REMEDIAL INVESTIGATION REPORT
DOLLINGER FACILITY
BRIGHTON, NEW YORK
VOLUME I

by

H&A of New York
Rochester, New York

for

Dollinger - A Filtrona Company
Richmond, Virginia

File No. 70007-43
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H & A OF NEW YORK

Geotechnical Engineers &
Environmental Consultants

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Attention: Mr. Anthony M. Vincent
Mr. Michael L. Burge

Subject: Dollinger Site Remedial Investigation Report

Gentlemen:

H&A is pleased to provide this report on the Dollinger Remedial Investigation, prepared in accordance with the Work Plan dated 15 February 1991. Copies have been sent to representatives of NYSDEC, NYSDOH, Monroe County Department of Health and the Document Repository.

Thank you for the opportunity to assist you with this project.

Sincerely yours,
H&A OF NEW YORK

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EXECUTIVE SUMMARY

This report presents results of the Remedial Investigation at the Dollinger Facility Site in Brighton, New York. The RI was undertaken on behalf of Dollinger-A Filtrona Company (former site owner) for NYSDEC Registry Site No. 828078, pursuant to an Order on Consent between Dollinger and the New York State Department of Environmental Conservation (NYSDEC) signed on 13 May 1991. The remedial investigation was performed in accordance with NYSDEC-approved RI Work Plan dated 15 February 1991, and addendum dated 11 March 1991.

The project site is an 18.5± acre property on which an approximately 140,000 square foot building is located. Industrial filters were manufactured and assembled in the building between 1970 and 1987. The site was vacated in 1987 and sold in 1989 to the current owners, Wil-Ray. The building is currently understood to be unoccupied.

Previous investigations at the site had identified three areas of concern which were the subject of this RI: a former TCE degreaser area, a former drum storage area and a former dumpster area. Additionally, an on site drainage pond and a waste/fill area purportedly located north of the Dollinger building were investigated under the RI.

The purported waste/fill area, identified by NYSDEC as a potential area of concern, was investigated using test pit explorations. As a result of visual observations, real-time sample screening with an OVA and TCL analysis of samples, no waste was identified in this area. A thin mantle of soil fill overlying native soils was identified and laboratory analyses detected no compounds associated with former Dollinger site activities or other areas of concern.

Previous site investigations (Sear-Brown, P.C. and H&A of New York) concluded that VOCs (volatile organic compounds - primarily TCE and its breakdown products) and semi-volatile compounds, present in surface soils at the remaining above-referenced areas of concern, may be associated with former site activities. RI investigations in these areas consisted of a grid boring program (to obtain soil samples to a maximum depth of 12 feet), installation of monitoring wells and groundwater sampling, and shallow soil, surface water and sediment sampling.

The nature and extent of contaminants in each of the media investigated has been defined as follows:

- Groundwater - compounds in groundwater primarily are limited to TCE and its breakdown products (1,2-DCE, 1,1-DCE and vinyl chloride) present immediately below the three areas of

concern (TCE degreaser area, drum storage area, and dumpster area). The highest concentration of these compounds was detected in the phreatic zone beneath the former TCE degreaser area. Sampling and analysis of the deepest site well, installed across the overburden bedrock interface below the former TCE degreaser area, did not detect chlorinated compounds, nor were chlorinated compounds detected in wells located north, south, east, or west of the three areas of concern.

- **Sediment/Soil** - The shallow pond sediment nearest the storm sewer outfall pipe, and shallow soil at each of the three areas of concern, contain detectable concentrations of chlorinated VOCs, semi-volatile phthalates and polyaromatic hydrocarbons (PAHs).

Results of contaminant fate and transport evaluations indicate that the VOCs, PAHs and phthalates are confined to on site areas and do not appear to be migrating to off site areas.

Results of the human health risk assessment conducted indicate that noncarcinogenic hazard indices for exposure cases were less than 1, the USEPA threshold value for this index. Carcinogenic risk for the typical case and reasonable maximum exposure conditions for a child trespass and on site worker scenario fell within or below the range identified by USEPA as acceptable (1×10^{-4} to 1×10^{-6}).

Results of this RI indicate that a sufficient database exists at this time to evaluate and select remedial action alternatives through the performance of a Feasibility Study (FS).

Supporting documentation for the above conclusions, prepared in accordance with USEPA guidance for RI report preparation, is contained in the attached RI Report. Volume I contains text, tables, figures and appendices with the primary summary material. Volume II contains laboratory analytical result summary sheets.

TABLE OF CONTENTS

		Page
EXECUTIVE SUMMARY		1
LIST OF TABLES		vi
LIST OF FIGURES		viii
I.	INTRODUCTION	1
1.1	Purpose of the Report	1
1.2	Site Description and History	1
1.3	Summary of Previous Investigations	2
1.4	Report Organization	4
II.	STUDY AREA INVESTIGATION	5
2.1	Surface Features	5
2.2	Investigation of Areas of Concern	5
2.3	Background Soil, Surface Water and Sediment Sampling	5
2.3.1	Storm Sewer Sampling	5
2.3.2	Surface Water Sampling	6
2.3.3	Background Soil Sampling	6
2.3.4	Sediment Sampling	6
2.4	Test Pit Explorations	6
2.5	Shallow Boring Grid Explorations	7
2.6	Test Boring/Observation Well Installations	8
2.7	Human Population Surveys	12
2.8	Ecological Investigations	12
III.	PHYSICAL CHARACTERIZATION OF THE STUDY AREA	13
3.1	Site Surface Water, sediment and Pond	13
3.2	Site Geology and Soils	13
3.3	Site Hydrogeology	15
3.4	Demography and Land Use	16
3.5	Ecology	17
IV.	NATURE AND EXTENT OF CONTAMINANTS	18
4.1	Soil Vapor	19
4.2	Soil	20
4.3	Groundwater	21
4.4	Surface Water and Sediment	22
4.5	Laboratory Data Validation	23
4.6	Air	23

TABLE OF CONTENTS
(Continued)

		Page
V.	CONTAINANT FATE AND TRANSPORT	25
5.1	Contaminant Persistence and Migration	25
5.2	Potential Routes of Migration	26
5.2.1	Soil	26
5.2.2	Groundwater	27
5.2.3	Surface Water	27
5.2.4	Air	27
VI.	RISK ASSESSMENT	28
6.1	Human Health Evaluation	28
6.1.1	Identification of Compounds of Concern	28
6.1.1.1	Data Evaluation	28
6.1.2	Exposure Assessment	30
6.1.2.1	Site Setting	30
6.1.2.2	Potentially Exposed Populations	30
6.1.3	Toxicity Assessment	36
6.1.3.1	Hazard Identification	36
6.1.3.2	Dose-Response Assessment	45
6.1.4	Risk Characterization	48
6.1.4.1	Risk Characterization Results	49
6.2	Environmental Evaluation	50
6.3	Level of Confidence/Uncertainty in the Risk Estimate	50
VII.	SUMMARY AND CONCLUSIONS	52
7.1	Summary	52
7.1.1	Nature and Extent of Contaminants	52
7.1.2	Fate and Transport	54
7.1.3	Risk Assessment	55
7.2	Conclusions	57
7.2.1	Data Limitations and Recommendations for Future Work	57
7.2.2	Recommended Remedial Action Objectives and Alternatives	58

TABLE OF CONTENTS
(Continued)

	Page
VIII. CERTIFICATION	59
RISK ASSESSMENT REFERENCES	60
APPENDICES	

APPENDIX A - Test Pit Reports
APPENDIX B - Test Boring Reports
APPENDIX C - Overburden Groundwater Monitoring Well Reports
APPENDIX D - Laboratory Soil Physical Testing Results
APPENDIX E - Rising Head Permeability Tests
APPENDIX F - Laboratory Data Validation
APPENDIX G - NYSDEC Laboratory Data
APPENDIX H - Laboratory Data (Volume II)

LIST OF TABLES

Table No.	Title
I	Summary of Monitoring Well Physical Data
II	Apparent Compounds Detected in Soil Vapor Shield Point Screening
III	Shallow Soil and Test Pit Organic Analyses
IV	Test and Grid Boring Soil Organic Analyses
V	Shallow Soils, Test Pit Soils, Grid and Test Boring Soils
VI	Groundwater Organic Analyses - 100 Series Wells
VII	Groundwater Organic Analyses - 200 Series Wells
VIII	Surface Water and Groundwater Inorganic Analyses
IX	Surface Water Organic Analyses
X	Sediment Organic Analyses
XI	Sediment Inorganic Analyses
XII	Borehole and Ambient Air Portable Gas Chromatograph Readings
XIII	Tentatively Identified Compounds
XIV	Quality Assurance/Quality Control Samples - Organic Analyses
XV	Quality Assurance/Quality Control Samples - Inorganic Analyses
XVI	Physical - Chemical and Fate Data of Organic Chemicals and Significance
XVII	Soil, Sediment, Groundwater and Soil Vapor Contaminant and Concentrations Used to Prepare Exposure Estimates
XVIII	Child Trespass Exposure Scenario - Ingestion of Chemicals in Soil

LIST OF TABLES (Cont.)

Table No.	Title
XIX	Child Trespass Exposure Scenario - Dermal Contact with Chemicals in Soil
XX	Child Trespass Exposure Scenario - Ingestion of Pond Sediment
XXI	On Site Worker Exposure Scenario - Inhalaton of Vapors
XXII	Chronic Toxicity Values: Potential Noncarcinogenic Effects - Oral Exposure
XXIII	Toxicity Values: Potential Carcinogenic Effects-Chemical Classification and Slope Factors
XXIV	Typical Exposure Case - Child Trespass Scenario-Potential Noncarcinogenic Effects
XXV	Reasonable Maximum Exposure Case - Child Trespass Scenario - Potential Noncarcinogenic Effects
XXVI	Typical Exposure Case - Child Trespass Scenario-Potential Carcinogenic Effects
XXVII	Reasonable Maximum Exposure Case - Child Trespass Scenario - Potential carcinogenic Effects
XXVIII	Reasonable Maximum Exposure Case - On Site Worker - Potential Noncarcinogenic Effects
XXIX	Typical Exposure Case - On Site Worker Scenario-Potential Carcinogenic Effects
XXX	Reasonable Maximum Exposure Case - On Site Worker - Potential Carcinogenic Effects
XXXI	Summary of Estimated Noncarcinogenic Hazard Indices Under Current Land Use Conditions
XXXII	Summary of Estimated Excess Lifetime Cancer Risks Under Current Land Use Conditions

LIST OF FIGURES

Figure No.	Title
1	Project Locus
2	Site Area Plan
3	Cover-Type Map
4	Subsurface Exploration and sampling Plan
5	Soil Screening Grid
6	Grid Screening and Sampling Results
7	Subsurface Profiles
8	Soil Vapor Sampling Location Plan
9	Organic Analytical Results - Surface, Test Pit and Test Boring Soil Sample Results in PPK
10	Organic Analytical Results - Surface Water, Storm Sewer Water, Shallow Sediment and Deep Sediment Sample Results in PPM

I. INTRODUCTION

This remedial investigation (RI) report is for the Dollinger facility located in Brighton, New York. This RI report has been prepared in conformance with the United States Environmental Protection Agency (USEPA) document entitled "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" dated October 1988. This report follows the H&A Work Plan dated February 1991 (Work Plan) and subsequent addenda which were added before and during the site investigations, with the concurrence of NYSDEC representatives.

1.1 PURPOSE OF THE REPORT

The intent of this report is to describe the site investigations that have taken place, present and summarize the data collected., and evaluate the presence and extent of site compounds of concern. This RI will serve as the basis for the forthcoming feasibility study (FS). This work was performed by Dollinger - A Filtrona Company, under an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC). Although Dollinger sold the property and building in 1989, the facility will be referred to as the Dollinger facility for the purposes of this RI report.

This report provides a summary of previous site investigations regarding the presence of hazardous substances on site and describes the work and quality assurance procedures which were conducted in the performance of the RI Work Plan investigation to characterize the nature and extent of the site compounds of concern in soil, sediment, surface water and groundwater.

1.2 SITE DESCRIPTION AND HISTORY

The site (NYSDEC Registry No. 828078) is an 18.5± acre property which is roughly rectangular in shape. An approximately 140,000 square foot, one story, slab-on-grade building is centrally located on the site. The site is located in Brighton, New York at 1 Town Line Circle. It is bounded on all sides by other commercial and industrial lots and buildings.

The site building was the location of the manufacture and assembly of industrial filters between 1970 and 1987. The building is serviced by electrical, natural gas, telephone, water, and sanitary sewer lines. In addition, a storm sewer, drainage swale and detention pond are present to the west, north, and northwest of the site building. Operations at the facility ceased in approximately 1987 and the building was vacated of personnel, equipment and operations prior to its sale in 1989. The facility is located on industrial-zoned property which is adjacent to industrial and general commercial-zoned properties.

Adjacent property uses are generally commercial and industrial in nature. Property to the west of the site is occupied by the Beam Mack Sales and Service Facility, for the sale and service of large trucks. Residential properties are present approximately 1200± feet south of the site. A small office building is located to the north of the site. To the south of the site is the remainder of the light industrial-office complex in which the Dollinger facility is located. East of the facility is a vacant lot associated with the Metro Park office-light industrial complex.

Since the sale of the building in 1989, the building facility has been owned by the Wil-Ray partnership and has been leased on short-term basis for a PBS television station auction and by Hansford Manufacturing for assembly line manufacturing. The building is currently unoccupied.

1.3 SUMMARY OF PREVIOUS INVESTIGATIONS

A two-phase environmental investigation of this site was conducted by Sear-Brown Associates with a third-phase of work completed by H&A. The first phase of the investigation involved the collection and analysis of historical site data and a field investigation using an Hnu photoionization detector and a metal detector. Soil, sediment and surface water samples were collected and analyzed by a laboratory for the presence of metals, volatile organics, base neutral and acid extractable compounds (semi-volatiles organics), pesticides and PCBs.

Based on the investigations and analytical results, Sear-Brown drew the following conclusions at the close of its Phase One investigation:

- o Hnu screening of sample headspace vapors detected the possible presence of volatile organic compounds in samples adjacent to a former TCE degreaser area, at a former drum storage area, and at a former dumpster area.
- o A possible fill area was identified on the northeast corner of the property. Scattered empty paint cans were observed on the adjoining property to the east. Testing of samples from the area of apparent fill on the northeast portion of the site ("waste can area") for priority pollutant metals did not indicate the presence of these analytes.
- o Analyses of soil samples from the drum storage area indicated detectable concentrations of volatile organic compounds, semi-volatiles organic compounds, priority pollutant metals, and the pesticide Endrin.
- o Analyses of surface water and sediment samples from the pond and a drainage ditch flowing into the pond indicated detectable concentrations of petroleum hydrocarbons, volatile organics and priority pollutant metals.

- Analyses of soil samples from the dumpster area indicated detectable concentrations of priority pollutant metals.

Additional site samples were collected and analyzed in Phase Two of the Sear-Brown investigation. This work was conducted in order to verify the first phase results and better identify the surficial distribution of compounds. Shallow soil samples were collected from the dumpster area, drum storage area, TCE degreaser area, and the granular fill bedding of the storm sewer line located north of the building. Water samples and sediment samples were collected from the pond. All samples were analyzed for volatile organic compounds.

At the conclusion of the Phase Two investigation, volatile and semi-volatile organic compounds had been detected in the site surface water and shallow soil samples, the dumpster area soil samples, samples of the pond sediment, samples of water from the pond, soil samples from the drum storage area, and a soil sample from along the sewer line. At that time is was decided that additional investigations were appropriate to determine the presence, if any, and extent of the compounds in the site groundwater.

The third phase of investigation at the site was conducted by H&A to further identify the presence of volatile organic compounds in site soils and to determine whether and to what extent these compounds have migrated to the groundwater.

Subsurface explorations performed at the site as part of the H&A investigation consisted of a soil vapor survey, seven test borings, 12 groundwater observation wells, and three test pits.

The results of the H&A investigation concluded the following:

- Soil sampling, soil vapor screening and soil headspace screening detected volatile organic compounds to a depth of approximately 12 feet immediately north of the Dollinger building, in the drum storage area outside the TCE degreaser room. Volatile organic compounds in the sub-parts per million range were also detected in both the shallow and deep groundwater in these areas (OW103-S, OW104-S, and OW104-D).

- Headspace screening of soil samples from B106 detected volatile organic compounds in the area northwest of the TCE degreaser and drum storage areas along the storm sewer line.

- A sample of groundwater from monitoring well OW101-D contained volatile organic compounds in the sub-part per million range. This well is located southeast of the TCE degreaser/drum storage area.

1.4 REPORT ORGANIZATION

This remedial investigation report is organized in accordance with the format recommended by the "Guidance For Conducting Remedial Investigation And Feasibility Studies Under CERCLA", dated October 1988. Accordingly, the RI report is presented as follows.

- Study Area Investigation - summarizes site field activities consisting of shallow soil, sediment, and surface water sampling, test pit and test boring explorations, and observation well installation and sampling. A discussion of the methods and materials used is included in this section. The ecological characterization of the site (Habitat Based Assessment modified from NYSDEC guidance as described by the site Work Plan) is also included in this section.

- Physical Characterization of the Study Area - summarizes field investigation results and discusses site physical characteristics. Such characteristics include surface water flow, overburden soils, bedrock geology, hydrogeology and site ecology.

- Nature and Extent of Contaminants - presents the results of site characterization including laboratory analytical and sample screening results from site media.

- Contaminant Fate and Transport - presents migration routes, persistence of site compounds, and factors affecting compound migration.

- Baseline Risk Assessment - summarizes human health and environment evaluations.

- Summary and Conclusions - summarizes the nature and extent of site compounds of concern and the fate and transport of these compounds in the assessment of site risks. This section also discusses data limitations and recommendations for future Feasibility Study work.

Figures and tables referenced in the text are included following the text. These serve to present the data in a concise manner and/or graphically present site information. Appendices to this report include field data such as exploration logs, well completion reports, permeability test records and laboratory data reports. The full laboratory data reports consist of approximately five file boxes of documentation which are not included with this report. A full copy of this documentation is maintained at H&A of New York's Rochester office and one copy has been provided to the NYSDEC Albany office.

II. STUDY AREA INVESTIGATION

2.1 SURFACE FEATURES

Elevations at the site vary between 548 and 536 feet in elevation above mean sea level across the approximately 1000 foot wide site (see Figure 1). A drainage ditch flows along the western edge of the property into a detention pond on the northwest site corner. The southern half of the site faces the front of the property and is landscaped with driveways and parking lots (see Figure 2). The northern half of the site (behind the building) is an undeveloped open field with grasses, shrubs and a row of trees along the northern property line (see Figure 3, Cover-Type Map). There is a slight east-west ridge on the northern end of the site. It appears that this ridge, which slopes down to the south somewhat sharply, is the result of the removal of topsoil between the building and the northern edge of the property.

2.2 INVESTIGATION OF AREAS OF CONCERN

The previous site investigations have identified three areas of concern on site: the TCE degreaser area, the former drum storage area adjacent to the north-central portion of the building, and the former dumpster area at the end of the entrance drive at the northeast corner of the paved portion of the site.

These previously identified areas of concern were investigated further in this RI. The grid borings described below (three rows of nine borings spaced 50 feet apart) were laid out to include both the dumpster and drum storage areas. The TCE degreaser area was investigated using a pair of observation wells installed inside the building (201), a well to the top of rock (205) located adjacent to the degreaser area outside the building, and one of the grid borings (GS-A8).

Soil, sediment, surface water, water in a storm sewer line and groundwater were sampled for this RI. Samples were collected from test pits, test borings, observation wells, surficial soils, the site pond, pond sediments, and the storm sewer on site. Figure 4, Subsurface Exploration and Sampling Plan, shows sample locations. Sampling and laboratory analytical methods are also described below.

2.3 BACKGROUND SOIL, SURFACE WATER AND SEDIMENT SAMPLING

2.3.1 Storm Sewer Sampling

The storm sewer water sampling was performed using a stainless steel beaker attached with screws to an inflexible PVC pole. Storm sewer water samples were taken at STW-201 and STW-202

(Figure 4) and were analyzed for volatiles, semi-volatiles and metals. Location STW-202 was sampled on 1 August and STW-201 on 21 August 1991 because less than one inch of water was present at STW-201 on 1 August. A maximum of three inches of water depth was observed in the sewer on both occasions.

2.3.2 Surface Water Sampling

Three surface water samples (SW-201, SW-202, and SW-204) were collected from the pond and analyzed for volatile organic compounds, semi-volatile organic compounds, petroleum hydrocarbons and metals. Although there was as much as 2 feet of water depth in some areas of the pond, at sample locations SW-202 and SW-204 it was necessary to create sumps (depressions) in the pond sediment to allow nearby surface water to collect until a sufficient quantity had flowed into the depression to fill sample containers. This collection method was observed and approved by Mr. David Crosby, NYSDEC representative. Surface water samples were not filtered. Figure 4 shows surface water sample locations.

2.3.3 Background Soil Sampling

The two background soil samples, collected from below the root zone and up to 6 inches in depth, are designated SO-201 and SO-202 and are located as shown on Figure 4. These locations were selected due to their distance from the areas of concern. The two background soil samples were analyzed for the full TCL analytes.

2.3.4 Sediment Sampling

Eight sediment samples were collected from the pond and adjacent drainageways and analyzed for volatile organic compounds, semi-volatile organic compounds, petroleum hydrocarbons and metals. Sediment samples were collected at four locations: SS-201, SS-202, SS-203, and SS-204 (Figure 4). Two of these sediment samples were also analyzed for total organic carbon using the analytical method agreed upon by Mr. John Munn of the New York State Department of Environmental Conservation (NYSDEC). A shallow sediment sample from approximately six inches below the surface and a deep sediment sample from approximately two feet below the surface were obtained at each location.

2.4 TEST PIT EXPLORATIONS

Six test pits were excavated on 5 August 1991, to approximately 11.0 ft. in depth in the areas on the northern portion of the site referred to as the "waste area" and "fill area" in the Sear-Brown

Phase One report. The purpose of these investigations was to further investigate site subsurface conditions to determine if fill and/or waste appeared to be present below ground surface. The test pits were excavated by Trimaldi Enterprises under the observation of H&A personnel and served to supplement the test borings in evaluating the nature of the glaciolacustrine sediments on the site. The test pit explorations were specifically used to (1) evaluate the presence and nature of possible bedding or other primary sedimentary features in the lacustrine deposits observed in the previous site borings and (2) collect samples of waste/fill if such materials were observed. Test pit locations are shown on Figure 4 and test pit reports are provided in Appendix A.

No waste or fill was observed in the pits, however. As required by the Work Plan, confirmatory samples from test pits TP-201 and TP-204 were submitted to the laboratory for full TCL analysis. The samples from test pits TP-202, TP-203, TP-205, and TP-206 were analyzed for volatile organic compounds. At the time the samples were analyzed for volatiles, extractions for semi-volatile and pesticide analyses were also performed. Upon evaluation of the full TCL results on samples from TP-201 and TP-204, it was decided that further analyses of the extracts from the other test pits were not necessary.

2.5 SHALLOW BORING GRID EXPLORATIONS

Twenty-five test borings in a grid configuration were drilled during 12 to 15 August 1991 in accordance with test boring procedures described in the Work Plan. The location of these borings is shown on Figure 5. The test borings were completed by Nothnagle Drilling to depths of 4.0 ft. to 12.0 ft. below ground surface by a truck-mounted Diedrich D-25 rotary drill rig using hollow stem auger casing. The drill rig and boring equipment were steam-cleaned prior to entering the site, between each test boring performed, and prior to exiting the property. Split-spoons were cleaned by hand between uses, using the decontamination sequence provided in the Work Plan.

Soil samples were obtained with standard split spoon samplers (2.0-in. O.D., 1.375-in. I.D.), in accordance with ASTM Specification D-1586-87. Field measurements of in-situ soil conditions consisted of the Standard Penetration Test (SPT); the Standard Penetration Resistance (N) (defined as the number of blows required to drive the standard split spoon sampler 1.0 ft. into undisturbed soil with a 140-pound weight falling freely for 30 inches) was recorded on test boring logs as drilling progressed. Soil sample descriptions were based on the Unified and Burmister soil classification systems. Descriptions of the subsurface conditions encountered at each test boring location are presented in Appendix B, Test Boring Reports.

Split spoon samples from the borings were collected and preserved by placing soil samples in a cooler where they were cooled to approximately 4°C. Soil grid samples were collected at two-foot intervals. Samples were placed in sample jars (two jars per sample) and sealed with aluminum foil. One of the samples was held for possible laboratory analysis, while the sample headspace of the second was screened using a Foxboro 128 GC Organic Vapor Analyzer (OVA). This was done by placing a portion of the soil from a split spoon sample into an eight ounce, wide-mouth glass jar using a stainless steel knife. The jar was covered with aluminum foil, capped with a screw-on lid, and shaken for about 30 seconds. The sample was then placed in ambient temperatures of approximately 24°-29°C for no less than 30 minutes. Following this, the lid was removed and the aluminum foil was pierced with an OVA in order to measure the organic vapor concentration in the headspace above the sample. The observed organic vapor concentration was recorded, the lid replaced and the jar was labeled with sample identification information (project number, date, boring number, sample depth, and OVA reading). As stated in the Work Plan, when the upper two samples from a location (0-2 ft. and 2-4 ft.) were "ND" (no volatiles detected with the OVA) or within a site background concentration range of detected volatiles, no further (deeper) samples were collected from that location.

Three samples collected from grid area boring (one boring at each of the drum storage area, dumpster area and degreaser area) were analyzed for the full TCL analytes. Additional samples were collected based on OVA readings and analyzed for volatile and semi-volatile organic compounds. Samples GS-A4, GS-A8, GS-B1, GS-B2, GS-B4 and GS-B5 were analyzed. See Figure 6 for grid boring layout, sample locations and grid sample OVA readings.

2.6 TEST BORING/OBSERVATION WELL INSTALLATIONS

Nine test borings and nine well installations were completed (between 16 and 31 August 1991) in accordance with test boring/well installation procedures described in the Work Plan. The location of these borings and observation wells is shown on Figure 4. The test borings were completed by Nothnagle Drilling Company to depths of approximately 15 to 83 ft. by truck-mounted Diedrich D-25 and Diedrich D-50 rotary drill rigs using hollow stem auger casing.

The drill rigs and boring equipment were steam-cleaned prior to entering the site, between each test boring performed, and prior to exiting the property. The split spoons were hand cleaned between uses according to the Work Plan decontamination specifications. Four two-well clusters, consisting of a shallow overburden and a deep overburden observation well, were installed. Locations of the wells are shown on Figure 4. The depths of the wells at these locations are consistent with the previously-installed shallow and deep overburden wells. The depths of these previous wells were based on headspace vapor screening results from the split spoon soil samples and on the apparent location of saturated zones and silt seams. The shallow overburden wells were installed and screened from approximately 6.0 ft. to 16.0 ft. so that the screened zone included the apparent top of the saturated zone. The deeper of the two overburden wells at each cluster was screened from approximately 20.0 ft. to 30.0 ft. As stated in the Work Plan, the well was screened below the apparent water table across the depth zone of highest volatile organic compound (VOC) concentration as detected by the OVA and confirmed with the portable GC. The borings were then continued until below the apparent presence of volatile organic compounds in the soil as detected with the OVA. This procedure, described in the Work Plan, was derived in consultation with NYSDEC personnel who reviewed the Work Plan.

Although attempts were made to locate the thin sand seams observed during previous well installation at the site, no such seams were observed during split spoon sampling. Therefore, screens were located based on results of headspace screening and apparent saturation of split spoon samples.

The ninth well installed in this investigation was the deep overburden well (OW205) screened from approximately 62.0 ft. to 83.0 ft. using a 21.0 ft. length of slotted PVC screen, as directed in the field by Mr. David Crosby of the NYSDEC. This length of well screen was necessary to include both the gravel zone and the overburden - top of rock interface in the screened interval. This well is located immediately outside the building adjacent to the TCE degreaser area.

During drilling of the first boring at each well cluster location, split spoon samples were collected continuously at two-foot intervals from the ground surface to total depth of boring, in accordance with the procedures of the Standard Penetration Test (ASTM D-1586-87). Representative samples from each split-spoon were classified in the field as they were collected, in accordance with the Burmister and Unified Soil Classification Systems. A portion of the sample was placed in labeled jars, subjected to field OVA screening, and was held in storage for future reference.

The installed overburden monitoring wells consist of a two-inch diameter PVC factory slotted well screen (No. 10 slot size), and a two-inch diameter PVC riser. Each of the eight overburden monitoring wells were constructed as followed:

- The borehole was advanced to the target depth using a 6-inch inside diameter hollow stem auger.

- Split-spoon samples were collected in accordance with the procedures previously discussed.

- The well screen and riser were equipped with centralizers and placed to the bottom of the borehole. As the augers were slowly removed, the sand pack was placed in the annular space around the well screen and riser from the base of the screen to approximately two feet above the screen. The sand used was clean, washed (#4Q size silica) sand.

- Three feet of bentonite pellets were placed above the sand pack except in those instances where the top of the sand pack was above the apparent water table, which occurred in all four shallow overburden wells. Since hydration of the bentonite pellets would not be guaranteed, a granular bentonite was mixed with water to form a pre-hydrated slurry which was tremied into place.

- Cement/bentonite grout was placed from the top of the bentonite pellets seal to approximately four feet below ground surface. The grout consisted of one bag (94 lbs) of Portland Cement and five pounds of bentonite mixed with six gallons of potable water.

- A four-inch square steel protective casing five feet in length was placed in the remaining annulus so that approximately one-half of its length remained above grade. The casing was equipped with a secure lockable lid to prevent entry to the well. This was done for well clusters OW204, OW202 and observation well OW205.

- For the wells at clusters OW201 and OW203, the well was terminated below grade within a flush mounted "curb box." To protect against surface water infiltration, the area around the well was mounded up approximately 3 inches. The well casing was capped with a secure locking well cap.

The deep overburden monitoring well consists of a two-inch diameter, factory slotted PVC well screen (No. 10 slot size), and a two-inch diameter PVC riser. The well was constructed as follows:

- A nominal 12-in. diameter boring was advanced to 20.0 ft. in depth, to a depth equal to the bottom of the adjacent shallow overburden well.

- 20.9 ft. of nominal 10-in. diameter steel riser pipe was installed to the bottom of the boring, extending above ground surface.

- The 10-in. steel riser was grouted in place from the bottom of the borehole to ground surface with a cement bentonite grout installed using a tremie pipe. The tremie pipe was gradually withdrawn from the well bore during the grouting process.

- To allow the grout to set, a period of 12+ hours was allowed to elapse before resumption of well construction activity.

- A nominal 10-in. boring was advanced to 40.0 ft., a depth equal to the bottom of the adjacent intermediate overburden well.

- Approximately 42 ft. of nominal 6-in. diameter steel riser pipe was installed to the bottom of the boring, extending above ground surface.

- The 6-in. diameter riser was grouted in place as previously described.

- After the requisite time had elapsed for the grout to set, well construction continued by advancing a hollow stem auger assembly with continuous split spoon sampling in accordance with ASTM D-1586-87 methodologies from the 6-in. casing seat at 43 feet to an approximate total depth of 83 feet below ground surface.

- One-half a foot of 4Q quartz sand was installed in the bottom of the boring.

- A twenty foot length of 2-in. ID, 0.010-in. slot (No. 10 size), PVC well screen threaded to 70.0 ft. of 2-in. ID PVC riser of sufficient length to extend from the bottom of the borehole to 2 feet above ground surface was installed. The screen was equipped with a threaded bottom cap. The screen-riser assembly was equipped with 2 centralizers. This screen length was selected following the decision in the field with Mr. David Crosby (NYSDEC representative) to screen the gravel zone encountered near the base of the overburden deposit the overburden - bedrock interface.

- Well construction, including installation of the sand pack, annular seals and protective casing, proceeded as described in the previous sections describing the shallow overburden well construction.

Groundwater Monitoring Well Reports are provided in Appendix C of this report. These documents provide specific details on well installation procedures and materials.

During test boring explorations, soil samples were selected for analysis for physical characteristics to evaluate the nature of subsurface soils. Samples from B-202d, B-203d and B-204d were selected as uncontaminated samples. Laboratory permeability tests, Atterberg Limits, sieve analyses and hydrometer analyses were performed. The discussion of these results is provided in Section 3.2 and the test reports are provided in Appendix D.

Soil samples from OW201-S and OW201-D, the borings/wells located nearest the former TCE degreaser area, were selected based on OVA headspace screening results and were analyzed for the full TCL analytes. Samples from the OW202 and OW203 clusters were also selected by screening and were analyzed for semi-volatile organic compounds.

The completed observation wells were developed as described in the Work Plan. Mechanical surging and bailing were used in well development. The wells were developed until they exhibited less than 50 NTUs or until two consecutive rising head permeability test results (separated by fifteen minutes of well development) agreed within one order of magnitude.

Following well development, the groundwater was sampled for laboratory analysis. Each well sample was analyzed for volatile and semi-volatile organic compounds. The OW201-S and OW-201D wells, adjacent to the TCE degreaser area, were analyzed for the full TCL analytes.

2.7 HUMAN POPULATION SURVEYS

Based on observations and information provided in the previous investigations, the nearest residence appears to be approximately 1200± feet south of the site. The site is surrounded by commercial and industrial properties and the area is generally commercial and industrial.

2.8 ECOLOGICAL INVESTIGATIONS

Representatives of H&A of New York conducted a site walkover to characterize ecosystems and confirm the environmental setting described in previous reports. The area surrounding the Dollinger facility building can be divided into three ecosystems. First, the area south and immediate east and west of the facility building is landscaped with maintained lawn and ornamental trees and shrubs. The second area, located on the north-northeast part of the site, is an open field bordered by a wooded lot and a shallow marshy area at the northeast corner, characterized by reeds and flanked by willow trees. At the north-northwest corner is a drainage retention pond and associated drainage channels. The ecological assessment is focused on areas to the north of the facility building including the field, site pond and drainage areas.

III. PHYSICAL CHARACTERIZATION OF THE STUDY AREA

The study area investigations described in Section II of this report were conducted to collect site samples for laboratory analysis and to document site physical characteristics. The following sections describe site surface water hydrology (the pond), site sediment, site subsurface geology and soils, and site hydrogeology based on information gathered during the RI.

3.1 SITE SURFACE WATER, SEDIMENT AND POND

A pond on the northwest corner of the site receives site drainage from two directions. A drainage ditch flows northward along the western property line into the pond. This ditch drains the western portion of the site as well as the adjacent properties to the south and west. At the time of sampling, this ditch contained flowing water. A site storm sewer also flows into the pond. This storm sewer receives run off from the paved areas on the east side of the site, the open field north of the site building and flow from the building roof drains. Storm sewer sampling location STW-202 was sampled on 1 August and STW-201 on 21 August 1991. Location STW-201 did not contain enough water to sample on the first date. Although it was proposed in the Work Plan to sample sediment from the storm sewer locations, there was insufficient sediment to sample. During the pond water and sediment sampling the pond average depth was 2± feet deep. During subsequent site visits in October the pond water level was noticeably higher (3-4 feet).

The percentage of organic carbon in two site sediment samples collected from the pond was found to be 14% and 24%, based on the testing method arrived at through discussions with Mr. John Munn of the NYSDEC. This information was used in the formula for deriving screening values for sediment contaminants, as shown on Table X.

3.2 SITE GEOLOGY AND SOILS

Test pit excavations and test boring explorations were conducted to collect subsurface soil samples and observe subsurface geology. Specifically, in the previous H&A investigation silt seams were observed in the subsurface lacustrine strata. There was not enough information from the previous explorations to determine if these seams were continuous or if they could be acting as a groundwater transport mechanism. Therefore, test pits were included in this investigation because they provide a better view of subsurface structures than test borings, although to a limited depth.

At test pit TP-205, a zone of discontinuous buff colored fine sand stringers 1 to 2 centimeters thick were observed at 3-4 feet. Also observed in each test pit were iron-stained planar partings in the silt. Descriptions of the soils encountered in each test pit were prepared by H&A of New York and are presented in the Test Pit

Reports (Appendix A). None of the silt seams noted in previous explorations were observed during this round of test pits and test borings.

Subsurface test boring explorations encountered mostly lacustrine sediments. Exceptions to this were the presence of 3 ft. or less of surficial soil fill in many of the grid borings and test borings and the presence of weathered bedrock at the base of boring B205. Descriptions of the deposits as encountered by explorations are as follows:

- <u>Soil Fill</u> (surficial) was encountered in 21 of the test borings, generally consisting of gray and brown SAND or GRAVEL in thicknesses of less than 3 ft.

- <u>Lacustrine</u> deposits were encountered in all explorations at the site, generally consisting of hard brown clayey SILT over stiff gray-brown silty CLAY. Several thin, wet SILT seams (less than 1 inch thick) were previously observed in the drilling of the 100 series borings, but not the 200 series borings. At a depth of 43 feet, where continuous sampling was begun on B205, an interval of gray SAND with silt and gravel was present to 60 feet. Between 60 and 79 feet, gray silt deposits were encountered. A sandy gravel was encountered at 65-67 feet, underlain by more gray silt. Lacustrine deposits approached 79+ ft. in thickness.

- <u>Vernon Shale</u> as weathered bedrock was encountered at the bottom (79.0 ft.) of the deepest boring (B205), consisting of very dense green-gray rock fragments.

Figure 7, Subsurface Profiles, provides a cross-sectional view across three subsurface transects: A-A', B-B' and C-C' as located on Figure 4. These cross-sections show site elevations, subsurface geology and other features discussed later in this section.

Physical characteristics of selected soils samples were evaluated in H&A's laboratory. Non-contaminated samples were selected for an evaluation of site geology. Laboratory permeability tests were performed on two samples from B202-d, one from 10-12 feet and one from 16-18 feet. This data is used in conjunction with rising head permeability data to evaluate hydraulic conductivity. Atterberg limits were performed on the 8-10 foot sample from B202-d and the 10-12 foot sample from B204-d. Generally, this test allows for the differentiation between silts and clays based on plastic behavior. Sieve and hydrometer analyses were conducted on samples B203-d, 10-12 feet; B202-d, 26-28 feet; and B203-d, 26-28 feet. Sieves are used to determine sample grain size; the hydrometer test more accurately evaluates the fine-grained fraction of the sample. The laboratory data sheets are provided in Appendix D and results discussed below.

Laboratory permeability tests were performed in general accordance with ASTM Standard D5084. This test provides a laboratory measurement of hydraulic conductivity (or coefficient of permeability) of water-saturated porous materials using a flexible wall permeameter. This test method is designed for use with samples that have a hydraulic conductivity less than or equal to 1×10^{-5} cm/sec.

The laboratory measured permeabilities were 3.84×10^{-8} cm/sec and 2.42×10^{-7} cm/sec. This range of values represents a generally fine-grained material with relatively low permeability similar to a clayey to silty deposit.

Atterberg limits (liquid limit, plastic limit and plasticity index) were determined for two samples, in general accordance with ASTM Standard D4318. The liquid limit is defined as the water content of a soil (in percent) at the boundary between the liquid and plastic states. The plastic limit is the soil water content, in percent, at the boundary between the plastic and brittle states. The plasticity index is the difference between the liquid limit and the plastic limit and represents the range of water content over which a soil behaves plastically. Measured liquid limits were 35.0 and 29.0; plastic limits were 14.4 and 12.7; resulting in plasticity indices of 20.6 and 16.3. Typically, plasticity indices in this range represent an inorganic clay of low to medium plasticity which may be gravelly, sandy or silty.

The sieve and hydrometer tests (after ASTM D422) were used to determine the distribution of particle sizes in site soil samples. The size of particles which pass the No. 200 sieve is determined by a sedimentation process, using a hydrometer. The grain size distribution curves show that between 80 and 95 percent of each of the three samples is comprised of silt or clay sized particles.

In summary, site soils testing shows the materials to be silty clays with laboratory permeabilities in the range of 1×10^{-7} to 1×10^{-8}. This laboratory-derived description generally agrees with the field observations and field-determined permeabilities, as described below.

3.3 SITE HYDROGEOLOGY

To evaluate hydrogeologic conditions at the site, rising head permeability tests and water level measurements were performed and groundwater contour plans developed.

Rising head permeability tests had been performed on some of the site wells as part of the previous H&A investigation. These results were checked and presented in a similar format to the new test results. Those 100-series wells not originally tested, and the newly installed 200 series wells, were tested as part of this RI. The resulting permeability values are presented on Table I, Summary of Monitoring Well Physical Data. As shown, these values range over three orders of magnitude from 9×10^{-8} cm/sec to 1×10^{-6} cm/sec.

The tests were performed for a minimum of one hour each, as described in Appendix I of the Work Plan. The field data sheets are presented in Appendix E of this RI. None of the wells tested recovered to static level within the hour. The resulting permeabilities match those seen in the laboratory permeability testing and appear to be representative for the site. Figure 7, Subsurface Profiles, has the rising head test permeabilities plotted on it opposite each well screen. A check of permeability versus geologic unit was made; no correlation between well screen placement and permeability was observed.

Ground surface, top of riser and top of casing elevations were surveyed and are presented on Table I. This data, with measured depth to water, was used to calculate groundwater elevations. Groundwater elevations for the shallow wells and the deep wells were plotted on separate plans to evaluate groundwater flow directions and gradients for the top of the saturated zone (shallow wells) and the deeper overburden flow (deep wells). Because of the low permeability of the site soils, it appears that water levels measured in the wells this fall are not representative (unusually low) due to slowness to recover from development, rising head testing and/or sampling, all of which require the removal of significant quantities of water from the well. This slow recovery to static water levels also occurred after the installation of the 100-series wells and is due to low soil permeabilities.

By plotting the groundwater contours using water levels measured in January of 1990 (100 series wells only), the flow direction in both shallow and deep wells is shown to be toward the pond in the northwest corner. This is similar to the surface topography of the site. The gradient of these flow maps is 0.01 feet per foot. Water levels are being measured periodically and updated information will be utilized once available. ✓ WHEN

3.4 DEMOGRAPHY AND LAND USE

As previously discussed in other sections of this report, the site is industrially zoned. The surrounding areas are predominantly light industrial and commercial with low residential density. Residences are present along Brighton-Henrietta Townline Road, separated by commercial buildings and properties.

3.5 ECOLOGY

The property lies within the Red Creek drainage basin. The drainage ditch and pond on the western boundary of the property receive run off from the site and adjacent properties. The drainage then proceeds in a northwesterly and then westerly direction between Cortese Suzuki and Conway GMC (businesses on W. Henrietta Road), through a culvert under W. Henrietta Road, continues west passing through a residentially-zoned area and empties into a class D stream #ONT-117-14-1b, approximately one half-mile west of the Dollinger property.

Much of the pond area was dry during July and August site investigations; evidence of flooding was observed at the pond in late October. A high water line was noted in the October 1991 visit indicating seasonal flooding.

Plant life typical of marshes and wetlands surrounds the pond and drainage ditch. Plant species identified include: cattails, dogwood, poison sumac, swamp candles and thistle. Willow and oak trees flank the northern border. Approximate locations of cover are shown on the Cover-Type Map, Figure 3.

Remnants of a mature woodlot border the northern portions of the property. An open field is present in the area between the woodlot and the facility building. The field contains transition type plant species typical of abandoned farm land returning to a wild state. The field contains a variety of grasses, shrubs, bushes and wildflowers. Representative species noted during the site walkover are shown on Figure 3.

A marshy area, approximately 14 foot in circumference near the northeastern property boundary, appears to be formed where the groundwater table occurs at ground surface. An area marked by wet soils is apparent between the marshy area on the northeast property boundary and the drainage retention pond. Site history indicates soil may have been removed from these areas when the site was graded. During periods of heavy rains, the shallow groundwater table (2 feet below original ground surface) probably keeps portions of the field saturated.

The Natural Heritage Program and Significant Habitat Unit were contacted for information regarding sensitive species and/or habitats which may have been identified in the area. Results of this inquiry will be included in this report if they become available.

In general, the site appears to provide good cover and food for wildlife. Numerous indicators of good habitat were observed including deer tracks and bedding area, raccoon tracks and scat, numerous small seed eating birds including a variety of sparrows, gold finches, and house finches.

IV. NATURE AND EXTENT OF CONTAMINANTS

The areas of concern at this site have previously been defined as the former TCE degreaser area, a former drum storage area north of and adjacent to the building and a former dumpster location northeast of the building at the pavement edge. These areas all lie within 400 feet of one another. Because of their close proximity to each other, it is not practical to separate the areas of concern for purposes of evaluating source areas. Therefore, the discussion that follows is structured by media evaluated (soil, sediment, water, vapor or air) and pertinent analytical results. For each media, organic results are summarized first, followed by a summary of inorganic results. The site media were evaluated using several field investigation techniques and laboratory analyses.

In order for this data to be meaningful, it is compared with screening values that have been selected for purposes of this RI. The screening values discussed below and shown on Tables II through XI are used in this RI report for comparison purposes only. During the feasibility study, Dollinger will evaluate appropriate criteria (including the screening values) to be used in evaluating the need for remediation at the site.

Soil vapor, soil, groundwater, surface water, sediment and air were evaluated. The soil vapor and air screening was performed by H&A personnel using a portable gas chromatograph. There are no State or Federal standardized screening values for comparison of data collected from these media and sampled in this manner. Therefore, these results were compared to other screening events at the same sample points or evaluated relative to neighboring results to provide an areal depiction of the data.

The soil organic results were compared to a recommended soil cleanup goal provided by the NYSDEC Division of Hazardous Waste Management. As shown by the formula provided on Table III, this screening value is dependent on the groundwater standard and octanol water partition coefficient for each compound, as well as the amount of organic carbon in the soil.

The groundwater and surface water screening values used for organic and inorganic comparison are the standards and guidance values for human health provided in the 25 September 1990 NYSDEC document "Ambient Water Quality Standards and Guidance Values." For inorganic data comparison, values from analysis of filtered samples from 58 wells installed in Monroe County for the CSOAP (Combined Sewer Overflow Abatement Program) investigation are also presented in Table VIII. These may be more indicative of background concentrations in this area. Furthermore, the NYSDEC values are for drinking water supplies and as such may not represent local background values.

Does not include GA or DOH values.

The sediment organic screening values used are from the USEPA formula which is provided on Table X. Variables in this formula are the ambient water quality data and octanol water partition coefficient for each compound, and the amount of organic carbon in the sediment. The organic carbon values used are from the previously disscussed site-specific sampling results.

The inorganic results for sediment and soils are compared to ranges in eastern U.S. soils as referenced on the data tables. For additional inorganic data comparison, soil and sediment clean up goals, from a detention pond clean up project, as provided by the NYSDEC for Inactive Hazardous Waste Site #851015, are also provided in Tables V and XI.

Bell's Farm and Home Center IRM

4.1 SOIL VAPOR

The four soil vapor shield points installed in August of 1991 were sampled on two occasions. On 2 August and 25 October 1991 soil vapor was pumped from these sample points and a sample was collected into tedlar bags. Table II, Apparent Compounds Detected In Soil Vapor Shield Point Screening, summarizes the results of the screening.

No compounds were detected during either sampling event at SV-201, on the east side of the building, or SV-204, near the site pond. SV-202, located in the vicinity of the former dumpster area, yielded soil vapor shield point samples containing the highest concentration of the chlorinated hydrocarbon compounds tested for (1,1-DCE, 1,2-DCE, TCE and vinyl chloride). TCE was used on site; DCE and vinyl chloride are breakdown products of TCE. SV-203 exhibited total TCE and breakdown product compound concentrations at approximately one-fifth to one-third of SV-202 during both sampling events, with TCE comprising the majority of the sample concentration.

Although groundwater level measurements were not collected at the same time as the soil vapor sampling, the site pond level was observed both times. During the 25 October sampling, the pond level was 1-2 feet higher than in early August. Correspondingly, the soil vapor concentrations were higher in August than in the October sampling. Dilution of shallow groundwater concentrations may have occurred as a result of infiltration of precipitation, resulting in lower soil vapor concentrations when the groundwater elevations were higher.

Based on the recent soil and groundwater analytical results (Sections 4.2 and 4.3 below), it was apparent that the former TCE degreaser area contains the highest detected site VOC concentrations in soil and groundwater (borings/wells OW-201s and OW-201d). Therefore, the results of the soil vapor sampling for H&A's 1988 report were reviewed and recalculated using only the values for TCE and its breakdown products since these are the components of the original soil vapor survey which were subsequently verified by laboratory analysis of soil and groundwater samples from beneath the slab.

Figure 8, Soil Vapor Sampling Location Plan, has been modified from the 1988 site investigation report prepared by H&A. This figure shows the concentration of total chlorinated hydrocarbons (TCE, Perc, DCE and Vinyl Chloride) in soil vapor samples from the site at that time. The highest soil vapor concentration recorded in this 1988 investigation is from the area adjacent to the TCE degreaser area. The concentrations generally drop off radially moving away from the degreaser area. Other elevated concentrations were detected in the vicinity of the former drum storage and dumpster areas.

4.2 SOIL

Soil samples were collected from background locations, test pits, grid borings, and test borings completed as monitoring wells.

The shallow soil samples used for background information were collected from the southwest portion of the site. Organic analytical results are presented on Table III. None of the organic compounds for which analyses were performed were found to be present in concentrations exceeding soil screening values. Inorganic results are shown on Table V. The majority of metals concentrations for the background samples are consistent with the mean concentration for metals in eastern U.S. soils. Those which exceed the mean still fall within the 95% confidence interval for the range of expected concentrations. The concentrations also fall within the clean up goals presented for NYSDEC registry site #851015.

Analysis of the test pit soil samples showed similar low concentrations for volatile organic compounds, also shown on Table III. No exceedances of the screening values were found. For the inorganic analyses, the calcium concentrations were elevated above the mean concentration of calcium in eastern U.S. soils. This is attributable to the abundance of calcium carbonate in the overburden deposits at the site.

In the grid boring soil sample organic analyses, one chlorinated hydrocarbon (TCE) and one BTX (benzene-toluene-xylene) compound (total xylenes) were found to be present in exceedance of the corresponding screening value. This sample, GS-A8, is located immediately adjacent to the exterior door to the former TCE degreaser area. Other elevated levels were detected at sample points adjacent to the former drum storage and degreaser areas. At these locations TCE was present at higher concentrations than the other organic compounds. These results are presented on Figure 6 and in Table IV. As in each of the figures which are used to present analytical results, this figure contains only those results which were not diluted, estimated or present in the blank. Nevertheless, the qualified data values are shown in each table with the corresponding qualifiers.

The test boring soil analyses also detected TCE concentrations in excess of the screening value. The 201 shallow and deep borings were sampled and found to contain TCE at levels exceeding those of the screening values at a depth of 8 to 14 feet below ground surface. As in the test pit soil inorganic analyses, calcium was detected at similarly elevated concentrations. Figure 9 shows the organic concentrations is soil.

4.3 GROUNDWATER

Groundwater organic analytical results are presented in Tables VI and VII. Figure 7, Subsurface Profiles, shows the compound detections (again for only those data with no analytical qualifiers) for each well on the cross-sections. Also shown on Figure 7 is the data from groundwater analyses conducted in the previous phase of site investigations. Only the 100-series wells were present at that time. In most cases the concentrations of chlorinated hydrocarbons have decreased or degraded (TCE degrades first to 1,2-DCE and then to vinyl chloride) since the previous sample analysis.

VOC concentrations higher than groundwater standards or guidance values were primarily detected only at wells in the three previously identified areas of concern. TCE and its degradation products were not detected at the following locations: the 105 and 106 clusters which are generally down-slope (and down gradient) of the areas of concern; the 202 cluster located less than 200 feet northeast of the TCE degreaser area (acetone, a common lab contaminant, was present in one sample); the 203 cluster at the southwest corner of the building; the 204 cluster at the southeast corner of the building (acetone was again present here in one sample); and the deep well (OW-205) adjacent to the former TCE degreaser area. Based on this data, it appears that the presence of organic compounds in groundwater and soils is limited to the vicinity of the three areas of concern.

— could be of concern to a treatment system

Results of the inorganic analyses of groundwater show iron, magnesium, manganese, and sodium to exceed the groundwater screening values. These are common rock/soil forming minerals, likely present as a result of sediment in the samples. Further, these compounds are generally not associated with industrial operations reportedly conducted by Dollinger at the site. comparison to the filtered CSOAP well data from Monroe County shows that sodium values are within the average for the area, as are most of the iron concentrations.

4.4 SURFACE WATER AND SEDIMENT

Figure 10 graphically displays the distribution of organics in the site surface water and sediment. Surface water samples were collected from the storm sewer and site pond; results are shown on Table IX. The pond sample closest to the storm sewer outlet, SW-201, contained 1,2-DCE and an estimated detection of vinyl chloride in excess of the surface water screening values. The pond water sample from location SW-204 contained bis(2-ethylhexyl)phthalate in excess of the screening value. No pattern was apparent to the low, isolated concentrations detected. The inorganic analyses, as shown on Table VIII, show exceedances for aluminum, iron, lead, magnesium, manganese, silver, sodium and zinc. Again, many of these are common, rock/soil/sediment forming minerals, none of which were reportedly used by Dollinger at the site. As discussed above, site sodium and iron concentrations fall within or close to the area averages.

Sediment samples were collected from four locations at the pond. Both a shallow (65 inches) and a deep (2± feet) sample were collected at each location. The shallow sample from SS-201 contains the volatile compounds benzene and chlorobenzene, and the semi-volatiles phenol and benzo(a)pyrene in exceedance of the screening values, as shown on Table X. Although many of the other samples contain volatile and semi-volatile compounds, none are in excess of the screening values calculated. The concentration and number of compounds detected at SS-201 is an isolated occurrence not reproduced at the other sediment sample locations. However SS-201 is near the storm sewer outlet.

Inorganic analyses of the sediment samples are summarized on Table XI. In most samples, calcium is present in excess of the 95th percentile screening value. Copper, lead, magnesium and zinc are also present in one or more sample at a concentration above the expected range for metals in soils for the eastern U.S. (95th percentile as shown on Table XI). All of the copper, lead and zinc results except two fall below the clean up goals provided by the NYSDEC for registry site #851015. The shallow sample at SS-201 generally contains both the greatest number of metal compounds and the highest concentrations relative to other site samples. The compound distribution does not exhibit a pattern; these inorganics may be naturally occurring or their presence may be related to the presence of the organic compounds at this location.

4.5 LABORATORY DATA VALIDATION

All of the above-presented data was validated by an NYSDEC-approved validator as prescribed in the Work Plan. Data validation text is in Appendix F. Tables XIII, XIV and XV contain quality assurance/quality control data including the blank analyses and the tentatively identified compounds (TICs). The validation indicates that all of the data is usable except reported results for semi-volatile analyses of samples GS-A8, SS-202s and SS-204s and pesticide analyses of SO-201 and SO-202, which were conducted outside the required holding time. These compounds were generally not otherwise indicated to be associated with the three Dollinger areas of concern and therefore this limitation does not appear to affect the RI results. Validation also resulted in confirmation or modification of data qualifiers by the lab used to identify limitations to data use. These include: estimated concentrations (E), results from diluted samples (D), compounds which were detected in a lab or cleaning blank (B), and estimated compounds (J).

4.6 AIR

Air sample collection was conducted at the B-205 borehole for borehole flux evaluation as described in the Work Plan. Table XII contains the borehole and ambient air readings. Samples were also taken during drilling at the drilling platform located approximately 4 feet above the borehole, and at 2± inches above ground surface at the location of 205, following the completion of drilling. Samples were collected in Tedlar bags and analyzed using the portable GC.

Results of the borehole flux evaluation indicate that concentrations detected in the sealed borehole appear to increase with the depth of the boring. Concentrations in the borehole increased from 881.9 ppm at 2-4 feet in depth to 4411 ppm at 9-11 feet in depth. Since approximately the same surface area of soil was exposed inside the borehole at the time of sampling, these increased concentrations are likely related to decreasing distance between the borehole bottom and the source of the volatile vapors (which, in this case, is likely to be groundwater) and/or a result of chlorinated VOC vapor density being heavier than air. For purposes of remediation planning, a flux of VOCs per sq. ft. of soil exposed may be estimated based on depth of excavation, proximity to groundwater, and proximity to each area of concern.

The concentration detected at the drill rig was measured during air rotary drilling in which air is forced from the borehole as part of the drilling process. Therefore, this concentration is not representative of ambient air quality, but does indicate the attenuation that occurs between the subsurface VOC source and a potential breathing zone during investigation operations. In this case the attenuation was 3 orders of magnitude. A concentration of 0.14 ppm total VOCs was measured at ground surface following drilling, but was not apparent by odor or in blanks. Assuming a similar 3 orders of magnitude decrease in concentration takes place between undisturbed ground surface and the breathing zone, no detectable concentrations would be apparent in outdoor area breathing zones. Although vapors might affect only indoor, poorly ventilated areas, based on the risk assessment (Section VI), and available data, no unacceptable health risks appear to exist.

Does this include utility works in an excavation?

V. CONTAMINANT FATE AND TRANSPORT

The environmental persistence of site compounds of concern and contaminant migration routes are described in this section.

5.1 CONTAMINANT PERSISTENCE AND MIGRATION

Table XVI contains information on the physio-chemistry and fate of organic chemicals and its significance. The significance of the listed properties is related to the relative mobility of compounds. This characteristic is a function of several criteria, briefly summarized in the following:

- Water Solubility - is the maximum concentration of a chemical that dissolves in pure water at a specific temperature and pH. It is a critical property affecting environmental fate and transport.

- Vapor Pressure - is a relative measure of the volatility of a chemical in its pure state and is an important determinant of the rate of vaporization from a particular media.

- Henry's Law Constant - is important in evaluating air exposure pathways. Values for Henry's Law Constant (H) can be calculated using the following equation and the values previously recorded for solubility, vapor pressures, and molecular weight:

$$H\ (atm\text{-}m^3) = \frac{\text{Vapor Pressure (atm)} \times \text{MW (g/mole)}}{\text{Water Solubility } (g/m^3)}$$

- Oraanic Carbon Partition Coefficient - (K_{oc}) is a measure of the tendency for organics to be adsorbed by soil and sediment and is expressed as:

$$K_{oc} = \frac{\text{mg chemical adsorbed/kg organic carbon}}{\text{mg chemical dissolved/liter of solution}}$$

  The K_{oc} is chemical-specific and is largely independent of soil properties.

- Octanol-Water Partition Coefficient - (K_{ow}) is a measure of how a chemical is distributed at equilibrium between octanol and water. It is an important parameter and is often used in the assessment of environmental fate and transport for organic chemicals. Additionally, K_{ow} is a key variable used in the estimation of other properties.

- o Retardation factors - provide an estimate of the degree to which compounds are retarded in their movement through the subsurface relative to the groundwater velocity and sorption to soil particles. Estimated retardation factors can be calculated using the formula:

$$R = 1 + \frac{P}{o} K_d$$

Where: P = Bulk density of the soil (1.75 g/cm^3 assumed)
o = Effective porosity (25% assumed)
K_d = (K_{oc} (soil organic carbon fraction)

The very low solubility and high octanol water partition coefficients of the pyrenes and PAHs indicate that they will be strongly adsorbed to sediments and other organic matter and will be relatively immobile. Similarly, the high solubilities and moderate to low octanol water partition coefficients of the chlorinated hydrocarbons and BTX compounds indicates that they will generally be preferentially present in a liquid media: surface water or groundwater.

Metals may occur in a metallic form, sorbed or chelated by organic matter or oxides, sorbed on exchange sites of waste constituents or soil colloids, or in the soil solution. Most metals are immobile at usual soil pH ranges and become significantly leachable only if acidic solutions percolate through the soils. At the normal range of soil pH values, metals have low concentrations in the soil solution and will not be leached at an appreciable rate. Other environmental factors which influence metal mobility include soil clay content, organic content, oxidation-reduction potential, carbonate content, and groundwater chemistry.

In general, it appears that the more mobile organic compounds (chlorinated hydrocarbons and BTEXs) are less persistent in site media and will therefore degrade as they move within or between given media. The less mobile site compounds (semi-volatiles) are also the more persistent and thus, although they may remain on site for a relatively long time they generally will not migrate within or between given site media. The inorganic compounds have a similarly low mobility and do not readily migrate within or between site media.

5.2 POTENTIAL ROUTES OF MIGRATION

5.2.1 Soil

Compounds present in soil at values higher than the screening values previously described, occur at only two locations sampled: the GS-A8 grid boring (located adjacent to the exterior door of the former TCE degreaser area) at 4-6 feet in depth, and the 201 borings beneath the building at 8-14 feet in depth. Since no shallow soil contaminants were detected outdoors during this investigation, there is not likely to be release of soil contaminants to the air. Migration to indoor air is a potential pathway, but only if there are cracks in the floor slab and poor indoor ventilation (this is evaluated further in the Risk Assessment, Section VI). Through groundwater flow and surface infiltration, soil contaminants can migrate into groundwater under certain physio-chemical conditions.

5.2.2 Groundwater

Site groundwater contaminants are not likely to be released to the air unless groundwater is present at the ground surface. This condition may exist inside the building at the sump.

Soluble contaminants will migrate with the groundwater at rates that depend on the groundwater flow velocity and the degree of retardation of contaminants associated with the presence of organic carbon in the subsurface.

5.2.3 Surface Water

With the generally low concentrations detected in the surface water sampling, the absence of contaminants in the well cluster adjacent to the pond (OW-105), the absence of contaminants present downstream (as presented in the NYSDEC sample results), and the isolated nature of the sediment contaminants at SS-201s, it does not appear that surface water is acting as a primary migration pathway.

However, previous data indicates a problem.

5.2.4 Air

Air as a migration route was evaluated through borehole and ambient air monitoring at the site. Results indicate that selected volatile organic compounds are released to air when soil containing the compounds is disturbed by drilling. However, the compounds are not persistent in air and are quickly dispersed and diluted.

VI. RISK ASSESSMENT

This baseline risk assessment (RA) evaluates potential impacts on human health and the environment from compounds identified at the Dollinger facility. This assessment was prepared in accordance with USEPA's Risk Assessment Guidance (RAG) document (1*) as recommended by the New York State Department of Health, Bureau of Toxic Substances Assessment (2).

6.1 HUMAN HEALTH EVALUATION

The four components of the human health RA are:

- Identification of Compounds of Concern
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization

6.1.1 Identification of Compounds of Concern

Compounds of potential concern, as defined by USEPA's RAG, are chemicals that are potentially site-related and for which analytical data are of sufficient quality for use in the quantitative RA. The process of identifying a list of chemicals of potential concern is based on evaluating analytical data for the site, analysis of naturally occurring levels of chemicals, and comparison with possible Federal and/or State regulatory criteria for concentrations of chemicals in the environment.

6.1.1.1 Data Evaluation

Analytical data for the Dollinger facility site were available from the Phase One investigation conducted in October 1988, and the Phase Two investigation conducted in July 1991. Data from available sources were gathered and reviewed for inclusion in the risk assessment.

Inappropriate to call these studies phase 1 and phase 2.

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*Number in parentheses refers to sources of information listed in "References" at the end of this section.

Analytical data quality is discussed in Appendix F (data validation) of this report. The nature and extent of contaminants and a comparison with background concentrations is presented in Section IV. Based on this review, compounds included in the risk assessment are summarized in Table XVII for soils, sediment, surface water and groundwater.

All organic compounds identified by laboratory evaluation were included in the RA except those associated with apparent laboratory or other sample handling contamination. Such compounds are identified in the data evaluation discussion and include: 1,1,1-Trichloroethane in samples SO201 and SS202 which were also identified in the associated laboratory blank and the pesticide 4-4-'DDE which was identified at an estimated concentration much lower than the detection limit.

Acetone and methylene chloride are used in a number of laboratory extraction procedures and are common laboratory contaminants. These compounds were identified in a number of samples and could not be ruled out as present due only to laboratory contamination and so are included in the RA. However, their detection may not represent actual site conditions.

A number of polynuclear aromatic hydrocarbons (PAHs) were identified in the sediment sample SS201. Laboratory quantification problems may have resulted in an overestimation of the compound concentrations. Therefore, these compounds are only included in the RA in the reasonable maximum exposure (RME) scenario.

All inorganic compounds identified at concentrations above background concentrations were included except for calcium which is not considered a toxic compound and would not be expected to pose a threat to human health or the environment. Inorganic compounds included in the RA are: copper, lead, mercury, nickel and zinc in sediment, and lead in surface water.

Only analytical results from the 1991 site investigation were included in the RA as these are considered most representative of current site conditions. Fate and transport processes which may affect previously identified compounds are discussed in Section V of this report.

6.1.2 Exposure Assessment

In the exposure assessment, compounds identified at the site are evaluated in terms of complete pathways by which humans may come in contact with them. The magnitude, frequency and duration of potential exposures are evaluated using scenarios of exposure. These scenarios are derived from site use and setting under current and predicted reasonable future conditions (3).

6.1.2.1 Site Setting

The 18.5± acre industrial-zoned property is located within a light industrial and commercial area of Brighton, Monroe County, New York (see Site Location Map - Figure 1). The nearest residential area is approximately 1200 feet south of the site.

Prior to its current industrial use, the site was used for agricultural and residential purposes.

An undeveloped field and woodland is located immediately north of the site. Conrail railroad tracks border the eastern portion of the property. The back of commercial facilities bordering on W. Henrietta Road are located on the western property boundary. An access road, commercial properties and a landscaped approach border the south side of the property off Brighton-Henrietta Town Line Road.

6.1.2.2 Potentially Exposed Populations

Characterization of potentially exposed populations is dependent on the nature and location of constituents identified at the Dollinger site, presence of potential pathways of migration offsite, and the land use and demographics of areas around the site. Based on a review of analytical data and land use activities, the apparent areas of potential concern include: surficial soils in the former drum storage area, former degreaser area, storm water drainageway; sediment from the drainage retention pond; and groundwater.

Potential exposure scenarios were developed to evaluate reasonable hypothetical exposure conditions for the Dollinger facility site based on USEPA's RAG and site zoning/use. Based on the industrial land-use zoning and locations of chemicals of concern, a non-resident trespass scenario and an on site worker scenario were evaluated. Planned future use of the site considers continued usage of the facility as an industrial/commercial property for the forseeable future. Therefore, potential future exposure scenarios would be the same as the current use scenarios. The potentially exposed populations under current and future site usage would include the following groups:

Project LA should include utility workers in a trench operation scenario. Note high levels in flux chamber study

1. Trespassers (including children) on the property potentially exposed to chemicals of concern in soils and sediments through accidental ingestion and skin contact.

