gray Silty CLAY, trace f Sand, saturated	
soil	S-5	2-1-2-3	1.9'	CH	0	@ 14.0' gray CLAY	
soil	S-6	3-2-3-3	1.7'	CH	0		
soil	S-7	WOH-1-2-3	1.5'	CH	0		
						End of Boring at 25.0 feet.	

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-12D**

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *05/15/95*

Finish Date: *05/17/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 55*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Bailer/Dual Line Air*

Duration: *4 hours*

Gals. Purged: *285 gallons*

Slug Test: *9.9 x 10^{-4}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *166.0*

TWC: *168.4*

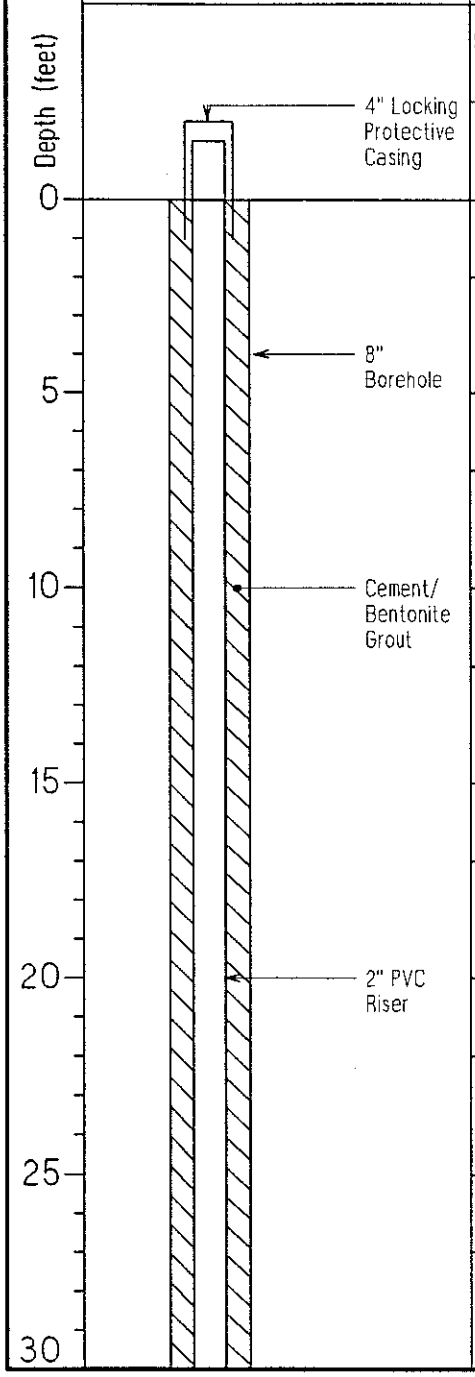
TPC: *168.6*

North: *685,000.73*

East: *593,908.21*

Geophysical Log: ☐ yes ☒ no

Comments:



soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
	S-1	12-9-10-8	1.2'	GC / CH	0	FILL (0.5) Gray fm GRAVEL and medium-brown Silty CLAY, dry	
						LACUSTRINE DEPOSITS Medium-brown Silty CLAY, trace f Sand, dry to wet	
	S-2	4-7-8-8	1.0'	CH	0		
						@ 10.0' brown Silty CLAY, little fm Sand, trace f angular Gravel, wet	
	S-3	4-5-4-7	0.8'	CH	0		
						@ 15.0' gray Silty CLAY, trace f Sand, wet	
	S-4	3-2-2-2	0.2'	CH	0		
						@ 20.0' gray CLAY, saturated	
	S-5	WOR-1-2-1	1.6'	CH	0		
	S-6	1-1-1-1	2.0'	CH	0		

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-12D

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *05/15/95*

Finish Date: *05/17/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30			S-7	1-1-1-1	2.0'	CH	0		
35			S-8	WOR/18"-2	2.0'	CH	0		
40	8" Borehole		S-9	WOH/24"	1.4'	CH	0		
45	Cement/ Bentonite Grout; 2" PVC Riser		S-10	WOR/18"-4	2.0'	CH	0	@ 46.5' gray CLAY, trace (-) f Sand	
50			S-11	WOR/12"-WOH-1	1.8'	CH	0		
55			S-12	WOR/12"-2-3	2.0'	CH	0	@ 55.0' gray CLAY	
60			S-13	WOR/18"-3	2.0'	CH	0		
65			S-14	WOR/12"-3-2	2.0'	CH	0		
70	Bentonite Slurry							@ 66.8' gray CLAY, trace (-) fm angular Gravel, trace (-) f Sand	

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-12D**

Project: *Groundwater Investigation*

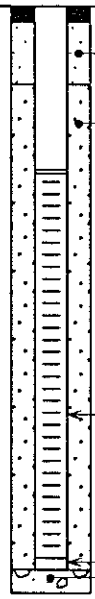
Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *05/15/95*

Finish Date: *05/17/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
70	 Secondary Sand Pack; Primary Sand Pack; 2" PVC 0.010" Screen; Endcap; Collapsed Natural Material		S-15	2-3-3-8	1.3'	GC	0	@ 70.0' gray Silty CLAY, little fm grading to some fmc angular Gravel, trace f Sand	
75			S-16	5-3-4-6	0.5'	GC	0		
80			S-17	18-15-8-12	1.4'	SM / GC	0	@ 80.0' gray cmf SAND, trace Clayey Silt; @ 81.0' gray Silty CLAY and mf GRAVEL, some cf Sand	
85			S-18	100/1"	0.1'	GC	0	Bedrock @ 85.1 feet. End of Boring at 85.1 feet.	
90									
95									
100									
105									
110									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-13S**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *05/31/95*

Finish Date: *05/31/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 55*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Bailer*

Duration: *0.75 hours*

Gals. Purged: *33 gallons*

Slug Test: *4.3 x 10^{-7}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *160.1*

TWC: *162.5*

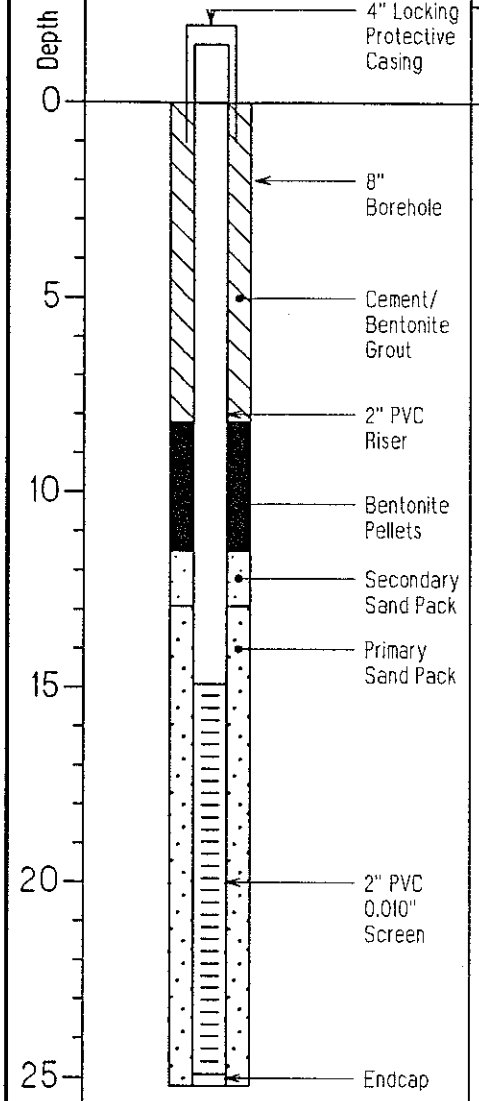
TPC: *162.6*

North: *686,130.09*

East: *594,562.13*

Geophysical Log: ☐ yes ☒ no

Comments:



WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
							See MW-13D for sample description.	
							End of Boring @ 25.2 feet.	

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-13D

Project: *Groundwater Investigation*
Project No.: *9596.03*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Start Date: *05/26/95*
Finish Date: *05/31/95*

DRILLING DATA

Inspector: *L. Scheuing/D. Gawronski*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 55*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

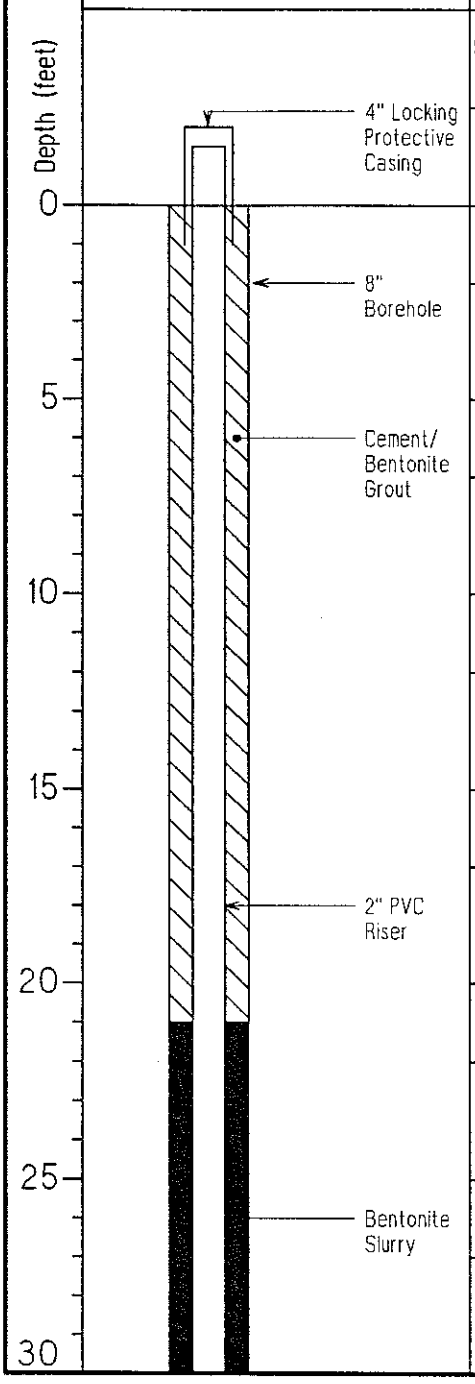
Method: *Surge Block/Dual Line Air*
Duration: *2.6 hours*
Gals. Purged: *205 gallons*
Slug Test: *1.9 x 10^{-2}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *160.2*
TWC: *162.4*
TPC: *162.6*
North: *686,123.89*
East: *594,562.05*

Geophysical Log: ☐ yes ☒ no
Comments:



WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
		S-1	15-8-6-8	1.1'		SW / CH	0.1	FILL (0.9) Dark gray mf SAND, with cinders, wet	
								LACUSTRINE DEPOSITS Brown Silty CLAY, trace f Sand, wet to moist	
		S-2	3-4-5-6	1.6'		CH	0		
		S-3	3-4-5-6	2.0'		CH	0	@ 10.0' brown Silty CLAY, little f Sand, trace to no f Gravel, moist	
		S-4	1-2-2-2	1.9'		CH	0	@ 15.3' grading to gray Silty CLAY, trace to little f Sand, saturated	
		S-5	WOR-1-1-2	2.0'		CH	0		
		S-6	WOH/18'-2	2.0'		CH	0		

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-13D

Project: *Groundwater Investigation*

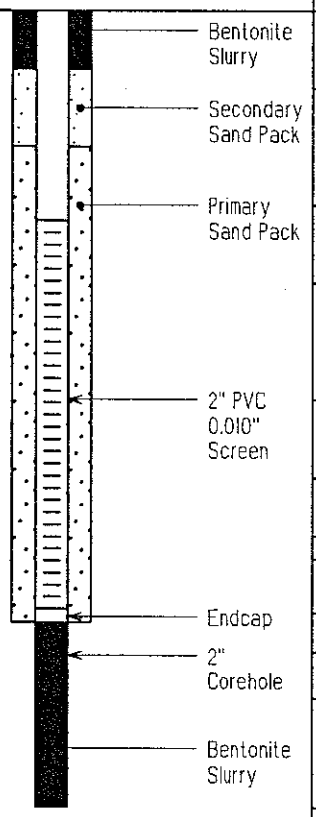
Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *05/26/95*

Finish Date: *05/31/95*

(CONTINUATION)



Depth (feet)	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	soil	S-7	WOR/12"-2-1	2.0'	CH	0		
35	soil	S-8	WOH/18"-1	2.0'	CH	0	@ 35.0' gray CLAY, with few f Sand partings	
40	soil	S-9	WOH-4-4-10	0.4'	CH	0	@ 40.0' gray Silty CLAY, little f Sand	
45	soil	S-10	100/1"	0.1'	SM	0	@ 43.5' gray f SAND and Clayey SILT, some f Gravel (43.6)	
	rock	R-1	NM	0.5'	40%	NM	BEDROCK	
	rock	R-2	NM	1.2'	60%	NM	Gray & black interbedded SHALE, with quartz & calcite mineralization	
50	rock	R-3	NM	2.8'	70%	NM		
							End of Boring at 50.5 feet.	
55								
60								
65								
70								

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-14S

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *05/18/95*
Finish Date: *05/25/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 55*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

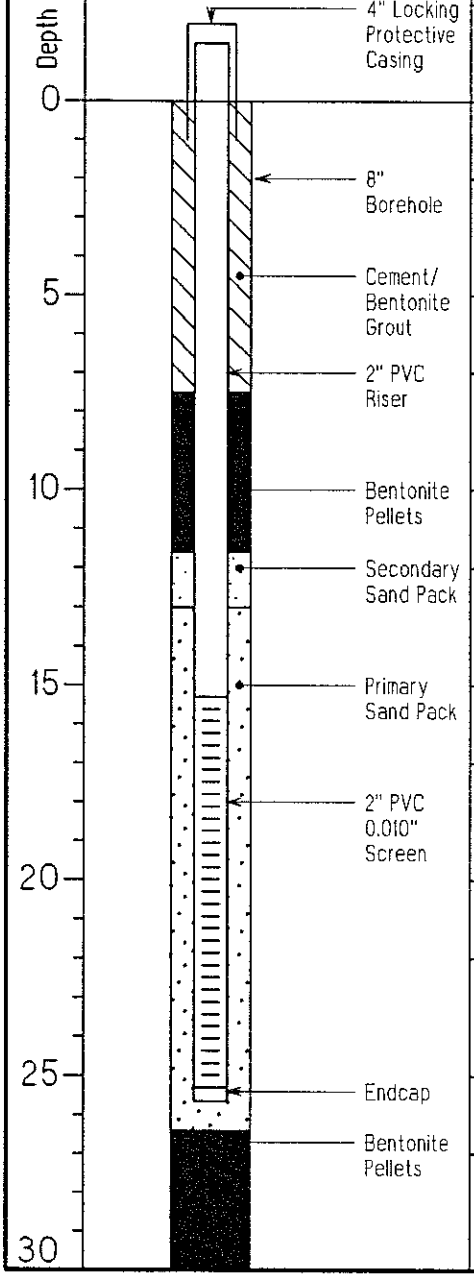
Method: *Surge Block/Bailer*
Duration: *0.75 hours*
Gals. Purged: *27 gallons*
Slug Test: *1.8 x 10^{-5}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *173.1*
TWC: *175.6*
TPC: *175.8*
North: *686,268.37*
East: *593,685.26*

Geophysical Log: ☐ yes ☒ no
Comments:



soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
soil	S-1	4-7-8-15	1.3'	CH	0	LACUSTRINE DEPOSITS Brown Silty CLAY, little to no f Gravel, trace (-) mf to f Sand, with roots, dry to moist	
soil	S-2	35-15-10-16	0.9'	CH	0		
soil	S-3	14-7-7-8	1.4'	CH	0		
soil	S-4	5-2-2-2	1.5'	CH	0	@ 15.0' gray Silty CLAY, trace f Sand, saturated	
soil	S-5	1-1-2-3	1.4'	CH	0		
soil	S-6	2-1-0-2	2.0'	CH	0		

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-14S

Project: *Groundwater Investigation*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Project No.: *9596.03*

Start Date: *05/18/95*

Finish Date: *05/25/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole; Bentonite Pellets		S-7	WOR-2-1-2	1.5'	CH	0		
35			S-8	3-1-2-2	1.5'	CH	0	@ 35.0' gray Silty CLAY, trace f Gravel @ 36.0' gray CLAY	
40	Cement/ Bentonite Grout		S-9	WOR/18"-2	2.0'	CH	0	@ 40.6' gray CLAY, trace f Sand	
45			S-10	WOR/24"	1.6'	CH	0		
50			S-11	WOR/18"-1	1.5'	CH	0		
55			S-12	WOR-1-3-4	1.8'	CH	0	@ 55.0' gray CLAY, trace f Sand, trace (-) to no f Gravel	
60			S-13	WOR/18"-3	2.0'	CH	0		
65			S-14	100/0"	NR	NA	NA	Bedrock @ 65.0 feet. End of Boring at 65.0 feet.	
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-14D**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *05/18/95*

Finish Date: *05/25/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 55*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Dual Line Air*

Duration: *4 hours*

Gals. Purged: *170 gallons*

Slug Test: *1.4 x 10^{-3}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *173.7*

TWC: *176.1*

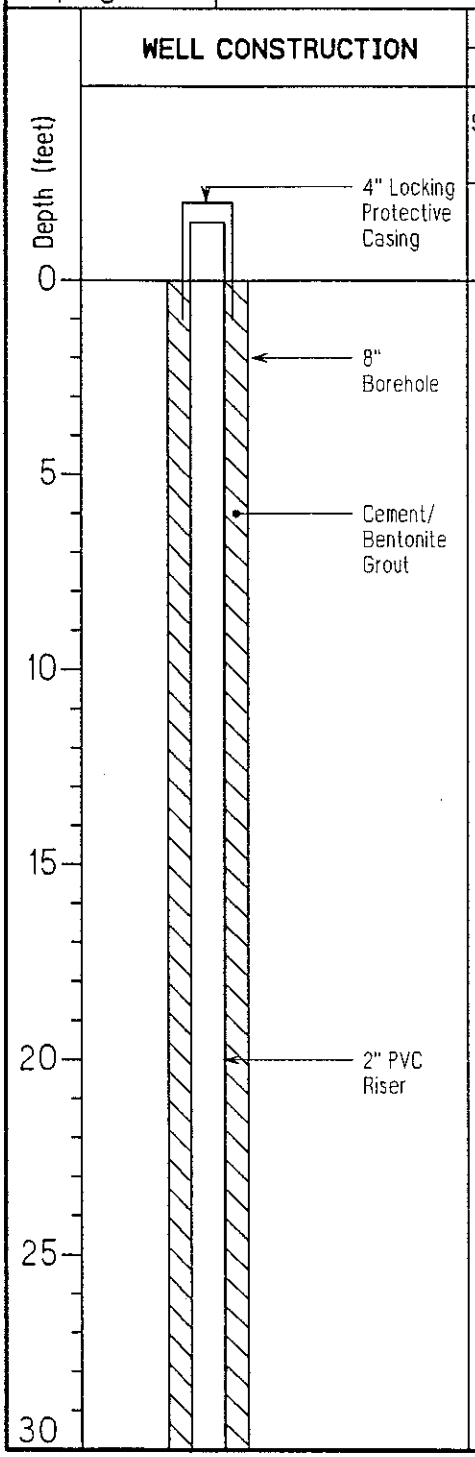
TPC: *176.4*

North: *686,262.84*

East: *593,680.99*

Geophysical Log: ☐ yes ☒ no

Comments:



WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
							See MW-14S for sample descriptions.	

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-14D

Project: *Groundwater Investigation*

Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *05/18/95*

Finish Date: *05/25/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	8" Borehole								
35	Cement/ Bentonite Grout								
40	2" PVC Riser								
45									
50	Bentonite Pellets								
55	Secondary Sand Pack; Primary Sand Pack								
60	2" PVC 0.010" Screen								
65	Endcap							End of Boring @ 65.3 feet.	
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-15S**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/25/95*

Finish Date: *07/25/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Bailer*

Duration: *0.5 hours*

Gals. Purged: *20 gallons*

Slug Test: *6.9 x 10^4* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *159.6*

TWC: *162.0*

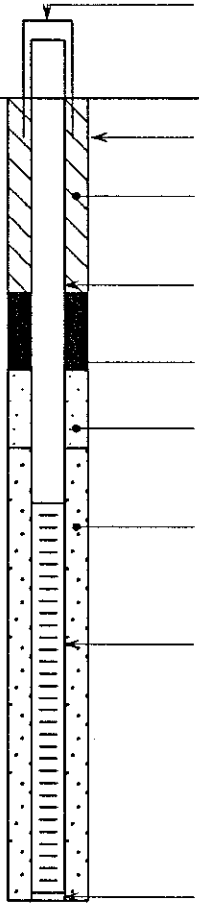
TPC: *162.2*

North: *687,490.56*

East: *594,477.68*

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No.	Run No.	Blows/ 6 in.	Hydraul. Cond. cm/sec	Rec. (ft.)	Rec. (ft.)	USCS	RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0												*See MW-15D for sample description.*	
5													
10													
15													
20												End of Boring @ 20.6 feet.	
25													
30													

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-15D**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/19/95*

Finish Date: *07/24/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Dual Line Air*

Duration: *1.5 hours*

Gals. Purged: *45 gallons*

Slug Test: *1.4 x 10^{-2}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *159.2*

TWC: *162.0*

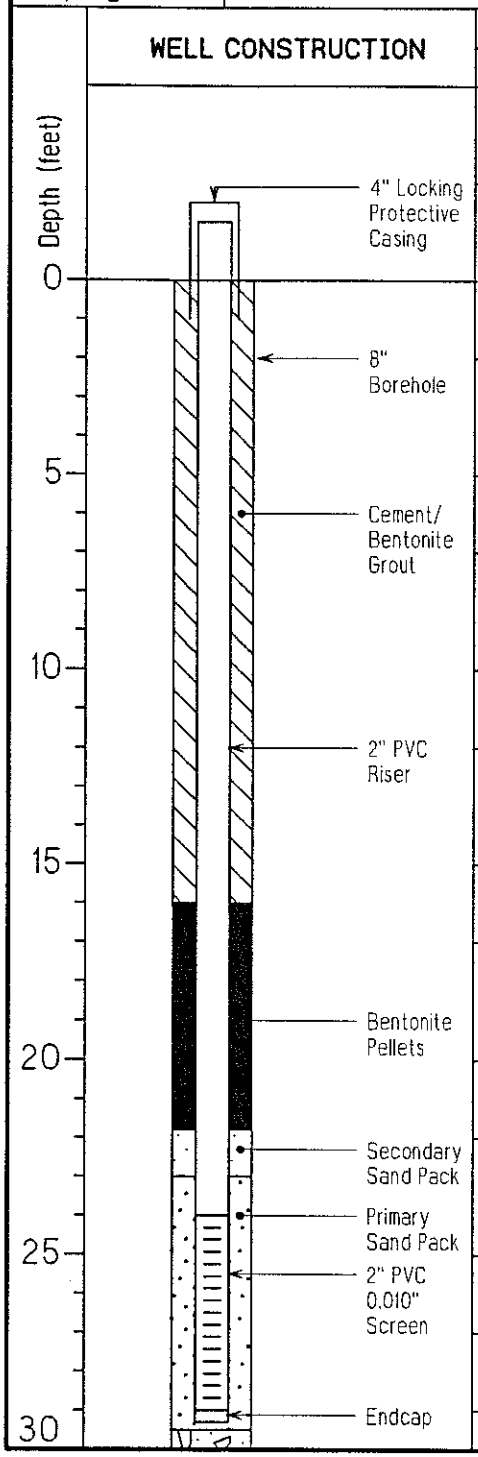
TPC: *161.6*

North: *687,485.21*

East: *594,477.51*

Geophysical Log: ☐ yes ☒ no

Comments:



WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
		S-1	2-2-4-4	1.5'		CH	0	LACUSTRINE DEPOSITS Brown Silty CLAY, trace to little f Sand, with roots, dry to wet	
		S-2	4-5-6-8	1.6'		CH	0		
		S-3	3-3-3-5	1.2'		CH	0		
		S-4	1-1-2-1	1.1'		CH	0	@ 15.5' gray Silty CLAY, little f Sand, saturated	
		S-5	4-5-7-14	0.2'		GP	0	@ 20.0' gray angular mf GRAVEL, some fmc Sand, no to little Clay & Silt	
		S-6	23-29-18-15	0.2'		GP	0		
		S-7	84-100/1"	0.1'		GP	0	@ 29.0' gray angular GRAVEL and cmf SAND	

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-15D

Project: *Groundwater Investigation*

Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/19/95*

Finish Date: *07/24/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	PID (ppm)	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD	VISUAL CLASSIFICATION	REMARKS
30	Collapsed Natural Material		S-7	84-100/1"	0.1'	GP	0					Bedrock @ 31.0 feet.	
												End of Boring at 31.0 feet.	
35													
40													
45													
50													
55													
60													
65													
70													

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-16S**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/10/95*

Finish Date: *07/11/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Bailer*

Duration: *0.5 hours*

Gals. Purged: *10.5 gallons*

Slug Test: *5.0 x 10^{-6}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *157.3*

TWC: *159.3*

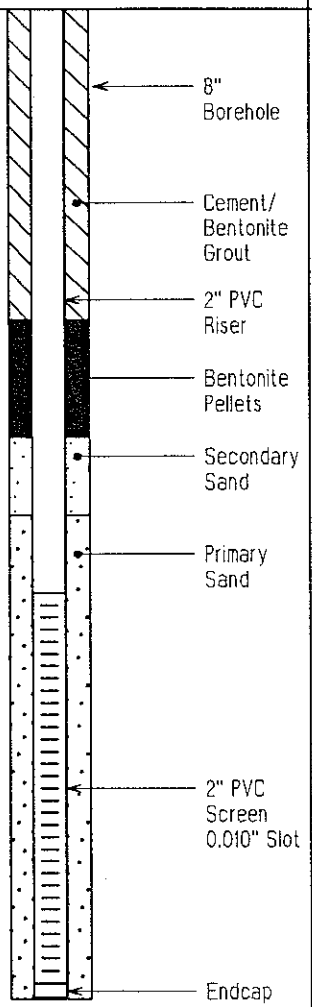
TPC: *159.5*

North: *686,949.23*

East: *595,108.94*

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0								*See MW-16D for sample description.*	
5									
10									
15									
20									
25								End of Boring @ 25.4 feet.	
30									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-16D**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/06/95*

Finish Date: *07/11/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *B. Bosworth/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Dual Line Air/Bailer*

Duration: *2 hours*

Gals. Purged: *48 gallons*

Slug Test: *9.2 x 10^{-3}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *157.4*

TWC: *159.9*

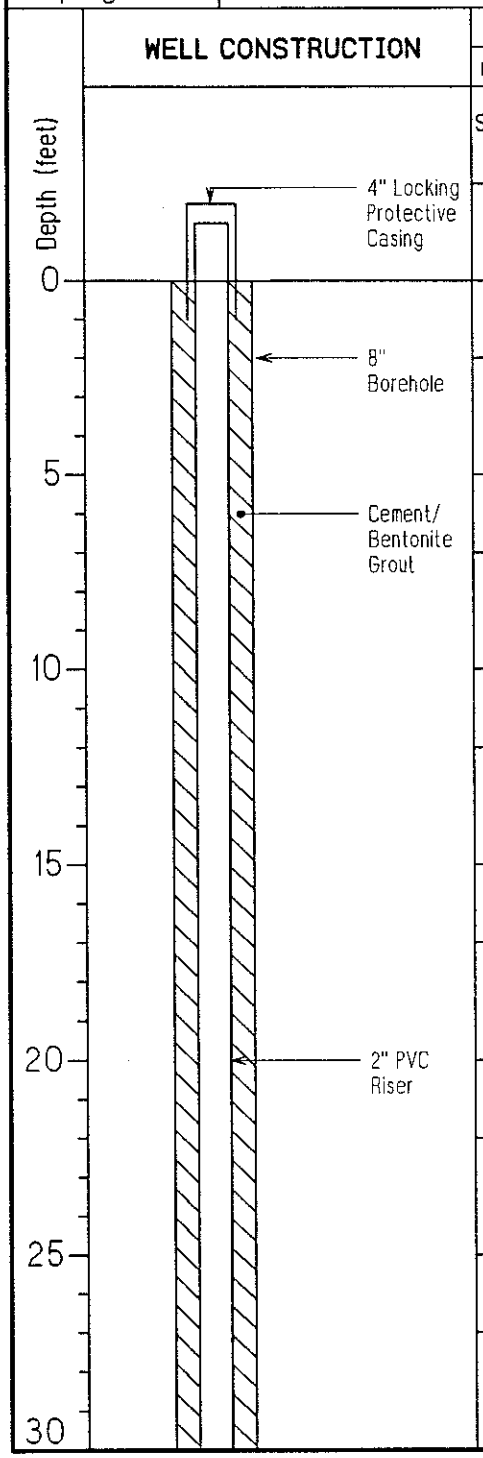
TPC: *160.1*

North: *686,942.93*

East: *595,107.68*

Geophysical Log: ☐ yes ☒ no

Comments:



Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			
S-1	3-6-7-9	1.0'	SW / CH	0.2	LACUSTRINE DEPOSITS Black f SAND, with roots, dry @ 0.2' brown, Silty CLAY, trace f Sand, dry to moist	
S-2	3-7-5-9	1.6'	CH	0		
S-3	7-8-7-7	NR	CH	0		
S-4	3-4-4-3	1.1'	CH	0	@ 15.0' gray Silty CLAY, little to trace f Sand, saturated	
S-5	2-3-3-3	0.8'	CH	0		
S-6	1-3-1-2	2.0'	CH	0		

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: MW-16D

Project: *Groundwater Investigation* Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *07/06/95*

Finish Date: *07/11/95*

(CONTINUATION)

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
30	Cement/Bentonite Grout		S-7	1-2-2-2	1.6'	CH	0		
35	Bentonite Pellets; Secondary Sand Pack		S-8	WOR/6"-WOH/18"	2.0'	CH	0		
40	Primary Sand Pack		S-9	WOH/24"	2.0'	CH	0	@ 40.0' gray CLAY	
45	2" PVC 0.010" Screen		S-10	WOR-3-5-8	0.1'	CH	0		
50	Endcap		S-11	40-100/1"	0.5'	SC	0	@ 49.0' gray fm SAND, some Silty CLAY, with gray Limestone or Shale fragments Bedrock @ 49.5 feet. End of Boring at 49.5 feet.	
55									
60									
65									
70									

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-17S**

Project: *Groundwater Investigation* | Project No.: *9596.03*

Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*

Start Date: *10/03/95*

Finish Date: *10/03/95*

DRILLING DATA

Inspector: *Laurie Scheuing*

Contractor: *R. Heffernen/Empire Soils Investigation Inc.*

Equipment: *CME 850*

Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

WELL DEVELOPMENT

Method: *Surge Block/Bailer*

Duration: *0.75 hours*

Gals. Purged: *20 gallons*

Slug Test: *7.8 x 10^{-3}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane

Grade: *140.8*

TWC: *143.9*

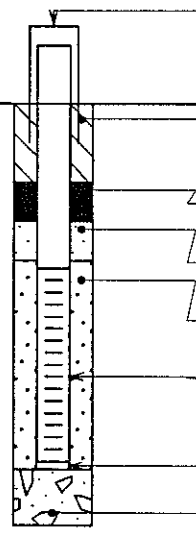
TPC: *144.0*

North: *686,934.03*

East: *595,603.13*

Geophysical Log: ☐ yes ☒ no

Comments:



Depth (feet)	soil/rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	soil	S-1	2-3-1-3	1.1'	CL	NM	LACUSTRINE DEPOSITS Brown Clayey SILT, trace f Gravel, with reed fragments, moist @ 0.5' grading to gray CLAY & SILT, moist	
5	soil	S-2	19-20-18-18	1.5'	SM	NM	@ 5.0' brown fmc SAND and Clayey SILT, some fm Gravel, wet	
10	soil	S-3	38-100/3"	0.8'	GP	NM	@ 10.0' gray fmc GRAVEL, little f Sand, saturated Bedrock @ 10.8 feet. End of Boring at 10.8 feet.	
15								
20								
25								
30								

ECKENFELDER INC.