2. On site workers potentially exposed to chemicals of concern in soil through inhalation of a vapor phase.

The first scenario developed to evaluate site conditions considers off-site residents entering the site. The closest residence is 1200 feet from the site. Therefore, older children were chosen to evaluate exposure conditions. It was considered unlikely that young children or adults would enter the property regularly or come in contact with contaminated soils.

The on site worker population evaluated considers inhalation of constituents of concern in the vapor phase. The ingestion and dermal absorption exposure routes are not considered likely to occur.

Both scenarios were developed considering potential exposure routes which exist on the property based on areal extent and migration as discussed previously.

Potential Future Use of Groundwater as Drinking Water

Groundwater on the site is not currently being used as a drinking water source, and is not planned for use in the foreseeable future (the area is on municipal water), and is unlikely to be used due to the low site permeabilities. Compounds in groundwater were identified at concentrations above NYSDEC Drinking Water Screening Values (see Tables VI and VII). In light of low site permeabilities, migration of compounds in groundwater has not been identified as a likely exposure pathway.

Identification of Exposure Pathways

For the child trespass scenario, all soil-related exposures are assumed to occur outdoors at or near the contaminated soils. For the on site worker scenario exposures are assumed to occur in the degreaser work area. All pond water and sediment related exposures are assumed to occur outdoors at the contaminated sediments.

These conservative (human-health protective) assumptions were used to evaluate exposure by the following routes:

- o Ingestion of soil contaminants by children trespassing on the site.
- o Dermal absorption of soil contaminants by children trespassing on the site.
- o Ingestion of contaminated pond water and sediment by children trespassing on the site.
- o Inhalation by on site workers of vapors which infiltrate and collect in the building.

Two levels of exposures were considered:

- o A routine or typical case.
- o A reasonable maximum exposure case.

The typical case employs average soil concentrations and intake parameters (e.g., amount of soil ingested, amount of soil on skin as specified in the USEPA Exposure Factors Handbook) and average soil contaminant values (3).

The reasonable maximum exposure (RME) case employs average intake parameters and maximum identified contaminant values.

The conservative nature of assumptions built into these potential exposures must be emphasized. For the child exposure scenario, a trespass must take place and the child must locate the specific location of the detected concentrations on site. For the on site worker, vapors must infiltrate the building and collect in a relatively confined space.

Source Media Contaminant Concentrations

The exposure pathways identified in Section 6.1.2 originate from soils within the site boundaries. No current or likely future offsite migration of contaminants was identified by RI sampling performed by

H&A or NYSDEC's separate sampling effort. Compounds that were detected at least once in soil or sediment samples from the site were included. The "representative" or typical case exposure concentrations were obtained by averaging the detected results for each contaminant. When averaging, duplicate analytical results were averaged to obtain the sample concentration used. Sample detection limits were not used as surrogate concentrations because quantitation limits were low enough to allow for detection above toxicity reference values.

Chemicals that were detected in only one sample are considered only in the reasonable maximum exposure (RME) scenario and at the concentration identified rather than averaging over the total number of samples analyzed. Maximum observed concentrations of chemicals detected at more than one location were used in the RME scenario.

Table XXVII presents the chemicals detected in soil, sediment, surface water, groundwater and soil vapor and their respective exposure concentration for the typical and RME scenarios.

Exposure Estimation Methods

This section integrates populations, activities and exposure pathways into exposure scenarios representing typical and reasonable maximum exposure conditions for the evaluation of human health risks.

These scenarios estimate absorbed doses using the following equation:

$$\text{Absorbed Dose} = \frac{(\text{Conc.})(\text{Contact Rate or Ingestion Rate})(\text{Exposure Frequency})(\text{Exposure Duration})(\text{Absorption Fraction})}{(\text{Body Weight})(\text{Averaging Time})}$$

As presented in the equation, absorbed dose is directly proportional to the product of contaminant concentration, contact rate, frequency of exposure and exposure duration, divided by the product of body weight and averaging time. Scenarios assume absorption fractions of 1 in keeping with USEPA practice and the need for maintaining consistency with procedures used for deriving chronic toxicity indices. Such equations enable estimation of both lifetime average daily doses

(LADDs) used in the evaluation of potential carcinogenic risks, and chronic daily doses (CDD) calculated for pathway specific exposure periods, which are used in the evaluation of noncarcinogenic risks.

The two scenarios evaluated in this document are:

Bcenario 1: Non-Resident Bite Trespass Exposure
Bcenario 2: On Bite Work Exposure

Scenario 1 - addresses potential exposures to 6 to 12 year old children, an age group that, if trespass occurred, would most likely come in contact with soil. Exposure routes addressed in this scenario include inadvertent ingestion of soil due to play activity and/or hand to mouth contact and direct contact with soil and sediment. Parameter values (based on the USEPA Exposure Factors Handbook, 1989) specific to this scenario are (4):

- Ingestion Rate (IR) of 100 mg/day for age groups older than 6 years old.
- Fraction Ingested (FI) = Fraction ingested from contaminated source = 1.0.
- Exposure frequency of 26 days/year (1 time/week for 26 weeks/year to account for the fact that the site contains an active industrial facility and access would occur mostly during non-working hours and primarily within the 6-month period between April and October).
- Exposure duration (ED) of 6 years assuming entire age period between 6 to 12 years old.
- Body Weight (BW) of 31 kg, the average of 9 year olds.
- Averaging time of 70 years for the pathway specific period of exposure for carcinogens or 6 years for noncarcinogens.

Parameter values specific for the dermal contact exposure route (based on the USEPA Exposure Factors Handbook, 1989) are (4):

- Skin surface area available for contact (cm^2/event): typical case = 1200 cm^2 (hands and 1/3 of arms and legs); reasonable maximum exposure = 1800 cm^2 (hands and one-half of arms and legs)

- A soil to skin adherence factor of 0.5 mg/cm^2

- An exposure frequency of 26 days/year (1 day/week, 26 weeks/year) for the typical case and reasonable maximum exposure case

- Exposure duration of 6 years

- Body weight of 31 kg

<u>Scenario 2</u> - addresses potential exposures to on site workers. Key variables in the worker exposure scenario include (4):

- Inhalation Rate (IR) of 0.8 m^3/hr typical case corresponding to light activity and 2.5 m^3/hr reasonable maximum exposure for moderate activity.

- Exposure Time (ET) assumed at 8 hours/day typical and reasonable maximum exposure.

- Exposure Frequency (EF) of 250 days/year (5 days/week, 50 weeks/year).

- Exposure Duration (ED) of 10 years (typical case), 40 years (RME case).

- Body Weight (BW) of 70 kg for both typical and reasonable maximum exposure case.

Concentrations of compounds in air were calculated using the following exposure criteria:

- 1 liter of groundwater entered the degreaser room through cracks in the floor, sewer pipe and sump pump and volatilized completely.

- Exposure occurs in the degreaser room, with the room treated conservatively as an enclosed room of approximately 384 m^3 volume.

- Assume six complete air changeover/24 hours (conservative, usually see 0.5 changes/hr.).

- Assume steady state contaminant concentration conditions (very conservative, would expect concentrations to decrease over time).

This simple mathematical model only evaluates migration of groundwater into the building. Maximum detected compound concentrations in groundwater were used to represent groundwater beneath the building. Vapor phase chemicals may also be entering the building through soil gas migration. Concentrations of 1,1-DCE, TCE and VC identified in the soil gas were higher than their associated OSHA PELs, indicating this is a potential migration pathway. It should be emphasized, however, that routine air monitoring during interior drilling did not detect total volatiles above background and OVA/HNu detection limits of ±1 ppm. Therefore, this scenario assumes a change in building conditions that would limit air circulation in the TCE degreaser areas and the total number of air changes.

Exposure Estimates

Estimates of potential exposure to site compounds that could occur were prepared by combining the source media contaminant concentrations with the exposure estimation methods discussed previously. The exposure estimates obtained by this process are given as chronic daily intake (CDIs) for each complete pathway and exposure case in the risk estimation tables (Tables XVIII to XXI).

6.1.3 Toxicity Assessment

The toxicity assessment identifies human health toxicity and carcinogenicity data for the compounds identified at the Dollinger site through a hazard identification and dose-response evaluation in accordance with USEPA guidance.

6.1.3.1 Hazard Identification

The hazard identification as defined by USEPA (1) is a qualitative description of the potential toxic properties of compounds of concern at the site. These are discussed in brief health effects summaries below. Toxicity and compound use data were obtained from the Agency for Toxic Substances and Disease Registry (ATSDR), Toxicity Profiles (5), and other references regarding occupational health and safety (6,7). Compound descriptions are arranged alphabetically.

Acetone

Acetone is a commonly used solvent. It also occurs naturally as a product of plant and animal metabolism, and therefore may be detected in soils, sediments, or water in contact with decaying vegetation or animal remains. The general population may be exposed to acetone by inhalation, ingestion or adsorption through the skin.

Acetone is not considered very persistent in the environment. Half life estimates range from 13 to 79 days in the atmosphere.

Acetone is generally regarded as having a low toxicity. Prolonged inhalation of high concentrations may produce irritation of the respiratory tract, coughing, headache, drowsiness, lack of coordination, and in severe cases, coma. No chronic health hazards have been associated with acetone.

Benzene

Benzene has a long history of industrial use, most notably as a solvent and as a starting material for the synthesis of other chemicals. It is also a constituent of gasoline, therefore it is a common anthropogenic non-point source compound found in roadway and parking lot run off.

Benzene is readily absorbed by inhalation and ingestion, but is relatively poorly absorbed through skin. Since benzene is quite volatile, inhalation is the most likely route of exposure.

Benzene is toxic to the blood-forming organs and the immune system. Excessive exposure (inhalation of concentrations of 10 to 100 ppm) can result in anemia, a weakened immune system, and headaches. Occupational exposure to benzene may also be associated with spontaneous abortions and miscarriages (supported by limited animal data) and certain developmental abnormalities such as low birth weight, delayed bone formation, and bone marrow toxicity. Benzene is regarded as a human carcinogen based on numerous studies documenting excess leukemia mortality among occupationally exposed workers.

Chromium

Chromium is a naturally-occurring element used industrially in making steel and other alloys. Chromium compounds are used in refractory brick for the metallurgical industry and in metal plating, manufacture of pigments, and other processes. Exposure to chromium can result from inhalation of air containing chromium-bearing particles and ingestion of water or food containing chromium. Chromium is considered an essential nutrient which helps to maintain normal glucose, cholesterol, and fat metabolism. The minimum daily requirement of chromium for optimal health has not been established, but a daily ingestion of 20-500 ug/day has been estimated to be safe and adequate.

There are two major forms of chromium which differ in their effects. One form, chromium VI, acts as an irritant and short-term high-level exposure can result in adverse effects at the site of contact, such as ulcers of the skin, irritation and perforation of the nasal mucosa, and irritation of the gastrointestinal tract. Minor to severe damage to the mucous membranes of the respiratory tract and to the skin have resulted from occupational exposure to as little as 0.1 mg/m^3 chromium VI compounds. Chromium VI may also cause adverse effects in the kidney and liver and long-term occupational exposure to low levels of chromium VI compounds has been associated with lung cancer in humans.

The second form of chromium, chromium III, does not result in these effects and is the form thought to be an essential nutrient.

<u>Copper</u>

Copper is a naturally-occurring element which is used to make electrical wiring, water pipe and is a component of alloys such as bronze and brass. Copper is an essential element at low dose levels but may induce toxic effects at high dose levels. Copper may enter the body by breathing air, drinking water, or eating food containing copper, and by skin contact with soil, water and other copper-containing substances. Long-term overexposure to copper dust can irritate the nose, mouth, and eyes and cause headaches, dizziness, nausea, and diarrhea. Ingestion of higher than normal concentrations of copper can cause vomiting, diarrhea, stomach cramps, and nausea. Liver and kidney damage and possibly death may occur if exposure continues. Concentrations of 3 mg/L in water caused liver damage in infants drinking the water for 9 months. Ingestion of water containing concentrations of 30 mg/L (single dose) by adult humans caused vomiting, diarrhea, and stomach cramps.

The minimum risk level (MRL) for copper has not been established. The National Academy of Science has recommended that 2-3 mg/day of copper is a safe and adequate daily intake.

1,1-Dichloroethene (1,1-DCE)

1,1-Dichloroethene (1,1-DCE, VDC, vinyldene chloride) is used to make certain plastics such as packaging materials and flame-retardant fabrics. It is a man-made chemical that is not found naturally in the environment. It may occur in the environment as a breakdown or degradation product of TCE or 1,1,1-TCA. The general public may come in contact with 1,1-DCE through contact with media contaminated by environmental releases or by contact with consumer products made with 1,1-DCE. 1,1-DCE can easily enter the body through the lungs as an air contaminant or through the digestive tract as a contaminant of food or water. It is expected to readily enter the body through the skin as well.

The effects of human exposure to 1,1-DCE have not been well documented. Prolonged exposures to high amounts of 1,1-DCE in animal studies have been associated with liver, kidney, heart and lung damage. In one animal study, an increased incidence of tumors was shown. The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for 1,1-DCE is 1 ppm.

1,2-Dichloroethene (1,2-DCE)

1,2-DCE is a synthetic organic chemical which is primarily used in the production of solvents and as an additive to dyes, lacquer solutions, perfumes, and thermoplastics. There are two forms of 1,2-DCE: cis-1,2-DCE and trans-1,2-DCE, which may occur separately or as a mixture. 1,2-DCE may occur as a degradation product of polychlorinated compounds such as TCE. 1,2-DCE can enter the body through drinking water, eating food, or breathing air which contains 1,2-DCE. Inhalation of high levels of 1,2-DCE can cause nausea, drowsiness, and may result in death. Liver, heart, and lung damage were observed in laboratory animals after short- or long-term exposure to 1,2-DCE in air or food. The relative potencies of the cis- and trans-isomers have not been adequately characterized to allow conclusions as to their individual potential to cause adverse health effects. Permissible Occupational Exposure Levels are 200 ppm based on an eight-hour Time Weighted Average (TWA) exposure period.

Ethylbenzene

Ethylbenzene is an organic chemical which occurs naturally in coal tars and petroleum. It is also found in man-made products such as paints, inks, and insecticides. Gasoline contains approximately **2%** ethylbenzene by weight and therefore this compound is also frequently present as a component of anthropogenic sources such as roadway and parking lot run off. Ethylbenzene is readily absorbed into the body following inhalation, or eating or drinking contaminated food or water. Ethylbenzene as a liquid can be absorbed by the skin, but vapors are not as readily absorbed. Humans exposed to levels of ethylbenzene as low as **460** ppm in the air for short periods of time have complained of eye and throat irritation.

The OHSA PEL value for ethylbenzene exposure in the work place is **100** ppm for an 8-hour TWA.

Lead

Lead is a naturally occurring element and is a major constituent of more than **200** identified minerals. It is also used in such processes as the manufacture of storage batteries and in a variety of metal products (e.g., sheet lead, solder, pipes), production of ammunition and various chemicals including pigments. Lead is a constituent of leaded gasoline (tetra ethyl lead) which were once a predominant automobile fuel but are now in limited use. Lead therefore is a common component of roadway run off. Humans are generally exposed to small amounts of lead on a daily basis. Lead is not a necessary nutrient, rather it is toxic at high concentrations.

The major source of daily intake of lead for adults and children is food and beverages. Air is another source for lead exposure. Target organs for lead toxicity include the blood, gastrointestinal tract, and the central nervous system. Lead is also a suspected human carcinogen. An acceptable daily intake for humans has not been firmly established, as toxicity research continues. The acceptable daily intake of **0.0014** mg/kg/day has been used by USEPA but no reference dose has been approved (8,9).

Polycyclic Aromatic Hydrocarbons (PAHs)

PAHs contain only carbon and hydrogen and consist of two or more fused benzene rings in linear, angular or cluster arrangements. PAHs are formed during the incomplete burning of fossil fuel, garbage, or any organic matter and may be carried into the air on dust particles and distributed into water and soil. Exposure may occur by inhalation of dust or particles, drinking water or accidental ingestion of soil or dust particles containing PAHs. Smoking or charcoal-broiling food can cause PAHs to be formed in the food which may be absorbed through the digestive tract.

Some PAHs are known carcinogens and potential health effects caused by PAHs are usually discussed in terms of the individual PAH compound's carcinogenic or noncarcinogenic effects. Proliferating tissues, such as the intestinal epithelium, bone marrow, lymphoid organs, and testes, seem to be especially susceptible targets. Concentrations of 150 mg/kg or more administered to laboratory animals have been shown to inhibit body growth. In general, no apparent reproductive, teratogenic, embryotoxic, and fetotoxic effects would be expected at background levels of PAHs. Cancer has been found in animals breathing approximately 1.25 ug/m /day Benzo(a)pyrene (one of the potentially carcinogenic PAHs), eating 5 mg/kg B(a)P per day or having 0.05 mg/kg B(a)P applied to their skin throughout their lives. These levels are at least 1,000 times higher than those to which humans are normally exposed. By USEPA convention, B(a)P is used as the surrogate for evaluation of the toxicity of all of the carcinogenic PAHs in this assessment.

Phthalates

Phthalates are a group of compounds which are esters of phthalic acid with various alcohols and a number of diesters.

Phthalates are used in the plastics industry for producing flexible or "soft" polyvinyl chloride (FVC). They are also used for the production of lacquers, dispersion agents, lubricants, insect repellants and agents for high vacuum pumps among others. Phthalatates are often associated with laboratory contamination due to their presence in the vacuum oil of laboratory equipment. Phthalates identified in Dollinger site media were Bis (2-ethylhexyl) phthalate, Di-n-butyl phthalate and Diethyl phthalate.

Humans may come in contact with phthalates through media contaminated following accidental or incidental release or by contact with consumer products containing it. The acute toxicity of phthalates is considered very slight and decreases generally with the increasing molecular weight. Symptoms observed following ingestion of 10 grams by humans included mild gastric disorders. The very low levels to which humans may be exposed have not been shown to cause adverse effects. Several phthales have been linked to embryotoxicity and teratogenicity at high concentrations in laboratory studies. Laboratory studies have indicated some of the phthalates are potential human carcinogens. Liver disease has also been associated with phthalate exposure in laboratory animals.

Toluene

Toluene is used as a solvent in the production of a variety of products and as a constituent in the automotive and aviation fuels. It therefore may be present in non-point sources such as roadway run off. Toluene can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. It may also enter the body through the skin. Toluene may cause irritation of the eyes, respiratory tract, and skin; fatigue; weakness; confusion; headache; dizziness; and drowsiness. The symptoms have been reported in association with occupational exposure to airborne concentrations of toluene ranging from 50 ppm (189 mg/m^3) to 1,500 ppm (5,600 mg/m^3). These symptoms generally increase in severity with increases in toluene concentration.

1,1,1-Trichloroethane (1,1,1-TCA)

1,1,1-TCA is a man-made chemical which has many industrial and household uses including as a cleaning solvent to remove oil or grease from manufactured metal parts, drycleaning and as a solvent to dissolve other substances such as glue and paint. 1,1,1-TCA is readily absorbed into the body following exposure by inhalation of air containing the vapor and ingestion of water or food containing 1,1,1-TCA. It also readily leaves the body with exhaled air. Inhalation of high levels of 1,1,1-TCA for a short time by humans resulted in effects such as dizziness, lightheadedness, and loss of balance and coordination. Studies in animals have shown that mild liver effects resulted from long-term exposure. The effects of long-term low level exposure in humans has not been established. The OSHA PEL value is 350 ppm for an 8-hour TWA exposure.

1,1,2-Trichloroethane

1,1,2-Trichloroethane (1,1,2-TCA) is a solvent and is used in the manufacture of 1,1-Dichloroethene. Humans may be exposed to 1,1,2-TCA by breathing air that contains it or by eating food or drinking water that contains it. 1,1,2-TCA is expected to be readily adsorbed through the skin. Toxicity hazards to humans have not been well documented. 1,1,2-TCA has been experimentally shown to induce liver tumors in mice and has been linked to liver and kidney damage in dogs. The OSHA PEL value is 10 ppm for an 8-hour TWA exposure.

Trichloroethene (TCE)

TCE is used as a cleaning agent and solvent for degreasing operations. TCE may cause adverse health effects following exposure via inhalation, ingestion, or skin or eye contact. TCE may cause drowsiness, dizziness, headache, blurred vision, lack of coordination, mental confusion, flushed skin, tremors, nausea, vomiting, fatigue, and heart arrhythmia. Exposure of laboratory animals to TCE has been associated with an increased incidence of a variety of tumors and TCE is considered a probable human carcinogen. An occupational PEL-TWA of 50 ppm has been set by OSHA.

Vinyl Chloride (VC)

VC is primarily used in the chemical manufacturing industry in the production of polymeric chemicals which are in turn used to manufacture a variety of plastic and vinyl products. VC may also occur as a degradation product of other polychlorinated compounds such as TCE and DCE. VC may cause adverse health effects following exposure by inhalation, ingestion, or by dermal or eye contact. VC is a known human and animal carcinogen. Liver cancer was reported in workers occupationally exposed to air concentrations in the range of less than 25 ppm to greater than 200 ppm. An occupational PEL-TWA of 1 ppm has been set by OSHA.

Noncarcinogenic effects associated with exposure include hepatitis-like changes in the liver, thyroid depression, alteration in blood chemistries, and dermatitis.

Xylenes

Xylenes are natural components of coal tar and petroleum. The majority of xylenes used commercially are man-made. There are three isomers of xylene (ortho-, meta-, and para-xylene) which can occur as a mixture referred to herein as xylenes. Xylenes are used in solvent mixtures and cleaning agents and as an ingredient in airplane fuel and gasoline. Xylenes, like benzene, toluene and ethylbenzene, are frequently detected in anthropogenic environmental sources such as roadway run off. Exposure to xylene may occur by breathing xylene fumes, or eating or drinking xylene-contaminated food or water. Xylene is rapidly absorbed following inhalation or ingestion. Short-term exposure of humans to high levels of xylene (100-299 ppm) causes irritation of the skin, eyes, nose and throat, increased reaction time to a visual stimulus, impaired memory, stomach discomfort, and possible changes in the liver and kidneys. Long-term exposure of laboratory animals to xylene in air (12-800 ppm) resulted in changes in the cardiovascular system, changes in liver weights, and hearing loss.

No studies were located regarding the long-term effects of inhalation or ingestion of xylene by humans. Xylene may be fatal if large enough concentrations are inhaled or ingested. Ingestion of 5,000 ppm of xylene in food by laboratory rats results in impaired visual function. Decreased body weight and increased numbers of birth defects in unborn rats were observed at higher concentrations. The occupational exposure PEL-TWA value for xylenes is 100 ppm.

Zinc

Zinc is an essential element and its absorption from the gastrointestinal tract is regulated by homeostatic mechanisms. Zinc appears to be toxic only at levels at least an order of magnitude greater than the recommended daily allowance. Toxicity appears to result from an overload of the homeostatic mechanism for absorption and excretion of zinc. Symptoms of overexposure may include severe diarrhea, abdominal cramping, nausea, and vomiting. Inhalation of zinc fumes or dusts has been associated with a condition called "metal fume fever" characterized by flu-like symptoms including throat irritation, body aches, weakness, and fatigue.

The maximum recommended level for zinc has not been established. The National Academy of Science has estimated that the recommended dietary allowance for zinc is 15 mg/day for an adult or 0.21 mg/kg body weight/day.

6.1.3.2 Dose-Response Assessment

For the dose-response assessment, quantitative indices of toxicity were compiled for estimating the relationship between the extent of potential exposure to a contaminant and the potential increased likelihood and/or severity of adverse effects. The methods for deriving indices of toxicity and estimating potential adverse effects are presented below. The indices of toxicity for the chemicals of concern are presented in Tables XXII and XXIII.

Categorization of Chemicals as Carcinogens or Noncarcinosens

As recommended by the USEPA RAG (1) and in accordance standard risk assessment practice, chemicals of concern were divided into two groups: potential carcinogens and noncarcinogens. The risks posed by these two types of compounds are assessed differently because noncarcinogens generally exhibit a threshold dose below which no adverse effects occur, while no such threshold is thought to exist for carcinogens.

As used here, the term carcinogen means any chemical for which there is sufficient evidence that exposure may result in continuing uncontrolled cell division (cancer) in humans and/or animals. Conversely, the term noncarcinogen means any chemical for which the carcinogenic evidence is negative or insufficient.

It should be noted that definitions are not static; rather, compounds may be reclassified when additional evidence becomes available. Chemicals of concern have been classified as carcinogens or noncarcinogens, based on weight-of-evidence criteria contained in the USEPA Carcinogenicity Evaluation Guidelines (10).

According to these USEPA guidelines, chemicals in the first three groups, A, B and C, are classified as carcinogens, probable human carcinogens and possible human carcinogens, respectively, and are subjected to non-threshold carcinogenic risk estimation procedures. The remaining chemicals, in groups D and E, are defined as noncarcinogens and are not classified as to carcinogenicity and are subjected to threshold-based toxicological risk estimation procedures.

Assessment of Noncarcinosens

For this risk assessment, methods were used to evaluate potential noncarcinogenic effects of chemicals of concern in accordance with USEPA RAG document recommended methods. Specifically, risks associated with noncarcinogenic effects (e.g., organ damage, immunological effects, birth defects, skin irritation) are assessed by comparing the estimated average exposure to the reference dose (RfD) derived by USEPA. The RfDs are derived by literature searches to obtain no observed or lowest observed adverse effects level (NOAEL or LOAEL), then applying a suitable uncertainty factor (usually ranging from 10 to 1,000) to allow for differences between the study conditions and the human exposure situation to which the acceptable daily dose is to be applied. NOAELs and LOAELs are usually based on laboratory experiments on animals in which relatively high doses are used. Consequently, uncertainty or safety factors are required when deriving RfDs to compensate for experimental data limitations and the lack of precision in extrapolating from high doses in animals to lower doses in humans.

RfDs are generally calculated using the formula:

$$\text{RfD (in mg/kg/day)} = \frac{\text{NOAEL or LOAEL (in mg/kg/day)}}{\text{(Uncertainity Factor(s)) (MF)}}$$

If the estimated exposure exceeds the estimated acceptable intake, some adverse effects are presumed to be possible, and the exposure level may be of potential concern. Conversely, if the estimated exposure is less than the estimated acceptable intake, no adverse affects would be expected, and the exposure level is considered acceptable.

Noncarcinogenic risks are usually assessed by calculating a hazard index which is the ratio of the estimated exposure to the RfD as follows:

$$HI = \frac{EE}{RfD}$$

where:

HI = Hazard Index
RfD = Reference Dose
EE = Estimated Exposure

A hazard index greater than 1 indicates that adverse effects may occur, while a value less than 1 means that adverse effects would not be expected. Chronic oral RfDs for the chemicals of concern at the Dollinger site are presented in Table XXII.

Assessment of Carcinosens

In contrast to noncarcinogenic effects, for which thresholds are thought to exist, scientists have been unable to experimentally demonstrate a threshold for carcinogenic effects. For carcinogens, USEPA assumes that a small number of molecular events can evoke changes in a single cell that can lead to uncontrolled cellular proliferation and eventually to a clinical state of disease.

This hypothetical mechanism for carcinogenesis is referred to as "non-threshold" because there is believed to be essentially no level of exposure to such a chemical that does not pose a probability of generating a carcinogenic response. However, depending on the potency of a specific carcinogen, and the level of exposure, such a risk could be vanishingly small.

For evaluating carcinogenic effects, USEPA uses a two-part evaluation in which the substance first is assigned a weight-of-evidence classification, and then a slope factor (SF) (formerly called carcinogenic potency factor) is calculated. The weight-of-evidence classification was discussed previously (Categorization of Chemicals as Carcinogens or Noncarcinogens). Slope factors are typically calculated for potential carcinogens categorized as A, B, and C carcinogens based on mathematical models and assumptions on dose, current theories on carcinogenesis, and confidence limits from human and animal studies. Noncarcinogenic compounds detected on site are presented in Table XXII, and potential carcinogens in Table XXIII.

By using these procedures the regulatory agencies have indicated they are unlikely to underestimate the actual slope factors for humans. The SF is a plausible upper-bound estimate of the probability of a response per unit intake of a chemical over a lifetime. Using SFs, lifetime excess cancer risks can be estimated by:

$$Risk = (LADD_j \times SF_j)$$

where:

$LADD_j$ = Exposure route-specific lifetime average daily dose
SF_j = Route-specific slope factor

Therefore, following this method, the carcinogenic risks for the oral and dermal routes of exposure are calculated as follows:

$$Risk = LADD_o \, SF_o + LADD_d \, SF_d$$

Subscript "o" indicates the oral route and subscript "d" the dermal route. SFs for the chemicals of concern for the oral exposure route are presented in Table XXIII. USEPA's weight-of-evidence classification for the chemical is included.

Once substances have been absorbed by the oral or dermal routes, their distribution, metabolism, and elimination patterns (pharmacokinetics) are usually similar. For this reason, and because dermal route RfDs and SFs are usually not available, oral route RfDs and SFs are often used to evaluate exposures to substances by both the oral and dermal routes. This approach is not appropriate and is not used if the adverse effect occurs at the point of exposure. Examples would be skin irritation or skin cancer resulting from dermal exposure. Therefore, depending on the compound, oral, or dermal and oral routes were evaluated as appropriate.

Exposure to some chemicals may result in both carcinogenic and noncarcinogenic effects. In these cases, both the carcinogenic and noncarcinogenic effects were evaluated and considered in the risk assessment process.

6.1.4 Risk Characterization

The risk characterization is the final step of the baseline health risk assessment process. The potential carcinogenic risks were assessed by multiplying the estimated LADD or Chronic Daily Intake (CDI) for a compound by its estimated slope factor (SF) to obtain the estimated risk. The estimated risk is expressed as the probability of that exposure resulting in an excess incidence of cancer. The risk range of 10^{-4} to 10^{-6} (is 1 in 10,000 to 1 in 1,000,000 probability or risk of an increased incidence of cancer) is used by USEPA to evaluate cancer risk estimates. USEPA generally considers that acceptable exposures to known or suspected carcinogens are those that represent an excess upper bound lifetime of between 10^{-4} and 10^{-6}.

As stated previously, noncarcinogenic compounds were evaluated by comparing the CDI of a substance to its chronic RfD. The hazard index obtained by dividing the CDI by the RfD is compared to unity (1.0). Following USEPA guidelines, significant risks are assumed likely if the index exceeds 1.0. The hazard index is not a measure of risk, but rather a measurement of whether the exposure dosage exceeds an acceptable level.

The cancer risk estimates or the hazard index (HI) for exposure to each chemical by each route of exposure, exposure pathway, category of receptor (on site worker or child) and exposure case (typical or RME) are initially estimated separately. The separate cancer risk estimates are then summed across chemicals and across exposure routes to obtain the total excess cancer risk for that population. HI's for noncarcinogens are summed across chemicals that produce the same type of adverse effect (such as liver damage) but are kept separate if their effects are different.

Tables XXVI to XXX summarize cancer risk estimates and hazard indexes for chemicals of concern by exposure pathway, exposed population and exposure case (8).

6.1.4.1 Risk Characterization Results

The site investigations performed to date were designed to characterize the nature, extent and limits of compounds in site media at the Dollinger facility. Possible areas of concern were identified based on a review of available information on past activities at the site and previous analytical data. Three possible areas of concern (former TCE degreaser, drum and dumpster areas) were then investigated using various field techniques.

Based on a review of analytical and site investigation information for the site, the site areas of concern were adequately identified and evaluated. Samples were collected from the central parts of the areas of concern and therefore are most likely representational of actual conditions.

Risk Summary - Results of the risk characterization are summarized in Tables XXXI and XXXII along with exposure routes and chemicals primarily responsible for the derived risk.

Noncarcinogenic Risk - In summary, based on the detected compound concentrations on site and the evaluation described above, noncarcinogenic hazard indices for the exposure routes and typical and RME cases were less than 1. Noncarcinogenic adverse health effects are not expected to occur with current site use conditions.

Carcinosenic Risk - For the typical case and RME case exposure conditions, carcinogenic risks for the child trespass and on site worker scenarios fell within the range identified by USEPA as acceptable (10^{-4} to 10^{-6}). Specifically, the calculated risk values are:

	Typical Case	RME Case
Child Trespass	2.04×10^{-6}	2.19×10^{-5}
Worker Exposure	2.8×10^{-6}	3.5×10^{-5}

6.2 ENVIRONMENTAL EVALUATION

Characterization of site ecologic resources was completed as required by the Work Plan and is described in Sections 2.8 and 3.5 of this document. Results of H&A site and NYSDEC off site sampling were evaluated to determine if site contaminants are moving to off site areas. No off site migration is apparent from these results and therefore no further environmental evaluation is required by the Work Plan. *

6.3 LEVEL OF CONFIDENCE/UNCERTAINTY IN THE RISK ESTIMATE

The nature of the risk assessment process strongly favors over-estimating the true risks. Accordingly, the risk estimates presented here are quite likely to overestimate the true risks and unlikely to underestimate them. Because the risk characterization combines and integrates the information developed in the exposure and toxicity assessment, uncertainities associated with these assessments also affect the degree of confidence that can be placed in risk characterization results. The primary factors contributing to exposure and toxicity uncertainties include but are not limited to:

- The use of only positive detection results to estimate soil, groundwater and sediment contaminant concentrations;

- The use of steady state assumptions for source concentration estimates. For example, highest concentrations of compounds present on site were used in estimating risk. Changing concentrations, such as breakdown of TCE to viny chloride, are not known and are therefore not considered in the baseline risk assessment.

- The use of concentrations of compounds in subsurficial soil as if they were present in surficial soils;

- The use of isolated positive samples as if they represented site-wide conditions;

- Uncertainties arising from the design, execution or relevance of the scientific studies that form the basis of the assessment; and

- Uncertainties involved in extrapolating from the underlying scientific studies to the exposure situation being evaluated, variable responses to chemical exposures within human and animal populations, between species and between routes of exposure.

Conservative assumptions used in deriving exposure scenarios can also contribute to overestimation of risk and lead to uncertainties in the final risk characterization process.

VII. SUMMARY AND CONCLUSIONS

7.1 SUMMARY

7.1.1 Nature and Extent of Contaminants

The Dollinger Remedial Investigation Work Plan was developed in order to further evaluate three previously identified areas of concern (former TCE degreaser, former drum storage, and former dumpster areas), as well as additional associated areas of concern identified by NYSDEC. These additional areas involved compounds that may be present in the site drainage pond, and the role the pond may serve in migration of site compounds, and a waste/fill area purportedly located north of the Dollinger building. As described by this RI report, several investigative techniques (test pits, borings, groundwater monitoring wells, soil vapor and air sampling) and various laboratory analytical methods were used to evaluate these areas.

The Remedial Investigation Work Plan, Section 5.1.5, identified ten Data Needs and Data Quality Objectives to satisfy the intent of the RI. The following summary of remedial investigation results satisfies the Data Needs and Data Quality Objectives to describe the nature and extent of contaminants according to each area of concern and the media affected.

Waste/Fill Area - The reported waste/fill area was identified by NYSDEC as a potential area of concern, and was investigated using test pit exploration techniques. As result of observation of exposed subsurface materials, screening of samples, and laboratory analysis of confirmation samples obtained, no waste was identified in this potential area of concern. The only fill identified consisted of a mantle of soil fill overlying native soils. OVA screening of samples obtained from the pits revealed no detectable volatile organic compounds, and laboratory analysis for volatile and semi-volatile compounds and TCL analysis did not detect chemical compounds potentially associated with other areas of concern on the site.

Former TCE Desreaser, Drum Storase, and Dumpster Areas - The Sear-Brown, P.C. and H&A of New York investigations performed in 1988 concluded that volatile organic compounds consisting primarily of TCE and associated chlorinated hydrocarbons, and semi-volatile compounds in limited surface soils, may be associated with activities performed in three adjacent but distinct areas on the north side of the Dollinger facility. These were then identified and have continued to be termed the former TCE degreaser area, drum storage area and dumpster area.

Investigations performed for this RI consisted of a grid sampling program which encompassed all three areas, sample screening, additional groundwater monitoring wells and groundwater sampling to evaluate groundwater. Results of the investigation confirm that chlorinated volatile organic compounds, semi-volatile phthalates, and polynuclear aromatic hydrocarbons (PAHs) are the primary compounds present which may have been associated with the former activities. The results of the grid sampling program show elevated concentrations of volatile organic compounds centered on each of the previously identified areas of concern. These results from the grid sampling program also agree with the previous soil sampling program as reported in H&A's 1988 data report for the Dollinger facility. Comparison of the three areas indicate that the former TCE degreaser area contains the highest VOC concentrations in soil of the three, followed by the drum storage area and the former dumpster area. Highest concentrations of VOCs in soil are generally at 2 ft. or greater in depth below ground surface.

Media that appear to be affected by compounds in each of the areas of concern include shallow soils, surface water (at one location), sediment in the site pond, and groundwater. The nature and extent of contaminants in each of these media is as follows:

- <u>Groundwater</u> - The contaminants in groundwater appear to be limited primarily to TCE and its breakdown products. Groundwater wells immediately below the three areas of concern contain TCE and its degradation products (1,2-DCE, 1,1-DCE, and vinyl chloride) in varying concentrations. The highest concentration of these compounds in groundwater is associated with the phreatic zone beneath the former TCE degreaser area. Concentrations beneath the former drum storage area are next highest followed by groundwater concentrations beneath the former dumpster area. Chlorinated VOC concentrations decrease by several orders of magnitude with depth, and results of analyses of other wells located west, north, south, and east of the areas of concern did not detect chlorinated volatile organics. Further, the deepest well installed across the overburden bedrock interface below the former TCE degreaser area also did not detect chlorinated VOCs.

  The low permeability of site soils, the relatively flat gradient and the retardation of site compounds all combine to result in a site groundwater velocity of approximately 0.01 feet per year and a velocity of site VOCs in groundwater of 0.004 feet per year.

- **Sediments/Soil** - Contaminants associated with sediment and soils in or affected by the three areas of concern include chlorinated VOCs, semi-volatile PAHs and phthalates. All three classes of compounds occur in shallow surficial soils centered on each of the three areas, and in drainage pond sediments nearest the outfall pipe for the storm sewer that drains this portion of the facility. Results of the grid sampling performed under this RI and the previous Sear-Brown, P.C. sampling show that the lateral extent of compound presence in shallow soils is limited to an area defined by the adjacent 50 ft. grid nodes in the grid sampling plan. The extent of compound presence in pond sediments is limited to the area around sample location SS-201 located at the end of the pond outfall pipe. Depth extent at this location appears to be limited to a depth between the shallow and deep soil samples, approximately less than 2 ft.

However, deeper sediment samples have not been collected.

7.1.2 Fate and Transport

Fate and transport for the compounds detected on site are summarized as follows:

- Field and lab permeability testing indicate the geologic materials on the site to be relatively impermeable. Calculated groundwater flow velocities for nearly all of the wells at the site are on the order of 1 ft. per year or less. Assuming retardation of the volatile compounds detected in groundwater, volatile compound transport rate is less than 1 foot per year. Comparison of groundwater analyses conducted in the 100-series wells in 1988 with those from the 1991 remedial investigation indicate that the chlorinated VOCs appear to be degrading "in place." For example, at both the 104 and 103 observation well clusters, concentration of TCE in groundwater decreased between 1988 and 1991, while the concentration of the degradation product 1,2-DCE increased over the same time period.

  OR is this a seasonal fluctuation.

  Chlorinated VOC fate and transport in site soil appear to be limited to infiltration from the three areas of concern downward into groundwater, however at a relatively slow rate limited by the low hydraulic conductivities of site soils. Depth profiling of headspace screening data gathered from the grid sample borings indicates that the fate and transport of the chlorinated VOCs in soil is impacted by volatilization from the shallow soils.

Fate and transport processes affecting chlorinated VOCs in site sediment appear to be limited. Organic carbon concentrations measured in pond sediments are sufficiently high so as to adsorb the chlorinated VOCs. Further, analyses of shallow and deep sediments at locations downstream from the pipe outfall indicate that sediment erosion processes have not carried VOCs adsorbed to sediment to the downstream ends of the pond.

- Neither PAHs nor phthalates were detected in groundwater on the site and therefore migration to groundwater is not a fate and transport mechanism associated with these compounds at the site.

  PAHs and phthalates were detected in highest concentrations in site sediments (near the pond outfall) and soil (in the case of the three areas of concern). Chemical properties of these compounds show them to be persistent in the environment, but relatively immobile. Low solubility of the compounds limits them from being carried with site groundwater or surface water to any significant distance from their source areas. However, because they are tightly adsorbed to soil organic matter particles they tend to travel with sediment and therefore would be subjected to transport through erosion processes. Based on sampling performed in the three areas of concern and the pond sediments, it appears that the areal distribution of PAHs and phthalates is limited to relatively confined areas in each of the three areas of concern defined by the 50 ft. spaced nodes of the sampling grid, and to pond sediments relatively close to the outfall pipe at the eastern end of the retention pond.

7.1.3 Risk Assessment

The Baseline Health Risk Assessment was performed for the Dollinger Remedial Investigation by evaluating the compounds present on site, the media in which they occur, the range of concentrations detected in those media, and potential exposure routes by which humans may be exposed to these materials. USEPA Risk Assessment Guidance dictates that compounds known to be associated with site activities be included in the risk assessment, as well as compounds that may be associated with anthropogenic non-point sources such as routine car or other emissions, storm water run off from roadways and parking lots, etc. Therefore, health risks reported for this site result from both chemical compounds that may have been associated with Dollinger site activities as well as from compounds that cannot be definitively distinguished from other anthropogenic sources.

The risk assessment was based on current and reasonably expected site use consistent with site zoning. For the Dollinger facility, the Health Risk Evaluation was limited to a typical and Reasonable Maximum Exposure (RME) for the on site worker exposure scenario, and a typical and RME exposure scenario for a child trespassing on the site. Further, exposure pathways were limited to dermal contact, ingestion and inhalation of compounds from site soils or sediments. Contaminated groundwater on site is not currently or likely to be used in the future. No complete exposure pathways for contact with site surface waters were identified. *← what about downgradient residential area*

Results of the baseline risk assessment indicate the following:

- **Noncarcinogenic risk** - Based on the detected compound concentrations on site and the risk evaluation performed, noncarcinogenic hazard indices for the typical and RME cases were both less than 1. Noncarcinogenic adverse health effects are not expected to occur as a result of current site use conditions or reasonably expected future site use conditions.

- **Carcinogenic Risk** - For the typical case exposure conditions, carcinogenic risk for the child trespass scenario and site worker scenario fell within or below the range identified by USEPA as acceptable (1 x 10^{-8} to 1 x 10-).

  For the reasonable maximum exposure (RME) case carcinogenic risk for the child trespass and on site worker exposure scenarios, carcinogenic risks fell within the range identified by USEPA as acceptable (1 x 10^{-4} to 1 x 10^{-6}).

As described previously in Section 6, the reader is cautioned that the nature of the risk assessment process strongly favors overestimation of true site risks. Accordingly, the risk estimates presented here are quite likely to overestimate the true risks, and unlikely to underestimate them. Further, the risk characterization process combines and integrates information developed from exposure and toxicity assessment, experimental laboratory results, and assumption of hypothetical conditions which may never exist on the site. Therefore, there is a level of uncertainty associated with the risk assessment process. However, USEPA criteria for performing the assessment require a conservative approach to account for these uncertainties, again favoring overestimation rather than true risk.

7.2 CONCLUSIONS

H&A of New York has conducted this Remedial Investigation on behalf of the Dollinger Corporation in accordance with the approved RI/FS Work Plan dated 15 February 1991. Results of the remedial investigation, as summarized in Section 7.1, indicate that a sufficient database exists at this time to evaluate potential remedial action alternatives through performance of a Feasibility Study.

Results of the investigation indicate that chlorinated volatile organic compounds primarily in soil and groundwater, and PAHs and phthalates in shallow soil and pond sediments are the primary compounds associated with the site. Results of the risk assessment indicate that the presence of these compounds under current and reasonable expected future site use conditions do not pose noncarcinogenic risks. Conservative assumptions in the risk assessment also indicate that carcinogenic risks fall within the USEPA acceptable range of 1×10^{-4} to 1×10^{-6}.

Results of the contaminant fate and transport evaluation performed under this RI indicate that the chlorinated VOCs, PAHs, and phthalates are confined to on site areas and do not appear to be migrating to off site areas. In particular, results from groundwater monitoring indicate that degradation of the chlorinated VOCs may be occurring essentially in place.

7.2.1 Data Limitations and Recommendations for Future Work

With respect to chlorinated VOC data gathered for the site there appear to be no limitations that would apply to use of the data. Validation of the laboratory results gathered under this investigation indicate all the volatile organic compound data to be usable and the analytical methods to be sufficient to detect concentrations low enough to identify apparent health risks. Further, comparison of the data gathered under this RI effort to information gathered under the previous H&A and Sear-Brown, P.C. investigations (1988) shows relatively good agreement among the data as to types of compounds present, and their location and areal extent. During the sampling for this RI, Mr. Crosby of the NYSDEC collected splits of H&A samples as well as additional samples at and down stream of the site. The NYSDEC data, summarized and presented in Appendix G, generally agree qualitatively and quantitatively with either the data from the H&A split samples or the results from the closest H&A sample location. This agreement in data also supports the reproducibility of the RI data results, using the sampling and analytical methods described by this investigation.

With respect to semi-volatile data, results of the RI data validation indicate that certain sediments and/or soils present on site produce matrix interference that limit quantitation of the semi-volatile data (specifically the phthalate and PAH data) at high concentrations. These matrix interferences did not appear to affect lower concentration samples. Since the matrix interferences did not appear to affect lower concentration semi-volatile samples, activities such as confirmation sampling, if required for remediation, should not be affected.

7.2.2 Recommended Remedial Action Objectives and Alternatives

Remedial action, as defined by USEPA, is intended to respond to releases in a way consistent with permanent remedy, to prevent or minimize the release of hazardous materials so that they do not migrate to cause danger to public welfare or the environment.

Potential remedial alternatives discussed with NYSDEC (based on information available from the H&A of New York and Sear-Brown 1988 investigations) included, among other things, lining of the storm sewer bed to reduce migration potential. Based on results of this remedial investigation, it appears that this is a relatively minor migration pathway and that excavation and lining of the storm sewer bed would not likely be cost-effective. Therefore, it is recommended that this alternative not be carried through to the FS. The other alternatives described in the Work Plan will be reviewed with NYSDEC at initiation of and for consideration in the FS.

As indicated by the February 1991 approved RI/FS Work Plan, remedial alternatives will be screened in the feasibility study in terms of the following criteria:

- Overall protection of human health and the environment
- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility and/or volume through treatment
- Short-term effectiveness
- Implementability
- Cost

Short and long-term effectiveness, implementability and cost will be the primary criteria in the selection of the remedial alternative(s).

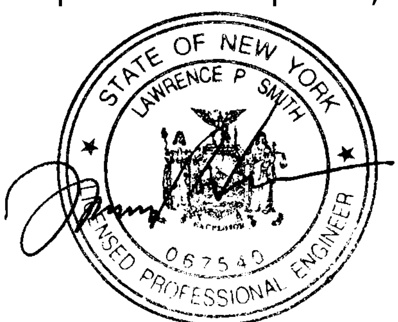
VIII. CERTIFICATION

H&A of New York hereby states that, to the best of knowledge and opinion, the activities, sampling and analyses described by the following:

1. AFC-Dollinger Work Plan, Remedial Investigation/Feasibility Study, dated 15 February 1991.

2. Work Plan Addendum I, AFC-Dollinger Facility, dated 11 March 1991.

Work has been performed in accordance with the above-noted approved Work Plan and addendum. This report is an accounting of the work performed. The conclusions provided are based solely on scope of work conducted and sources of information referenced in the report. This work has been undertaken in accordance with generally accepted environmental consulting practices; no other warranty, express or implied, is made.



Lawrence P. Smith, P.E.
Partner

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RISK ASSESSMENT
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Table I

Summary of Monitoring Well Physical Data
Dollinger - A **Filtrona** Company
Remedial Investigation

Monitoring Well No.	Groundsurface Elevation	Top of Riser Elevation	Top of Outer Casing Elevation	Screened **Interval**	Groundwater Elevation **4&7** Oct. 91	Groundwater Elevation 6 Nov. 91	In-situ Hydraulic Conductivity **cm/sec**
OW101-S	543.9	545.9	546.0	519.3-528.3	532.1	532.8	1.0E-06
OW101-D	543.7	545.7	545.8	507.7-515.7	529.9	530.4	3.9E-06
OW102-S	541.1	543.7	543.9	514.1-524.1	520.6	520.3	9.4E-07
OW102-D	540.8	543.1	543.3	490.1-505.1	521.6	523.5	4.0E-07
OW103-S	541.5	543.5	543.7	517.0-527.0	527.3	528.0	4.9E-08
OW103-D	541.6	542.5	542.7	505.6-515.6	527.6	527.0	5.3E-08
OW104-S	542.7	544.9	545.1	518.7-528.7	534.6	534.7	5.2E-08
OW104-D	542.7	545.6	545.8	504.5-514.5	526.1	526.3	9.0E-08
OW105-S	536.2	538.3	538.5	516.2-526.2	532.9	532.9	7.2E-07
OW105-D	536.1	538.0	538.2	501.0-511.0	529.4	529.8	8.2E-08
OW106-S	542.2	544.5	544.7	519.2-527.2	532.9	533.0	9.7E-07
OW106-D	542.0	544.5	544.7	507.0-517.0	530.1	530.0	6.7E-07
OW201-S	542.9	542.6	542.9	528.6-538.4	533.4	537.9	1.3E-06
OW201-D	542.9	542.6	542.9	515.2-525.3	532.7	535.5	8.5E-08
OW202-S	542.3	544.7	544.9	523.9-533.8	531.8	530.5	8.0E-08
OW202-D	542.6	545.2	545.3	510.0-520.1	521.0	529.2	4.8E-08
OW203-S	542.5	542.4	542.7	526.7-536.9	534.2	534.0	6.8E-08
OW203-D	542.4	542.2	542.5	512.7-523.1	522.1	532.4	6.3E-08
OW204-S	540.6	543.5	543.6	521.7-531.9	526.0	525.4	7.3E-08
OW204-D	539.5	542.3	542.5	506.7-516.8	516.1	519.6	2.1E-08
OW205	542.7	544.8	545.0	458.0-478.2	521.4	521.1	2.4E-06

NOTES:

1. All elevations are in feet and referenced to **USC&GS** Mean Sea Level Datum.
2. For the water level measurements from 4 and 7 October 1991, all wells were measured on 4 October except OW201-S and OW201-D which were measured on 7 October 1991.

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Table II

Apparent Compounds Detected in Soil Vapor Shield Point Screening
Dollinger - A Filtrona Company
Remedial Investigation

Sample Location	Date Sampled	Vinyl Chloride	1,1-DCE	t-1,2-DCE	c-1,2-DCE	TCE	Total
SV-201	812191	---	---	---	---	---	0
SV-202	812191	---	---	2.0	170	410	582
duplicate		---	---	---	170	400	570
duplicate		---	---	---	173	411	584
duplicate							
SV-203	8/2/91	---	---	---	26	102	128
duplicate		---	---	---	28	107	135
SV-204	8/2/91	---	---	---	---	---	0
SV-201	10/25/91	---	---	---	---	---	0
SV-202*	10125191	11.4	3.19	1.28	110	170	295.87
duplicate	10125191	16.4	3.80	1.50	116	182	319.70
triplicate	10125191	16.4	3.80	1.41	113	178	312.61
SV-203	10/25/91	0.06	0.10	0.57	39.7	63.1	103.53
duplicate	10/25/91	0.09	0.10	0.22	39.4	62.4	102.21
SV-204	10/25/91	---	---	---	---	---	0

NOTES:

1. See Figure 4 for sample shield point location.
2. Depth of installation of shield points in feet below ground surface.

    sv-201 5.5
    SV-202 6.8
    SV-203 6.6
    SV-204 3.0

3. Compound concentrations are in parts per million on molar volume basis of analyte in air.
4. Analysis performed on HP-5890 Series II Gas Chromatograph.
5. When SV-202 was sampled on 10125191, water was encountered in the probe.
6. See accompanying text for additional information.

vbd:tb2 gma

Table III
Shallow Soil and Test Pit Organic Analyses
Dollinger - A Filtrona Company
Remedial Investigation

	SAMPLE LOCATION AND IDENTIFICATION								
PARAMETER	SO-201	SO-202	TP-201	TP-202	TP-203	TP-204	TP-205	TP-206	Soil Screening Value
Volatiles									
1,1,1-Trichloroethane	0.004JB	0.003JB	—	0.003J	—	0.002J	—	—	1.9
Trichloroethene	—	0.002J	—	—	—	—	—	—	1.6
Acetone	0.016	—	0.011JB	0.013JB	—	0.012B	0.034B	—	NP
Methylene Chloride	—	—	0.003JB	0.004JB	0.003JB	0.003JB	0.006JB	0.005JB	NP
Semi-Volatiles									
				NA	NA		NA	NA	
Bis(2-Ethylhexyl)Phthalate	—	0.15J	0.85			0.167			NP
Anthracene	—	—	0.069J			—			1750
Benzo(a)Anthracene	—	—	0.15J			—			6.9
Benzo(b)Fluoranthene	0.16J	0.094J	0.167			—			2.75
Benzo(a)Pyrene	0.082J	—	0.11J			—			NP
Chrysene	0.16J	0.093J	—			—			1.0
Fluoranthene	0.30J	0.180J	0.48J			—			47.50
Indeno(1,2,3-cd)Pyrene	0.066J	—	0.071J			—			8.0
Phenanthrene	0.15J	0.093J	0.41J			—			17.50
Pyrene	—	0.15J	0.33J			—			47.50
Pesticides & PCB's									
4,4'-DDE	—	0.010J	—	NA	NA	—	NA	NA	NP

NOTES:

1. — Analyte was analyzed for but not detected.
2. NA - Sample not analyzed for this parameter.
3. NP - Screening Value not provided as all variables needed for calculation not available in references used.
4. J - Indicates an estimated value. The mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitntion limit and greater than zero.
5. B - Analyte detected in the associated method blank.
6. Results reported in milligrams per kilogram (ppm).
7. Soil Screening Value calculated using NYSDEC Soil Cleanup goals calculation.

   Cs = f x Cw x Koc

   Cs = Soil concentration allowed, f = 2.5% organic carbon,

   Cw = Groundwater Criteria **(mg/l), Koc = Octanol** water coefficient (mgfl).

   Soil Cleanup goal **(ppm)** = Cs x Dilution and Attenuation Multiplier (100).

   Koc from **USEPA** 1986 Superfund Public Health Evaluation Manual.

dmc/123/soils

Table IV

Test and Grid Boring Soil Organic Analyses

Dollinger – A Filtrona Company

Remedial Investigation

PARAMETER	SAMPLE BORING LOCATION											
	GS–A8(4–6)	GS–B1(10–12)	GS–B2(2–4)	GS–A4(4–6)	GS–B4(10–12)	GS–B5(4–6)	GS–B5(4–6)DL	B201s(12–14)	B201d(8–10)	B202d(6–8)	B203d	Soil Screening Value
Volatiles												
										NA	NA	
1,2–Dichloroethene (Total)	—	—	—	—	—	0.069	0.011DJ	0.3J	0.55J			0.7
Tetrachloroethene	0.23J	—	—	—	—	—	—	—	—			4.55
1,1,2–Trichloroethane	—	—	—	—	0.078J	0.010	0.008DJ	—	—			0.7
Trichloroethene	51.0	0.021	0.70	0.002J	0.88	1.3E	0.34D (0.83D)	3.2	2.5			1.6
Ethylbenzene	8.1	—	0.044	—	—	—	—	—	—			14.0
Toluene	2.5	—	0.022J	—	—	—	—	—	—			4.0
Xylenes (Total)	50.0	0.002J	0.13	—	0.034J	—	0.023DJ	—	—			3.0
Acetone	—	0.017	—	0.016B	—	0.014	0.049BDJ	—	—			NP
4–Methyl–2–pentanone	1.6J	—	—	—	—	—	—	—	—			NP
Semi Volatiles												
				NA			NA					
Bis(2–ethylhexyl)phthalate	—	0.30BJ	0.085J		—	—		0.60J	0.140J	—	1.7	NP
Diethyl Phthalate	—	—	0.21J		0.100J	—		—	—	—	—	17.75
Di–n–butyl phthalate	—	—	1.9B		0.83B	0.26JB		7.6	0.660J	4.8B	1.6B	NP
Anthracene	0.250J	—	—		—	—		—	—	—	—	1750
Benzo(a)Anthracene	0.560J	—	—		—	—		—	—	—	—	6.9
Benzo(b)Fluoranthene	0.660J	—	—		—	—		—	—	—	—	2.75
Benzo(k)Fluoranthene	0.350J	—	—		—	—		—	—	—	—	2.75
Benzo(g,h,i)Perylene	0.290J	—	—		—	—		—	—	—	—	8.15
Benzo(a)Pyrene	0.490J	—	—		—	—		—	—	—	—	NP
Chrysene	0.610J	—	—		—	—		—	—	—	—	1.0
Fluoranthene	1.3J	—	—		—	—		—	—	—	—	47.50
Indeno(1,2,3–cd)Pyrene	0.380J	—	—		—	—		—	—	—	—	8.0
Phenanthrene	1.3J	—	—		—	—		—	—	—	—	17.50
Pyrene	1.2J	—	—		—	—		—	—	—	—	47.50
Pesticides/PCB's												
	—	NA	—	NA	NA	—	NA	—	—	NA	NA	NP

Notes:
1. — Analyte was analyzed for but not detected.
2. D – Compounds identified at a secondary dilution factor.
3. B – Analyte detected in blank.
4. J – Indicates an estimated value. The mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit and greater than zero.
5. NA – Not analyzed for this parameter.
6. NP – Screening Value not provided as all variables needed for calculation not available in references used.
7. (#–#) – Represents depth of sample collection.
8. Soil Screening Value calculated using NYSDEC Soil Cleanup goals calculation.
   Cs = f x Cw x Koc
   Cs = Soil concentration allowed, f = 2.5% organic carbon,
   Cw = Groundwater Criteria (mg/l), Koc = Octanol water coefficient (mg/l).
   Soil Cleanup goal (ppm) = Cs x Dilution and Attenuation Multiplier (100).
   Koc from USEPA 1986 Superfund Public Health Evaluation Manual.
9. Results reported in milligrams per kilogram (ppm).

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Table V

Shallow Soils, Test Pit Soils, Grid and Test Boring Soils
Inorganic Analyses
Dollinger - A Filtrona Company
Remedial Investigation

	SAMPLE LOCATION AND IDENTIFICATION									
PARAMETER	SO-201	SO-202	TP-201	TP-204	B-201d	B-201s	GS-A8	GS-B2	GS-B5	Geometric Mean	95th Percent
Aluminum	19.400	11,800	13,100	8,820	7,520	6,850	11,600	9,140	10,200	33,000	272,000
Antimony	—	—	—	—	—	—	—	—	—	1	3
Arsenic	4.4	6.0	4.9	4.1	3.1	3.5	4.9	3.3	2.8	(20) 5	32
Barium	85	72	73	82	68	62.6	125	79	88.3	290	1,602
Beryllium	—	—	—	—	—	—	—	—	—	1	4
Cadmium	—	—	—	—	—	—	—	—	—	(3) <1	<10
calcium	13,300	3,430	15,300B	62.700	61,100B	63,400B	71,900B	70,200B	60,600B	3,400	32.250
Chromium	23	20	15	15	15	13	26	17	21	(100) 33	223
Cobalt	11	8.5B	6.6B	8.3B	—	6.7B	8.7B	9.5B	9.1B	6	39
Copper	12	11	8.5	17	15	14	23	17	20	(170) 13	102
Iron	23,900	19,700	16,900	18.900	16,800	14,800	20,400	17,900	19,100	14.000	115,000
Lead	32	32	15	7.9	7.9	8.0	11	8.3	10	(500) 14	53
Magnesium	7,140	3,560	5,990	16,200	14,900	14,400	15,400	14,900	18,900	2,100	26,500
Manganese	474	354	371	519	494	16	621	537	497	260	3,800
Mercury	—	—	—	—	—	—	0.12	—	—	0	1
Nickel	23	20	17	22	23	19	35	23	26	(100) 11	77
Potassium	1,450	1,370	1,280	1,810	1,520	1.490	2,600	2,120	2,750	12,000	21,300
Selenium	—	—	—	—	—	—	—	—	—	0	2
Silver	1.7B	—	6.1	3.8	—	11	—	—	—	(5) NP	NP
Sodium	273B	237B	218B	357B	225B	254B	397B	325B	517B	2,500	51,800
Thallium	—	—	—	—	—	—	—	—	—	(5) 8	19
Vanadium	26	25	22	20	16	17	28	20	22	43	271
Zinc	73	63	51	45	46	38	60	43	55	(350) 40	178
Cyanide	—	—	—	—	NA	—	—	—	—	NP	NP

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Notes:

1. — Analyte was analyzed for but not detected.
2. B - Value is greater than or equal to the instrument detection limit but less than the contract required detection limit.
3. NA - Sample not analyzed for this parameter.
4. NP - Screening Value not provided in reference used.
5. Results reported in milligrams per kilogram (ppm).
6. 'Element Concentrations in Soils and Other Surficial Materials Of the Conterminous United States", USCS, 1984, used for Screening Values. The 95th percent defined in RI text. The value in parentheses is a soil clean up goal provided by the NYSDEC for a site where inorganics are present in the soil and sediment.

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Table VI
Groundwater Organic Analyses 100 Series Wells
Dollinger - A Filtrona Company
Remedial Investigation

	SAMPLE LOCATION AND IDENTIFICATION												
PARAMETER	OW101s	OW101d	OW102s	OW102d	OW103s	OW103d	OW104s	OW104d	OW105s	OW105d	OW106s	OW106d	Groundwater Screening Value
Volatile~													
1,1-Dichloroethene	—	—	—	—	—	—	—	—	—	—	—	—	0.005
1,2-Dichloroethene (Total)	—	—	0.0021	—	0.073	0.0007J	0.13	0.007		—	—	—	0.005
Tetrachloroethene	—	—	—	—	—	—	—	—	—	—	—	—	0.005
1,1,1-Trichloroethane	—	—	—	—	—	0.16	—	—	—	—	—	—	0.005
Trichloroethene	0.008JB	0.003JB	0.0808	0.020B	0.0006JB	0.016B	0.010B	0.009B	—	—	—	—	0.005
Vinyl chloride	—	—	—	—	0.064	—	—	—	—	—	—	—	0.002
Toluene	—	—	—	—	—	—	—	—	—	—	—	—	0.005
Acetone	—	—	—	—	—	—	—	—	—	—	—	—	0.005
Semi-Volatiles													
	—	—	—	—	—	—	—	—	—	—	—	—	
Pesticides\PCB's													
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NP

NOTES:
1. B - Analyte detected in the method blank.
2. J - Indicates an estimated value. The mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit and greater than zero.
3. NA - Sample not analyzed for this parameter.
4. — Analyte was analyzed for but not detected.
5. NP - Screening Value not provided in NYSDEC reference used.
6. Groundwater Screening Value from NYSDEC Ambient Water Quality Standards and Guidance Values, 25 September 1990.
7. Results reported in milligrams per liter (ppm).

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Table VII

Groundwater Organic Analyses 200 Series Wells

Dollinger - A Filtrona Company

Remedial Investigation

	SAMPLE LOCATION AND IDENTIFICATION											
PARAMETER	OW201s	OW201sDL1	OW201sDL2	OW201d	OW202s	OW202d	OW203s	OW203d	OW204s	OW204d	OW205	Groundwater Screening Value
Volatiles												
1,1-Dichloroethene	0.019	—	—	—	—	—	—	—	—	—	—	0.005
1,2-Dichloroethene (Total)	4.8E	9.5ED	11.0D	0.056	—	—	—	—	—	—	—	0.005
Tetrachloroethene	0.023	—	—	—	—	—	—	—	—	—	—	0.005
Trichloroethene	4.9E	50EDB	36.0D	0.082	—	—	—	0.0004JB	—	—	—	0.005
Vinyl chloride	0.24E	0.16JD	—	0.007J	—	—	—	—	—	—	—	0.02
Benzene	0.0006J	—	—	—	—	—	—	—	—	—	—	ND
Toluene	0.012	—	—	—	—	—	—	—	—	—	—	0.005
Acetone	—	—	—	—	—	0.023	—	—	—	0.041	—	0.005
Chloroform	0.004JB	—	—	—	—	0.006J	—	—	—	—	0.001J	0.1
Methylene Chloride	0.0006J	—	—	—	—	—	—	—	—	—	—	0.005
Semi-Volatiles												
	—	—	—	—	—	—	—	—	—	—	—	
Pesticides\PCB's												
	—	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NP

NOTES:

1. B - Analyte detected in the method blank.
2. D - Sample dilution required.
3. E - Compounds whose concentrations exceed the calibration range.
4. J - Indicates an estimated value. The mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit and greater than zero.
5. NA - Sample not analyzed for this parameter.
6. — Analyte was analyzed for but not detected.
7. NP - Screening Value not provided in NYSDEC reference used.
8. ND - Not detected.
9. Groundwater Screening Value from NYSDEC Ambient Water Quality Standards and Guidance Values, 25 September 1990.
10. Results reported in milligrams per liter (ppm).

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Table VIII

Surface Water and Groundwater Inorganic Analyses
Dollinger - A Filtrona Company
Remedial Investigation

	SAMPLE LOCATION AND INDENTIFICATION									
PARAMETER	STW-201	STW-202	SW-201	SW-202	SW-204	SW-204DUP	Surface Water Screening Value	OW-201s	OW-201d	Groundwater Screening Value
Aluminum	0.22	1.47	0.26	1.00	6.10	4.82	0.10	0.626	6.69	NP
Antimony	—	—	—	—	—	—	0.003	—	—	0.003
Arsenic	—	—	—	—	—	—	(0.0116) 0.025	—	—	(0.0116) 0.025
Barium	0.0551B	0.122B	0.0519B	0.104B	0.128B	0.123B	(0.21) 1.00	0.0877B	0.234	(0.21) 1.00
Beryllium	—	—	—	—	—	—	0.003	—	—	0.003
Cadmium	—	0.006	—	—	—	—	(0.0122) 0.010	—	—	(0.0122) 0.010
Calcium	40.40B	92.60	41.30	220.0	110.0	110.0	NP	58.7	78.9	NP
Chromium	—	0.024	—	—	—	0.012	(0.03) 0.050	—	0.0125	(0.03) 0.050
Cobalt	—	—	—	—	—	—	NP	—	—	NP
Copper	0.062	0.079	0.0235B	—	0.038	0.036	0.20	0.0178B	0.037	0.20
Iron	1.24	7.08	1.35	8.42	8.23	7.59	(6.3) 0.30	0.942	10.2	(6.3) 0.30
Lead	0.028	0.415	0.022	0.033	0.045	0.045	(0.098) 0.025	0.013	0.017	(0.098) 0.025
Magnesium	16.2	43.0	14.4	39.2	22.2	22.0	(0.385) 35.0	28.1	74.9	(0.385) 35.0
Manganese	0.060	0.222	0.206	2.17	0.489	0.484	0.30	0.173	0.422	0.30
Mercury	0.00024	—	—	—	0.00051	0.00029	0.002	—	—	0.002
Nickel	—	—	—	0.0307B	—	—	NP	0.0307B	0.0297B	NP
Potassium	5.64	8.51	1.76B	0.667B	5.19	4.71B	NP	10.8	7.17	NP
Selenium	—	—	—	—	—	—	0.010	—	—	0.010
Silver	0.096	—	—	0.007B	—	—	0.050	0.015	0.018	0.050
Sodium	42.6	96.1	23.9	72.6	33.7	33.9	(190.7) 20.0	30.5	36.6	(190.7) 20.0
Thallium	—	—	—	—	—	—	0.004	—	—	0.004
Vanadium	—	—	—	—	—	—	NP	—	—	NP
Zinc	0.273	1.18	0.366	0.044	0.242	0.238	0.30	0.0586	0.11	0.30
Cyanide	NA	NA	NA	NA	NA	NA	0.10	—	—	0.10

Notes:

1. — Analyte was analyzed for but not detected.
2. B - Value is greater than or equal to the instrument detection limit but less than the contract required detection limit.
3. NA - Sample not analyzed for this parameter.
4. NP - Screening Value not provided in NYSDEC reference used.
5. Results reported in milligrams per liter (ppm).
6. NYSDEC Ambient Water Quality Standards and Guidance Values, 25 September 1990 used for Screening Values. The 95th percent d e f i in RI text. The value in parentheses is an average dissolved concentration for inorganics in Monroe County based on 58 groundwater samples performed for the CSOAP (combined sewer overflow abatement program) investigations.

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Table IX

Surface Water Organic Analyses
Dollinger - A Filtrona Company
Remedial Investigation

	SAMPLE LOCATION AND INDENTIFICATION						
PARAMETER	STW-202	STW-201	SW-201	SW-202	SW-204	SW-204 DUP.	Surface Water Screening Value
Volatiles							
1,2-Dichlorothene (Total)	--	**0.0008J**	0.011	--	--	--	0.005
Trichloroethene	--	0.0027	--	--	--	--	0.003
Vinyl Chloride	--	--	**0.006J**	--	--	--	0.003
Semi-Volatiles							
	--	--	--	--	--	--	
Bis(2-Ethylhexyl)Phthalate	**0.004J**	--	--	--	**0.007J**	--	0.004
Butyl Benzyl Phthalate	**0.003J**	--	--	--	--	--	0.050
Benzoic Acid	--	--	0.0027	--	--	--	NP
Fluoranthene	--	--	--	0.0027	--	--	0.050
4 Methyl phenol	--	--	**0.001J**	--	--	--	0.001
Petroleum Hydrocarbons							
	NA	NA	--	--	--	--	--

NOTES:

1. -- Analyte was analyzed for but not detected.
2. NA - Sample not analyzed for this parameter.
3. NP - Screening Value not provided in NYSDEC reference used.
4. J - Indicates an estimated value. The mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit and greater than zero.
5. Results reported in milligrams per liter (ppm).
6. Surface Water Screening Values from NYSDEC Ambient Water Quality Standards and Guidance Values, 25 September 1990.

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Table X

Sediment Organic Analyses
Dollinger – A Filtrona Company
Remedial Investigation
Sample Locations and Identifications

PARAMETER	SS-201s	SS-201sRE	SS-201sDL	SS-201d	SS-202s	SS-202s DUP	SS-202s DUPDL	SS-202d	SS-203s	SS-203sDUP	SS-203d	SS-204s	SS-204d	Sediment Screening Value
Volatile~														
		NA	NA											
1,1-Dichloroethene	1.55			--	--	--	--	--	--	--	--	--	--	181.0
1,2-Dichloroethene (Total)				0.018	--	--	--	--	--	--	--	--	--	136.4
1,1,1-Trichloroethane	DL-3600 DL-3600			0.004JB	0.007JB	0.003JB	--	0.004JB	0.00458	0.004JB	0.00658	--	0.004JB	1138.2
Trichloroethene	--			0.059	--	--	--	--	--	--	--	--	--	0.33
Benzene	1.55			--	--	--	--	--	--	--	--	--	--	0.12
Chlorobenzene	1.45			--	--	--	--	--	--	--	--	--	--	0.396
tthylbenzene	59.0			0.018	--	--	--	--	--	0.00045	--	--	--	8448
Toluene	5.3			0.001J	--	--	0.005JD	--	--	--	--	--	--	1260
Xylenes (Total)	220.0			0.075	--	--	--	--	--	--	--	--	--	NP
Acetone	DL 7700			0.023	0.039	0.49E	0.140D	0.049	0.078	0.074	0.13	0.075	0.011	NP
2-Butanone	--			--	--	0.069	--	--	--	--	--	--	--	NP
Methylene Chloride	0.91J			--	--	--	0.015JD	--	--	--	--	--	--	NP
Semi-Volatiles														
							NA							
Di-n-butylphthalate	8.8	6.8		--	5.5JB	--		--	--	--	--	6.8JB	--	NP
Bis(2-ethylhexyl)phthalate	110E	130	82D	--	0.69J	4.2		1.0	1.5	1.1	0.99	2.45	--	NP
Butylbenzylphthalate	120E	140E	78D	0.00885	0.33J	0.485		--	--	0.0077J	--	1.3J	--	NP
Acenaphthene	5.4	5.0	3.7JD	--	0.135	0.12J		0.024J	--	--	--	0.080J	--	1817
Acenaphthylene	--	0.29J		--	--	--		--	--	--	--	--	--	180
Anthracene	25t	21	16JD	0.0135	0.68J	0.60J		--	0.0595	0.0052J	--	--	--	1008
Benzo(a)anthracene	110E	120t	56JD	0.29J	2.55	3 5		0.52J	0.32J	0.30J	0.33J	2.45	--	99,360
Benzo(b)fluoranthene	140t	140t	71D	0.40J	6.0J	6.0		0.64J	0.47J	0.51J	0.48J	8.5J	--	39,600
Benzo(k)fluoranthene	11	10	31JD	0.165	2.25	2.5		0.34J	0.24J	0.24J	0.19J	3.55	--	39,600
Benzo(g,h,i)perylene	Q.9	11	27JD	0.165	1.45	1 6J		0.23J	0.24J	0.27J	0.17J	0.8J		117,360
Benzo(a)pyrene	43t	38t	46JD	0.26J	3.65	3.7		0.42J	0.26J	0.295	0.225	4.1J	--	1.58
Chrysene	7.3	8.0	61D	--	3.45	4.2		0.61J	0.475	0.425	0.435	4.W	--	14,400
Dibenz(a,h)anthracene	1.6	4 6	5.8JD	--	0.31J	0.043		--	0.0305	0.038J	--	0.245	--	237,600
Dibenzofuran	2.7E	2.8		--	--	--		--	--	--	--	--	--	NP
2.4 Dimethyl Phenol	0.073J	--		--	--	--		--	--	--	--	--	--	NP
Fluoranthene	220E	160t	140D	0.92	7.1J	10.0		1.5	0.79J	0.84J	1.1	7.75	--	35.568
Fluorene	10	8.2	6.3JD	--	--	--		--	--	--	--	--	--	525.60
Indeno(1,2,3-cd)pyrene	14	17	36JD	0.20J	2.05	2.8		0.295	0.28J	0.355	0.21J	1.45	--	115.200
2-Methylnaphthalene	0.33J	0.415		--	--	--		--	--	--	--	--	--	NP
Naphthalene	0.80J	0.81J		--	--	--		--	--	--		--	--	NP
Phenanthrene	120t	100E	97D	0.505	3.8J	3.8		0.72J	0.34J	0.27J	0.565	2.05	--	1008
Phenol	1.0JB	1.1JB		--	--	--		--	--	--	--	--	--	0.017
Pyrene	140t	150E	140D	0.73J	5.8J	7.2		1.4	0.695	0.65J	0.87J	6.75	--	2736
Petroleum as SAE 30														
	DET	NA	NA	--	DET	--		--	DET	--	--	DET	--	--

NOTES:

1. **B** – Analyte detected in the method blank.
2. D – Sample dilution required.
3. E – Concentrations exceed the calibration range.
4. — Analyte was analyzed for but not detected.
5. DET – Analyte detected and present but not quantified.
6. NA – Sample not analyzed for this parameter.
7. NP – Screening Values not provided as all variables needed for calculation were not available in references used.
8. **J** – Indicates an estimated value. The mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the **sample quantitation** limit and greater than zero.
9. Results reported in milligrams per kilogram (ppm).
10. Sediment Screening Values based on **USEPA** 2/89. Sediment criteria = **AWQS/GV x Kow** x **Foc.** **AWQS/GV** = Surface water criteria, **Kow** = Koc from **USEPA 1986** Superfund Public Health Evaluation Manual, **Foc** = Fraction of organic carbon measured in sediment.

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Table XI

Sediment Inorganic Analyses
Dollinger – A Filtrona Company
Remedial Investigation

PARAMETER	SS–201s	SS–201d	SS–202s	SS–202sDUP	SS–202d	SS–203s	SS–203sDUP	SS–203d	SS–204s	SS–204d	Geometric Mean	95th Percent
	SAMPLE LOCATION AND INDENTIFICATION											
Aluminum	8,250	12,600	8,810	10,600	10,300	16,100	15,700	18,100	14,200	14,300	33,000	272,000
Antimony	—	—	—	—	—	—	—	—	—	—	1	3
Arsenic	12	3.9	5.8	3.0	3.4	6.4	4.8	7.1	4.6	5.2	(20) 5	32
Barium	319	94	95	76	93	127	135	128	146	118	290	1,602
Beryllium	—	—	—	—	—	—	—	—	—	—	1	4
Cadmium	—	—	—	—	—	—	—	—	—	—	(3) <1	<10
Calcium	61,500	60,700	19,600	31,200	63,200	43,400	37,700	58,300	44,600	56,700	3,400	32,250
Chromium	70	23	23	19	22	28	27	30	36	25	1100) 33	223
Cobalt	23.1B	8.0B	7.4B	6.5B	8.0B	13.6B	18	12.2B	11.1B	10.4B	6	39
Copper	174	17	24	30	15	40	34	28	52	18	(170) 13	102
Iron	36,200	19,500	17,600	13,900	18,700	24,300	25,100	26,800	27,000	23,100	14,000	115,000
Lead	137	11	55	53	16	67	79	22	99	13	(500) 14	53
Magnesium	17,400	15,700	8,330	15,000	18,500	15,800	12,400	27,200	14,000	13,800	2,100	26,500
Manganese	728	477	318	253	506	418	409	547	412	509	260	3,800
Mercury	0.85	—	—	—	—	—	—	—	—	—	0	1
Nickel	93	22	24	21	19	29	32	34	35	26	(100) 11	77
Potassium	4,700	2,250	1,600	1,380	1,650	2,600	2,680	2,200	2,580	1,700	12,000	21,300
Selenium	—	—	—	—	—	—	—	—	—	—	0	2
Silver	2.8B	2.5	2.8	1.2B	2.1B	2.4B	2.3B	2.4B	2.7B	2.1B	(5) NP	NP
Sodium	798B	416B	320B	341B	509B	474B	414B	475B	565B	548B	2,500	51,800
Thallium	—	—	—	—	—	—	—	—	—	—	(5) 8	19
Vanadium	43	22	20	18	21	30	31	30	30	24	43	271
Zinc	2,890	72	214	210	65	222	202	116	554	117	(350) 40	178
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NP	NP

Notes:

1. — Analyte was analyzed for but not detected.
2. B – Value is greater than or equal to the instrument detection limit but less than the contract required detection limit.
3. NA – Sample not analyzed for this parameter.
4. NP – Screening Value not provided in reference used.
5. Results reported in milligrams per kilogram (ppm).
6. 'Element Concentrations in Soils and Other Surficial Materials Of the Conterminous United States", USGS, 1984, used for Screening Values. The 95th percent defined in RI text. The value in parentheses is a sediment clean up goal provided by the NYSDEC for a site where inorganics are present in the soil and sediment.

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Table XU

Borehole and Ambient Air Portable Gas Chromatograph Readings
Dollinger - A Filtrona Company
Remedial Investigation

Probe Depth(ft)	Date Sampled	B205 Borehole Depth(ft)	Auger Pullback Depth(ft)	Vinyl Chloride	1,1-DCE	trans-1,2-DCE	cis-1,2-DCE	TCE	Toluene	PERC	Total
2.0-4.0	8123191	4.0	2.0	---	---	0.3	85.5	796	---	0.1	881.9
2.0-4.0	8/23/91	4.0	2.0	---	---	---	67.9	658	---	---	725.9
5.0-7.0	8/23/91	7.0	5.0	3.0	4.9	1.6	56.1	1690*	52.8	1.8	1810.2
5.0-7.0	8/23/91	7.0	5.0	2.3	5.0	1.7	72.8	3040*	51.6	2.6	3176.0
9.0-11.0	8/23/91	11.0	9.0	14.6	13.5	1.6	450	2400*	63.3	2.5	2945.5
9.0-11.0	8/23/91	11.0	9.0	12.3	13.1	1.7	610	3700*	69.8	4.1	4411.0
drill rig(5)	8/23/91	20.0	---	---	---	---	0.02	5.6	0.01	---	5.63
above ground											
ambient (5)	10/29/91	---	---	---	---	---	---	0.141	---	---	0.141
	10/29/91	---	---	---	---	---	---	0.089	---	---	0.089
	10/29/91	---	---	---	---	---	---	0.086	---	---	0.086

NOTES:

1. All data expressed in parts per million on molar volume of analyte in air.
2. * Chromatogram peak exceeded scale; value is an approximate measure based on peak area.
3. Analyses performed on Photovac 10s70 portable gas chromatograph, except "above ground ambient" sample run on Hewlett Packard HP-5890 Series II gas chromatograph.
4. See accompanying text for additional information.
5. Sample "at drill rig" collected above drilling platform approximately 4 ft. above borehole during air rotary drilling. Sample "above ground ambient" collected at 2-inches above ground surface with tedlar bag after drilling completed at location OW-205.

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Table XIII

Tentatively Identified Compounds
Dollinger - A Filtrona Company
Remedial Investigation

Analysis	Sample ID	Matrix	TIC Compound	Estimated Concentration
Volatiles	B201s(12-14)	Boring Soil	Unknown	0.66J
Volatiles	SS201d	Sediment	Alkyl Benzene Derivative	6.8J
Volatiles	SS202sDUPDL	Sediment	Dichlorinated Compound	0.15J
Volatiles	OW105d	Groundwater	Iodo-methyl-benzene isomer	0.014J
Volatiles	OW204d	Groundwater	Unknown Hydrocarbon	0.006J
Semi Volatiles	B201s(12-14)	Boring Soil	Unknown	0.74J
Semi Volatiles	B201s(12-14)	Boring Soil	Unknown	0.43J
Semi Volatiles	B201d(8-10	Boring Soil	Unknown	0.427
Semi Volatiles	GSA8(2-4)	Grid Soil	Unknown	9.20J
Semi Volatiles	GSA8(2-4)	Grid Soil	Unknown	8.8J
Semi Volatiles	GSA8(2-4)	Grid Soil	Alkyl Sub-stituted Compound	0.67J
Semi Volatiles	GSB2(2-4)	Grid Soil	Unknown	2.1J
Semi Volatiles	GSB2(2-4)	Grid Soil	Unknown	0.57J
Semi Volatiles	GSB2(2-4)	Grid Soil	Alkyl Sub-stituted Compound	2.0J
Semi Volatiles	GSB5(4-6)	Grid Soil	Unknown	2.2JB
Semi Volatiles	GSB5(4-6)	Grid Soil	Unknown	0.52J
Semi Volatiles	GSB5(4-6)	Grid Soil	Oxybisethanol Derivative	0.427
Semi Volatiles	GSB1(10-12)	Grid Soil	Unknown	2.1JB
Semi Volatiles	GSB4(10-12)	Grid Soil	Unknown	1.5JB
Semi Volatiles	GSB4(10-12)	Grid Soil	Unknown	0.33JB
Semi Volatiles	GSB4(10-12)	Grid Soil	Unknown	0.42J
Semi Volatiles	GSB4(10-12)	Grid Soil	Unknown	0.30J
Semi Volatiles	GSB4(10-12)	Grid Soil	Unknown	0.30J
Semi Volatiles	GSB4(10-12)	Grid Soil	Fluoronitro-phenol isomer	0.37J
Semi Volatiles	SO201	Surface Soil	Unknown	1.8JB
Semi Volatiles	SO201	Surface Soil	Unknown Hydro.	0.64J
Semi Volatiles	SO201	Surface Soil	Unknown Hydro.	1.6J
Semi Volatiles	SO201	Surface Soil	Unknown Hydro.	1.5J
Semi Volatiles	SO201	Surface Soil	Alkyl Hydro.	4.3J
Semi Volatiles	SO201	Surface Soil	Alkyl Hydro.	0.76J

Notes:

1. L.C. - Long Chain
2. PAH - Polyaromatic hydrocarbon

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Table XIII

Tentatively Identified Compounds
Dollinger - A Filtrona Company
Remedial Investigation

Semi Volatiles	SO202	Surface Soil	Unknown	2.9JB
Semi Volatiles	SO202	Surface Soil	L.C. Hydro.	2.3J
Semi Volatiles	SO202	Surface Soil	L.C. Hydro.	5.1J
Semi Volatiles	SO202	Surface Soil	L.C. Hydro.	3.3J
Semi Volatiles	SO202	Surface Soil	L.C. Hydro.	12.0J
Semi Volatiles	SO202	Surface Soil	Unknown Hydro.	0.42J
Semi Volatiles	SO202	Surface Soil	Alkyl Hydro.	3.2J
Semi Volatiles	SO202	Surface Soil	Unknown	0.34J
Semi Volatiles	SO202	Surface Soil	unknown	[illegible]
Semi Volatiles	SS201d	Sediment	Unknown	1.5J
Semi Volatiles	SS201d	Sediment	Alkyl Saturated Hydrocarbon	0.50J
Semi Volatiles	SS201d	Sediment	Unknown	1.1J
Semi Volatiles	SS201d	Sediment	Unknown	0.44J
Semi Volatiles	SS201d	Sediment	Unknown	0.46J
Semi Volatiles	SS201d	Sediment	Unknown	0.927
Semi Volatiles	SS201s	Sediment	Dimethyl Benzene Isomer	427
Semi Volatiles	SS201s	Sediment	Unknown	210J
Semi Volatiles	SS201s	Sediment	Unknown	180J
Semi Volatiles	SS201s	Sediment	PAH Derivative	21J
Semi Volatiles	SS201s	Sediment	Unknown	28J
Semi Volatiles	SS201s	Sediment	Unknown	53J
Semi Volatiles	SS201s	Sediment	Unknown	11J
Semi Volatiles	SS201s	Sediment	Unknown Ester	13J
Semi Volatiles	SS201s	Sediment	Unknown Ester	19J
Semi Volatiles	SS201s	Sediment	Unknown	95J
Semi Volatiles	SS201s	Sediment	Unknown	8.5J
Semi Volatiles	SS201s	Sediment	Unknown	23J
Semi Volatiles	SS201s	Sediment	Unknown	15J
Semi Volatiles	SS201s	Sediment	Unknown	150J
Semi Volatiles	SS201s	Sediment	Unknown	33J
Semi Volatiles	SS201s	Sediment	Unknown	12J
Semi Volatiles	SS201s	Sediment	Unknown	8.5J
Semi Volatiles	SS201s	Sediment	Unknown	7.4J
Semi Volatiles	SS201s	Sediment	Unknown	9.1J
Semi Volatiles	SS201s	Sediment	Unknown	5.6J
Semi Volatiles	SS201sRE	Sediment	Dimethylbenzene Isomer	39J
Semi Volatiles	SS201sRE	Sediment	PAH	140J

Notes:

1. L.C. - Long Chain
2. PAH - Polyaromatic hydrocarbon

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Table XIII

Tentatively Identified Compounds
Dollinger - A Filtrona Company
Remedial Investigation

			Derivative	
Semi Volatiles	SS201sRE	Sediment	Unknown	110J
Semi Volatiles	SS201sRE	Sediment	Unknown	200J
Semi Volatiles	SS201sRE	Sediment	unknown	36J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	50J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	76J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	290J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	14J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	39J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	91J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	68J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	12J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	59J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	23J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	37J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	38J
Semi Volatiles	SS201sRE	Sediment	Unknown Ester	26J
Semi Volatiles	SS201sRE	Sediment	Long Chain Hydrocarbon	40J
Semi Volatiles	SS201sDL	Sediment	PAH Derivative	26J
Semi Volatiles	SS202d	Sediment	Unknown	0.95J
Semi Volatiles	SS202s	Sediment	Tertmethylbutyl phenol isomer	0.71J
Semi Volatiles	SS202s	Sediment	Unknown	0.97J
Semi Volatiles	SS202s	Sediment	Unknown	1.1J
Semi Volatiles	SS202s	Sediment	Unknown	0.54JB
Semi Volatiles	SS202s	Sediment	PAH Derivative	0.58J
Semi Volatiles	SS202s	Sediment	Unknown	0.92J
Semi Volatiles	SS202s	Sediment	Unknown	1.3J
Semi Volatiles	SS202s	Sediment	PAH Derivative	0.60J
Semi Volatiles	SS202s	Sediment	PAH Derivative	0.36J
Semi Volatiles	SS202s	Sediment	PAH Derivative	0.44J
Semi Volatiles	SS202s	Sediment	PAH Derivative	0.36J
Semi Volatiles	SS202s	Sediment	Unknown	0.97J
Semi Volatiles	SS202s	Sediment	PAH Derivative	1.8J
Semi Volatiles	SS202s	Sediment	Unknown	0.37J
Semi Volatiles	SS202s	Sediment	Unknown	0.38J
Semi Volatiles	SS202sDUP	Sediment	Unknown	1.2J
Semi Volatiles	SS202sDUP	Sediment	Unknown	0.58J
Semi Volatiles	SS202sDUP	Sediment	Unknown	0.51J

'otes:

1. L.C. - Long Chain
2. PAH - Polyaromatic hydrocarbon

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Table XIII

Tentatively Identified Compounds
Dollinger - A Filtrona Company
Remedial Investigation

Semi Volatiles	SS202sDUP	Sediment	PAH Derivative	2.4J
Semi Volatiles	SS202sDUP	Sediment	Unknown	3.2J
Semi Volatiles	SS202sDUP	Sediment	Unknown Acid	2.6J
Semi Volatiles	SS202sDUP	Sediment	Unknown	0.93J
Semi Volatiles	SS202sDUP	Sediment	Unknown	1.2J
Semi Volatiles	SS202sDUP	Sediment	Unknown	0.99J
Semi Volatiles	SS202sDUP	Sediment	Unknown	1.6J
Semi Volatiles	SS202sDUP	Sediment	Unknown	1.4J
Semi Volatiles	SS202sDUP	Sediment	Long Chain Hydrocarbon	0.69J
Semi Volatiles	SS202sDUP	Sediment	Unknown	1.1J
Semi Volatiles	SS202sDUP	Sediment	Unknown	0.92J
Semi Volatiles	SS202sDUP	Sediment	Unknown	0.68J
Semi Volatiles	SS202sDUP	Sediment	Unknown	1.1J
Semi Volatiles	SS202sDUP	Sediment	Unknown	0.86J
Semi Volatiles	SS202sDUP	Sediment	Unknown	0.65J
Semi Volatiles	SS202sDUP	Sediment	Unknown	2.5J
Semi Volatiles	SS203d	Sediment	Unknown	2.1J
Semi Volatiles	SS203d	Sediment	Alkyl Saturated Hydrocarbon	0.71J
Semi Volatiles	SS203d	Sediment	Alkyl Saturated Hydrocarbon	0.49J
Semi Volatiles	SS203d	Sediment	Unknown	1.4J
Semi Volatiles	SS203d	Sediment	Alkyl Saturated Hydrocarbon	0.50J
Semi Volatiles	SS203d	Sediment	Alkyl Saturated Hydrocarbon	2.2J
Semi Volatiles	SS203d	Sediment	Alkyl Saturated Hydrocarbon	0.46J
Semi Volatiles	SS203d	Sediment	Unknown	0.59J
Semi Volatiles	SS203d	Sediment	Unknown	0.59J
Semi Volatiles	SS203d	Sediment	Unknown	1.1J
Semi Volatiles	SS203s	Sediment	Unknown	1.2J
Semi Volatiles	SS203s	Sediment	Alkyl Hydrocarbon	0.68J
Semi Volatiles	SS203s	Sediment	Alkyl Hydrocarbon	0.86J
Semi Volatiles	SS203s	Sediment	Alkyl Hydrocarbon	2.7J
Semi Volatiles	SS203s	Sediment	Alkyl Hydrocarbon	1.6J
Semi Volatiles	SS203s	Sediment	Unknown	0.41J
Semi Volatiles	SS203s	Sediment	Alkyl Hydrocarbon	1.4J
Semi Volatiles	SS203s	Sediment	Unknown	0.37J

Notes:

1. L.C. - Long Chain
2. PAH - Polyaromatic hydrocarbon

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Table XIII

Tentatively Identified Compounds
Dollinger - A Filtrona Company
Remedial Investigation

Semi Volatiles	SS203s	Sediment	Hydrocarbon	
Semi Volatiles	SS203s	Sediment	Alkyl Hydrocarbon	1.5J
Semi Volatiles	SS203s	Sediment	Unknown	0.52J
Semi Volatiles	SS203s	Sediment	Unknown	0.92J
Semi Volatiles	SS203s	Sediment	Hydrocarbon	
Semi Volatiles	SS203s	Sediment	Unknown	0.54J
Semi Volatiles	SS203s	Sediment	Unknown	0.86J
Semi Volatiles	SS203s	Sediment	Long Chain Hydrocarbon	2.6J
Semi Volatiles	SS203s	Sediment	Unknown	1.2J
Semi Volatiles	SS203s	Sediment	Unknown	1.1J
Semi Volatiles	SS203s	Sediment	Unknown	0.75J
Semi Volatiles	SS203s	Sediment	Unknown	0,52J
Semi Volatiles	SS203s	Sediment	Unknown	1.0J
Semi Volatiles	SS203s	Sediment	Unknown	2.0J
Semi Volatiles	SS203sDUP	Sediment	Alkyl Hydrocarbon	2.8J
Semi Volatiles	SS203sDUP	Sediment	Long Chain Hydrocarbon	1.9J
Semi Volatiles	SS203sDUP	Sediment	Long Chain Hydrocarbon	2.1J
Semi Volatiles	SS203sDUP	Sediment	Long Chain Hydrocarbon	0.93J
Semi Volatiles	SS203sDUP	Sediment	Long Chain Hydrocarbon	0.96J
Semi Volatiles	SS203sDUP	Sediment	Unknown	1.1J
Semi Volatiles	SS203sDUP	Sediment	Long Chain Hydrocarbon	1.7J
Semi Volatiles	SS203sDUP	Sediment	Unknown	2.2J
Semi Volatiles	SS203sDUP	Sediment	Unknown	0.53J
Semi Volatiles	SS203sDUP	Sediment	Unknown	0.77J
Semi Volatiles	SS203sDUP	Sediment	Long Chain Hydrocarbon	0.96J
Semi Volatiles	SS203sDUP	Sediment	Long Chain Hydrocarbon	0.75J
Semi Volatiles	SS203sDUP	Sediment	Unknown	0.57J
Semi Volatiles	SS203sDUP	Sediment	Unknown	0.96J
Semi Volatiles	SS203sDUP	Sediment	Unknown	4.1J
Semi Volatiles	SS203sDUP	Sediment	Unknown	0.72J
Semi Volatiles	SS204d	Sediment	Unknown	0.95J
Semi Volatiles	SS204d	Sediment	Unknown	0.53J

Notes:
1. L.C. - Long Chain
2. PAH - Polyaromatic hydrocarbon

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Table XIII

Tentatively Identified Compounds
Dollinger - A Filtrona Company
Remedial Investigation

Semi Volatiles	SS204d	Sediment	Unknown	0.37J
Semi Volatiles	SS204d	Sediment	Unknown	1.0J
Semi Volatiles	SS204dRE	Sediment	Unknown	0.68J
Semi Volatiles	SS204dRE	Sediment	unknown	0.49J
Semi Volatiles	SS204dRE	Sediment	Unknown	0.47J
Semi Volatiles	SS204dRE	Sediment	Unknown	1.6J
Semi Volatiles	SS204s	Sediment	Tetramethylbutyl phenol isomer	1.5J
Semi Volatiles	SS204s	Sediment	Unknown	2.1J
Semi Volatiles	SS204s	Sediment	Nonyl phenol isomer	4.5J
Semi Volatiles	SS204s	Sediment	Unknown	4.5J
Semi Volatiles	SS204s	Sediment	Unknown	5.4J
Semi Volatiles	SS204s	Sediment	Tetramethylbutyl phenol isomer	4.6J
Semi Volatiles	SS204s	Sediment	Unknown	3.3J
Semi Volatiles	SS204s	Sediment	Unknown	0.78J
Semi Volatiles	SS204s	Sediment	Unknown Hydrocarbon	1.7J
Semi Volatiles	SS204s	Sediment	Unknown	1.5J
Semi Volatiles	SS204s	Sediment	Unknown	0.81J
Semi Volatiles	SS204s	Sediment	Unknown	2.4J
Semi Volatiles	SS204s	Sediment	Unknown Hydrocarbon	4.5J
Semi Volatiles	SS204s	Sediment	Unknown	4.5J
Semi Volatiles	SS204s	Sediment	Unknown	3.3J
Semi Volatiles	SS204s	Sediment	Unknown	8.3J
Semi Volatiles	SS204s	Sediment	Unknown	4.6J
Semi Volatiles	SS204s	Sediment	Unknown	3.1J
Semi Volatiles	SS204s	Sediment	Unknown	1.4J
Semi Volatiles	TP201	Test Pit Soil	Unknown	0.99J
Semi Volatiles	TP201	Test Pit Soil	Unknown	0.74J
Semi Volatiles	TP201	Test Pit Soil	Unknown	0.35J
Semi Volatiles	TP201	Test Pit Soil	Unknown Hydrocarbon	1.2J
Semi Volatiles	TP201	Test Pit Soil	Alkyl Hydrocarbon	2.2J
Semi Volatiles	TP201	Test Pit Soil	Alkyl Hydrocarbon	0.74J
Semi Volatiles	TP201	Test Pit Soil	Cyclo Alkane	2.0J
Semi Volatiles	TP201	Test Pit Soil	Alkyl Hydrocarbon	0.54J
Semi Volatiles	TP204	Test Pit Soil	Unknown	0.75J

Notes:
1. L.C. - Long Chain
2. PAH - Polyaromatic hydrocarbon

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Table XIII

Tentatively Identified Compounds
Dollinger - A Filtrona Company
Remedial Investigation

Semi Volatiles	STW202	Stormwater	Unknown Hydrocarbon	0.024J
Semi Volatiles	SW201	Surface Water	Unknown Hydrocarbon	0.41J
Semi Volatiles	SW201	Surface Water	Unknown Hydrocarbon	0.0127
Semi Volatiles	SW204	Surface Water	Unknown Hydrocarbon	0.045J
Semi Volatiles	SW204DUP	Surface Water	Unknown	0.010J
Semi Volatiles	SW204DUP	Surface Water	Unknown Hydrocarbon	0.038J
Semi Volatiles	Field Blk2	SDG: GSA8	Diphenyl Methanone	0.010J
Semi Volatiles	Field Blk2	SDG: GSA8	Phenyl Methanone Derivative	0.010J
Semi Volatiles	Field Blk2	SDG: GSA8	Unknown	0.0127
Semi Volatiles	Field Blk	SDG: OW201s	Unknown	0.046J
Semi Volatiles	Field Blk	SDG: OW201s	Unknown	0.0127

Notes:
1. L.C. - Long Chain
2. PAH - Polyaromatic hydrocarbon

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Table XIV

Quality Assurance1 Quality Control Samples
Organic Analyses
Dollinger – A Filtrona Company
Remedial Investigation

	SAMPLE LOCATION AND IDENTIFICATION														
PARAMETER	FBLK	TRIP BLK1	TRIP BLK2	TRIP BLK3	FIELD BLK1	FIELD BLK2	FIELD BLK3	FIELD BLK4	TRIP BLK1	TRIP BLK2	TRIP BLK3	TRIP BLK4	FBLNK	TRIP BLK	TRIP BLK
Sample Delivery Group	STW–202	STW–202	STW–202	STW–202	GSA8	GSA8	GSA8	GSA8	GSA8	GSA8	GSA8	GSA8	OW–201d	SS–201d	OW–101d
Volatiles															
	—						—	—	—		—	—	—	—	—
Acetone	—	—	—	—	0.010	0.016	—	—	—	—	—	—	1 –	I -	- I
Methylene Chloride	—	0.002JB	0.002JB	0.001JB	—	—	—	—	—	0.0004JB	—	—	—	0.001J	0.0008J
Toluene	—	—	—	—	0.005J	—	—	—	—	—	—	—	—	—	—
Trichloroethylene	—	—	—	—	0.017	0.0005J	—	—	—	—	—	—	—	—	0.0004J
Xylenes (Total)	—	—	—	—	0.002J	—	—	—	—	—	—	—	—	—	—
Semi–Volatiles															
		NA	NA	NA	—	—	—	—	NA	NA	NA	NA	—	NA	NA
Butylbenzylphthalate	0.003J	—	—	—	—	—	—	—							
Phenanthrene	—	—	—	—	0.006J	—	—	—							
Fluoranthene	—	—	—	—	0.004J	—	—	—							
Pyrene	—	—	—	—	0.002J	—	—	—							
Pesticides															
	—	NA	NA	NA	—	—	—	—	NA	NA	NA	NA	NA	NA	NA

NOTES:

1. — Analyte was analyzed for but not detected.
2. NA – Sample not analyzed for this parameter.
3. J – Indicates an estimated value. The mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit and greater than zero.
4. Results reported In milligrams per liter (ppm).

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Table XV
Quality Assurance1 Quality Control Samples
Inorganic Analyses
Dollinger - A Filtrona Company
Remedial Investigation

	SAMPLE LOCATION AND IDENTIFICATION					
PARAMETER	FLDBLK1	FLBLK2	FLDBLK	FLDBNK	FLDBLK	FLDBLNK
Sample Delivery Group	GSA8	GSA8	GSA8	GSA8	STW 202	OW201d
Aluminum	9.9	10.0	4.25	--	--	--
Antimony	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--
Barium	0.094B	0.091B	0.039B	--	--	--
Beryllium	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--
Calcium	52.9	56.8	24.6	8.8	0.59B	3.02B
Chromium	0.070	0.042	0.022	--	--	--
Cobalt	--	--	--	--	--	--
Copper	0.082	0.052	0.052	0.038	0.030	--
Iron	24.5	21.1	9.76	--	0.12	--
Lead	--	--	--	0.017	0.0050	--
Magnesium	11.4	12.5	5.3	--	--	--
Manganese	0.44	0.46	0.20	0.15	--	--
Mercury	--	--	--	--	--	--
Nickel	0.028B	0.020B	--	--	--	--
Potassium	4.57B	3.82B	1.6B	--	--	--
Selenium	--	--	--	--	--	--
Silver	--	--	--	0.22	--	--
Sodium	3.72B	3.14B	0.88B	--	0.47B	0.34B
Thallium	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--
Zinc	0.86	0.22	0.15	--	0.016B	--
Cyanide	--	--	NA	--	--	--

Notes:
1. -- Analyte was analyzed for but not detected.
2. Results reported in milligrams per liter (ppm).
3. B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.

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TABLE XVI
Dollinger - A Filtrona Company
Remedial Investigation
Physical - Chemical and Fate Data of Organic Chemicals and Significance

Chemical	Cas. No.	Weight (g/mole)	Solubility (mg/L)	Vapor Pressure (mm Hg)	Henry's Lau Constant (atm-m-mole)	Koc (m/g)	Log Kou
CHLORINATED HYDROCARBONS							
1,1 dichloroethene	75-35-4	97	2250	600	3.4E-2	65	1.84
1,2 dichloroethene (trans)	540-59-0	97	6300	324	6.5E-3	59	0.48
tetrachloroethene	127-18-4	166	150	17.8	2.59E-2	364	2.6
1,1,1-trichloroethane	71-55-6	133	1500	123	1.44E-2	152	2.5
trichloroethene	79-01-06	131	1100	57.9	9.1E-3	126	2.38
vinyl chloride	75-01-4	63	2670	2660	8.19E-2	57	1.38
BTX							
benzene	71-43-2	78	1750	95.2	5.59E-3	83	2.12
chlorobenzene	108-90-7	113	466	11.7	3.72E-3	330	2.84
toluene	108-88-3	92	535	28.1	6.37E-3	300	2.73
xylene (total)	1330-20-7	106	198	10	7.04E-3	240	3.26
SEMI-VOLATILES							
benzo(a)pyrene	50-32-8	252	1.2E-3	5.6E-9	1.55E-6	5.5E+6	6.06
bis(2-ethylhexyl)phthalate	117-81-7	391	--	--	--	--	--
phenol	108-95-2	94	93000	0.341	4.54E-7	14.2	1.46

NOTE:

1. Data from USEPA Superfund Public Health Evaluation Manual, October 1986.

Relative Mobility	Vapor Pressure (mmHg at 25°C)	Solubility (mg/L at 25°C)	Henry's Lau Constant (atm-m^3-mole)*	K_{oc} (mL/g)**
High	>100	>100	$>5.5x10^{-3}$	<10
Moderate	10-99	10-99	$5.5x10^{-4}$ to $5.5x10^{-3}$	10-99
Lou	0.1-9.9	0.1-9.9	$5.5x10^{-5}$ to $5.5x10^{-4}$	100-999
Very Lou	<0.1	<0.1	$<5.5x10^{-5}$	>1,000

Notes:

1. * Using as a reference point the value $5.5x10^{-3}$, considered by Smith et.al. (1980) to be indicative of high volatility from water.
2. **Using as a reference point the value ≤100 mL/g, reported by Kenaga (1980) to correspond to moderate to high mobility.

vbd157

TABLE XVII
SOIL, SEDIMENT, SURFACE WATER, GROUNDWATER AND SOIL VAPOR CONTAMINANT AND CONCENTRATIONS USED TO PREPARE EXPOSURE ESTIMATES

Chemical	Typical or Representative Case	RME Case (Reasonable Maximum Exposure) (mg/kg)
SOIL mg/kg → TCE seems → need to check previous investigations		
Acetone	0.024	0.049
Ethylbenzene	4.07	8.1
Toluene	1.26	2.5
Xylenes	10.04	50.0
1,2-Dichloroethene	--	0.04
Tetrachloroethene	--	0.25
Trichloroethene	7.75	51.0
1,1,2-Trichloroethane	--	0.009
1,1,1-Trichloroethane	--	0.003
Anthracene	0.16	0.25
Benzo(a)anthracene	0.36	0.56
Chrysene	0.29	0.61
Benzo(b)fluoranthene	0.27	0.66
Benzo(k)fluoranthene	--	0.35
Benzo(a)pyrene	0.23	0.49
Indeno (1,2,3-cd)pyrene	0.17	0.38
Benzo(g,h,i)perylene	--	0.29
Phenanthrene	--	1.3
Fluoranthene	--	1.3
Pyrene	--	1.2
Bis(2-ethylhexyl)phthalate	0.44	1.7
Diethyl Phthalate	.158	0.21
Surface Water		
Benzoic Acid	--	0.002
Bis(2-ethylhexyl)phthalate	--	0.00075
1,2-Dichloroethene	--	0.011
4-Methyl Phenol	--	0.001
Vinyl Chloride	--	0.006

No TCE

– Need to check previous investigations

TABLE XVII (Cont.)
SOIL, SEDIMENT, SURFACE WATER, GROUNDWATER
AND SOIL VAPOR CONTAMINANT AND
CONCENTRATIONS USED TO PREPARE
EXPOSURE ESTIMATES

Chemical	Typical or Representative Case	RME Case (mg/kg)
Sediment mg/kg — NO TCE	NO VC	← 1.5 ppm TCE
Acetone	0.12	0.49
Benzene	--	1.5
2-Butanone	--	0.069
Chlorobenzene	--	1.4
2,4-Dimethyl Phenol	--	0.073
Ethylbenzene	19.67	59.0
Toluene	1.77	5.3
Xylenes	110.04	220.0
1,2-Dichloroethene	--	0.018
Methylene Chloride	0.46	0.91
Trichloroethene	--	0.059
Acenaphthalene	--	0.29
Acenaphthene	1.79	5.4
Anthracene	6.78	25.0
Benzo(a) Anthracene	22.05	120.0
Benzo(b)fluoranthene	30.29	140.0
Benzo(k) fluoranthene	3.04	11.0
Benzo(g,h,i)perylene	2.58	11.0
Benzo(a) pyrene	5.52	43.0
Chrysene	3.60	8.0
Dibenz(a,h)anthracene	0.98	4.6
Dibenzofuran	2.75	2.8
Fluoranthene	41.0	220.0
Fluorene	9.1	10.0
Indeno(1,2,3-cd)pyrene	3.85	17.0
Naphthalene	0.8	0.8
2-methylnaphthalene	0.37	0.41
Phenanthrene	23.2	120.0
Pyrene	31.40	150.0
Copper	--	174.0
Lead	--	137.0
Mercury	--	1.0
Nickel	--	93.0
Zinc	--	2,890.0

TABLE XVII (Cont.)
SOIL, SEDIMENT, SURFACE WATER, GROUNDWATER AND
SOIL VAPOR CONTAMINANT AND
CONCENTRATIONS USED TO PREPARE
EXPOSURE ESTIMATES

Chemical	Typical or Representative Case (mg/kg)	RME Case (mg/kg)
Total Polynuclear Aromatic Hydrocarbons		
Di-n-butylphthalate	6.98	8.8
Butylbenzylphthalate	37.46	140.0
Bis-2ethylhexylphthalate	27.99	130.0
Groundwater (mg/L)		
Acetone	0.032	0.041
Toluene	--	0.012
1,2-Dichloroethene	2.25	11.0
1,1-Dichloroethene	--	0.019
1,1,1-Trichloroethane	--	0.015
Trichloroethene	18.0	0.16
Vinyl Chloride	0.112	36.0
Soil Vapor (parts per million on molar volume of analyte in air)		
1,1-Dichloroethene	2.20	3.80
1,2-Dichloroethene (cis)	98.51	173
1,2-Dichloroethene (trans)	1.16	2.0
Trichloroethene	208.55	411
Vinyl Chloride	8.87	16.4

NOTES:

--. Only one sample contained detectable concentrations

RME: Reasonable maximum exposure value is the maximum detected concentration from the July 1991 Site Investigation.

Typical: Value is the average of detected compound concentrations from the July 1991 Site Investigation.

vbd149

TABLE XVIII

CHILD TRESPASS EXPOSURE SCENARIO
INGESTION OF CHEMICALS IN SOIL

Equation:

$$CDI\ (mg/kg\text{-}day) = \frac{(Cs)\ (IR)\ (CF)\ (FI)\ (EF)\ (ED)}{(BW)\ (AT)}$$

where:

CDI = Chemical Daily Intake (mg/kg-day)

Cs = Chemical concentration in soil (mg/kg)

CF = Converson factor (10^{-6} kg/mg)

IR = Ingestion rate (100 mg/day for age groups greater than 6 years old)

FI = Fraction ingested from contaminated source 1.0

EF = Exposure frequency: 26 days/year (equivalent to 1 time/week for 26 weeks/year)

ED = Exposure duration: 6 years (assume entire age period of 6 to 12 years old)

BW = Body weight - 31 kg (9 year old average; EPA 1989)

AT = Pathway specific period of exposure

NOTE:

1. EPA 1989, Exposure Factors Handbook.

vbd149

TABLE XIX

CHILD TRESPASS EXPOSURE SCENARIO
DERMAL CONTACT WITH CHEMICALS IN SOIL

Equation:

$$\text{Absorbed dose} = \frac{(Cs)\ (ABS)\ (CF)\ (SA)\ (AF)\ (EF)\ (ED)}{(BW)\ (AT)}$$

where:

Absorbed dose = Chemical Daily Intake (CDI)

CS = Chemical concentration in soil

ABS = Fraction absorbed (unitless)

CF = Conversion factor (10^{-6} kg/mg)

SA = Skin surface area available for contact (cm^2/event)
Typical case = 1200 cm^2 (hands and 1/3 of arms and legs, surface area; EPA 1989)

RME case 1800 cm^2 (hands and one-half of arms and legs, surface areas; EPA 1989)

AF = Soil to skin adherence factor (mg/cm^2)
Typical and RME = 0.5 mg/cm^2 (LePow 1975)

EF = Exposure frequency (events/year)
Typical case - 26 days/year (1 day/week, 26 weeks/year)
RME case - 26 days/year (1 day/week, 26 weeks/year)

ED = Exposure duration - 6 years (period between 6 and 12 years old)

BW = 31 kg (9 years old average; EPA 1989)

AT = Pathway specific period of exposure

NOTE:

1. EPA 1989, Exposure Factors Handbook.

vbd149

TABLE XX

CHILD TRESPASS EXPOSURE SCENARIO
INGESTION OF POND SEDIMENT

Equation:

$$\text{Absorbed dose (mg/kg-day)} = \frac{(Csd)\ (D)\ (F)\ (I)\ (Abs)}{(BW)\ (AT)}$$

where:

Csd = Chemical concentration in pond sediment

D = The duration of exposure (5 years)

F = The frequency of exposure (10 day/year)

I = The daily intake of sediment (50 mg/day)

ABS = The absorption factor (assume 1.0 by convention)

BW = Body Weight (31 kg)

AT = Pathway specific period of exposure (i.e. 70 years/lifetime, 365 days/year.

vbd149

TABLE XXI

ON SITE WORKER EXPOSURE SCENARIO
INHALATION OF VAPORS

Equation:

$$\text{Absorbed dose (mg/kg-day)} = \frac{(Ca)\ (ABS)\ (IR)\ (ET)\ (EF)\ (ED)}{(BW)\ (AT)}$$

where:

Ca = Contaminant Concentration in Air (mg/m^3)
ABS = Fraction Absorbed (unitless)
IR = Inhalation Rate (m^3/hr)
ET = Exposure Time (hours/day)
EF = Exposure Frequency (days/year)
ED = Exposure Duration (years)
BW = Body Weight
AT = Averaging Time (days)

VARIABLE	CASE	RECEPTOR	VALUE Rationale/Source
CA	Typical/RME	Adult	Modeled Value
ABS	Typical/RME	Adult	1.0 (assumed, by convention)
IR	Typical	Adult	0.8 m^3/hr (light activity, EPA 1989)
	RME	Adult	2.5 m^3/hr (moderate activity, EPA 1989)
ET	Typical/RME	Adult	8 hours/day
EF	Typical/RME	Adult	250 days/year (5 days/ week, 50 weeks)
ED	Typical	Adult	10 years
	RME	Adult	40 years
BW	Typical/RME	Adult	70 kg(adult average EPA 1989)
AT	Typical/RME	Adult	EDx365 days/year

TABLE XXII

CHRONIC TOXICITY VALUES: POTENTIAL NONCARCINOGENIC EFFECTS
ORAL EXPOSURE

chemical	Chronic RfD (oral) mg/kg-day	Critical Effect	RfD Basis/ RfD Source	Uncertainty (UF) and Modifying (MF) Factors
Acetone	1×10^{-1}	Wt. changes, Liver Kidney	Rat/oral HEAST	1000
2-Butanone	5×10^{-2}	CNS Effects, feto tox	Rat/inhal HEAST	1000
Chlorobenzene	2×10^{-2}	Liver, Kidney Effects	Rat/oral HEAST	1000
2,4-Dimethylphenol	2×10^{-2}	Neuro signs, blood changes	Mouse/oral HEAST	3000
Ethylbenzene	1×10^{-1}	Liver, Kidney TOX., development TOX	Rat/oral HEAST	300
Toluene	2×10^{-1}	CNS Effects	Rat/oral HEAST	1000
Xylenes	2.0	CNS Effects, Irritation	Rat/oral HEAST	100
cis-1,2-Dichloroethene	1×10^{-2}	Blood Changes	Rat/oral HEAST	3000
methylene chloride	6×10^{-2}	Liver Tox.	Rat/Water HEAST	100
1,1,2-Trichloroethane	4×10^{-3}	Clinical Chem. Changes	Mouse/oral HEAST	1000

TABLE XXII (Cont.)

CHRONIC TOXICITY VALUES: POTENTIAL NONCARCINOGENIC EFFECTS
ORAL EXPOSURE

Chemical	Chronic RfD (oral) mg/kg-day	Critical Effect	RfD Basis/ RfD Source	Uncertainty (UF) and Modifying (MF) Factors
1,1,1-Trichloroethane	9×10^{-2}	Liver Tox.	Guinea pig HEAST	NS
Anthracene	3×10^{-1}	NOEL	Mouse/oral HEAST	3000
Fluoranthene	4×10^{-2}	Liver, Kidney, Blood	Mouse/oral HEAST	300
Fluorene	4×10^{-2}	Blood Changes	Mouse/oral HEAST	3000
Pyrene	3×10^{-2}	Kidney Effects	Mouse/oral HEAST	3000
Di-n-butyl phthalate	1×10^{-1}	Mortality	Rat/diet HEAST	1000
Diethyl phthalate	8×10^{-1}	Body Weight	Rat/diet HEAST	1000
Butylbenzyl phthalate	2×10^{-1}	Body Wt. change	Rat/diet HEAST	1000
Bis2-ethylhexyl phthalate	2×10^{-2}	Liver Wt. Change	Guinea Pig/diet HEAST	1000
Copper	3.7×10^{-2}	Local GI irrit.	Human/NS	NS
Lead	1.4×10^{-3} (5)	NS	NS	NS
Nickel	2×10^{-2}	Body Wt., organ changes	Rat/diet HEAST	300

TABLE XXII (Cont.)

CHRONIC TOXICITY VALUES: POTENTIAL NONCARCINOGENIC EFFECTS
ORAL EXPOSURE

Chemical	Chronic RfD (oral) mg/kg-day	Critical Effect	RfD Basis/ RfD Source	Uncertainty (UF) and Modifying (MF) Factors
Zinc	2×10^{-1}	Anemia	Human/oral HEAST	10
Mercury	3×10^{-4}	CNS Effects	NS/HEAST	10

Notes:

1. RfD = Reference Dose
2. NOEL: No observed effect level
3. HEAST = Health Effects Assessment Summary Tables
4. NS = Not Specified
5. EPA 1986, Superfund Public Health Evaluation Manual
6. NAS-RDI National Academy of Science, Recommended Daily Intake.

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TABLE XXIII

TOXICITY VALUES: POTENTIAL CARCINOGENIC EFFECTS
CHEMICAL CLASSIFICATION AND SLOPE FACTORS

Chemical	Slope Factor (mg/kg/day)$^{-1}$	Weight of Evidence	Type of Cancer	SF Basis/ SF Source
1,1-Dichloroethene	6×10^{-1}	C	--	Diet/HEAST
1,1,2-Trichloroethane	5.7×10^{-2}	C	--	Water/HEAST
Trichloroethene	1.1×10^{-2}	B2	Liver	Oral/HEAST
Vinyl Chloride	1.9	A	Lung	Diet/HEAST
Benzo(a)anthracene	NA	B2	NA	HEAST
Benzo(a)pyrene	11.5	B2	Stomach	Mouse/Diet/HEAST
Benzo(b)fluoranthene	NA	B2	NA	HEAST
Benzo(k)fluoranthene	NA	B2	NA	HEAST
Chrysene	NA	B2	NA	HEAST
Dibenzo(a,h)anthracene	NA	B2	NA	HEAST
Indeno(1,2,3-c,d)pyrene	NA	B2	NA	HEAST
Bis(2-ethylhexyl) phthalate	1.4×10^{-2}	B2	Liver	HEAST
Butylbenzyl phthalate	NA	C	NA	HEAST

Notes:

1. HEAST = Health Effects Assessment Summary Tables
2. NA: Not Available
3. SF: Slope Factor

TABLE XXIV

TYPICAL EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL NONCARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	RfD (mg/kg-day)	Hazard Quotient (CDI/RfD)	Pathway Specific Hazard Index
Exposure Pathway: Ingestion of soil				
Acetone	5.52×10^{-9}	0.1	5.52×10^{-8}	
Ethylbenzene	9.36×10^{-7}	0.1	9.36×10^{-6}	
Toluene	2.90×10^{-7}	0.2	1.45×10^{-6}	
Xylene	2.31×10^{-6}	2.0	1.16×10^{-6}	
Anthracene	3.68×10^{-8}	0.3	1.23×10^{-7}	
Bis(2-ethylhexyl) phthalate	1.01×10^{-7}	0.02	5.05×10^{-6}	
Diethyl phthalate	3.11×10^{-9}	0.8	3.89×10^{-9}	
				1.72×10^{-5}

TABLE XXIV (Cont.)

TYPICAL EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL NONCARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	RfD (mg/kg-day)	Hazard Quotient (CDI/RfD)	Pathway Specific Hazard Index
Exposure Pathway: Dermal Contact				
Acetone	3.36×10^{-8}	0.1	3.36×10^{-7}	
Ethylbenzene	5.7×10^{-6}	0.1	5.7×10^{-5}	
Toluene	1.76×10^{-6}	0.2	8.8×10^{-6}	
Xylene	1.4×10^{-5}	2.0	7.0×10^{-6}	
Anthracene	2.24×10^{-7}	0.3	7.47×10^{-7}	
Bis(2-ethylhexyl) phthalate	6.16×10^{-7}	0.02	3.08×10^{-5}	
Diethyl phthalate	1.86×10^{-8}	0.8	2.33×10^{-8}	
				1.047×10^{-4}
Total Exposure Hazard Index				1.22×10^{-4}

Notes:

1. CDI = Chemical Daily Intake
2. RfD = Reference Dose

TABLE XXV

REASONABLE MAXIMUM EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL NONCARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	RfD (mg/kg-day)	Hazard Quotient (CDI/RfD)	Pathway Specific Hazard Index
Exposure Pathway: Ingestion of Soil				
Acetone	1.13×10^{-8}	0.1	1.13×10^{-7}	
Ethylbenzene	1.86×10^{-6}	0.1	1.86×10^{-5}	
Toluene	5.75×10^{-7}	0.2	2.88×10^{-6}	
Xylene	1.15×10^{-5}	2.0	5.75×10^{-6}	
1,2-Dichloroethylene	9.2×10^{-9}	0.01	9.2×10^{-7}	
1,1,2-Trichloroethane	2.07×10^{-9}	0.004	5.18×10^{-7}	
1,1,1-Trichloroethane	6.9×10^{-10}	0.09	7.67×10^{-9}	
Anthracene	5.75×10^{-8}	0.3	1.92×10^{-7}	
Pyrene	2.76×10^{-7}	0.03	9.20×10^{-6}	
Bis(2-ethylhexyl) phthalate	3.91×10^{-7}	0.02	1.96×10^{-5}	
Diethyl phthalate	4.14×10^{-9}	0.8	5.18×10^{-9}	
				5.78×10^{-5}

TABLE XXV (Cont.)

REASONABLE MAXIMUM EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL NONCARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	RfD (mg/kg-day)	Hazard Quotient (CDI/RfD)	Pathway Specifi Hazard Index
Exposure Pathway: Dermal Contact				
Acetone	1.01×10^{-7}	0.1	1.01×10^{-6}	
Ethylbenzene	1.67×10^{-5}	0.1	1.67×10^{-4}	
Toluene	5.15×10^{-6}	0.2	2.58×10^{-5}	
Xylene	1×10^{-4}	2.0	5×10^{-5}	
1,2-Dichloroethylene	8.24×10^{-8}	0.01	8.24×10^{-6}	
1,1,2-Trichloroethane	1.85×10^{-8}	0.004	4.63×10^{-6}	
1,1,1-Trichloroethane	6.18×10^{-9}	0.09	6.87×10^{-8}	
Anthracene	5.15×10^{-7}	0.3	1.72×10^{-6}	
Fluoranthene	2.68×10^{-6}	0.04	6.7×10^{-5}	
Bis(2-ethylhexyl) phthalate	3.5×10^{-6}	0.1	3.5×10^{-5}	
Diethyl phthalate	3.72×10^{-8}	0.8	4.65×10^{-8}	
Pyrene	2.47×10^{-6}	0.03	8.23×10^{-5}	
				4.43×10^{-4}

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TABLE XXV (Cont.)

REASONABLE MAXIMUM EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL NONCARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	RfD (mg/kg-day)	Hazard Quotient (CDI/RfD)	Pathway Specific Hazard Index
Exposure Pathway: Ingestion of Pond Sediment				
Acetone	2.17×10^{-8}	0.1	2.17×10^{-7}	
2-Butanone	3.05×10^{-9}	0.05	6.1×10^{-8}	
Chlorobenzene	6.19×10^{-8}	0.02	3.09×10^{-6}	
Methylene Chloride	4.02×10^{-8}	0.06	6.7×10^{-7}	
2,4-Dimethyl Phenol	3.22×10^{-9}	0.02	1.61×10^{-7}	
Ethylbenzene	2.61×10^{-6}	0.1	2.61×10^{-5}	
Toluene	2.34×10^{-7}	0.2	1.17×10^{-6}	
Xylene	9.72×10^{-6}	2.0	4.8×10^{-6}	
1,2-Dichloroethylene	7.96×10^{-10}	0.01	7.96×10^{-8}	
Anthracene	1.11×10^{-6}	0.3	3.7×10^{-6}	
Fluoranthene	9.72×10^{-6}	0.04	2.43×10^{-4}	
Fluorene	4.42×10^{-7}	0.04	1.1×10^{-5}	
Pyrene	6.63×10^{-6}	0.03	2.21×10^{-4}	
Copper	7.69×10^{-6}	0.04	1.99×10^{-4}	
Lead	6.06×10^{-6}	1.4×10^{-3}	4.33×10^{-3}	
Nickel	4.11×10^{-6}	0.02	2.06×10^{-4}	
Mercury	4.42×10^{-8}	3×10^{-4}	1.47×10^{-4}	
Zinc	1×10^{-4}	0.2	5×10^{-4}	
Di-n-butyl phthalate	3.89×10^{-7}	0.1	3.89×10^{-6}	
Butyl benzyl phthalate	5.31×10^{-7}	0.2	2.66×10^{-6}	
Bis(2-ethylhexyl) phthalate	4.93×10^{-7}	0.02	2.47×10^{-5}	
				5.93×10^{-3}
Total Exposure Hazard Index				6.43×10^{-3}

Notes:

1. CDI = Chemical Daily Intake
2. RfD = Reference Dose

TABLE XXVI

TYPICAL EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL CARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	SF (mg/kg-day)	Chemical Specific Risk (CDI x SF)	Total Pathway Risk
<u>Exposure Pathway</u>: Ingestion of Soil				
Trichloroethylene	1.53×10^{-7}	1.1×10^{-2}	1.68×10^{-9}	
Benzo(a)anthracene	7.09×10^{-9}	11.5 (*)	8.15×10^{-8}	
Chrysene	5.71×10^{-9}	11.5 (*)	6.57×10^{-8}	
Benzo(b)fluoranthene	5.32×10^{-10}	11.5 (*)	6.12×10^{-9}	
Benzo(a)pyrene	4.53×10^{-9}	11.5	5.21×10^{-8}	
Indeno-1,2,3-cd pyrene	3.35×10^{-9}	11.5 (*)	3.85×10^{-8}	
Bis(2-ethylhexyl)phthalate	8.67×10^{-9}	1.4×10^{-2}	1.21×10^{-10}	
				2.46×10^{-7}

TABLE XXVI (Cont.)

TYPICAL EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL CARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	SF (mg/kg-day)	Chemical Specific Risk (CDI x SF)	Total Pathway Risk
Exposure Pathway: Dermal Contact				
Trichloroethylene	9.15×10^{-7}	1.1×10^{-2}	1.01×10^{-8}	
Benzo(a)anthracene	4.23×10^{-8}	11.5 (*)	4.86×10^{-7}	
Chrysene	3.42×10^{-8}	11.5 (*)	3.93×10^{-7}	
Benzo(b)fluoranthene	3.19×10^{-8}	11.5 (*)	3.67×10^{-7}	
Benzo(a)pyrene	2.71×10^{-8}	11.5	3.12×10^{-7}	
Indeno-1,2,3-cd pyrene	2.0×10^{-8}	11.5 (*)	2.30×10^{-7}	
Bis(2-ethylhexyl)phthalate	5.19×10^{-8}	1.4×10^{-2}	7.27×10^{-10}	
				1.80×10^{-6}
Total Exposure Risk				2.04×10^{-6}

Notes:

1. CDI = Chemical Daily Intake
2. SF = Slope Factor
3. * = SF for Benzo(a)pyrene

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TABLE XXVII

REASONABLE MAXIMUM EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL CARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	SF (mg/kg-day)	Chemical Specific Risk (CDI x SF)	Total Pathway Risk
Exposure Pathway: Ingestion of Soil				
Trichloroethylene	1.0×10^{-6}	1.1×10^{-2}	1.11×10^{-8}	
1,1,2-Trichloroethane	1.77×10^{-10}	5.7×10^{-2}	1.01×10^{-11}	
Benzo(a) anthracene	1.1×10^{-8}	11.5 (*)	1.27×10^{-7}	
Chrysene	1.2×10^{-8}	11.5 (*)	1.38×10^{-7}	
Benzo(b) fluoranthene	1.3×10^{-8}	11.5 (*)	1.5×10^{-7}	
Benzo(k) fluoranthene	6.9×10^{-9}	11.5 (*)	7.94×10^{-8}	
Benzo(a) pyrene	9.65×10^{-9}	11.5	1.11×10^{-7}	
Indeno-1,2,3-cd pyrene	7.49×10^{-9}	11.5 (*)	8.61×10^{-8}	
Bis(2-ethylhexyl)phthalate	3.35×10^{-8}	1.4×10^{-2}	4.69×10^{-10}	
				7.03×10^{-7}

TABLE XXVII (Cont.)

REASONABLE MAXIMUM EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL CARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	SF (mg/kg-day)	Chemical Specific Risk (CDI x SF)	Total Pathway Risk
Exposure Pathway: Dermal Contact				
Trichloroethylene	9.03×10^{-6}	1.1×10^{-2}	9.9×10^{-8}	
1,1,2-Trichloroethane	1.85×10^{-8}	5.7×10^{-2}	1.05×10^{-9}	
Benzo(a) anthracene	9.91×10^{-8}	11.5 (*)	1.14×10^{-6}	
Chrysene	1.08×10^{-7}	11.5 (*)	1.24×10^{-6}	
Benzo(b) fluoranthene	1.17×10^{-7}	11.5 (*)	1.35×10^{-6}	
Benzo(k) fluoranthene	6.2×10^{-8}	11.5 (*)	7.13×10^{-7}	
Benzo(a) pyrene	8.67×10^{-8}	11.5	9.97×10^{-7}	
Indeno-1,2,3-cd pyrene	6.73×10^{-8}	11.5 (*)	7.74×10^{-7}	
Bis(2-ethylhexyl) phthalate	3.01×10^{-7}	1.4×10^{-2}	3.31×10^{-9}	
				6.31×10^{-6}

TABLE XXVII (Cont.)