Subsurface Boring Log

Well Name/Location: **MW-18S**

Project: *Groundwater Investigation*
Client: *Hercules Inc./DYNO Nobel Inc. Port Ewen, N.Y.*
Project No.: *9596.03*
Start Date: *07/18/95*
Finish Date: *07/19/95*

DRILLING DATA

Inspector: *Laurie Scheuing*
Contractor: *B. Bosworth/Empire Soils Investigation Inc.*
Equipment: *CME 850*
Method: *4 1/4" ID Hollow Stem Augers*

SAMPLING METHODS

	Sampler	Tube	Core
Type:	*Split Spoon*	*NA*	*NA*
Diameter:	*2 inch*	*NA*	*NA*
Other:	*140 lb./30 in.*	*NA*	*NA*

WELL CONSTRUCTION

	Riser	Screen
Material:	*PVC, Sch. 40*	*PVC, 0.010" Screen*
Diameter (ID):	*2 inch*	*2 inch*
Coupling:	*Flush-Threaded*	*Flush-Threaded*

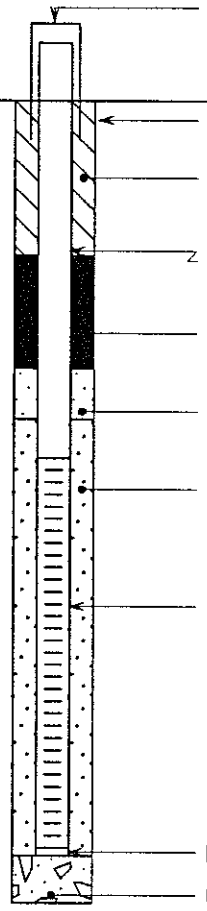
WELL DEVELOPMENT

Method: *Surge Block/Dual Line Air*
Duration: *2 hours*
Gals. Purged: *30 gallons*
Slug Test: *8.3 x 10^{-4}* (cm/sec)

SURVEY DATA

DATUM: NGVD/NYS Plane
Grade: *144.4*
TWC: *146.8*
TPC: *147.0*
North: *686,601.13*
East: *595,237.84*

Geophysical Log: ☐ yes ☒ no
Comments:



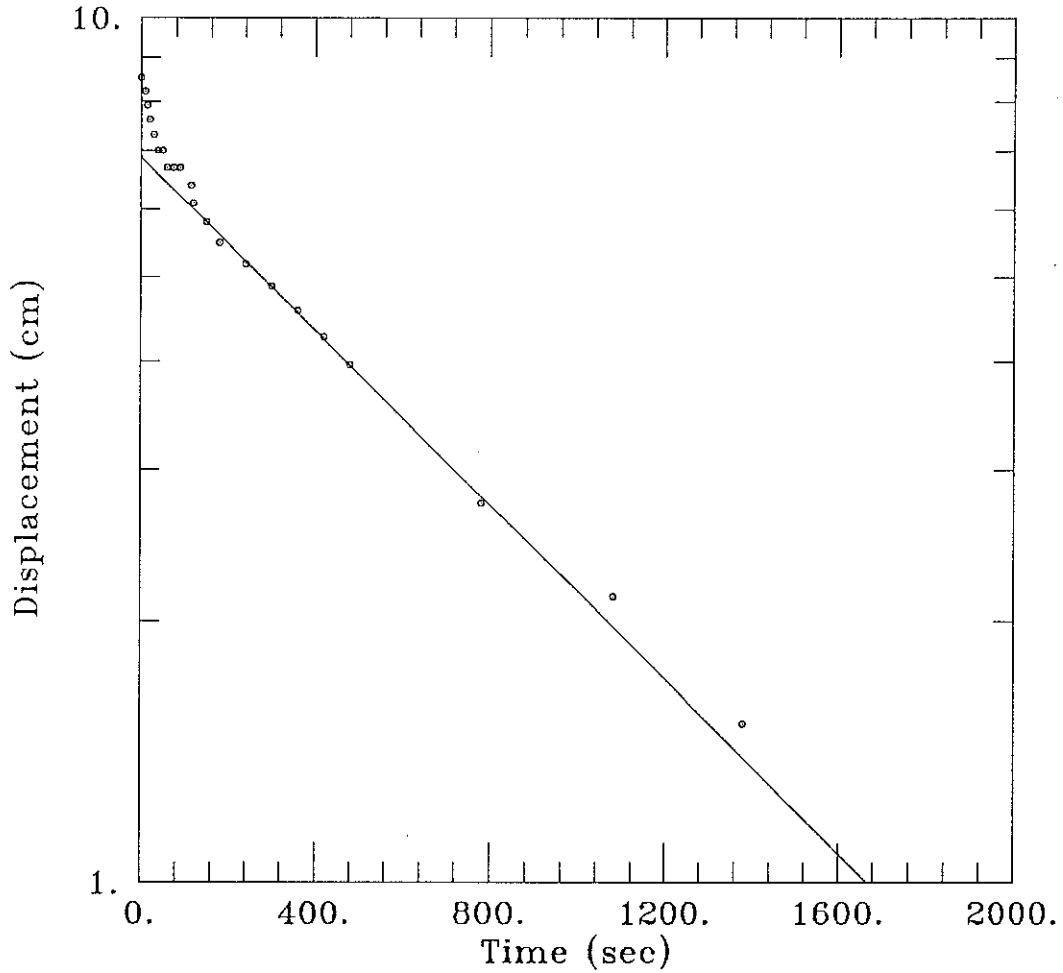
Depth (feet)	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	PID (ppm)	VISUAL CLASSIFICATION	REMARKS
0	S-1	1-1-2-4	1.1'	MH	0	LACUSTRINE DEPOSITS Brown SILT & CLAY, little f Sand, moist	
5	S-2	1-10-11-9	1.3'	SM / GP	0	@ 5.0' brown f SAND, some to no Silt & Clay, damp @ 5.6' grading to gray mf GRAVEL and cmf SAND, little Clayey Silt, damp	
10	S-3	34-100/1"	0.4'	GP	0		
15	S-4	17-63-38-37	1.2'	GP	0	@ 15.0' gray mf GRAVEL and cmf SAND, trace to little Clayey Silt, saturated	
20	S-5	45-100/0"	0.3'	GP	0	Bedrock @ 20.5 feet. End of Boring at 20.5 feet.	
25							
30							

APPENDIX B

SLUG TEST SOLUTIONS

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-1



DATA SET:
MW-1.DAT
10/26/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-1

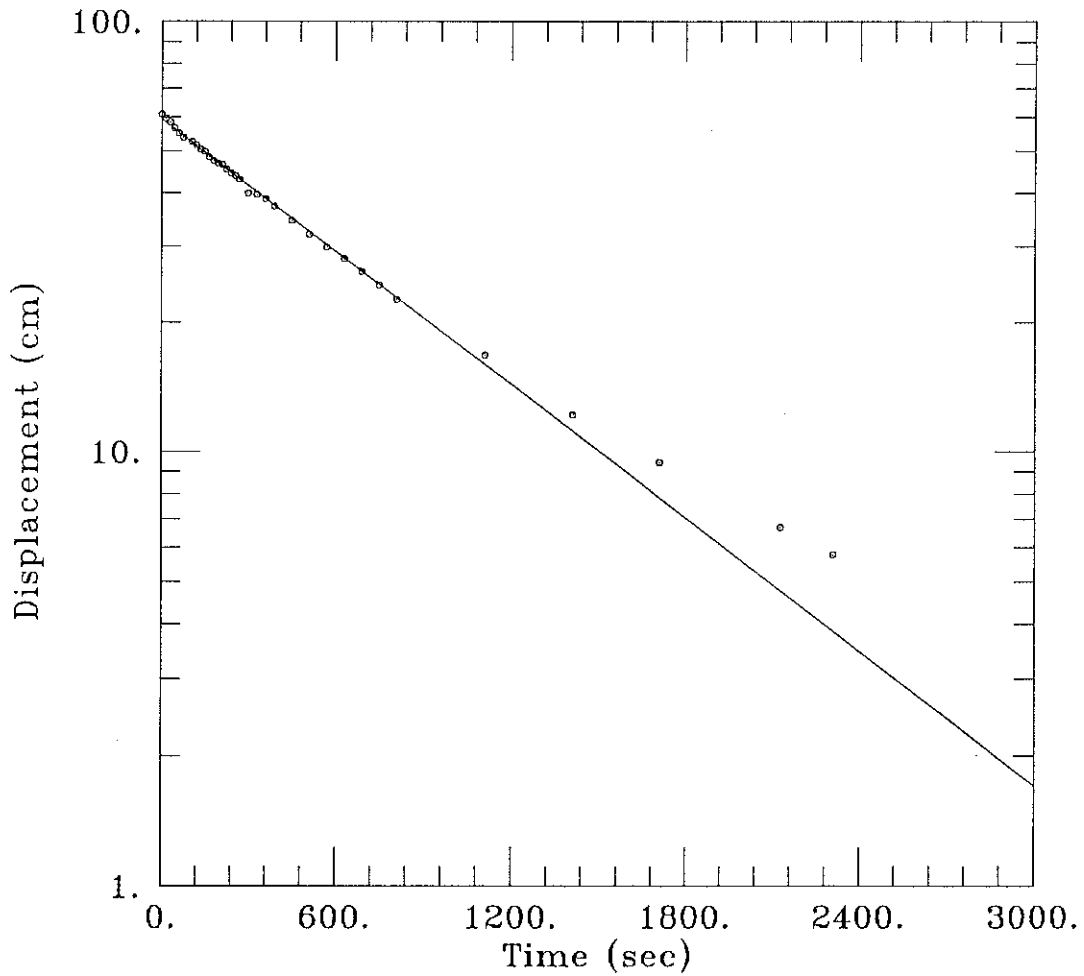
TEST DATA:
H0 = 8.53 cm
rc = 3.81 cm
rw = 3.81 cm
L = 380.1 cm
b = 380.1 cm
H = 380.1 cm

PARAMETER ESTIMATES:
K = 7.848E-05 cm/sec
y0 = 6.906 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-2B



DATA SET:
MW-2B.DAT
10/26/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-2B

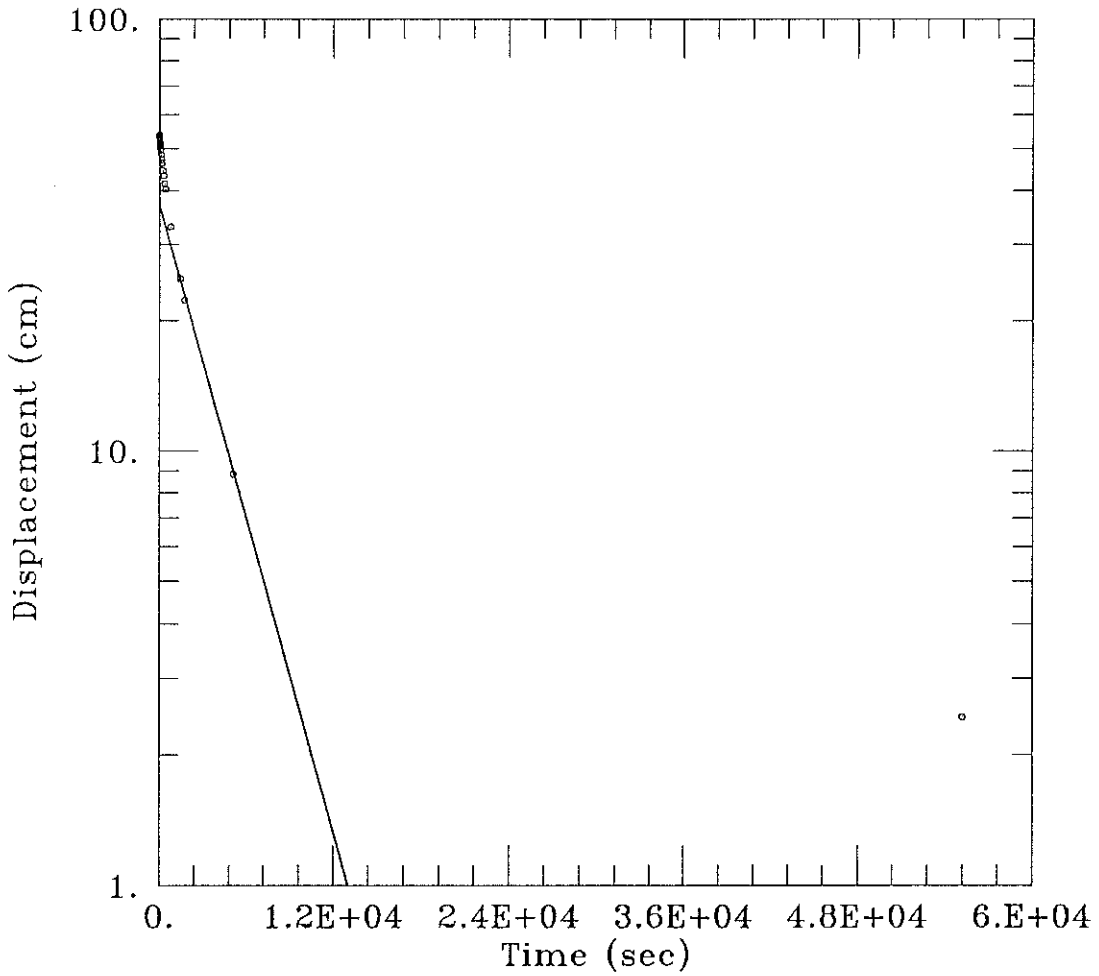
TEST DATA:
H0 = 60.96 cm
rc = 2.54 cm
rw = 12.02 cm
L = 304.8 cm
b = 464.8 cm
H = 464.8 cm

PARAMETER ESTIMATES:
K = 0.0002493 cm/sec
y0 = 59.51 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-3



DATA SET:
MW-3.DAT
10/27/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-3

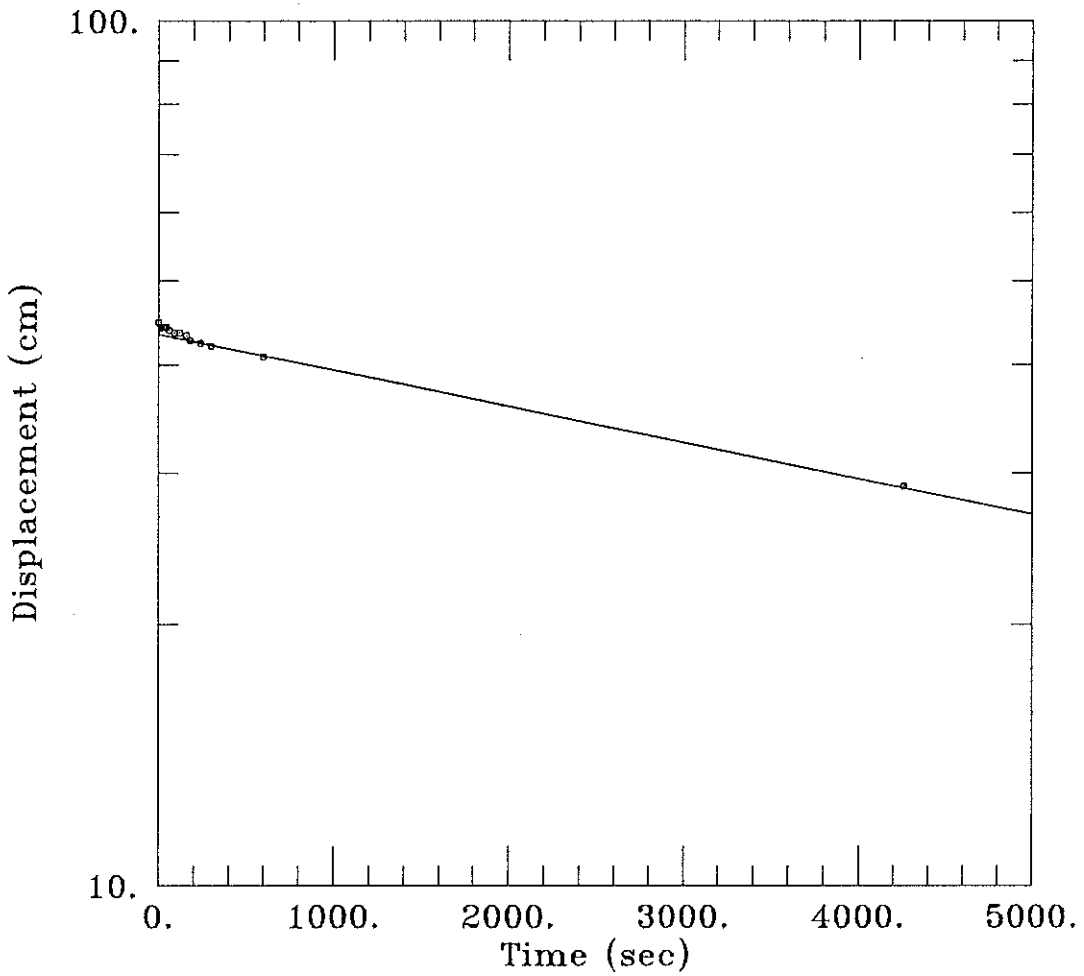
TEST DATA:
H0 = 53.95 cm
rc = 2.54 cm
rw = 12.02 cm
L = 304.8 cm
b = 1113.1 cm
H = 534. cm

PARAMETER ESTIMATES:
K = 4.976E-05 cm/sec
y0 = 37.01 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-4B Test 1



DATA SET:
MW-4B_1.DAT
10/27/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-4B

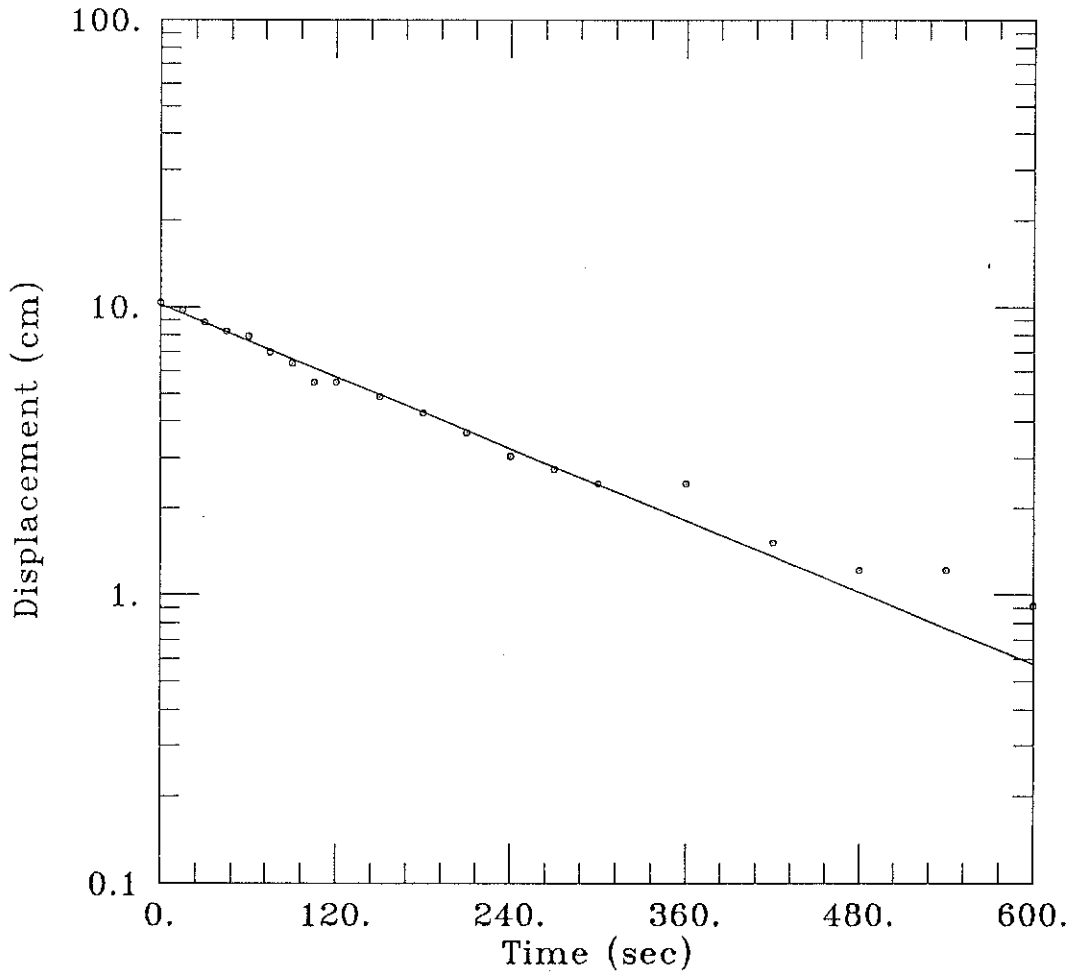
TEST DATA:
H0 = 44.81 cm
rc = 2.54 cm
rw = 12.02 cm
L = 304.8 cm
b = 923.2 cm
H = 527. cm

PARAMETER ESTIMATES:
K = 1.739E-05 cm/sec
y0 = 43.36 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-8 Test 1



DATA SET:
MW-8_1.DAT
10/27/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 17, 1995
test well: MW-8

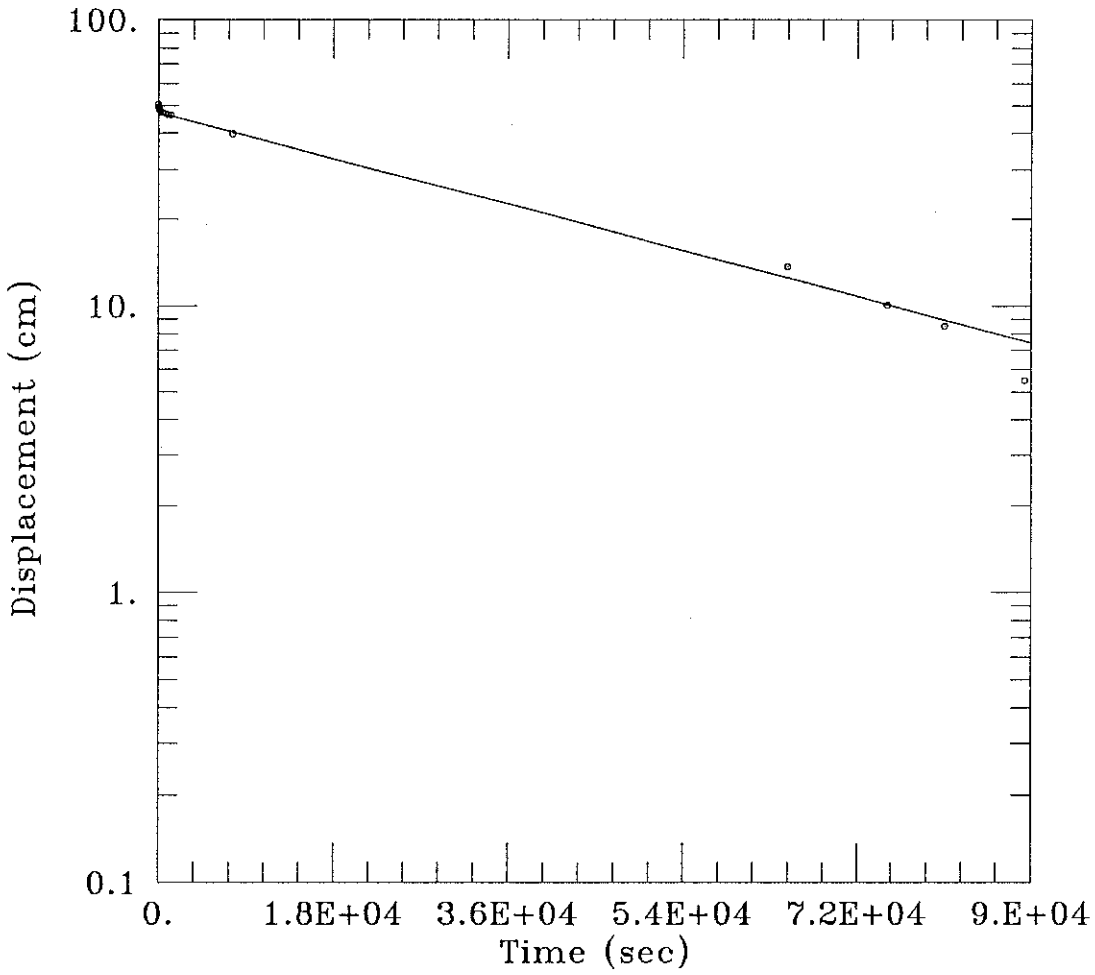
TEST DATA:
H0 = 10.36 cm
rc = 2.54 cm
rw = 12.02 cm
L = 304.8 cm
b = 380.1 cm
H = 288.7 cm

PARAMETER ESTIMATES:
K = 0.0008064 cm/sec
y0 = 10.18 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-11S



DATA SET:
MW-11S.DAT
10/26/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-11S