REASONABLE MAXIMUM EXPOSURE CASE - CHILD TRESPASS SCENARIO
POTENTIAL CARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	SF (mg/kg-day)	Chemical Specific Risk (CDI x SF)	Total Pathway Risk
Exposure Pathway: Ingestion of Pond Sediment				
Benzene	5.69×10^{-9}	6×10^{-1}	3.41×10^{-9}	
Trichloroethylene	2.61×10^{-9}	1.1×10^{-2}	2.87×10^{-11}	
Acenaphthalene	1.1×10^{-9}	11.5 (*)	1.27×10^{-8}	
Benzo(a)anthracene	4.45×10^{-7}	11.5 (*)	5.12×10^{-6}	
Benzo(b)fluoranthene	5.31×10^{-7}	11.5 (*)	6.11×10^{-6}	
Benzo(k)fluoranthene	4.17×10^{-8}	11.5 (*)	4.80×10^{-7}	
Benzo(a)pyrene	1.63×10^{-7}	11.5	1.87×10^{-6}	
Chrysene	3.03×10^{-8}	11.5 (*)	3.48×10^{-7}	
Dibenz(a,h)anthracene	1.74×10^{-8}	11.5 (*)	2.00×10^{-7}	
Indeno-1,2,3-cd pyrene	6.44×10^{-8}	11.5 (*)	7.41×10^{-7}	
Bis(2-ethylhexyl)phthalate	4.93×10^{-7}	1.4×10^{-2}	6.9×10^{-9}	
				1.49×10^{-5}
Total Exposure Risk				2.19×10^{-5}

Notes:

1. CDI = Chemical Daily Intake
2. SF = Slope Factor

TABLE XXVIII

REASONABLE MAXIMUM EXPOSURE CASE - ON SITE WORKER
POTENTIAL NONCARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	RfD (mg/kg-day)	Hazard Risk	Pathway Specific Hazard Index
Exposure Pathway: Inhalation of Volatiles				
Acetone	3.6×10^{-6}	1×10^{-1}	3.6×10^{-5}	
Toluene	1.0×10^{-6}	2×10^{-1}	5.1×10^{-6}	
1,2-Dichloroethene	9.5×10^{-4}	1×10^{-2}	9.5×10^{-2}	
1,1,1-Trichloroethene	8.2×10^{-5}	9×10^{-2}	9.0×10^{-2}	
				1.8×10^{-1}

CDI = Chemical Daily Intake
RfD - Reference Dose

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TABLE XXIX

TYPICAL EXPOSURE CASE - ON SITE WORKER SCENARIO
POTENTIAL CARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	SF (mg/kg-day)	Chemical Specific Risk	Total Pathway Risk
Exposure Pathway: Inhalation of Volatiles				
1,1-Dichlorethene	7.5×10^{-8}	6×10^{-1}	4.5×10^{-8}	
Trichloroethene	1.4×10^{-4}	1.1×10^{-2}	1.6×10^{-6}	
Vinyl Chloride	6.3×10^{-7}	1.9	1.2×10^{-6}	
				2.8×10^{-6}

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TABLE XXX

REASONABLE MAXIMUM EXPOSURE CASE - ON SITE WORKER
POTENTIAL CARCINOGENIC EFFECTS

Chemical	CDI (mg/kg-day)	SF (mg/kg-day)	Chemical Specific Risk	Total Pathway Risk
<u>Exposure Pathwav</u>: Inhalation of Volatiles				
1,1-Dichloroethene	5.6×10^{-6}	6×10^{-1}	3.35×10^{-6}	
Trichloroethene	1.8×10^{-3}	1.1×10^{-2}	1.93×10^{-5}	
Vinyl Chloride	7.8×10^{-6}	1.9	1.5×10^{-5}	
				3.4×10^{-5}

1. SF = Slope Factor
2. CDI = Chemical Daily Intake

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TABLE XXXI
SUMMARY OF ESTIMATED NONCARCINOGENIC HAZARD INDICES UNDER CURRENT LAND USE CONDITIONS

Exposure Scenario	Receptor: Adult	Receptor: Child	Exposure Routes in Order of Importance	Chemicals Primarily Responsible For Risks In Order of Importance
Typical Case				
Child Trespass	NA	1.22×10^{-4}	Derm.	1,2-DCE
On site Worker	ND[a]	NA	---	---
RME Case				
Child Trespass	NA	6.43×10^{-3}	Ingest. Pond Sed.	Lead, Zinc
On site Worker	1.8×10^{-1}	NA	Inhal.	1,2-DCE

Notes:

1. RME = Reasonable Maximum Exposure
2. NA = Not Applicable

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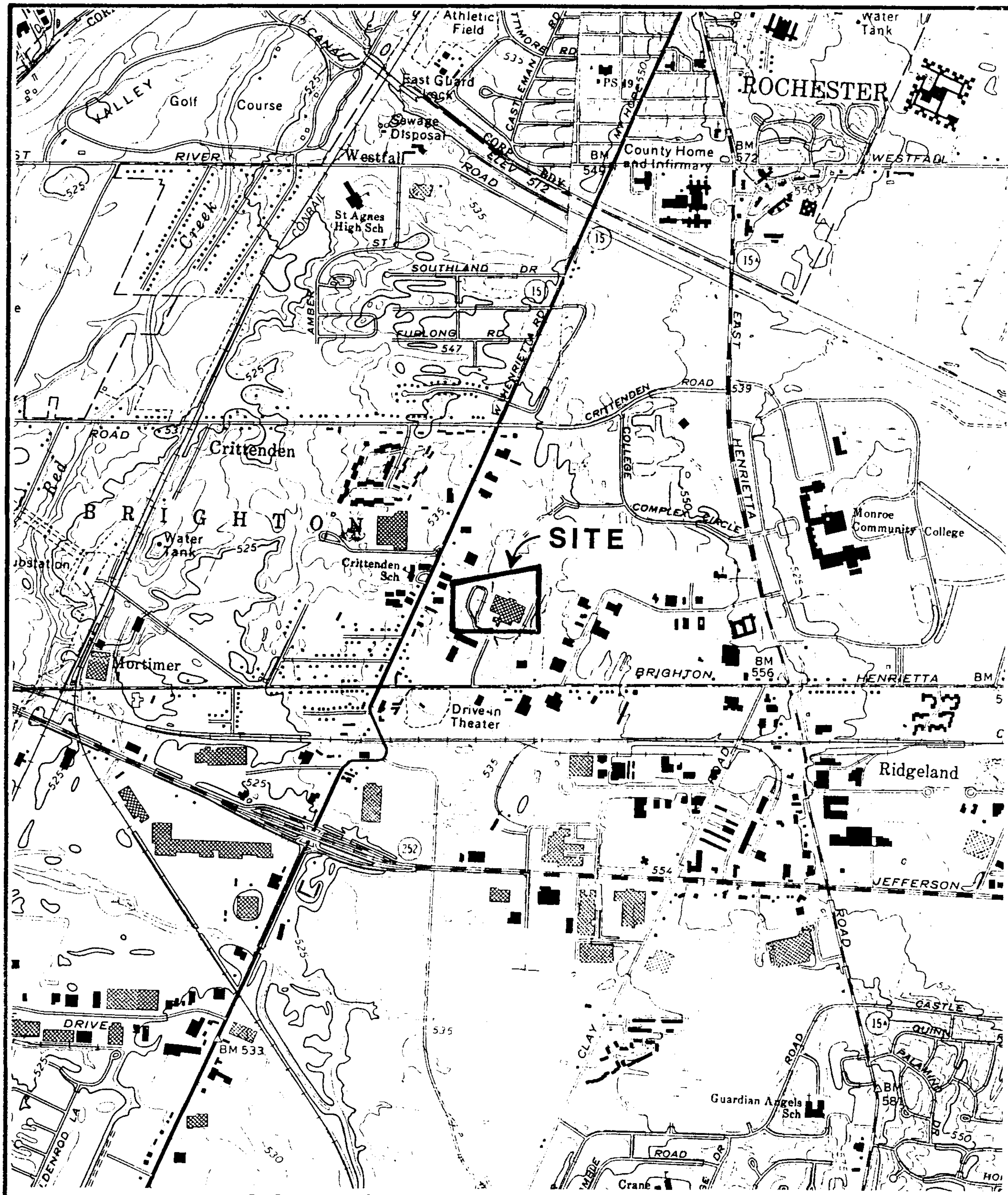
TABLE XXXII
SUMMARY OF ESTIMATED EXCESS LIFETIME
CANCER RISKS UNDER CURRENT LAND USE CONDITIONS

Exposure Scenario	Receptor Adult	Receptor Child	Exposure Routes in Order of Importance	Chemicals Primarily Responsible For Risks In Order of Importance
Typical Case				
Child Trespass	NA	2.04×10^{-6}	Derm, Ingest.	PAH's
On site Worker	2.8×10^{-6}	NA	Inhal.	TCE, VC
RME Case				
Child Trespass	NA	2.19×10^{-5}	Dermal, Ingest. Pond Sed.	PAH's
On site Worker	3.4×10^{-5}	NA	Inhal.	TCE,VC

Notes:

1. RME = Reasonable Maximum Exposure
2. NA = Not Applicable
3. PAHs = Polynuclear Aromatic Hydrocarbons



LATITUDE: 43° 05' 49"N LONGITUDE: 77° 37' 38"W

QUADRANGLE LOCATION

USGS QUADRANGLE: WEST HENRIETTA AND PITTSFORD, NY

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PROJECT LOCUS

SCALE: 1 IN. = 2000 FT.

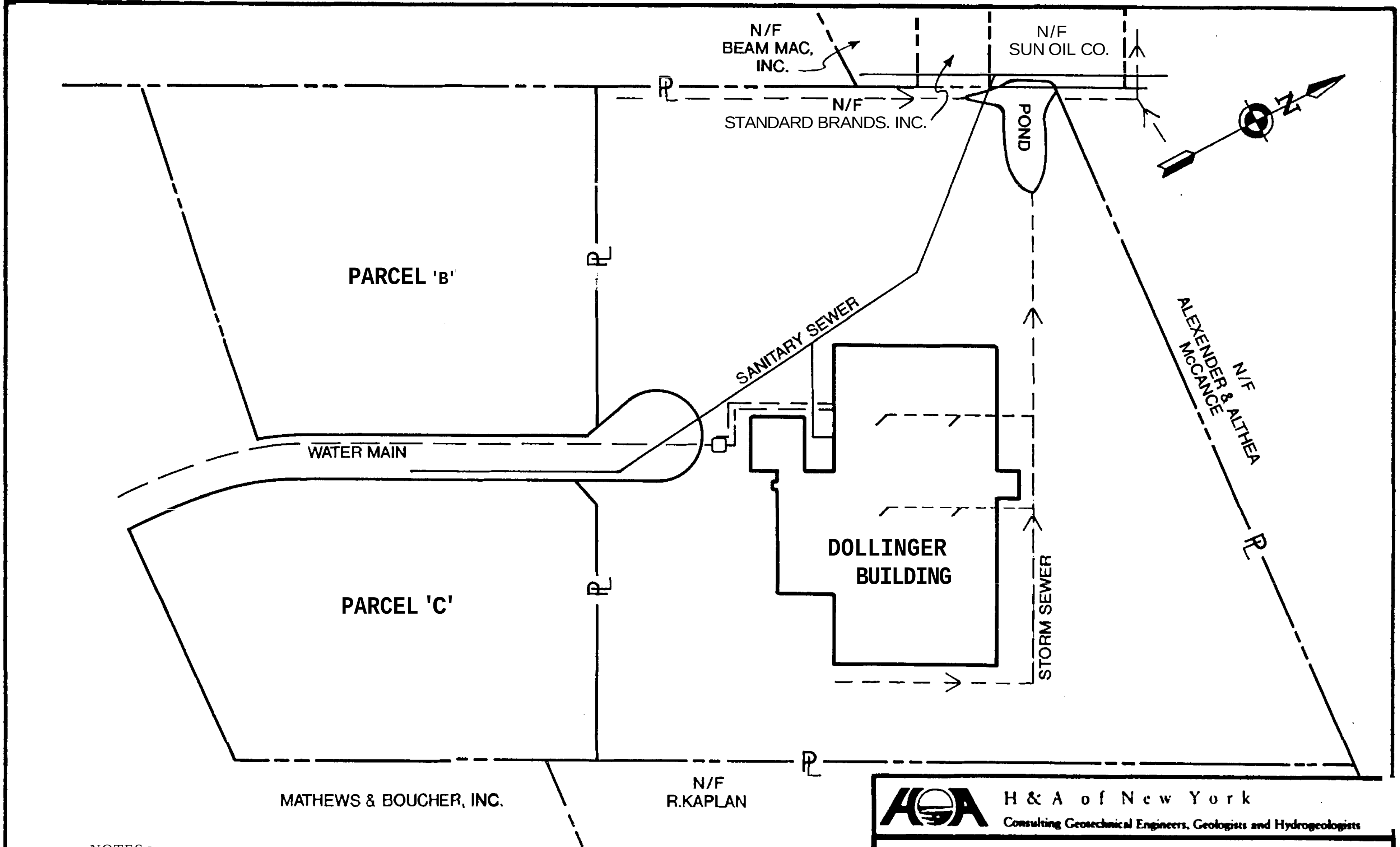
NOVEMBER 1991

FILE NO. 70007-43

CHARRETTE

FIGURE 1

FILE NO. 70007-43



NOTES:

1. Figure based on plan entitled "Dollinger Property, Site and Utility Plan" prepared by Sear Brown, Schoenberger & Costich dated 2 February 1968.

2. See accompanying text for additional information.

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SITE AREA PLAN

SCALE: 1 IN. = 200 FT. NOVEMBER 1991

FIGURE 2

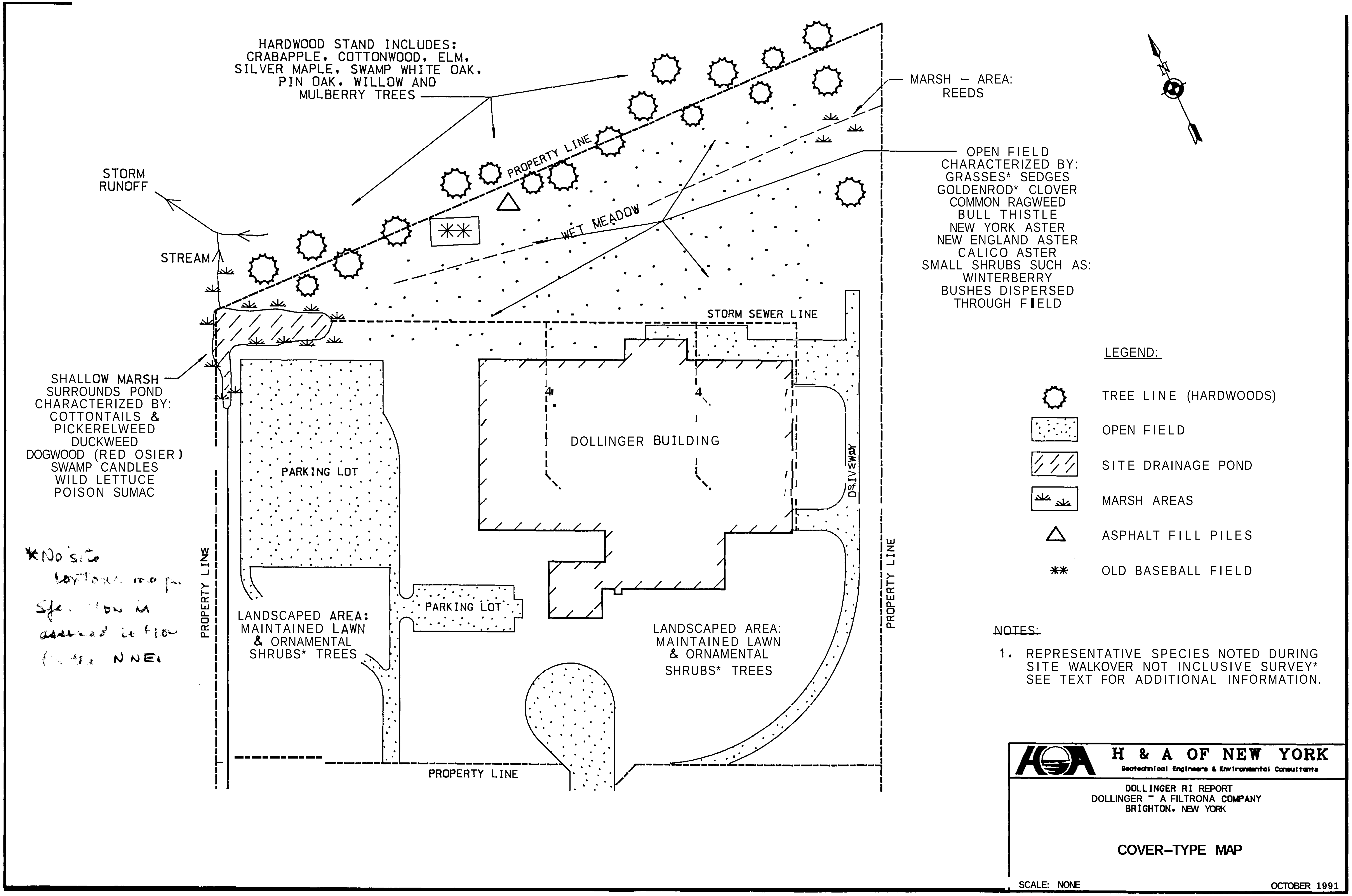

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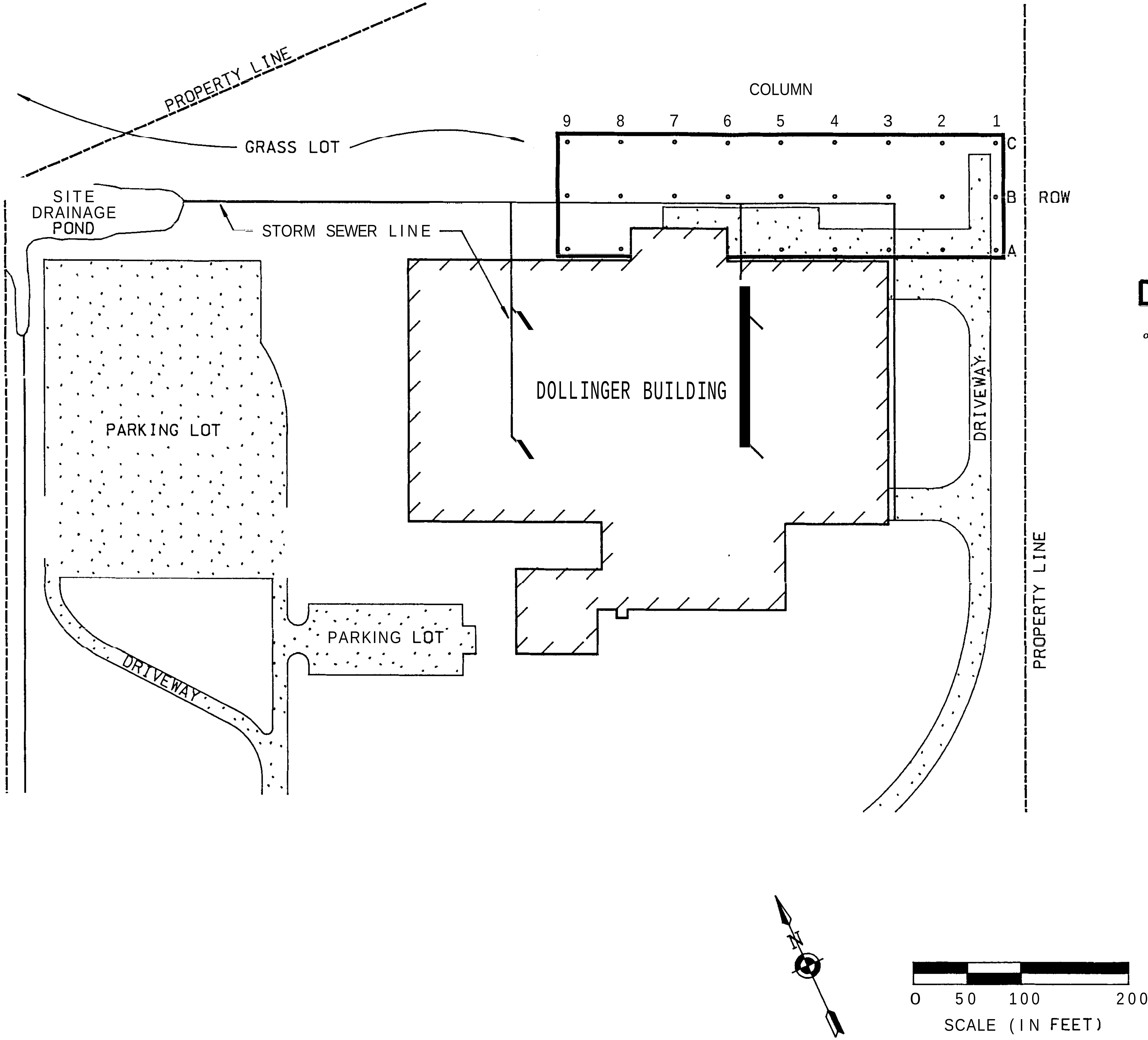
FIGURE 3



LEGEND:

SOIL SCREENING GRID AREA

SOIL SCREENING LOCATION

NOTES:

1. FIGURE BASED ON PLAN ENTITLED "DOLLINGER PROPERTY. SITE AND UTILITY PLAN" PREPARED BY SEAR-BROWN. SCHOENBERGER & COSTICH DATED 2 FEBRUARY 1968 AND REVISED 28 JUNE 1968.

2. SOIL SCREENING WAS CONDUCTED USING AN OVA ON THE HEADSPACE OF UP TO 6 SAMPLES FROM EACH SOIL SCREENING LOCATION: A SAMPLE FROM 0-2', 2-4', 4-6', 6-8', 8-10', AND 10-12' BELOW GROUND SURFACE. LABORATORY ANALYSIS WAS CONDUCTED ON SELECTED SAMPLES.

3. SEE ACCOMPANYING TEXT AND FIGURES FOR ADDITIONAL INFORMATION.

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SOIL SCREENING GRID

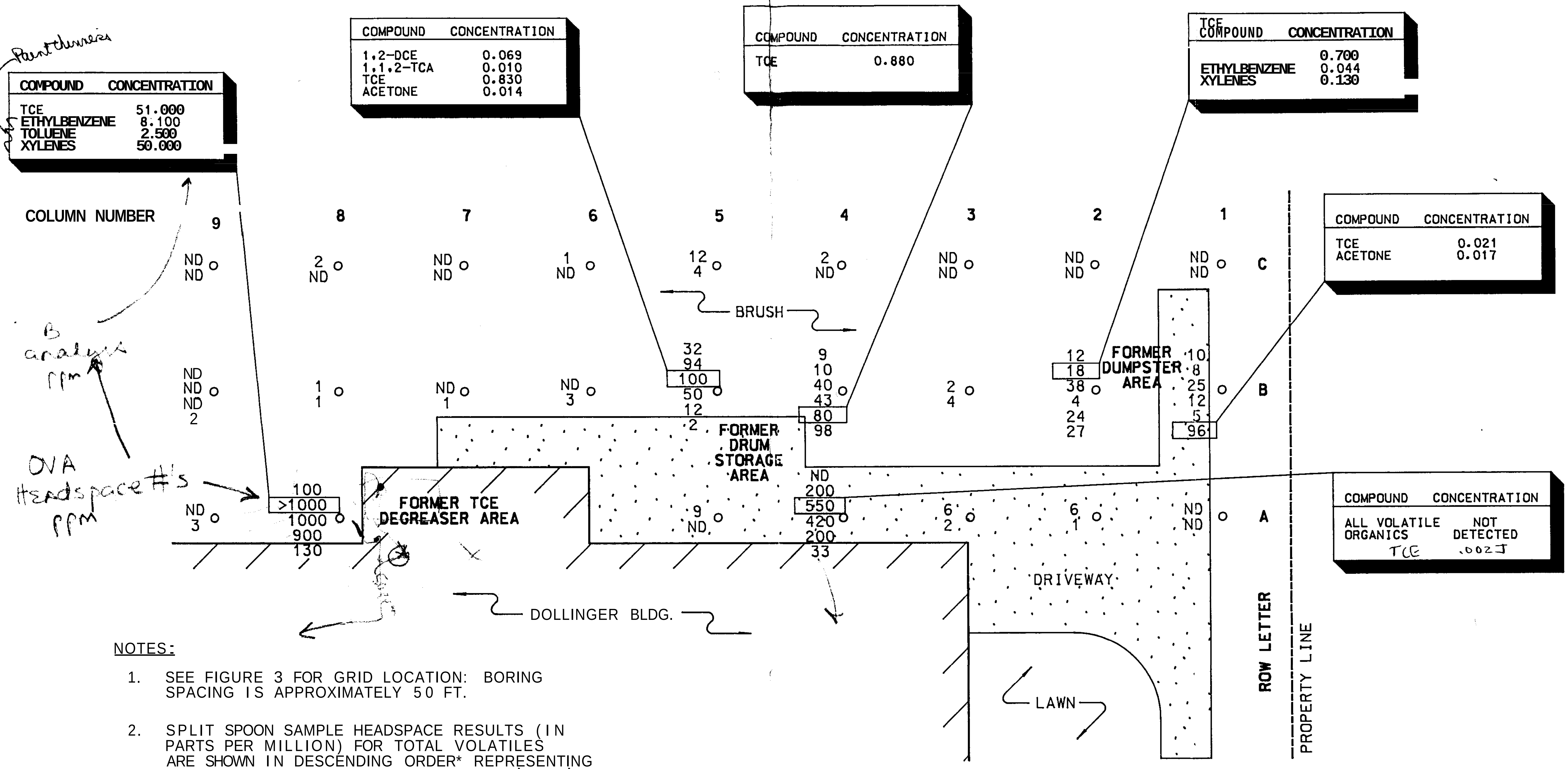
SCALE: AS SHOWN

NOVEMBER 1991

FILENAME: FIGURE5.DGN

FIGURE 5

FILE NO. 70007-43



NOTES:

1. SEE FIGURE 3 FOR GRID LOCATION: BORING SPACING IS APPROXIMATELY 50 FT.

2. SPLIT SPOON SAMPLE HEADSPACE RESULTS (IN PARTS PER MILLION) FOR TOTAL VOLATILES ARE SHOWN IN DESCENDING ORDER* REPRESENTING THE FOLLOWING SAMPLE INTERVALS: 0-2',2-4', 4-6', 6-8', 8-10', AND 10-12'. MOST BOREHOLES WERE TERMINATED AT 4FT.

3. ANALYTICAL RESULTS FOR SELECTED SAMPLES ARE SHOWN IN THE BOXES SHOWN FROM SAMPLE INTERVALS SUBMITTED. RESULTS ARE IN PARTS PER MILLION. A FOXBORO 128 GC OVA WAS USED FOR HEADSPACE SCREENING.

4. BORINGS CONDUCTED BETWEEN 12 AND 15 AUGUST 1991.

5. REFER TO ACCOMPANYING TEXT AND TABLES FOR ADDITIONAL INFORMATION.

0 20 40 80

SCALE (IN FEET)

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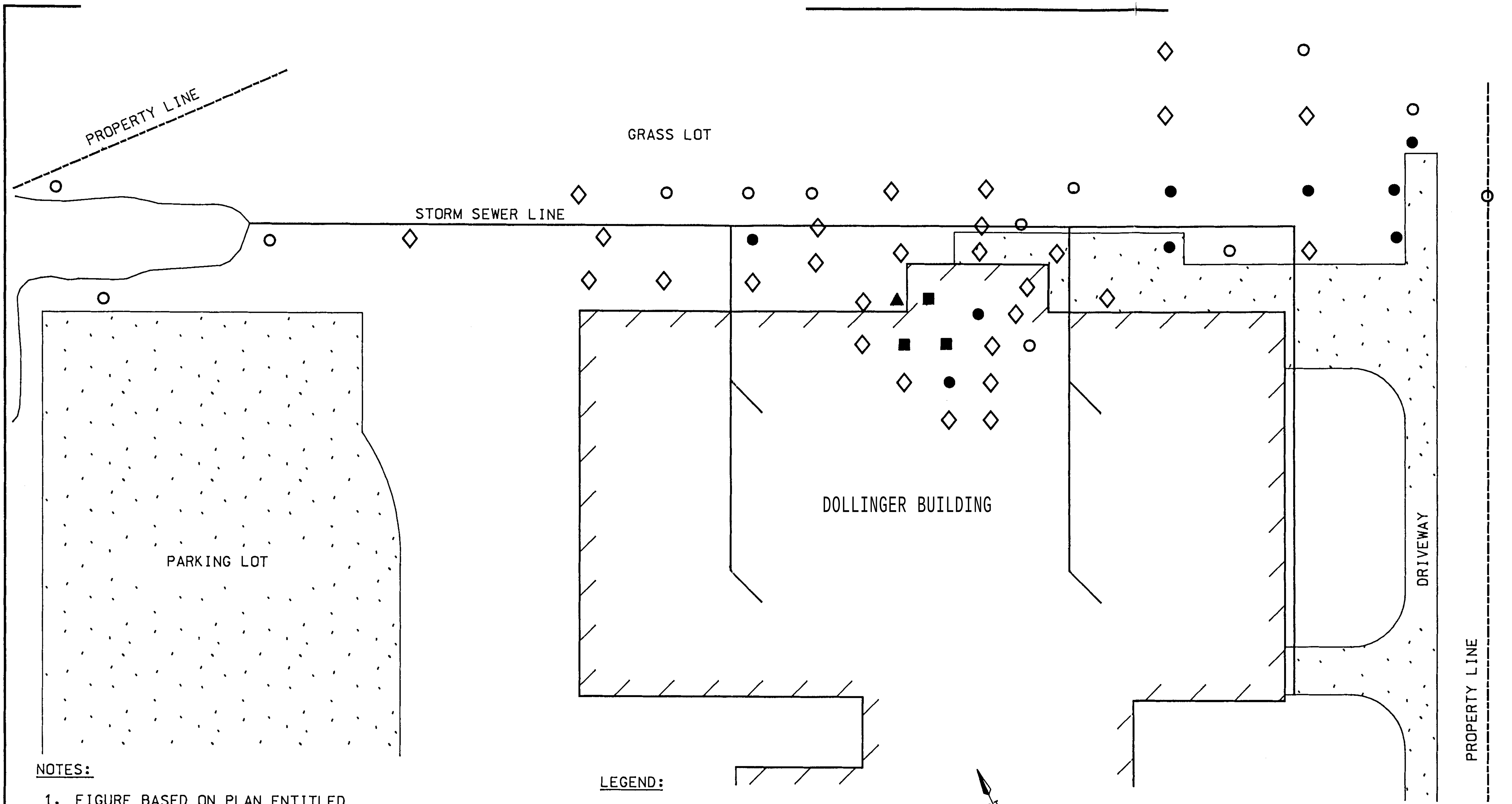
GRID SCREENING AND SAMPLING RESULTS

SCALE: AS SHOWN NOVEMBER 1991

FILENAME: FIGURE6.DGN

FIGURE 6

FILE NO. 70007-43



NOTES:

1. FIGURE BASED ON PLAN ENTITLED "DOLLINGER PROPERTY, SITE AND UTILITY PLAN" PREPARED BY SEAR-BROWN, SCHOENBERGER & COSTICH DATED 2 FEBRUARY 1968 AND REVISED 28 JUNE 1968.
2. SOIL VAPOR SCREENING COMPLETED BY H&A PERSONNEL BETWEEN 21 JUNE AND 8 JULY 1988.
3. SEE ACCOMPANYING TEXT FOR ADDITIONAL INFORMATION.

LEGEND:

SYMBOLS ASSOCIATED WITH SOIL VAPOR SAMPLE LOCATIONS REPRESENT TOTAL CHLORINATED HYDROCARBON CONCENTRATIONS AS FOLLOWS:

- ▲ >10 PPM TCH (TOTAL CHLORINATED HYDROCARBONS)
- ■ 3 – 10 PPM CH
- ● 0.5 – 3.0 PPM CH
- ◇ 0.1 – 0.5 PPM CH
- ○ ND – 0.1 PPM CH

0 30 60 120
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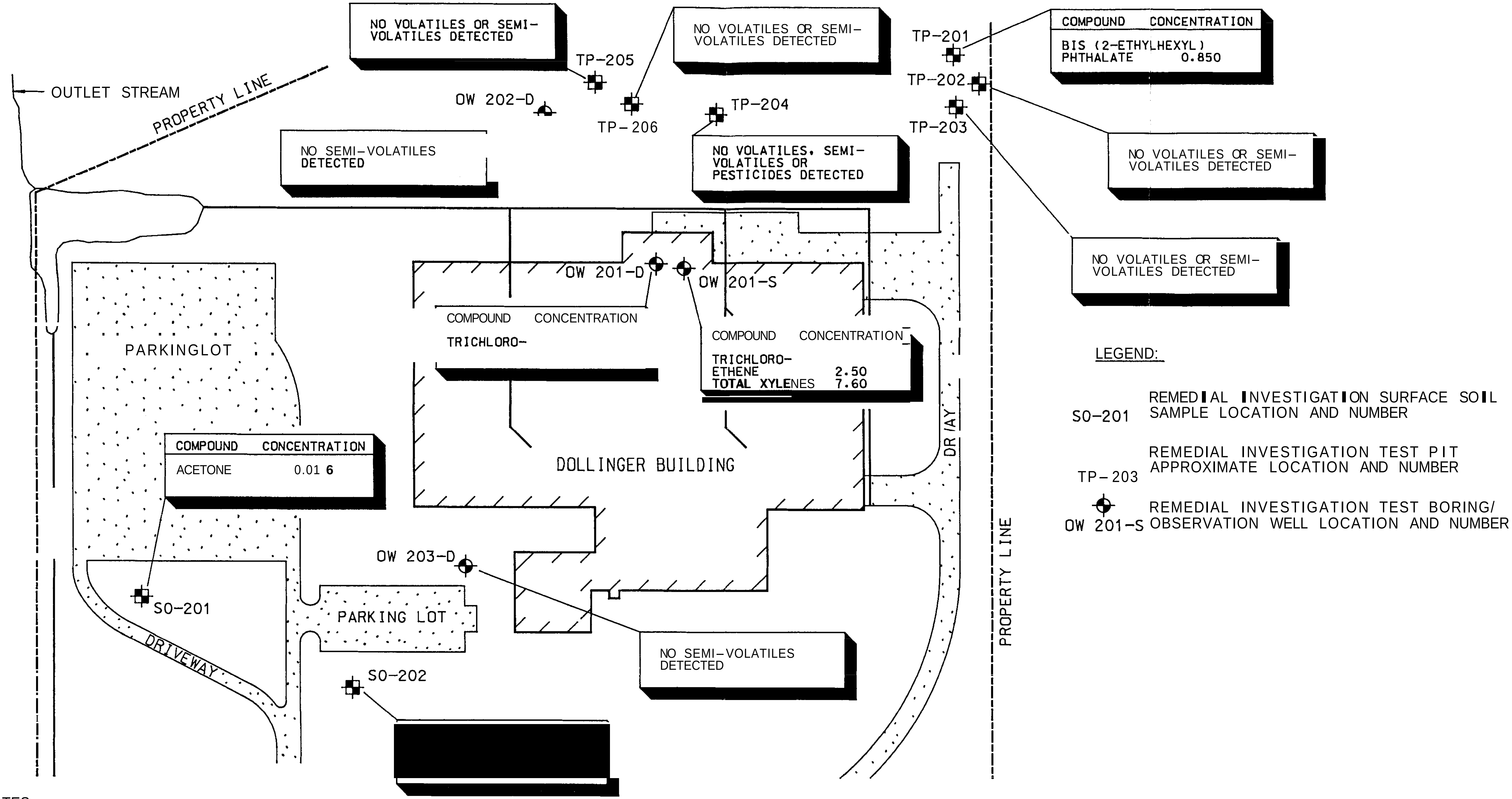
SOIL VAPOR SAMPLING LOCATION PLAN

SCALE: AS SHOWN — NOVEMBER 1991

FILENAME: FIGURE8.DGN

FIGURE 8

FILE NO. 70007-43



NOTES:

1. FIGURE BASED ON PLAN ENTITLED "DOLLINGER PROPERTY* SITE AND UTILITY PLAN" PREPARED BY SEAR-BROWN* SCHOENBERGER & COSTICH DATED 2 FEBRUARY 1968 AND REVISED 28 JUNE 1968.
2. REMEDIAL INVESTIGATION TEST BORINGS AND OBSERVATION WELLS INSTALLED BY NOTHNAGLE DRILLING COMPANY UNDER THE OBSERVATION OF H&A PRESONNEL BETWEEN 12 AND 31 AUGUST 1991.
3. REMEDIAL INVESTIGATION TEST PITS PERFORMED BY TRIMALDI ENTERPRISES UNDER THE OBSERVATION OF H&A PERSONNEL ON 5 AUGUST 1991.
4. SEE ACCOMPANYING TEXT FOR ADDITIONAL INFORMATION.

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0 50 100 200

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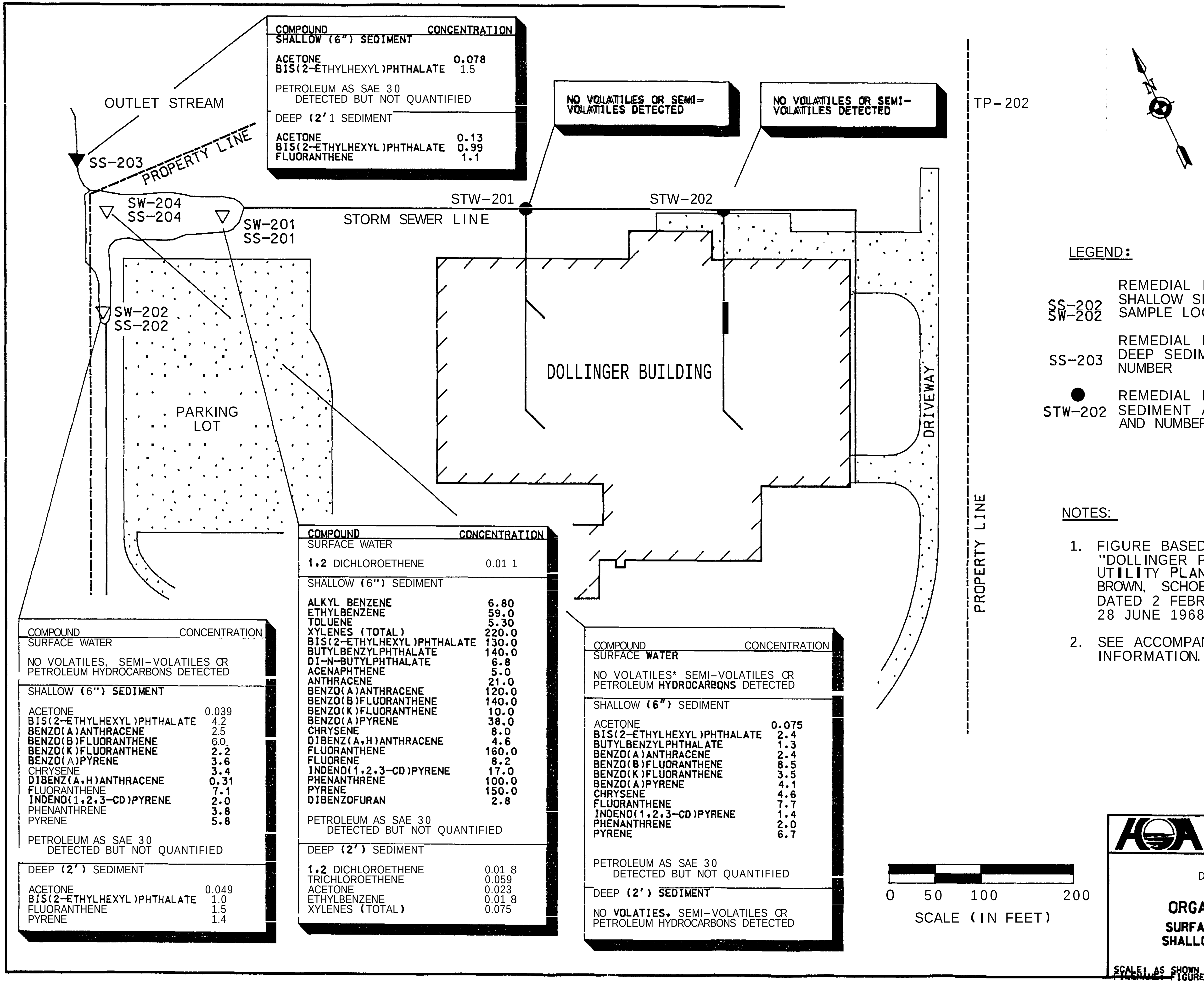
ORGANIC ANALYTICAL RESULTS
SURFACE, TEST PIT AND TEST BORING
SOIL SAMPLE RESULTS IN PPM

SCALE: AS SHOWN
NOVEMBER 1991

FILENAME: FIGURE9.DGN

FIGURE 9

FILE NO. 70007-43



COMPOUND	CONCENTRATION
SHALLOW (6") SEDIMENT	
ACETONE	0.078
BIS(2-ETHYLHEXYL)PHTHALATE	1.5
PETROLEUM AS SAE 30 DETECTED BUT NOT QUANTIFIED	
DEEP (2') SEDIMENT	
ACETONE	0.13
BIS(2-ETHYLHEXYL)PHTHALATE	0.99
FLUORANTHENE	1.1

NO VOLATILES OR SEMI-VOLATILES DETECTED

NO VOLATILES OR SEMI-VOLATILES DETECTED

COMPOUND	CONCENTRATION
SURFACE WATER	
NO VOLATILES, SEMI-VOLATILES OR PETROLEUM HYDROCARBONS DETECTED	
SHALLOW (6") SEDIMENT	
ACETONE	0.039
BIS(2-ETHYLHEXYL)PHTHALATE	4.2
BENZO(A)ANTHRACENE	2.5
BENZO(B)FLUORANTHENE	6.0
BENZO(K)FLUORANTHENE	2.2
BENZO(A)PYRENE	3.6
CHRYSENE	3.4
DIBENZ(A,H)ANTHRACENE	0.31
FLUORANTHENE	7.1
INDENO(1,2,3-CD)PYRENE	2.0
PHENANTHRENE	3.8
PYRENE	5.8
PETROLEUM AS SAE 30 DETECTED BUT NOT QUANTIFIED	
DEEP (2') SEDIMENT	
ACETONE	0.049
BIS(2-ETHYLHEXYL)PHTHALATE	1.0
FLUORANTHENE	1.5
PYRENE	1.4

COMPOUND	CONCENTRATION
SURFACE WATER	
1,2 DICHLOROETHENE	0.01 1
SHALLOW (6") SEDIMENT	
ALKYL BENZENE	6.80
ETHYLBENZENE	59.0
TOLUENE	5.30
XYLENES (TOTAL)	220.0
BIS(2-ETHYLHEXYL)PHTHALATE	130.0
BUTYLBENZYLPHTHALATE	140.0
DI-N-BUTYLPHTHALATE	6.8
ACENAPHTHENE	5.0
ANTHRACENE	21.0
BENZO(A)ANTHRACENE	120.0
BENZO(B)FLUORANTHENE	140.0
BENZO(K)FLUORANTHENE	10.0
BENZO(A)PYRENE	38.0
CHRYSENE	8.0
DIBENZ(A,H)ANTHRACENE	4.6
FLUORANTHENE	160.0
FLUORENE	8.2
INDENO(1,2,3-CD)PYRENE	17.0
PHENANTHRENE	100.0
PYRENE	150.0
DIBENZOFURAN	2.8
PETROLEUM AS SAE 30 DETECTED BUT NOT QUANTIFIED	
DEEP (2') SEDIMENT	
1,2 DICHLOROETHENE	0.01 8
TRICHLOROETHENE	0.059
ACETONE	0.023
ETHYLBENZENE	0.01 8
XYLENES (TOTAL)	0.075

COMPOUND	CONCENTRATION
SURFACE WATER	
NO VOLATILES* SEMI-VOLATILES OR PETROLEUM HYDROCARBONS DETECTED	
SHALLOW (6") SEDIMENT	
ACETONE	0.075
BIS(2-ETHYLHEXYL)PHTHALATE	2.4
BUTYLBENZYLPHTHALATE	1.3
BENZO(A)ANTHRACENE	2.4
BENZO(B)FLUORANTHENE	8.5
BENZO(K)FLUORANTHENE	3.5
BENZO(A)PYRENE	4.1
CHRYSENE	4.6
FLUORANTHENE	7.7
INDENO(1,2,3-CD)PYRENE	1.4
PHENANTHRENE	2.0
PYRENE	6.7
PETROLEUM AS SAE 30 DETECTED BUT NOT QUANTIFIED	
DEEP (2') SEDIMENT	
NO VOLATIES, SEMI-VOLATILES OR PETROLEUM HYDROCARBONS DETECTED	

LEGEND:

- SS-202 / SW-202 — REMEDIAL INVESTIGATION SURFACE WATER, SHALLOW SEDIMENT AND DEEP SEDIMENT SAMPLE LOCATION AND NUMBER
- SS-203 — REMEDIAL INVESTIGATION SHALLOW AND DEEP SEDIMENT SAMPLE LOCATION AND NUMBER
- ● STW-202 — REMEDIAL INVESTIGATION STORM SEWER SEDIMENT AND WATER SAMPLE LOCATION AND NUMBER

NOTES:

1. FIGURE BASED ON PLAN ENTITLED "DOLLINGER PROPERTY, SITE AND UTILITY PLAN" PREPARED BY SEAR-BROWN, SCHOENBERGER & COSTICH DATED 2 FEBRUARY 1968 AND REVISED 28 JUNE 1968.
2. SEE ACCOMPANYING TEXT FOR ADDITIONAL INFORMATION.

H & A OF NEW YORK
Geotechnical Engineers & Environmental Consultants

DOLLINGER RI REPORT
DOLLINGER - A FILTRONA COMPANY
BRIGHTON, NEW YORK

ORGANIC ANALYTICAL RESULTS

SURFACE WATER, STORM SEWER WATER, SHALLOW SEDIMENT AND DEEP SEDIMENT SAMPLE RESULTS IN PPM

SCALE: AS SHOWN
FILENAME: FIGURE10.DGN
NOVEMBER 1991
FIGURE 10

HSA OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP-201 FILE NO. 70007-43

PROJECT:	DOLLINGER RI/FS	LOCATION:	See Plan
LOCATION:	BRIGHTON, NEW YORK	ELEVATION:	---
CLIENT:	DOLLINGER - A FILTRONA COMPANY	EXPLORATION DATE:	8/5/91
CONTRACTOR:	TRIMALDI ENTERPRISES	HSA REP.:	J. Talpey
EQUIPMENT USED:	CASE 580D BACKHOE		

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
				Brom gravelly SILT, trace medium to fine sand, dry, crumbly. -FILL-	Sample TP-101 submitted for Laboratory analysis.
2	TP-101	1.5-2.0			
	Bag Sample	3.0 - 4.0	3.0	Black-brom loamy SILT, Little clay, abundant root fibers, with trace carbonized wood fragments and soft woody debris. -SWAMP DEPOSIT-	Lou density soil.
4					
			4.5	Light gray fine sandy SILT, with very feu cobbles and trace weathered gravel, dry. -GLACIAL MELTWATER DEPOSIT-	Non-cohesive soil.
			5.0	Dark brown CLAY, Little silt, mist, medium plasticity. -LACUSTRINE-	
6			6.2	Brom clayey SILT, trace gravel and fine sand, damp, crunbly, with some rusty iron staining. -LACUSTRINE-	
8					
			9.5	Gray silty CLAY, moist, plastic. -LACUSTRINE-	
10					
				Bottom of Exploration at 11.0 ft.	No organic vapor readings detected in excavation.
12					

UATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY	
DATE	TIME*	DEPTH FT	LENGTH 14.0 feet UIDTH 2.4 feet	DEPTH:	11.0
				JAR SAMPLES:	1
			BOULDERS	BAG SAMPLES:	1
			8" to 18" DIAMETER: No. = Vol. cu ft	UATER LEVEL:	None
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO.	TP-201

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP-202 FILE NO. 70007-43

PROJECT:	DOLLINGER RI/FS	LOCATION:	See Plan
LOCATION:	BRIGHTON, NEU YORK	ELEVATION:	--
CLIENT:	DOLLINGER - A FILTRONA COMPANY	EXPLORATION DATE:	8/5/91
CONTRACTOR:	TRIMALDI ENTERPRISES	H&A REP.:	J. Talpey
EQUIPMENT USED:	CASE 580D BACKHOE		

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
				Brown fine sandy SILT, some cobbles, dry, hard, with rough vertical cracks (dessication) packed by root fibers, crumbly texture. -FILL-	
2			2.5	Brown-gray mottled clayey SILT, damp, hard. -LACUSTRINE-	Hard digging from 2.5 to 5.5 ft. Sides of excavation smooth, slick, competent.
4					
6			5.5±	Grades to broun SILT, some clay, damp, hard, with iron-staining along rough planar soil partings, blocky texture, trace granular black mineralization along soil partings. -LACUSTRINE-	Apparent soil fractures with Localized rusty iron staining.
8	TP-202	8.5-9.0			
10	Bag Sample	10.5 11.5			Sample TP-202 submitted for laboratory analysis.
12				Bottom of Exploration at 11.5 ft.	No organic vapor readings detected in excavation.

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 18.0 feet WIDTH 2.4 feet	DEPTH: 11.5
				JAR SAMPLES: 1
			BOULDERS	BAG SAMPLES: 1
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: None
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP-202

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP-203 FILE NO. 70007-43

PROJECT:	DOLLINGER RI/FS	LOCATION:	See Plan
LOCATION:	BRIGHTON, NEW YORK	ELEVATION:	--
CLIENT:	DOLLINGER - A FILTRONA COMPANY	EXPLORATION DATE:	8/5/91
CONTRACTOR:	TRIMALDI ENTERPRISES	H&A REP.:	J. Talpey
EQUIPMENT USED:	CASE 580D BACKHOE		

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
				Brown to red-brown SILT, trace fine sand, crumbly a d extensively cracked, dry, with root fibers along cracks, worms. -FILL-	Vertical cracking of soil mass (dessication). Sample TP-203 submitted for laboratory analysis.
	TP-203	1.0-1.5	1.5		
2				Grades to brown to brown-gray SILT, some clay, damp, hard, with feu polished cobbles, and rusty iron staining on soil parting surfaces. -LACUSTRINE-	Hard digging from approximately 2.5 to 5.0 ft.
4					
6			6.5±		
				Grades down to brown SILT, little clay, trace coarse to fine sad, with rusty iron-staining and black granular mineralization along soil partings, damp. -LACUSTRINE-	Excavated soil breaks into rough blocky chunks, 10-20 cm wide.
8					
10					
				Bottom of Exploration at 10.5 ft.	No organic vapor readings detected in excavation.
12					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 14.0 feet WIDTH 2.0 feet	DEPTH: 10.0
				JAR SAMPLES: 1
			BOULDERS	BAG SAMPLES: None
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: None
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP-203

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP-204 FILE NO. 70007-43

PROJECT: DOLLINGER RI/FS LOCATION: BRIGHTON, NEW YORK CLIENT: DOLLINGER - A FILTROWA COMPANY CONTRACTOR: TRIMALDI ENTERPRISES EQUIPMENT USED: CASE 580D BACKHOE	LOCATION: See Plan ELEVATION: -- EXPLORATION DATE: 8/5/91 H&A REP.: J. Talpey

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
			0.5±	Brown silty LOAM, with occasional pebbles and gravel, root fibers. -TOPSOIL FILL-	
2 4				Brown SILT, trace clay, hard, crumbly, dry, occasional cobbles and one angular boulder. -LACUSTRINE-	Sides of excavation vertical, smooth, competent. Soil has high dry strength. Hard digging from 0.5 to 6.0 ft.
6 8	TP-204	8.0 10.0	6.0±	Grades to brown SILT, Little clay, trace coarse to fine sand, hard, crumbly, mist, with horizontal partings closely set 1 to 2 cm. apart, iron staining along partings. -LACUSTRINE-	Sample TP-204 submitted for Laboratory analysis.
10 12				Bottom of Excavation at 10.0 ft.	No organic vapor readings detected in excavation.

WATER LEVEL		
DATE	TIME*	DEPTH FT

* Hrs after completed

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 13.0 feet WIDTH 2.6 feet

BOULDERS

8" to 18" DIAMETER:	No.	= Vol.	cu ft
Over 18" DIAMETER:	No.	= Vol.	cu ft

SUMMARY

DEPTH:	10.0
JAR SAMPLES:	1
BAG SAMPLES:	None
WATER LEVEL:	None
TEST PIT NO.	TP-204

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP-205 FILE NO. 70007-43

PROJECT:	DOLLINGER RI/FS	LOCATION:	See Plan
LOCATION:	BRIGHTON, NEW YORK		
CLIENT:	DOLLINGER - A FILTRONA COMPANY	ELEVATION:	--
CONTRACTOR:	TRIMALDI ENTERPRISES	EXPLORATION DATE:	8/5/91
EQUIPMENT USED:	CASE 580D BACKHOE	H&A REP.:	J. Talpey

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
				Dark brown fine sardy, SILT, trace pebbles and gravel, uith abundant root fibers, worms, damp. -TOPSOIL-	
2					
			3.0	Dark brown-black clayey SILT, with wood fibers and twigs, rusty iron-staining along soil partings, moist. Interlayered uith buff colored fine SAND stringers 1 to 2 cm thick along upper surface, discontinuous. -SWAMP DEPOSIT-	Deposit is lens-shaped, not a continuous layer. Sample TP-205 submitted for Laboratory analysis.
4	TP-205	3.5-4.0	4.0	Brown-gray mottled clayey SILT, moist, slightly plastic. -LACUSTRINE-	Easy digging from 2.0 to 6.0 ft.
6					
			7.5±	Grades to hard brown SILT, Little clay, crumbly, uith iron-staining along rough planar soil partings, with very few cobbles, mist. -LACUSTRINE-	
8					
10					
12				Bottom of Exploration at 12.0 ft.	No organic vapor readings detected in excavation.

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 15.0 feet WIDTH 2.2 feet	DEPTH: 15.0
				JAR SAMPLES: 1
			BOULDERS	BAG SAMPLES: None
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: None
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP-205

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP-206 FILE NO. 70007-43

PROJECT: DOLLINGER RI/FS LOCATION: BRIGHTON, NEW YORK CLIENT: DOLLINGER - A FILTRONA COMPANY CONTRACTOR: TRIMALDI ENTERPRISES EQUIPMENT USED: CASE 580D BACKHOE	LOCATION: See Plan ELEVATION: EXPLORATION DATE: 8/5/91 H&A REP.: J. Talpey

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
	TP-206	0.0 1.2		Dark broun gravelly SILT, with cobbles and pebbles, and abundant roots. -TOPSOIL FILL-	Sample TP-206 submitted for laboratory analysis.
2			1.2	Light broun, iron-stained layer from 1.2 to 2.0 ft. (Possible oxidized surface previously exposed to surficial ueathering.) Brown, red-broun to gray mottled SILT, trace clay, fine sand, gravel, very feu cobbles, moist. -LACUSTRINE-	
4					Sides of excavation smooth, slick, competent.
6			6.0±	Grades to hard broun SILT, trace clay, crumbly, damp, uith rusty iron-stained partings, and some black granular to dendritic mineralization on partings, very feu smooth polished cobbles and pebbles. -LACUSTRINE-	Hard digging from approximately 6.0 to 9.0 ft.
8					
10				Bottom of Exploration at 9.0 ft.	No organic vapor readings detected in excavation.
12					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 14.0 feet WIDTH 2.2 feet	DEPTH: 9.0
				JAR SAMPLES: 1
			BWLDERS	BAG SAMPLES: None
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: None
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP-206

APPENDIX B

Test Boring Reports

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B201-D

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: WOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 2
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4-1/4	1-3/8, 3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 28.0 ft. while continuous split spoon sampling

ELEVATION: 542.9
DATUM: NGVD
START: 16 August 1991
FINISH: 16 August 1%'1
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		1, 1, 2	S1 8"/24"	0.0 - 2.0	0.5	Cored through concrete.
					2.0	Very soft red-brown clayey SILT, little coarse to medium sand, little gravel, wet. -FILL-
		10, 39, 29, 32	S2 24"/24"	2.0 - 4.0		Hard red-brown clayey SILT, trace coarse to mediun sand, trace gravel, moist. -LACUSTRINE-
5		12, 20, 28, 30	S3 24"/24"	4.0 - 6.0		Same, except with brown silt pockets.
		20, 30, 32, 45	S4 24"/24"	6.0 - 8.0		Same.
		10, 20, 24, 32	S5 22"/24"	8.0 - 10.0		Same, except wet. -LACUSTRINE-
10		6, 14, 14, 17	S6 22"/24"	10.0 - 12.0		Same, except very stiff, with iron staining.
		15, 18, 20, 22	S7 15"/24"	12.0 - 14.0		Same, except with iron staining.
15		10, 11, 13, 14	S8 18"/24"	14.0 - 16.0	15.5	Same. -LACUSTRINE-
						Very stiff gray silty CLAY, trace medium sand, wet. -LACUSTRINE-
		12, 11, 11, 9	S9 24"/24"	16.0 - 18.0		Same, except trace gravel.
		WOR, WOR, UOH, WOH	S10 24"/24"	18.0 - 20.0		Very soft gray CLAY, little silt, trace medium to coarse sand, wet. -LACUSTRINE-
20		2, 3, 3, 4	S11 24"/24"	20.0 - 22.0		Same, except medium stiff.
		9, 11, 11, 12	S12 24"/24"	22.0 - 24.0		Same, except very stiff. -LACUSTRINE-
		3, 5	S13	24.0		Same, except stiff and trace gravel.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 28.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 14S
BORING NO. B201-D

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B201-D FILE NO. 70007-43 SHEET NO. 2 OF 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		8 9	20"/24"	26.0		Same, except stiff and trace gravel.
		6 9 11 14	S14 18"/24"	26.0 28.0		Same, except very stiff. -LACUSTRINE-
30						Bottom of Boring at 28.0 ft.
						Note: 1. See Groundwater Monitoring Well Installation Report.
35						
40						
45						
50						
55						
60						

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B201-S

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ELEVATION: 542.9
DATUM: NGVD
START: 19 August 1991
FINISH: 19 August 1991
DRILLER: N. Short
H&A REP: M. Corrigan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4-1/4	3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 8.0 ft. prior to split spoon sampling

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
8.0–10.0		10 16 19 25	S1 24"/24"	8.0–10.0		Hard red-brown clayey SILT, trace medium to coarse sand, trace gravel, moist. -LACUSTRINE-
12.0–14.0		8 13 14 23	S2 24"/24"	12.0–14.0		Same, except very stiff. -LACUSTRINE-
15.0						Bottom of Boring at 15.0 ft. **Note:** 1. See Groundwater Monitoring Well Installation Report.

Depth scale: 5, 10, 15, 20, 25

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 15.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. B201-S

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B202-D

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 2
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	6-1/4	1-3/8	---
HAMMER MIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 30.0 ft. uhile continuous split spoon sampling

ELEVATION: 542.6
DATUM: NGVD
START: 22 August 1%'1
FINISH: 23 August 1%'1
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		3, 8, 10, 10	S1 8"/24"	0.0–2.0	0.2	Loose brown Loamy SILT, uith roots, dry. -TOPSOIL- Medium dense Light broun fine sandy SILT, dry. -FILL-
		7, 7, 11, 16	S2 12"/24"	2.0–4.0	3.0	Same. Very stiff dark brown SILT, Little clay, trace coarse to medium sand, uith wood fibers, damp.
5		5, 7, 8, 10	S3 12"/24"	4.0–6.0	5.0	Same. -SWAMP DEPOSIT- Very stiff red-brown mottled clayey SILT, trace medium sad, damp. -LACUSTRINE-
		8, 11, 17, 28	S4 20"/24"	6.0–8.0		Same, except trace gravel, moist.
		3, 8, 14, 23	S5 20"/24"	8.0–10.0		Very stiff red-brown clayey SILT, trace to medium sand, trace gravel, moist.
10			S6 13"/24"	10.0–12.0		Shelby tube sample taken.
		3, 8, 11, 13	S7 17"/24"	12.0–14.0		Very stiff red-brown clayey SILT, trace medium sand, moist.
15		7, 10, 10, 12	S8 18"/24"	14.0–16.0	15.5	Same. -LACUSTRINE- Very stiff gray silty CLAY, trace medium sand, moist to wet. -LACUSTRINE-
			S9 21"/24"	16.0–18.0		Shelby tube sample taken.
		2, 4, 4, 5	S10 18"/24"	18.0–20.0		Same, except stiff.
20		4, 6, 7, 6	S11 18"/24"	20.0–22.0		Stiff gray silty CLAY, trace medium to coarse sand, trace gravel, wet. -LACUSTRINE-
		2, 3, 5, 8	S12 24"/24"	22.0–24.0		Same.
		2, 3	S13	24.0		Same.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 30.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 15S
BORING NO. B202-D

H&A OF NEW YORK, ROCHESTER, NEW YORK
Consulting Geotechnical Engineers,
Geologists and Hydrogeologists

TEST BORING REPORT

BORING NO. B202-D
FILE NO. 70007-43
SHEET NO. 2 OF 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		6 7	24"/24"	26.0		Same.
		1 4 7 8	S14 24"/24"	26.0 28.0		Same.
30		5 8 12 16	S15 21"/24"	28.0 30.0		Same. -LACUSTRINE-
35						Bottom of Boring at 30.0 ft.
40						
45						
50						
55						
60						

Note:

1. See Groundwater Monitoring Well Installation Report.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B202-S

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	---	---
INSIDE DIAMETER (IN)	6-1/4	---	---
HAMMER MIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-50
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 16.0 ft. without split spoon sanpling

ELEVATION: 542.3
DATUM: NGVD
START: 26 August 1991
FINISH: 26 August 1991
DRILLER: F. Grattan
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						
10						
15						
						Bottom of Boring at 16.0 ft.
20						
25						

Notes:

1. See Test Boring Report B202-D for geologic descriptions.
2. See Groundwater Monitoring Well Installation Report.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sanple
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 16.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: ---
BORING NO. B202-S

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B203-D

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 2
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	6-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT 8 PROCEDURES
RIG TYPE: Diedrich D-50
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 30.0 ft. while continuous split spoon sampling

ELEVATION: 542.4
DATUM: NGVD
START: 20 August 1991
FINISH: 20 August 1991
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		10 38 68 42	S1 12"/24"	0.0 - 2.0	0.4	Loose brown loamy SILT, little coarse to medium sand, trace gravel, uith roots, dry. -TOPSOIL-
						Dense gray-brown silty GRAVEL, some coarse to fine sand, dry. -FILL-
		16 19 20 24	S2 3"/24"	2.0 - 4.0		Same, except dense. *Split spoon sampled through apparent cobble. -FILL-
5		9 8 15 16	S3 12"/24"	4.0 - 6.0	4.0	Very stiff red-brown mottled clayey SILT, trace coarse to medium sand, dry. -LACUSTRINE-
		17 24 33 41	S4 20"/24"	6.0 - 8.0		Same, except hard.
		7 13 17 20	S5 20"/24"	8.0 - 10.0		Same, except hard, dry to damp, trace iron staining. -LACUSTRINE-
10		5 10 12 14	S6 24"/24"	10.0 - 12.0		Same, except trace staining, damp.
		9 12 16 25	S7 24"/24"	12.0 - 14.0		Same, except moist.
					13.5	Hard gray silty CLAY, trace iron staining, moist. -LACUSTRINE-
15		4 7 8 8	S8 24"/24"	14.0 - 16.0		Same, except medium stiff and gray-brown silt seam at 14.9 ft. with iron staining, moist to wet.
		7 11 15 15	S9 24"/24"	16.0 - 18.0		Very stiff gray silty CLAY, moist to wet. -LACUSTRINE-
		3 4 4 6	S10 24"/24"	18.0 - 20.0		Medium stiff gray silty CLAY, trace coarse to medium sand, wet.
20		1 3 4 5	S11 24"/24"	20.0 - 22.0		Same.
		4 7 9 12	24"/24"	24.0		Same, except very stiff. -LACUSTRINE-
25		1 1	S13	24.0		Same, except with trace brown silt seams.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 30.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 15S
BORING NO. B203-D

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B203-D FILE NO. 70007-43 SHEET NO. 2 OF 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		4 7	24"/24"	26.0		Same, except with trace brown silt seams.
		4 10 11 16	S14 24"/24"	26.0 28.0		Same, except very stiff.
		4 5 6 8	S15 10"/24"	28.0 30.0		Same, except stiff. -LACUSTRINE-
30						Bottom of Boring at 30.0 ft.
35						
40						
45						
50						
55						
60						

Note:

1. See Groundwater Monitoring Well Installation Report.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B203-S

PROJECT: DOLLINGER RI/FS CLIENT: DOLLINGER - A FILTRONA COMPANY CONTRACTOR: NOTHNAGLE DRILLING	FILE NO. 70007-43 SHEET NO. 1 OF 1 LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	---	---
INSIDE DIAMETER (IN)	6-1/4	---	---
HAMMER WEIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-50
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 16.0 ft. without sampling.

ELEVATION: 542.5
DATUM: NGVD
START: 20 August 1991
FINISH: 20 August 1991
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						
10						
15						
						Bottom of Boring at 16.0 ft.
20						Notes: 1. See soil classification from boring B203-D. 2. See Groundwater Monitoring Well Installation Report
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 16.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: ---
BORING NO. B203-S

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B204-D

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 2
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	6-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-50
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 30.0 ft. while continuous split spoon sampling

ELEVATION: 539.5
DATUM: NGVD
START: 21 August 1991
FINISH: 21 August 1991
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		6 10 12 14	S1 18"/24"	0.0 2.0	0.2	Loose dark broun loamy SILT, with root fibers, damp. -TOPSOIL- Very stiff red-brown clayey SILT, trace iron staining, damp.
		13 17 24 29	S2 24"/24"	2.0 4.0		Same, except hard. -LACUSTRINE-
5		7 11 13 18	S3 19"/24"	4.0 6.0		Same, except trace coarse to medium sand, trace gravel, moist.
		20 20 29 37	S4 20"/24"	6.0 8.0		Hard red-brown clayey SILT, trace coarse to medium sand, trace gravel, moist. Same. -LACUSTRINE-
		6 10 11 13	S5 20"/24"	8.0 10.0	8.5	Very stiff gray silty CLAY, trace coarse to medium sand, mist. Possible vertical brown-gray clayey SILT seam from 8.5 ft. to 9.5 ft.
10		3 5 7 13	S6 18"/24"	10.0 12.0		Stiff gray silty CLAY, trace coarse to medium sand, moist to wet. -LACUSTRINE-
		9 14 17 21	S7 19"/24"	12.0 14.0		Same, exept hard trace gravel, broun silt seam at 13.9 ft.
15		8 4 7 10	S8 20"/24"	14.0 16.0		Stiff gray silty CLAY, trace coarse to medium sand, trace gravel, wet.
		11 12 14 17	S9 18"/24"	16.0 18.0		Same, exept very stiff. -LACUSTRINE-
		3 4 5 7	S10 21"/24"	18.0 20.0		Same.
20		3 5 6 8	S11 21"/24"	20.0 22.0		Same. -LACUSTRINE-
		9 12 14 17	S12 22"/24"	22.0 24.0		Same, exept very stiff.
25		2 4	S13	24.0		Same.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 30.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 15S
BORING NO. B204-D

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B204-D FILE NO. 70007-43 SHEET NO. 2 OF 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		5 8	22"/24"	26.0		Same.
		11 12 14 19	S14 21"/24"	26.0 28.0		Same, except very stiff.
30		1 1 3 5	S15 21"/24"	28.0 30.0		Same, except medium stiff. -LACUSTRINE-
						Bottom of Boring at 30.0 ft.
						Note: 1. See Groundwater Monitoring Well Report.
35						
40						
45						
50						
55						
60						

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B204-S

PROJECT: DOLLINGER RI/FS CLIENT: DOLLINGER - A FILTRONA COMPANY CONTRACTOR: NOTHNAGLE DRILLING	FILE NO. 70007-43 SHEET NO. 1 OF 1 LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	---	---
INSIDE DIAMETER (IN)	6-1/4	---	---
HAMMER WEIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING ECUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 16.0 ft. uithout split spoon sampling

ELEVATION: 540.6
DATUM: NGVD
START: 22 August 1991
FINISH: 22 August 1991
DRILLER: N. Short
H M REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						
10						
15						Bottom of Boring at 16.0 ft.
20						Notes: 1. See soil classification from boring B204-D. 2. See Groundwater Monitoring Well Installation Report.
25						

UATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT):	16.0 ft.
ROCK CORED (LIN FT):	---
SAMPLES:	---
BORING NO.	B204-S

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B205

PROJECT:	DOLLINGER RI/FS	FILE NO. 70007-43
CLIENT:	DOLLINGER - A FILTRONA COMPANY	SHEET NO. 1 OF 3
CONTRACTOR:	NOTHNAGLE DRILLING	LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES	
TYPE	Auger	SS	---	RIG TYPE: Diedrich D-50	ELEVATION: 542.7
INSIDE DIAMETER (IN)	6-1/4	1-3/8	---	BIT TYPE: ---	DATUM: NGVD
HAMMER WEIGHT (LB)	---	140	---	DRILL MUD: ---	START: 23 August 1991
HAMER FALL (IN)	---	30	---	OTHER:	FINISH: 23 August 1991
					DRILLER: S. Loranti
					H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		5 11 16 22	S1 20"/24"	2.0 4.0		Very stiff red-brown mottled clayey SILT, trace coarse to medium sand, damp. -LACUSTRINE-
5		6 11 17 21	S2 11"/24"	5.0 7.0		Same.
10		3 10 12 17	S3 23"/24"	9.0 11.0		Same. -LACUSTRINE-
15						
20						
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMARY

OVERBURDEN (LIN FT):	
ROCK CORED (LIN FT):	---
SAMPLES:	3S
BORING NO.	B205

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B205 FILE NO. 70007-43 SHEET NO. 2 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT	VISUAL CLASSIFICATION AND REMARKS
30						
35						
40						
		1 1 1 1	S4 6"/24"	43.0 45.0		Very Loose gray silty SAND.
45		1 1 2 2	S5 6"/24"	45.0 47.0		Soft gray fine sandy SILT, Little coarse to medium sand, trace clay, wet.
		3 3 4 6	S6 4"/24"	47.0 49.0		Loose gray coarse to medium SAND, Little fine sand, trace silt, trace gravel, wet.
50		7 8 9 8	S7 6"/24"	49.0 51.0		Medium dense gray coarse to medium SAND, Little gravel, wet. -LACUSTRINE-
		10 7 12 14	S8 15"/24"	51.0 53.0		Same.
		9 7 7 10	S9 12"/24"	53.0 55.0		Same, except some gravel. -LACUSTRINE-
55		8 6 8 9	S10 12"/24"	55.0 57.0		Medium dense gray gravelly coarse to medium SAND, wet.
		20 16 25 24	S11 14"/24"	57.0 59.0		Same, except dense.
60		5 12 21 7	S12 16"/24"	59.0 61.0	60.0	Same. Very dense gray fine sandy SILT, Little gravel, wet.