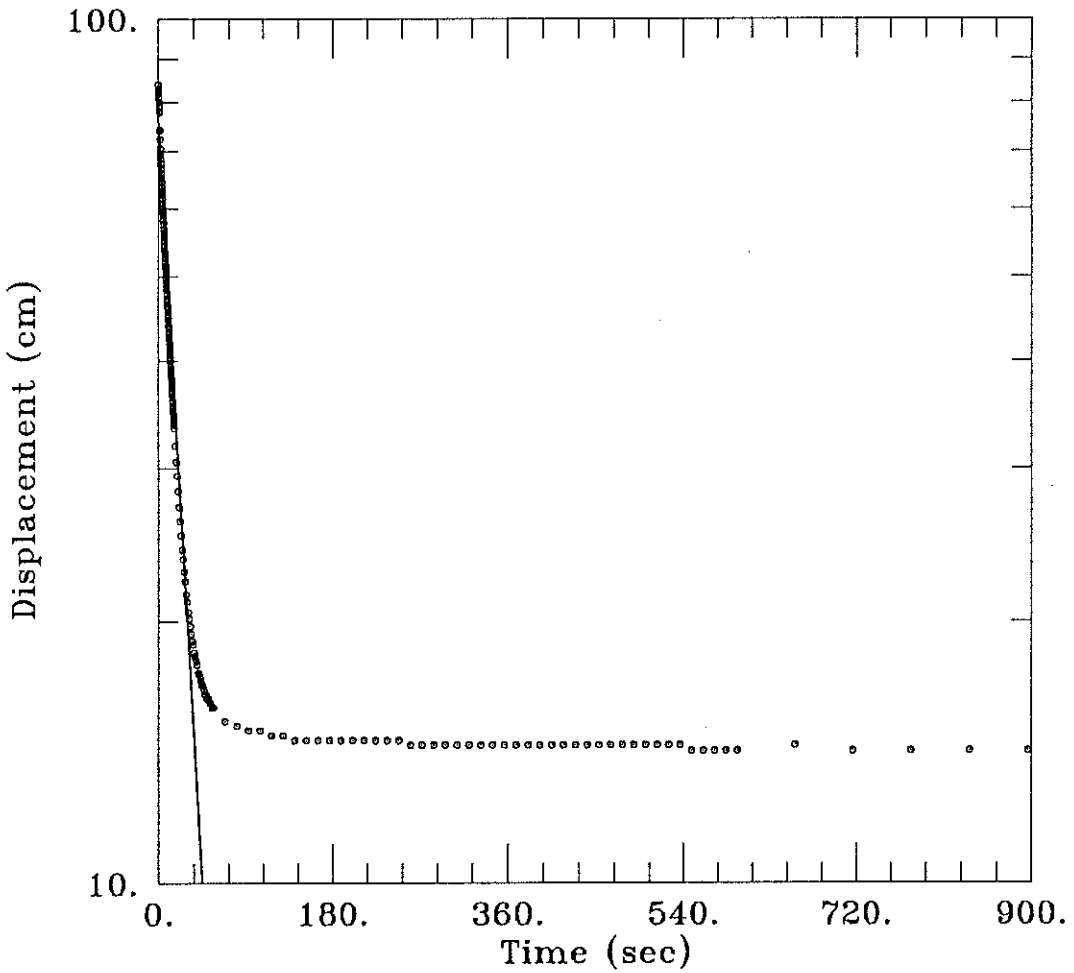
TEST DATA:
H0 = 50.6 cm
rc = 2.54 cm
rw = 10.16 cm
L = 304.8 cm
b = 1156.4 cm
H = 516.3 cm

PARAMETER ESTIMATES:
K = 3.621E-06 cm/sec
y0 = 47.23 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-11D Test 4



DATA SET:
MW-11D_4.DAT
10/27/95

AQUIFER MODEL:
Confined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 20, 1995
test well: MW-11D

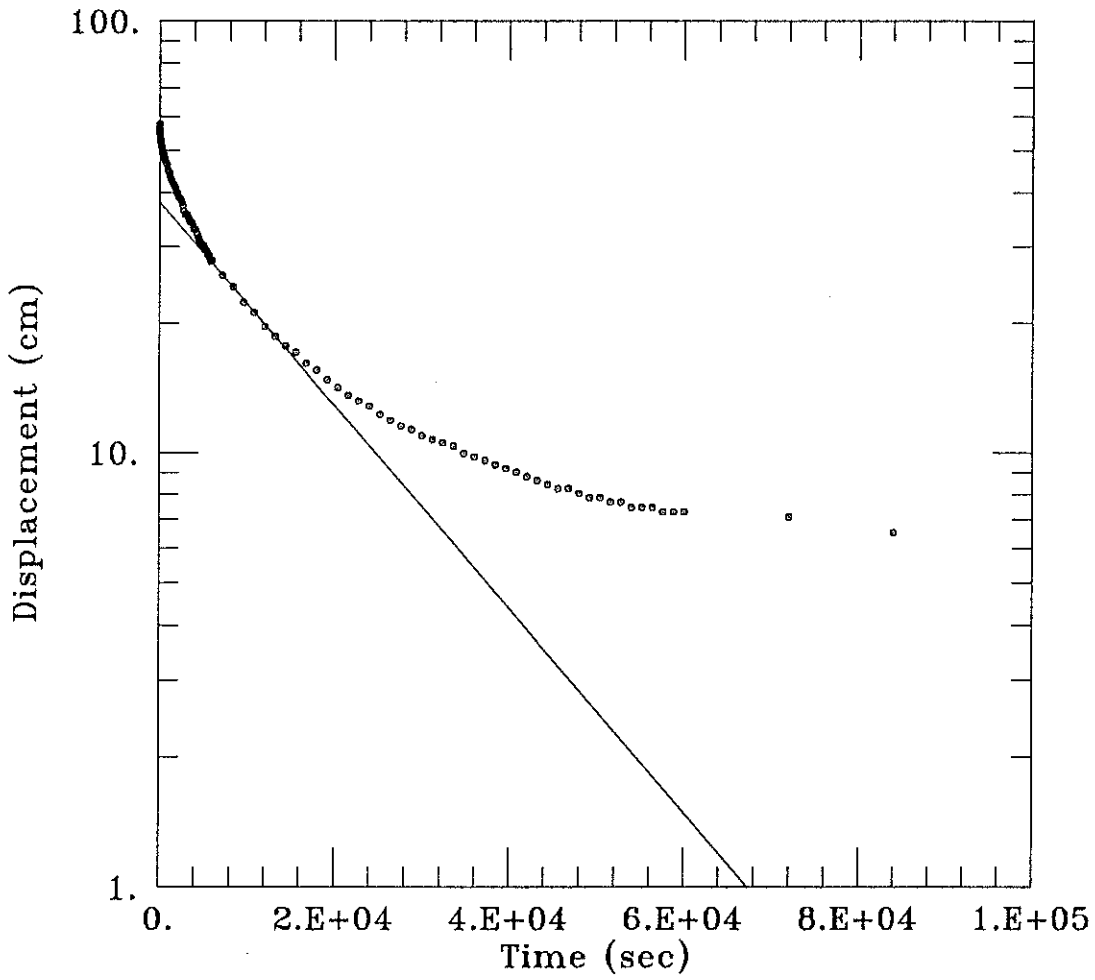
TEST DATA:
H0 = 84.03 cm
rc = 2.54 cm
rw = 10.16 cm
L = 304.8 cm
b = 1219.2 cm
H = 1219.2 cm

PARAMETER ESTIMATES:
K = 0.008815 cm/sec
y0 = 75.44 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-12S



DATA SET:
MW-12S.DAT
10/27/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: June 20, 1995
test well: MW-12S

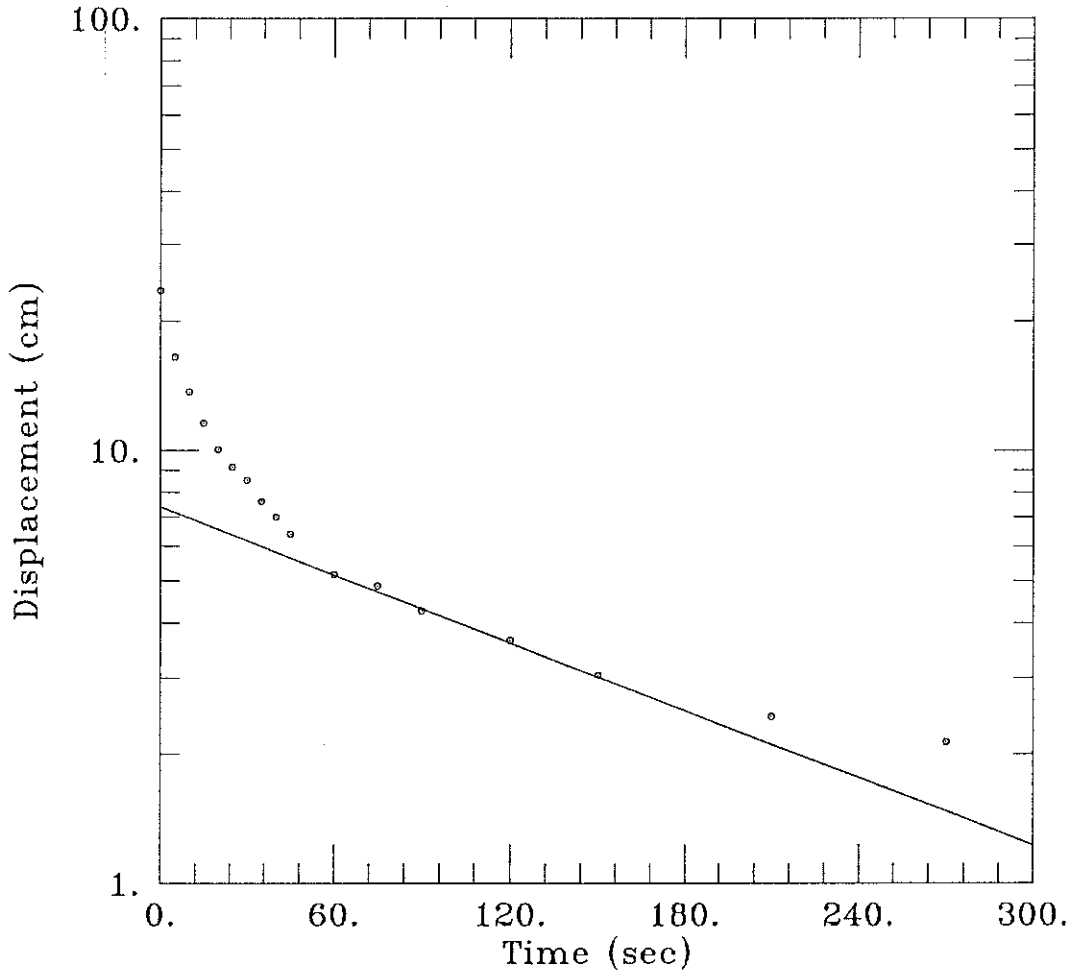
TEST DATA:
H0 = 57.61 cm
rc = 2.54 cm
rw = 10.16 cm
L = 304.8 cm
b = 1916.3 cm
H = 544.7 cm

PARAMETER ESTIMATES:
K = 7.441E-06 cm/sec
y0 = 37.96 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-12D



DATA SET:
MW-12D.DAT
10/26/95

AQUIFER MODEL:
Confined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-12D

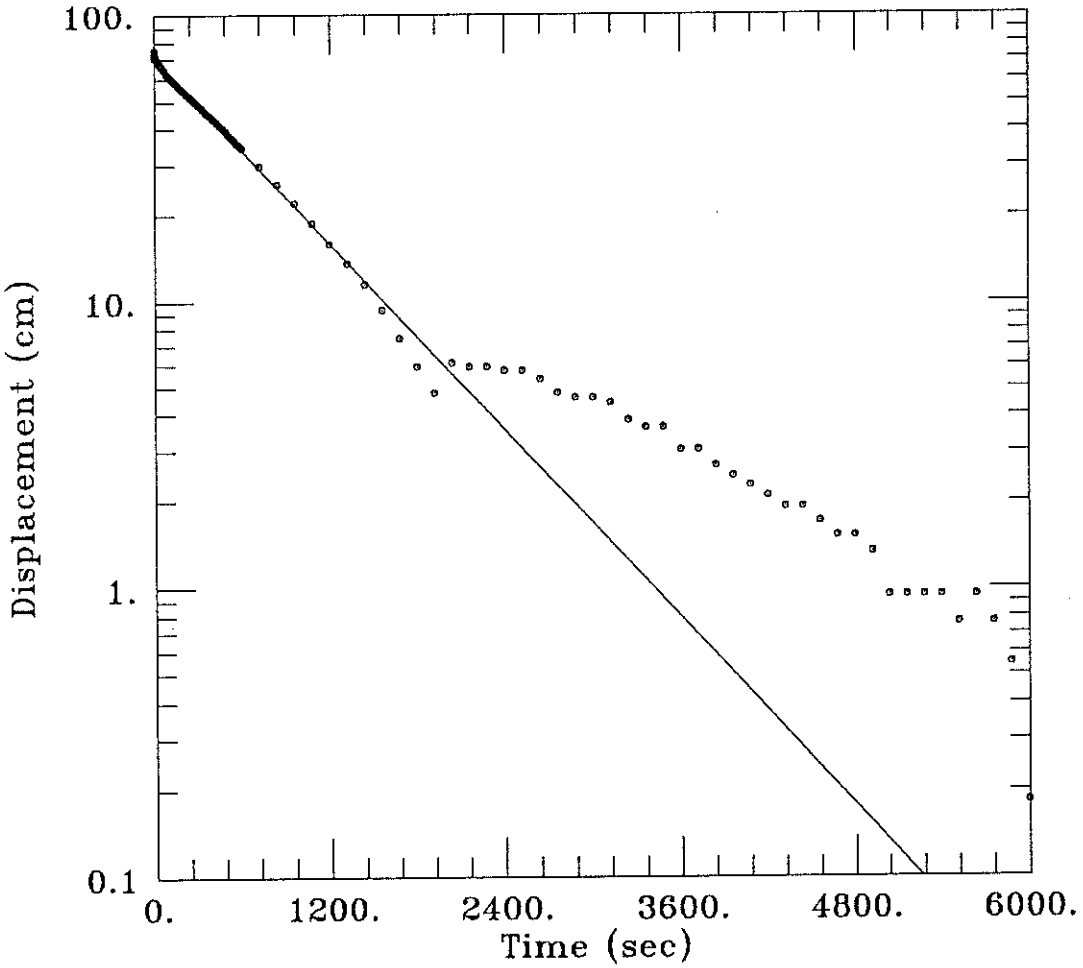
TEST DATA:
H0 = 23.47 cm
rc = 2.54 cm
rw = 10.16 cm
L = 304.8 cm
b = 460.3 cm
H = 460.3 cm

PARAMETER ESTIMATES:
K = 0.0009851 cm/sec
y0 = 7.415 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-13S



DATA SET:
MW-13S.DAT
10/27/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: July 12, 1995
test well: MW-13S

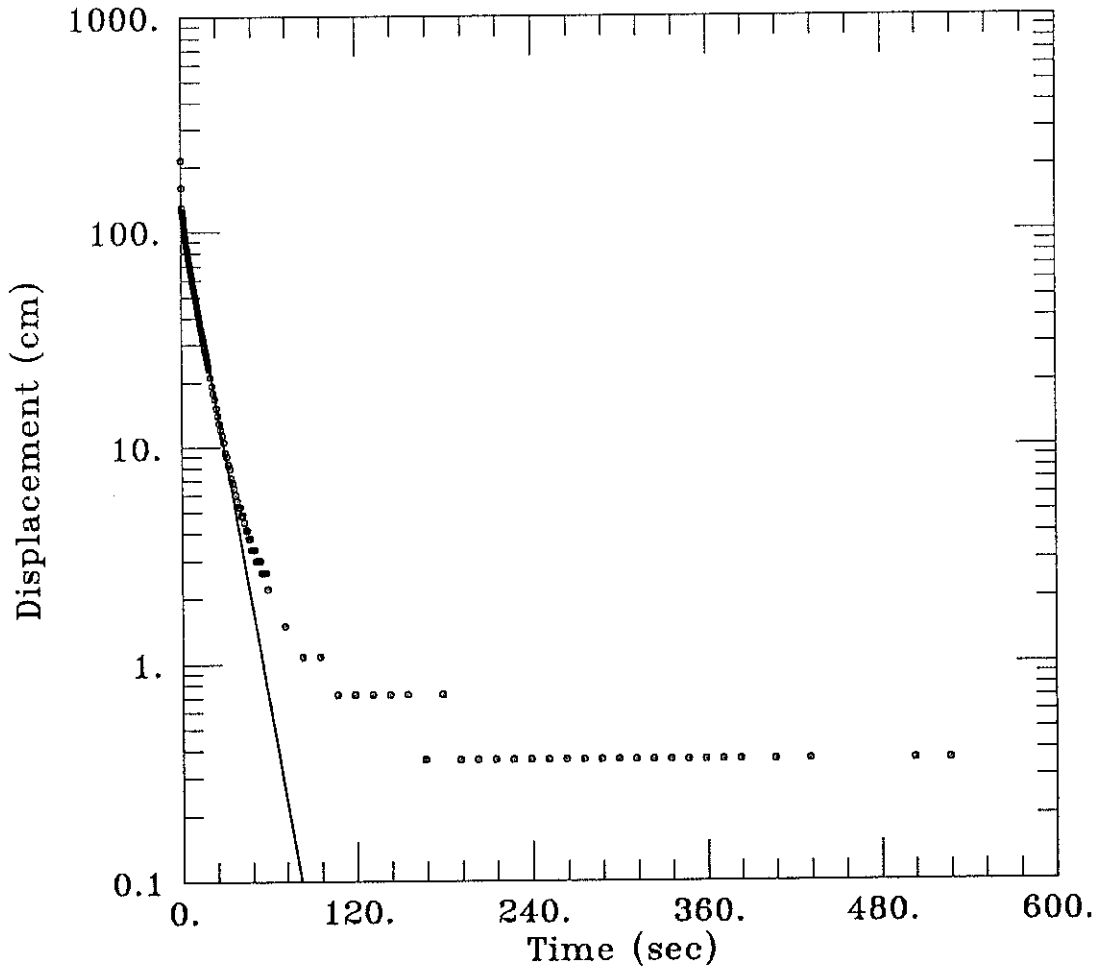
TEST DATA:
H0 = 72.21 cm
rc = 0.083 cm
rw = 0.333 cm
L = 304.8 cm
b = 906.5 cm
H = 446.2 cm

PARAMETER ESTIMATES:
K = 4.32E-07 cm/sec
y0 = 71.42 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-13D



DATA SET:
MW-13D.DAT
10/30/95

AQUIFER MODEL:
Confined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: August 8, 1995
test well: MW-13D

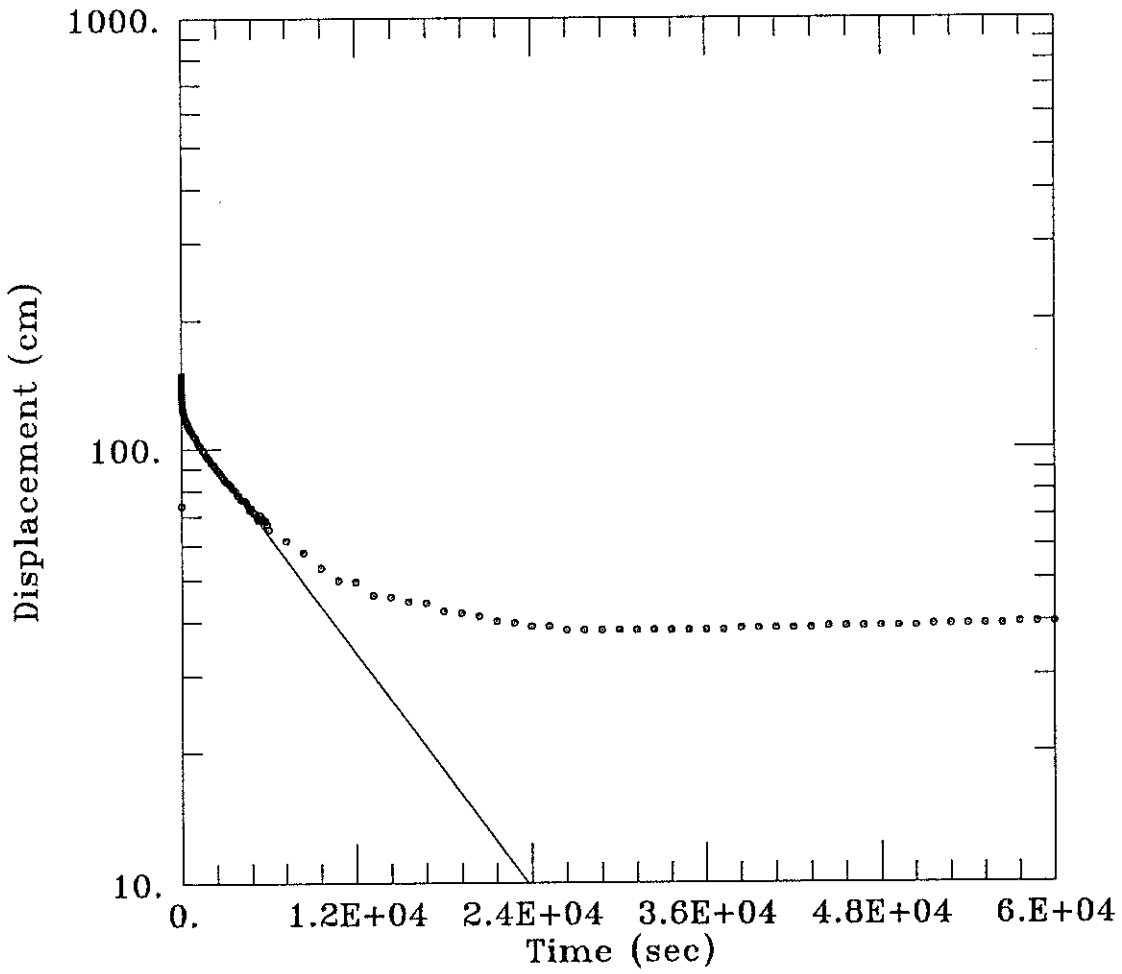
TEST DATA:
H0 = 215.2 cm
rc = 2.54 cm
rw = 10.16 cm
L = 167.6 cm
b = 167.6 cm
H = 167.6 cm

PARAMETER ESTIMATES:
K = 0.01898 cm/sec
y0 = 122.5 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-14S Test 1



DATA SET:
MW-14S_1.DAT
10/30/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: July 19, 1995
test well: MW-14S

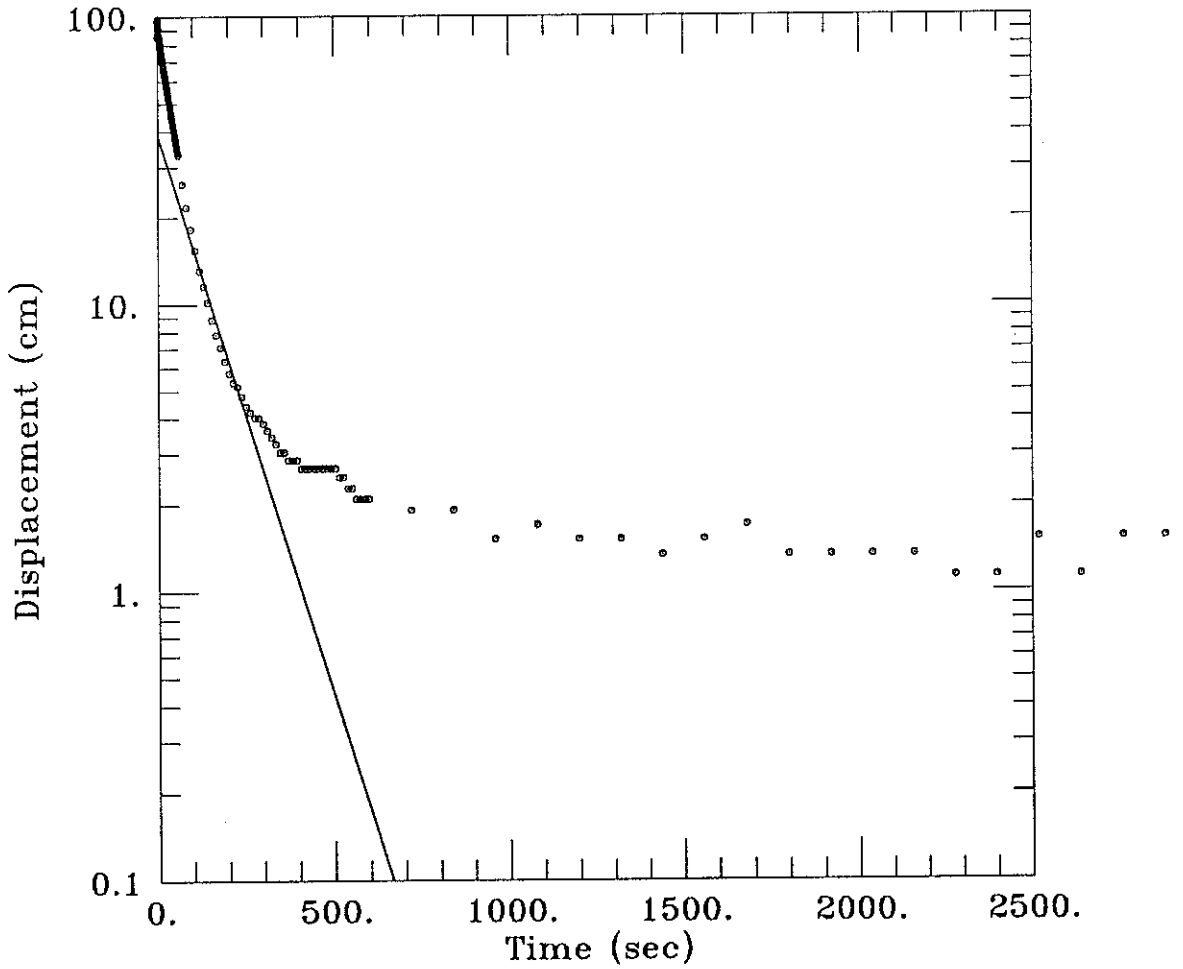
TEST DATA:
H0 = 73.94 cm
rc = 2.54 cm
rw = 10.16 cm
L = 304.8 cm
b = 550.2 cm
H = 550.2 cm

PARAMETER ESTIMATES:
K = 1.778E-05 cm/sec
y0 = 118.2 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-14D



DATA SET:
MW-14D.DAT
10/30/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: August 8, 1995
test well: MW-14D

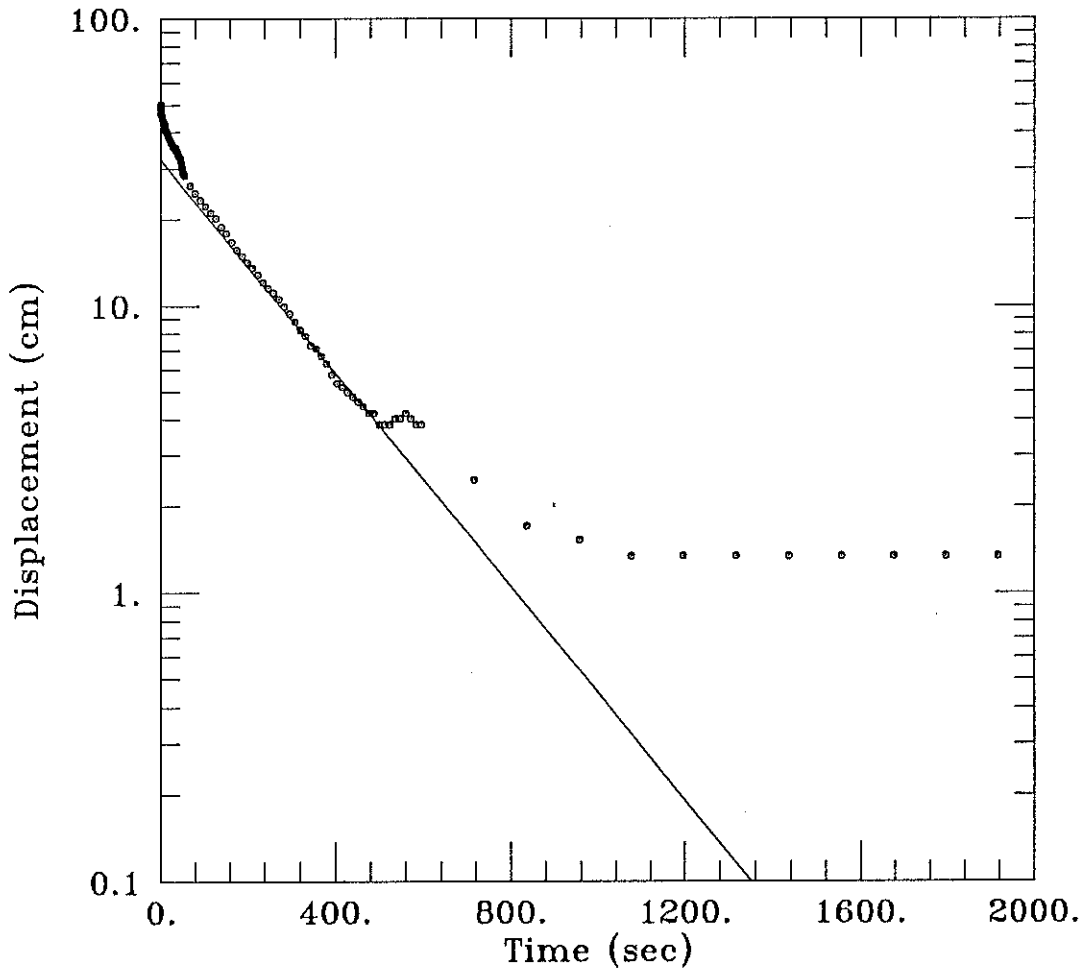
TEST DATA:
H0 = 96.44 cm
rc = 2.54 cm
rw = 10.16 cm
L = 304.8 cm
b = 313.9 cm
H = 313.9 cm

PARAMETER ESTIMATES:
K = 0.001354 cm/sec
y0 = 38.68 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-15S Test 1



DATA SET:
MW-15S_1.DAT
10/30/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: August 4, 1995
test well: MW-15S

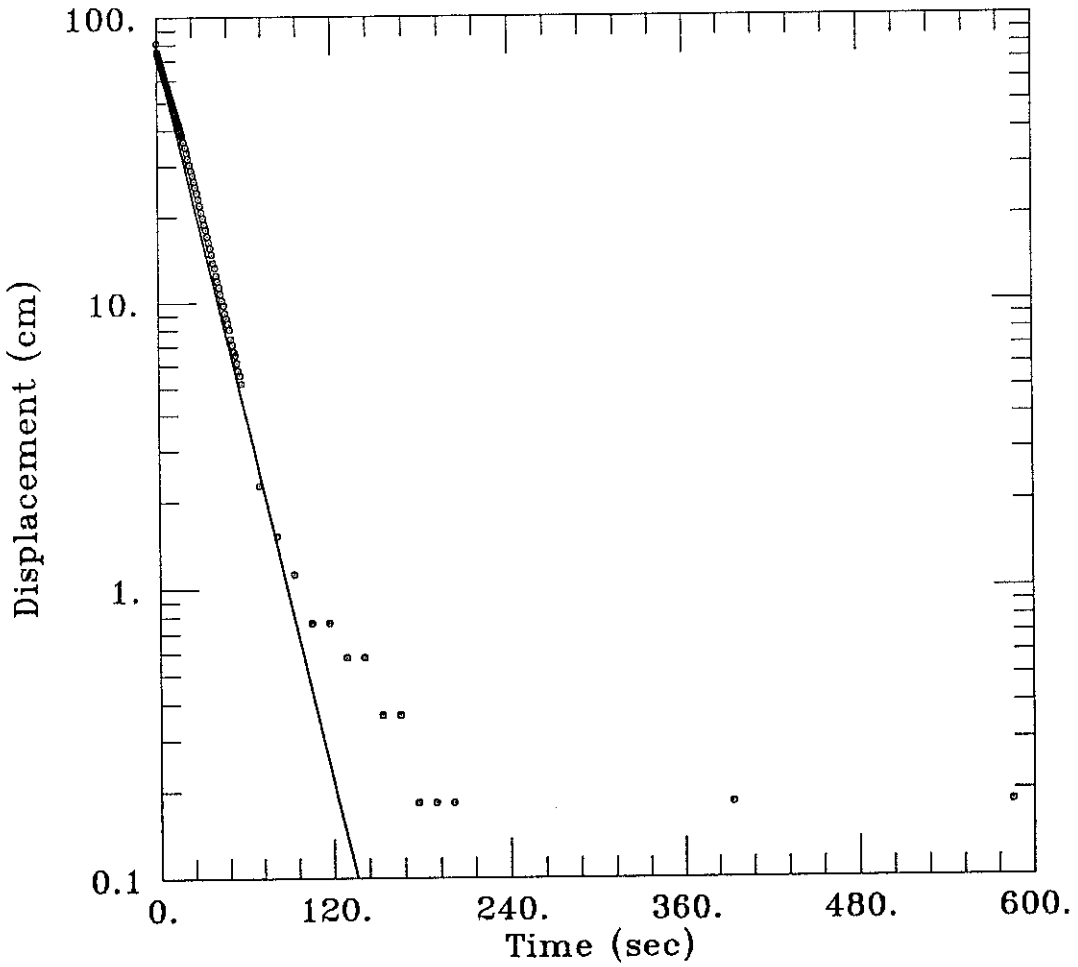
TEST DATA:
H0 = 49.74 cm
rc = 2.54 cm
rw = 10.16 cm
L = 304.8 cm
b = 421.5 cm
H = 421.5 cm

PARAMETER ESTIMATES:
K = 0.00069 cm/sec
y0 = 32.25 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-15D



DATA SET:
MW-15D.DAT
10/30/95

AQUIFER MODEL:
Confined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: August 4, 1995
test well: MW-15D

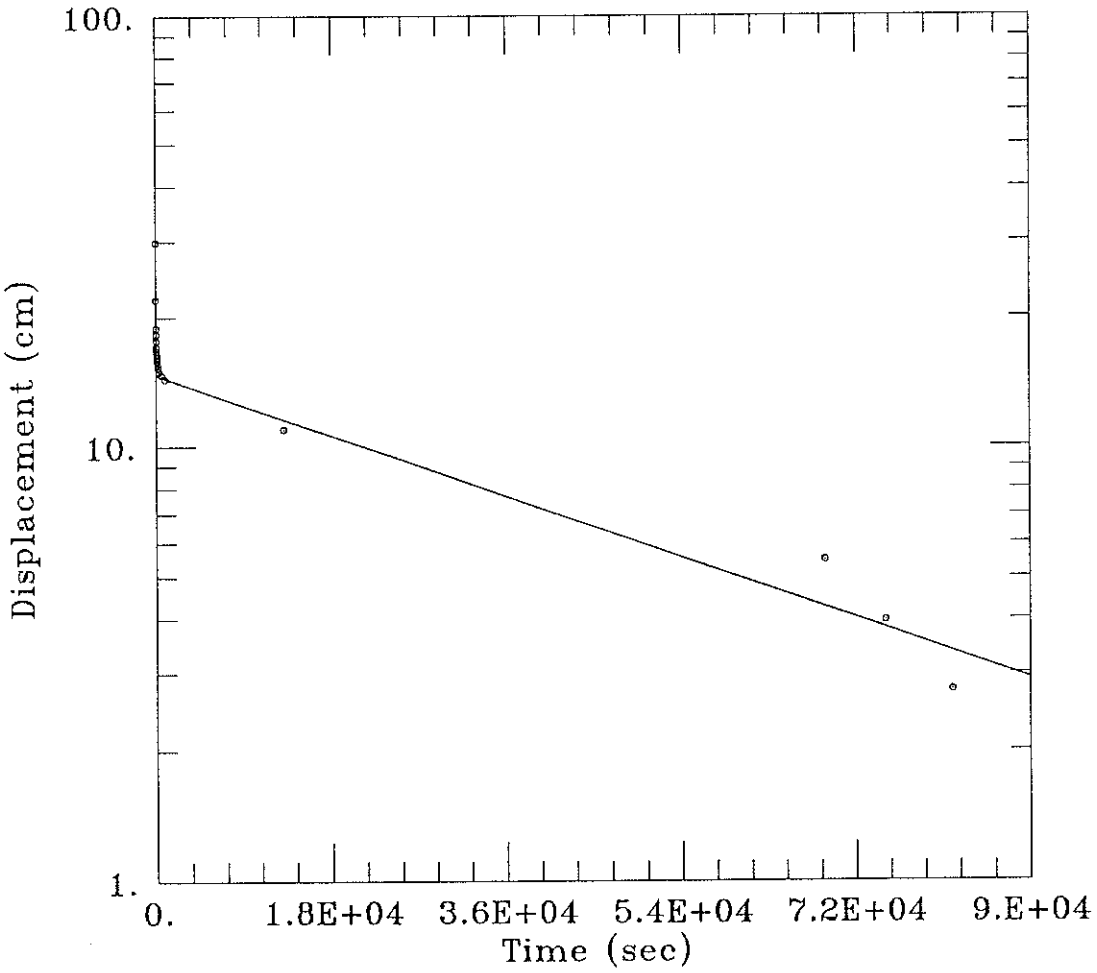
TEST DATA:
H0 = 80.89 cm
rc = 2.54 cm
rw = 10.16 cm
L = 152.4 cm
b = 335.3 cm
H = 335.3 cm

PARAMETER ESTIMATES:
K = 0.01368 cm/sec
y0 = 74.79 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-16S



DATA SET:
MW-16S.DAT
10/26/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-16S

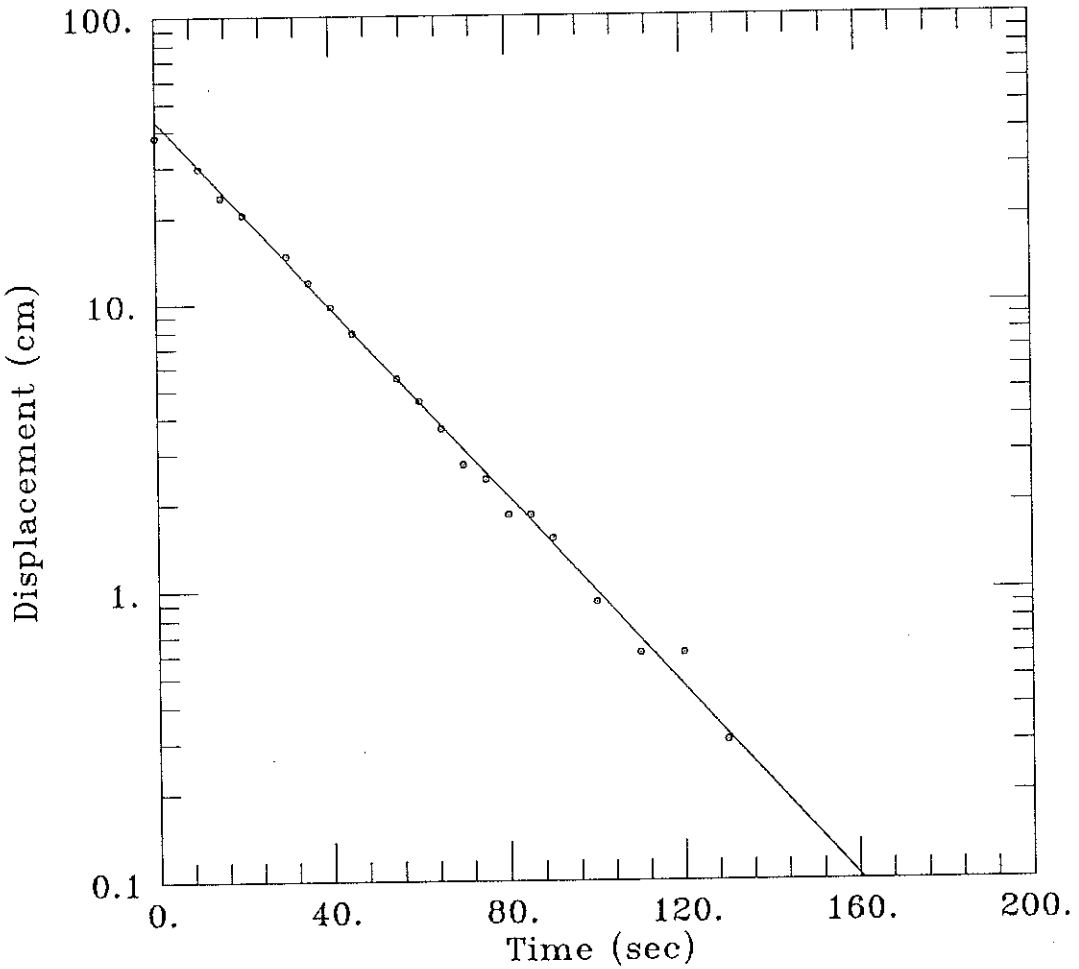
TEST DATA:
H0 = 29.87 cm
rc = 2.54 cm
rw = 10.16 cm
L = 145.4 cm
b = 145.4 cm
H = 145.4 cm

PARAMETER ESTIMATES:
K = 5.048E-06 cm/sec
y0 = 14.62 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-16D Test 2



DATA SET:
MW-16D_2.DAT
10/26/95

AQUIFER MODEL:
Confined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-16D

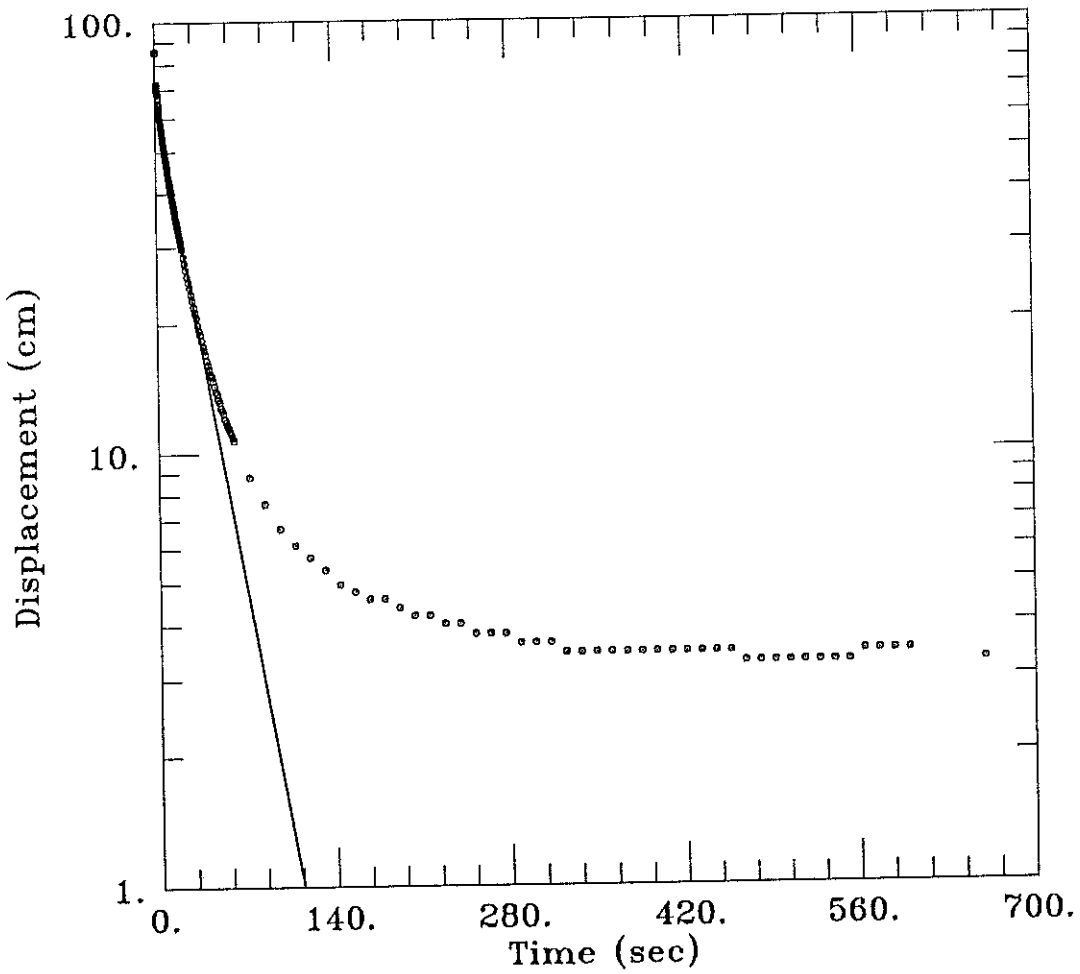
TEST DATA:
H0 = 38.1 cm
rc = 2.54 cm
rw = 10.16 cm
L = 137.2 cm
b = 137.2 cm
H = 137.2 cm

PARAMETER ESTIMATES:
K = 0.00923 cm/sec
y0 = 43.79 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-17S Test 2



DATA SET:
MW-17S_2.DAT
10/30/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 20, 1995
test well: MW-17S

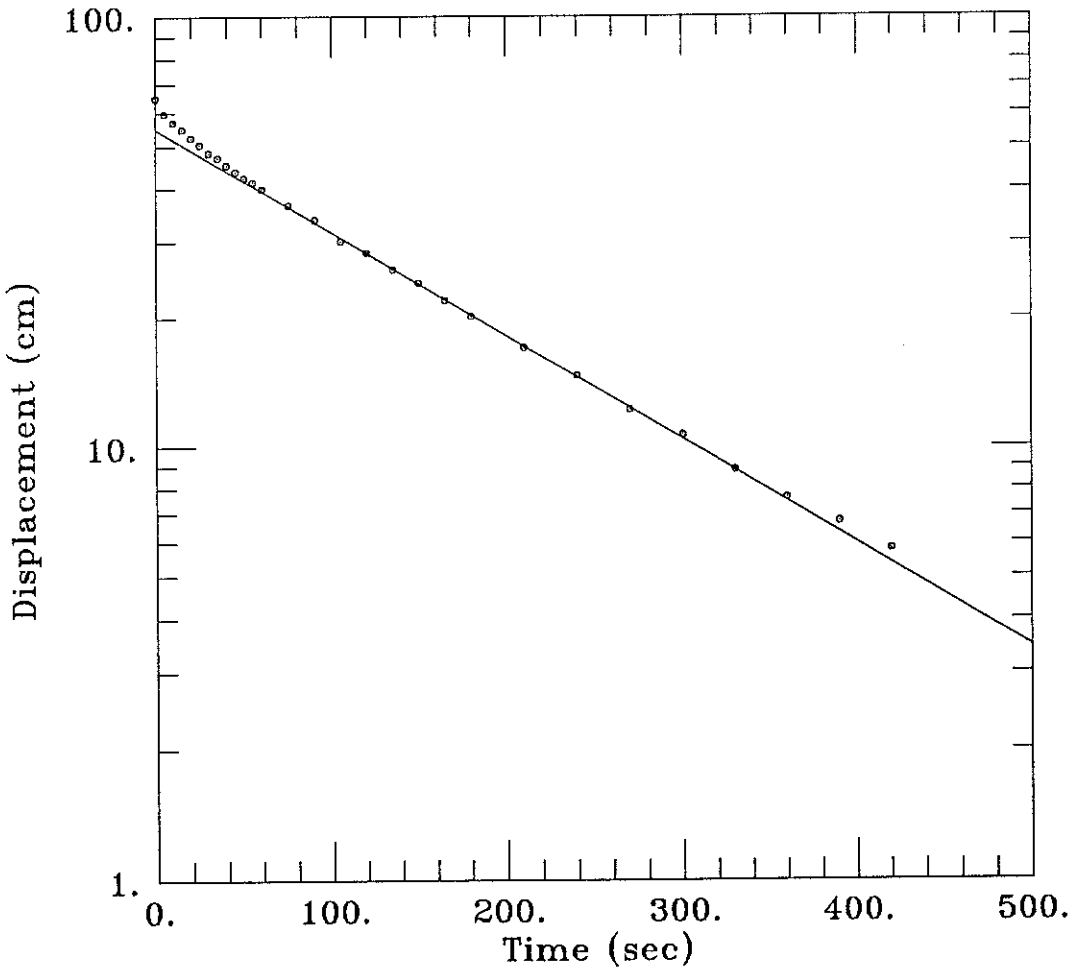
TEST DATA:
H0 = 85.74 cm
rc = 2.54 cm
rw = 10.16 cm
L = 152.4 cm
b = 211.5 cm
H = 168.9 cm

PARAMETER ESTIMATES:
K = 0.007765 cm/sec
y0 = 63.65 cm

AQTESOLV

Client: Hercules Inc./DYNO Nobel Inc.	Company: ECKENFELDER INC.
Location: Port Ewen, NY	Project: 9596.02

MW-18S Test 1



DATA SET:
MW-18S_1.DAT
10/30/95

AQUIFER MODEL:
Unconfined
SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: October 16, 1995
test well: MW-18S

TEST DATA:
H0 = 64.92 cm
rc = 2.54 cm
rw = 10.16 cm
L = 304.8 cm
b = 453.2 cm
H = 428.9 cm

PARAMETER ESTIMATES:
K = 0.0008326 cm/sec
y0 = 54.97 cm

AQTESOLV

APPENDIX C

SURFACE AND GROUNDWATER FIELD DATA SHEETS

SURFACE WATER FIELD DATA SHEETS

ECKENFELDER INC.

☐ Nashville, Tennessee
☑ Mahwah, New Jersey
☐ Rochester, New York

ENVIRONMENTAL SAMPLING FIELD DATA SHEET

Sample Number: SW-2
Sample I.D.: _____ (If different from samp no.)

Project: GW Sampling
Client: Hercules / DYNO Job No.: 9596.04
Personnel: LES/ERL

Date: 10/16/95 Time: 12:45
Weather Conditions: sunny breezy
Air Temperature: 60°F

SAMPLE MEDIUM:

☐ SURFICIAL SOIL: Depth Interval: _____
☐ DEEP SOIL: Depth Interval: _____
☑ SURFACE WATER: Depth Interval: 0-3"
☐ BOTTOM SEDIMENT
☐ OTHER: Describe: _____

SAMPLING DATA:

SAMPLE COLLECTION EQUIPMENT:

☐ Scoop ☐ Shovel ☐ Direct into sample container ☐ Split-spoon sampler ☐ Hand auger
☐ Hand Corer ☐ Petite Ponar Dredge ☐ Eckman Dredge ☑ Bottle Sampler
☐ Peristaltic Pump ☐ Automated Interval Sampler ☐ Other: _____

SAMPLER CONSTRUCTION: (Check as many as apply)

☐ Teflon®	☐ PVC
☐ Stainless Steel	☐ Polyethylene
☐ Carbon Steel	☐ Polypropylene
☑ Glass	☐ Other: _____

SAMPLE TYPE: ☑ Grab ☐ Composite ☐ Other: _____
SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

FIELD MEASUREMENT DATA:

APPEARANCE (describe):
☐ Oily ☑ "Clean" ☑ Clear ☐ Turbid ☐ Color: _____ ☐ Contains Immiscible Liquid
ODOR?: ☐ Yes ☑ No , Description: _____
GRAIN SIZE DESCRIPTION: (Use for soils only)

FIELD DETERMINATIONS: pH: 7.6 Meter Model: Oakton pH Tstr. Meter S/N: —
Temperature: 12°C Spec. Cond.: NM Meter Model: — Meter S/N: —
Other: —
LABORATORY ANALYSIS: VOA, + metals, BNA

NO. OF CONTAINERS: 6 Field Blank I.D.: — Trip Blank I.D.: TB101695 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Schuring Date: 10/16/95

ECKENFELDER INC.

☐ Nashville, Tennessee
☑ Mahwah, New Jersey
☐ Rochester, New York

ENVIRONMENTAL SAMPLING FIELD DATA SHEET

Sample Number: SW-3
Sample I.D.: _____ (If different from samp no.)

Project: GW Sampling Date: 10/16/95 Time: 11:36
Client: Hercules / DYNO Job No.: 9596.06 Weather Conditions: sunny, breezy
Personnel: LES/ERL Air Temperature: 60°F

SAMPLE MEDIUM:

☐ SURFICIAL SOIL: Depth Interval: _____
☐ DEEP SOIL: Depth Interval: _____
☑ SURFACE WATER: Depth Interval: 0-3'
☐ BOTTOM SEDIMENT
☐ OTHER: Describe: _____

SAMPLING DATA:

SAMPLE COLLECTION EQUIPMENT:

☐ Scoop ☐ Shovel ☐ Direct into sample container ☐ Split-spoon sampler ☐ Hand auger
☐ Hand Corer ☐ Petite Ponar Dredge ☐ Eckman Dredge ☑ Bottle Sampler
☐ Peristaltic Pump ☐ Automated Interval Sampler ☐ Other: _____

SAMPLER CONSTRUCTION: (Check as many as apply)

☐ Teflon®	☐ PVC
☐ Stainless Steel	☐ Polyethylene
☐ Carbon Steel	☐ Polypropylene
☑ Glass	☐ Other: _____

SAMPLE TYPE: ☑ Grab ☐ Composite ☐ Other: _____
SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

FIELD MEASUREMENT DATA:

APPEARANCE (describe):
☐ Oily ☑ "Clean" ☐ Clear ☐ Turbid ☐ Color: _____ ☐ Contains Immiscible Liquid
ODOR?: ☐ Yes ☑ No , Description: _____
GRAIN SIZE DESCRIPTION: (Use for soils only)

FIELD DETERMINATIONS: pH: 7.6 Meter Model: Dakton PhTstr Meter S/N: —
Temperature: 11.0°C Spec. Cond.: NM Meter Model: — Meter S/N: _____
Other: _____
LABORATORY ANALYSIS: VOA, total metals, BNA

NO. OF CONTAINERS: 5 Field Blank I.D.: — Trip Blank I.D.: TB01695 Replicate I.D.: _____
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurel Schiavo Date: 10/16/95

GROUNDWATER FIELD DATA SHEETS

ECKENFELDER INC®

☐ Nashville, Tennessee
☑ Mahwah, New Jersey

GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-1
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling
Client: Hercules / DYNO
Job No.: 959606
Personnel: LES / ZK
Date: 9/12/95 Time: 0815
Weather Conditions: Sunny
Air Temperature: 50°F

WELL DATA:

Casing Diameter: 4" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 3" ☐ Stainless Steel ☐ Galv. Steel ☐ PVC ☐ Teflon® ☑ Open rock
DEPTH TO : Static Water Level: 23.02 Bottom of Well: 32.7' bottom silty
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☐ Yes ☑ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 3.4 gal To be purged: 10.2 gal

PURGE DATA:

METHOD: ☐ Bailer, Size: ___ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene HD ☐ Polypropylene ☐ Other: _____

Pumping Rate: ~0.5gpm Elapsed Time: 12m Volume Pumped: 6g
Was well purged to dryness? ☑ Yes ☐ No Number of Well Volumes Removed: 2

TIME SERIES DATA:

	Initial	1	2			
Temp.:	~~15°~~ 15C	~~16°~~ 16°	~~17°~~ 17°C			
pH:	6.5	6.6	6.6			
Spec. Cond.:	~~200 µmhos~~ 200 µmhos/cm	202	211			
Other N/A:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☐ Bailer, Size: ___ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump ☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene HD ☐ Polypropylene ☐ Other: _____

SAMPLING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45 µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 6.6 Meter Model: QuikTon pH Tstr Meter S/N: ___
Temperature: 23° Spec. Cond.: 211 µmhos/cm Meter Model: YSI 33 Meter S/N: 90M0227X
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091295 Trip Blank I.D.: TB091295 Replicate I.D.: ___
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Downing Date: 9/12/95

ECKENFELDER INC®

☐ Nashville, Tennessee
☑ Mahwah, New Jersey

GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-2A
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling Date: 9/12/95 Time: 1430
Client: Hercules / DYNO Job No.: 9596.01 Weather Conditions: Sunny, Breezy
Personnel: LES / ZK Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 15.34' Bottom of Well: 26.7'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 1.8g To be purged: 5.5g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: Nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 6g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:

	Initial	1	2	3		
Well Volumes:						
Temp.:	14°C	14°	13°	13°		
pH:	7.1	7.2	7.1	7.2		
Spec. Cond.:	430 µmhos/cm	350	350	360		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☐ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton Meter S/N: —
Temperature: 13°C Spec. Cond.: 360 µmhos/cm Meter Model: YSI 33 Meter S/N: 91M102726
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091295 Trip Blank I.D.: TB091295 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Louise Delaney Date: 9/12/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-2B
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling Date: 9/12/95 Time: 15:30
Client: Hercules / BYNO Job No.: 95960 Weather Conditions: sunny, breezy
Personnel: LES/ZK Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 14.63' Bottom of Well: 28.8'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: ____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 2.3g To be purged: 6.8g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 5g
Was well purged to dryness? ☑ Yes ☐ No Number of Well Volumes Removed: 2+

TIME SERIES DATA:	Well Volumes:	Initial	1	2	3		
	Temp.:	13°C	13°C	12.5°C			
	pH:	7.1	7.2	7.2			
	Spec. Cond.:	320 µmhos/cm	320	325			
	Other NA:						
	Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton Meter S/N: —
Temperature: 12.5°C Spec. Cond.: 325µmhos/cm Meter Model: YSI 33 Meter S/N: 90M0227
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091295 Trip Blank I.D.: TB091295 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Louise Fahrenz Date: 9/12/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-3
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling
Client: Hercules / DYNO
Job No.: 959606
Personnel: LES / ZK
Date: 9/13/95
Time: 13:30
Weather Conditions: raining
Air Temperature: 65°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 10.53' Bottom of Well: 26
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 2.5g To be purged: 7.5g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.65" ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☑ Polypropylene ☐ Other: _____

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 9g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:

Well Volumes:	Initial	1	2	3		
Temp.:	13°C	13°	13°	13°		
pH:	7.0	6.8	6.8	6.8		
Spec. Cond.:	800 µmhos/cm	750	750	700		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.65" ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm QUICK Filter
APPEARANCE: ☐ Clear ☑ Turbid ☐ Color: brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 6.8 Meter Model: Oakton Meter S/N: —
Temperature: 13°C Spec. Cond.: 700µmhos Meter Model: YSI 33 Meter S/N: 90M0227Z6
NO. OF CONTAINERS: 7 Field Blank I.D.: FB091395 Trip Blank I.D.: TB091495 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Kohanowski Date: 9/13/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-4A
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling Date: 9/13/95 Time: 11:50
Client: Hercules / DYNO Job No.: 959606 Weather Conditions: overcast
Personnel: LES/ZK Air Temperature: 60°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 9.76 Bottom of Well: 23.5
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☐ Yes ☐ No
VOLUME OF WATER: Standing in well: 2.29 To be purged: 6.69

PURGE DATA:

METHOD: ☒ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/(Bailer): ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/(Rope): ☐ Teflon® ☐ Polyethylene ☑ Polypropylene ☐ Other: _____

Pumping Rate: NA Elapsed Time: N/A Volume Pumped: 7g
Was well purged to dryness? ☐ Yes ☒ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:

	Initial	1	2	3		
Well Volumes:						
Temp.:	12.5°C	13°C	13°C	13°C		
pH:	~~12~~ 7.2	7.2	7.2	7.2		
Spec. Cond.:	~~1300~~ 750 µmhos	~~750~~ 750	800	790		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/(Bailer): ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/(Rope): ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: Nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick filter
APPEARANCE: ☐ Clear ☐ Turbid ☒ Color: brown/gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☑ Yes: Solvent ☐ No Other: Oily sheen

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton Meter S/N: —
Temperature: 13°C Spec. Cond.: 790µ Meter Model: YSI-33 Meter S/N: 90M0227?6
NO. OF CONTAINERS: 7 Field Blank I.D.: EB-091395 Trip Blank I.D.: TB-091495 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Julia Kamuck Date: 9/13/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-4B
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling Date: 9/13/95 Time: 12:45
Client: Hercules / DYNO Job No.: 9596.06 Weather Conditions: overcast
Personnel: LES / ZK Air Temperature: 60°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 10.81 Bottom of Well: 27'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☐ Yes ☑ No Silty Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 2.69 To be purged: 7.89

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6x5 ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene ☐ Polypropylene ☐ Other: _____

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 8g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA: Well Volumes:	Initial	1	2	3		
Temp.:	13°C	12°C	12°C	12°C		
pH:	7.2	7.2	7.2	7.2		
Spec. Cond.:	950 umhos	950 u	1000 u	950		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6x3 ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: Nylon

SAMPLING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45 µm Quickfitter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☒ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton Meter S/N: —
Temperature: 12°C Spec. Cond.: 950 µmhos Meter Model: YSI Meter S/N: 92M+2026
NO. OF CONTAINERS: 7 Field Blank I.D.: EB 091395 Trip Blank I.D.: TB-091495 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Julia Kramish Date: 9/13/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-6
Sample I.D.: _____ (if different from well no.)