H&A OF NEU YORK, ROCHESTER, NEU YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B205 FILE NO. 70007-43 SHEET NO. 3 OF 3

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT	VISUAL CLASSIFICATION AND REMARKS
		25 99 84 68	S13 16"/24"	61.0 63.0		Same.
		35 44 75 88	S14 16"/24"	63.0 65.0		Very dense gray fine sandy SILT, trace coarse sand, wet.
65		135 135/.2	S15 2"/8"	65.0 65.8	65.0	Very dense coarse sandy GRAVEL, wet.
		48 89 100/.1	S16 13"/13"	67.0 68.1	67.0	Very dense gray SILT, trace coarse sand.
70		44 100/.3	S17 9"/9"	69.0 69.8		Very dense gray SILT, trace coarse sand, with green-gray rock fragments. -LACUSTRINE-
		100/.3	S18 3"/4"	71.0 71.3		Same.
		5 92 100/.3	S19 10"/16"	73.0 74.3		Same.
75		24 45 100/.5	S20 18"/18"	75.0 76.5		Same.
		100/.4	S21 5"/5"	77.0 77.4		Same.
80		100/.2	S22 2"/2"	79.0 79.2	79.0	Green-gray weathered bedrock. -BEDROCK-
85						Bottom of Boring at 83.0 ft.
90						
95						

Note:

1. See Grounduater Monitoring Well Installation Report.
2. Length of 10 in. I.D. steel casing 20.9 ft.
3. Reedrill SK-35 Air Rotary Drill Rig used to advance 12-1/4 in. diameter drill bit to 20.0 ft.
4. 10 in. casing required pounding to seat in borehole from approximately 15 to 20 it. depth.
5. Grouted borehole annulus from surface with approximately 25 to 30 gallons of Portland Cement Grout.
6. Reedrill SK-35 Air Rotary Drill Rig used to advance 9-7/8 in. diameter drill bit to 40.0 ft.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-A1

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sampled to 4.0 ft. without advancing augers

ELEVATION:
DATUM: NGVD
START: 14 August 1991
FINISH: 14 August 1991
DRILLER: N Short
H&A REP: M Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		9 17 19 19	S1 17"/24"	0.0 - 2.0	0.2	Loose brown Loamy SILT, trace coarse sand, dry. -TOPSOIL-
		11 16 21 24	S2 18"/24"	2.0 - 4.0		Hard red-brown clayey SILT, trace medium to coarse sand, trace gravel, damp. Same. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft.
10						
15						
20						
25						

<u>Note:</u>

1. Borehole backfilled to ground surface with native materials and bentonite pellets.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-A1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-A2

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers through asphalt to .5 ft.

ELEVATION:
DATUM: NGVD
START: 14 August 1991
FINISH: 14 August 1991
DRILLER: N. Short
H&A REP: M Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		Augered	S1	0.5	0.5	Asphalt Pavement.
		10 12 5	12"/18"	2.0	1.6	Medium dense gray-brown sandy GRAVEL, some silt, damp. -FILL-
		4 10 12 15	S2 22"/24"	2.0 4.0		Medium stiff red-brown mottled clayey SILT, trace coarse to medium sand, trace gravel, moist. Same, except very stiff. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft.
10						
15						
20						
25						

Note:

1. Borehole backfilled to ground surface with native materials and asphalt patch materials.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-A2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-A3

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT 8 PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sampled to 4.0 ft. without advancing augers

ELEVATION:
DATUM: NGVD
START: 14 August 1991
FINISH: 14 August 1991
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		Augered	S1	0.5	0.5	Asphalt Pavement.
		5 9 10	6"/18"	2.0	2.0	Loose gray-brown silty GRAVEL, some sand, dry. -FILL-
		10 12 12 17	S2 24"/24"	2.0 4.0		Very stiff red-brown clayey SILT, trace coarse to fine sand, trace gravel, damp. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft
10						
15						
20						
25						

Note

1. Borehole backfilled to ground surface with native materials and asphalt patch materials.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-A3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-A4

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT 8 PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL RID: ---
OTHER: Advanced augers to 8.0 ft. Split spoon sampled to 12.0 ft.

ELEVATION:
DATUM: NGVD
START: 14 August 1991
FINISH: 15 August 1991
DRILLER: N. Short
H&A REP: M Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER 8 RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		Cored	S1	0.5	0.5	Concrete slab, uith steel mesh.
		3 5 4	15"/18"	2.0	0.6	Loose gray-brounsandy GRAVEL, moist. -FILL-
		6 10 12 17	S2 22"/24"	2.0 4.0		Stiff red-brown mottled clayey SILT, trace coarse sand, trace gravel, moist. -LACUSTRINE-
5		17 21 22 22	S3 18"/24"	4.0 6.0		Same.
		14 13 16 15	S4 14"/24"	6.0 8.0		Same. -LACUSTRINE-
		5 6 7 19	S5 21"/24"	8.0 10.0		Same, except Loose and moist to uet, uith some silty fine SAND seams.
10		9 a a 10	S6 24"/24"	10.0 12.0		Same.
					10.7	Stiff gray silty CLAY, trace medium sand, moist to wet. -LACUSTRINE-
						Bottom of Boring at 12.0 ft.
15						
20						
25						

Notes:

1. Backfilled borehole to 0.5 ft. with cement grout. Capped borehole to ground surface with concrete.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 12.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 6S
BORING NO. GS-A4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-A5

PROJECT: DOLLINGER RI/FS CLIENT: DOLLINGER - A FILTRONA COMPANY CONTRACTOR: NOTHNAGLE DRILLING	FILE NO. 70007-43 SHEET NO. 1 OF 1 LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers through asphalt to 0.5 ft.

ELEVATION:
DATUM: HGVD
START: 14 August 1991
FINISH: 14 August 199'l
DRILLER: N. Short
H&A REP: H. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		Augered	S1	0.5	0.5	Asphalt Pavement
		6 / 14 / 14	12"/18"	2.0		Medium dense gray-brown silty SAND, some gravel, dry. -FILL-
		7 / 11 / 14 / 19	S2 22"/24"	2.0 4.0	1.8	Stiff red-brown mottled clayey SILT, trace coarse to medium sand, trace gravel, damp. Same, except very stiff. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft
10						
15						
20						
25						

Note:

1. Borehole backfilled to ground surface with native materials and asphalt patch material.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sanple
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-A5

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-A8

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon samples S1 thru S4 collected with 3 in. I.D. sampler.

ELEVATION:
DATUM: NGVD
START: 14 August 1991
FINISH: 14 August 1991
DRILLER: N. Short
H M REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		7 22 16 13	S1 12"/24"	0.0 2.0	2.0	Dense brown sandy GRAVEL, little silt, dry. Split spoon sampled through apparent cobble. -FILL-
		23 30 40 40	S2 20"/24"	2.0 4.0		Hard red-brown mottled clayey SILT, trace coarse to medium sand, trace gravel, damp, solvent smell. -LACUSTRINE-
5		11 12 14 21	S3 20"/24"	4.0 6.0		Same, except very stiff and moist.
		17 22 27 31	S4 24"/24"	6.0 8.0		Hard red-brown mottled clayey SILT, trace coarse to medium sand, trace gravel, moist. -LACUSTRINE-
		37 28 39 31	S5 NR	8.0 10.0		No recovery.
10		17 18 25 18	S6 22"/24"	10.0 12.0	11.8	Same.
						Medium stiff gray silty CLAY, trace coarse to medium sand, trace gravel, moist. -LACUSTRINE-
15						Bottom of Boring at 12.0 ft.
20						
25						

Notes:

1. Solvent smell was evident while backfilling borehole.
2. Borehole backfilled to ground surface with benrcnite pellets.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 12.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 6S
BORING NO. GS-A8

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-A9

PROJECT: DOLLINGER RI/FS	FILE NO. 70007-43
CLIENT: DOLLINGER - A FILTRONA COMPANY	SHEET NO. 1 OF 1
CONTRACTOR: NOTHNAGLE DRILLING	LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sampled to 4.0 ft. without advancing augers.

ELEVATION:
DATUM: NGVD
START: 15 August 1991
FINISH: 15 August 1991
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		3 11 16 17	S1 8"/24"	0.0 - 2.0	0.4	Loose brown sandy SILT, some gravel, trace black plastic slag. -TOPSOIL FILL-
		11 15 24 27	S2 18"/24"	2.0 - 4.0		Hard red-brown gravelly SILT, some clay, trace coarse sand. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft.
10						**Note:** 1. Borehole backfilled to ground surface with native materials and bentonite pellets.
15						
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-A9

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B1

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 8.0 ft. with continuous split spoon sampling to 12.0 ft.

ELEVATION:
DATUM: NGVD
START: 13 August 1991
FINISH: 13 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		6 14 18 23	S1 19"/24"	0.0 2.0		Dense brown clayey SILT, some gravel in upper 0.2 ft., dry, crumbly.
		20 34 35 33	S2 21"/24"	2.0 4.0		Same, except very dense, moist, with black granular mineralization on rough undulating to planar soil partings. -LACUSTRINE-
5		27 24 28 28	S3 23"/24"	4.0 6.0		Same.
		18 27 24 25	S4 21"/24"	6.0 8.0		Grades to stiff brown silty CLAY, trace coarse sand, moist, medium plasticity. -LACUSTRINE-
		12 17 23 30	S5 24"/24"	8.0 10.0		Same.
10		16 18 20 21	S6 20"/24"	10.0 12.0	10.5	Stiff gray CLAY, some silt; moist, medium to high plasticity. -LACUSTRINE-
15						Bottom of Boring at 12.0 ft.
20						
25						

Notes:

1. Borehole caved upon removing augers. Remainder of borehole backfilled to surface with bentonite pellets.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 12.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 6S
BORING NO. GS-B1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B2

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4-1/4	1-3/8, 3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sanples S1 & S2 collected with 3 in. I.D. spoon. Advanced auger to 4.0 ft. prior to S3-S6

ELEVATION:
DATUM: NGVD
START: 13 August 1991
FINISH: 13 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PERFT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		20 44 42 41	S1 19"/24"	0.0 – 2.0	0.8	Medium dense brown SILT, Little clay, with occasional gravel and little fine sand, root fibers, dry, friable. -TOPSOIL FILL-
		29 43 44 40	S2 24"/24"	2.0 – 4.0		Dense brown SILT, little clay, dry, hard, with occasional pebbles. -LACUSTRINE-
5		11 19 24 33	S3 24"/24"	4.0 – 6.0		Very dense brown clayey SILT, with occasional gravel, damp, crumbly. -LACUSTRINE-
		29 30 22 21	S4 24"/24"	6.0 – 8.0	7.8	Same, moist. Same, uith rusty iron staining on rough undulating soil partings.
		10 16 14 16	S5 24"/24"	8.0 – 10.0		Stiff gray silty CLAY, trace medium sand, moist, moderately plastic. -LACUSTRINE-
10		11 10 15 17	S6 /24"	10.0 – 12.0		Same, uith brown SILT pocket, mottled, from 9.0 to 9.4 ft. Same, uith very feu pebbles and gravel-size stones.
15						Bottom of Boring at 12.0 ft.
20						
25						

Note:

1. Backfilled borehole to ground surface with bentonite pellets.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 12.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 6S
BORING NO. GS-B2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B3

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER UEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sampled to 4.0 ft. without advancing augers.

ELEVATION:
DATUM: NGVD
START: 13 August 1991
FINISH: 13 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOUS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		3 9 9 8	S1 15"/24"	0.0 2.0	0.2	Loose dark brown loamy SILT, with root fibers. -TOPSOIL FILL-
					1.0	Loose gray coarse to fine SAND, little silt, dry. -FILL-
		6 6 5 3	S2 18"/24"	2.0 4.0		Loose to medium dense brown clayey SILT, damp. -LACUSTRINE- Same.
5						Bottom of Boring at 4.0 ft.
10						
15						
20						
25						

Note:

1. Backfilled borehole to ground surface with bentcnite pellets.

UATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
8/13/91	NA	0.5	0.0	4.0	2.5

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-B3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B4

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMERFALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced 2-1/4" augers to 8.0 ft. prior to split spoon samples S5 & S6.

ELEVATION:
DATUM: NGVD
START: 13 August 1991
FINISH: 13 August 1991
DRILLER: N. Short
HBA REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
0		4 13 17 22	S1 19"/24"	0.0 - 2.0	0.2	Loose brown SILT with root fibers. -TOPSOIL-
2		24 28 29 30	S2 18"/24"	2.0 - 4.0		Very stiff broun SILT, sane clay, damp. -LACUSTRINE- Hard broun SILT, sane clay, trace coarse sand, damp.
4		27 24 27 25	S3 12"/24"	4.0 - 6.0		Hard red-brown clayey SILT, trace coarse sand, trace gravel, moist.
6		22 27 19 25	S4 24"/24"	6.0 - 8.0		Same.
8		3 11 13 16	S5 23"/24"	8.0 - 10.0		Same, except very stiff.
10		12 15 17 20	S6 24"/24"	10.0 - 12.0		Same, except moist to wet. -LACUSTRINE-
12						Bottom of Boring at 12.0 ft.

Notes:

1. Borehole caved to approximately 4.0 ft. upon removing augers. Remainder of borehole backfilled with cement grout.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 12.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 6S
BORING NO. GS-B4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B5

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4-1/4	3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 8.0 ft. Split spoon sampled to 12.0 ft.

ELEVATION:
DATUM: NGVD
START: 13 August 1991
FINISH: 14 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		4, 8, 11, 13	S1 18"/24"	0.0 - 2.0	0.2	Loose brown loamy SILT, with root fibers moist. -TOPSOIL FILL-
		11, 19, 23, 26	S2 23"/24"	2.0 - 4.0	2.0	Dense gray-brown mottled clayey SILT, trace gravel, trace coarse to medium sand, damp with crude gray to red-brown Layering. -FILL-
5		44, 37, 40, 38	S3 18"/24"	4.0 - 6.0		Hard red-brown mottled clayey SILT, trace gravel, trace coarse to medium sand, damp. -LACUSTRINE- Same.
		30, 26, 26, 34	S4 21"/24"	6.0 - 8.0		Same.
		19, 22, 43, 50	S5 24"/24"	8.0 - 10.0		Same.
10		4, 10, 11, 13	S6 23"/24"	10.0 - 12.0		Same. Medium stiff gray silty CLAY, trace medium to coarse sand, moist. -LACUSTRINE-
15						Bottom of Boring at 12.0 ft.
20						
25						

Notes:

1. Borehole backfilled to ground surface from 4.0 ft. with cement grout.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT):	12.0 ft.
ROCK CORED (LIN FT):	---
SAMPLES:	6S
BORING NO.	GS-B5

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B6

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sampled without advancing augers

ELEVATION:
DATUM: NGVD
START: 14 August 1991
FINISH: 14 August 1991
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		16 55 57 38	S1 12"/24"	0.0 2.0	0.2	Medium dense sandy SILT, with root fibers, dry. -TOPSOIL-
						Very dense brown sandy GRAVEL, some silt, dry.
		28 30 35 36	S2 22"/24"	2.0 4.0	2.5	Same. -FILL-
						Hard red-brown mottled clayey SILT, trace medium to coarse sand trace gravel, damp. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft.
10						
15						
20						

Notes:

1. Boring backfilled to ground surface with bentonite pellets.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-B6

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B7

PROJECT: DOLLINGER RI/FS CLIENT: DOLLINGER - A FILTRONA COMPANY CONTRACTOR: NOTHNAGLE DRILLING	FILE NO. 70007-43 SHEET NO. 1 OF 1 LOCATION: See Plan	

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	---	SS	---	RIG TYPE: Diedrich D-25
INSIDE DIAMETER (IN)	---	1-3/8	---	BIT TYPE: ---
HAMMER EIGHT (LB)	---	140	---	DRILL MUD: ---
HAMMER FALL (IN)	---	30	---	OTHER: Advanced split spoon sanpler to 4.0 ft. without augers

ELEVATION:
DATUH: NGVD
START: 15 August 1991
FINISH: 15 August 1991
DRILLER: N. Short
H&A REP: M Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		6 15 13 15	S1 19"/24"	0.0 2.0	0.4	Loose brown SILT, trace medium sand, with roots, dry. -TOPSOIL-
		19 19 18 18	S2 19"/24"	2.0 4.0		Dense brown SILT, some clay, trace coarse sand, dry. -FILL- Hard red-broun mottled clayey SILT, trace coarse sand, trace gravel, damp to moist, with trace iron staining. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft.
10						Note: 1. Borehole backfilled to ground surface with bentonite pellets.
15						
20						
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sanple
S Split Spoon

SUHMARY

OVERBURDEN (LIN FT):	4.0 ft.
ROCK CORED (LIN FT):	---
SAMPLES:	2S
BORING NO.	GS-B7

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B8

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sampled to 4.0 ft. uithout advancing augers

ELEVATION:
DATUM: NGVD
START: 14 August 1991
FINISH: 14 August 1991
DRILLER: N. Short
H&A REP: M. Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		5 19 19 15	S1 19"/24"	0.0 – 2.0	0.2	Loose broun Loamy SILT, trace coarse sand, dry. -TOPSOIL-
		16 27 24 31	S2 /24"	2.0 – 4.0		Hard red-brom mottled clayey SILT, trace coarse to medium sand, trace gravel, dry. -LACUSTRINE- Same, except danp.
5						Bottom of Boring at 4.0 ft.
10						Note: 1. Borehole backfilled to surface uith bentonite pellets.
15						
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-B8

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-B9

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2-1/4	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMERFALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers to 4.0 ft. Split spoon sampled to 8.0 ft.

ELEVATION:
DATUM: NGVD
START: 15 August 1991
FINISH: 15 August 1991
DRILLER: N. Short
H&A REP: M Corrigan

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		3 14 17 23	S1 18"/24"	0.0 – 2.0	0.2	Loose brown SILT, with roots, dry. -TOPSOIL- / Medium dense gravelly SILT, some coarse sand, dry. -FILL-
		19 13 15 19	S2 19"/24"	2.0 – 4.0	3.0	Hard red-brown mottled clayey SILT, trace medium to coarse sand, dry. -LACUSTRINE-
5		15 18 23 21	S3 15"/24"	4.0 – 6.0		Same, damp.
		15 16 13 19	S4 12"/24"	6.0 – 8.0		Same, except very stiff, trace gravel, moist. -LACUSTRINE-
10						Bottom of Boring at 8.0 ft.
15						
20						
25						

Note:

1. Borehole backfilled to surface with native materials and bentonite pellets.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 8.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 4S
BORING NO. GS-B9

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C1

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA CMPANY
COWTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMERUEIGHT (LB)	---	140	---
HAMVER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL KID: ---
OTHER: Advanced split spoon sampler to 4.0 ft. without augers.

ELEVATION:
DATLM: NGVD
START: 13 August 1991
FINISH: 13 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		8 12 15 15	S1 21"/24"	0.0 – 2.0		Medium dense brown clayey SILT, some gravel in upper 0.2 ft., dry, crumbly.
		16 17 20 24	S2 23"/24"	2.0 – 4.0		Same, damp, and with trace black granular mineralization on soil partings, trace coarse sand. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft.
						Note: 1. Backfilled borehole to surface with bentonite pellets.
10						
15						
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-C1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C2

PROJECT: DOLLINGER RI/FS	FILE NO. 70007-43
CLIENT: DOLLINGER - A FILTRONA COMPANY	SHEET NO. 1 OF 1
CONTRACTOR: NOTHNAGLE DRILLING	LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Oiedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced split spoon sampler to 4.0 ft. without augers.

ELEVATION:
DATUM: NGVD
START: 12 August 1991
FINISH: 12 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		7 12 13 16	S1 19"/24"	0.0 2.0		Medium dense brown SILT, Little clay, dry, crumbly. -LACUSTRINE-
		23 27 33 33	S2 21"/24"	2.0 4.0		Same, except very dense, damp and with some gray mottling and rusty iron staining. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft.
10						Note: 1. Backfilled borehole to ground surface with bentonite pellets.
15						
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-C2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C3

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced split spoon sampler without augers to 4.0 ft.

ELEVATION:
DATUM: NGVD
START: 12 August 1991
FINISH: 12 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		6 10 11 13	S1 12"/24"	0.0 2.0		Medium dense brown SILT, little clay, trace fine sand, occasional pebbles, dry, crumbly.
		18 22 29 32	S2 21"/24"	2.0 4.0		Same, except dense, and with trace black granular mineralization on soil partings. -LACUSTRINE-
5						Bottom of Boring at 4.0 ft.
10						**Note:** 1. Backfilled borehole to 3.0 ft. with native materials, and to surface with bentonite pellets.
15						
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-C3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C4

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced split spoon sampler to 4.0 ft. uithout augers.

ELEVATION:
DATUM: NGVD
START: 12 August 1991
FINISH: 12 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		4 7 11 14	S1 18"/24"	0.0 – 2.0		Medium dense brown to red-brown clayey SILT, dry, crumbly. -LACUSTRINE-
		17 27 28 29	S2 20"/24"	2.0 – 4.0		Same, very dense, hard.
5						Bottom of Boring at 4.0 ft.
						Note:
						1. Backfilled borehole to 0.5 ft. with native materials and topped with bentonite pellets.
10						
15						
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

Thin Wall Tube
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-C4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C5

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES
RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced split spoon sampler to 4.0 ft. without augers.

ELEVATION:
DATUM: NGVD
START: 12 August 1991
FINISH: 12 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		3 9 11 14	S1 19"/24"	0.0 2.0		Medium dense broun clayey SILT, trace gravel with gray and tan mottling. -LACUSTRINE-
		14 17 24 25	S2 20"/24"	2.0 4.0		Same, except dense.
5						Bottom of Boring at 4.0 ft.
10						Note: 1. Backfilled borehole to 0.5 ft. with native materials and topped with bentonite pellets.
15						
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY
OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-C5

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C6

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA CMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER MIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sampled to 4.0 ft. without augers.

ELEVATION:
DATUM: NGVD
START: 12 August 1991
FINISH: 12 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		3 7 12 14	S1 20"/24"	0.0 2.0	0.2	Loose dark brown SILT, with abundant root fibers, moss, trace gravel, damp. -TOPSOIL-
						Medium dense brown clayey SILT, trace gravel, damp with gray mottling, crumbly. -LACUSTRINE-
		11 22 27 28	S2 21"/24"	2.0 4.0		Same, except dense.
5						Bottom of borehole at 4.0 ft.
						Note:
						1. Backfilled borehole with native materials and topped with bentonite pellets.
10						
15						
20						
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-C6

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C7

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced split spoon sampler to 4.0 ft. without augers.

ELEVATION:
DATUM: NGVD
START: 12 August 1991
FINISH: 12 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		6 8 14 18	S1 17"/24"	0.0 2.0	0.3	Loose dark brown Loamy SILT, damp. -TOPSOIL-
		16 24 34 36	S2 24"/24"	2.0 4.0		Medium dense dark brown clayey SILT, trace coarse sand and gravel, uith gray mottling and root fibers, damp. -LACUSTRINE- Same, except dense.
5						Bottom of Boring at 4.0 ft.
10						
15						
20						
25						

Note:

1. Backfilled borehole uith native materials.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT):	4.0 ft.
ROCK CORED (LIN FT):	---
SAMPLES:	2S
BORING NO.	GS-C7

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C8

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced split spoon samples to 4.0 ft. without augers.

ELEVATION:
DATUM: NGVD
START: 12 August 1991
FINISH: 12 August 1991
DRILLER: N. Short
H&A REP: J. Talepy

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		3 9 9 11	S1 22"/24"	0.0 2.0	0.5	Loose dark brown Loamy SILT, with root fibers, dry. -TOPSOIL-
		5 22 44 35	S2 5"/24"	2.0 4.0		Medium dense brown fine clayey SILT, trace gravel, dry. -LACUSTRINE- Same, except very dense. Split spoon encountered cobble, poor recovery.
5						Bottom of Boring at 4.0 ft.
						Note: 1. Backfilled borehole to ground surface with native materials.
10						
15						
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-C8

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. GS-C9

PROJECT: DOLLINGER RI/FS
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING

FILE NO. 70007-43
SHEET NO. 1 OF 1
LOCATION: See Plan

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1-3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25
BIT TYPE: ---
DRILL MUD: ---
OTHER: Split spoon sampled to 4.0 ft. without advancing augers.

ELEVATION:
DATUM: NGVD
START: 12 August 1991
FINISH: 12 August 1991
DRILLER: N. Short
H&A REP: J. Talpey

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		2 7 11 12	S1 21"/24"	0.0 2.0		Medium dense brown SILT, trace gravel with black malleable asphalt fragments, dry, crumbly, with root fibers. -FILL-
					2.0	
		8 11 12 18	S2 17"/24"	2.0 4.0		Medium dense dark brown clayey SILT, trace fine sand, damp, with trace organic fibers, low plasticity. -BURIED TOPSOIL-
5						Bottom of Boring at 4.0 ft.
						Note: 1. Borehole backfilled to surface with native materials.
10						
15						
20						
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S
BORING NO. GS-C9

APPENDIX C

Overburden Groundwater Monitoring Well Reports

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE
LOCATION: BRIGHTON, NEW YORK
CLIENT: AMERICAN FILTRONA
CONTRACTOR: ROCHESTER DRILLING CO.
DRILLER: R. BAUER H&A REPRESENTATIVE: J. FITCH
INSTALLATION DATE 5 JULY 1988

FILE NO. 70007-41
WELL NO. OW101-S
BORING NO. B101-S
LOCATION See Plan

SHEET 1 OF 2

SURVEY DATUM NGVD

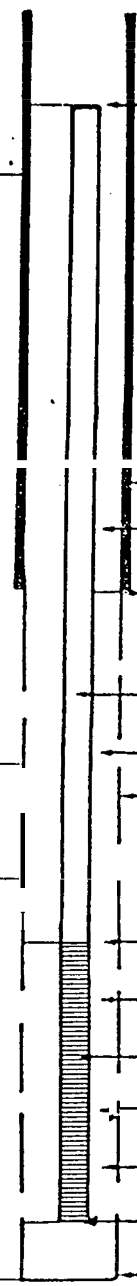
GROUND ELEVATION 543.9

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

-LACUSTRINE-
Clayey SILT

214.6 ft.

CEMENT/ BENTONITE GROUT
10.2 ft.
BENTONITE PELLETS
13.6 ft.
#4 QUARTZ SAND
24.6 ft.



~~ELEVATION OR~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF CASING OR ~~ROADWAY BOX~~	2.1 ft.
~~ELEVATION OR~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF RISER PIPE.	2.0 ft.
THICKNESS OF SURFACE SEAL	10.2 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
~~ELEVATION~~ DEPTH OF BOTTOM OF CASING	4.9 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED. ETC.)	Threaded
~~ELEVATION~~ DEPTH OF BOTTOM OF RISER	15.6 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION~~ DEPTH OF BOTTOM OF WELLSCREEN	24.6 ft.
~~ELEVATION~~ DEPTH OF BOTTOM OF BOREHOLE	24.6 ft.

[FIGURES REFER TO: EL. ____ DEPTH X]

WELL SUMMARY: 17.6 ft. (LENGTH OF RISER PIPE) + 9.0 ft. (LENGTH OF WELLSCREEN) = 26.6 ft. (TOTAL LENGTH)

H&A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW101-S

ELEVATION SUBTRAHEND 543.9

FILE NO. 70007-41

PAGE NO. 2 of 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 6/88	0800	15 hrs.	9.6 ft.	534.3		JGT
7/ 7/88	0752	1.5 days	6.9 ft.	537.0		JF
7/ 8/88	1130	3 days	7.2 ft.	536.7		JT/NLR
7/11/88	0943	6 days	6.6 ft.	537.3		JF
7/12/88	0754	7 days	7.1 ft.	536.8		JF
7/12/88	1130	**well developed by drillers**				
7/18/88	1625	13 days	6.2 ft.	537.7	Measured by General Testing Corp.	GTC
8/03/88	1635	29 days	5.1 ft.	538.8		JF
8/22/88	---	48 days	6.9 ft.	537.0		LSD
1/15/90	1425	---	2.4 ft.	541.5		SFP
8/19/91	1030	---	9.1 ft.	534.8		JGT
8/19/91	1525	---	9.1 ft.	534.8		JGT
8/21/91	1008	---	9.2 ft.	534.7		JGT
8/26/91	0906	---	9.5 ft.	534.4		JGT
9/05/91	---	---	10.0 ft.	533.9		MJC
10/04/91	---	---	11.8 ft.	532.1		JM

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT:	DOLLINGER SITE	FILE NO.	70007-41
LOCATION:	BRIGHTON, NEW YORK	WELL NO.	OW101-D
CLIENT:	AMERICAN FILTRONA	BORING NO.	B101-D
CONTRACTOR:	ROCHESTER DRILLING CO.	LOCATION	See Plan
DRILLER:	R. BAUER — H&A REPRESENTATIVE: J. FITCH		
INSTALLATION DATE	5 JULY 1988	SHEET	1 OF 2

SURVEY DATUM: NGVD

GROUND ELEVATION: 543.7

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

-LACUSTRINE- Clayey SILT

CEMENT/ BENTONITE GROUT

23.2 ft.

BENTONITE PELLETS

25.2 ft.

#4 QUARTZ SAND

36.0 ft. | 36.0 ft.

~~ELEVATION OR~~ STICKUP ABOVE/~~BELOW~~ GROUND SURFACE OF CASING	2.1 ft.
~~ELEVATION OR~~ STICKUP ABOVE/~~BELOW~~ GROUND SURFACE OF RISER PIPE.	2.0 ft.
THICKNESS OF SURFACE SEAL	23.2 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 ft.
~~ELEVATION~~/DEPTH OF BOTTOM OF CASING	2.9 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~/DEPTH OF BOTTOM OF RISER	28.0 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION~~/DEPTH OF BOTTOM OF WELLSCREEN	36.0 ft.
~~ELEVATION~~/DEPTH OF BOTTOM OF BOREHOLE	36.0 ft.

[FIGURES REFER TO: EL. ____ DEPTH X]

WELL SUMMARY: 30.0 ft. (LENGTH OF RISER PIPE) + 8.0 ft. (LENGTH OF WELLSCREEN) = 38.0 ft. (TOTAL LENGTH)

H & A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW101-D

ELEVATION SUBTRAHEND 543.7

FILE NO. 70007-41

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 5/88	0830	4 days	21.8 ft.	521.9	In augers.	JF
7/ 5/88	1540	4 days	29.5 ft.	514.2	40 minutes after bailing.	JF
7/ 6/88	0800	5 days	27.6 ft.	516.1		JGT
7/ 7/88	0748	6 days	24.5 ft.	519.2		JF
7/ 8/88	1135	7 days	21.3 ft.	522.4		JF
7/11/88	0945	10 days	21.7 ft.	522.0		JF
7/12/88	0800	11 days	20.1 ft.	523.6		JF
7/12/88	1100	**well developed by drillers (bailed empty--remained muddy)**				
7/18/88	1625	17 days	19.3 ft.	524.4	Measured by General Testing Corp.	GTC
8/03/88	1635	33 days	12.7 ft.	531.0		JF
8/22/88	----	52 days	16.6 ft.	527.3		LSD
1/15/90	1430	---	6.1 ft.	537.6		SFP
8/19/91	1035	---	9.7 ft.	534.0		JGT
8/19/91	1520	---	9.7 ft.	533.0		JGT
8/21/91	1010	---	9.9 ft.	533.8		JGT
8/26/91	0907	---	10.2 ft.	533.5		JGT
9/05/91	---	---	10.6 ft.	533.1		MJC
10/04/91	---	---	13.8 ft.	529.9		JM

H & A FORM 59A JAN. 79

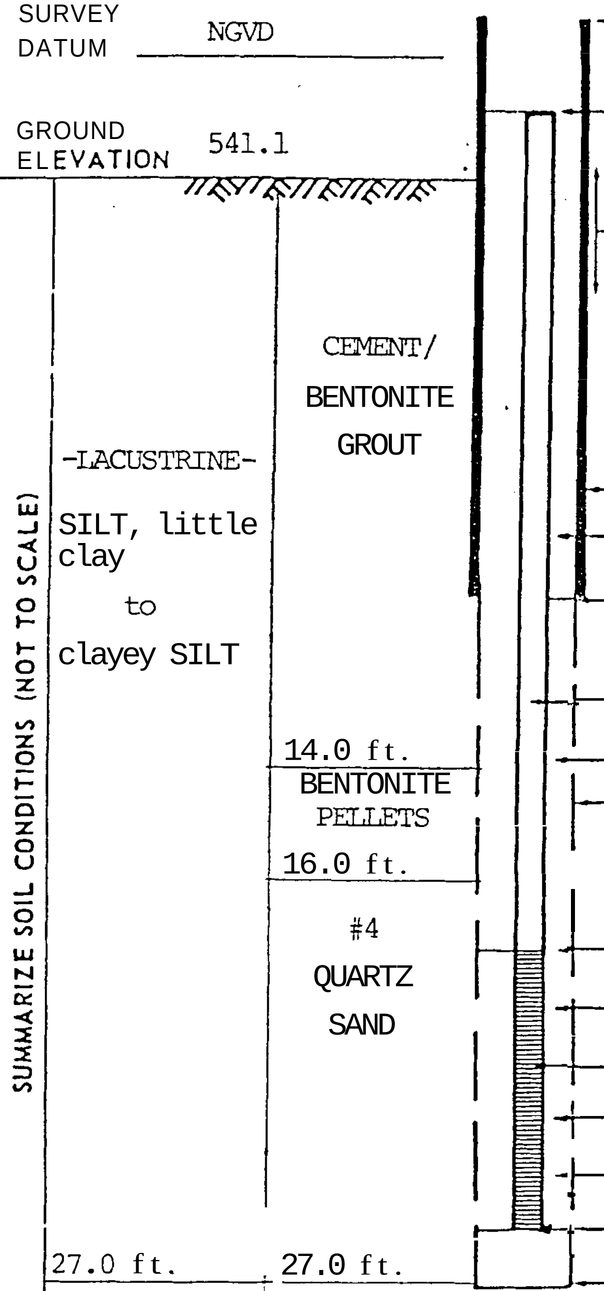
H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE
LOCATION: BRIGHTON, NEW YORK
CLIENT: AMERICAN FILTRONA
CONTRACTOR: ROCHESTER DRILLING CO.
DRILLER: L. PARKER H&A REPRESENTATIVE: J. FITCH
INSTALLATION DATE 6 JULY 1988

FILE NO. 70007-41
WELL NO. OW102-S
BORING NO. B102-S
LOCATION See Plan
SHEET 1 OF 2

SURVEY DATUM NGVD
GROUND ELEVATION 541.1



~~ELEVATION OR~~ STICKUP ABOVE/~~BELOW~~ GROUND SURFACE OF CASING OR ~~ROAD BOX~~	2.8 ft.
~~ELEVATION OR~~ STICKUP ABOVE/~~BELOW~~ GROUND SURFACE OF RISER PIPE.	2.6 ft.
THICKNESS OF SURFACE SEAL	14.0 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
~~ELEVATION~~/DEPTH OF BOTTOM OF CASING	2.2 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~/DEPTH OF BOTTOM OF RISER	17.0 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION~~/DEPTH OF BOTTOM OF WELLSCREEN	27.0 ft.
~~ELEVATION~~/DEPTH OF BOTTOM OF BOREHOLE	27.0 ft.

[FIGURES REFER TO: EL. DEPTH "]

WELL SUMMARY: 19.6 ft. (LENGTH OF RISER PIPE) + 10.0 ft. (LENGTH OF WELLSCREEN) = 29.6 ft. (TOTAL LENGTH)

H & A FORM SV SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW102-S

ELEVATION SUBTRAHEND 541.1

FILE NO. 70007-41

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 8/88	1140	1.5 days	dry	---		JGT/NLR
7/11/88	1042	5 days	26.1 ft.	515.0		JF
7/12/88	0805	6 days	25.2 ft.	515.9		JF
7/18/88	1640	12 days	21.1 ft.	520.0	Measured by General Testing Corp.	GTC
8/03/88	1642	28 days	13.1 ft.	528.0		JF
8/22/88	---	47 days	7.8 ft.	533.3		LSD
1/15/90	1435	---	2.2 ft.	538.9		SFP
8/19/91	1515	---	11.6 ft.	529.5		JGT
8/21/91	1016	---	11.9 ft.	529.2		JGT
8/26/91	0917	---	13.2 ft.	527.9		JGT
9/06/91	---	---	15.1 ft.	526.0		MJC
10/04/91	---	---	20.5 ft.	520.62		JM

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE	FILE NO. 70007-41
LOCATION: BRIGHTON, NEW YORK	WELL NO. OW102-D
CLIENT: AMERICAN FILTRONA	BORING NO. B102-D
CONTRACTOR: ROCHESTER DRILLING CO.	LOCATION See Plan
DRILLER: L. PARKER H&A REPRESENTATIVE: J. FITCH	
INSTALLATION DATE 6 JULY 1988	SHEET 1 OF 2

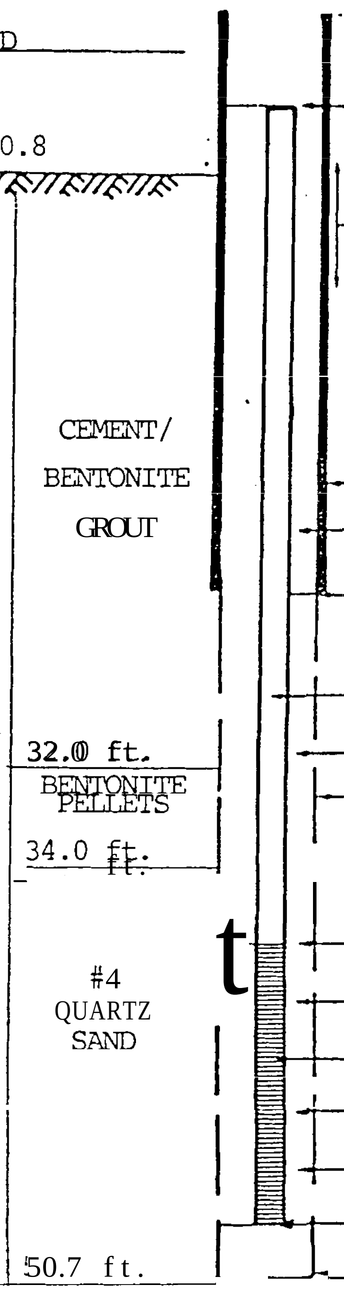
SURVEY DATUM NGVD

GROUND ELEVATION 540.8

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

-LACUSTRINE-
SILT, little clay to clayey SILT

50.7 ft.



~~ELEVATION OR~~ STICKUP ABOVE/~~BELOW~~ GROUND SURFACE OF CASING ~~OR ROADBOX~~	2.5 ft.
~~ELEVATION OR~~ STICKUP ABOVE/~~BELOW~~ GROUND SURFACE OF RISER PIPE.	2.3 ft.
THICKNESS OF SURFACE SEAL	32.0 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
~~ELEVATION~~/DEPTH OF BOTTOM OF CASING	2.5 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~/DEPTH OF BOTTOM OF RISER	35.7 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Scheduled 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION OR~~ DEPTH OF BOTTOM OF WELLSCREEN	50.7 ft.
~~ELEVATION OR~~ DEPTH OF BOTTOM OF BOREHOLE	50.7 ft.

[FIGURES REFER TO: EL. ____ DEPTH ✓]

WELL SUMMARY: 38.0 ft. (LENGTH OF RISER PIPE) + 15.0 ft. (LENGTH OF WELLSCREEN) = 53.0 ft. (TOTAL LENGTH)

H & A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW102-D

ELEVATION SUBTRAHEND 540.8

FILE NO. 70007-41

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 5/88	1630	1/2 hr.	dry	---	In augers.	JF
7/ 6/88	0800	15 hrs.	43.8 ft.	497.0	In augers.	JGT
7/ 7/88	0743	1.5 days	50.3 ft.	490.5	(water muddy)	JF
7/11/88	0949	6 days	30.0 ft.	510.8		JF
7/12/88	0809	7 days	. 24.4 ft.	516.4		JF
7/12/88	1100	**well	developed by drillers**			
7/18/88	1640	13 days	13.6 ft.	527.2	Measured by General Testing Corp.	GTC
8/03/88	1642	29 days	12.1 ft.	528.7		JF
8/22/88	---	48 days	10.4 ft.	530.4		LSD
1/15/90	1440	---	5.5 ft.	535.3		SFP
8/19/91	1510	---	12.6 ft.	528.2		JGT
8/21/91	1019	---	12.9 ft.	527.9		JGT
8/26/91	0920	---	13.9 ft.	526.9		JGT
9/06/91	---	---	15.0 ft.	525.3		MJC
10/04/91	---	---	19.2 ft.	521.6		JM

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE
LOCATION: BRIGHTON, NEW YORK
CLIENT: AMERICAN FILTRONA
CONTRACTOR: ROCHESTER DRILLING CO.
DRILLER: R. BAUER H&A REPRESENTATIVE: J. FITCH
INSTALLATION DATE 6 JULY 1988

FILE NO. 70007-41
WELL NO. OW103-S
BORING NO. B103-S
LOCATION See Plan
SHEET 1 OF 2

SURVEY DATUM NGVD

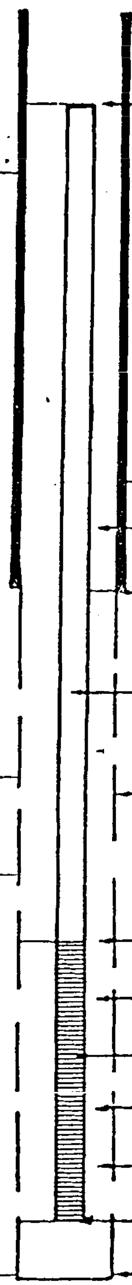
GROUND ELEVATION 541.5

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

-LACUSTRINE-
SILT, little clay
to
Clayey SILT

24.5 ft.

CEMENT/ BENTONITE GROUT
11.6 ft.
BENTONITE PELLETS
13.5 ft.
#4 QUARTZ SAND
24.5 ft.



~~ELEVATION OR~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF CASING OR ~~ROADWAY BOX~~	2.2 ft.
~~ELEVATION OR~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF RISER PIPE.	2.0 ft.
THICKNESS OF SURFACE SEAL	11.6 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
~~ELEVATION~~ DEPTH OF BOTTOM OF CASING	2.8 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~ DEPTH OF BOTTOM OF RISER	14.5 fi.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 ft.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION~~ DEPTH OF BOTTOM OF WELLSCREEN	24.5 fi.
~~ELEVATION~~ DEPTH OF BOTTOM OF BOREHOLE	24.5 ft.

[FIGURES REFER TO: EL. DEPTH "]

WELL SUMMARY: 16.5 ft. (LENGTH OF RISER PIPE) + 10.0 ft. (LENGTH OF WELLSCREEN) = 26.5 ft. (TOTAL LENGTH)

H & A FORM SY 12

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW103-S | ELEVATION SUBTRAHEND 541.5 | FILE NO. 70007-41

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 8/88	1150	1.5 days	24.0 ft.	517.5		JGT/NLR
7/11/88	1036	6 days	9.2 ft.	532.3		JF
7/12/88	0816	7 days	17.7 ft.	523.8		JF
7/12/88	1300+	**well developed by drillers.				
7/18/88	1650	13 days	12.1 ft.	529.4	Measured by General Testing Corp.	GTC
8/03/88	1646	29 days	5.2 ft.	536.3		JF
8/22/88	---	48 days	6.5 ft.	535.0		LSD
1/15/90	1453	---	2.9 ft.	538.6		SFP
8/19/91	1456	---	8.9 ft.	532.6		JGT
8/21/91	1022	---	9.2 ft.	532.3		JGT
8/26/91	0925	---	9.7 ft.	531.8		JGT
9/04/91	---	---	10.6 ft.	530.9		MJC
9/05/91	---	---	11.0 ft.	530.5		MJC
10/04/91	---	---	14.2 ft.	527.3		JM

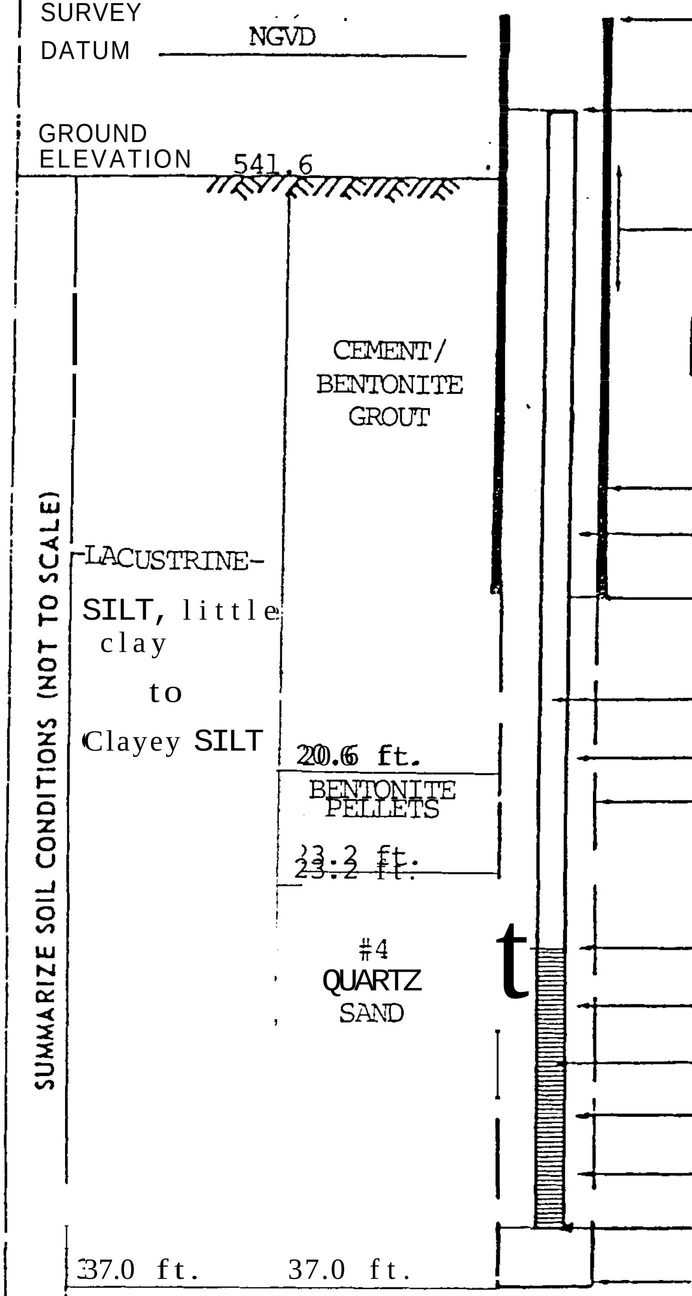
H & A of New York
d Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE	FILE NO. 70007-41
LOCATION: BRIGHTON, NEW YORK	WELL NO. OW103-D
CLIENT: AMERICAN FILTRONA	BORING NO. B103-D
CONTRACTOR: ROCHESTER DRILLING CO.	LOCATION See Plan
DRILLER: R. BAUER H&A REPRESENTATIVE: J. FITCH	
INSTALLATION DATE 6 JULY 1988	SHEET 1 OF 2

SURVEY DATUM NGVD

GROUND ELEVATION 541.6



~~ELEVATION~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF CASING OR ~~ROADBOX~~ ~~WAY BOX~~	2.1 ft.
~~ELEVATION~~ STICKUP ABOVE GROUND SURFACE OF RISER PIPE.	1.9 ft.
THICKNESS OF SURFACE SEAL	20.6 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
~~ELEVATION~~/DEPTH OF BOTTOM OF CASING	2.9 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~/DEPTH OF BOTTOM OF RISER	25.0 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Scneauie 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sad
~~ELEVATION~~/DEPTH OF BOTTOM OF WELLSCREEN	35.0 ft.
~~ELEVATION~~/DEPTH OF BOTTOM OF BOREHOLE	37.0 ft.

[FIGURES REFER TO: EL. ____ DEPTH X]

WELL SUMMARY: 26.9 ft. (LENQTH OF RISER PIPE) + 10.0 ft. (LENGTH OF WELLSCREEN) = 36.9 ft. (TOTAL LENGTH)

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW103-D

ELEVATION SUBTRAHEND 541.6

FILE NO. 70007-41

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 7/88	0755	15 hrs.	34.6 ft.	507.0		JF
7/ 8/88	1148	1.5 days	30.5 ft.	511.1		JGT/NLR
7/11/88	1038	5 days	20.1 ft.	521.5		JF
7/12/88	0814	6 days	16.5 ft.	525.1		JF
7/12/88	1300+	**well developed by drillers**				
7/18/88	1650	12 days	9.6 ft.	532.0	Measured by General Testing Corp.	GTC
8/03/88	1646	28 days	6.6 ft.	535.0		JF
8/22/88	---	47 days	7.6 ft.	534.0		LSD
1/15/90	1450	---	4.6 ft.	537.0		SFP
8/19/91	1500	---	9.6 ft.	532.0		JGT
8/21/91	1025	---	9.9 ft.	531.7		JGT
8/26/91	0923	---	10.3 ft.	531.3		JGT
9/04/91	---	---	11.0 ft.	530.6		MJC
9/05/91	---	---	11.5 ft.	530.1		MJC
10/04/91	---	---	14.0 ft.	527.6		JM

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

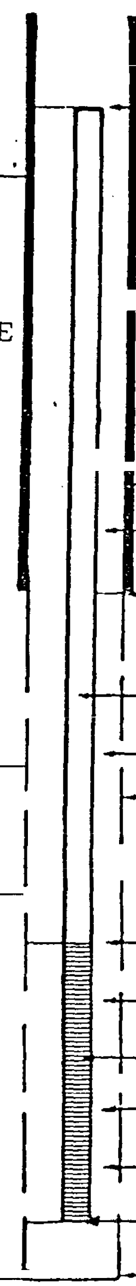
OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE
LOCATION: BRIGHTON, NEW YORK
CLIENT: AMERICAN FILTRONA
CONTRACTOR: ROCHESTER DRILLING CO.
DRILLER: T. SMITH   H&A REPRESENTATIVE: J. FITCH
INSTALLATION DATE 12 JULY 1988

FILE NO. 70007-41
WELL NO. OW104-S
BORING NO. B104-S
LOCATION See Plan
SHEET 1 OF 2

SURVEY DATUM NGVD

GROUND ELEVATION 542.7



SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

Soil	Depth / Backfill
-LACUSTRINE- SILT, little clay to Clayey SILT	CEMENT/ BENTONITE GROUT
	10.5 ft.
	BENTONITE
	12.8 ft.
	#4 QUARTZ SAND
24.0 ft.	24.0 ft.

~~ELEVATION~~/STICKUP ABOVE ~~ROAD~~ GROUND SURFACE OF CASING OR ~~ROAD WAY BOX~~	2.4 ft.
~~ELEVATION~~/STICKUP ABOVE ~~ROAD~~ GROUND SURFACE OF RISER PIPE.	2.2 ft.
THICKNESS OF SURFACE SEAL	10.5 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 ft.
~~ELEVATION~~/DEPTH OF BOTTOM OF CASING	2.6 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~/DEPTH OF BOTTOM OF RISER	14.0 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION~~/DEPTH OF BOTTOM OF WELLSCREEN	24.0 ft.
~~ELEVATION~~/DEPTH OF BOTTOM OF BOREHOLE	24.0 ft.

[FIGURES REFER TO: EL. ____ DEPTH X]

WELL SUMMARY: 16.2 ft. (LENGTH OF RISER PIPE) + 10.0 ft. (LENGTH OF WELLSCREEN) = 26.2 ft. (TOTAL LENGTH)

H&A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW104-S

ELEVATION SUBTRAHEND 542.7

FILE NO. 70007-41

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/12/88	1230	2 hours	dry	—		JF
7/18/88	1705	6 days	20.1 ft.	522.6	Measured by Genral Testing Corp.	GTC
8/03/88	1650	22 days	8.7 ft.	534.0		JF
8/22/88	---	41 days	6.0 ft.	536.7		LSD
1/15/90	1507	---	4.0 ft.	538.7		SFP
8/19/91	1535	---	7.6 ft.	535.1		JGT
8/21/91	1042	---	7.6 ft.	535.1		JGT
8/26/91	0932	---	7.7 ft.	535.0		JGT
9/06/91	---	---	7.4 ft.	535.3		MJC
9/12/91	---	---	17.8 ft.	524.9		MJC
10/04/91	---	---	8.1 ft.	534.6		JM

H&A JAN 79

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

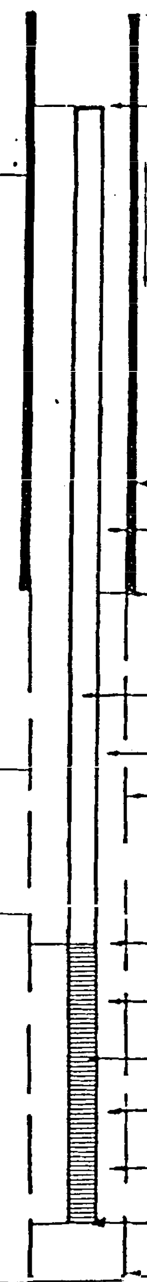
OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE
LOCATION: BRIGHTON, NEW YORK
CLIENT: AMERICAN FILTRONA
CONTRACTOR: ROCHESTER DRILLING CO.
DRILLER: L. PARKER H&A REPRESENTATIVE: J. TALPEY
INSTALLATION DATE 7 JULY 1988

FILE NO. 70007-41
WELL NO. OW104-D
BORING NO. B104-D
LOCATION See Plan
SHEET 1 OF 2

SURVEY DATUM NGVD

GROUND ELEVATION 542.7



SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

-LACUSTRINE-
SILT, little clay
to
clayey SILT
38.5 ft.

CEMENT/ BENTONITE GROUT
24.7 ft.
BENTONITE PELLETS
26.9 ft.
#4 QUARTZ SAND
38.5 ft.

STICKUP ABOVE GROUND SURFACE OF CASING OR	3.1 ft.
STICKUP ABOVE GROUND SURFACE OF RISER PIPE.	2.9 ft.
THICKNESS OF SURFACE SEAL	24.7 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
DEPTH OF BOTTOM OF CASING	1.9 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
DEPTH OF BOTTOM OF RISER	28.4 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
DEPTH OF BOTTOM OF WELLSCREEN	38.4 ft.
DEPTH OF BOTTOM OF BOREHOLE	38.5 ft.

[FIGURES REFER TO: EL. ____ DEPTH ^]

WELL SUMMARY: 31.1 ft. (LENGTH OF RISER PIPE) + 10.0 ft. (LENGTH OF WELLSCREEN) = 41.1 ft. (TOTAL LENGTH)

H & A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW104-D
ELEVATION SUBTRAHEND 542.7
FILE NO. 70007-41

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 8/88	1155	1 day	34.0 ft.	508.7		JGT/NLR
7/11/88	1034	4 days	18.9 ft.	523.8		J-!?
7/12/88	0833	5 days	16.6 ft.	526.1		J-!?
7/12/88	1300+	5 days	**well developed by drillers**			
7/18/88	1705	11 days	-14.4 ft.	528.3	Measured by General Testing Corp.	GTC
8/03/88	1650	27 days	14.0 ft.	528.7		JF
8/22/88	---	46 days	14.9 ft.	527.8		LSD
1/15/90	1502	---	14.5 ft.	528.2		SFP
8/19/91	1530	---	15.6 ft.	527.1		JGT
8/21/91	1043	---	15.7 ft.	527.0		JGT
8/26/91	0929	---	15.8 ft.	526.9		JGT
9/05/91	---	---	16.2 ft.	526.5		MJC
9/07/91	---	---	17.4 ft.	525.3		MJC
10/04/91	---	---	16.6 ft.	526.1		JM

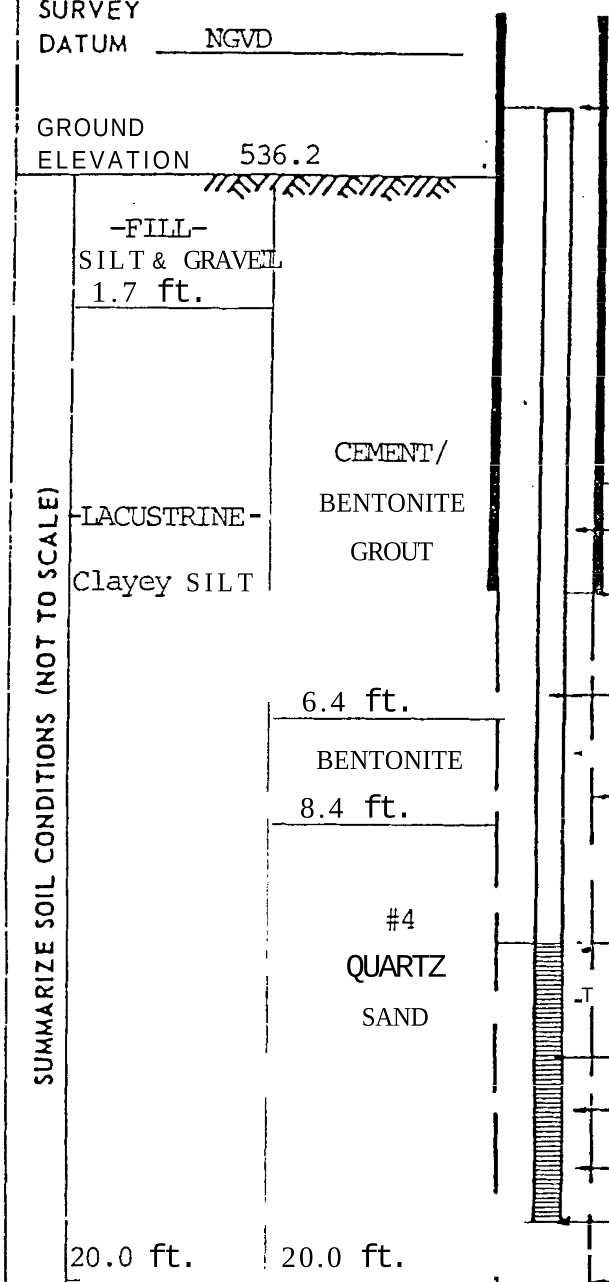
H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT:	DOLLINGER SITE	FILE NO.	70007-41
LOCATION:	BRIGHTON, NEW YORK	WELL NO.	OW105-S
CLIENT:	AMERICAN FILTRONA	BORING NO.	B105-S
CONTRACTOR:	ROCHESTER DRILLING CO.	LOCATION	See Plan
DRILLER:	R. BAUER — H&A REPRESENTATIVE: N. REIGLE		
INSTALLATION DATE	8 JULY 1988	SHEET	1 OF 2

SURVEY DATUM NGVD

GROUND ELEVATION 536.2



~~ELEVATION OR~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF CASING OR ~~ROAD BOX~~	2.3 ft.
~~ELEVATION OR~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF RISER PIPE.	2.1 ft.
THICKNESS OF SURFACE SEAL	6.4 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
~~ELEVATION~~ DEPTH OF BOTTOM OF CASING	2.7 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~ DEPTH OF BOTTOM OF RISER	10.0 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION~~ DEPTH OF BOTTOM OF WELLSCREEN	20.0 ft.
~~ELEVATION~~ DEPTH OF BOTTOM OF BOREHOLE	20.0 ft.

[FIGURES REFER TO: EL. DEPTH "]

WELL SUMMARY: 12.1 ft. (LENGTH OF RISER PIPE) + 10.0 ft. (LENGTH OF WELLSCREEN) = 22.1 ft. (TOTAL LENGTH)

H & A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW105-S

ELEVATION SUBTRAHEND 536.2

FILE NO. 70007-41
PAGE NO. 2 of 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 8/88	1205	2 hrs.	dry	---		JGT/NLR
7/11/88	1028	3 days	5.4 ft.	530.8		JF
7/12/88	0821	4 days	5.5 ft.	530.7		JF
7/12/88	1300+	**well developed by drillers*"				
7/18/88	1735	10 days	. 2.9 ft.	533.3	Measured by General Testing Corp.	GTC
8/03/88	1702	26 days	3.7 ft.	532.5		JF
8/22/88	---	45 days	4.2 ft.	532.0		LSD
1/15/90	1525	---	2.6 ft.	533.6		SFP
8/21/91	0947	---	3.2 ft.	533.0		JGT
8/26/91	0946	---	3.5 ft.	532.7		JGT
9/05/91	---	---	3.7 ft.	532.5		MJC
9/08/91	---	---	3.7 ft.	532.5		MJC
10/04/91	---	---	3.3 ft.	532.9		JM

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE	FILE NO. 70007-41
LOCATION: BRIGHTON, NEW YORK	WELL NO. OW105-D
CLIENT: AMERICAN FILTRONA	BORING NO. B105-D
CONTRACTOR: ROCHESTER DRILLING CO.	LOCATION See Plan
DRILLER: R. BAUER H&A REPRESENTATIVE: J. TALPEY	
INSTALLATION DATE 7 JULY 1988	SHEET 1 OF 2

SURVEY DATUM NGVD

GROUND ELEVATION 536.1

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

- FILL- SILT & GRAVEL — 1.7 ft.
- LACUSTRINE- Clayey SILT — 35.1 ft.

Backfill:
- CEMENT/ BENTONITE GROUT — 21.8 ft.
- BENTONITE PELLETS — 24.1 ft.
- #4 QUARTZ SAND — 35.1 ft.

~~ELEVATION OR~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF CASING OR ~~ROAD BOX~~	2.1 ft.
~~ELEVATION OR~~ STICKUP ABOVE ~~BELOW~~ GROUND SURFACE OF RISER PIPE.	1.9 ft.
THICKNESS OF SURFACE SEAL	21.8 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
~~ELEVATION~~/DEPTH OF BOTTOM OF CASING	2.9 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~/DEPTH OF BOTTOM OF RISER	25.1 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION~~/DEPTH OF BOTTOM OF WELLSCREEN	35.1 ft.
~~ELEVATION~~/DEPTH OF BOTTOM OF BOREHOLE	35.1 ft.