Project: GW Sampling
Client: Hercules/DVNO
Job No.: 959606
Personnel: LES/ZK
Date: 9/15/95
Time: 16:00
Weather Conditions: Sunny
Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 3.20 Bottom of Well: 6.72
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 5.69 To be purged: 16.99

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☑ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® (Bailer) ☑ Stainless Steel (SS) ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene (HD) ☐ Polypropylene ☑ Other: nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 17 g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3

TIME SERIES DATA:

	Initial	1	2	3		
Well Volumes:						
Temp.:	21	11.5°C	15°C	15°C		
pH:	11.11	11.5	9.6	9.7		
Spec. Cond.:	3 [illegible]	500 u	140 u	140 u		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☑ Stainless Steel (SS) ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene (HD) ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45 µm QUICK FILTER
APPEARANCE: ☐ Clear ☑ Turbid ☐ Color: gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 9.7 Meter Model: Oakton Meter S/N: —
Temperature: 15°C Spec. Cond.: 140 µmhos Meter Model: YSI 33 Meter S/N: 95M022726
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091395 Trip Blank I.D.: TB091595 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: [signature] Date: 9/15/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-7
Sample I.D.: _____ (if different from well no.)

Project: GW Sampling Date: 9/15/95 Time: 1700
Client: Hercules / DYNO Job No.: 95960 Weather Conditions: Sunny
Personnel: LES/EK Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☐ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 35.55 Bottom of Well: 43.5'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☐ Yes ☑ No 3 Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 13 gal To be purged: 38

PURGE DATA:

METHOD: ☑ Bailer, Size: 16"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene ☐ Polypropylene ☑ Other: _____

Pumping Rate: NA Elapsed Time: NA Volume Pumped: ~4 gal
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA: Well Volumes:	Initial	1	2	3		
Temp.:	13°C	12°	12°	12°		
pH:	8.1	8.1	8.1	8.1		
Spec. Cond.:	200	200	205	210		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 16"x3 ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45 um Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 8.1 Meter Model: Oakton Meter S/N: —
Temperature: 12°C Spec. Cond.: 210 Meter Model: YSI 33 Meter S/N: 90M022782
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091595 Trip Blank I.D.: TB091595 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: [signature] Date: 9/15/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-8
Sample I.D.: plusrc091495 (if different from well no.)

Project: GW Sampling
Client: Hercules / DYNO
Job No.: 9596.06
Personnel: LES / EK
Date: 9/14/95
Time: 0750
Weather Conditions: sunny, breezy
Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 15.68' Bottom of Well: 22'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: ____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 1.01 g To be purged: 3.0 g

PURGE DATA:

METHOD: ☑ Bailer, Size: 16"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: ____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene ☐ Polypropylene ☑ Other: nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: LS 3.50
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA: Well Volumes:	Initial	1	2	3		
Temp.:	13°C	12.5°C	12°C	12°		
pH:	6.6	6.9	7.0	6.9		
Spec. Cond.:	390µmhos	380	370	360		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 16"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: ____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: Gray-brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ____ ☑ No Other: ____

FIELD DETERMINATIONS OF RECORD:
pH: 6.9 Meter Model: Oakton Meter S/N: —
Temperature: 12°C Spec. Cond.: 360µmhos Meter Model: YSI-33 Meter S/N: 90M0222726
NO. OF CONTAINERS: 14 Field Blank I.D.: EB091395 Trip Blank I.D.: TB091495 Replicate I.D.: REP091495
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Lakeway Date: 9/14/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-9
Sample I.D.: _____ (If different from well no.)

Project: GWSampling
Client: Hercules / DYNO Job No.: 9596.06
Personnel: LES / ZK

Date: 9/14/95 Time: 1050
Weather Conditions: p. sunny
Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☐ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 7.55 Bottom of Well: 19'
DATUM: ☐ Top of Protective Casing ☐ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 18g To be purged: 5.5g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene ☐ Polypropylene ☐ Other: _____

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 6g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:

	Initial	1	2	3		
Temp.:	14°C	15°C	14°C	14.5°C		
pH:	6.9	7.2	7.2	7.2		
Spec. Cond.:	275µmhos	290	285	295		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☐ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton Meter S/N: —
Temperature: 14.5°C Spec. Cond.: 285µmhos Meter Model: YSI 33 Meter S/N: 90M022726
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091395 Trip Blank I.D.: TB091495 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Gohring Date: 9/14/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-10
Sample I.D.: MW-10MS/MSD (if different from well no.)

Project: GW Sampling Date: 9/14/95 Time: _____
Client: Hercules / DYNO Job No.: 95960 Weather Conditions: p. sunny
Personnel: LES/ZK Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 8.68' Bottom of Well: 24'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☐ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 2.5g To be purged: 7.5g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene ☐ Polypropylene ☐ Other: _____

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 8g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA: Well Volumes:	Initial	½ 1	2	3		
Temp.:	13.5°C	13.5°C	13°C	13°C		
pH:	7.6	7.4	7.4	7.4		
Spec. Cond.:	280u	280u	275u	250u		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45 µm Quick Filter
APPEARANCE: ☐ Clear ☒ Turbid ☒ Color: Brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☒ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.4 Meter Model: Oakton Meter S/N: —
Temperature: 13°C Spec. Cond.: 280u Meter Model: YSI-33 Meter S/N: 90M022726
NO. OF CONTAINERS: 9,16 Field Blank I.D.: FB091495 Trip Blank I.D.: TB091495 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Tabeling Date: 9/14/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-15
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling Date: 9/15/95 Time: 12:40
Client: Hercules / DYNO Job No.: 9596A Weather Conditions: Sunny
Personnel: LES/ZK Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☐ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 8.94 Bottom of Well: 24.4
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 2.59 To be purged: 7.5 gal

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____ (11:51)
Tubing/Rope: ☐ Teflon® ☑ Polyethylene ☐ Polypropylene ☐ Other: _____

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 7.5 gal
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3

TIME SERIES DATA:	Well Volumes:	initial	1	2	3		
	Temp.:	12.5°C	13°	12°	14°		
	pH:	7.7	7.4	7.8	8.2		
	Spec. Cond.:	400 µmhos	410	370	330		
	Other NA:						
	Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☐ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☐ Other: nylon

SAMPLING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☐ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☐ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 8.2 Meter Model: Oakton Meter S/N: —
Temperature: 14°C Spec. Cond.: 330 Meter Model: YSI 33 Meter S/N: 96M022726
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091395 Trip Blank I.D.: TB091595 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: [signature] Date: 9/15/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-11D
Sample I.D.: plus Rep091595 (If different from well no.)

Project: GWSampling
Client: HERCULES/DANO
Job No.: 9159.06
Personnel: LES/EK
Date: 9/15/95
Time: 12:15
Weather Conditions: SUNNY
Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 8.78 Bottom of Well: 64.71
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: ____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 8.99 To be purged: 26.97

PURGE DATA:

METHOD: ☐ Bailer, Size: ____ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: ____

MATERIALS: Pump/Bailer: ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☑ HD Polyethylene ☐ Polypropylene ☐ Other: ____

11.51

Pumping Rate: 9gpm Elapsed Time: 15m Volume Pumped: 300
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3T

TIME SERIES DATA: Well Volumes:	Initial	1	2	3		
Temp.:	13°C	12.5	13°	12.5°		
pH:	7.2	7.5	7.4	7.2		
Spec. Cond.:	190umhos	200	200	200		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☐ Bailer, Size: ____ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: ____

MATERIALS: Pump/Bailer: ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☑ HD Polyethylene ☐ Polypropylene ☐ Other: ____

SAMPLING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm QUICKFILTER
APPEARANCE: ☐ Clear ☑ Turbid ☐ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ____ ☑ No Other: ____

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton Meter S/N: ____
Temperature: 12.5°C Spec. Cond.: 2004 mhos Meter Model: YSI-33 Meter S/N: 90M0327261
NO. OF CONTAINERS: 14 Field Blank I.D.: EB091595 Trip Blank I.D.: TB091595 Replicate I.D.: REP091595
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: [signature] Date: 9/15/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-12S
Sample I.D.: _____ (if different from well no.)

Project: GW Sampling Date: 9/13/95 Time: 09.00
Client: Hercules/DVNC Job No.: 95[illegible]6 Weather Conditions: raining
Personnel: LES/ZK Air Temperature: 65°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☐ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☐ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 8.18 Bottom of Well: 25A
DATUM: ☐ Top of Protective Casing ☐ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 2.8 g To be purged: 8.4

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.66"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☑ Polypropylene ☐ Other: _____

Pumping Rate: — Elapsed Time: — Volume Pumped: 8.5g
Was well purged to dryness? ☒ Yes ☐ No ZK Number of Well Volumes Removed: ~2.5

TIME SERIES DATA:	Well Volumes:	initial	1	2	2+		
	Temp.:	12.5°C	12°	13°	14°		
	pH:	7.1	7.0	7.1	7.1		
	Spec. Cond.:	475 µmhos/cm	465	465	465		
	Other NA:						
	Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.66"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☒ Other: [illegible]

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick filter
APPEARANCE: ☐ Clear ☑ Turbid ☐ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.1 Meter Model: Oakton Meter S/N: —
Temperature: 14° Spec. Cond.: 465 µmhos/cm Meter Model: ysi 33 Meter S/N: 90M0227526
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091395 Trip Blank I.D.: TB091495 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: [signature] Date: 9/13/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-12D
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling
Client: Hercules/BYNO Job No.: 95906
Personnel: LES/EL

Date: 9/13/95 Time: 0830
Weather Conditions: raining
Air Temperature: 65°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO: Static Water Level: 18.73 Bottom of Well: 84.5'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: ____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 10.5 g To be purged: 31.5 g

PURGE DATA:

METHOD: ☐ Bailer, Size: ____ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: (Pump/Bailer): ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: _____ 7.35
(Tubing/Rope): ☐ Teflon® ☑ HD Polyethylene ☐ Polypropylene ☐ Other: _____

Pumping Rate: 2 g/min Elapsed Time: 16m Volume Pumped: 32g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3

TIME SERIES DATA:

	Initial	1	2	3		
Well Volumes:						
Temp.:	14°C	12°C	12.5°C	12.0°C		
pH:	7.0	7.2	7.2	7.2		
Spec. Cond.:	140 µmhos/cm	200	205	205		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☐ Bailer, Size: ____ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: (Pump/Bailer): ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: _____
(Tubing/Rope): ☐ Teflon® ☑ HD Polyethylene ☐ Polypropylene ☐ Other: _____

SAMPLING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☑ Clear ☐ Turbid ☐ Color: ____ ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton Meter S/N: ____
Temperature: 12.0°C Spec. Cond.: 205µmhos/cm Meter Model: YSI 33 Meter S/N: 90M0022726
NO. OF CONTAINERS: 7 Field Blank I.D.: FB091195 Trip Blank I.D.: TB091495 Replicate I.D.: ____
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Lohmeyer Date: 9/13/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-13S
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling
Client: Hercules / DYNO Job No.: 7596.06
Personnel: LES / ZK

Date: 9/11/95 Time: 11:00
Weather Conditions: Sunny, 65°F
Air Temperature: 65°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 11.01' Bottom of Well: 25.2'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 2.3 g To be purged: 6.8 g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: NA
Was well purged to dryness? ☐ Yes ☐ No Number of Well Volumes Removed: _____

TIME SERIES DATA:

	Initial	1	2	3		
Well Volumes:						
Temp.:	14.5 ~~15.5~~ °C	~~15.5~~ 15.6	~~16~~ 16	~~15.5~~ 15.5		
pH:	6.7	6.9	6.9	6.8		
Spec. Cond.:	900 µmhos/cm	900	900	900		
Other N/A:						
Other N/A:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☐ Other: Nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:

Temperature: 15.5 °C pH: 6.8 Meter Model: Oakton pH tstr Meter S/N: —
Spec. Cond.: 900 µmhos/cm Meter Model: YSI 33 Meter S/N: 90M0227426
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091295 Trip Blank I.D.: TB091295 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Lakeway Date: 9/11/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-13D
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling Date: 9/11/95 Time: 11:45
Client: Hercules / DYNO Job No.: 9596.06 Weather Conditions: Sunny
Personnel: LES / ZK Air Temperature: 70°s

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 24.32 Bottom of Well: 45.8
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 3.44 To be purged: 10.3

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: Nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: NA
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3

TIME SERIES DATA:	Well Volumes:	Initial	1	2	3		
	Temp.:	~~19~~ °C	18.9	16.2	14.0		
	pH:	9.2	9.6	7.6	7.2		
	Spec. Cond.:	322 µmhos/cm	321	328	325		
	Other N/A:						
	Other N/A:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: Nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton pH tstr Meter S/N: —
Temperature: 14.0°C Spec. Cond.: 325 µmhos/cm Meter Model: YSI 33 Meter S/N: 90M0-22726
NO. OF CONTAINERS: 7 Field Blank I.D.: FB091295 Trip Blank I.D.: TB091295 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Kleung Date: 9/11/95

1.48

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☐ Nashville, Tennessee
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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-14S
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling
Client: Hercules / DYNO Job No.: 9596.06
Personnel: LES/ZL

Date: 9/12/95 Time: 10:30
Weather Conditions: Sunny
Air Temperature: 66°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 8.03 ' Bottom of Well: 25.7 '
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 8.89 To be purged: 8.5g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: ~~N/A~~ 7gal
Was well purged to dryness? ☑ Yes ☐ No Number of Well Volumes Removed: 2+

TIME SERIES DATA: Well Volumes:	Initial	1	2	3		
Temp.:	17°C	17.5°	~~18~~ 18°C	NM		
pH:	7.8	7.0	8.3	NM		
Spec. Cond.:	370 µmhos/cm	340	295	NM		
Other N/A:						
Other N/A:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 8.3 Meter Model: Oakton Meter S/N: _____
Temperature: 18°C Spec. Cond.: 295 Meter Model: YSI 33 Meter S/N: 90M022726
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091295 Trip Blank I.D.: TB091295 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Fleming Date: 9/12/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-14D
Sample I.D.: _____ (If different from well no.)

Project: GWSampling Date: 9/12/95 Time: 10:10
Client: Hercules/BYNO Job No.: 9596.06 Weather Conditions: sunny, breezy
Personnel: LES/ZK Air Temperature: 60°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 18.82 Bottom of Well: 65.3
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 7.4g To be purged: 22.3g

PURGE DATA:

METHOD: ☐ Bailer, Size: ___ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene HD ☐ Polypropylene ☐ Other: _____

Pumping Rate: ~2gpm Elapsed Time: 12m Volume Pumped: 25g
Was well purged to dryness? ☐ Yes ☐ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:

	Initial	1	2	3		
Well Volumes:						
Temp.:	17°C	16°C	16.5°C	16°C		
pH:	9.0	9.4	8.8	8.1		
Spec. Cond.:	140 umhos/cm	140	160	165		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☐ Bailer, Size: ___ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® HD ☑ Polyethylene ☐ Polypropylene ☐ Other: _____

SAMPLING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45μm Quickfilter
APPEARANCE: ☐ Clear ☑ Turbid ☐ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 8.1 Meter Model: Oakton Meter S/N: —
Temperature: 16°C Spec. Cond.: 165 Meter Model: YSI 33 Meter S/N: 90M022726
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091295 Trip Blank I.D.: TB091295 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Louise Toleung Date: 9/12/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-15S
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling
Client: Hercules / Dynb
Personnel: LES / ZK
Date: 9/11/95 Time: ~~3:00~~ 15:45
Job No.: 959606 Weather Conditions: Sunny, 70°F
Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: ~~20.6~~ 3.73 Bottom of Well: 20.6
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: ____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 1.90 g To be purged: 5.70 g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: ____

MATERIALS: Pump/(Bailer): ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: ____
Tubing/(Rope): ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: Nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: NA
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3

TIME SERIES DATA:	Well Volumes:	Initial	1	2	3		
	Temp.:	14°C	15°C	45	135		
	pH:	6.9	6.9	7.0	7.1		
	Spec. Cond.:	350 µmhos/cm	450	430	430		
	Other NA:						
	Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: ____

MATERIALS: Pump/(Bailer): ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: ____
Tubing/(Rope): ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☒ Other: Nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ____ ☑ No Other: ____

FIELD DETERMINATIONS OF RECORD: LS
pH: 7.1 Meter Model: Oakton pH Tstr Meter S/N: ____
Temperature: 13.5°C Spec. Cond.: 430 µmhos/cm Meter Model: YSI 33 Meter S/N: 90MD22726
NO. OF CONTAINERS: 1 Field Blank I.D.: EB091295 Trip Blank I.D.: TB091295 Replicate I.D.: ____
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: [signature] Date: 9/11/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-15D
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling Date: 9/11/95 Time: 16:10
Client: Hercules / Dyno Job No.: 95966 Weather Conditions: Sunny 70°F
Personnel: LES / ZK Air Temperature: 70°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 8.32 Bottom of Well: 29.3
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 3.36 gal To be purged: 10.1 gal

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

Pumping Rate: NA Elapsed Time: NA Volume Pumped: NA lb
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:

Well Volumes:	Initial	1	2	3		
Temp.:	15.5°C	13°C	13.5°C	16°C		
pH:	7.7	7.2	7.3	7.2		
Spec. Cond.:	345 µmhos/cm	340	340	360		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm QuickFilter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: lt. brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☐ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Meter Model: Oakton pH tstr Meter S/N: ——
Temperature: 16°C Spec. Cond.: 360 Meter Model: YSI 33 Meter S/N: 90M0227
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091295 Trip Blank I.D.: TB091295 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie A. Kreiling Date: 9/11/95

20.98

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-16S
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling Date: 9/15/95 Time: 0815
Client: Hercules / DYNO Job No.: 9916.06 Weather Conditions: Sunny
Personnel: LES / ZK Air Temperature: 55°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 20.21' Bottom of Well: 25.4'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: ____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 0.8g To be purged: 2.5g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene ☐ Polypropylene ☐ Other: ____

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 2.5g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3

TIME SERIES DATA:

	Well Volumes:	Initial	1	2	3		
	Temp.:	11°C	11°C	11.5°C	11°C		
	pH:	7.4	7.5	7.5	7.5		
	Spec. Cond.:	405	400	390	390		
Other NA	:						
Other NA	:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm QuickFilter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: orange ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☒ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 7.5 Meter Model: Oakton Meter S/N: —
Temperature: 11°C Spec. Cond.: 390µmhos Meter Model: YSI 33 Meter S/N: 90MC27726
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091395 Trip Blank I.D.: TB091595 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Blevins Date: 9/15/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-16D
Sample I.D.: MW-16DMS/MSD (If different from well no.)

Project: GW Sampling
Client: HERCULES / DYNO Job No.: 959606
Personnel: LES / ZK

Date: 9/15/95 Time: 0800
Weather Conditions: SUNNY
Air Temperature: 55°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 21.52' Bottom of Well: 49'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: ____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 4.4g To be purged: 13.2g

PURGE DATA:

METHOD: ☐ Bailer, Size: ___ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: ____

MATERIALS: Pump/Bailer: ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☑ HD Polyethylene ☐ Polypropylene ☐ Other: ____

Pumping Rate: 7.2gpm Elapsed Time: 0810 Volume Pumped: 15g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:	Initial	1	2	3		
Well Volumes:						
Temp.:	11.5°C	11.5	11.5	12°C		
pH:	7.0	7.4	7.5	7.5		
Spec. Cond.:	370µmhos	380	380	380		
Other NA:						
Other NA:						

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☐ Bailer, Size: ___ ☐ Bladder Pump ☑ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: ____

MATERIALS: Pump/Bailer: ☐ Teflon® ☑ Stainless Steel ☐ PVC ☐ Other: ____
Tubing/Rope: ☐ Teflon® ☑ HD Polyethylene ☐ Polypropylene ☐ Other: ____

SAMPLING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: Gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ____ ☑ No Other: ____

FIELD DETERMINATIONS OF RECORD:

pH: 7.5 Meter Model: Oakton Meter S/N: ____
Temperature: 12°C Spec. Cond.: 380 Meter Model: YSI 33 Meter S/N: 90M0227626
NO. OF CONTAINERS: 16 Field Blank I.D.: EB091395 Trip Blank I.D.: TB091595 Replicate I.D.: ____
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Laurie Kelling Date: 9/15/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-19S
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling
Client: Hercules / DVNO
Job No.: 9996.06
Personnel: LES / ERL
Date: 10/16/95 Time: 11:15
Weather Conditions: breezy, sunny
Air Temperature: 60° F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 3.86 Bottom of Well: 12.9'
DATUM: ☐ Top of Protective Casing ☐ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 1.4g To be purged: 4.3g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.6"x5' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☑ Polypropylene ☐ Other: _____

Pumping Rate: _____ Elapsed Time: 10:56 – 10:44 Volume Pumped: 5g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:

Well Volumes:	Initial	1	2	3		
Temp.:	13	14°C	13°C	14°C		
pH:	5.8	6.5 last	6.7 last	7.2 last		
Spec. Cond.:	NM	NM	NM	NM		
Other _____:						
Other _____:						

PURGING EQUIPMENT: ☐ Dedicated ☑ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: Nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: _____ ☑ No Other: _____

FIELD DETERMINATIONS OF RECORD:
pH: 14°C Meter Model: Oakton Meter S/N: —
Temperature: 8.72 Spec. Cond.: NM Meter Model: NM Meter S/N: _____
NO. OF CONTAINERS: 4 Field Blank I.D.: — Trip Blank I.D.: TB-1695 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: _____ Date: 10/16/95

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GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-18S
Sample I.D.: _____ (If different from well no.)

Project: GW Sampling
Client: Hercules / DYNO
Job No.: 859.06
Personnel: LES/ZK
Date: 9/15/95
Time: 0920
Weather Conditions: Sunny
Air Temperature: 60°F

WELL DATA:

Casing Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2" ☐ Stainless Steel ☐ Galv. Steel ☑ PVC ☐ Teflon® ☐ Open rock
DEPTH TO: Static Water Level: 8.09 Bottom of Well: 19.41'
DATUM: ☐ Top of Protective Casing ☑ Top of Well Casing ☐ Other: _____
Is the well clean to the bottom? ☑ Yes ☐ No Is the well in good condition? ☑ Yes ☐ No
VOLUME OF WATER: Standing in well: 1.8g To be purged: 5.4g

PURGE DATA:

METHOD: ☑ Bailer, Size: 1.5" ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☑ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☑ Polyethylene ☐ Polypropylene ☐ Other: _____

Pumping Rate: NA Elapsed Time: NA Volume Pumped: 5.5g
Was well purged to dryness? ☐ Yes ☑ No Number of Well Volumes Removed: 3

TIME SERIES DATA:	Well Volumes:	Initial	1	2	3		
	Temp.:	14°C	14°C	14°C	14°C		
	pH:	6.7	6.9	6.8	6.8		
	Spec. Cond.:	440u	490u	490u	500u		
Other NA:							
Other NA:							

PURGING EQUIPMENT: ☐ Dedicated ☐ Prepared Off-Site ☑ Field Cleaned

SAMPLING DATA:

METHOD: ☑ Bailer, Size: 1.6"x3' ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Other: _____

MATERIALS: Pump/Bailer: ☑ Teflon® ☐ Stainless Steel ☐ PVC ☐ Other: _____
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☑ Other: nylon

SAMPLING EQUIPMENT: ☑ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☑ Yes ☐ No Method: 0.45µm Quick Filter
APPEARANCE: ☐ Clear ☑ Turbid ☑ Color: gray ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☑ Yes: sulfur ☐ No Other: _____

FIELD DETERMINATIONS OF RECORD:

pH: 6.8 Meter Model: Oakton Meter S/N: —
Temperature: 14°C Spec. Cond.: 500u Meter Model: YSI 33 Meter S/N: 90H022726
NO. OF CONTAINERS: 7 Field Blank I.D.: EB091395 Trip Blank I.D.: TB091595 Replicate I.D.: —
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: _____ Date: 9/15/95

APPENDIX D

CHAIN-OF-CUSTODY FORMS

HYDROPUNCH® CHAIN-OF-CUSTODY FORMS

CHAIN OF CUSTODY RECORD

ECKENFELDER INC.

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Send Results To:
Name Tim Roeper
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SAMPLE DETAILS: 8 of 12
Page 1 of 1
Cooler No. 1 of 1
Date Shipped ~~7/14/95~~ 7/17/95

Project No. 9596.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Schewing

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	NaOH, 40ml	NaOH, 250ml						Analysis Requested
3783	4°C	7/14/95	14:00		✓	T80714 95 (#442)		✓		2					2							VOA
3784	↓	↓	09:45		✓	HP-7, 23-24'		✓		2					2							VOA
3785	↓	↓	09:45		✓	HP-7, 42-44'		✓		2					2							VOA*
			14:00		✓	Temperature Blank		✓		1					1							Temperature

Relinquished by: (Signature)	Date / Time 7/17/95 1600	Received by: (Signature)	
Relinquished by: (Signature)	Date / Time 7/17/95 14:00	Received by: FEDEX (Signature)	
Relinquished by: (Signature)	Date / Time 7/17/95 1600	Received by: (Signature)	
Received for Laboratory by: (Signature)	Date / Time 7/18/95 0905		

Remarks Cooler #109
* Analyze HP-7, 42-44' only if compounds detected in HP-7, 23-24'.
Cooler not picked up on 7/14/95 from shipping. Temperature 7/17/95 25°C
Rush

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	Fx P1

Rev. 2/9

DISTRIBUTION: Original and yellow copies accompany sample shipment to laboratory; Pink copy retained by samplers.

Nº 76490

00022

CHAIN OF CUSTODY RECORD

7/14/95 COC
P91

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Send Results To:
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Fax

SAMPLE DETAILS:
Page 2 of 2
Cooler No. 1 of 1
Date Shipped 7/17/95

Project No. 9596.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Gilkeson

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Lab Use Only: Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	None	40ml	Analysis Requested
3786	4°C	7/17/95	1000		✓	EB071795		✓		2					2		VOA

	Date / Time		
Relinquished by: (Signature)	7/13/95 1600	Received by: (Signature)	
Relinquished by: (Signature)	7/17/95 1600	Received by: FEDEX (Signature)	
Relinquished by: (Signature)		Received by: (Signature)	
Received for Laboratory by: (Signature)		Date / Time 7/18/95 0905	

Remarks Rush

Lab Use Only

VOA Headspace	Y	(N)	N/A
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A
Method of Shipment	FX-P1		

Rev-2/95

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00023

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Send Results To:
Name Tim Roper
Company Eckenfelder
Address
City & State Mahwah
Phone 201-529-0800
Fax 201-529-0818

SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/6/95

Project No. 9596.03
Project Name HP sampling
Samplers (Signature) Laurie Gehring

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	Analysis Requested
3018	18°C	6/6/95	0800		✓	HP-14, 25'		✓		1		1			VOA
3019	↓	6/6/95	16:00		✓	TB060695		✓		2		2			VOA
3020	✓	6/6/95	10:30		✓	HP-14, 42-45'		✓		1		1			VOA #analyze only if detects in HP-14, 25' Not Required (no)

	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
1	Brian Richard	5/9/95 1330	Laurie Gehring
2	Laurie Gehring	6/6/95 17:00	FEDEX
3			
Received for Laboratory by: (Signature)	Tim Wan	Date / Time	6/7/95 0915

Remarks
Temp 18°C
3018 ✓

Lab Use Only
VOA Headspace (Y) N N/A
Breakage Y (N) N/A
Spillage Y (N) N/A
Correct Containers (Y) N N/A
Custody Seals Intact Y (N) N/A
Method of Shipment FedEx

Rev. 2/95

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00008

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City & State Manwah
Phone
Fax

SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/7/95

Project No. 9596.03
Project Name Hydropunch Sampling
Samplers (Signature) Laura Fakening

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH							Analysis Requested
3067	9°C	6/7/95	0800		✓	HP-5, 26-28'		✓		2		2									VOA
3068	↓	↓	0930		✓	HP-5, 42-45'		✓		1		1									VOA # (not required)
3069	↓	↓	16:00		✓	TB060795 (#413)		✓		2		2									VOA

MATRIX | Lab Use Only: Bottle/Preservatives

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	5/9/95 1530	
Relinquished by: (Signature)	6/7/95 16:00	Received by: FEDEX (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time 6/8/95 0715	

Remarks Rush
#analyze HP-5, 42-45' only if compounds detected in HP-5, 26-28'.

Cooler # 100

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	Fed-X

Rev. 2/95

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Nº 7503

60000

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/8/95

Project No. 95960.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Lefevre

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	Analysis Requested
3095	15°C	6/8/95	0700		✓	DUP060895		✓		2		2			VOA
3096			0800		✓	HP-10, 21-24'		✓		2		2			VOA
3097			1015		✓	HP-10, 37-37.5'		✓		1		1			VOA * Had to run
3098			1820		✓	HP-2, 26-29'		✓		1		1			VOA
3099			1600		✓	TB060895 #412		✓		2		2			VOA
6/9 #3100			1540		✓	HP-2, 46-49'		✓		1		1			VOA * (Not required)

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/9/95 1330	
Relinquished by: (Signature)	6/8/95 16:00	Received by: FEDEX (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date 6/9/95 Time 0905	

Remarks There are bubbles in some of the samples that I couldn't remove.
*analyze only if compounds detected in HP-10, 21-24'.
*analyze only if compounds detected in HP-2 26-29'
Cooler #140 CAR#95-140

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	FX-P1

Rev. 2/95

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/12/95

Project No. 95[illegible],03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Lofleur

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl Nb Pres	H2SO4	NaOH	HCl	Analysis Requested
3139	3°	9/12/95	0800		✓	HP-11, 21-24'		✓		2		2				VOA
3140	↓	↓	0930		✓	HP-11, 41-43.5'		✓		1		1				VOA* (Didn't Run)
3141	↓	↓	16:00		✓	TB061295 #420		✓		2		2				VOA

MATRIX
Lab Use Only
Bottle/Preservatives

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	6/13/95 1100	[signature]
[signature]	6/14/95 1600	FEDEX (Signature)
(Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature) [signature]	Date 6/15/95 / Time 0915	

Remarks
* Analyze only if compounds detected in HP-11, 21-24'

Lab Use Only

VOA Headspace	Y	(N)	N/A
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	Y	N	(N/A)
Method of Shipment	Fed-X		

Rev. 2/95

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Nº 7819

00011

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City & State Mahwah
Phone
Fax

SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/16/95

Project No. 9596.03
Project Name HP Sampling
Samplers (Signature) Laurie Gehring

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	Na2S2O3	Analysis Requested
3209	5°C	6/16/95	0805		✓	HP-13, 22-22.5'		✓		2					2	VOA
3210	↓	↓	0915		✓	HP-13, 43-44'		✓		2					2	VOA * x1/x50 and x10/x200 Was analyzed
3211	↓	↓	16:00		✓	TB061695 (#421)		✓		2		2				VOA

MATRIX
Lab Use Only
Bottle/Preservatives

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Laurie Gehring	6/7/95 / 1600	Laurie Gehring
Laurie Gehring	6/16/95 / 16:00	FEDEX
	/	
	/	

Received for Laboratory by: (Signature) Brian Kelly — Date / Time 6/17/95 / 0910

Remarks
* Analyze only if compounds detected in HP-13, 22-22.5'

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N (N/A)
Method of Shipment	FX-SAT

Rev. 2/95

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№ 7820

00012

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/19/95

Project No. 9596.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Lohewing

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	No Pres/250ml	No Pres/40ml	Analysis Requested
	3°C	6/19/95	16:00		✓	Temperature Blank		✓		1					1		Temperature
3235			16:00		✓	TB061995 #423		✓		2		~~HCl~~			2		VOA
3236			0745		✓	HP-6, 23-24'		✓		2					2		VOA
3237	↓		0915		✓	HP-6, 41-44'		✓		2					2		VOA *

MATRIX | Lab Use Only | Bottle/Preservatives

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Brian K. Ward	6/19/95 1535	Laurie Lohewing
Laurie Lohewing	6/19/95 1600	FEDEX
	/	
Received for Laboratory by: (Signature) David M. Adler	Date / Time 6/20/95 0915	

Remarks
* Analyze HP-6, 41-44' only if compounds detected in HP-6, 23-24'.

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	FX-PL

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00013

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/21/95

Project No. 95603
Project Name HP Sampling
Samplers (Signature) Laurie Lakeman

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	None 40mL	None 250mL	Analysis Requested
3302	3°C	6/21/95	12:00		✓	HP-4, 27.5-28.5'		✓		2					2		VOA
3303			~~1340~~		✓	HP-4, ~~47-48~~ dup 42-43'		✓		2					2		VOA*
3304			16:00		✓	TB062195 #422		✓		2					2		VOA
			16:00		✓	Temp. Blank ~~#04~~		✓		1					1		Temperature

	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
1		6/21/95 1535	
2		6/21/95 1600	FEDEX
3			
Received for Laboratory by:		Date / Time	
		6/22/95 0905	

Remarks
*Analyze HP-4, 47-48' only if compounds detected in HP-4, 27.5-28.5'

CAR #95-263

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	FX-P1

Rev. 2/95

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/23/95

Project No. 4596.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Lakeman

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	NaHSO4 40ml	NaHSO4 25ml					Analysis Requested
3441	4°C	6/22/95	0940		✓	EB-062295		✓		2		2									VOA
3442	↓	6/23/95	16:00		✓	TB-062395 (#428)		✓		2					2						VOA
		↓	16:00		✓	Temp Blank		✓		1						1					Temperature
3443			0740		✓	HP-1, 28-29'		✓		1					1						VOA
3444	↓	↓	0900		✓	HP-1, 42-43'		✓		1					1						VOA *

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/16/95 | 530	
Relinquished by: (Signature)	6/23/95 | 16:00	Received by: FEDEX (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time 6/24/95 | 0850	

Remarks
*Analyze HP-1, 42-43' only if compounds detected in HP-1, 28-29'.

Lab Use Only
VOA Headspace Y (N) N/
Breakage Y (N) N/
Spillage Y (N) N
Correct Containers (Y) N N
Custody Seals Intact (Y) N N
Method of Shipment FX-SAT

Rev.

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No. 7011 1001

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/28/95

Project No. 9516.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Gallenberg

Lab Use Only Lab #	Temp.	Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	40mL Clear	250mL Lime	Analysis Requested
35116	4°C	6/28/95	16:00		✓	TBC62895 #427		✓		2					2		VOA
*			16:00		✓	Temperature Blank		✓		1					1		Temperature
3517			0745		✓	HP-12, 23-24'		✓		1					1		VOA
3518			0800		✓	HP-16, 23-24'		✓		1					1		VOA
3519	✓	↓	10:00		✓	HP-16, 43-44'		✓		1					1		VOA *

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	6/28/95 1530	
Relinquished by: (Signature)	6/28/95 16:00	Received by: FEDEX (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	6/29/95 0910	

Remarks
* Analyze HP-16, 43-44' only if compounds detected in HP-16, 23-24'.

Lab Use Only

VOA Headspace	Y	(N)	N/A
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A

Method of Shipment FX-P1

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00016

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/29/95

Project No. 95916.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Gollering

Lab Use Only Lab #/Temp.	Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	STORE 40mL	STORE 250mL	Analysis Requested
3551 2°C	6/29/95	1600		✓	Temperature Blank		✓		1						1	Temperature
3551		1600		✓	TB0629 95 (11434)		✓		2					2		VOA
3552		0740		✓	HP-15, 28-29'		✓		2					2		VOA
3553		0750		✓	HP-12, 42-43'		✓		2					2		VOA *
3554		0900		✓	HP-15, 43-44'		✓		1					1		VOA **

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Brian Gilbert	6/28/95 1400	Laurie Gollering
Laurie Gollering	6/29/95 1600	FEDEX
Received for Laboratory by: Nancy M. Miller		Date / Time 6/30/95 0850

Remarks
*Analyze HP-12, 42-43' only if compounds detected in HP-12, 23-24' (sent in 6/28/95)
** Analyze HP-15, 43-44' only if compounds detected in HP-15, 28-29'.
Cooler #109

Lab Use Only

VOA Headspace	Y	(N)	N/A
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A
Method of Shipment	FX-P1		

Rev. 2/9

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0011

№ 7762

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Page 1 of 1
Cooler No. 1 of 1
Date Shipped 6/30/95

Project No. 9596.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Pohlmann

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	HNO3 40mL	NaOAc 40mL	Analysis Requested
	10C	6/30/95	0800		✓	Temperature Blank		✓		1					1		~~VOA~~ Temperature
35e1	↓	↓	0800		✓	TB063095 #435		✓		2					2		VOA
35e2	↓	↓	0950		✓	HP-10A, 32-34'		✓		1					1		VOA

MATRIX | Lab Use Only: Bottle/Preservatives

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Brian Killeen	6/29/95 1400	L Pohlmann
L Pohlmann	6/30/95 12:00	FEDEX
	/	
Received for Laboratory by: Linda Cashman	7/1/95 9:45	

Remarks Rush

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	FX-SAT

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Page 1 of 1
Cooler No. 1 of 1
Date Shipped 7/7/95

Project No. 9596.03
Project Name Hydropunch Sampling
Samplers (Signature) Laurie Gleiring

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	1 Liter 40ml	1 Liter 250ml	Analysis Requested
36526	6°C	7/7/95	0740		✓	HP-3, 43-44		X		2					2		VOA
36527	↓		0800			TB070795		X		2					2		VOA
		↓	0800			Temperature Blank #437									1		Temperature

MATRIX — Lab Use Only — Bottle/Preservatives

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Laurie Gleiring	7/7/95 1500	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Laurie Gleiring	7/7/95 12:00	FEDEX
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time	
Kathy M. Adler	7/8/95 0900	

Remarks Rush

Lab Use Only

VOA Headspace	Y	(N)	N/A
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A

Method of Shipment FX-SAT

Rev. 2/95

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№ 7715

00019

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped ~~5~~ 7/5/95

Project No. 95916.03
Project Name Hyampurch Sampling
Samplers (Signature) Laurie Fleming

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	5 NaOH/ZnAc	Analysis Requested
35716	2°C	7/5/95	0740		✓	HP-3, 23-24'		✓		2				2		VOA
"	"	7/5/95	16:00		✓	Temperature Blank		✓		1				1		Temperature

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Laurie Fleming		Laurie Fleming
Laurie Fleming	7/5/95 16:00	FEDEX
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time	
	7/6/95 0900	

Remarks

Lab Use Only

VOA Headspace	Y	N	N/A
Breakage	Y	N	N/A
Spillage	Y	N	N/A
Correct Containers	Y	N	N/A
Custody Seals Intact	Y	N	N/A
Method of Shipment			

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Page 1 of 1
Cooler No. 1 of 1
Date Shipped 7/13/95

Project No. 95960.03
Project Name Hydropunch Sampling
Samplers (Signature) Laura Ebeling

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	Nbr, 40mL	Amb, 250mL	Analysis Requested
3759	4°C	7/13/95	16:00		✓	TB071395 #436		✓		2					2		VOA
3760			16:00		✓	DUP 071395		✓		2					2		VOA
			16:00		✓	Temperature Blank		✓		1						1	Temperature
3761			0845		✓	HP-8, 23-24'		✓		2					2		VOA
3762			0845		✓	HP-9, 22-23'		✓		2					2		VOA
3763			0930		✓	HP-8, 42-43'		✓		1					1		VOA*

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Brian Gibbs	7/5/95 1500	Laura Ebeling
Relinquished by: (Signature) Laura Ebeling	7/13/95 16:00	Received by: FEDEX (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature) Brian Gibbs	Date / Time 7/14/95 0915	

Remarks
*Analyze HP-8, 42-43' only if compounds detected in HP-8, 23-24'.

Lab Use Only

VOA Headspace	Y	(N)	N/A
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A
Method of Shipment	FEDEX		

Rev. 2/95

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SURFACE AND GROUNDWATER CHAIN-OF-CUSTODY FORMS

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SAMPLE DETAILS:
Page 1 of 2
Cooler No. 1 of 4
Date Shipped 9/12/95

Project No. 9596.00
Project Name GW Sampling
Samplers (Signature) Laurie Ebbeling / Zelia Kranich

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	Lab Use Only Bottle/Preservatives: HNO3	H2SO4	NaOH	HNO3	RCS	Analysis Requested
4579	7°C	9/11/95	11:00		✓	MW-13S		✓		3		3			1	VOA
		↓	↓		↓	↓		↓		2				2		BNA
		↓	↓		↓	↓		↓		2	2		pH 1.5			Total & Soluble Metals
4580		9/11/95	11:45		✓	MW-13D		✓		3		3				VOA
		↓	↓		↓	↓		↓		2				2		BNA
		↓	↓		↓	↓		↓		2	2		pH 1.5			Total & Soluble Metals
4581		9/11/95	15:45		✓	MW-15S		✓		3		3				VOA
		↓	↓		↓	↓		↓		1				1		BNA
		↓	↓		↓	↓		↓		2	2		pH 1.0			Total & Soluble Metals
4582	↓	9/11/95	16:10		✓	MW-15D		✓		3		3				VOA

	Date / Time		
Relinquished by: (Signature)	9/12/95 1615	Received by: (Signature)	
Relinquished by: (Signature)	9/12/95 17:00	Received by: FEDEX (Signature)	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	
Received for Laboratory by: (Signature)	Date / Time 9/13/95 0905		

Remarks Cooler #22

Lab Use Only

VOA Headspace	Y	(N)	N/A
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A
Method of Shipment	FX-P1		

Rev. 9/95

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Page 2 of 2
Cooler No. 1 of 4
Date Shipped 9/12/95

Project No. 9596.06
Project Name GW Sampling
Samplers (Signature) Laurie Gallenberg / Zelia Kranick

Lab Use Only Lab #/Temp.	Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	THIO PHOS	H2SO4	NaOH	None	Analysis Requested
4583 T°C	9/12/95	0815		✓	MW-1		✓		3	3					VOA
4584		10:10		✓	MW-14D		✓		3	3					VOA
4585		1030		✓	MW-14S		✓		3	3					VOA
4586	9/12/95	11:50		✓	EB091295		✓		2	2					VOA
4587		16:00		✓	TB091295 #454		✓		2	2					VOA
4588		14:30		✓	MW-2A		✓		3	3					VOA
4589		15:30		✓	MW-2B		✓		3	3					VOA
	9/12/95	16:00		✓	Temperature Blank		✓		1				1		Temp.

MATRIX | Lab Use Only | Bottle/Preservatives

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Laurie Gallenberg	9/12/95 1615	Laurie Gallenberg
Relinquished by: (Signature) Laurie Gallenberg	9/12/95 17:00	Received by: Fedex (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature) Dawn M. Adler	Date 9/13/95	Time 0905

Remarks Cooler #22

Lab Use Only

VOA Headspace	Y (N)	N/A
Breakage	Y (N)	N/A
Spillage	Y (N)	N/A
Correct Containers	(Y) N	N/A
Custody Seals Intact	(Y) N	N/A
Method of Shipment	FEX-P1	

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Page 1 of 1
Cooler No. 2 of 4
Date Shipped 9/12/95

Project No. 9596.06
Project Name GW Sampling
Samplers (Signature) Laurie Gotsching / Zelda Franck

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: Amber	HCl	H_2SO_4	NaOH	HNO_3	Analysis Requested
4581	3°C	9/11/95	1515		✓	MW-15S		✓		1					1	BNA
4583		9/12/95	0815		✓	MW-1		✓		2					2	BNA
↓		↓	↓		↓	↓		✓		2	2	pH 1.0				Total & Soluble Metals
4582		9/11/95	1610		✓	MW-15D		✓		2					2	BNA
↓		↓	↓		↓	↓		✓		2	2	pH 1.5				Total & Soluble Metals
4584		9/12/95	10:10		✓	MW-14D		✓		1					1	BNA
↓		↓	↓		↓	↓		✓		2	2	pH 1.0				Total & Soluble Metals
	↓	9/12/95	16:00		✓	Temperature Blank		✓		1					1	Temperatur

Relinquished by: (Signature) Date / Time 9/13/95 1400 Received by: (Signature)
Relinquished by: (Signature) Date / Time 9/13/95 17:00 Received by: FEDEX (Signature)
Relinquished by: (Signature) Date / Time Received by: (Signature)
Received for Laboratory by: (Signature) Date / Time 9/13/95 0905

Remarks Cooler #2

Lab Use Only
VOA Headspace Y N (N/A)
Breakage Y (N) N/A
Spillage Y (N) N/A
Correct Containers (Y) N N/A
Custody Seals Intact (Y) N N/A
Method of Shipment FEDEX

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Page 1 of 1
Cooler No. 3 of 4
Date Shipped 9/12/95

Project No. 4596.06
Project Name GW Sampling
Samplers (Signature) Laurie Lakeman / Julia Hart

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: Analysis Requested
4584	10°C	9/12/95	10:10		✓	MW-14D		✓		1	BNA
4585		9/12/95	10:30		✓	MW-14S		✓		2	BNA
↓		↓	↓			↓		✓		2	Total & Soluble Metals
4586		9/12/95	11:50		✓	EB091295		✓		2	BNA
↓		↓	↓		↓	↓		✓		2	Total & Soluble Metals
4588		9/12/95	14:30		✓	MW-2A		✓		2	Total & Soluble Metals
4589		↓	15:30		✓	MW-2B		✓		1	Total Metals
	↓	9/12/95	16:00		✓	Temperature Blank		✓		1	temp.

Lab Use Only
Bottle/Preservatives: HNO3, HCl, H2SO4, NaOH, Al Kb Pres

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: FEDEX (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time 9/13/95	0905

Remarks: Cooler #106

Lab Use Only

VOA Headspace	Y N (N/A)
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	FX-P1

Rev. 2/95

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№ 8119

0016

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Page 1 of 1
Cooler No. 4 of 4
Date Shipped 9/12/95

Project No. 95960.06
Project Name GW Sampling
Samplers (Signature) Laurie Gollering / Julia Kanuth

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	HNO3 pres	Analysis Requested
45588	9°C	9/12/95	14:30		✓	MW-2A		✓		2					2	BNA
45589	↓	↓	15:30		↓	MW-2B		↓		2					2	BNA
↓	↓	↓	↓		↓	↓		↓		1	1					Soluble Metals
		9/12/95	16:00		✓	Temperature Blank		✓		1					1	temp.

Relinquished by:	Date / Time	Received by:
(Signature)	9/8/95 1620	(Signature)
Relinquished by: (Signature)	9/12/95 17:00	Received by: FEDEX (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time 9/13/95 0905	

Remarks Cooler #63

Lab Use Only
VOA Headspace Y N (N/A)
Breakage Y (N) N/A
Spillage Y (N) N/A
Correct Containers (Y) N N/A
Custody Seals Intact (Y) N N/A
Method of Shipment FX-P1

Rev. 2/95

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 5
Date Shipped 9/13/95

Project No. 9596.06
Project Name GW Sampling
Samplers (Signature) Laurie Gilling / Julia Francis

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Lab Use Only: Bottle/Preservatives: Al-HCl	HCl	H_2SO_4	NaOH	HNO_3 Pres	Analysis Requested
41658	8°C	9/13/95	0800		✓	MW-12D		✓		2					2	BNA
↓	↓	↓	↓		↓	↓		↓		2	2	pH<2				Total & Soluble Metals
41657			0900		✓	MW-12S		✓		2					2	BNA
↓			↓		↓	↓		↓		2	2	pH<2				Total & Soluble Metals
41658			0915		✓	EB091395		✓		2					2	BNA
↓			↓		↓	↓		↓		2	2	pH<2				Total & Soluble Metals
41659		↓	1330		✓	MW-3		✓		1	1					Soluble Metals
	↓	9/14/95	1600		✓	Temperature Blank		✓		1					1	Temperature

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	9/8/95 1620	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	9/14/95 1800	FEDEX
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time	
	9/15/95 0910	

Remarks: Cooler #1

Lab Use Only

VOA Headspace	Y	N	(N/A)
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A
Method of Shipment	FX-PI		

Rev. 2/95

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0018

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 2 of 5
Date Shipped 9/14/95

Project No. 959606
Project Name GW Sampling
Samplers (Signature) Laurie Schuring / Zelia Thomas

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: Amber	HCl	H_2SO_4	NaOH	HNO_3 Pres	Analysis Requested
41610	2°C	9/13/95	11:50		✓	MW-1A		✓		2					2	BNA
↓			↓		↓	↓		↓		2	2	✓				Total & Soluble Metals
41611			12:40		✓	MW-4B		✓		2					2	BNA
↓			↓		↓	↓		↓		2	2	✓				Total & Soluble Metals
41659			13:30		✓	MW-3		✓		2					2	BNA
↓		↓	↓		↓	↓		↓		1	1	✓				Total Metals
41662		9/14/95	0750		✓	MW-10 1115/1115D		✓		1	1	✓				Soluble Metals
	↓	9/14/95	1600		✓	Temperature Blank		✓		1					1	Temperature

MATRIX

Lab Use Only
Bottle/Preservatives

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	9/8/95 1420	[signature]
[signature]	9/14/95 1800	FEDEX (Signature)
	Date / Time	
(Signature)		(Signature)
Received for Laboratory by: [signature]	Date / Time 9/15/95 0910	

Remarks: Cooler #80

Lab Use Only

VOA Headspace	Y	N	(N/A)
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A

Method of Shipment FX-P1

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0019

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 3 of 6
Date Shipped 9/14/95

Project No. 9596.06
Project Name GW Sampling
Samplers (Signature) R Kleung / Felicia Hamrick

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	ZHNO3 PRES	Analysis Requested
46665	7°C	9/14/95	1230		✓	EB091495 SED		✓		2					2	BNA
↓		↓	↓		↓	↓		✓		1	1					Total Metals
46663		9/14/95	1000		✓	REP091495		✓		2					2	BNA
↓		↓	↓		↓	↓		✓		2	2					Total & Soluble Metals
46664		9/14/95	1050		✓	MW-9		✓		2					2	BNA
↓		↓	↓		↓	↓		✓		2	2					Total & Soluble Metals
46662		9/14/95	0950		✓	MW-10 MS/MSD		✓		3	3					Total metals
	↓	9/14/95	16:00		✓	Temperature Blank		✓		1					1	temperature

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
D M. Adler	9/12/95 1530	R Kleung
R Kleung	9/15/95 1800	FEDEX
D M. Adler	9/15/95 0910	

Remarks: Cooler #95

Lab Use Only

VOA Headspace	Y	N	(N/A)
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A
Method of Shipment	FEDEX		

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Page 1 of 1
Cooler No. 4 of 5
Date Shipped 9/14/95

Project No. 95496.06
Project Name GW Sampling
Samplers (Signature) Laurie Flaming / Zelia Hamrick

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	HNO3/HCl	Analysis Requested
46607	5°C	9/14/95	0750		✓	MW-8		✓		2					2	BNA
* ↓		↓	↓		↓	↓		↓		2	2					Total & Soluble Metals
46602			0950		✓	MW-10 MS/MSD		✓		2	2	H2O				Soluble Metals
↓			↓		↓	↓		↓		4					4	BNA
46607			1400		✓	SW-5 MS/MSD		✓		3	3	H2O				Total Metals
46608			1200		✓	Rep091495SUR		✓		1	1	H2O				Total Metals
	↓	↓	1600		✓	Temperature Blank		✓		1					1	temperature

	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
1		9/14/95 1417	
2		9/14/95 18:00	FEDEX
3			
Received for Laboratory by:		Date / Time	
		9/15/95 0910	

Remarks Cooler #131

Lab Use Only

VOA Headspace	Y	N	(N/A)
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A

Method of Shipment FX-PL

Rev. 2/95

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Page 1 of 3
Cooler No. 5 of 5
Date Shipped 9/14/95

Project No. 95K0.06
Project Name GW Sampling
Samplers (Signature) Laurie Lohring / Zofia Kramek

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	Lab Use Only Bottle/Preservatives	Analysis Requested
46687	5°C	9/14/95	14:00		✓	SW-5 MS/MSD		✓		4	4	BNA
46689			1315		✓	SW-4		✓		1	1-pH<2	Total metals
↓			↓		↓	↓		✓		2	2	BNA
46688			1200		✓	Rep091495 QUR		✓		2	2	BNA
46557		9/13/95	0900		✓	MW-12S		✓		3	3	VOA
46556			0800		✓	MW-12D		✓		3	3	
46558			1015		✓	EB091395		✓		2	2	
46559			1330		✓	MW-3		✓		3	3	
46560			1150		✓	MW-4A		✓		3	3	
46561	↓		12:10		✓	MW-4B		✓		3	3	

	Date / Time	Received by:
Relinquished by: (Signature)	9/14/95 0750	(Signature)
Relinquished by: (Signature)	9/14/95 18:00	Received by: FedEx (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time	

Remarks Cooler #110

Lab Use Only
VOA Headspace Y (N) N/A
Breakage Y (N) N/A
Spillage Y (N) N/A
Correct Containers (Y) N N/A
Custody Seals Intact (Y) N N/A
Method of Shipment FX-PL

Rev 7/95

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№ 8027

00022

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SAMPLE DETAILS:
Page 2 of 2
Cooler No. 5 of 5
Date Shipped 9/14/95

Project No. 9596.06
Project Name GW Sampling
Samplers (Signature) Laura Fleming / Julia Kranick

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	Other pH 2 H2SO4	NaOH	HCl pH<2	Analysis Requested
46662	5°C	9/14/95	0950		✓	MW-10 ms/msd		✓		6	6				VOA
46665			1230			EB091495 soil		✓		2	2				
46663			1000			Rep 091495		✓		3	3				
46664			1050			MW-9		✓		3	3				
46666			0850			MW-8		✓		3	3				
46667			1400			SW-5 ms/msd		✓		6	6				
46668			1200			Rep 091495 sw		✓		3	3				
46669			1345			SW-4		✓		3	3				
46670			1100		✓	TB091495 #457		✓		2	2				
			16:00		✓	Temperature Blank		✓		1				1	Temperature