[FIGURES REFER TO: EL. ____ DEPTH ✓]

WELL SUMMARY: 27.0 ft. (LENGTH OF RISER PIPE) + 10.0 ft. (LENGTH OF WELLSCREEN) = 37.0 ft. (TOTAL LENGTH)

H & A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW105-D
ELEVATION SUBTRAHEND 536.1
FILE NO. 70007-41
PAGE NO. 2 of 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/ 8/88	1200	1 day	0.4 ft.	535.7		JGT/NLR
7/11/88	1030	4 days	15.4 ft.	520.7		JF
7/12/88	0823	5 days	12.8 ft.	523.3		JF
7/12/88	1300+	**5 days**	**well developed by drillers**			
7/18/88	1735	11 days	8.8 ft.	527.3	Measured by General Testing Corp.	GTC
8/03/88	1702	27 days	6.5 ft.	529.6		JF
8/22/88	---	46 days	**6.8** ft.	529.3		LSD
1/15/90	1535	---	5.1 ft.	531.0		SFP
8/21/91	0945	---	5.9 ft.	530.2		JGT
8/26/91	0947	---	5.9 ft.	530.2		JGT
9/05/91	---	---	5.9 ft.	530.2		MJC
10/04/91	---	---	**6.7** ft.	529.4		JM

H&A Jan.79 5YA

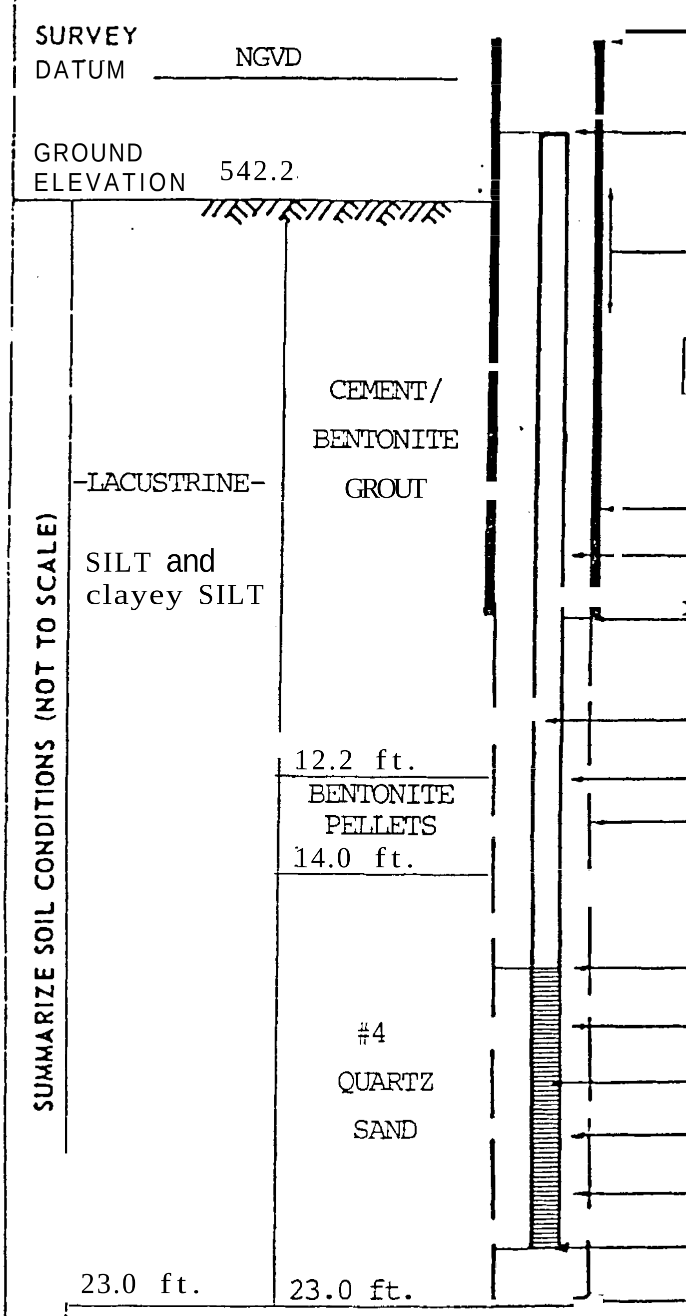
H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE	FILE NO. 70007-41
LOCATION: BRIGHTON, NEW YORK	WELL NO. OW106-S
CLIENT: AMERICAN FILTRONA	BORING NO. B106-S
CONTRACTOR: ROCHESTER DRILLING CO.	LOCATION See Plan
DRILLER: T. SMITH H&A REPRESENTATIVE: J. FITCH	
INSTALLATION DATE 11 JULY 1988	SHEET 1 OF 2

SURVEY DATUM NGVD

GROUND ELEVATION 542.2



STICKUP ABOVE GROUND SURFACE OF CASING	2.5 ft.
STICKUP ABOVE GROUND SURFACE OF RISER PIPE.	2.3 ft.
THICKNESS OF SURFACE SEAL	12.2 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
DEPTH OF BOTTOM OF CASING	2.5 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
DEPTH OF BOTTOM OF RISER	15.0 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Schedule 40 slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
DEPTH OF BOTTOM OF WELLSCREEN	23.0 ft.
DEPTH OF BOTTOM OF BOREHOLE	23.0 ft.

[FIGURES REFER TO: EL. ___ DEPTH ✓]

WELL SUMMARY: 17.3 ft. (LENGTH OF RISER PIPE) + 8.0 ft. (LENGTH OF WELLSCREEN) = 25.3 ft. (TOTAL LENGTH)

H&A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW106-S

ELEVATION SUBTRAHEND 542.2

FILE NO. 70007-41
PAGE NO. 2 of 2

DATE		ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/12/88	1000	17 hrs.	dry	---		JF
7/18/88	1525	6 days	11.7 ft.	530.5	Measured by General Testing Corp.	GTC
8/03/88	1654	22 days	4.7 ft.	537.5		J-F
8/22/88	---	41 days	6.0 ft.	536.2		LSD
1/15/90	1514	---	2.6 ft.	539.6		SFP
8/19/91	1405	---	7.9 ft.	534.3		JGT
8/20/91	1033	---	8.1 ft.	531.4		JGT
8/26/91	0937	---	8.3 ft.	533.9		JGT
9/05/91	---	---	8.4 ft.	533.8		MJC
10/04/91	---	---	12.1 ft.	530.1		JM

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

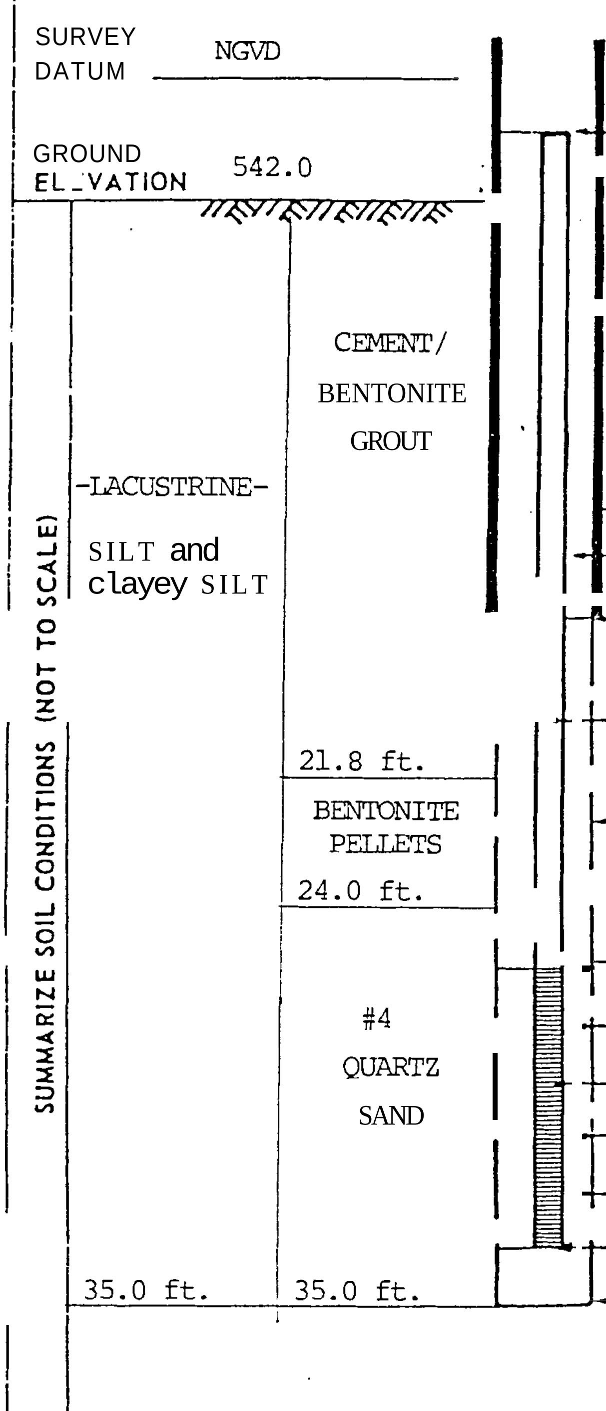
OVERBURDEN OBSERVATION WELL REPORT

PROJECT: DOLLINGER SITE
LOCATION: BRIGHTON, NEW YORK
CLIENT: AMERICAN FILTRONA
CONTRACTOR: ROCHESTER DRILLING CO.
DRILLER: T. SMITH H&A REPRESENTATIVE: J. FITCH
INSTALLATION DATE 11 JULY 1988

FILE NO. 70007-41
WELL NO. OW106-D
BORING NO. B106-D
LOCATION See Plan
SHEET 1 OF 2

SURVEY DATUM NGVD

GROUND ELEVATION 542.0



~~ELEVATION OR~~ STICKUP ABOVE/~~BELOW~~ GROUND SURFACE OF CASING ~~OR ROAD BOX~~	2.7 ft.
~~ELEVATION~~ OR STICKUP ABOVE/~~BELOW~~ GROUND SURFACE OF RISER PIPE.	2.5 ft.
THICKNESS OF SURFACE SEAL	21.8 ft.
TYPE OF SURFACE SEAL	Cement/Bentonite Grout
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Steel Tube
INSIDE DIAMETER OF CASING	4.0 in.
~~ELEVATION~~/DEPTH OF BOTTOM OF CASING	2.3 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND RISER	Cement/Bentonite Grout
DIAMETER OF BOREHOLE	8.0 in.±
TYPE OF COUPLING (THREADED, SOLVENT WELDED, WELDED, ETC.)	Threaded
~~ELEVATION~~/DEPTH OF BOTTOM OF RISER	25.0 ft.
TYPE OF WELLSCREEN OR MANUFACTURER	Slotted PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	#4 Quartz Sand
~~ELEVATION~~/DEPTH OF BOTTOM OF WELLSCREEN	35.0 ft.
~~ELEVATION~~/DEPTH OF BOTTOM OF BOREHOLE	35.0 ft.

[FIGURES REFER TO: EL. ____ DEPTH ^]

WELL SUMMARY: 27.5 ft. (LENGTH OF RISER PIPE) + 10.0 ft. (LENGTH OF WELLSCREEN) = 37.5 ft. (TOTAL LENGTH)

H & A FORM 59 SEP 72

H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

GROUNDWATER LEVEL MONITORING REPORT

OW/PZ NUMBER: OW106-D
ELEVATION SUBTRAHEND 542.0
FILE NO. 70007-41

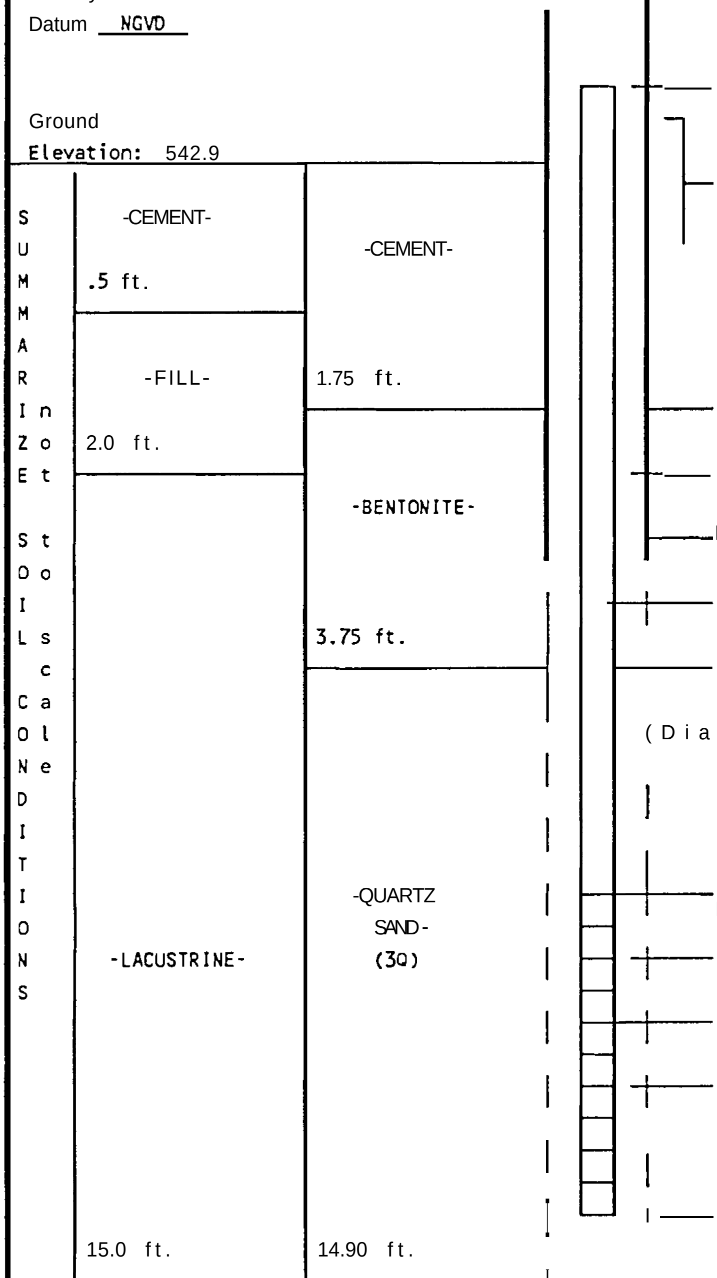
DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM G.S.	ELEVATION OF WATER	REMARKS	READ BY
7/11/88	1022	3 days	30.4 ft.	511.6	Measured in augers	JF
7/12/88	0827	4 hrs.	12.4 ft.	529.6		JF
7/12/88	1300+	**well developed by driller				
7/18/88	1525	10 days	9.4 ft.	532.6	Measured by General Testing Corp.	GTC
8/03/88	1654	26 days	8.5 ft.	533.5		JF
8/22/88	---	45 days	9.2 ft.	532.8		LSD
1/15/90	1518	---	7.0 ft.	535.0		SFP
8/19/91	1400	---	10.6 ft.	531.4		JGT
8/21/91	1035	---	10.7 ft.	531.3		JGT
8/26/91	0940	---	10.9 ft.	531.1		JGT
9/05/91	---	---	11.0 ft.	531.0		MJC
10/04/91	---	---	9.1 ft.	532.9		JM

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:	DOLLINGER RI/FS	FILE NO:	70007-43
LOCATION:	BRIGHTON, NEW YORK	WELL NO:	OW-201-S
CLIENT:	DOLLINGER - A FILTRONA COMPANY	LOCATION:	SEE PLAN
CONTRACTOR:	NOTHNAGLE DRILLING		
DRILLER:	N. SHORT RIG TYPE: DIEDRICH D-25	SHEET:	1 OF 2
INSTALLATION DATE:	19 AUGUST 1991	INSPECTOR:	M. CORRIGAN

Survey Datum NGVD

Ground Elevation: 542.9



Depth below ground surface of protective casing.	0.0 ft.
Depth below ground surface of riser pipe.	0.3 ft.
Thickness of Surface Seal	3.75 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Cement
Type of Protective Casing	Roadway Box
Inside Diameter of Protective Casing	8.0 in.
Depth of Bottom of Protective Casing	1.0 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Bentonite
(Diameter of Borehole	8.0 in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	4.8 ft.
Type of Wellscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Uellscreen	14.6 ft.
Depth of Bottom of Borehole	15.0 ft.

Remarks:

Well No. OW-201-S

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW201-S	GROUND SURFACE ELEVATION: 542.9	FILE NO. 70007-43 PAGE NO. 2 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM TOC	DEPTH OF WATER FROM GS	ELEVATION OF WATER	REMARKS	READ BY
8/21/91	10:57	2 days	4.3	4.6	538.3	Measured from top of inner casing; ground surface (concrete floor slab) at top of outer casing	JGT
8/26/91	10:23	7 days	4.6	4.9	538.0		JGT
9/6/91			3.6		539.0		MJC
9/12/91			3.9		538.7		MJC
10/07/91			9.2		533.4		JM
10/11/91			6.2		536.4		JM

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:	DOLLINGER RI/FS	FILE NO.:	70007-43
LOCATION:	BRIGHTON, NEW YORK	WELL NO.:	OW-201-0
CLIENT:	DOLLINGER - A FILTRONA COMPANY	LOCATION:	SEE PLAN
CONTRACTOR:	NOTHNAGLE DRILLING		
DRILLER:	N. SHORT RIG TYPE: DIEDRICH D-25	SHEET:	1 OF 2
INSTALLATION DATE:	19 AUGUST 1991	INSPECTOR:	M. CORRIGAN

Survey Datum NGVD

Ground Elevation: 542.9

SUMMARIZE SOIL CONDITIONS / Install Scale

Soil Conditions	Install
-CEMENT- .5 ft.	-CEMENT- 1.5 ft.
-FILL- 2.0 ft.	-BENTONITE/ CEMENT GROUT- 15.0 ft.
-LACUSTRINE- 15.5 ft.	-BENTONITE- 17.0 ft.
-LACUSTRINE- 28.0 ft.	-QUARTZ SAND- (3Q) 28.0 ft.

Depth below ground surface of protective casing.	0.0 ft.
Depth below ground surface of riser pipe.	0.3 ft.
Thickness of Surface Seal	17.0 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Cement
Type of Protective Casing	Roadway Box
Inside Diameter of Protective Casing	8.0 in.
Depth of Bottom of Protective Casing	1.0 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Bentonite/Cement Grout
Diameter of Borehole	8.0 in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	17.9 ft.
Type of Wellscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Arourd Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	25.0 ft.
Depth of Bottom of Borehole	28.0 ft.

Remarks:

Well No. OU-201-D

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW201-D	GROUND SURFACE ELEVATION: 542.9	FILE NO. 70007-43 PAGE NO. 2 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM TOC		ELEVATION OF WATER	REMARKS	READ BY
				GS			
8/21/91	10:54	5 days	25.6	25.8	517.0	Measured from top of inner casing; ground surface (concrete floor slab) at top of outer casing	JGT
8/26/91	10:21	10 days	22.8	23.1	519.8		JGT
9/6/91			28.0		514.6		MJC
9/12/91			24.3		518.3		MJC
10/07/91			9.9		532.7		JM
10/11/91			9.7		532.9		JM

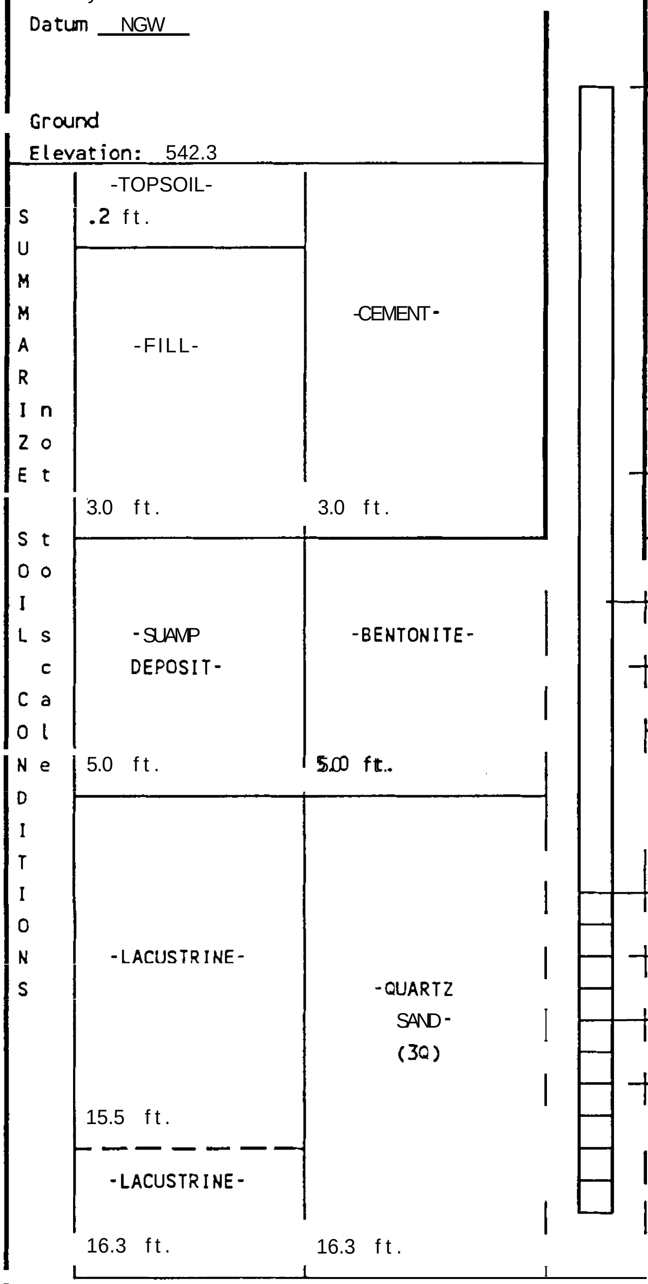
H&A OF NEU YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: DOLLINGER RI/FS
LOCATION: BRIGHTON, NEW YORK
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING
DRILLER: F. GRATTAN RIG TYPE: DIEDRICH D-50
INSTALLATION DATE: 26 AUGUST 1991

FILE NO.: 70007-43
WELL NO.: OW-202-S
LOCATION: SEE PLAN
SHEET: 1 OF 2
INSPECTOR: M. CORRIGAN

Survey
Datum NGW

Ground
Elevation: 542.3



Stickup above ground surface of protective casing.	2.6 ft.
Stickup above ground surface of riser pipe.	2.4 ft.
Thickness of Surface Seal	5.0 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Cement
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom bf Protective Casing	2.4 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Bentonite
Diameter of Borehole	10.0 in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	6.1 ft.
Type of Wellscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Uellscreen	16.0 ft.
Depth of Bottom of Borehole	16.3 ft.

Remarks:

Well No. OW-202-S

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW202-S	GRWND SURFACE ELEVATION: 542.3	FILE NO. 70007-43 PAGE NO. 2 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM TOC	ELEVATION OF WATER	REMARKS	READ BY
9/5/91	1500		11.5	533.2	Measured from top of PVC riser.	MJC
9/11/91			11.5	533.2		MJC
10/04/91			12.9	531.8		JM

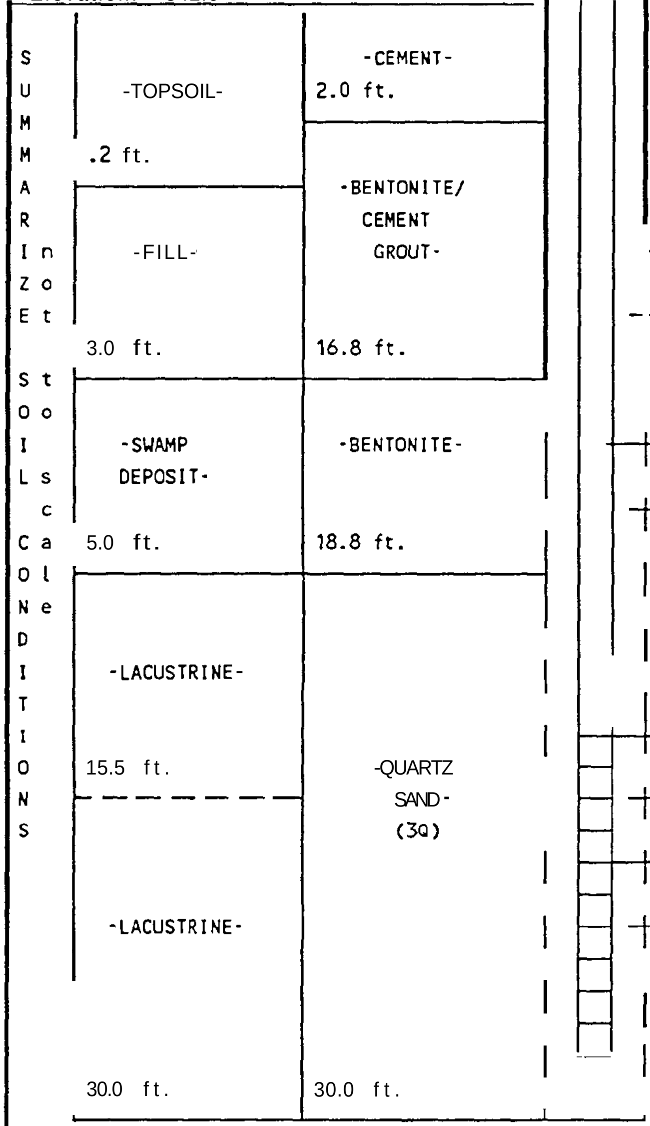
H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING ELL REPORT

PROJECT:	DOLLINGER RI/FS	FILE NO.:	70007-43
LOCATION:	BRIGHTON, NEW YORK	WELL NO.:	OW-202-D
CLIENT:	DOLLINGER - A FILTRONA COMPANY	LOCATION:	SEE PLAN
CONTRACTOR:	NOTHNAGLE DRILLING		
DRILLER:	N. SHORT RIG TYPE: DIEDRICH D-25	SHEET:	1 OF 2
INSTALLATION DATE:	23 AUGUST 1991	INSPECTOR:	M. CORRIGAN

Survey
Datum NGVD

Ground
Elevation: 542.6



Stickup above ground surface of protective casing.	2.7 ft.
Stickup above ground surface of riser pipe.	2.6 ft.
Thickness of Surface Seal	18.8 ft.
Type of Surface Seal [indicated all seals shouing depth, thickness and type]	Cement
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	2.30 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Bentonite/Cement Grout
Diameter of Borehole	10.0 in.
Type of coupling (threaded, uelded, etc.)	Threaded
Depth of Bottom of Riser	19.9 ft.
Type of Wellscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Arourd Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	30.0 ft.
Depth of Bottom of Borehole	30.0 ft.

Remarks:

Well No. OW202-D

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW202-D

GROUND SURFACE ELEVATION: 542.6

FILE NO. 70007-43

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM TOC	ELEVATION OF WATER	REMARKS	READ BY
9/05/91	1505		28.2	517.0	Measured from top of pvc riser	MJC
9/11/91			30.1	515.1		MJC
10/04/91			24.2	521.0		JM

H&A OF NEU YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	OVERBURDEN GRWNDUATER MONITORING WELL REPORT

PROJECT:	DOLLINGER RI/FS	FILE NO.:	70007-43
LOCATION:	BRIGHTON, NEU YORK	WELL NO.:	OW-203-S
CLIENT:	DOLLINGER - A FILTRONA COMPANY	LOCATION:	SEE PLAN
CONTRACTOR:	NOTHNAGLE DRILLING		
DRILLER:	N. SHORT RIG TYPE: DIEDRICH D-50	SHEET:	1 OF 2
INSTALLATION DATE:	20 AUGUST 1991	INSPECTOR:	M. CORRIGAN

Survey
Datum NGVD

Ground
Elevation: 542.5

SUMMARY OF SOIL CONDITIONS / IN ZONE SAMPLES

Soil	Depth	Backfill	Depth
-TOPSOIL-	0.4 ft.	-CEMENT-	2.5 ft.
-FILL-	4.0 ft.	-BENTONITE-	4.5 ft.
-LACUSTRINE-	13.5 ft.	-QUARTZ SAND- (3Q)	
-LACUSTRINE-	16.0 ft.		15.90 ft.

Item	Value
Stickup above ground surface of protective casing.	0.2 ft.
Depth below grourd surface of riser pipe.	0.1 ft.
Thickness of Surface Seal	4.5 ft.
Type of Surface Seal [indicated all seals showing depth, thickness ard type]	Cement
Type of Protective Casing	Roadway 8ox
Inside Diameter of Protective Casing	10.0 in.
Depth of Bottom of Protective Casing	1.0 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Arourd Riser	Bentonite
Diameter of Borehole	10.0 in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	5.7 ft.
Type of WelLscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Uellscreen	Quartz Sand
Depth of Bottom of Uellscreen	15.90 ft.
Depth of Bottom of Borehole	16.0 ft.

Remarks:

Well No. OW203-S

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW203-S	GROUND SURFACE ELEVATION: 542.5	FILE NO. 70007-43 PAGE NO. 2 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM TOC	ELEVATION OF WATER	REMARKS	READ BY
8/26/91	0956		TOC 7.8 / GS 8.1	534.6	Measured from top of inner casing; ground surface at top of outer casing	JGT
9/05/91	0915		8.6	533.8		MJC
9/11/91			7.6	534.8		MJC
10/04/01			8.2	534.2		JM

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

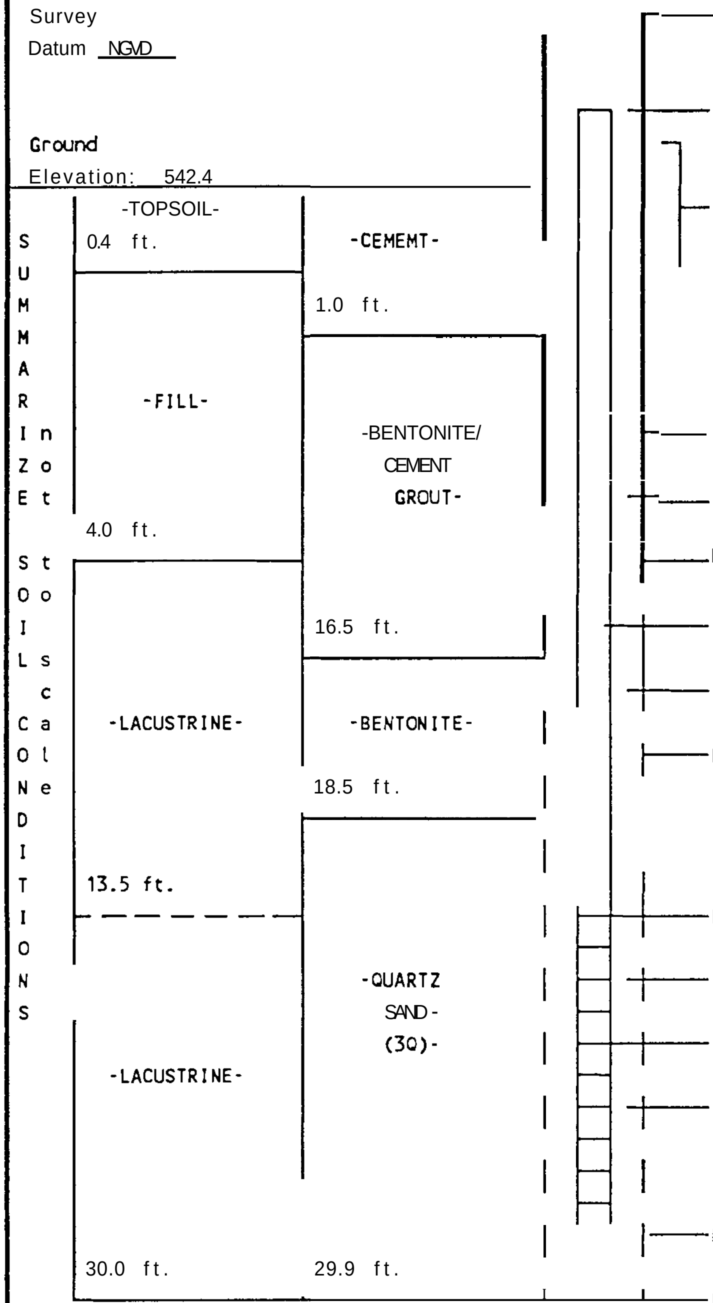
OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: DOLLINGER RI/FS
LOCATION: BRIGHTON, NEW YORK
CLIENT: DOLLINGER - A FILTRONA COMPANY
CONTRACTOR: NOTHNAGLE DRILLING
DRILLER: N. SHORT   RIG TYPE: DIEDRICH D-50
INSTALLATION DATE: 20 AUGUST 1991

FILE NO.: 70007-43
WELL NO.: OW-203-D
LOCATION: SEE PLAN
SHEET: 1 OF 2
INSPECTOR: M. CORRIGAN

Survey Datum NGVD

Ground Elevation: 542.4



Stickup above ground surface of protective casing.	0.1 ft.
Depth below ground surface of riser pipe.	0.2 ft.
Thickness of Surface Seal	18.5 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Cement
Type of Protective Casing	Roadway Box
Inside Diameter of Protective Casing	12.0 in.
Depth of Bottom of Protective Casing	1.0 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Bentonite/Cement Grout
Diameter of Borehole	10.0 in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	19.5 ft.
Type of WelLscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	29.90 ft.
Depth of Bottom of Borehole	30.0 ft.

Remarks:

Well No. OW-203-D

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW203-D

GRWND SURFACE ELEVATION: 542.4

FILE NO. 70007-43

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM TOC	ELEVATION OF WATER	REMARKS	READ BY
8/26/91	0958		TOC 18.2 GS 18.5	524.0	Measured from top of inner casing; ground surface at top of outer casing	
9/05/91	0920		28.5	513.7		MJC
9/12/91			26.5	515.7		MJC
10/04/01			20.1	522.1		JM

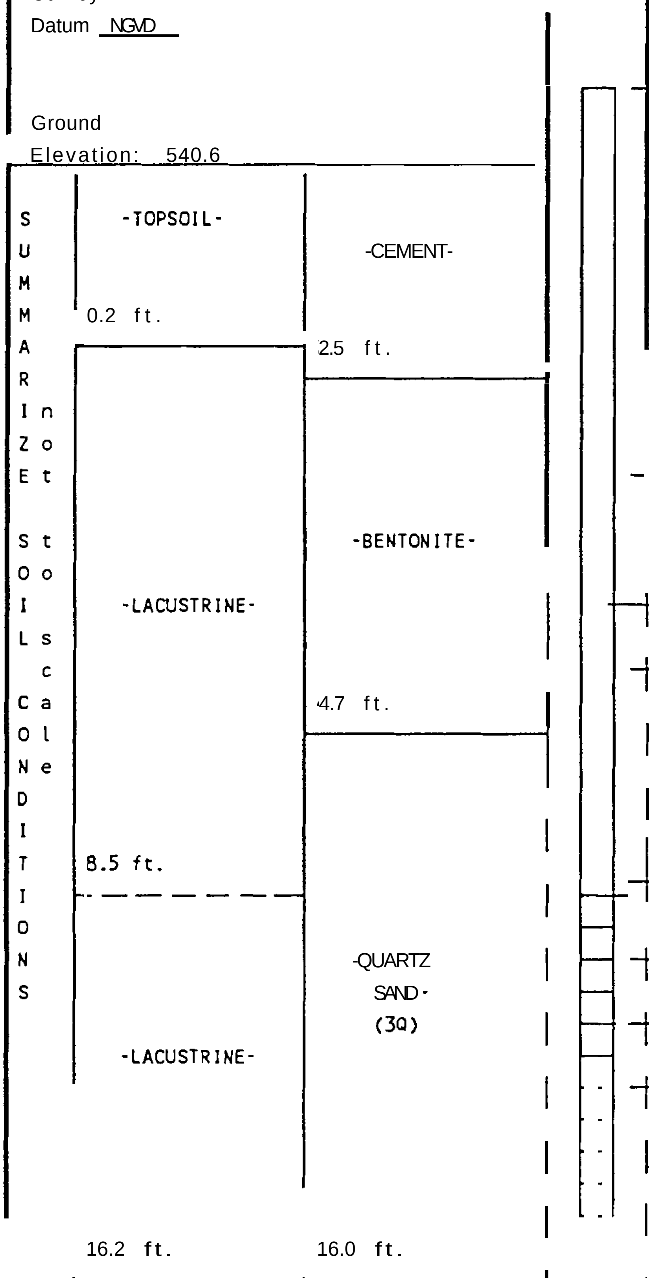
H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:	DOLLINGER RI/FS	FILE NO.:	70007-43
LOCATION:	BRIGHTON, NEW YORK	WELL NO.:	OW-204-S
CLIENT:	DOLLINGER - A FILTRONA COMPANY	LOCATION:	SEE PLAN
CONTRACTOR:	NOTHNAGLE DRILLING		
DRILLER:	N. SHORT RIG TYPE: DIEDRICH D-50	SHEET:	1 OF 2
INSTALLATION DATE:	22 AUGUST 1991	INSPECTOR:	M. CORRIGAN

Survey Datum NGVD

Ground Elevation: 540.6



Stickup above ground surface of protective casing.	3.0 ft.
Stickup above ground surface of riser pip.	2.9 ft.
Thickness of Surface Seal	4.7 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Cement
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	2.0 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Bentonite
Diameter of Borehole	10.0 in.
Type of coupling (threaded, uelded, etc.)	Threaded
Depth of Bottom of Riser	5.8 ft.
Type of Wellscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	16.0 ft.
Depth of Bottom of Borehole	16.2 ft.

Remarks:

Well No. OW-204-S

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW204-S

GROUND SURFACE ELEVATION: 540.6

FILE NO. 70007-43
PAGE NO. 2 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM TOC	ELEVATION OF WATER	REMARKS	READ BY
8/26/91	1005		TOC 17.3 GS 14.5	526.2	Measured from top of inner casing	JGT
9/05/91	0945		17.8	525.7		MJC
9/11/91			17.8	525.7		MJC
10/04/91			17.5	526.0		JM

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:	DOLLINGER RI/FS	FILE NO.:	70007-43
LOCATION:	BRIGHTON, NEW YORK	WELL NO.:	OW-204-D
CLIENT:	DOLLINGER - A FILTRONA COMPANY	LOCATION:	SEE PLAN
CONTRACTOR:	NOTHNAGLE DRILLING		
DRILLER:	N. SHORT RIG TYPE: DIEDRICH D-50	SHEET:	1 OF 2
INSTALLATION DATE:	21 AUGUST 1991	INSPECTOR:	M CORRIGAN

Survey Datum NGVD

Ground Elevation: 539.5

SUMMARY OF SOIL CONDITIONS / IN ZONE ST OO LS C CA OL NE D

Summary of Soil Conditions	Backfill
-TOPSOIL-	-CEMENT-
	1.75 ft.
0.2 ft.	-BENTONITE/ CEMENT GROUT-
-LACUSTRINE-	16.3 ft.
	-BENTONITE-
	18.3 ft.
8.5 ft.	
-LACUSTRINE-	-QUARTZ SAND- (3Q)
30.0 ft.	30.0 ft.

Stickup above ground surface of protective casing.	3.0 ft.
Stickup above ground surface of riser pipe.	2.8 ft.
Thickness of Surface Seal	18.3 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Cement
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	2.0 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Bentonite/Cement Grwt
Diameter of Borehole	10.0 in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	19.9 ft.
Type of Wellscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	30.0 ft.
Depth of Bottom of Borehole	30.0 ft.

Remarks:

Well No. OW-204-D

H&A OF NEU YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDUATER LEVEL MONITORING REPORT

WELL NUMBER: OW204-D	GROUND SURFACE ELEVATION: 539.5	FILE NO. 70007-43 PAGE NO. 2 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF UATER FROM TOC	ELEVATION OF UATER	REMARKS	READ BY
8/26/91	1002		TOC Dry / GS Dry	---	Measured from top of outer casing	JGT
9/05/91	0945		30.7	511.6		MJC
9/11/91			31.0	511.3		MJC
10/04/91			26.2	516.1		JM

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:	DOLLINGER RI/FS	FILE NO.:	70007-43
LOCATION:	BRIGHTON, NEW YORK	WELL NO.:	OW-205
CLIENT:	DOLLINGER - A FILTRONA COMPANY	LOCATION:	SEE PLAN
CONTRACTOR:	NOTHNAGLE DRILLING		
DRILLER:	N. SHORT RIG TYPE: DIEDRICH D-50	SHEET:	1 OF 2
INSTALLATION DATE:	31 AUGUST 1991	INSPECTOR:	M. CORRIGAN

Survey Datum NGVD

Ground Elevation: 542.7

SUMMARIZE SOIL CONDITIONS

Soil	Depth (ft.)	Seal/Backfill	Depth (ft.)
-LACUSTRINE-	15.5 ft.	-CEMENT-	2.0 ft.
-LACUSTRINE-	60.0 ft.	-BENTONITE/CEMENT GROUT-	57.0 ft.
-LACUSTRINE-	65.0 ft.	-BENTONITE-	60.5 ft.
-LACUSTRINE-	67.5 ft.	-QUARTZ SAND- (3Q)	82.6 ft.
-LACUSTRINE-	79.0 ft.		
-WEATHERED BEDROCK-	83.0 ft.		

Item	Value
Stickup above ground surface of protective casing.	2.3 ft.
Stickup above ground surface of riser pipe.	2.1 ft.
Thickness of Surface Seal	60.5 ft.
Type of Surface Seal [indicated all seals showing depth, thickness a d type]	Cement
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	2.7 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Bentonite/Cement Grout
Diameter of Borehole	10 in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	62.4 ft.
Type of Wellscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sad
Depth of Bottom of Uellscreen	82.6 ft.
Depth of Bottom of Borehole	83.0 ft.

Remarks:

Well No. OW-205

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDUATER LEVEL MONITORING REPCRT

WELL NUMBER: OW205	GROUND SURFACE ELEVATION: 542.7	FILE NO. 70007-43 PAGE NO. 2 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM TOC	ELEVATION OF WATER	REMARKS	READ BY
9/11/91			22.9	521.9	Measured from top of PVC riser	MJC
10/04/91			23.4	521.4		JM

APPENDIX D

Laboratory Soil Physical Testing Results

H&A OF NEW YORK
LABORATORY PERMEABILITY TEST REPORT

FILE NUMBER: 70007-43
DATE: October 1991

PROJECT: Dollinger Remedial Investigation
CLIENT: Dollinger - A Filtrona Company

EXPLORATION NUMBER: B202-D
SAMPLE NUMBER: S9
SAMPLE DEPTH (FEET): 16-18

SAMPLE TYPE: Shelby Tube
PERMEAMETER TYPE: Flexible Wall
PERMEANT: De-Aired Water

COMPACTION CHARACTERISTICS
METHOD: ---
MAXIMUM DRY DENSITY (PCF): ---
OPTIMUM WATER CONTENT (%): ---
PERCENT COMPACTION: ---

	INITIAL	FINAL
SAMPLE HEIGHT (CM):	8.10	8.10
DIAMETER (CM):	7.14	7.14
WET DENSITY (PCF):	132.8	136.3
DRY DENSITY (PCF):	115.8	115.8
WATER CONTENT (%):	14.7	17.7

TEST PRESSURES
CELL (PSI): 58.5
SAMPLE BOTTOM (PSI): 53.5
SAMPLE TOP (PSI): 50.0

GRADIENT: 30

STABILIZED FLOW RATE (CC/SEC): 4.61×10^{-5}

PERMEABILITY (CMISEC): 3.84×10^{-8}

COMMENTS:

H&A OF NEW YORK
LABORATORY PERMEABILITY TEST REPORT

FILE NUMBER: 70007-43
DATE: October 1991

PROJECT: Dollinger Remedial Investigation
CLIENT: Dollinger - A Filtrona Company

EXPLORATION NUMBER: B202-D
SAMPLE NUMBER: S6
SAMPLE DEPTH (FEET): 10-12

SAMPLE TYPE: Shelby Tube
PERMEAMETER TYPE: Flexible Wall
PERMEANT: De-Aired Water

COMPACTION CHARACTERISTICS
METHOD: ---
MAXIMUM DRY DENSITY (PCF): ---
OPTIMUM WATER CONTENT (%): ---
PERCENT COMPACTION: ---

	INITIAL	FINAL
SAMPLE HEIGHT (CM):	8.06	8.06
DIAMETER (CM):	7.27	7.27
WET DENSITY (PCF):	135.1	135.6
DRY DENSITY (PCF):	118.5	118.5
WATER CONTENT (%):	14.0	14.4

TEST PRESSURES
CELL (PSI): 58.4
SAMPLE BOTTOM (PSI): 53.4
SAMPLE TOP (PSI): 50.0

GRADIENT: 30

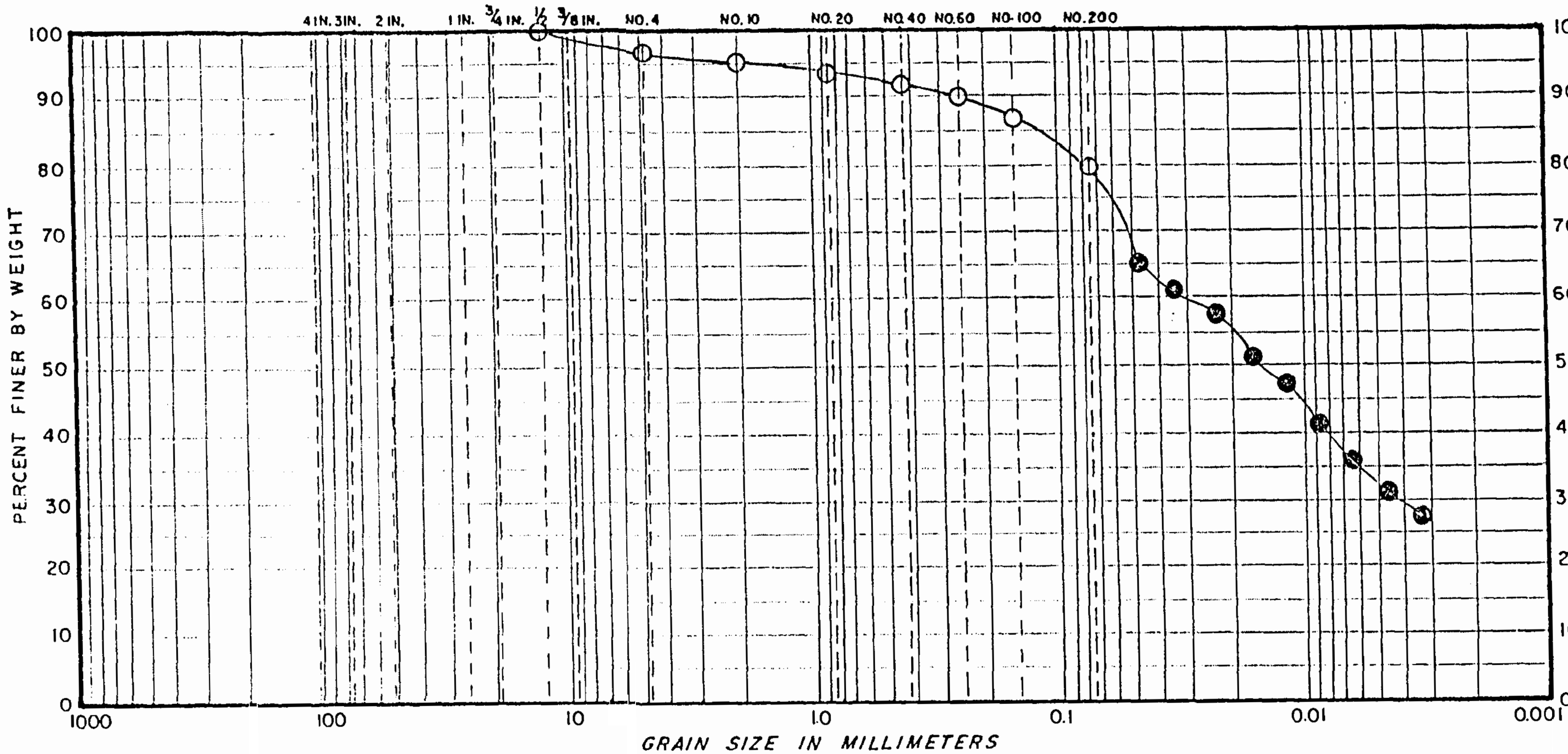
STABILIZED FLOW RATE (CC/SEC): 3.01×10^{-4}

PERMEABILITY (CM/SEC): 2.42×10^{-7}

COMMENTS:

H&A FORM OCT. 75

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

UNIFIED SOIL CLASSIFICATION SYSTEM, CORPS OF ENGINEERS U.S. ARMY

○ B203 D 100-12.0 … fine sand

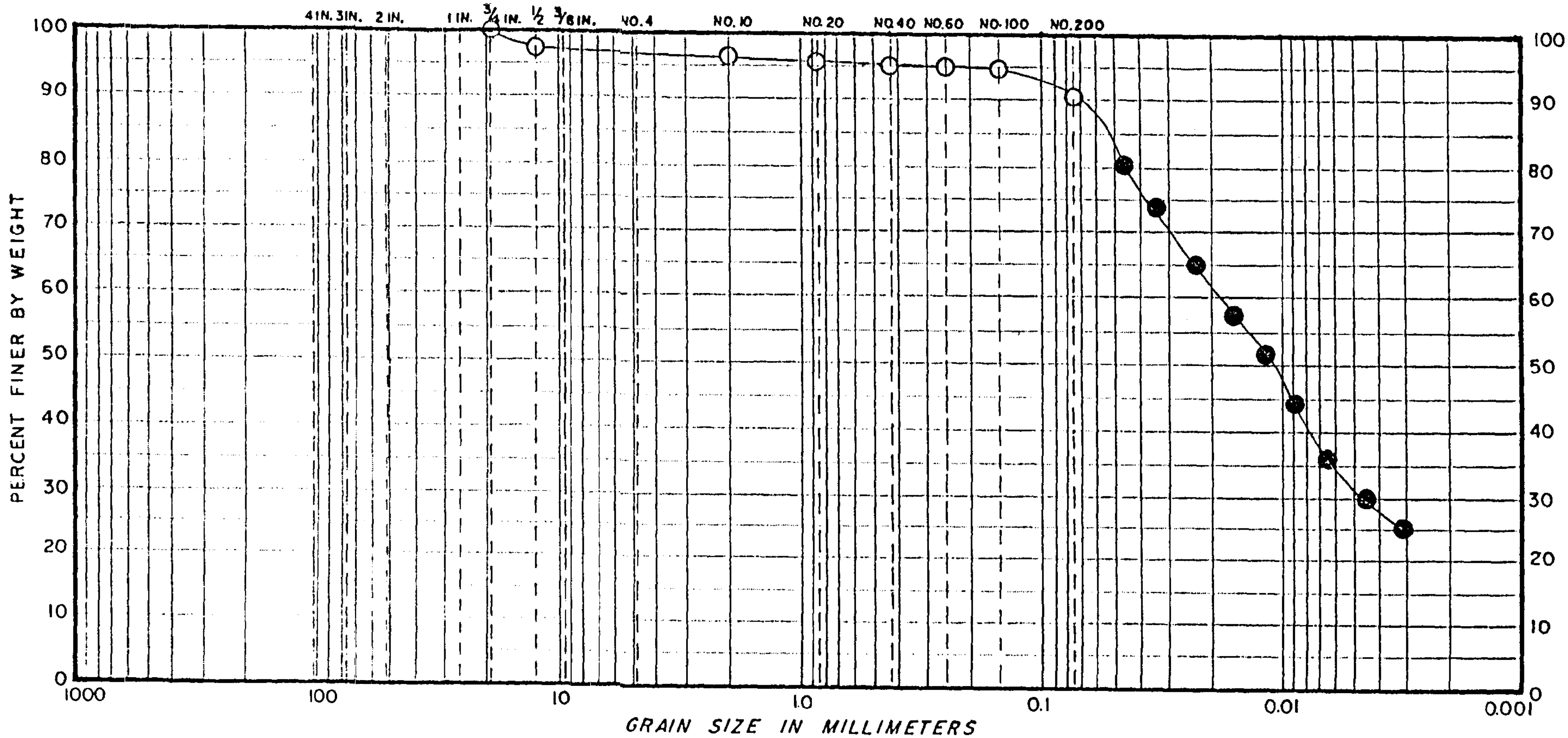
PROJECT ______

FILE NO. 70007-43 DATE Oct 1991

HALEY & ALDRICH, INC.

HBA ..RM 40
OCT. 75

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

UNIFIED SOIL CLASSIFICATION SYSTEM, CORPS OF ENGINEERS, U.S. ARMY

260-280 Reddish brown silty CLAY, trace fine sand

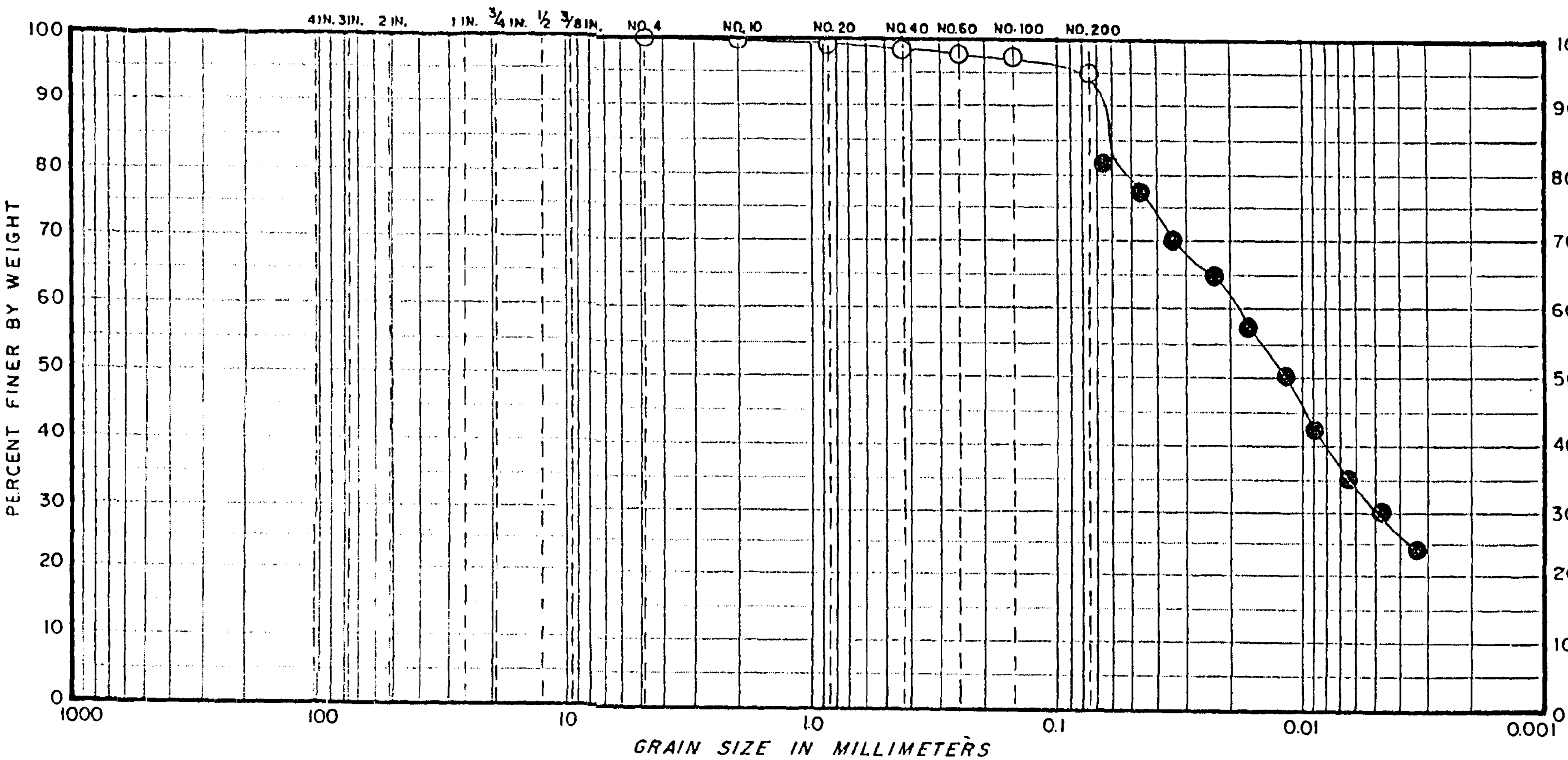
PROJECT ______________

FILE NO. 70007-43 DATE Oct 1991

HALEY & ALDRICH, INC.

H&A RM OCT. 75

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

UNIFIED SOIL CLASSIFICATION SYSTEM, CORPS OF ENGINEERS, U.S. ARMY

B203D 260-280 Reddish brown silty CLAY, trace fine sand

PROJECT ____________

E NO. 70007-43 DATE Oct 1991

ATTERBERG LIMITS

SOIL SAMPLE ______

LOCATION ______

BORING NO. B202D DEPTH 8.0-10.0

SAMPLE NO. ______

SPECIFIC GRAVITY ______

PROJECT ______

FILE NO. 70007-43

TEST NO. ______

DATE 15 OCT 91

TESTED BY EJL

CHECKED BY SDH

PLASTIC LIMIT BALANCE NO 1801

DETERMINATION NO.	1	2	3		WATER CONTENT AT TIME OF TEST 1
CONTAINER NO.	108	109	110		
WT. CONTAINER & WET SOIL IN g	17.9158	18.6045	18.3871		
WT. CONTAINER & DRY SOIL IN g	17.7654	18.4276	18.1911		
WT. WATER IN g	0.1504	0.1769	0.1960		
WT. CONTAINER IN g	16.7543	17.1927	16.7907		
WT. DRY SOIL IN g	1.0111	1.2349	1.4004		
WATER CONTENT IN %	14.9	14.3	14.0	AVG. 14.4	

SAMPLE PRETREATMENT

AIRDRIED? N

SPLIT ON:

( ) SIEVE No. 40

( ) SIEVE No. 10

(X) NOT SPLIT

OVEN TEMPERATURE FOR WATER CONTENTS

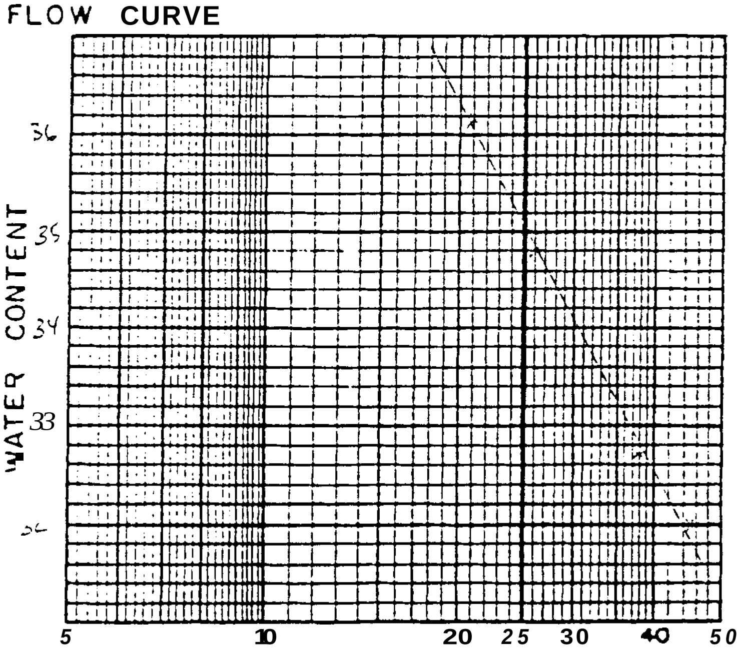
( ) 65 to 75°C

(X) 100 to 110°C

LIQUID LIMIT BALANCE NO 1801

DETERMINATION NO.						
NO. OF BLOWS	45	26	38	21		
CONTAINER NO.	111	112	113	114		
WT. CONTAINER & WET SOIL IN g	19.7507	19.8736	20.2852	20.3525		
WT. CONTAINER & DRY SOIL IN g	19.0975	19.1215	19.4675	19.4005		
WT. WATER IN g	0.6532	0.7521	0.8177	0.9520		
WT. CONTAINER IN g	17.0567	16.9619	16.9684	16.7681		
WT. DRY SOIL IN g	2.0408	2.1596	2.4991	2.6324		
WATER CONTENT IN %	32.0	34.8	32.7	36.2		

FLOW CURVE



RESULTS SUMMARY

NATURAL WATER CONTENT, w, ______

LIQUID LIMIT, w_L, 35.0

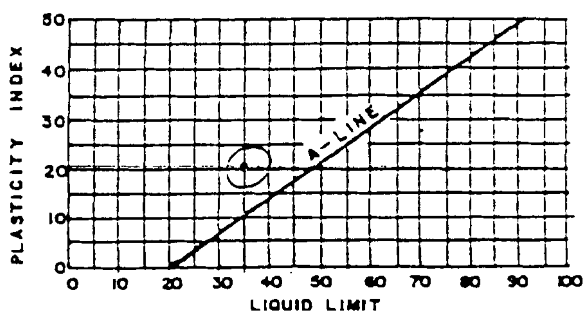
PLASTIC LIMIT, w_p, 14.4

PLASTICITY INDEX 20.6

FLOW INDEX ______

LIQUIDITY INDEX, $I_L = \frac{w - w_p}{w_L - w_p}$

PLASTICITY CHART



H&A FORM No. 513 AUGUST 1986

HALEY & ALDRICH, INC.