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Laura Fleming	9/14/95 1530	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	9/14/95 1800	Fedex
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time	

Remarks: Cooler #110

Lab Use Only
VOA Headspace Y (N) N/A
Breakage Y (N) N/A
Spillage Y (N) N/A
Correct Containers (Y) N N/A
Custody Seals Intact (Y) N N/A
Method of Shipment FX-PL

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 4
Date Shipped 9/15/95

Project No. 9596.06
Project Name GW Sampling
Samplers (Signature) Laurie Gokeling

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	HNO3 Res	Analysis Requested
4715	3°C	9/15/95	0900		✓	mw-16D ms/msD		✓		4					4	BNA
↓			↓		↓	↓		↓		6	6					Total & Soluble Metals
4716			1700		✓	mw-7		✓		1	1					Soluble Metals
↓			↓		↓	↓		↓		1	1					Total Metals
↓		↓	↓		↓	↓		↓		2				2		BNA
	↓	9/15/95	1900		✓	Temperature Blank		✓		1				1		Temperature

Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	9/15/95 1015	
Relinquished by: (Signature)	9/15/95 1700	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time 9/16/95 0905	

Remarks: Cooler # 119

Lab Use Only

VOA Headspace	Y	N	(N/A)
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A
Method of Shipment	FX-SAT		

Rev. 2/95

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 2 of 4
Date Shipped 9/15/95

Project No. 95916.06
Project Name GW Sampling
Samplers (Signature) Laurie Scheuing / Zelia Kn

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	ND Res	Analysis Requested
4717	2°C	9/15/95	1600		✓	MW-6		✓		2					2	BNA
↓			↓		↓	↓		↓		2	2					Total & Soluble metals
4718			0920		✓	MW-18S		✓		2					2	BNA
↓			↓		↓	↓		↓		2	2					Total & Soluble metals
4719		↓	0915		✓	MW-16S		✓		2	2					Total & Soluble metals
4721		9/14/95	1840		✓	EB091495SUR		✓		1	1				1	~~BNA~~ Total metals
4719		9/15/95	0815		✓	MW-16S		✓		1					1	BNA
4720		9/15/95	1215		✓	MW-11D		✓		1	1					Soluble Metals
	↓	9/15/95	1900		✓	Temperature Blank		✓		1					1	Temperature

Relinquished by:	Date / Time	Received by:
(Signature)	9/8/95 1645	(Signature)
(Signature)	9/15/95 2000	Fedex (Signature)
(Signature)		(Signature)
Received for Laboratory by: (Signature)	Date / Time 9/16/95 0905	

Remarks: Cooler #4

Lab Use Only

VOA Headspace	Y	N	(N/A)
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A

Method of Shipment FX-SAT

Rev 2/95

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Page 1 of 1
Cooler No. 3 of 4
Date Shipped 9/15/95

Project No. 9596.06
Project Name GW Sampling
Samplers (Signature) Laurie Kleeming / Z Khanid

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	NaPres	Analysis Requested
4721	2°C	9/14/95	1840		✓	EB091495 SUR		✓		2				2		BNA
4720	↓	9/15/95	12:15		✓	MW-11D		✓		2				2		BNA
↓			↓		✓	↓		✓		1	1					Total Metals
4719			0815		✓	MW-16S		✓		1				1		BNA
4722			1240		✓	MW-11S		✓		2				2		BNA
↓			↓		✓	↓		✓		2	2					Total & Soluble Metals
4723		↓	10:00		✓	REP091595		✓		2	2					Total & Soluble Metals
	↓	9/15/95	1700		✓	Temperature Blank		✓		1				1		Temperature

Relinquished by:	Date / Time	Received by:
(Signature)	9/8/95 1620	(Signature)
Relinquished by: (Signature)	9/15/95 0800	Received by: FEDEX (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date / Time 9/16/95 0905	

Remarks: Cooler #135

Lab Use Only

VOA Headspace	Y	N	(N/A)
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	(Y)	N	N/A

Method of Shipment FX-SAT

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SAMPLE DETAILS:
Page 1 of 2
Cooler No. 4 of 4
Date Shipped 9/15/95

Project No. 95960.06
Project Name GW Sampling
Samplers (Signature) Laurie Lokeming / Z Hamid

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH	No Pres	Analysis Requested
4713	2°C	9/15/95	1000		✓	Rep091595		✓		2					2	BNA
		9/15/95	1:00		✓	Temperature Blank		✓		1					1	temperature
4715			0900		✓	MW-16 MS/MSD		✓		6	6					VOA
4716			1700		✓	MW-7		✓		3	3					
4717			1600		✓	MW-6		✓		3	3					
4718			0920		✓	MW-18S		✓		3	3					
4719			0815		✓	MW-16S		✓		3	3					
4721		9/14/95	1840		✓	EB091495SUR		✓		2	2					
4720		9/15/95	1215		✓	MW-11D		✓		3	3					
4722	↓	↓	1240		✓	MW-11S		✓		3	3					

	Date / Time	
Relinquished by: (Signature) Brian Richard	9/15/95 1620	Received by: (Signature) L Lokeming
Relinquished by: (Signature) L Lokeming	9/15/95 2000	Received by: (Signature) FEDEX
Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Received for Laboratory by: (Signature) Sandra M. Allen	Date 9/16/95 Time 0935	

Remarks: Cooler #3

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	FX-SAT

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SAMPLE DETAILS:
Page 2 of 2
Cooler No. 4 of 4
Date Shipped 9/15/95

Project No. 959600
Project Name GW Sampling
Samplers (Signature) R Scheuing

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water	Other	Total # of Containers	HNO3	HCl	H2SO4	NaOH								Analysis Requested
4723	5°C	9/15/95	1000		✓	Rep091595		✓		3		3										VOA
4724	↓	↓	1900		✓	TB091595 #455		✓		2		2										↓

MATRIX: Soil/Sed/Sludge | Water | Other | Total # of Containers
Lab Use Only — Bottle/Preservatives: HNO3 | HCl | H2SO4 | NaOH

	Date / Time		
Relinquished by: (Signature) R Scheuing	9/13/95 1000	Received by: (Signature) R Scheuing	
Relinquished by: (Signature) R Scheuing	9/15/95 1200	Received by: (Signature) Fedex	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	
Received for Laboratory by: (Signature)	Date / Time 9/14/95 0905		

Remarks: Cooler #3

Lab Use Only

VOA Headspace	Y (N) N/A
Breakage	Y (N) N/A
Spillage	Y (N) N/A
Correct Containers	(Y) N N/A
Custody Seals Intact	(Y) N N/A
Method of Shipment	FX-SAT

Rev. 2/95

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SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped

Project No. 95960 6
Project Name GW & Del. Pond Sampling
Samplers (Signature) Laurie Fleming

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	MATRIX: Soil/Sed/Sludge	Water	Other	Total # of Containers	Bottle/Preservatives: HNO3	HCl	H2SO4	NaOH	None 60ml	RNDC 500mL	LNDC 250mL	None 250mL	None 40mL	Analysis Requested
4728	7°C	9/14/95	1440		✓	DP-1	✓			2					2					VOA (8240 LL), % Solids
↓	↓	↓	↓	✓	✓	↓	✓			1						1				BNA / Metals
4729			1500		✓	DP-2	✓			2					2					VOA (8240 LL), % Solids
↓			↓	✓		↓	✓			2							2			BNA / Metals
4730			1460		✓	Rep091495 SED	✓			2					2					VOA (8240 LL), % Solids
↓		↓	↓	✓		↓	✓			1						1				BNA / Metals
	↓	9/15/95	900		✓	Temperature Blank		✓		1								1		temperature

	Date / Time		
Relinquished by: (Signature)	9/15/95 1600	Received by: (Signature)	
Relinquished by: (Signature)	9/16/95 1700	Received by: TRR (Signature)	
Relinquished by: (Signature)	9/18/95 0800	Received by: (Signature)	
Received for Laboratory by: (Signature)	Date / Time 9/19/95 0907		

Remarks
Cooler #92
Metals: Al, Sb, As, Ba, Cd, Cr, Co, Cu, Pb, Hg, K, Se, Ag, Zn

Deliverables
Water decanted by DMA

Lab Use Only

VOA Headspace	Y	(N)	N/A
Breakage	Y	(N)	N/A
Spillage	Y	(N)	N/A
Correct Containers	(Y)	N	N/A
Custody Seals Intact	Y	N	(N/A)
Method of Shipment	FX		

Rev. 2/9

DISTRIBUTION: Original and yellow copies accompany sample shipment to laboratory; Pink copy retained by samplers.

№ 8047

CHAIN OF CUSTODY RECORD

ECKENFELDER INC.

Ship to:
ECKENFELDER INC.
227 French Landing Drive
Nashville, TN. 37228
Phone No. (615) 255-2288
Fax No. (615) 256-8332
Attn: Lab

Send Invoice To:
Name Tim Roper
Company
Address
City & State
Phone
P.O. #

Send Results To:
Name Tim Roper
Company
Address
City & State
Phone
Fax

SAMPLE DETAILS:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 10/16/95

Project No. 9516.06
Project Name GW Sampling
Samplers (Signature) Susie Fleming / E. Simbeck

Lab Use Only Lab #/Temp.		Date Sampled	Time	Comp.	Grab	Sample Location/ Description	Soil/Sed/Sludge	Water (ground)	Other	Total # of Containers	Bottle/Preservatives: HNO3	Bottle/Preservatives: THCl	Bottle/Preservatives: pH<2 H2SO4	Bottle/Preservatives: NaOH	Bottle/Preservatives: HNO3 pres	Analysis Requested
5482	3°C	10/16/95	1115		✓	MW-17S		✓		3		3				VOA
↓	↓	↓	↓		↓	↓				2	2					Total & Soluble Metals
↓			↓		↓	↓				3				3		BNA
5483			11:30		✓	SW-3		Surface		2		2				VOA
↓			↓		↓	↓				1		1				Total Metals
↓			↓		↓	↓				2				2		BNA
5484			12:15		✓	SW-2				3		3				VOA
↓			↓		↓	↓				1	1					Total Metals
↓			↓		↓	↓				2				2		BNA
5485	↓	↓	16:00		✓	TBD1695 #505		✓		2		2				VOA

	Signature	Date / Time	Received by: Signature
Relinquished by:		10/16/95 1600	
Relinquished by:		10/16/95 16:00	Received by: FedEx
Relinquished by:		Date / Time	Received by:
Received for Laboratory by:		Date / Time 10/17/95 0905	

Remarks: pls Temperature Blank

Cooler #23

Lab Use Only:
VOA Headspace Y (N) N/A
Breakage Y (N) N/A
Spillage Y (N) N/A
Correct Containers (Y) N N/A
Custody Seals Intact (Y) N N/A
Method of Shipment Fx-P

Rev. 9/95

DISTRIBUTION: Original and yellow copies accompany sample shipment to laboratory; Pink copy retained by samplers.

0030

№ 08480

APPENDIX E

WATER QUALITY DATA

HYDROPUNCH® ANALYTICAL RESULTS

HYDROPUNCH® SAMPLING RESULTS
(Group 1 of 4)

Sample Name	Depth (feet)	Date	Acetone (µg/L)	Benzene (µg/L)	Bromo-dichloro-methane (µg/L)	Bromoform (µg/L)	Bromo-methane (µg/L)	2-Butanone (µg/L)	Carbon Disulfide (µg/L)	Carbon Tetra-chloride (µg/L)	Chloro-benzene (µg/L)	Chloro-ethane (µg/L)
HP-1	28-29	6/23/95	7.6 J	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-1	42-43	6/23/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-2	26-29	6/8/95	5 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	2 U
HP-3	23-24	7/5/95	30 J	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-3	43-44	7/7/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-4	27.5-28.5	6/21/95	25 U	5 U	5 U	5 U	10 U	50 U	10 U	5 U	5 U	10 U
HP-4	42-43	6/21/95	125 U	25 U	25 U	25 U	50 U	250 U	50 U	25 U	25 U	50 U
HP-5	26-28	6/7/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-6	23-24	6/19/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-7	23-24	7/14/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-8	23-24	7/13/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-8	42-43	7/13/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-9	22-23	7/13/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-10	21-24	6/8/95	5 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	2 U
HP-10	37-37.5	6/8/95	250 U	50 U	50 U	50 U	50 U	500 U	50 U	50 U	50 U	100 U
HP-10A	32-34	6/30/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-11	21-24	6/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
HP-12	23-24	6/28/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-12	42-43	6/29/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-13	22-22.5	6/16/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
HP-13	43-44	6/16/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	200 E
HP-14	25	6/6/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-15	28-29	6/29/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-15	43-44	6/29/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
HP-16	23-24	6/28/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
DUP060895	(HP-10, 21-24)	6/8/95	5 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	2 U

U - analyzed for, but not detected, number is reporting limit; J - an estimated value; B - present in the method blank;
E- exceeds instrument calibration limits; D - diluted sample.

HYDROPUNCH® SAMPLING RESULTS (Continued)
(Group 1 of 4)

Sample Name	Depth (feet)	Date	Acetone (µg/L)	Benzene (µg/L)	Bromo-dichloro-methane (µg/L)	Bromoform (µg/L)	Bromo-methane (µg/L)	2-Butanone (µg/L)	Carbon Disulfide (µg/L)	Carbon Tetra-chloride (µg/L)	Chloro-benzene (µg/L)	Chloro-ethane (µg/L)
DUP071395	(HP-8, 23-24')	7/13/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
EB062295		6/22/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
EB071795		7/17/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB060695		6/6/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB060795		6/7/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB060895		6/8/95	5 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	2 U
TB061295		6/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
TB061695		6/16/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
TB061995		6/19/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB062195		6/21/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB062395		6/23/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB062895		6/28/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB062995		6/29/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB063095		6/30/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB070795		7/7/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB071395		7/13/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U
TB071495		7/14/95	5 U	1 U	1 U	1 U	2 U	10 U	2 U	1 U	1 U	2 U

U - analyzed for, but not detected, number is reporting limit; J - an estimated value; B - present in the method blank;
E- exceeds instrument calibration limits; D - diluted sample.

SURFACE AND GROUNDWATER SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS
(Group 1 of 4)

Sample Name	Screened Interval (a)	Date	Acetone (µg/L)	Benzene (µg/L)	Bromo-dichloro-methane (µg/L)	Bromoform (µg/L)	Bromo-methane (µg/L)	2-Butanone (µg/L)	Carbon Disulfide (µg/L)	Carbon Tetra-chloride (µg/L)	Chloro-benzene (µg/L)	Chloro-ethane (µg/L)
Water Quality Standard (b):				0.7						5	20	
MW-1	R	9/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-2A	S	9/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-2B	D	9/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-3	S	9/13/95	500 U	100 U	100 U	100 U	200 U	1,000 U	100 U	100 U	100 U	200 U
MW-4A	S	9/13/95	5,000 U	1,000 U	1,000 U	1,000 U	2,000 U	10,000 U	1,000 U	1,000 U	1,000 U	2,000 U
MW-4B	S	9/13/95	50 U	10 U	10 U	10 U	20 U	100 U	10 U	10 U	10 U	20 U
MW-6	D	9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-7	D	9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-8	S	9/14/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-9	S	9/14/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-10	S	9/14/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-11S	S	9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-11D	D	9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-12S	S	9/13/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-12D	D	9/13/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-13S	S	9/11/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-13D	D	9/11/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-14S	S	9/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-14D	D	9/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-15S	S	9/11/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-15D	D	9/11/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-16S	S	9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-16D	D	9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
VOLATILE ORGANIC COMPOUNDS
(Group 1 of 4)

Sample Name	Screened Interval	Date	Acetone (µg/L)	Benzene (µg/L)	Bromo-dichloro-methane (µg/L)	Bromoform (µg/L)	Bromo-methane (µg/L)	2-Butanone (µg/L)	Carbon Disulfide (µg/L)	Carbon Tetra-chloride (µg/L)	Chloro-benzene (µg/L)	Chloro-ethane (µg/L)
Water Quality Standard:				0.7						5	20	
MW-17S	D	10/16/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
MW-18S	D	9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
SW-2	S	10/16/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
SW-3	S	10/16/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
REP091495	(MW-8)	9/14/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
REP091595	(MW-11D)	9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
EB091295		9/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
EB091395		9/13/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
EB091495SUR		9/14/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
TB091295		9/12/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
TB091495		9/14/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
TB091595		9/15/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U
TB101695		10/16/95	5 U	1 U	1 U	1 U	2 U	10 U	1 U	1 U	1 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
VOLATILE ORGANIC COMPOUNDS
(Group 2 of 4)

Sample Name	Screened Interval	Date	Chloroform (µg/L)	Chloro-methane (µg/L)	Dibromo-chloro-methane (µg/L)	1,2-Dichloro-benzene (c) (µg/L)	1,3-Dichloro-benzene (c) (µg/L)	1,4-Dichloro-benzene (c) (µg/L)	Dichloro-difluoro-methane (µg/L)	1,1-Dichloro-ethane (µg/L)	1,2-Dichloro-ethane (µg/L)	1,1-Dichloro-ethene (µg/L)
Water Quality Standard:			7			4.7	5	4.7			0.8	
MW-1	R	9/12/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-2A	S	9/12/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-2B	D	9/12/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-3	S	9/13/95	100 U	200 U	100 U	2 U	2 U	2 U	200 U	450 JD	--	6,500 D
MW-4A	S	9/13/95	1,000 U	2,000 U	1,000 U	0.7 J	2 U	2 U	2,000 U	1,000 U	1,000 U	1,000 U
MW-4B	S	9/13/95	10 U	20 U	10 U	2 U	2 U	2 U	20 U	10 U	10 U	3.7 JD
MW-6	D	9/15/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-7	D	9/15/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-8	S	9/14/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-9	S	9/14/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-10	S	9/14/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-11D	D	9/15/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-11S	S	9/15/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-12D	D	9/13/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-12S	S	9/13/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-13D	D	9/11/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-13S	S	9/11/95	1 U	2 U	1 U	2 U	2 U	2 U	2.4 J	1 U	1 U	1 U
MW-14D	D	9/12/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-14S	S	9/12/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-15D	D	9/11/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-15S	S	9/11/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-16D	D	9/15/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
MW-16S	S	9/15/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
VOLATILE ORGANIC COMPOUNDS
(Group 2 of 4)

Sample Name	Screened Interval	Date	Chloroform (µg/L)	Chloro-methane (µg/L)	Dibromo-chloro-methane (µg/L)	1,2-Dichloro-benzene (c) (µg/L)	1,3-Dichloro-benzene (c) (µg/L)	1,4-Dichloro-benzene (c) (µg/L)	Dichloro-difluoro-methane (µg/L)	1,1-Dichloro-ethane (µg/L)	1,2-Dichloro-ethane (µg/L)	1,1-Dichloro-ethene (µg/L)
Water Quality Standard:			7			4.7	5	4.7			0.8	
MW-17S	D	10/16/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
MW-18S	D	9/15/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
SW-2	S	10/16/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
SW-3	S	10/16/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
REP091495	(MW-8)	9/14/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
REP091595	(MW-11D)	9/15/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
EB091295		9/12/95	1 U	2 U	1 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U
EB091395		9/13/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
EB091495SUR		9/14/95	1 U	2 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
TB091295		9/12/95	1 U	2 U	1 U	--	--	--	1 U	1 U	1 U	1 U
TB091495		9/14/95	1 U	2 U	1 U	--	--	--	2 U	1 U	1 U	1 U
TB091595		9/15/95	1 U	2 U	1 U	--	--	--	2 U	1 U	1 U	1 U
TB101695		10/16/95	1 U	2 U	1 U	--	--	--	1 U	1 U	1 U	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
VOLATILE ORGANIC COMPOUNDS
(Group 3 of 4)

Sample Name	Screened Interval	Date	cis-1,2-Dichloro-ethene (µg/L)	trans-1,2-Dichloro-ethene (µg/L))	1,2-Dichloro-propane (µg/L)	cis-1,3-Dichloro-propene (µg/L)	trans-1,3-Dichloro-propene (µg/L)	Ethyl-benzene (µg/L)	2-Hexanone (µg/L)	4-Methyl-2-pentanone (µg/L)	Methylene Chloride (µg/L)	Styrene (µg/L)
Water Quality Standard:												5
MW-1	R	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 J	1 U
MW-2A	S	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-2B	D	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-3	S	9/13/95	100 U	100 U	100 U	100 U	100 U	100 U	200 U	200 U	100 U	100 U
MW-4A	S	9/13/95	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	2,000 U	2,000 U	1,000 U	1,000 U
MW-4B	S	9/13/95	110	10 U	10 U	10 U	10 U	10 U	20 U	20 U	10 U	10 U
MW-6	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-7	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-8	S	9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-9	S	9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-10	S	9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-11D	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-11S	S	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-12D	D	9/13/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-12S	S	9/13/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-13D	D	9/11/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-13S	S	9/11/95	3.4 J	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-14D	D	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1.2 J	1 U
MW-14S	S	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-15D	D	9/11/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-15S	S	9/11/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-16D	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-16S	S	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
VOLATILE ORGANIC COMPOUNDS
(Group 3 of 4)

Sample Name	Screened Interval	Date	cis-1,2-Dichloro-ethene (µg/L)	trans-1,2-Dichloro-ethene (µg/L))	1,2-Dichloro-propane (µg/L)	cis-1,3-Dichloro-propene (µg/L)	trans-1,3-Dichloro-propene (µg/L)	Ethyl-benzene (µg/L)	2-Hexanone (µg/L)	4-Methyl-2-pentanone (µg/L)	Methylene Chloride (µg/L)	Styrene (µg/L)
Water Quality Standard:												5
MW-17S	D	10/16/95	1 U	2 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
MW-18S	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
SW-2	S	10/16/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
SW-3	S	10/16/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
REP091495	(MW-8)	9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
REP091595	(MW-11D)	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
EB091295		9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
EB091395		9/13/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
EB091495SUR		9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
TB091295		9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
TB091495		9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
TB091595		9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U
TB101695		10/16/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
VOLATILE ORGANIC COMPOUNDS
(Group 4 of 4)

Sample Name	Screened Interval	Date	1,1,2,2-Tetrachloro-ethane (µg/L)	Tetrachloro-ethene (µg/L))	Toluene (µg/L)	1,1,1-Trichloro-ethane (µg/L)	1,1,2-Trichloro-ethane (µg/L)	Trichloro-ethene (µg/L)	Trichloro-fluouro-methane (µg/L)	Vinyl Chloride (µg/L)	Total Xylenes (µg/L)
Water Quality Standard:							0.6			2	
MW-1	R	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-2A	S	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-2B	D	9/12/95	1 U	1 U	1 U	1.8 J	1 U	1.1 J	2 U	2 U	1 U
MW-3	S	9/13/95	100 U	100 U	100 U	24,000 D	100 U	42,000 D	200 U	200 U	100 U
MW-4A	S	9/13/95	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	990,000 D	2,000 U	2,000 U	1,000 U
MW-4B	S	9/13/95	10 U	10 U	10 U	10 U	10 U	68,000 D	20 U	20 U	10 U
MW-6	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-7	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-8	S	9/14/95	1 U	1 U	1 U	1 U	1 U	4.3 J	2 U	2 U	1 U
MW-9	S	9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-10	S	9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-11D	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U
MW-11S	S	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-12D	D	9/13/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-12S	S	9/13/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-13D	D	9/11/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-13S	S	9/11/95	1 U	1 U	1 U	1 U	1 U	8.5 J	2 U	2 U	1 U
MW-14D	D	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-14S	S	9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-15D	D	9/11/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-15S	S	9/11/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-16D	D	9/15/95	1 U	1 U	1 U	1 U	1 U	2.9 J	2 U	2 U	1 U
MW-16S	S	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
VOLATILE ORGANIC COMPOUNDS
(Group 4 of 4)

Sample Name	Screened Interval	Date	1,1,2,2-Tetrachloro-ethane (µg/L)	Tetrachloro-ethene (µg/L))	Toluene (µg/L)	1,1,1-Trichloro-ethane (µg/L)	1,1,2-Trichloro-ethane (µg/L)	Trichloro-ethene (µg/L)	Trichloro-fluouro-methane (µg/L)	Vinyl Chloride (µg/L)	Total Xylenes (µg/L)
Water Quality Standard:							0.6			2	
MW-17S	D	10/16/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
MW-18S	D	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
SW-2	S	10/16/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
SW-3	S	10/16/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
REP091495	(MW-8)	9/14/95	1 U	1 U	1 U	1 U	1 U	4 J	2 U	2 U	1 U
REP091595	(MW-11D)	9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
EB091295		9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
EB091395		9/13/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
EB091495SUR		9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
TB091295		9/12/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
TB091495		9/14/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
TB091595		9/15/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
TB101695		10/16/95	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U

(a) S indicates well screened in shallow overburden; D indicates well screened in deep overburden; R indicates well screened in bedrock

(b) Water quality standards taken from NYSDEC Water Quality Standards, Table 1, Section 703.5. Where no value is given, standard was not listed on table.

(c) Analytical results for 1,2-, 1,3-, and 1,4- dichlorobenzene taken from the 8270 scan.