APPENDIX E

Rising Head Permeability Tests

RISING HEAD TEST SUMMARY

WELL NAME: 101-S

DATE OF TEST: 19-JUL-89

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

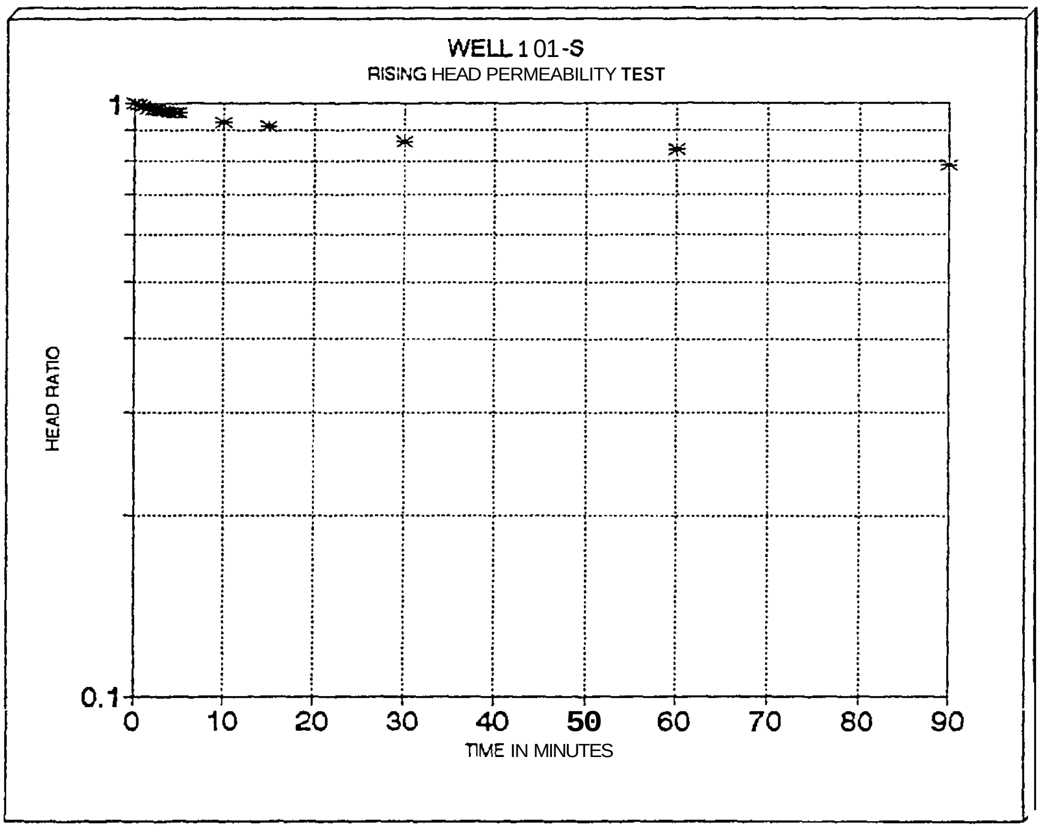
Test Section Diameter (D), In R	0.67
Casing Diameter (d), in R:	0.17
Test Length Section (L), In ft.:	11
m = (Kh/Kv)**0.5:	1.73
t1 In min.:	30
t2 In min.:	90
H1 In feet:	14.60
H2 In feet:	13.30
Kh (cm/sec) =	1.0E-06
Kh (ft/min) =	2.1E-06
Kh (ft/day) =	3.0E-03

Rising Head Test Field Data — Static Water 8.2

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
25.10	0	1.00	16.90
25.00	0.5	0.99	16.80
24.90	1	0.99	16.70
24.80	1.5	0.98	16.60
24.70	2	0.98	16.50
24.70	2.5	0.98	16.50
24.60	3	0.97	16.40
24.60	3.5	0.97	16.40
24.50	4	0.96	16.30
24.50	4.5	0.96	16.30
24.50	5	0.96	16.30
23.90	10	0.93	15.70
23.60	15	0.91	15.40
22.80	30	0.86	14.60
22.30	60	0.83	14.10
21.50	90	0.79	13.30

NOTES

1. m Is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) Is equal to the borehole diameter.
3. Method taken from Hvorslev. 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 101-D

DATE OF TEST: 19-JUL-89

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in ft.	0.67
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	10.8
m = (Kh/Kv)**0.5:	1.73
H in min.:	16
t2 in min.:	30
H1 in feet:	16.90
H2 in feet:	16.60
Kh (cm/sec) =	3.9E-06
Kh (ft/min) =	7.8E-06
Kh (ft/day) =	1.1E-02

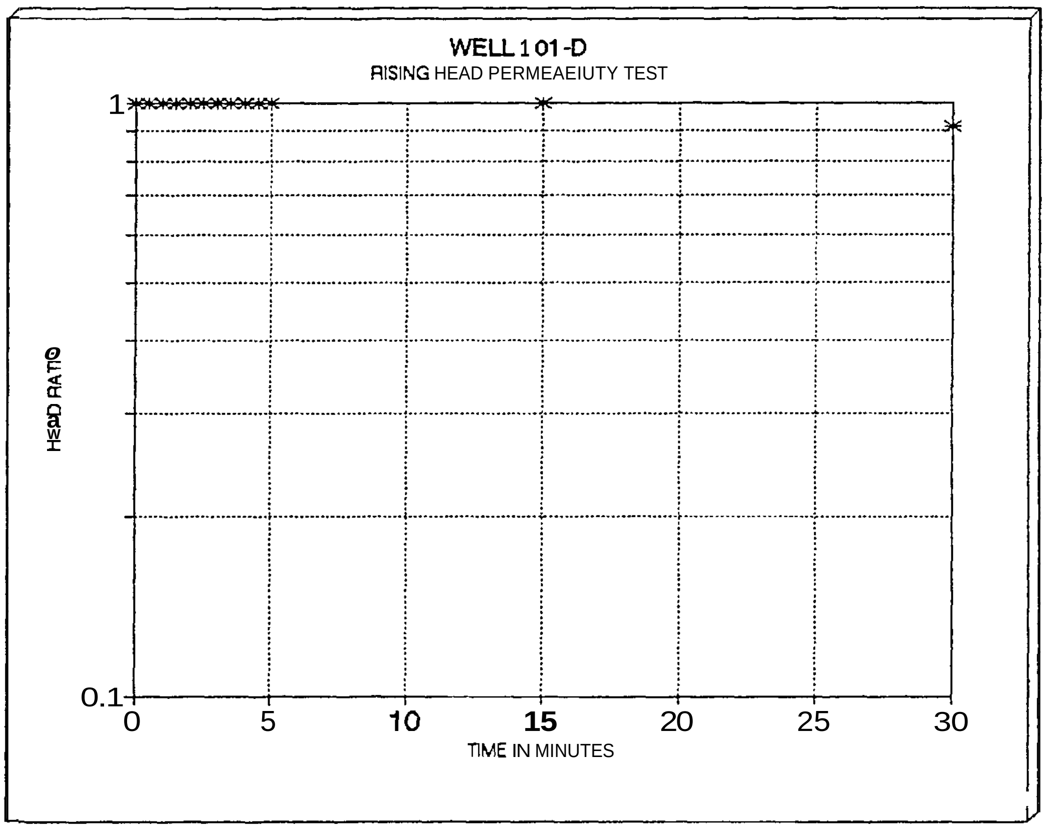
Rising Head Test Field Data

Static Water 21.3

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
38.20	0	1.00	16.90
38.20	0.5	1.00	16.90
38.20	1	1.00	16.90
38.20	1.5	1.00	16.90
38.20	2	1.00	16.90
38.20	2.5	1.00	16.90
38.20	3	1.00	16.90
38.20	3.5	1.00	16.90
38.20	4	1.00	16.90
38.20	4.5	1.00	16.90
38.20	5	1.00	16.90
38.20	15	1.00	16.90
36.80	30	0.92	15.50

NOTES

1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 102-S

DATE OF TEST: 19-JUL-89

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in ft	0.67
Casing Diameter (d), In ft.:	0.17
Test Length Section (L),In ft.:	3.3
m = (Kh/Kv)**0.5:	1.73
t1 In min.:	10
t2 In mln.:	90
H1 In feet:	4.30
H2 In feet:	4.10
Kh (cm/sec) =	9.4E-07
Kh (ft/min) =	1.8E-06
Kh (ft/day) =	27E-03

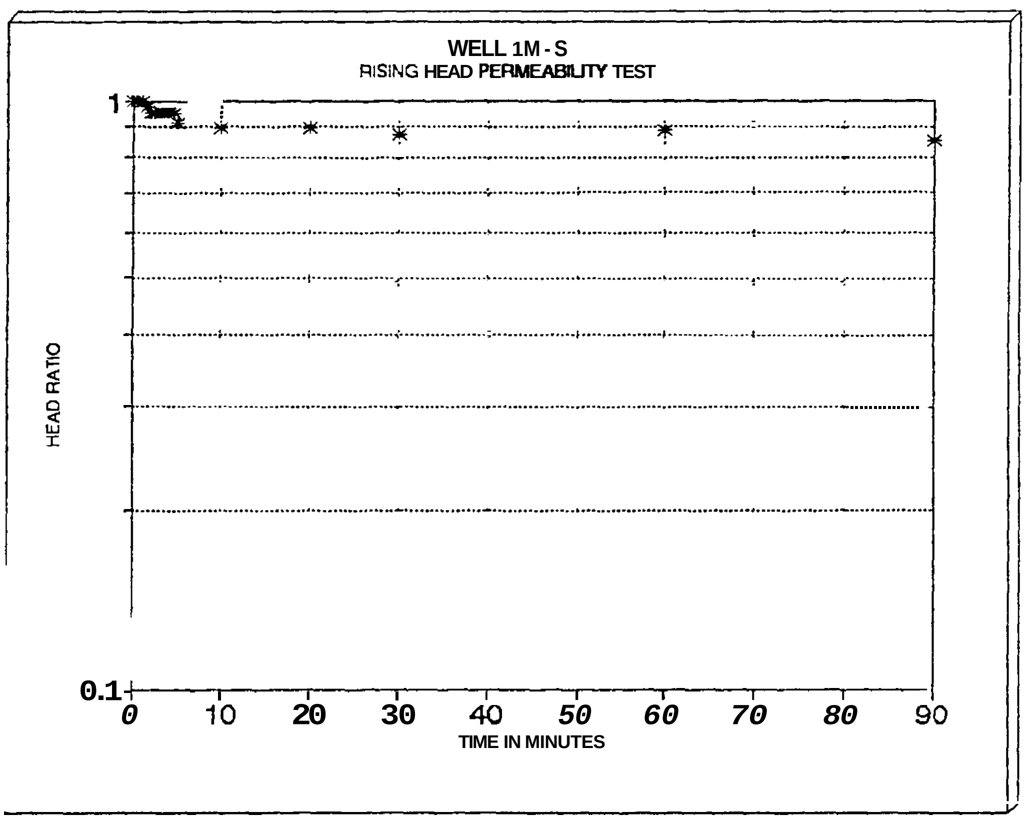
Rising Head Test Field Data

Static Water
23.7

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
28.50	0	1.00	4.80
28.50	0.5	1.00	4.80
28.50	1	1.00	4.80
28.40	1.5	0.98	4.70
28.30	2	0.96	4.60
28.30	2.5	0.96	4.60
28.30	3	0.96	4.60
28.30	3.5	0.96	4.60
28.30	4	0.96	4.60
28.30	4.5	0.96	4.60
28.10	5	0.92	4.40
28.00	10	0.90	4.30
28.00	20	0.90	4.30
27.90	30	0.87	4.20
27.98	60	0.89	4.28
27.80	90	0.85	4.10

NOTES

1. m Is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev. 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 102-D

DATE OF TEST: 19-JUL-89

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in R	0.67
Casing Diameter (d), In R:	0.17
Test Length Section (L),In R:	16.7
m = (Kh/Kv)**0.5:	1.73
t1 In min.:	10
t2 In rnin.:	90
H1 In feet:	33.10
H2 in feet:	31.00
Kh (cm/sec) =	4.0E-07
Kh (ft/min) =	7.9E-07
Kh (ft/day) =	1.1E-03

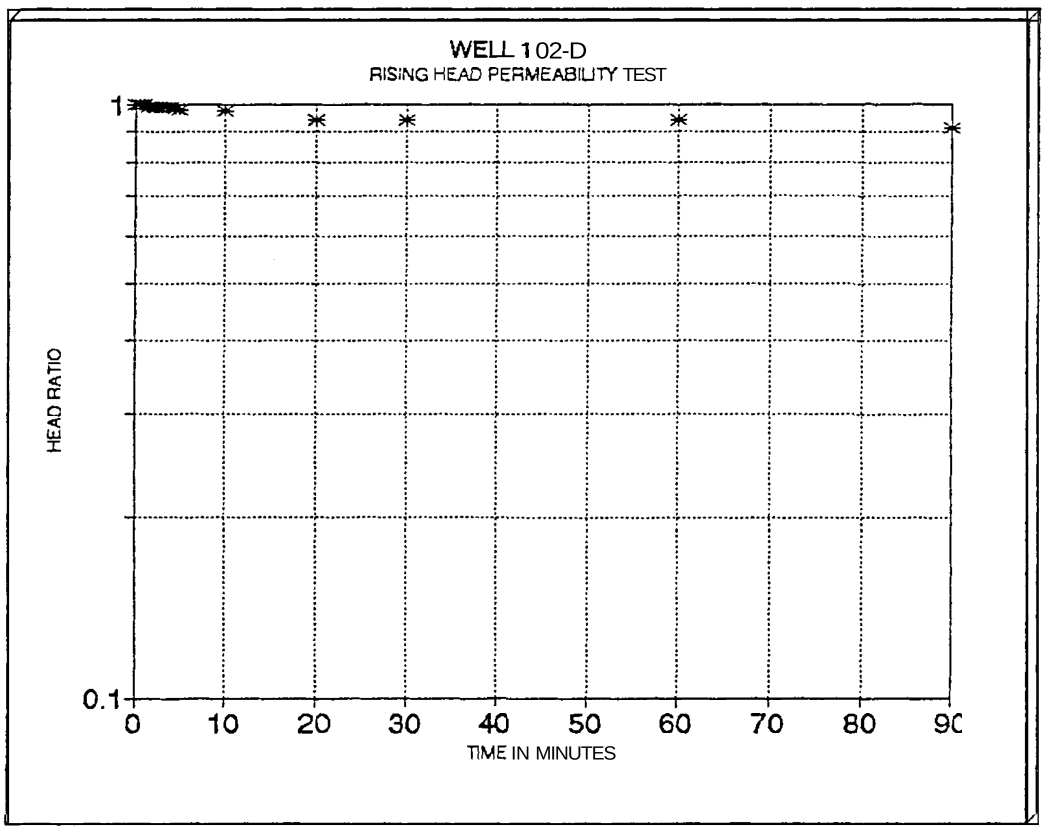
Rising Head Test Field Data

Static Water 16.9

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
49.80	0	1.00	33.90
49.80	0.5	1.00	33.90
49.70	1	1.00	33.80
49.50	1.5	0.99	33.60
49.50	2	0.99	33.60
49.50	2.5	0.99	33.60
49.50	3	0.99	33.60
49.40	3.5	0.99	33.50
49.40	4	0.99	33.50
49.30	4.5	0.99	33.40
49.20	5	0.98	33.30
49.00	10	0.98	33.10
47.90	20	0.94	32.00
47.70	30	0.94	31.80
47.80	60	0.94	31.90
46.90	90	0.91	31.00

NOTES

1. m Is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Dlameter (D) Is equal to the borehole diameter.
3. Method taken from Hvorslev. 1961.



RISING HEAD TEST SUMMARY

WELL NAME: 103-S

DATE OF TEST: 04-SEP-91

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in R	0.67
Caslng Dlameter (d), in R:	0.17
Test Length Section (L),in ft.:	11
m = (Kh/Kv)**0.5:	1.73
t1 In min.:	0.25
t2 In min.:	60
H1 In feet:	13.91
H2 In feet:	13.85
Kh (cm/sec) =	4.9E-08
Kh (ft/mln) =	9.6E-08
Kh (ft/day) =	1.4E-04

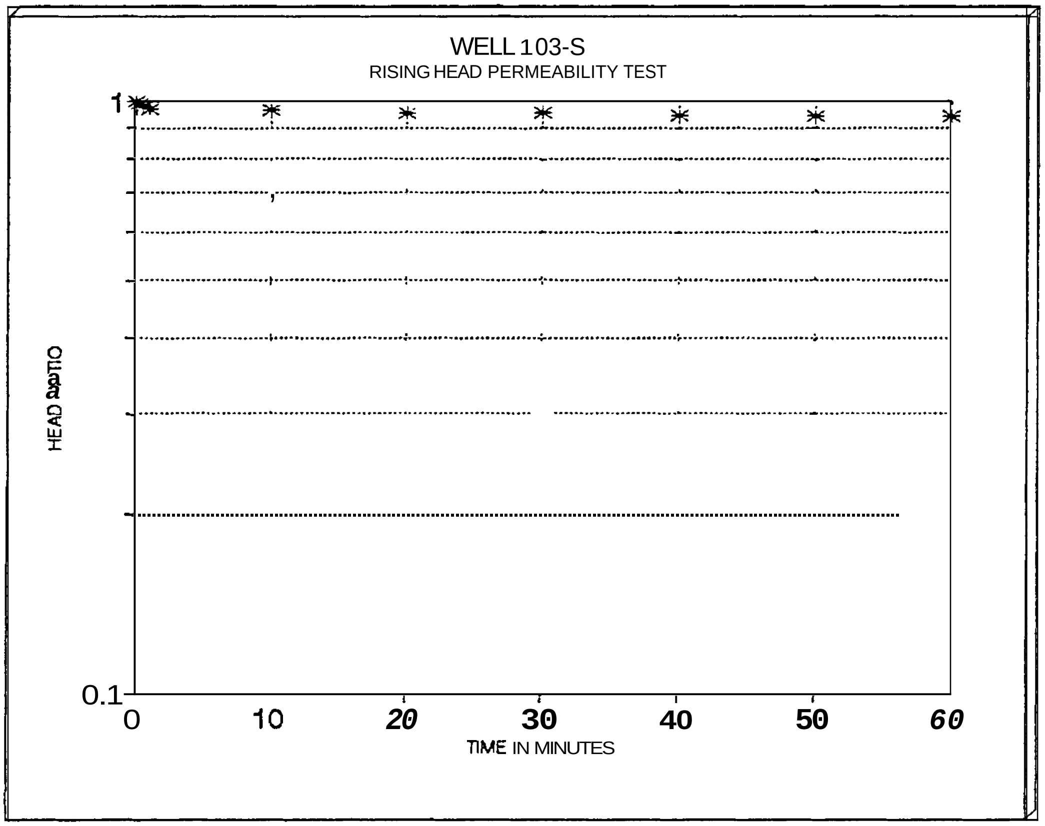
Rising Head Test Field Data

Static Water 1275

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
13.92	0	1.00	1.17
13.91	0.25	0.99	1.16
13.90	0.5	0.98	1.16
13.89	1	0.97	1.14
13.88	10	0.97	1.13
13.87	20	0.96	1.12
13.87	30	0.96	1.12
13.86	40	0.96	1.11
13.86	60	0.95	1.11
13.85	60	0.94	1.10

NOTES

1. m Is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Dlameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1961.



RISING HEAD TEST SUMMARY

WELL NAME: **103-D**

DATE OF TEST: **04-SEP-91**

Rislng Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), In ft	0.67
Casing Dlameter (d), In ft:	0.17
Test Length Section (L),In ft:	13.8
m = (Kh/Kv)**0.5:	1.73
t1 In mln.:	1
t2 In mln.:	60
H1 In feet:	14.49
H2 In feet:	14.41
Kh (cm/sec) =	5.3E-08
Kh (ft/min) =	1.0E-07
Kh (ft/day) =	1.5E-04

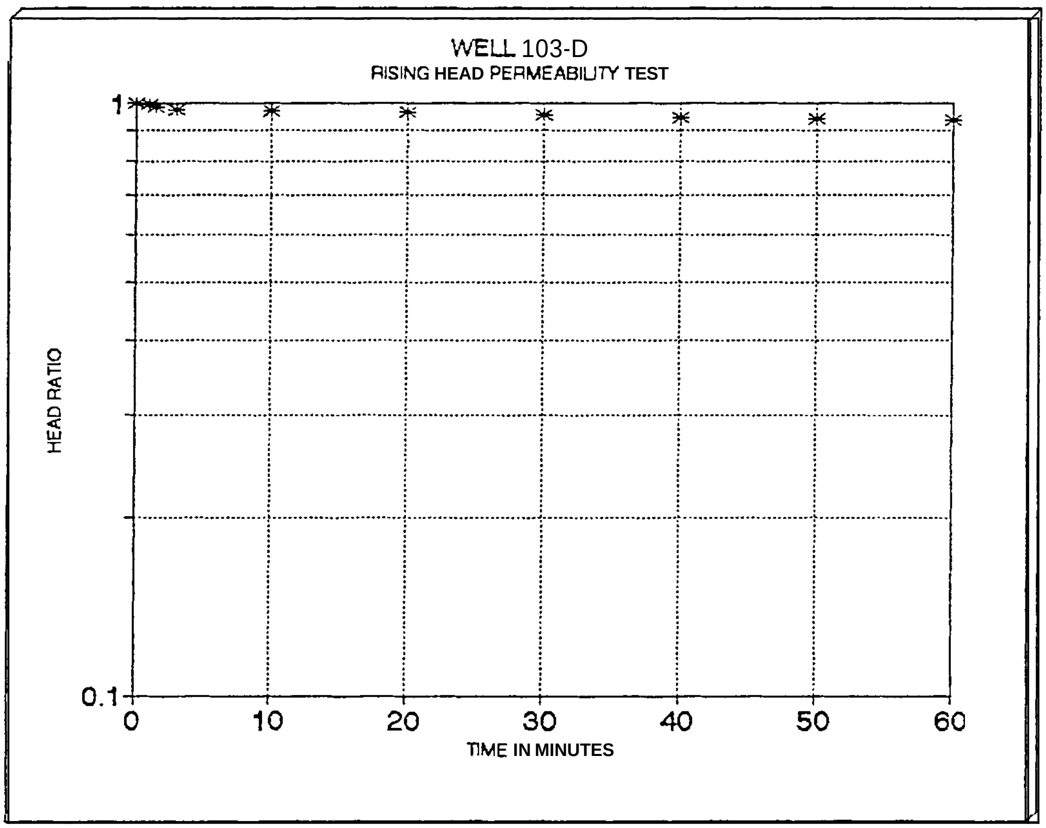
Rising Head Test Field Data

Static Water 13.12

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
14.50	0	1.00	1.38
14.49	1	0.99	1.37
14.48	1.5	0.99	1.36
14.47	3	0.98	1.35
14.46	10	0.97	1.34
14.45	20	0.96	1.33
14.44	30	0.96	1.32
14.43	40	0.95	1.31
14.42	50	0.94	1.30
14.41	60	0.93	1.29

NOTES

1. rn Is the square root of the ratio of horlzontal to vertical permeability.
2. Test Section Dlameter (D) Is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 104-S

DATE OF TEST: 11-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in ft	0.67
Casing Diameter (d), in ft:	0.17
Test Length Section (L), in ft.:	6
m = (Kh/Kv)**0.5:	1.73
t1 in min.:	0.25
t2 in min.:	60
H1 in feet:	20.46
H2 in feet:	20.39
Kh (cm/sec) =	5.2E-08
Kh (ft/min) =	1.0E-07
Kh (ft/day) =	1.5E-04

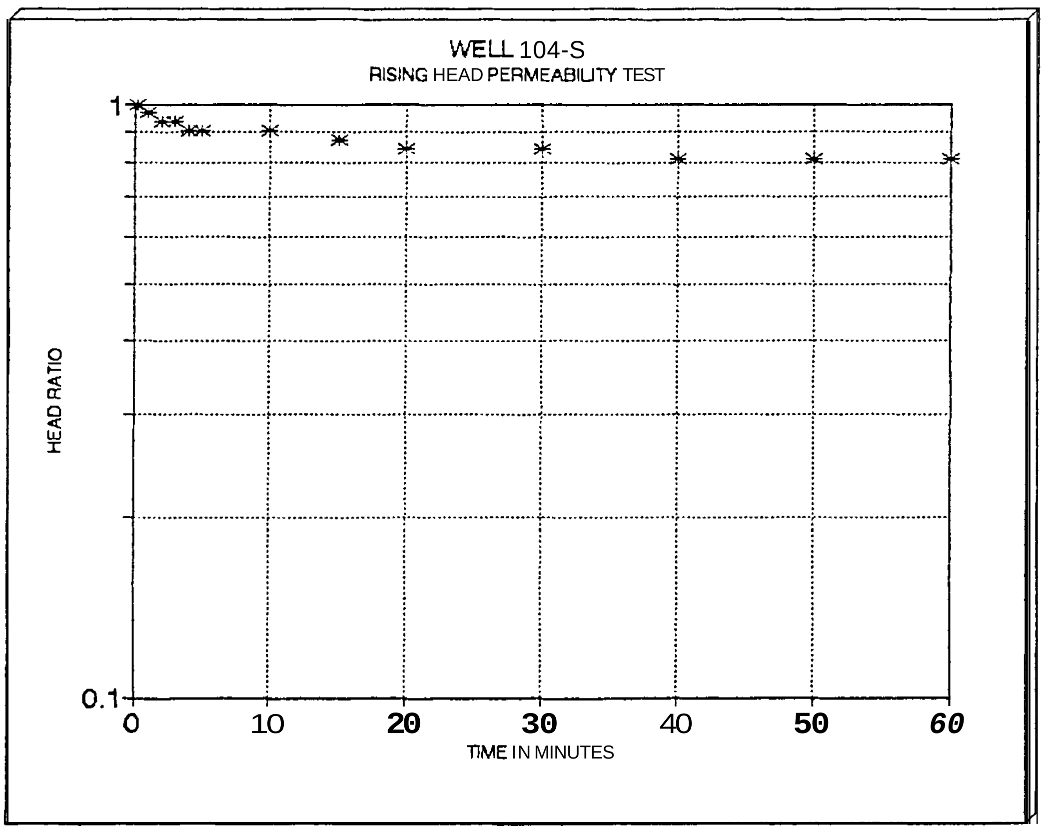
Rising Head Test Field Data

Static Water 20.13

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
20.45	0.25	1.00	0.32
20.44	1	0.97	0.31
20.43	2	0.94	0.30
20.43	3	0.94	0.30
20.42	4	0.91	0.29
20.42	5	0.91	0.29
20.42	10	0.91	0.29
20.41	15	0.88	0.28
20.40	20	0.84	0.27
20.40	30	0.84	0.27
20.39	40	0.81	0.26
20.39	50	0.81	0.26
20.39	60	0.81	0.26

NOTES

1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 104-D

DATE OF TEST: 11-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh= [((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in ft.:	0.67
Casing Diameter (d), in ft.:	0.17
Test Length Section (L),in ft.:	11.6
m = (Kh/Kv)**0.5:	1.73
t l in min.:	0.25
t2 in min.:	60
H1 in feet:	21.83
H2 in feet:	21.65
Kh (cm/sec) =	9.0E-08
Kh (ft/min) =	1.8E-07
Kh (ft/day) =	2.5E-04

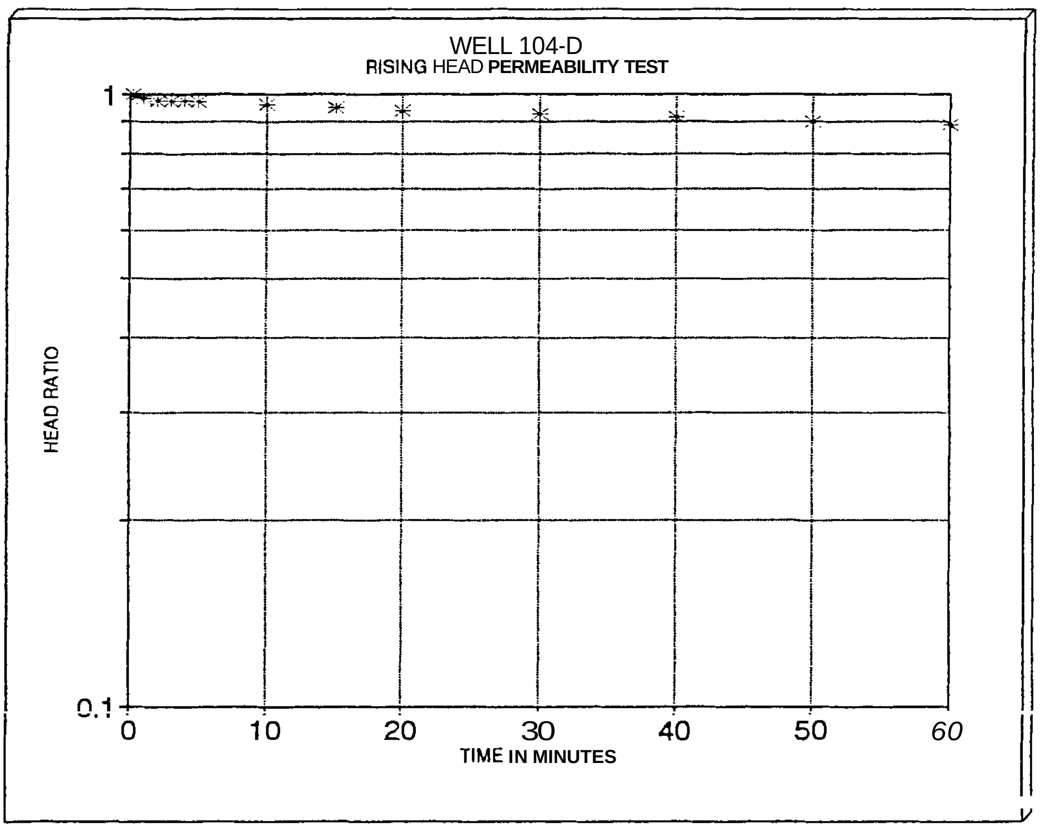
Rising Head Test Field Data

Static Water 20.2

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
21.83	0.25	1.00	1.63
21.81	0.50	0.99	1.61
21.80	1	0.98	1.60
21.79	2	0.98	1.59
21.79	3	0.98	1.59
21.79	4	0.98	1.59
21.78	5	0.97	1.58
21.77	10	0.96	1.57
21.75	15	0.95	1.55
21.73	20	0.94	1.53
21.71	30	0.93	1.51
21.69	40	0.91	1.49
21.67	50	0.90	1.47
21.65	60	0.89	1.45

NOTES

1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 105-S
DATE OF TEST: 11-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh= [((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

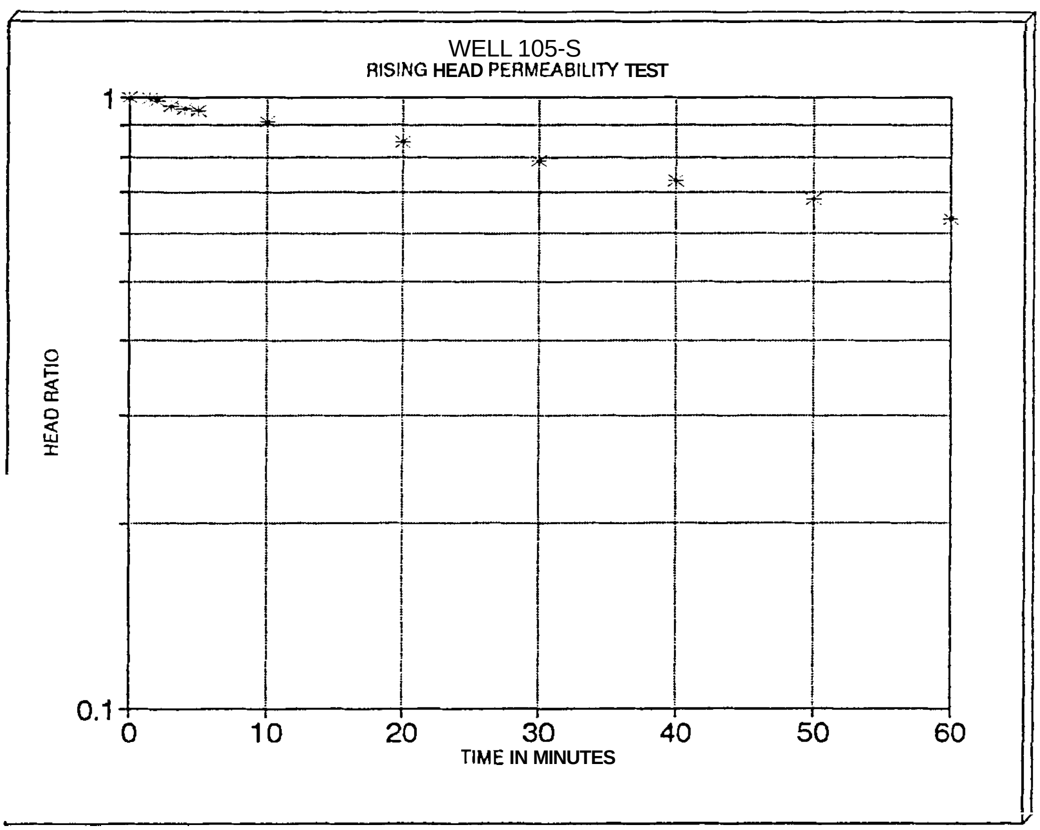
Test Section Diameter (D), in ft.:	0.67
Casing Diameter (d), in ft.:	0.17
Test Length Section (L),in ft.:	11.6
m = (Kh/Kv)**0.5:	1.73
t1 in min.:	1.75
t2 in min.:	60
H1 in feet:	7.06
H2 in feet:	6.62
Kh (cm/sec) =	7.2E-07
Kh (ft/min) =	1.4E-06
Kh (ft/day) =	2.0E-03

Rising Head Test Field Data

Static Wa:
5.84

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
7.07	0.00	1.00	1.23
7.06	1.45	0.99	1.22
7.05	2	0.98	1.21
7.03	3	0.97	1.19
7.02	4	0.96	1.18
7.01	5	0.95	1.17
6.96	10	0.91	1.12
6.88	20	0.85	1.04
6.81	30	0.79	0.97
6.74	40	0.73	0.90
6.68	50	0.68	0.84
6.62	60	0.63	0.78

NOTES
1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 105-D
DATE OF TEST: 11SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh= [((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

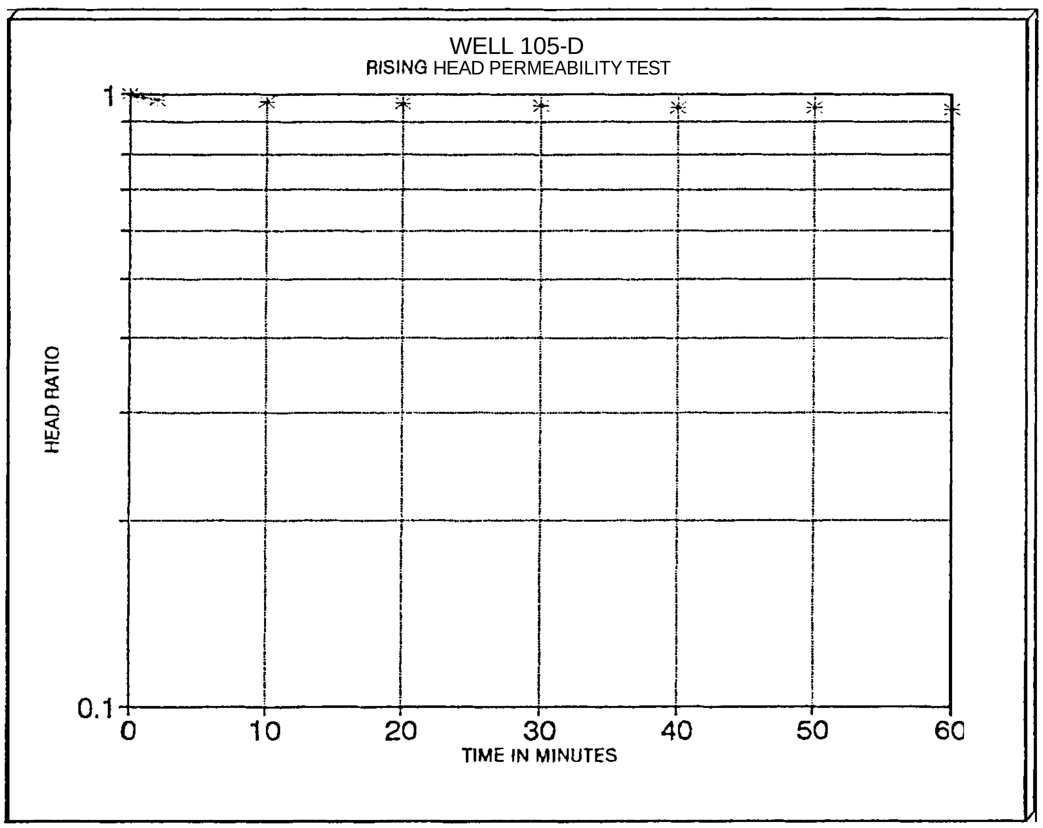
Test Section Diameter (D), in ft.:	0.67
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	11
m = (Kh/Kv)**0.5:	1.73
t l in min.:	0.5
t2 in min.:	60
H1 in feet:	9.70
H2 in feet:	9.63
Kh (cm/sec) =	8.2E-08
Kh (ft/min) =	1.6E-07
Kh (ft/day) =	2.3E-04

Rising Head Test Field Data

Static Wat
8.31

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
9.71	0.0	1.00	1.40
9.70	0.5	0.99	1.39
9.69	1	0.99	1.38
9.68	2	0.98	1.37
9.67	10	0.97	1.36
9.66	20	0.96	1.35
9.65	30	0.96	1.34
9.64	40	0.95	1.33
9.64	50	0.95	1.33
9.63	60	0.94	1.32

NOTES
1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 106-S

DATE OF TEST: 19-JUL-89

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), In ft	0.67
Casing Diameter (d), In ft.:	0.17
Test Length Section (L),in ft:	9
m = (Kh/Kv)**0.5:	1.73
t1 In min.:	0.5
t2 in min.:	60
H1 In feet:	11.20
H2 In feet:	10.40
Kh (cm/sec) =	9.7E-07
Kh (ft/min) =	1.9E-06
Kh (ft/day) =	2.8E-03

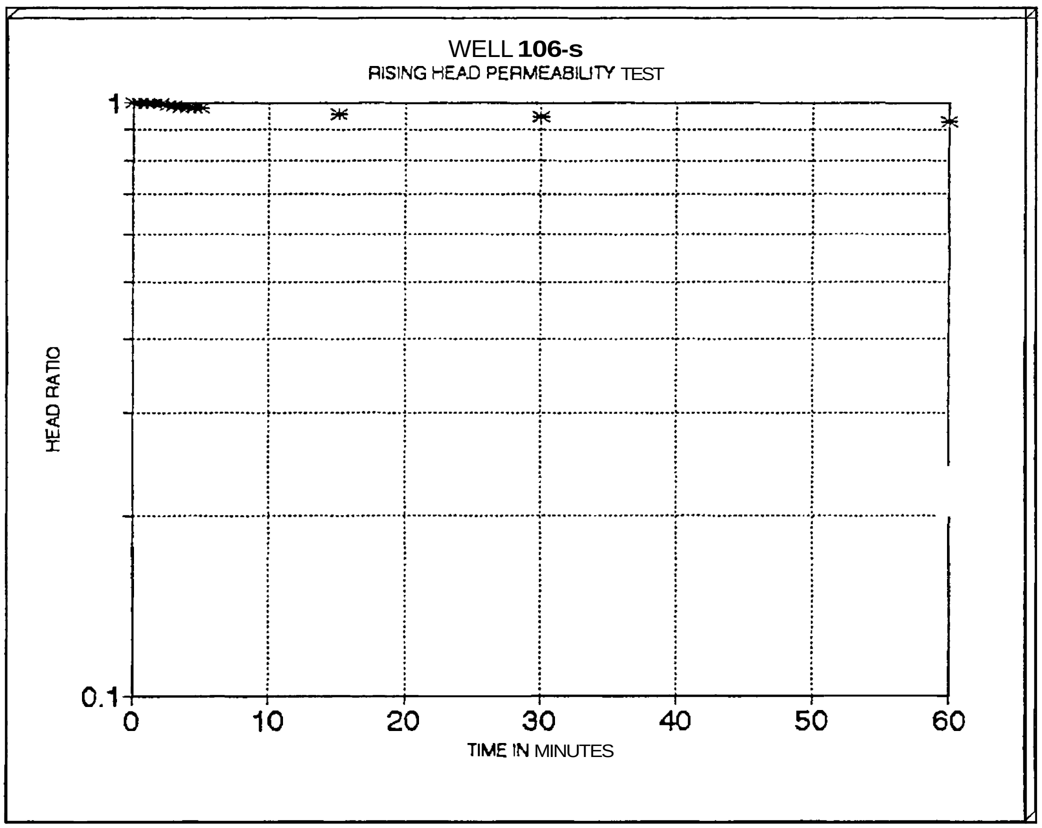
Rising Head Test Field Data

Static Water 14

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
25.20	0	1.00	11.20
25.20	0.5	1.00	11.20
25.20	1	1.00	11.20
25.20	1.5	1.00	11.20
26.20	2	1.00	11.20
25.10	25	0.99	11.10
25.10	3	0.99	11.10
25.00	3.6	0.98	11.00
25.00	4	0.98	11.00
26.00	4.5	0.98	11.00
25.00	5	0.98	11.00
24.70	15	0.96	10.70
24.60	30	0.95	10.60
24.40	60	0.93	10.40

NOTES

1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) Is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 106-D

DATE OF TEST: 19-JUL-89

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in ft.	0.67
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	11
m = (Kh/Kv)**0.5:	1.73
t1 in min.:	0.6
t2 in min.:	60
H1 in feet:	24.50
H2 in feet:	23.10
Kh (cm/sec) =	6.7E-07
Kh (ft/min) =	1.3E-06
Kh (ft/day) =	1.9E-03

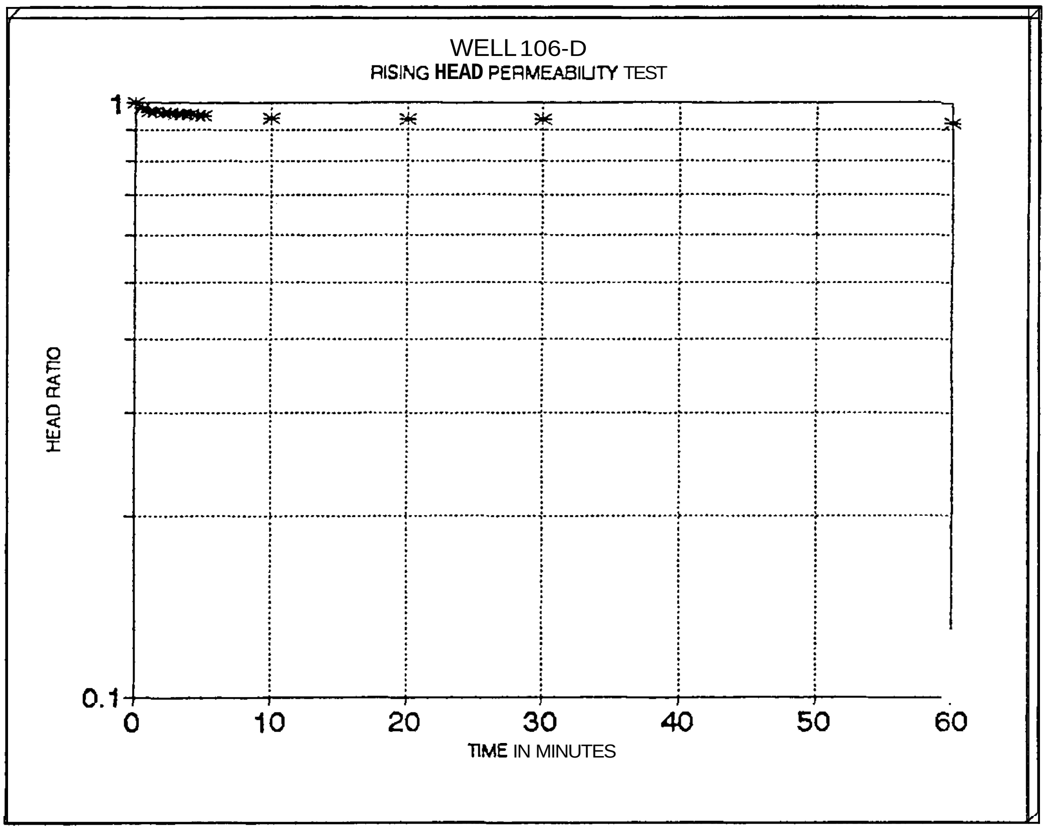
Rising Head Test Field Data

Static Water
11.9

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
36.90	0	1.00	25.00
36.40	0.5	0.98	24.50
36.00	1	0.96	24.10
36.00	1.6	0.96	24.10
35.90	2	0.96	24.00
36.90	25	0.96	24.00
36.80	3	0.96	23.93
35.80	3.5	0.96	23.90
36.80	4	0.96	23.90
36.70	4.5	0.95	23.80
36.70	5	0.95	23.80
35.50	10	0.94	23.60
36.30	20	0.94	23.40
35.30	30	0.94	23.40
35.00	60	0.92	23.10

NOTES

1. m is the square root of the ratio of horizontal to vefflcal permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 201-S
DATE OF TEST: 12-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh= [((d*d)ln((2*m*L)/D))ln(H1/H2)] 18L(t2-t1)

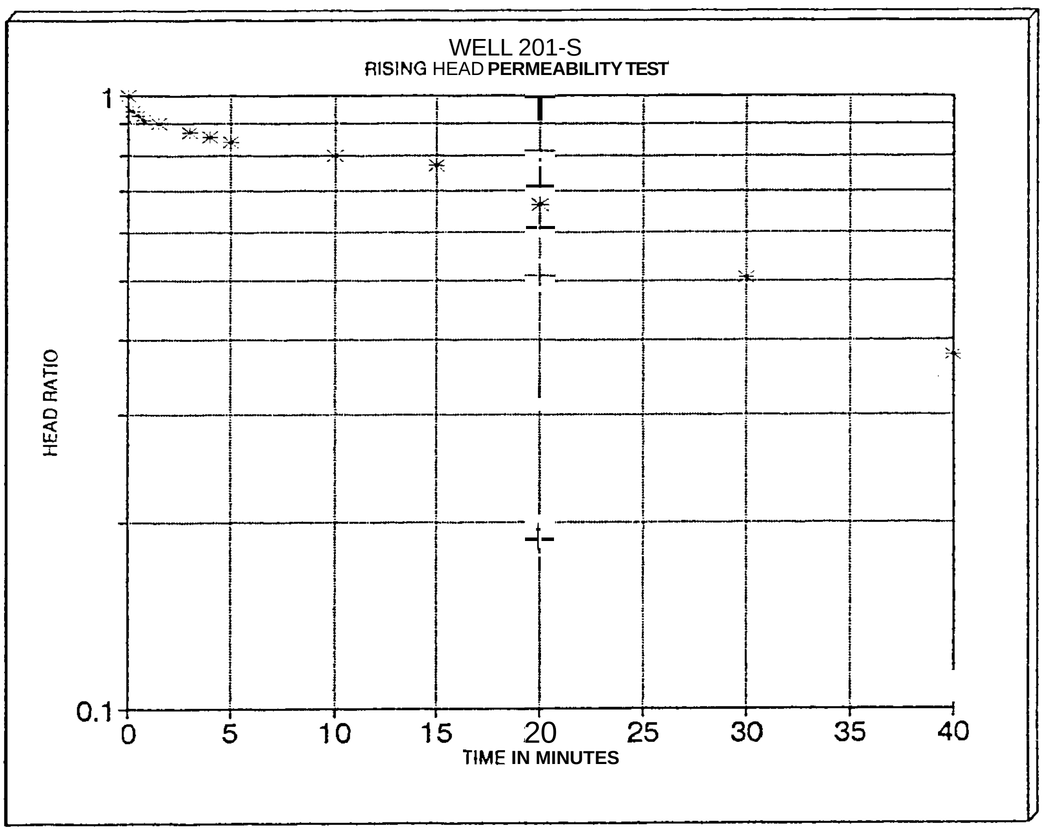
Test Section Diameter (D), in ft.:	0.67
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	10.3
m = (Kh/Kv)**0.5:	1.73
t l in min.:	0.25
t2 in min.:	60
H1 in feet:	4.58
H2 in feet:	4.10
Kh (cm/sec) =	1.3E-06
Kh (ft/min) =	2.6E-06
Kh (ft/day) =	3.7E-03

Rising Head Test Field Data

Static Wat 3.93

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
4.62	0.00	1.00	0.69
4.58	0.25	0.94	0.65
4.57	0.50	0.93	0.64
4.56	0.75	0.91	0.63
4.55	1.50	0.90	0.62
4.53	3	0.87	0.60
4.52	4	0.86	0.59
4.51	5	0.84	0.58
4.48	10	0.80	0.55
4.46	15	0.77	0.53
4.39	20	0.67	0.46
4.28	30	0.51	0.35
4.19	40	0.38	0.26
4.13	50	0.29	0.20
4.10	60	0.25	0.17

NOTES
1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 201-D

DATE OF TEST: 12-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh= [((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

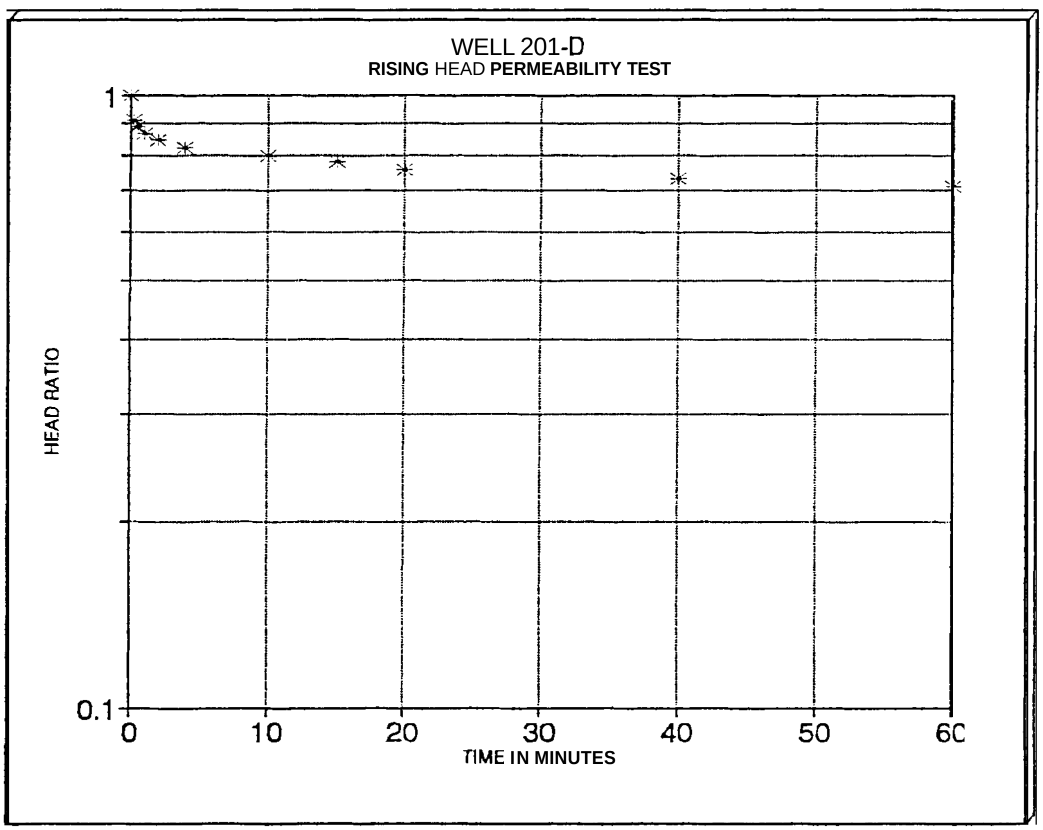
Test Section Diameter (D), in ft.:	0.67
Casing Diameter (d), in ft.:	0.17
Test Length Section (L),in ft.:	4
m = (Kh/Kv)**0.5:	1.73
t l in min.:	0.25
t2 in min.:	60
H1 in feet:	24.66
H2 in feet:	24.57
Kh (cm/sec) =	8.5E-08
Kh (ft/min) =	1.7E-07
Kh (ft/day) =	2.4E-04

Rising Head Test Field Data — Static Wat 24.25

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
24.70	0.00	1.00	0.45
24.66	0.25	0.91	0.41
24.65	0.50	0.89	0.40
24.64	1	0.87	0.39
24.63	2	0.84	0.38
24.62	4	0.82	0.37
24.61	10	0.80	0.36
24.60	15	0.78	0.35
24.59	20	0.76	0.34
24.58	40	0.73	0.33
24.57	60	0.71	0.32

NOTES

1. rn is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 202-S

DATE OF TEST: 11-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh= [((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

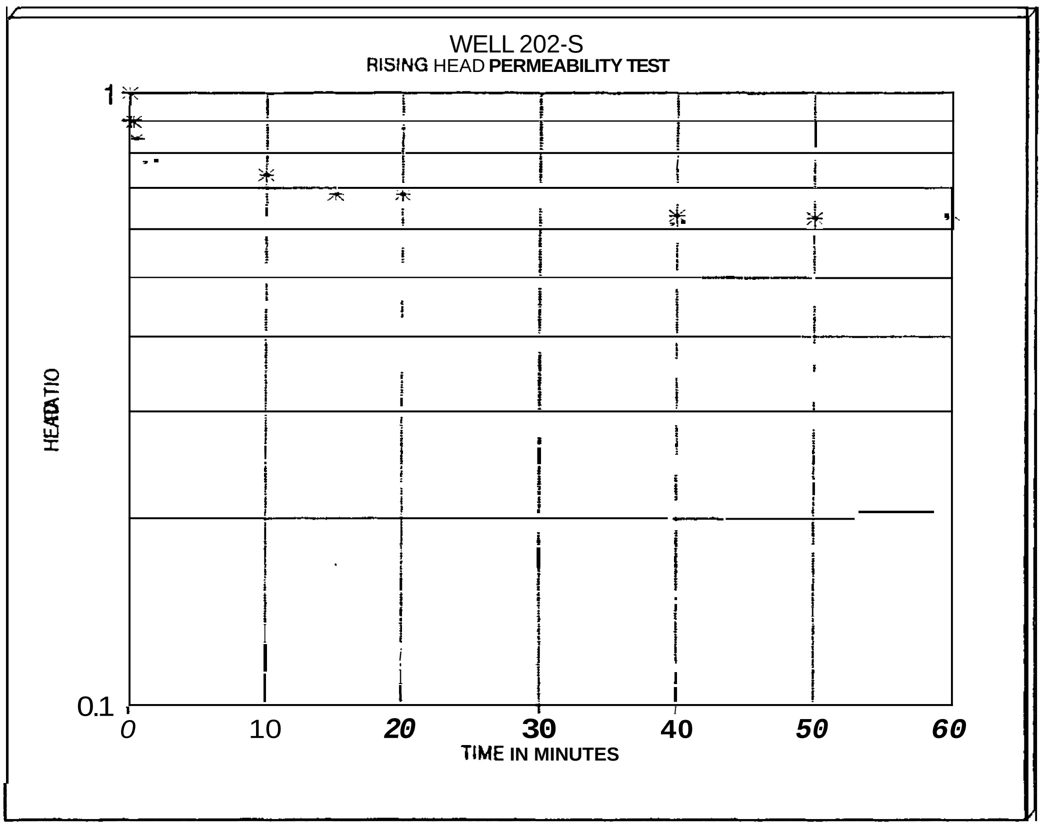
Test Section Diameter (D), in ft.:	0.83
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	5
m = (Kh/Kv)**0.5:	1.73
t1 in min.:	0.25
t2 in min.:	60
H1 in feet:	11.71
H2 in feet:	11.66
Kh (cm/sec) =	8.0E-08
Kh (ft/min) =	1.6E-07
Kh (ft/day) =	2.3E-04

Rising Head Test Field Data

Static Wat 11.54

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Heed (ft)
11.73	0	1.00	0.19
11.71	0.25	0.89	0.17
11.70	0.5	0.84	0.16
11.69	1.5	0.79	0.15
11.68	10	0.74	0.14
11.67	15	0.68	0.13
11.67	20	0.68	0.13
11.67	30	0.68	0.13
11.66	40	0.63	0.12
11.66	50	0.63	0.12
11.66	60	0.63	0.12

NOTES
1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 202-D

DATE OF TEST: 11-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in ft.:	0.83
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	2.5
m = (Kh/Kv)**0.5:	1.73
t1 in min.:	0.25
t2 in min.:	60
H1 in feet:	30.24
H2 in feet:	30.19
Kh (cm/sec) =	4.8E-08
Kh (ftlmin) =	9.4E-08
Kh (ft/day) =	1.4E-04

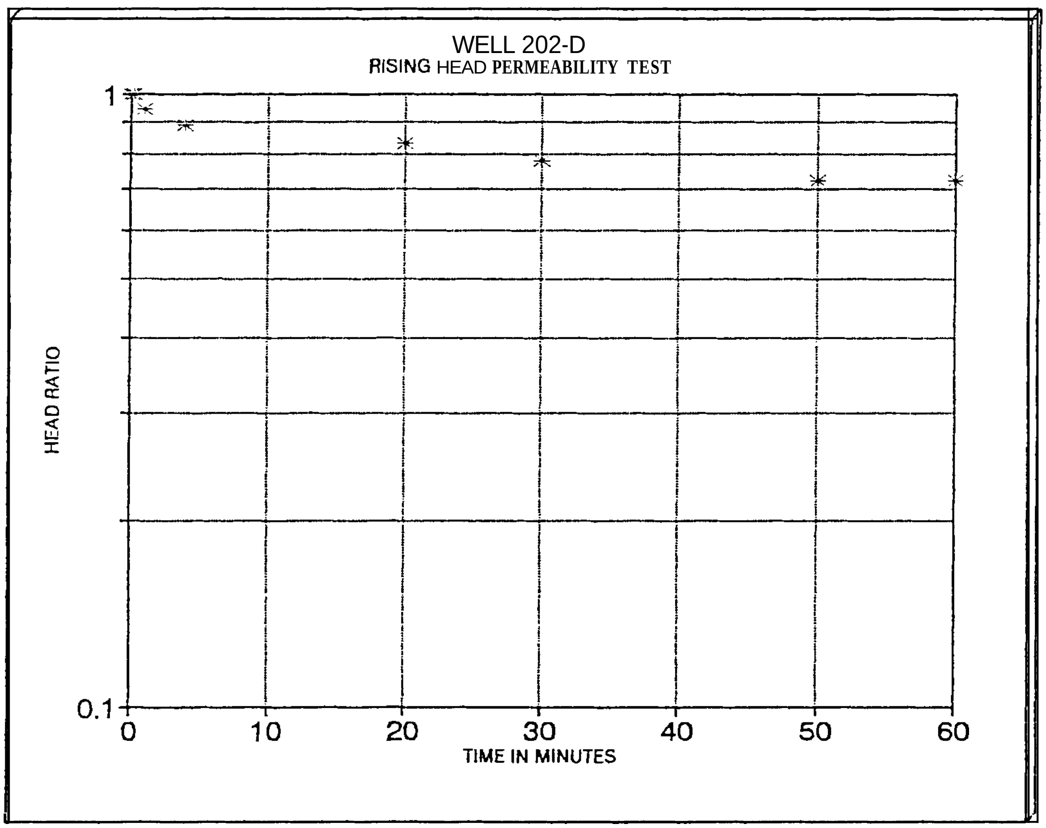
Rising Head Test Field Data

Static Wat
30.06

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
30.24	0	1.00	0.18
30.24	0.25	1.00	0.18
30.23	1	0.94	0.17
30.22	4	0.89	0.16
30.21	20	0.83	0.15
30.20	30	0.78	0.14
30.19	50	0.72	0.13
30.19	60	0.72	0.13

NOTES

1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 203-S

DATE OF TEST: 11-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh= [((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

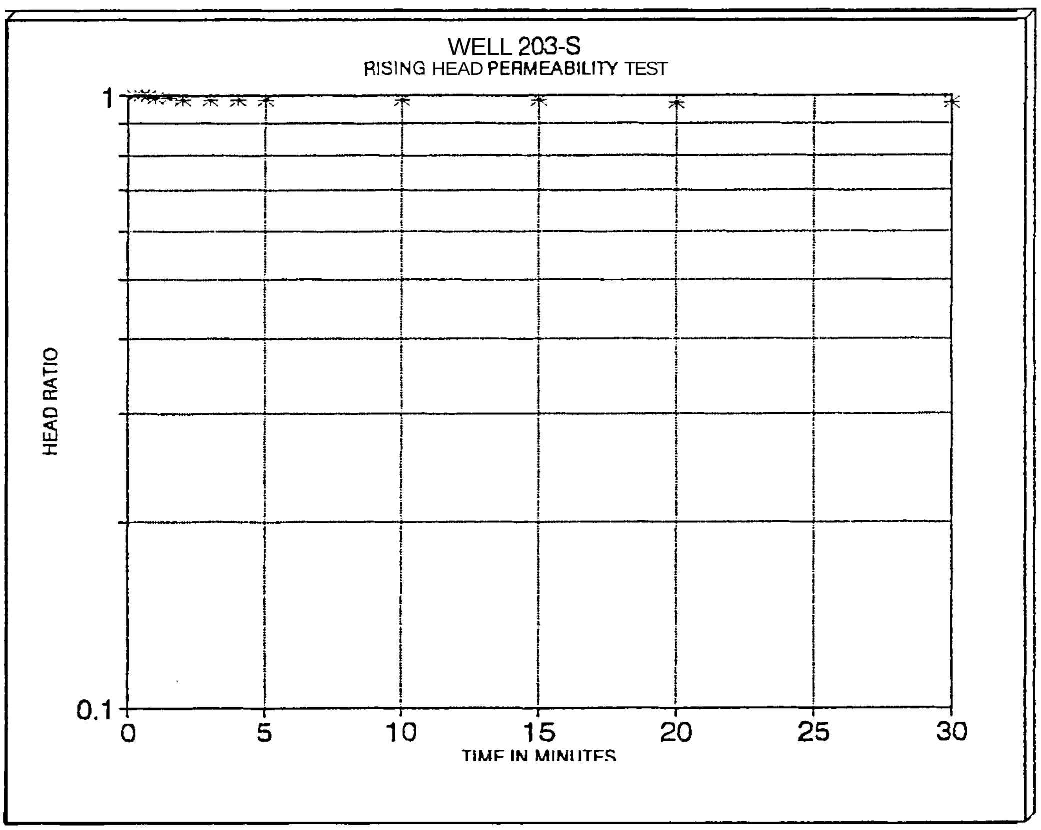
Test Section Diameter (D), in ft.:	0.83
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	7
m = (Kh/Kv)**0.5:	1.73
t1 in min.:	0.25
t2 in min.:	60
H1 in feet:	8.75
H2 in feet:	8.71
Kh (cm/sec) =	6.8E-08
Kh (ft/min) =	1.3E-07
Kh (ft/day) =	1.9E-04

Rising Head Test Field Data — Static Wat 7.6

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
8.75	0.25	1.00	1.15
8.75	0.50	1.00	1.15
8.75	0.75	1.00	1.15
8.74	1	0.99	1.14
8.74	1.5	0.99	1.14
8.73	2	0.98	1.13
8.73	3	0.98	1.13
8.73	4	0.98	1.13
8.73	5	0.98	1.13
8.73	10	0.98	1.13
8.73	15	0.98	1.13
8.72	20	0.97	1.12
8.72	30	0.97	1.12
8.72	40	0.97	1.12
8.72	50	0.97	1.12
8.71	60	0.97	1.11

NOTES

1. m is the square root of the ratio of horizontal to vertical permeabilrty.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 203-D
DATE OF TEST: 12-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

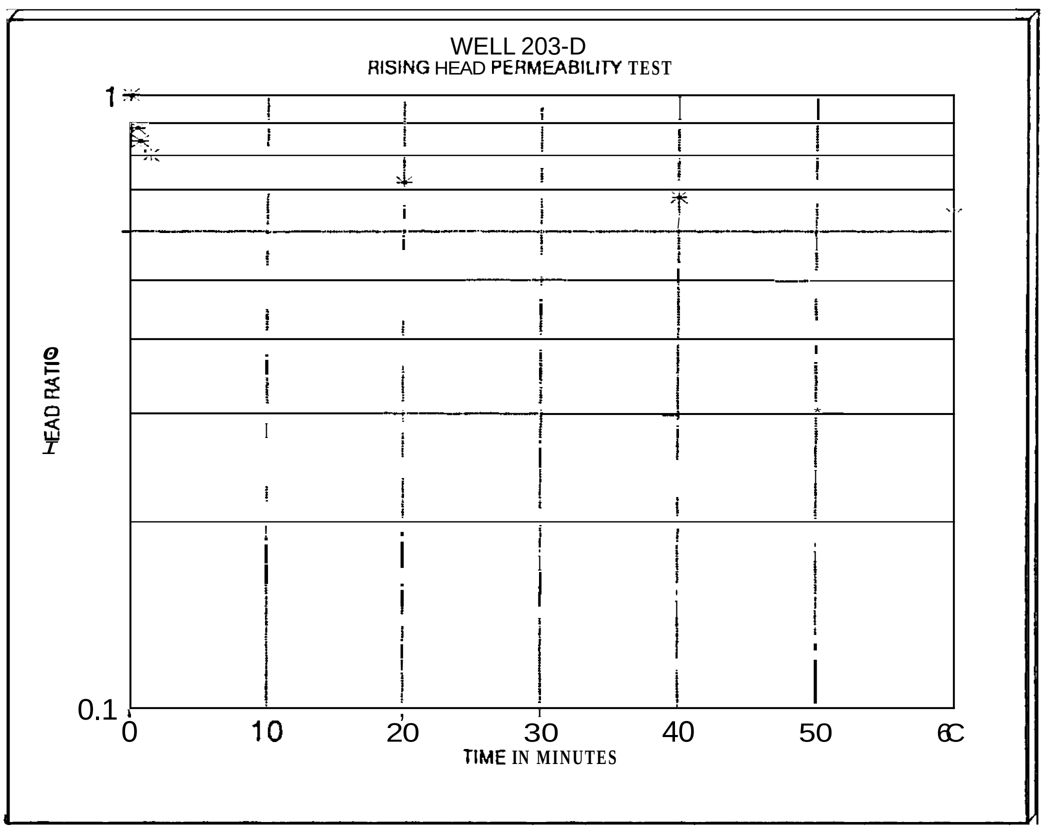
Test Section Diameter (D), in ft.:	0.83
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	3.4
m = (Kh/Kv)**0.5:	1.73
t l in min.:	0.25
t2 in min.:	60
H1 in feet:	26.71
H2 in feet:	26.64
Kh (cmlsec) =	6.3E-08
Kh (ft/min) =	1.2E-07
Kh (ft/day) =	1.8E-04

Rising Head Test Field Data

Static Wat
26.48

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
26.73	0	1.00	0.25
26.71	0.25	0.92	0.23
26.70	0.50	0.88	0.22
26.69	0.75	0.84	0.21
26.68	1.50	0.80	0.20
26.67	10	0.76	0.19
26.66	20	0.72	0.18
26.65	40	0.68	0.17
26.64	60	0.64	0.16

NOTES
1. m is the square root of the ratio of horizontal *to* vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 204-S

DATE OF TEST: 11-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in ft.:	0.83
Casing Diameter (d), in ft.:	0.17
Test Length Section (L),in ft.:	1
m = (Kh/Kv)**0.5:	1.73
t l in min.:	0.25
t2 in min.:	60
H1 in feet:	17.93
H2 in feet:	17.90
Kh (cm/sec) =	7.3E-08
Kh (ft/min) =	1.4E-07
Kh (ft/day) =	2.1E-04

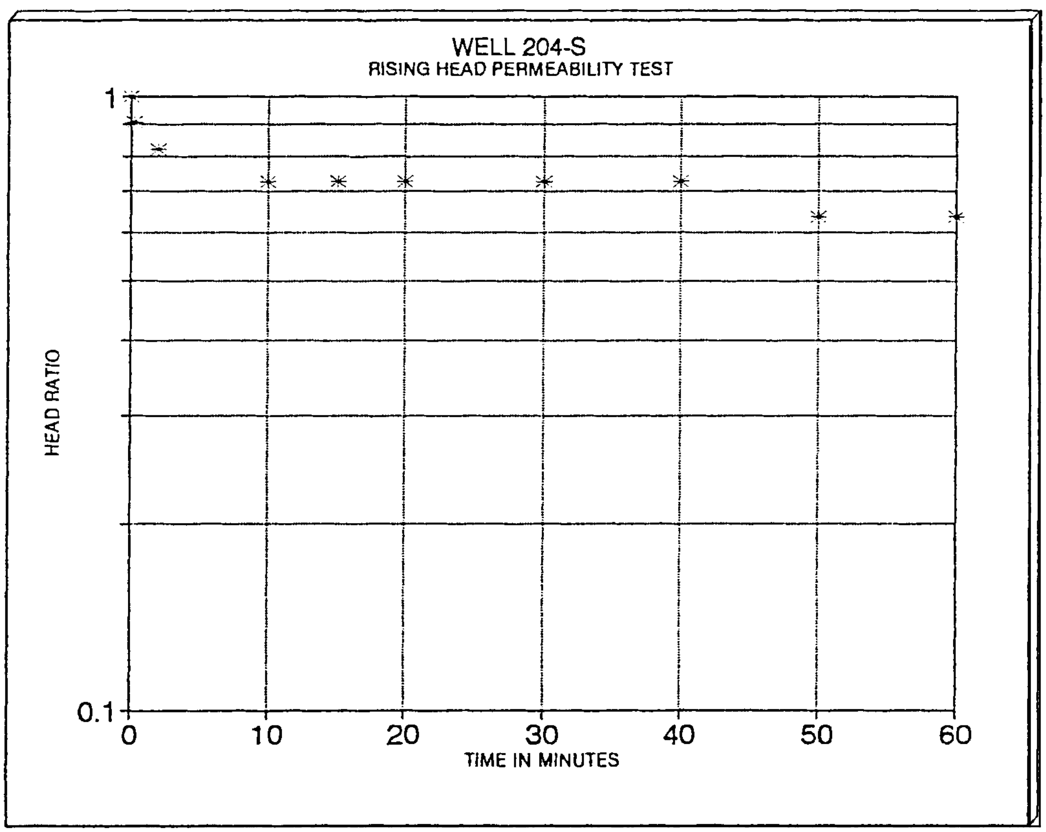
Rising Head Test Field Data

Static Wat 17.83

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
17.94	0	1.00	0.11
17.93	0.25	0.91	0.10
17.92	2	0.82	0.09
17.91	10	0.73	0.08
17.91	15	0.73	0.08
17.91	20	0.73	0.08
17.91	30	0.73	0.08
17.91	40	0.73	0.08
17.90	50	0.64	0.07
17.90	60	0.64	0.07

NOTES

1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 204-D
DATE OF TEST: [redacted]-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

Test Section Diameter (D), in ft.:	0.83
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	2
m = (Kh/Kv)**0.5:	1.73
t1 in min.:	0.5
t2 in min.:	60
H1 in feet:	31.11
H2 in feet:	31.09
Kh (cm/sec) =	2.1E-08
Kh (ft/min) =	4.1E-08
Kh (ft/day) =	6.0E-05

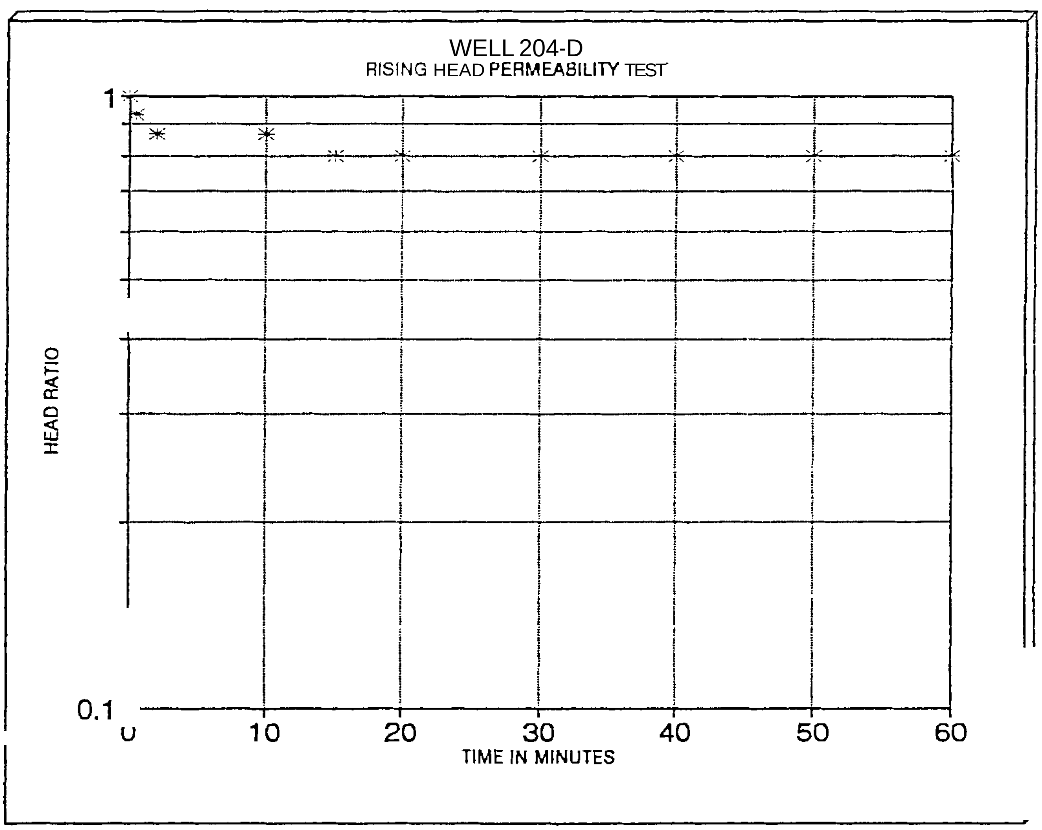
Rising Head Test Field Data

Static Wat 30.97

Depth Water (ft)	Elapsed Time (min)	Head Ratio	Residual Head (ft)
31.12	0	1.00	0.15
31.11	0.5	0.93	0.14
31.10	2	0.87	0.13
31.10	10	0.87	0.13
31.09	15	0.80	0.12
31.09	20	0.80	0.12
31.09	30	0.80	0.12
31.09	40	0.80	0.12
31.09	50	0.80	0.12
31.09	60	0.80	0.12

NOTES

1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



RISING HEAD TEST SUMMARY

WELL NAME: 205

DATE OF TEST: 11-SEPT-91

Rising Head Permeability Calculation
Hvorslev Method
Kh=[((d*d)ln((2*m*L)/D))ln(H1/H2)] / 8L(t2-t1)

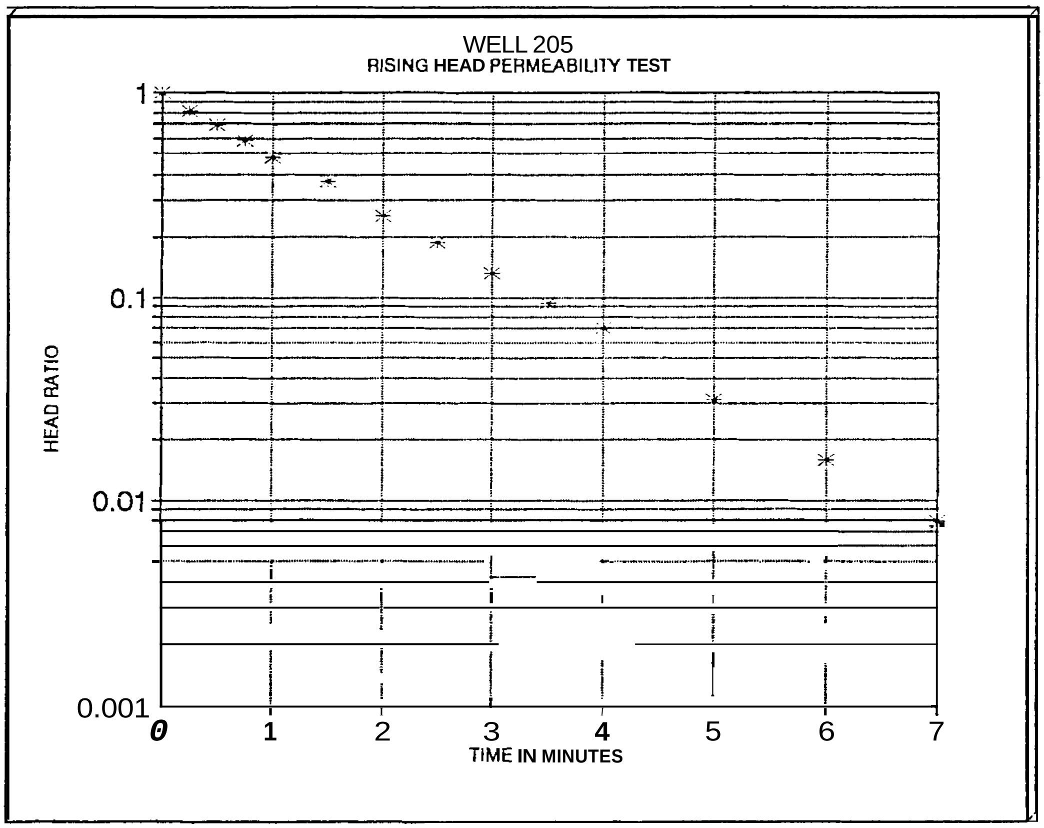
Test Section Diameter (D), in ft.:	0.83
Casing Diameter (d), in ft.:	0.17
Test Length Section (L), in ft.:	22.1
m = (Kh/Kv)**0.5:	1.73
t1 in min.:	0.25
t2 in min.:	7
H1 in feet:	23.96
H2 in feet:	22.93
Kh (cm/sec) =	2.4E-06
Kh (ft/min) =	4.8E-06
Kh (ft/day) =	6.9E-03

Rising Head Test Field Data — Static Wat 22.92

Depth Water (ft)	Elapsed Time (min)	Head Raiio	Residual Head (ft)
24.20	0	1.00	1.26
23.96	0.25	0.81	1.04
23.81	0.50	0.70	0.89
23.67	0.75	0.59	0.75
23.54	1	0.48	0.62
23.39	1.5	0.37	0.47
23.24	2	0.25	0.32
23.16	2.5	0.19	0.24
23.09	3	0.13	0.17
23.04	3.5	0.09	0.12
23.01	4	0.07	0.09
22.96	5	0.03	0.04
22.94	6	0.02	0.02
22.93	7	0.01	0.01

NOTES

1. m is the square root of the ratio of horizontal to vertical permeability.
2. Test Section Diameter (D) is equal to the borehole diameter.
3. Method taken from Hvorslev, 1951.