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 1 of 6)

Sample Name	Screened Interval (a)	Date	Acenaphthene (µg/L)	Acenaphthylene (µg/L)	Anthracene (µg/L)	Benzo(a)-anthracene (µg/L)	Benzo(a)-pyrene (µg/L)	Benzo(b)-fluoranthene (µg/L)	Benzo(g,h,i)-perylene (µg/L)	Benzo(k)-fluoranthene (µg/L)	4-Bromophenyl-phenylether (µg/L)
Water Quality Standard (b):			20				ND				
MW-1	R	9/12/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-2A	S	9/12/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-2B	D	9/12/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-3	S	9/13/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-4A	S	9/13/95	0.47 J	2 U	0.26 J	2 U	2 U	2 U	2 U	2 U	2 U
MW-4B	S	9/13/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-6	D	9/15/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-7	D	9/15/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-8	S	9/14/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-9	S	9/14/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-10	S	9/14/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-11S	S	9/15/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-11D	D	9/15/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-12S	S	9/13/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-12D	D	9/13/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-13S	S	9/11/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-13D	D	9/11/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-14S	S	9/12/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-14D	D	9/12/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-15S	S	9/11/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-15D	D	9/11/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-16S	S	9/15/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 1 of 6)

Sample Name	Screened Interval	Date	Acenaphthene (µg/L)	Acenaphthylene (µg/L)	Anthracene (µg/L)	Benzo(a)-anthracene (µg/L)	Benzo(a)-pyrene (µg/L)	Benzo(b)-fluoranthene (µg/L)	Benzo(g,h,i)-perylene (µg/L)	Benzo(k)-fluoranthene (µg/L)	4-Bromophenyl-phenylether (µg/L)
Water Quality Standard:			20				ND				
MW-16D	D	9/15/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-17S	D	10/16/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-18S	D	9/15/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
SW-2	S	10/16/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
SW-3	S	10/16/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
REP091495	(MW-8)	9/14/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
REP091595	(MW-11D)	9/15/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
EB091295		9/12/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
EB091395		9/13/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
EB091495SUR		9/14/95	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 2 of 6)

Sample Name	Screened Interval	Date	Butyl-benzyl-phthalate (µg/L)	Di-n-butyl-phthalate (µg/L)	Carbazole (µg/L)	4-Chloro-3-methylphenol (µg/L)	4-Chloro-aniline (µg/L)	bis(2-Chloroethoxy) methane (µg/L)	bis(2-Chloroethyl) ether (µg/L)	bis(2-Chloro-isopropyl) ether (µg/L)	2-Chloro-naphthalene (µg/L)	2-Chloro-phenol (µg/L)
Water Quality Standard:				50					1		10	
MW-1	R	9/12/95	2 U	0.99 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-2A	S	9/12/95	2 U	0.35 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-2B	D	9/12/95	2 U	0.61 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-3	S	9/13/95	2 U	1.3 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-4A	S	9/13/95	2 U	0.79 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-4B	S	9/13/95	2 U	0.46 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-6	D	9/15/95	2 U	0.27 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-7	D	9/15/95	2 U	0.38 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-8	S	9/14/95	2 U	0.57 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-9	S	9/14/95	2 U	0.68 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-10	S	9/14/95	2 U	0.36 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-11S	S	9/15/95	2 U	2 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-11D	D	9/15/95	2 U	0.27 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-12S	S	9/13/95	2 U	0.41 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-12D	D	9/13/95	2 U	0.37 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-13S	S	9/11/95	2 U	0.67 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-13D	D	9/11/95	2 U	1.9 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-14S	S	9/12/95	0.55 J	1.2 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-14D	D	9/12/95	2 U	1.1 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-15S	S	9/11/95	2 U	0.57 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-15D	D	9/11/95	2 U	0.61 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-16S	S	9/15/95	2 U	0.84 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 2 of 6)

Sample Name	Screened Interval	Date	Butyl-benzyl-phthalate (µg/L)	Di-n-butyl-phthalate (µg/L)	Carbazole (µg/L)	4-Chloro-3-methylphenol (µg/L)	4-Chloro-aniline (µg/L)	bis(2-Chloroethoxy) methane (µg/L)	bis(2-Chloroethyl) ether (µg/L)	bis(2-Chloro-isopropyl) ether (µg/L)	2-Chloro-naphthalene (µg/L)	2-Chloro-phenol (µg/L)
Water Quality Standard:				50					1		10	
MW-16D	D	9/15/95	2 U	0.56 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-17S	D	10/16/95	2 U	0.42 J	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
MW-18S	D	9/15/95	2 U	0.35 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
SW-2	S	10/16/95	2 U	0.26 J	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
SW-3	S	10/16/95	2 U	0.33 J	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
REP091495	(MW-8)	9/14/95	2 U	0.49 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
REP091595	(MW-11D)	9/15/95	2 U	0.2 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
EB091295		9/12/95	2 U	1.8 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
EB091395		9/13/95	2 U	0.35 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U
EB091495SUR		9/14/95	2 U	0.29 JB	2 U	2 U	1 U	1 U	2 U	1 U	2 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 3 of 6)

Sample Name	Screened Interval	Date	4-Chlorophenyl-phenylether (µg/L)	Chrysene (µg/L)	Dibenz(a,h)-anthracene (µg/L)	Dibenzofuran (µg/L)	3,3'-Dichloro-benzidine (µg/L)	2,4-Dichloro-phenol (µg/L)	Diethyl-phthalate (µg/L)	Dimethyl-phthalate (µg/L)	2,4-Dimethyl-phenol (µg/L)	4,6-Dinitro-2-methyl-phenol (µg/L)
Water Quality Standard:								0.3				
MW-1	R	9/12/95	2 U	1 U	2 U	0.42 J	2 U	2 U	0.29 J	2 U	2 U	4 U
MW-2A	S	9/12/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-2B	D	9/12/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-3	S	9/13/95	2 U	1 U	2 U	2 U	2 U	2 U	0.45 J	2 U	2 U	4 U
MW-4A	S	9/13/95	2 U	1 U	2 U	0.42 J	2 U	2 U	0.19 J	2 U	2 U	4 U
MW-4B	S	9/13/95	2 U	1 U	2 U	2 U	2 U	2 U	0.15 J	2 U	2 U	4 U
MW-6	D	9/15/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-7	D	9/15/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-8	S	9/14/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-9	S	9/14/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-10	S	9/14/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-11S	S	9/15/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-11D	D	9/15/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-12S	S	9/13/95	2 U	1 U	2 U	2 U	2 U	2 U	0.26 J	2 U	2 U	4 U
MW-12D	D	9/13/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-13S	S	9/11/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-13D	D	9/11/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-14S	S	9/12/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-14D	D	9/12/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-15S	S	9/11/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-15D	D	9/11/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-16S	S	9/15/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 3 of 6)

Sample Name	Screened Interval	Date	4-Chlorophenyl-phenylether (µg/L)	Chrysene (µg/L)	Dibenz(a,h)-anthracene (µg/L)	Dibenzofuran (µg/L)	3,3'-Dichloro-benzidine (µg/L)	2,4-Dichloro-phenol (µg/L)	Diethyl-phthalate (µg/L)	Dimethyl-phthalate (µg/L)	2,4-Dimethyl-phenol (µg/L)	4,6-Dinitro-2-methyl-phenol (µg/L)
Water Quality Standard:								0.3				
MW-16D	D	9/15/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-17S	D	10/16/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
MW-18S	D	9/15/95	2 U	1 U	2 U	2 U	2 U	2 U	0.16 J	2 U	2 U	4 U
SW-2	S	10/16/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
SW-3	S	10/16/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
REP091495	(MW-8)	9/14/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
REP091595	(MW-11D)	9/15/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
EB091295		9/12/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
EB091395		9/13/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U
EB091495SUR		9/14/95	2 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	4 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 4 of 6)

Sample Name	Screened Interval	Date	2,4-Dinitrophenol (µg/L)	2,4-Dinitrotoluene (µg/L)	2,6-Dinitrotoluene (µg/L)	bis(2-Ethylhexyl) phthalate (µg/L)	Fluoranthene (µg/L)	Fluorene (µg/L)	Hexachlorobenzene (µg/L)	Hexachlorobutadiene (µg/L)	Hexachlorocyclopentadiene (µg/L)	Hexachloroethane (µg/L)
Water Quality Standard:						50			0.35	0.5	1	
MW-1	R	9/12/95	7 U	2 U	1 U	1.4 J	2 U	1 U	2 U	2 U	1 U	1 U
MW-2A	S	9/12/95	7 U	2 U	1 U	1.3 J	2 U	1 U	2 U	2 U	1 U	1 U
MW-2B	D	9/12/95	7 U	2 U	1 U	1.7 J	2 U	1 U	2 U	2 U	1 U	1 U
MW-3	S	9/13/95	7 U	2 U	1 U	0.68 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-4A	S	9/13/95	7 U	2 U	1 U	3.4 J	0.54 J	0.71 J	2 U	2 U	1 U	1 U
MW-4B	S	9/13/95	7 U	2 U	1 U	0.34 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-6	D	9/15/95	7 U	2 U	1 U	4.5 J	2 U	1 U	2 U	2 U	1 U	1 U
MW-7	D	9/15/95	7 U	2 U	1 U	1.2 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-8	S	9/14/95	7 U	2 U	1 U	0.88 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-9	S	9/14/95	7 U	2 U	1 U	0.9 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-10	S	9/14/95	7 U	2 U	1 U	0.44 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-11S	S	9/15/95	7 U	2 U	1 U	10 J	2 U	1 U	2 U	2 U	1 U	1 U
MW-11D	D	9/15/95	7 U	2 U	1 U	0.21 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-12S	S	9/13/95	7 U	2 U	1 U	0.66 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-12D	D	9/13/95	7 U	2 U	1 U	0.36 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-13S	S	9/11/95	7 U	2 U	1 U	1 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-13D	D	9/11/95	7 U	2 U	1 U	0.76 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-14S	S	9/12/95	7 U	2 U	1 U	6.9 J	2 U	1 U	2 U	2 U	1 U	1 U
MW-14D	D	9/12/95	7 U	2 U	1 U	0.25 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-15S	S	9/11/95	7 U	2 U	1 U	3.7 J	2 U	1 U	2 U	2 U	1 U	1 U
MW-15D	D	9/11/95	7 U	2 U	1 U	0.65 JB	2 U	1 U	2 U	2 U	1 U	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 4 of 6)

Sample Name	Screened Interval	Date	2,4-Dinitrophenol (µg/L)	2,4-Dinitrotoluene (µg/L)	2,6-Dinitrotoluene (µg/L)	bis(2-Ethylhexyl) phthalate (µg/L)	Fluoranthene (µg/L)	Fluorene (µg/L)	Hexachlorobenzene (µg/L)	Hexachlorobutadiene (µg/L)	Hexachlorocyclopentadiene (µg/L)	Hexachloroethane (µg/L)
Water Quality Standard:						50			0.35	0.5	1	
MW-16S	S	9/15/95	7 U	2 U	1 U	2.5 J	2 U	1 U	2 U	2 U	1 U	1 U
MW-16D	D	9/15/95	7 U	2 U	1 U	0.79 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-17S	D	10/16/95	7 U	2 U	1 U	1.2 JB	2 U	1 U	2 U	2 U	1 U	1 U
MW-18S	D	9/15/95	7 U	2 U	1 U	3.5 J	2 U	1 U	2 U	2 U	1 U	1 U
SW-2	S	10/16/95	7 U	2 U	1 U	0.23 JB	2 U	1 U	2 U	2 U	1 U	1 U
SW-3	S	10/16/95	7 U	2 U	1 U	0.2 JB	2 U	1 U	2 U	2 U	1 U	1 U
REP091495	(MW-8)	9/14/95	7 U	2 U	1 U	0.9 JB	2 U	1 U	2 U	2 U	1 U	1 U
REP091595	(MW-11D)	9/15/95	7 U	2 U	1 U	0.21 JB	2 U	1 U	2 U	2 U	1 U	1 U
EB091295		9/12/95	7 U	2 U	1 U	1.1 JB	2 U	1 U	2 U	2 U	1 U	1 U
EB091395		9/13/95	7 U	2 U	1 U	0.23 JB	2 U	1 U	2 U	2 U	1 U	1 U
EB091495SUR		9/14/95	7 U	2 U	1 U	0.24 JB	2 U	1 U	2 U	2 U	1 U	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 5 of 6)

Sample Name	Screened Interval	Date	Indeno (1,2,3-cd) pyrene (µg/L)	Isophorone (µg/L)	2-Methyl-naphthalene (µg/L)	2-Methyl-phenol (µg/L)	4-Methyl-phenol (µg/L)	N-Nitroso-di-n-propylamine (µg/L)	N-Nitroso-diphenyl-amine (µg/L)	Naphthalene (µg/L)	2-Nitroaniline (µg/L)	3-Nitroaniline (µg/L)	4-Nitroaniline (µg/L)
Water Quality Standard:										10			
MW-1	R	9/12/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-2A	S	9/12/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-2B	D	9/12/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-3	S	9/13/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-4A	S	9/13/95	2 U	2 U	1.9 J	1 U	2 U	2 U	0.5 J	5.6 J	2 U	2 U	2 U
MW-4B	S	9/13/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-6	D	9/15/95	2 U	2 U	2 U	1 U	2 U	2 U	0.31 J	2 U	2 U	2 U	2 U
MW-7	D	9/15/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-8	S	9/14/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-9	S	9/14/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-10	S	9/14/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-11S	S	9/15/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-11D	D	9/15/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-12S	S	9/13/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-12D	D	9/13/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-13S	S	9/11/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-13D	D	9/11/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-14S	S	9/12/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-14D	D	9/12/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	0.3 J	2 U	2 U	2 U
MW-15S	S	9/11/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-15D	D	9/11/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-16S	S	9/15/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 5 of 6)

Sample Name	Screened Interval	Date	Indeno (1,2,3-cd) pyrene (µg/L)	Isophorone (µg/L)	2-Methyl-naphthalene (µg/L)	2-Methyl-phenol (µg/L)	4-Methyl-phenol (µg/L)	N-Nitroso-di-n-propylamine (µg/L)	N-Nitroso-diphenyl-amine (µg/L)	Naphthalene (µg/L)	2-Nitroaniline (µg/L)	3-Nitroaniline (µg/L)	4-Nitroaniline (µg/L)
Water Quality Standard:										10			
MW-16D	D	9/15/95	2 U	2 U	2 U	1 U	2 U	2 U	0.27 J	2 U	2 U	2 U	2 U
MW-17S	D	10/16/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MW-18S	D	9/15/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
SW-2	S	10/16/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
SW-3	S	10/16/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
REP091495	(MW-8)	9/14/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
REP091595	(MW-11D)	9/15/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
EB091295		9/12/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
EB091395		9/13/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
EB091495SUR		9/14/95	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 6 of 6)

Sample Name	Screened Interval	Date	Nitrobenzene (µg/L)	2-Nitrophenol (µg/L)	4-Nitrophenol (µg/L)	Di-n-octyl-phthalate (µg/L)	Pentachloro-phenol (µg/L)	Phenanthrene (µg/L)	Phenol (µg/L)	Pyrene (µg/L)	1,2,4-Trichloro-benzene (µg/L)	2,4,5-Trichloro-phenol (µg/L)	2,4,6-Trichloro-phenol (µg/L)
Water Quality Standard:			30				1		1		10		
MW-1	R	9/12/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-2A	S	9/12/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-2B	D	9/12/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-3	S	9/13/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-4A	S	9/13/95	1 U	1 U	2 U	2 U	5 U	2.9 J	1 U	0.38 J	2.3 J	2 U	2 U
MW-4B	S	9/13/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-6	D	9/15/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-7	D	9/15/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-8	S	9/14/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-9	S	9/14/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-10	S	9/14/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-11S	S	9/15/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-11D	D	9/15/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-12S	S	9/13/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-12D	D	9/13/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-13S	S	9/11/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-13D	D	9/11/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-14S	S	9/12/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-14D	D	9/12/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-15S	S	9/11/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-15D	D	9/11/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
SEMIVOLATILE ORGANIC COMPOUNDS
(Group 6 of 6)

Sample Name	Screened Interval	Date	Nitrobenzene (µg/L)	2-Nitrophenol (µg/L)	4-Nitrophenol (µg/L)	Di-n-octyl-phthalate (µg/L)	Pentachloro-phenol (µg/L)	Phenanthrene (µg/L)	Phenol (µg/L)	Pyrene (µg/L)	1,2,4-Trichloro-benzene (µg/L)	2,4,5-Trichloro-phenol (µg/L)	2,4,6-Trichloro-phenol (µg/L)
Water Quality Standard:			30				1		1		10		
MW-16S	S	9/15/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-16D	D	9/15/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-17S	D	10/16/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
MW-18S	D	9/15/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
SW-2	S	10/16/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
SW-3	S	10/16/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
REP091495	(MW-8)	9/14/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
REP091595	(MW-11D)	9/15/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
EB091295		9/12/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
EB091395		9/13/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U
EB091495SUR		9/14/95	1 U	1 U	2 U	2 U	5 U	2 U	1 U	2 U	2 U	2 U	2 U

(a) S indicates well screened in shallow overburden; D indicates well screened in deep overburden; R indicates well screened in bedrock

(b) Water quality standards taken from NYSDEC Water Quality Standards, Table 1, Section 703.5. Where no value is given, standard was not listed on table.

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples.

SURFACE AND GROUNDWATER SAMPLING RESULTS
INORGANIC CONSTITUENTS
(Group 1 of 3)

Sample Name	Screened Interval (a)	Date	Aluminum, Soluble (µg/L)	Aluminum, Total (µg/L)	Antimony, Soluble (µg/L)	Antimony, Total (µg/L)	Arsenic, Soluble (µg/L)	Arsenic, Total (µg/L)	Barium, Soluble (µg/L)	Barium, Total (µg/L)	Cadmium, Soluble (µg/L)	Cadmium, Total (µg/L)
Water Quality Standard (b):								25		1,000		10
MW-1	R	9/12/95	50 U	800	5 U	5 U(N)	7 U	7 U	180	250	1 U	1 U
MW-2A	S	9/12/95	50 U	51,000	5 U	5 U(N)	7 U	25	110	450	1 U	1 U
MW-2B	D	9/12/95	50 U	92,000	5 U	5 U(N)	7 U	80	140	1,100	1 U	1.1
MW-3	S	9/13/95	50 U	72,000	5 U	5 U(N)	7 U	40	79	540	1 U	1 U
MW-4A	S	9/13/95	50 U	3,500	5 U	5 U(N)	7 U	7 U	78	100	1 U	1 U
MW-4B	S	9/13/95	50 U	31,000	5 U	5 U(N)	9.7	35	44	190	1 U	1 U
MW-6	D	9/15/95	86	200,000	5.7	5 U	7 U	88	86	1,500	1 U	2.6
MW-7	D	9/15/95	53	120,000	5 U	5 U	7 U	100	96	1,300	1 U	2.4
MW-8	S	9/14/95	50 U	34,000	5 U	5 U(N)	7 U	77	78	360	1 U	1 U
MW-9	S	9/14/95	52	54,000	5 U	5 U(N)	7 U	44	100	1,100	1 U	1.4
MW-10	S	9/14/95	50 U	65,000	5 U	5 U(N)	7 U	64	120	640	1 U	1 U
MW-11S	S	9/15/95	69	81,000	5 U	5 U	7 U	46	91	700	1 U	1 U
MW-11D	D	9/15/95	64	5,700	5 U	5 U	7 U	7 U	180	220	1 U	1 U
MW-12S	S	9/13/95	57	90,000	5 U	5 U(N)	7 U	33	150	600	1 U	2.5
MW-12D	D	9/13/95	50 U	2,500	5.5	5 U(N)	8.7	7.9	120	140	1 U	1 U
MW-13S	S	9/11/95	50 U	27,000	5 U	5 U(N)	7 U	17	61	190	1 U	1 U
MW-13D	D	9/11/95	50 U	49,000	5 U	5 U(N)	12	56	60	420	1 U	1 U
MW-14S	S	9/12/95	50 U	94,000	5 U	5 U(N)	7 U	47	46	710	1 U	1 U
MW-14D	D	9/12/95	50 U	32,000	5 U	5 U(N)	7 U	16	51	270	1 U	1 U
MW-15S	S	9/11/95	50 U	55,000	5 U	5 U(N)	7 U	26	150	490	1 U	1 U
MW-15D	D	9/11/95	50 U	29,000	5 U	5 U(N)	7 U	23	59	300	1 U	1 U
MW-16S	S	9/15/95	50 U	860	5.4	5 U	7 U	7 U	1,100	1,100	9	12
MW-16D	D	9/15/95	64	24,000	5 U	5 U	13	27	120	300	1 U	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples, N - predigestion spike recovery was outside the +/- 25% control limits.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
INORGANIC CONSTITUENTS
(Group 1 of 3)

Sample Name	Screened Interval	Date	Aluminum, Soluble (µg/L)	Aluminum, Total (µg/L)	Antimony, Soluble (µg/L)	Antimony, Total (µg/L)	Arsenic, Soluble (µg/L)	Arsenic, Total (µg/L)	Barium, Soluble (µg/L)	Barium, Total (µg/L)	Cadmium, Soluble (µg/L)	Cadmium, Total (µg/L)
Water Quality Standard:								25		1,000		10
MW-17S	D	10/16/95	66	35,000	5 U	5 U	7 U	20	190	600	1 U	1.1
MW-18S	D	9/15/95	50 U	77,000	5 U	5 U	7 U	38	170	800	1 U	1 U
SW-2	S	10/16/95	--	180	--	5 U	--	7 U	--	100	--	1 U
SW-3	S	10/16/95	--	290	--	5 U	--	7 U	--	120	--	1 U
REP091495	(MW-8)	9/14/95	50 U	33,000	5 U	5 U(N)	7 U	66	78	340	1 U	1 U
REP091595	(MW-11D)	9/15/95	50 U	5,400	5 U	5 U	7 U	7 U	180	220	1 U	1 U
EB091295		9/12/95	50 U	50 U	5 U	5 U(N)	7 U	7 U	3 U	3 U	1 U	1 U
EB091395		9/13/95	50 U	50 U	5 U	5 U(N)	7 U	7 U	3 U	3 U	1 U	1 U
EB091495SUR		9/14/95	--	50 U	--	5 U	--	7 U	--	3 U	--	1 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples, N - predigestion spike recovery was outside the +/- 25% control limits.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
INORGANIC CONSTITUENTS
(Group 2 of 3)

Sample Name	Screened Interval	Date	Chromium, Soluble (µg/L)	Chromium, Total (µg/L)	Cobalt, Soluble (µg/L)	Cobalt, Total (µg/L)	Copper, Soluble (µg/L)	Copper, Total (µg/L)	Lead, Soluble (µg/L)	Lead, Total (µg/L)	Mercury, Soluble (µg/L)	Mercury, Total (µg/L)
Water Quality Standard:				50		5		200		25		2
MW-1	R	9/12/95	5 U	10	3.1	15	4 U	18	5 U	5 U	0.2 U	0.2 U
MW-2A	S	9/12/95	5 U	71	1 U	38	4 U	70	5 U	32	0.2 U	0.31
MW-2B	D	9/12/95	5 U	140	1 U	84	4 U	200	5 U	110	0.2 U	0.2 U
MW-3	S	9/13/95	5 U	100	1 U	47	4 U	100	5 U	44	0.2 U	0.52
MW-4A	S	9/13/95	5 U	6.1	1 U	2.1	4 U	6.4	5 U	5 U	0.2 U	0.2 U
MW-4B	S	9/13/95	5 U	43	1.1	24	4 U	56	5 U	26	0.2 U	0.2 U
MW-6	D	9/15/95	5 U	300	1 U	140	4 U	470	5 U	140	0.2 U	0.72
MW-7	D	9/15/95	5 U	190	1 U	110	4 U	330	5 U	110	0.2 U	0.6
MW-8	S	9/14/95	5 U	50	1 U	28	4 U	57	5 U	26	0.2 U	0.2 U
MW-9	S	9/14/95	5 U	76	1 U	66	4 U	150	5 U	46	0.2 U	0.2 U
MW-10	S	9/14/95	5 U	98	1 U	49	4 U	110	5 U	60	0.2 U	0.32
MW-11D	D	9/15/95	5 U	11	1 U	3.1	4 U	9.6	5 U	5 U	0.2 U	0.2 U
MW-11S	S	9/15/95	5 U	110	1 U	51	4 U	120	5 U	60	0.2 U	0.2 U
MW-12D	D	9/13/95	5 U	5.4	1 U	1.6	4 U	4 U	5 U	5 U	0.2 U	0.2 U
MW-12S	S	9/13/95	5 U	130	1 U	73	4 U	160	5 U	130	0.2 U	0.2 U
MW-13D	D	9/11/95	5 U	71	1 U	43	4 U	120	5 U	50	0.2 U	0.2 U
MW-13S	S	9/11/95	5 U	38	1 U	20	4 U	43	5 U	26	0.2 U	0.2 U
MW-14D	D	9/12/95	5 U	62	1 U	26	4 U	62	5 U	32	0.2 U	0.2 U
MW-14S	S	9/12/95	5 U	130	1 U	66	4 U	140	5 U	77	0.2 U	0.2 U
MW-15D	D	9/11/95	5 U	49	2	27	4 U	81	5 U	30	0.2 U	0.33
MW-15S	S	9/11/95	5 U	76	1 U	37	4 U	110	5 U	43	0.2 U	0.2 U
MW-16D	D	9/15/95	5 U	80	2.1	31	4 U	41	5 U	17	0.2 U	0.2 U
MW-16S	S	9/15/95	5 U	5 U	1 U	1.5	4 U	15	5 U	14	0.2 U	0.46
MW-17S	D	10/16/95	5 U	50	1 U	20	4 U	76	5 U	27	0.2 U	0.2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples, N - predigestion spike recovery was outside the +/- 25% control limits.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
INORGANIC CONSTITUENTS
(Group 2 of 3)

Sample Name	Screened Interval	Date	Chromium, Soluble (µg/L)	Chromium, Total (µg/L)	Cobalt, Soluble (µg/L)	Cobalt, Total (µg/L)	Copper, Soluble (µg/L)	Copper, Total (µg/L)	Lead, Soluble (µg/L)	Lead, Total (µg/L)	Mercury, Soluble (µg/L)	Mercury, Total (µg/L)
Water Quality Standard:				50		5		200		25		2
MW-18S	D	9/15/95	5 U	120	1 U	40	4 U	170	5 U	42	0.2 U	0.2 U
SW-2	S	10/16/95	--	5 U	--	1 U	--	130	--	5 U	--	0.2 U
SW-3	S	10/16/95	--	5 U	--	1 U	--	35	--	5 U	--	0.2 U
REP091495	(MW-8)	9/14/95	5 U	47	1 U	25	4 U	50	5 U	22	0.2 U	0.2 U
REP091595	(MW-11D)	9/15/95	5 U	11	1 U	3.1	4 U	7.8	5 U	5 U	0.2 U	0.2 U
EB091295		9/12/95	5 U	5 U	1 U	1 U	4 U	4 U	5 U	5 U	0.2 U	0.2 U
EB091395		9/13/95	5 U	5 U	1 U	1 U	4 U	4 U	5 U	5 U	0.2 U	0.2 U
EB091495SUR		9/14/95	--	5 U	--	1 U	--	4 U	--	5 U	--	0.2 U

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples, N - predigestion spike recovery was outside the +/- 25% control limits.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
INORGANIC CONSTITUENTS
(Group 3 of 3)

Sample Name	Screened Interval	Date	Potassium, Soluble (µg/L)	Potassium, Total (µg/L))	Selenium, Soluble (µg/L)	Selenium, Total (µg/L)	Silver, Soluble (µg/L)	Silver, Total (µg/L)	Zinc, Soluble (µg/L)	Zinc, Total (µg/L)
Water Quality Standard:						10		50		300
MW-1	R	9/12/95	1.8	2.1	5 U	5 U	1 U	1 U	20 U	36
MW-2A	S	9/12/95	1.2	11	5 U	5 U	1 U	1 U	20 U	250
MW-2B	D	9/12/95	2.2	25	77	80	1 U	1 U	20 U	580
MW-3	S	9/13/95	1 U	16	5 U	5 U	1 U	1 U	21	330
MW-4A	S	9/13/95	2.7	3.6	5 U	5 U	1 U	1 U	22	37
MW-4B	S	9/13/95	2.2	9.2	5 U	5 U	1 U	1 U	20 U	160
MW-6	D	9/15/95	5	53	5 U	5 U	1 U	1	20 U	810
MW-7	D	9/15/95	1 U	25	5 U	5 U	1 U	1.2	30	640
MW-8	S	9/14/95	1	8.3	5 U	5 U	1 U	1 U	24	190
MW-9	S	9/14/95	1.3	13	5 U	5 U	1 U	1.5	24	320
MW-10	S	9/14/95	1 U	14	5 U	5 U	1 U	1 U	22	320
MW-11D	D	9/15/95	1.8	3.8	5 U	5 U	1 U	1 U	20 U	35
MW-11S	S	9/15/95	1.8	22	5 U	5 U	1 U	1 U	22	310
MW-12D	D	9/13/95	1.7	2.6	5 U	5 U	1 U	1 U	20 U	23
MW-12S	S	9/13/95	1.6	18	5 U	5 U	1 U	1 U	48	470
MW-13D	D	9/11/95	2.5	14	5 U	5 U	1 U	1 U	20 U	280
MW-13S	S	9/11/95	1 U	7.4	5 U	5 U	1 U	1 U	24	140
MW-14D	D	9/12/95	1.2	9.1	5 U	5 U	1 U	1 U	22	170
MW-14S	S	9/12/95	2.4	20	5 U	5 U	1 U	1 U	20 U	420
MW-15D	D	9/11/95	2.8	12	220	250	1 U	1 U	23	170
MW-15S	S	9/11/95	1 U	16	150	150	1 U	1 U	25	270
MW-16D	D	9/15/95	4.1	11	5 U	5 U	1 U	1 U	62	110

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples, N - predigestion spike recovery was outside the +/- 25% control limits.

SURFACE AND GROUNDWATER SAMPLING RESULTS (Continued)
INORGANIC CONSTITUENTS
(Group 3 of 3)

Sample Name	Screened Interval	Date	Potassium, Soluble (µg/L)	Potassium, Total (µg/L))	Selenium, Soluble (µg/L)	Selenium, Total (µg/L)	Silver, Soluble (µg/L)	Silver, Total (µg/L)	Zinc, Soluble (µg/L)	Zinc, Total (µg/L)
Water Quality Standard:						10		50		300
MW-16S	S	9/15/95	3.7	4.4	11	26	1 U	1.6	39	64
MW-17S	D	10/16/95	2.2	13	5 U	5 U	1 U	1 U	20	150
MW-18S	D	9/15/95	8.7	33	5 U	5 U	1 U	1 U	21	220
SW-2	S	10/16/95	--	2.9	--	160	--	1 U	--	68
SW-3	S	10/16/95	--	2.7	--	10	--	1 U	--	74
REP091495	(MW-8)	9/14/95	1	9.2	5 U	5 U	1 U	1 U	20 U	170
REP091595	(MW-11D)	9/15/95	1.8	3.8	5 U	5 U	1 U	1 U	20 U	34
EB091295		9/12/95	1 U	1 U	5 U	5 U	1 U	1 U	20 U	20 U
EB091395		9/13/95	1 U	1 U	5 U	5 U	1 U	1 U	24	20 U
EB091495SUR		9/14/95	--	1 U	--	5 U	--	1 U	--	20 U

(a) S indicates well screened in shallow overburden; D indicates well screened in deep overburden; R indicates well screened in bedrock

(b) Water quality standards taken from NYSDEC Water Quality Standards, Table 1, Section 703.5. Where no value is given, standard was not listed on table.

U - analyzed for, but not detected; number is reporting limit, J - an estimated value, B - present in the method blank,
E- exceeds instrument calibration limits, D - diluted samples, N - predigestion spike recovery was outside the +/- 25% control limits.