APPENDIX F

Laboratory Data Validation

Appendix F

Dollinger RI/FS
Laboratory Data Validation

INTRODUCTION

The sample laboratory data package representing the analysis of environmental samples collected at the Dollinger site from 1 August to 10 September 1991 is contained in five (5) sample delivery groups (SDGs). Each SDG section is delineated by the H&A of New York sampling identification number for the first sample received by the laboratory for each respective SDG.

This validation report has been prepared to assess the compliance of each SDG with the NYSDEC Analytical Services Protocol Revised December, 1989 (NYSDEC ASP 89) requirements. The report incorporates the review of the five SDGs within each data validation criterion. Any deviation from NYSDEC ASP 89 requirements is designated by the SDG number in which the deviation was noted and the associated samples listed by the H&A of New York identification number that are affected.

The sample analysis data package contains two levels of NYSDEC ASP 89 reporting formats, Category A and full NYSDEC Superfund-CLP deliverables. The sample analytical data were reviewed for as many validation criteria as could be determined with the documentation provided for each level of reporting format. Sample identifications, analysis performed and reporting formats are provided in Table 1 of the report.

FORMAT

The validation report is comprised of two sections - organic analyses and inorganic analyses respectively. Each section is divided into subsections for each validation criterion as defined by "Functional Guidelines for the Evaluation of Organic and Inorganic Analyses" USEPA, Revised February, 1988. At the end of each section of the report, a summary of each noted deviation from NYSDEC ASP 89 protocol requirements is prioritized and the reviewer's opinion is provided as to the effect on the analytical results reported. The anomaly is also determined to be either actionable or non-actionable by the contracted laboratory.

SECTION I. ORGANIC ANALYSES

A. Holding Time Compliance

Volatiles Analysis: Volatile analysis of each SDG sample was performed within five days from verified time of sample receipt (VTSR) and within seven days of sample collection as required by NYSDEC ASP 89 protocol.

Semi-Volatiles Analysis: Semi volatiles sample preparation was performed within five days of VTSR as required by NYSDEC ASP 89 for each SDG sample with the exception of samples SS-202s and SS-204s within SDG: SS-201d and GSA8(2-4) within SDG: GSA8. The initial preparation and analysis of samples SS-202s and SS-204s exhibited poor surrogate recoveries and a re-extraction was performed as required by NYSDEC ASP 89 criteria. The re-extraction was performed on 23 August 1991 or 21 days after VTSR. Since the extraction holding time was exceeded by 16 days, analytes detected as present, quantitated and reported should be flagged (J) as an estimated concentration. Analytes not detected and reported as less than (<) the contract required quantitation limit (CRQL) should be flagged (R) as rejected and unusable. Sample extraction holding time was also exceeded for sample GSA8(2-4) within sample SDG: GSA8. The VTSR for GSA8(2-4) was 15 August 1991 with extraction performed on 9 September 1991 or 20 days after expiration of the holding time. Each target analyte detected as present should be flagged (J) as estimated and each non-detect should be flagged (R) as rejected and unusable.

Pesticide/PCB Analysis: Each sample submitted for Pesticide/PCB analysis was extracted within five days of the VTSR and seven days of the sample collection as required by NYSDEC ASP 89 protocol with the exception of samples SO-201 and SO-202 in SDG: SS-201d. The initial analysis of each SDG sample exhibited a low surrogate recovery. The samples were re-extracted and analyzed as required by NYSDEC ASP 89 protocol. Although the re-extraction was performed after the expiration of the analytical hold-time, the correlation of the reported results for sample SO-202 (0.0071 and 0.010 ppb for 4,4' DDE respectively) indicate that this anomaly had no effect on the sample data.

B. GC/MS Tuning Procedure

Volatiles Analysis: GC/MS instrument tuning was performed utilizing bromofluorobenzene (BFB) within twelve hours prior to the analysis of each SDG sample as required by NYSDEC ASP 89 protocol. Observed relative ion abundance for each instrument tuning were within NYSDEC ASP 89 criteria. Each GC/MS tuning performed prior to each SDG sample analysis batch is provided in Table 2 of this report.

Semi Volatiles Analysis: GC/MS instrument tuning was performed utilizing decafluorotriphenylphosphine (DFTPP) within twelve hours of the analysis of each SDG sample as required by NYSDEC ASP 89 criteria. Observed relative ion abundance for each instrument tuning were within NYSDEC ASP 89 acceptance criteria. Each GC/MS instrument tuning performed prior to SDG sample analysis is provided in Table 3 of the report.

C. Instrument Calibration

Volatiles Analysis: GC/MS volatiles analysis was performed utilizing four instruments with GC/MS identifications of 51D, 51E, I50G, and I50H. Initial calibration for each GC/MS instrument utilized in the analysis of each sample delivery group sample was performed with five calibration standards for each target analyte ranging in concentration from 20 to 200 parts per billion (ppb). The relative standard deviation (RSD) calculated for each target analyte was less than (<) 35 percent (%) as required by NYSDEC ASP 89 criteria. The relative response factor (RRF) calculated for each analyte was greater than (>) 0.05 as required by NYSDEC ASP 89 protocol. Initial calibrations were confirmed every twelve hours utilizing a single continuing calibration standard prepared at a concentration of 50 ppb for each target analyte. The percent difference (%D) calculated for each target analyte was < 35 % and the RRF calculated for each target analyte was > 0.05 as required by NYSDEC ASP 89 protocol.

Semi-Volatiles Analysis: GC/MS semi-volatiles analysis was performed utilizing four instruments with GC/MS identifications of I50W, I50X, I50Y, and I50Z. Initial calibration of each instrument was performed with five calibration standards for each target analyte ranging in concentration from 20 to 160 ppb with the exception of benzoic acid, 2,4,5 trichlorophenol, 2-nitroaniline, 3-nitroaniline, 2,4 dinitrophenol, 4-nitrophenol, 4-nitroaniline, 4,6 dinitro-2-methylphenol, and pentachlorophenol. The preceding nine compounds were calibrated on each instrument utilizing four calibration standards ranging from 50 - 160 ppb. The relative standard deviation (RSD) for each target analyte was < 35 % and the RRF for each target analyte was >0.05 as required by NYSDEC ASP 89 protocol. After twelve hours of instrument operation, a single continuing calibration standard at a concentration of 50 ppb for each target analyte was utilized to confirm the initial calibration. The % D for each target analyte was calculated to be < 35 % and the RRF for each target analyte was calculated to be >0.05 as required by NYSDEC ASP 89 protocol.

Pesticide/PCB Analysis: Pesticide/PCB analysis of each SDG sample was performed on GC HP5890A5 utilizing a single split injection technique. Channel A was equipped with a 30 meter capillary column (#114-DB 608) and channel B was equipped with a 30 meter capillary column (#124-DB 1701). Initial and continuing calibration analyses of Evaluation B (Eval B), Independent A (IND A) and Independent B (IND B) standards were performed in the frequency required by NYSDEC ASP 89 protocol. Each Eval B standard mix analyzed concurrently with SDG samples exhibited < 15 % DDT breakdown and < 10 % RSD for each target analyte, Endrin, Aldrin, 4,4'DDT and surrogate dibutylchlorendate as required by NYSDEC ASP 89 protocol. Each IND A and IND B standard mix analyzed concurrently with SDG samples exhibited a calculated RSD of < 10% for each target analyte as required by NYSDEC ASP 89 protocol.

D. Method Blank Analysis

Volatiles Analysis: Target compounds were detected in method blank analyses associated with samples from SDGs STW-202, OW-101d, SS-20ld and GSA8. Table 4 of this report provides a list of the target compounds detected, the affected sample analyses and the recommended action levels for each target analyte as defined by "Functional Guidelines for the Evaluation of Organic Analyses" USEPA, Revised February 1988.

Refer to M. Orsanic Section Summarv and Table 4 of this report for the recommended corrective action.

Semi-Volatiles Analysis: Semi-volatile target compounds were not detected in method blank analyses associated with SDGs: GSA8, OW-101D, OW-201d and STW-202. Phenol was detected at 0.47 ppm during method blank analysis associated with SDG: SS-20ld samples SO-201, SO-202, SS-201d, SS201s, SS201sDL, SS201sRE, SS202d, SS202sDUP, SS203d, SS203s, SS203sDUP, SS204d, SS204dRE, SO201MS and SO 201MSD. The recommended action level for detected phenol concentrations within the sample analyses was determined to be 2.35 ppm as defined by "Functional Guidelines for the Evaluation of Organic Analyses" USEPA, 2/88.

Refer to M. Orsanic Section Summary for the recommended corrective action.

Pesticide/PCB Analvsis: Pesticide/PCB target compounds were not detected in method blank analyses associated with SDGs: STW-202 and OW-201d. Pesticide/PCB analyses were not performed in SDG: OW-101d. Alpha-chlordane was detected at 0.011 ppm during method blank analysis associated with SDG: SS-20ld samples. Since alpha-chlordane was not detected within any SDG: SS201d samples, no corrective action is recommended. Beta-BHC and methoxychlor were detected during method blank analyses analyzed concurrently with SDG: GSA8 samples GSA8(2-4), GSB2(2-4), GSB5(4-6), GSA8(2-4)MS/MSD, and B201s(12-14) at concentrations of 0.016 and 0.140 ppm respectively. The action level for associated SDG samples was calculated to be 0.080 and 0.70 ppm for beta-BHC and rnethoxychlor respectively as defined by the "Functional Guidelines for the Evaluation of Organic Analyses", USEPA, Revised February, 1988.

Refer to M. Orsanic Section Summary for the recommended corrective action.

E. Surrosate Recovery

Volatiles Analysis: Recovery of surrogates, toluene-d8, bromofluorobenzene and 1,2 dichloroethane-d4 were within NYSDEC ASP 89 criteria for each standard, SDG sample and quality assurance sample analysis.

Semi Volatiles Analysis: Recovery of surrogates, nitrobenzene-d5 (NTB), 2-fluorobiphenyl (2-FBP), terphenyl, phenol-d5, 2-fluorophenol, and 2,4,6 tribromophenol (2,4,6-TBP) were within NYSDEC ASP 89 criteria for each standard, SDG sample and quality assurance sample analysis with the following exceptions.

SDG	Surrogate	Sample ID	%Recovery	Criteria % (NYSDEC)
STW 202	2,4,6 TBP	Field Blank	133	10-123
STW 202	2,4,6 TBP	MS Blank	124	10-123
STW 202	2,4,6 TBP	SW 201	152	10-123
STW 202	2,4,6 TBP	SW 202	126	10-123
STW 202	2,4,6 TBP	SW 204	148	10-123
STW 202	2,4,6 TBP	SW 204dup	151	10-123
SS-201d	2-FBP	SS201sRE	244	43-116
GSA8	NTB	STW201msd	118	35-114
GSA8	2-FBP	GSA8 (2-4)	164	43-116
GSA8	2,4,6 TBP	Field Blk4	135	10-123

Since NYSDEC ASP 89 criteria only requires re-extraction and re-analysis for surrogate recoveries < 10 %, no corrective action is recommended.

Pesticide/PCB Analysis: Recovery of surrogate dibutylchlorendate was within NYSDEC ASP 89 criteria for each standard, SDG sample and quality assurance sample analysis with the exception of 19% recovery exhibited in sample SO-201MSD from SDG: SS-201d. Since no target analytes were detected in either sample SO-201 or SO-201MS, no corrective action is recommended.

F. Matrix Spike/Matrix Spike Duplicate Analysis

Volatiles Analysis: Recovery of matrix spike analytes, 1,1 dichloroethene, trichloroethene, benzene, toluene, and chlorobenzene for each volatiles analysis for both soil and water matrices were within NYSDEC ASP 89 criteria with the following exceptions.

SDG	Analyte	Sample ID	%Recovery	Criteria % (NYSDEC)
SS-20ld	Trichloroethene	MS blank2	66	75-125
SS-20ld	Benzene	MS blank2	71	75-125
SS-20ld	Toluene	MS blank2	68	75-125
SS-20ld	Chlorobenzene	MS blank2	63	75-125
GSA8	Trichloroethene	GSB1(10-12)	41	62-137
GSA8	Trichloroethene	GSA8(2-4)	140	62-137

The replicate percent difference (RPD) calculated for each matrix spike analyte was within NYSDEC ASP 89 criteria with the following exceptions.

SDG	Analyte	Sample ID	%Recovery	Criteria % (NYSDEC)
OW-201d	Trichloroethene	OW-201s	17	0-14
SS-20ld	1,1 Dichloroethene	SS-201s	23	0-22
SS-20ld	Toluene	SS-201s	22	0-21
SS-20ld	Chlorobenzene	SS-201s	25	0-21

Each matrix spike (MS) analyte recovery and calculated RPD observed outside the NYSDEC ASP 89 criteria was appropriately flagged (*) on Form III VOA-2. Since NYSDEC ASP 89 MS recovery criteria are provided for advisory purposes only, no corrective action is recommended.

Semi-Volatiles Analysis: Generally, recovery of matrix spike analytes, phenol, 2-chlorophenol, 1,4 dichlorobenzene, N-nitroso-di-n-propylamine, 1,2,4 trichlorobenzene, 4-chloro-3-methylphenol, acenaphthene, 4-nitrophenol, 2,4 nitrotoluene, pentachlorophenol and pyrene were within NYSDEC ASP 89 criteria.

Generally, the replicate percent difference (RPD) calculated for each matrix spike analyte was also within NYSDEC ASP 89 criteria.

Matrix spike analyte recoveries and calculated RPDs observed outside NYSDEC ASP 89 criteria were appropriately flagged (*) on Form III SV-2. Since NYSDEC ASP 89 MS criteria are provided for advisory purposes only, no corrective action is recommended.

Pesticide/PCB Analysis: Generally, the recovery of matrix spike analytes, gamma-BHC (Lindane), Heptachlor, Aldrin, Dieldrin, Endrin, 4,4'-DDT were within NYSDEC ASP 89 criteria. Each matrix spike analyte recovery observed outside the NYSDEC ASP 89 criteria was appropriately flagged (*) on Form III PEST-2. Since NYSDEC ASP 89 MS criteria are provided for advisory purposes only, no corrective action is recommended.

For each SDG sample for which matrix spike and matrix spike duplicate analysis was performed, the calculated RPD for each MS analyte was within the NYSDEC ASP 89 criteria listed on Form III PEST-2.

G. Field Duplicate Analysis

Three samples were collected in duplicate and analyzed to assess the precision of the sampling and analysis methodology. The results of each target analyte detected as present is presented in the following table. Since there is no comparison criteria established for field duplicate analysis within the NYSDEC ASP 89 protocol, the information can only be utilized to indicate the precision attained during the completion of the sampling and analysis program conducted at the Dollinger site.

SDG	Matrix	Sample IDs.	Analyte Detected	[R1]	[R2]	RPD%
SS-201d	soil	SS-202s/DUP	Acetone	0.039	0.14	115
SS-201d	soil	SS-202s/DUP	Phenanthrene	3.8	3.8	0
SS-201d	soil	SS-202s/DUP	Pyrene	7.1	10.0	34
SS-201d	soil	SS-202s/DUP	Fluoranthrene	5.8	7.2	25
SS-201d	soil	SS-202s/DUP	Benzo (a) anthracene	2.5	3.5	33
SS-201d	soil	SS-202s/DUP	Chyrsene	3.4	4.2	21
SS-201d	soil	SS-202s/DUP	Benzo(b) fluoro-anthene	6.0	6.8	12
SS-201d	soil	SS-202s/DUP	Benzo(k) fluoro-anthene	2.2	2.5	13
SS-201d	soil	SS-202s/DUP	Benzo(a)pyrene	3.6	3.7	2.7
SS-201d	soil	SS-202s/DUP	Indeno(123 cd) pyrene	2.0	2.8	33
SS-201d	soil	SS-202s/DUP	Benzo(ghi)-perylene	1.4	1.6	13
SS-201d	soil	SS-202s/DUP	Bis(2-ethylhexyl) phthalate	1.5	1.1	5.3
SS-201d	soil	SS-203s/DUP	Acetone	74	78	5.3
STW-202	water	SW-204/DUP		ND	ND	---

The calculated RPD for each analyte is indicative of representative sampling and analysis determinations normally observed within environmental media with the exception of acetone in SDG sample SS-202s/DUP. Since acetone is a known common laboratory contaminant and the RPD exhibited for acetone within the sample matrix is high relative to other target analytes detected, the reported result for acetone may not be indicative of the actual site conditions.

H. Internal Standard Summarv

Volatiles Analvsis: Internal standards, bromochloromethane, difluorobenzene and chlorobenzene-d6 exhibited total area counts for each standard, SDG sample and quality assurance sample analysis within the NYSDEC ASP 89 criteria of -50% and +100% relative to the initial or corresponding continuing calibration standard for each analytical batch. Relative retention time (RRT) for each internal standard within each standard, SDG sample and quality assurance sample fell within the NYSDEC ASP 89 criteria of ± 0.06 RRT units of the corresponding initial or continuing calibration standard.

Semi-Volatiles Analysis: Internal standards, 1,4 dichlorobenzene-d4, naphthalene-d8, acenaphthene-d10, phenanthene-d10, chyrsene-dl2 and perylene-dl2 exhibited total area counts for each standard, SDG sample and quality assurance sample analysis within the NYSDEC ASP 89 protocol criteria of -50% and +100% relative to the initial calibration or corresponding continuing calibration standard for each analytical batch with the exception of Perylene-dl4 in samples SS-204d, SS202s dup, SS204dRE and SS201s from SDG: SS-201d. Due to a low relative response of Perylene-dl4 within the sample matrix, the reported results for Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(123cd)pyrene, Dibenz(a,h)anthracene and Benzo(g,h,i) perylene for each sample analysis may exhibit a "high bias" from the actual concentrations within the sample matrix and may not be indicative of the site conditions.

Refer to M. Oraanic Section Summary for recommended corrective actions.

The relative response time for each internal standard within each standard, SDG sample and quality assurance sample analysis fell within the NYSDEC ASP 89 criteria of ±0.06 RRT units of the corresponding initial and continuing calibration standard.

I. Tarqet Compound Identification and Quantitation

Volatiles Analvsis: Target compounds detected as present appeared to be identified and quantitated correctly. A random spot check of at least two target compound quantitations per SDG indicated that each analyte was reported correctly.

Semi Volatiles Analysis: Target analytes detected as present, quantitated and reported appeared to be correct based on a random spot check of two target analyte quantitations per sample delivery group.

Pesticide/PCB Analysis: Beta-BHC, methoxychlor and 4,4' DDE were the only target analytes detected as present within the SDG samples. The identification and quantitation for each analyte was performed in accordance with NYSDEC ASP 89 protocol.

J. Detection Limit Reporting

Volatile, Semi Volatile and Pesticide\PCB Analysis: Reported detection limits were adjusted for sample volume analyzed, percent moisture exhibited in soil matrices and post preparation dilutions (if required) to provide accurate quantitation within instrument calibration. A random spot check of two reported detection limits per sample matrix per analysis per SDG indicated that the adjusted reporting limits were reported correctly.

K. Tentatively Identified Compound (TIC) Quantitations

Volatiles and Semi Volatiles Analysis: Several tentatively identified compounds were detected as present within the SDG samples during volatiles and semi-volatiles analysis. TICs were appropriately identified as to compound classification based on mass spectral characteristics (eg. Unknown hydrocarbon). A random spot check of two TIC quantitations per sample analysis per SDG indicated the reported values to be determined in accordance with NYSDEC ASP 89 protocol.

L. Data Package Completeness

Each SDG was presented with documentation required for compliance with NYSDEC ASP 89 Category A or Superfund-CLP deliverables where applicable with the following exceptions.

1. Method Detection Limit Tables for each organic analysis methodology performed were not provided for each SDG.

2. NYSDEC Forms 1 through 7 were not provided for SDGs: OW101d and OW201d.

M. Organic Section Summary

Actionable Items:

See attached communication addressed to the contracted laboratory dated 8 November 1991.

Non-actionable Items:

Holding Time Non-Compliance: Semi-Volatiles extraction of samples SS-202s, SS-204s and GSA8(2-4) were performed outside of the analytical holding time requirements. The target analytes detected as present within the samples should be flagged (J) as estimated concentrations. The target analytes not detected as present should be flagged (R) as rejected.

Internal Standard Summary Criteria: Samples SS-201s and SS-202s DUP exhibited a possible matrix interference in the determination of the target analytes benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene and dibenz(a,h)anthracene. With the corresponding internal standard, Perylene-d14, exhibiting a low relative response within each sample matrix, the quantitated results were reported with an inherent high bias. The reported concentrations for the analytes listed above within samples SS-201s and SS-202sDUP should be flagged (J) as estimated. Based on the reduced response of Perylene-D14 within the sample matrices of greater than one order of magnitude from the response exhibited within the corresponding calibration standard, it is estimated that the reported results are likely to be biased 5 to 10 times higher than the actual concentration within the sample matrix.

Method Blank Analyses

Volatiles Analysis: Several target analytes were detected as present during volatiles analysis of the SDG samples. Table 4 of this report provides the recommended action levels for each target analyte detected during method blank and the corresponding sample analysis. For each target analyte detected concurrently within the method blank and associated SDG samples, the reported SDG sample results should be adjusted to the action levels when the reported result falls between the action level and non-detection. If the sample result is above the action level, the result should remain unchanged.

Refer to Table 4 of this report which provides the detected target analyte, the associated SDG sample numbers and the recommended reporting limit.

Semi-Volatiles Analysis: No target analytes were detected as present during method blank analysis with the exception of phenol detected at 0.47 parts per million (ppm) in method blank SBLK 95 of SDG: SS-201d. The reported concentration of phenol detected within the associated SDG samples was above non-detection and below the calculated action level of 2.35U ppm, the reported results for the associated SDG samples should be changed to <2.35U.

Pesticide/PCB Analvsis: No target analytes were detected as present during method blank analyses performed with each SDG sample with the exception of beta-BHC and methoxychlor in SDG: GSA8, and alpha-chlordane in SDG: SS-20ld. The reported concentration of beta-BHC and methoxychlor detected within the associated SDG samples was below the calculated action level of 0.080 and 0.70 ppm respectively. The reported results should be adjusted to <0.080U and <0.70U for beta-BHC and methoxychlor respectively for the associated SDG samples. Alpha-chlordane was not detected as present in any of the associated SDG samples, therefore, no corrective action is recommended.

Surrosate Recovery

Semi-Volatiles Analvsis: Several surrogate recoveries were calculated to be above the NYSDEC ASP 89 acceptance criteria. The apparent high bias of the surrogate recoveries can be attributed to two possible analytical anomalies. The cause for the observed high bias is most likely a result of low internal standard response observed within the sample matrix of the associated samples. The low internal standard response produces an apparent higher relative response of the surrogate compounds and thus a higher quantitated result than the theoretical surrogate spike concentration. A second but less likely cause may be an analytical error in either the preparation of the surrogate spike solution or addition of the surrogate spike to the sample matrix. Since high surrogate recoveries indicate a high extraction efficiency was achieved during sample preparation, no corrective action based on the surrogate recovery data is recommended.

Matrix Spike/Matrix Spike Duplicate Analvsis

Volatiles Analvsis: The matrix spike recovery of trichloroethene (TCE) outside NYSDEC ASP 89 criteria exhibited in samples GSB1(10-12) and GSA8(2-4) can be attributed to relatively higher concentrations of the target analytes within the sample matrix which masked the recovery of the TCE spike. This anomaly is a matrix specific condition and should not be considered indicative of the accuracy of the laboratory analysis. Therefore, no corrective action is recommended.

Semi-Volatiles Analvsis: Several matrix spike analytes exhibited consistently low recovery from the sample matrices. The consistency of the matrix spike recovery bias indicates either a uniform matrix interference throughout the SDG samples or an analytical error in the preparation and analysis of the matrix spike analytes. Matrix spike blanks analyzed concurrently with the SDG samples also exhibited consistently low recoveries for acid-extractable analytes which indicates a possible method bias for the target analytes may have occurred. Since the quality control limits recommended by NYSDEC ASP 89 are "advisory only" for matrix spike blank recoveries, no corrective action is recommended.

Pesticide/PCB Analysis: Matrix spike recoveries calculated for several analytes were outside the NYSDEC ASP 89 protocol criteria. No discernible trend can be determined from the erratic matrix spike recovery data. Since no target analytes were detected above the contract required quantitation limits and the matrix spike data indicates that a majority of the analytes could be determined from the sample matrices, no corrective action is recommended.

Matrix Spike Duplicate Analysis (RPD)

Volatiles, Semi Volatiles and Pesticide/PCB Analyses: Several analytes were determined within the sample matrices exhibiting a replicate percent difference (RPD) above the NYSDEC ASP 89 acceptance criteria. Generally, the variable precision observed appeared to be a function of sample matrix non-homogeniety. No corrective action is recommended.

Data Packase Completeness: Several integral portions of the data package were not available within the first submittal of the data package from the laboratory. These omissions have been requested from the laboratory for inclusion within the final data package.

SECTION II. INORGANICS ANALYSES

INTRODUCTION

Samples were submitted to the contract laboratory for inorganics analysis within sample delivery groups (SDGs) STW-202, SS-201d, GSA8 and OW-201d. Inorganics analyses were not performed within SDG: OW-101d. Inorganics analyses performed included elemental analysis by graphite furnace atomic absorption (GFAA) spectroscopy, flame atomic absorption (FAA) spectroscopy, inductively coupled plasma atomic emission spectroscopy (ICP-AES) and mercury cold vapor atomic absorption analysis (CVAA). For samples submitted within each SDG for "Full TCL" analysis, cyanide analysis was also performed by manual spectrophotometric wet chemistry.

A. Holding Time Compliance

Each mercury analysis performed on SDG samples was prepared and analyzed within 26 days of verified time of sample receipt (VTSR) as required by NYSDEC ASP 89 protocol. Each cyanide analysis was performed within 12 days of VTSR as required by NYSDEC ASP 89 protocol.

B. Instrument Calibration

Six instruments were utilized in elemental analysis of the SDG samples. The following Table lists the instrument identification, type and analytes determined during inorganic analysis.

Identification	Type	Analytes Determined
ARL 3560	ICP-AES	Barium (Ba), Beryllium (Be) Cadmium (Cd), Chromium (Cr), Copper (Cu), Magnesium (Mg), Manganese (Mn), Nickel (Ni), and Zinc (Zn)
PE 3100	FAA	Calcium (Ca), Cobalt (Co) Manganese (Mn)
PE 5100 #1	GFAA	Arsenic (As), Lead (Pb) Thallium (Tl)
PE 5100 #2	GFAA	Lead (Pb), Selenium (Se) Thallium (Tl)
PE 5100 #3	GFAA	Antimony (Sb), Arsenic (As) Lead (Pb), Thallium (Tl)
PE 2380	CVAA	Mercury (Hg)

Initial calibration verification standard recovery of each analyte for each instrumental analysis batch was within NYSDEC ASP 89 criteria of 90-110 % of the true value.

Continuing calibration verification standard recovery analyzed within each instrumental analysis batch was within the NYSDEC ASP 89 criteria of 90 to 110 % of the true value for ICP-AES, GFAA, and FAA analysis and 80 to 120 % recovery of true value for mercury analysis by CVAA, and 85 to 115 % recovery for cyanide analyses.

C. Contract Required Detection Limit (CRDL) Standard Recovery

CRDL standard recovery for each analyte ranged from 80 to 167 % recovery for SDG: OW-201d, 63 to 160 % for SDG: STW-202, 33 to 250 % for SDG: SS-201d and 32 to 173 % for SDG: GSA8. Since acceptance criteria for CRDL standard is yet to be established by NYSDEC, no corrective action is recommended.

D. Initial Calibration Blank (ICB), Continuing Calibration Blank (CCB) and Preparation Blank (PB) Results

No inorganic analytes were detected at concentrations above the CRDL within the ICB, CCB, or PB analyzed concurrently with each SDG sample.

E. ICP Interference Check Sample Analysis

ICP interference check samples analyzed concurrently with SDG samples exhibited percent recoveries for each target inorganic analyte within NYSDEC ASP 89 criteria of ± 20 % of the true value.

F. Matrix Spike Sample Analysis

Matrix spike recoveries for each inorganic analyte ranged from 78 to 138% for SDG : STW-202, 70 to 200% for SDG : GSA8, and 60 to 120 % for SDG : OW-201d. Matrix spike recoveries for SDG : SS-201 d sample SO-201s MS were As (24%), Sb (0%), Ba (54%), Be (53%), Cd (38%), Cr (48%), Co (50%), Cu (50%), Pb (73%), Ni (55%), Se (0%), Ag (38%), Tl (68%), V (52%) and Zn (21%). Matrix spike recoveries for SDG : SS-201d sample TP-201 MS were As (34%), Sb (0.0%), Ba (58%), Be (53%), Cd (10%), Cr (55%), Co (51%), Cu (57%), Pb (70%), Mn (461%), Ni (60%), Ag (29%), Tl (54%), V (51%), and Zn (45%).

The consistent low recovery of each respective analyte may indicate that a uniform matrix interference exists within each matrix spike sample for SDG: SS201d. Since acceptance criteria are yet to be established by NYSDEC for matrix spike recoveries, no corrective action is recommended.

G. Matrix Duplicate Analysis

The replicate percent difference (RPD) calculated for matrix duplicate analyses performed within SDG: STW-202, SDG: SS-201d, SDG: GSA8 and SDG: OW-201d for each analyte detected as present were within NYSDEC ASP 89 criteria of ± 20 % or ± CRDL for analyte concentrations detected below five times the CRDL.

H. Laboratory Control Sample (LCS) Results

LCS materials analyzed concurrently with each SDG sample were provided by private vendors, ERA and Inorganic Ventures for solid and aqueous matrices respectively. The recovery of each analyte for each LCS determination fell within the criteria established by the manufacturer as presented on Form VII-IN within each SDG data package.

I. ICP Serial Dilution Analysis

ICP serial dilution analysis was performed concurrently with each SDG. Analytes detected at a concentration of > 50 times the instrument detection limit (IDL) for each sample matrix was analyzed at a five fold dilution at least once within each SDG. Analytes which exhibited >10% difference from the original undiluted result were flagged "E" on Form I-IN and Form XI-IN within the SDG data package.

J. Instrument Detection Limits (IDLs)

Each IDL reported was equivalent to or below the NYSDEC ASP 89 CRDL for each analyte analyzed by ICP, GFAA, FAA, and CVAA. Each IDL reported was determined within 90 days prior to the analysis of the SDG samples as required by NYSDEC ASP 89 protocol.

K. **ICP Interelement Correction Factors (ICFs)**

ICP ICFs were determined 4 June 1991 which was within 12 months of the analysis of the SDG samples as required by NYSDEC ASP 89 protocol.

L. **ICP Linear Ranges**

ICP linear ranges for each analyte were determined 25 April 1991 and 14 September 1991 which bracket the analysis of the SDG samples. Although ICP linear ranges were determined more than 90 days prior to the analysis of the SDG samples as required by NYSDEC ASP 89 protocol, the close correlation of the 25 April 1991 ICP linear range determinations as compared to the 14 September results indicates the analysis of the SDG samples was not affected. No correction action is recommended.

M. Summary

Actionable Items: See attached correspondance with the contracted laboratory dated 8 November 1991 and 14 November 1991.

Non-Actionable Items: None noted by the reviewer.

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Table 1
Analytical Requirement Summary

SDG No.	Sample No.	Volatiles	Semi Volatiles	Pest./PCB	Inorganics	Pet. Hydrocarbons	Reporting Criteria
STW-202	STW-202	x	x		x	x	Category A
	SW-201	x	x		x	x	Category A
	SW-202	x	x		x	x	Category A
	SW-204	x	x		x	x	Category A
	SW-204DUP	x	x		x	x	Category A
	FIELD BLANK	x	x	x	x		Full CLP
	TRIP BLK-1	x					Category A
	TRIP BLK-2	x					Category A
	TRIP BLK-3	x					Category A
SS-201d	SS-201d	x	x		x	x	Category A
	SS-202d	x	x		x	x	Category A
	SS-203d	x	x		x	x	Category A
	SS-204d	x	x		x	x	Category A
	SS-204s	x	x		x	x	(category A
	SS-202s	x	x		x		Category A
	SS-201s	x	x		x		Category A
	SS-202sDUP	x	x		x		Category A
	SO-201	x	x	x	x		Full CLP
	SO-202	x	x	x	x		Full CLP
	TP-201	x	x	x	x		Full CLP
	TP-202	x	x				Category A
	TP-203	x	x				Category A
	TP-204	x	x	x	x		Full CLP
	TP-205	x	x				Category A
	TP-206	x	x				Category A
	TRIP BLANK	x					Category A
GSA8	GSA8	x	x	x	x		Full CLP
	GSB2	x	x	x	x		Full CLP
	GSA4	x					Category A
	GSB5	x	x	x	x		Full CLP
	GSB1	x	x				Category A
	GSB4	x	x				Category A
	B-201d	x	x	x	x		Full CLP
	B-201s	x	x	x	x		Full CLP
	B-202d	x	x				Category A
	B-202s	x	x				Category A
	B-203d	x	x				Category A
	B-203s	x	x				Category A
	STW-201	x	x				Category A
	FBLK-1	x	x	x	x		Full CLP
	FBLK-2	x	x	x	x		Full CLP

Notes:
1. Volatiles - Target Compound List Volatiles NYSDEC ASP Method 89-1
2. Semi Volatiles - Target Compound List Semi Volatiles NYSDEC ASP Method 89-2
3. Pesticides\PCB - Target Compound List Pesticides\PCB NYSDEC ASP Method 89-3
4. Inorganics - Target Compound List Inorganics CLP SOW Inorganics 2/88
5. Pet. Hydrocarbons - NYSDOH Petroleum Hydrocarbon Method 310.13

Table 1
Analytical Requirement Summary

SDG No.	Sample No.	Volatiles	Semi Volatiles	Pest./PCB	Inorganics	Pet. Hydrocarbons	Reporting Criteria
	FBLK-3	x	x				Full CLP
	FBLK-4	x	x				Full CLP
	TBLK-1	x					Category A
	TBLK-2	x					Category A
	TBLK-3	x					Category A
	TBLK-4	x					Category A
OW-101d	OW-101d	x	x				Category A
	OW-101s	x	x				Category A
	OW-102d	x	x				Category A
	OW-102S	x	x				Category A
	OW-103d	x	x				Category A
	OW-103s	x	x				Category A
	OW-104d	x	x				Category A
	OW-104s	x	x				Category A
	OW-105d	x	x				Category A
	OW-105s	x	x				Category A
	OW-106d	x	x				Category A
	OW-106s	x	x				Category A
	OW-202d	x	x				Category A
	OW-202s	x	x				Category A
	OW-203d	x	x				Category A
	OW-203S	x	x				Category A
	OW-204d	x	x				Category A
	OW-204s	x	x				Category A
	OW-205	x	x				Category A
	TRIP BLANK	x					Category A
OW-201d	OW-201d	x	x	x	x		Full CLP
	OW-201s	x	x	x	x		Full CLP
	FIELD BLANK	x	x		x		Full CLP

Notes:
1. Volatiles - Target Compound List Volatiles NYSDEC ASP Method 89-1
2. Semi Volatiles - Target Compound List Semi Volatiles NYSDEC ASP Method 89-2
3. Pesticides\PCB - Target Compound List Pesticides\PCB NYSDEC ASP Method 89-3
4. Inorganics - Target Compound List Inorganics CLP SOW Inorganics 2/88
5. Pet. Hydrocarbons - NYSDOH Petroleum Hydrocarbon Method 310.13

Table 2
GC/MS TUNING PROCEDURE

GC MS Tuning Criteria–Volatiles Bromofluorobenzene (BFB)		Instrument: 51e	Instrument: 51e
		Date: 5 August 91	Date: 6 August 91
		Time: 1350	Time: 0930
Mass (m/z)	Ion Abundance Criteria	SDG : STW-202	SDG : STW-202
50	15.0-40.0 % of the base peak	32.7	31.8
75	30.0-60.0 % of the base peak	56.0	56.8
95	base peak, 100 % relative abundance	100.0	100.0
96	5.0-9.0 % of the base peak	6.1	5.3
173	less than 2.0 % of mass 174	0.0	0.0
174	greater than 50.0 % of the base peak	52.4	58.9
175	5.0-9.0 % of mass 174	6.9	6.4
176	greater than 95.0 % but less than 101.0 % of mass 174	98.7	99.8
177	5.0-9.0 % of mass 196	5.8	6.4

GC MS Tuning Criteria–Volatiles Bromofluorobenzene (BFB)		Instrument: I50g	Instrument: I50g
		Date: 5 August 91	Date: 7 August 91
		Time: 1447	Time: 0935
Mass (m/z)	Ion Abundance Criteria	SDG : STW-202	SDG : STW-202
50	15.0-40.0 % of the base peak	28.3	25.4
75	30.0-60.0 % of the base peak	55.2	56.6
95	base peak, 100 % relative abundance	100.0	100.0
96	5.0-9.0 % of the base peak	7.3	7.1
173	less than 2.0 % of mass 174	0.0	0.0
174	greater than 50.0 % of the base peak	79.9	79.2
175	5.0-9.0 % of mass 174	8.9	8.3
176	greater than 95.0 % but less than 101.0 % of mass 174	99.8	99.7
177	5.0-9.0 % of mass 196	7.5	5.1

GCMS Tuning Criteria–Volatiles Bromofluorobenzene (BFB)		/Instrument: 150h	Instrument: 51d
		Date: 6 August 91	Date: 8 August 91
		Time:2114	Time: 1752
Mass (m/z)	Ion Abundance Criteria	SDG : SS-201d	SDG : GSA8
50	15.0-40.0 % of the base peak	21.9	22.7
75	30.0-60.0 % of the base peak	52	53.8
95	base peak, 100 % relative abundance	100	100
96	5.0-9.0 % of the base peak	7.2	6.2
173	less than 2.0 70 of mass 174	0.0	0
174	greater than 50.0 % of the base peak	79.4	67.3
175	5.0-9.0 % of mass 174	6.2	5.9
176	greater than 95.0 % but less than 101.0 % of mass 174	100	95.9
177	5.0-9.0 % of mass 196	5.8	6.1

Table 2
GC/MS TUNING PROCEDURE

Mass (m/z)	GCMS Tuning Criteria-Volatiles Bromofluorobenzene(BFB) Ion Abundance Criteria	Instrument:51d Date:9 Sept. 91 Time:0952 SDG :OW-101d SDG :OW-201d	Instrument:51d Date:10 Sept. 91 Time:1001 SDG :OW-101d SDG :OW-201d
50	15.0-40.0 % of the base peak	25.8	23.5
75	30.0-60.0 % of the base peak	58	55.6
95	base peak, 100 % relative abundance	100	100
96	5.0-9.0 % of the base peak	7.6	6.1
173	less than 2.0 % of mass 174	0	0
174	greater than 50.0 % of the base peak	57.4	52.8
175	5.0-9.0 % of mass 174	6.4	6.4
176	greater than 95.0 $5 but less than 101.0 % of mass 174	97.7	95.2
177	5.0-9.0 % of mass 196	6.3	5.8

Mass (m/z)	GCMS Tuning Criteria-Volatiles Bromofluorobenzene(BFB) Ion Abundance Criteria	Instrument:51e Date:10 Sept. 91 Time:0926 SDG :OW-101d SDG :OW-201d	Instrument:51e Date:10 Sept. 91 Time:2130 SDG :OW-101d SDG :OW-201d
50	15.0-40.0 % of the base peak	26.8	25.2
75	30.0-60.0 % of the base peak	54	51.6
95	base peak, 100 % relative abundance	100	100
96	5.0-9.0 % of the base peak	7.6	8.9
173	less than 2.0 % of mass 174	0	0
174	greater than 50.0 % of the base peak	75.4	79
175	5.0-9.0 % of mass 174	7.8	8.6
176	greater than 95.0 % but less than 101.0 % of mass 174	96.8	97.2
177	5.0-9.0 % of mass 196	8.2	7.8

Table 3
GCMS Tuning Procedure

GC MS Tuning Criteria– Semi–Volatiles
Decafluorotriphenylphosphine (DFTPP)

Mass (m/e)	Ion Abundance Criteria	Instrument: I50w, Date: 21 August 91, Time: 1116, SDG :STW-202	Instrument:I50w, Date: 24 August 91, Time: 1225, SDG :STW-202
51	30.0-60.0 % of mass 198	39.6	57.9
68	less than 2.0 % of mass 69	(0.0)1	(1.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	44.6	55.6
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.9	6.4
275	10.0-30.0 % of mass 198	23.9	20.3
365	greater than 1.00 % of mass 198	2.45	1.76
441	present but less than mass 443	8.7	7.6
442	greater than 40.0 % of mass 198	64.7	57.5
443	17.0-23.0 % of mass 442	(21.0)2	(18.2)2

1 = % of mass 69   2 = % of mass 442

GC MS Tuning Criteria– Semi–Volatiles
Decafluorotriphenylphosphine (DFTPP)

Mass (m/e)	Ion Abundance Criteria	Instrument: I50w, Date: 26 August 91, Time: 1808, SDG :STW-202	Instrument:I50z, Date:22 August 91, Time:1445, SDG :STW-202
51	30.0-60.0 % of mass 198	41	57.9
68	less than 2.0 % of mass 69	(0.0)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	49.1	48.9
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	7.5	6.4
275	10.0-30.0 % of mass 198	25.9	24.6
365	greater than 1.00 % of mass 198	2.63	1.43
441	present but less than mass 443	11.8	7.8
442	greater than 40.0 % of mass 198	78	69.8
443	17.0-23.0 % of mass 442	(21.8)2	(18.6)2

1 = % of mass 69   2 = % of mass 442

GC MS Tuning Criteria– Semi–Volatiles
Decafluorotriphenylphosphine(DFTPP)

Mass (m/e)	Ion Abundance Criteria	Instrument:I50y, Date:21 August 91, Time:1134, SDG :SS-201d	Instrument:I50y, Date:22 August 91, Time:1015, SDG :SS-201d
51	30.0-60.0 % of mass 198	38.2	39.8
68	less than 2.0 % of mass 69	(0.0)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	44	41.1
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6	5.9
275	10.0-30.0 % of mass 198	17.1	18.7
365	greater than 1.00 % of mass 198	1.11	1.17
441	present but less than mass 443	8.2	10.5
442	greater than 40.0 % of mass 198	64.8	84
443	17.0-23.0 % of mass 442	(17.2)2	(17.8)2

1 = % of mass 69   2 = % of mass 442

Table 3
GCMS Tuning Procedure

	GC MS Tuning Criteria– Semi–Volatiles Decafluorotriphenylphosphine (DFTPP)	Instrument:I50y	Instrument:I50Y
		Date:23 August 91	Date:24 August 91
		Time:1024	Time:1306
Mass (m/e)	Ion Abundance Criteria	SDG :SS-201d	SDG :SS-201d
51	30.0-60.0 % of mass 198	48.6	45.6
68	less than 2.0 % of mass 69	(0.0)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	44	40.8
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6	6.4
275	10.0-30.0 % of mass 198	17.1	19.8
365	greater than 1.00 % of mass 198	1.11	1.3
441	present but less than mass 443	8.2	7.5
442	greater than 40.0 % of mass 198	64.8	69.3
443	17.0-23.0 % of mass 442	(17.7)2	(18.6)2

1 = % of mass 69 2 = % of mass 442

	GC MS Tuning Criteria– Semi–Volatiles Decafluorotriphenylphosphine (DFTPP)	Instrument:I50y	Instrument:I50Y
		Date:29 August 91	Date:2 Sept. 91
		Time:0853	Time:1357
Mass (m/e)	Ion Abundance Criteria	SDG :SS-201d	SDG :SS-201d
51	30.0-60.0 % of mass 198	42.2	58
68	less than 2.0 % of mass 69	(0.0)1	(0.0) 1
70	less than 2.0 % of mass 69	(0.6)1	(0.0) 1
127	40.0-60.0 % mass of peak 198	49	55.2
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.2	6.4
275	10.0-30.0 % of mass 198	21.3	18
365	greater than 1.00 % of mass 198	1.8	2.02
441	present but less than mass 443	6	4.9
442	greater than 40.0 % of mass 198	44.9	44.7
443	17.0-23.0 % of mass 442	(17.7)2	(19.3)2

1 = % of mass 69 2 = % of mass 442

	GC MS Tuning Criteria– Semi–Volatiles Decafluorotriphenylphosphine (DFTPP)	Instrument:I50z	Instrument:I50W
		Date:23 August 91	Date:30 August 91
		Time:1132	Time:1542
Mass (m/e)	Ion Abundance Criteria	SDG :SS-201d	SDG :GSA8
51	30.0-60.0 % of mass 198	56.8	54.1
68	less than 2.0 % of mass 69	(0.0)1	(1.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	48.3	42
197	less than 1.0 % of mass 198	0	0.2
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.3	7.5
275	10.0-30.0 % of mass 198	27.4	22.2
365	greater than 1.00 % of mass 198	1.9	2.2
441	present but less than mass 443	11.1	8
442	greater than 40.0 % of mass 198	79.3	64.6
443	17.0-23.0 % of mass 442	(17.6)2	(21.3)

1 = % of mass 69 2 = % of mass 442

Table 3
GCMS Tuning Procedure

	GC MS Tuning Criteria- Semi-Volatiles Decafluorotriphenylphosphine(DFTPP)	Instrument:I50W	Instrument:I50x
		Date:18 August 91	Date:4 Sept 91
		Time:0950	Time:1230
Mass (m/e)	Ion Abundance Criteria	SDG :GSA8	SDG :GSA8
51	30.0-60.0 % of mass 198	53.1	52
68	less than 2.0 % of mass 69	(0.2)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	48.4	43.7
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0% of mass 198	6.5	6.6
275	10.0-30.0 % of mass 198	19.4	21.2
365	greater than 1.00 % of mass 198	1.58	2.51
441	present but less than mass 443	4.8	11.8
442	greater than 40.0 % of mass 198	40.4	91.6
443	17.0-23.0 % of mass 442	(18.4)2	(19.8)2

1 = % of mass 69   2 = % of mass 442

	GC MS Tuning Criteria- Semi-Volatiles Decafluorotriphenylphosphine(DFTPP)	Instrument:I50Y	Instrument:I50y
		Date:2 Sept.91	Date:4 Sept. 91
		Time:1357	Time:1057
Mass (m/e)	Ion Abundance Criteria,	SDG :GSA8	SDG :GSA8
51	30.0-60.0 % of mass 198	58	52.7
68	less than 2.0 % of mass 69	(0.0)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	55.2	48.1
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.4	6.3
275	10.0-30.0 % of mass 198	18	19.9
365	greater than 1.00 % of mass 198	2.02	2.18
441	present but less than mass 443	4.9	7
442	greater than 40.0 % of mass 198	44.7	54.8
443	17.0-23.0 % of mass 442	(19.3)2	(20.1)2

1 = % of mass 69   2 = % of mass 442

	GC MS Tuning Criteria- Semi-Volatiles Decafluorotriphenylphosphine(DFTPP)	Instrument:I50y	Instrument:I50y
		Date:5 Sept. 91	Date:6 SEPT 91
		Time:1024	Time:0857
Mass (m/e)	Ion Abundance Criteria	SDG :GSA8	SDG :GSA8
51	30.0-60.0 % of mass 198	51.1	40.4
68	less than 2.0 % of mass 69	(0.0)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.2)1
127	40.0-60.0 % mass of peak 198	48.7	47.3
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.4	6.2
275	10.0-30.0 % of mass 198	20.7	21.3
365	greater than 1.00 % of mass 198	2.35	2.6
441	present but less than mass 443	7.8	9.1
442	greater than 40.0 % of mass 198	63.7	67.1
443	17.0-23.0 % of mass 442	(18.8)2	(19.1)2

1 = % of mass 69   2 = % of mass 442

Table 3
GCMS Tuning Procedure

Mass (m/e)	GC MS Tuning Criteria– Semi–Volatiles Decafluorotriphenylphosphine (DFTPP) Ion Abundance Criteria	Instrument:I50y Date:11 Sept 91 Time:0815 SDG :GSA8	Instrument:I50z Date:20 August 91 Time:1550 SDG :GSA8
51	30.0-60.0 % of mass 198	40.6	45.3
68	less than 2.0 % of mass 69	(0.0)1	(0.6)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	42.2	46.2
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.3	6.5
275	10.0-30.0 % of mass 198	22.6	24
365	greater than 1.00 % of mass 198	2.78	2.78
441	present but less than mass 443	9.9	8.9
442	greater than 40.0 % of mass 198	77.8	75.6
443	17.0-23.0 % of mass 442	(19.7)2	(18.8)2

1 = % of mass69 2 = % of mass 442

Mass (m/e)	GC MS Tuning Criteria– Semi–Volatiles Decafluorotriphenylphosphine (DFTPP) Ion Abundance Criteria	Instrument:I50w Date:18 Sept 91 Time:0950 SDG :OW-101d	Instrument:I50w Date:19 Sept 91 Time:0905 SDG :OW-1 01d
51	30.0-60.0 % of mass 198	53.1	50.8
68	less than 2.0 % of mass 69	(0.2)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	48.4	48.2
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.5	6.4
275	10.0-30.0 % of mass 198	19.4	21.4
365	greater than 1.00 % of mass 198	1.58	1.98
441	present but less than mass 443	4.8	5.1
442	greater than 40.0 % of mass 198	40	43.8
443	17.0-23.0 % of mass 442	(18.4)2	(18.7)2

1 = % of mass 69 2 = % of mass 442

Mass (m/e)	GC MS Tuning Criteria– Semi–Volatiles Decafluorotriphenylphosphine (DFTPP) Ion Abundance Criteria	Instrument:I50w Date:24 Sept 91 Time:1550 SDG :OW-101d	Instrument:I50w Date:25 Sept 91 Time:0828 SDG :OW-101d
51	30.0-60.0 % of mass 198	44	46.8
68	less than 2.0 % of mass 69	(0.0)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	48.4	46.4
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0% of mass 198	6.5	6.9
275	10.0-30.0 % of mass 198	19.4	23.4
365	greater than 1.00 % of mass 198	1.58	2.8
441	present but less than mass 443	4.8	9.3
442	greater than 40.0 % of mass 198	40.4	76.8
443	17.0-23.0 % of mass 442	(18.4)2	(19.3)2

1 = % of mass 69 2 = % of mass 442

Table 3
GCMS Tuning Procedure

GC MS Tuning Criteria- Semi-Volatiles Decafluorotriphenylphosphine (DFTPP)		Instrument:I50w	Instrument:I50w
		Date:27 Sept 91	Date:27 Sept 91
		Time:0803	Time:1331
Mass (m/e)	Ion Abundance Criteria	SDG :OW-101d	SDG :OW-101d
51	30.0-60.0 % of mass 198	51.8	53.7
68	less than 2.0 % of mass 69	(0.0)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.0)1
127	40.0-60.0 % mass of peak 198	48.4	50.6
197	less than 1.0 % of mass 198	0	0
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.6	6.8
275	10.0-30.0 % of mass 198	23.3	23.1
365	greater than 1.00 % of mass 198	2.63	2.44
441	present but less than mass 443	8	7
442	greater than 40.0 % of mass 198	65.4	55.1
443	17.0-23.0 % of mass 442	(20.1)2	(19.3)2

1 = % of mass 69   2 = % of mass 442

GC MS Tuning Criteria- Semi-Volatiles Decafluorotriphenylphosphine(DFTPP)		Instrument:I50z	Instrument:I50z
		Date:17 Sept 91	Date:18 Sept 91
		Time:1925	Time:0814
Mass (m/e)	Ion Abundance Criteria	SDG :OW-201d	SDG :OW-201 d
51	30.0-60.0 % of mass 198	55.7	56.7
68	less than 2.0 % of mass 69	(0.0)1	(0.0)1
70	less than 2.0 % of mass 69	(0.0)1	(0.2)1
127	40.0-60.0 % mass of peak 198	47.9	47.3
197	less than 1.0 % of mass 198	0	0.1
198	base peak, 100 % Relative Abundance	100	100
199	5.0-9.0 % of mass 198	6.6	6.5
275	10.0-30.0 % of mass 198	19.8	21.2
365	greater than 1.00 % of mass 198	1.17	1.44
441	present but less than mass 443	5.6	6.4
442	greater than 40.0 % of mass 198	44.1	49.9
443	17.0-23.0 % of mass 442	(19.2)2	(18.1)2

1 = % of mass 69   2 = % of mass 442

TABLE 4

METHOD BLANK ANALYSES
VOLATILES

Sample I.D.	SDG No.	Target Compound Detected	Concentration Detected(1)	CRQL	Recommended Action Level(2)	H&A Samples Analyzed concurrently
VBLK 07	STW-202	Methylene Chloride	1	5	10U	Field Blank, SW201, SW-204, SW-204 Dup. Trip Blank 1, Trip Blank 2 Trip Blank 3, SW-201MS SW-201 MSD
VBLK 31	OW-101d	Trichloroethene	1	5	5U	OW-101D, OW-103S, OW-101S OW-102D, OW-104D, OW-102S OW-103D, OW-104S, OW-203D OW-101S, MS/MSD Trip Blank
VBLK 45	SS-201d	1,1,1-Trichloroethane	4	5	20U	SO-201, SS-201D, SS-202D, SS-202S, SS-203D, SS-203S, SS-302S Dup., SS-204D, SO-201MS, S0-201MSD
VBLK 46	SS-201d	1,1,1-Trichloroethane	2	5	10U	S0-202, SS-202S Dup., SS-202S Dup. DL, SS-204S
VBLK 49	SS-201d	Acetone	10	10	100U	TP-101, TP-102, TP-103,
VBLK 49	SS-201d	Methylene Chloride	12	5	20U	TP-104, TP-105, TP-106, TP-101MS, TP-101MSD
VBLK 08	GSA8	Methylene Chloride	0.3	5	3U	Field Blank 1 Field Blank 2 Trip Blank 1'
VBLK 68	GSA8	Acetone	6	10	60U	GSB5(4-6)DL MS Blank GSB1(10-12) MS/MSD
VBLK 70	GSA8	Acetone	3	10	30U	GSA4 (4-6)

Notes:
1. Data presented in parts per billion (ppb)
2. Action Level - The recommended adjusted reporting level for detected target analytes as defined by "Functional Guidelines for Evaluation of Organic Analyses" USEPA, 1 February 1988.

slc/70007-43

H & A OF NEW YORK

Geotechnical Engineers & Environmental Consultants

RECEIVED
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RECRA ENVIRONMENTAL, INC.

8 November 1991
File No. 70007-43

RECRA Environmental, Inc.
10 Hazelwood Drive
Amherst, New York 14228-2298

Attention: Ms. Deborah Kinecki

Subject: Project Nos. NY91-820, NY91-831R

Ladies and Gentlemen:

Upon performance of data validation of Recra Environmental, Inc. Project Nos. NY91-820 and NY91-831R, the following items were noted as being actionable by the contracted laboratory.

Please provide comment to each item listed in the form of a written response accompanied with support documentation.

Project No. NY91-820: Sample Delivery Group (SDG) STW-202

Item 1: NYSDEC Form 1, Analytical Requirement Summary appears to be incorrect. Pesticide/PCB analysis was requested for the field blank sample only. Please provide a corrected NYSDEC Form 1 for inclusion with the data package.

Item 2: Method Detection Limits (MDL) were not provided for any of the organic analyses performed for the Sample Delivery Group (SDG) samples. Please provide the pertinent MDL data as required by NYSDEC ASP89 protocol.

Item 3: ICP Linear Ranges were determined 25 April 1991 or greater than 90 days prior to the analysis of the Sample Delivery Group (SDG) samples. Please provide an updated ICP Linear Range table performed within 90 days of the SDG samples analysis as required by NYSDEC ASP89 protocol.

189 North Water Street
Rochester, NY 14604
716/232-7386

Affiliate
Haley & Aldrich, Inc.
Cambridge, Massachusetts
Glastonbury, Connecticut
Scarborough, Maine
Bedford, New Hampshire

Proiect No. NY91-831R Sample Delivery Group SS-201-D

Item 1: NYSDEC Form 3, Sample Preparation and Analysis Summary, Semi-volatile analysis does not reflect the actual preparation date for sample SS-204S of 23 August 1991. Please provide a corrected NYSDEC Form 3 for inclusion in the sample data summary package.

Item 2: SDG Samples SS-202S and SS-204S were re-extracted and reanalyzed due to poor surrogate recovery as required by NYSDEC ASP89 protocol. However, the re-extraction appears to have been performed outside of NYSDEC ASP89 holding time criteria (5 days). Please verify that the re-extraction was performed outside of holding time and if so, an opinion from the laboratory of the significance, if any, this has on the precision and accuracy of the analysis.

Item 3: See Item 2 of Project No. NY91-820, SDG: STW202. MDLs are also needed for this group.

Item 4: The inorganics portion of the data package was identified as SDG No. "33201 D". Please provide an explanation as to why this identifier was used or provide corrected pages for inclusion in the sample data package.

Item 5: See Item 3 of Project No. NY91-820, SDG: STW202. Please provide an updated ICP Linear Range table as requested.

Item 6: Due to an apparent photocopier malfunction Page No. 3373 of the sample data package, inorganics section, was reproduced off-center and is not legible. Please provide an additional copy of this page for inclusion in the sample data package.

Proiect No. NY91-831R, SDG: OW-101-D

Item 1: NYSDEC Forms 1, 2, 3, 4, 5, 6, 7 were omitted from the SDG sample data summary package. Please provide NYSDEC forms for inclusion in the sample data summary package.

Item 2: See Item 2 Project No. NY91-820, SDG: STW202. MDLs are needed for this group.

Project No. NY91-831R, SDG : GSA8

Item 1: On NYSDEC Form 2, sample preparation and analysis summary, VOA analyses, sample GSB4 (10-12) and STW201 verified time of sample receipt and date of analysis have been switched. Please provide a corrected copy for inclusion in the sample data package.

Item 2: See Item 2 Project No. NY91-820, SDG: STW202. MDLs are needed for this group.

Item 3: Surrogate recoveries in exceedance of NYSDEC ASP89 criteria were noted as follows: nitrobenzene (118%) for sample STW-201 MSD, 2-fluorophenol (164%) for sample GSA (2.0 - 4.0), 2, 4, 5 tribromophenol (135%) for sample Field Blank 4. Please provide an explanation as to why these samples were not reprepared and reanalyzed as required by NYSDEC ASP89 protocol, and an opinion from the laboratory as to the significance, if any, this has on accuracy and/or precision of the sample results.

Item 4: Quantitation of trichloroethene for sample GSB5 (4-6) DL appears to be incorrect. Please verify the quantitation and provide a sample calculation with the corrected analyte concentration.

Project NY91-831R, SDG: OW-201-D

Item 1: NYSDEC Form 4, Sample Preparation and Analysis Summary, Pesticide/PCB analysis, appears to be incorrect. Please review chain of custody documents and provide a corrected NYSDEC Form 4 for this sample delivery group.

Item 2: See Item 2, Project No. NY91-820, SDG: STW202. MDLs are needed for this group.

Item 3: NYSDEC forms 1, 2, 3, 4, 5, 6, 7 do not contain the preparation and analysis chronology of the field blank sample. Please provide corrected NYSDEC forms for inclusion in the sample data package.

Item 4: Page #33 lists the incorrect SDG No. (OW-201-S) for the field blank sample. Please provide a corrected page for inclusion in the data package.

Item 5: The chain of custody records, Page No. 77 of the sample data package requests "Full TCL" analysis for the field blank sample. Upon review of the Pesticide/PCB analysis logs, the field blank sample appears to have not been analyzed. Please provide an explanation why Pesticide/PCB analysis was not performed on the field blank sample.

Please respond to the items listed in the form of a written response by 14 November 1991. This is the date our report must be shipped to NYSDEC to adhere to the project schedule. Therefore, your prompt attention to this matter is greatly appreciated. If you have any questions regarding this letter, please do not hesitate to contact us.

Sincerely yours,
H&A OF NEW YORK

Denis M. Conley
Staff Scientist

For Vincent B. Dick
Senior Env. Geologist

DMC/VBD/slc:dmc15

RECRA ENVIRONMENTAL, INC.
Chemical and Environmental Analysis Services

World University Games Buffalo '93
GRAND PATRON
HELPING TO BRING THE WORLD TO BUFFALO

November 14, 1991

Mr. Denis Conley
H&A of New York
189 North Water Street
Rochester, NY 14604

RE: Data Validation, Projects NY91-820 and NY91-831R

Dear Mr. Conley:

In response to your letter dated November 8, 1991, Recra Environmental, Inc. has reviewed the indicated data packages and offers the following resolutions to the validation issues.

Proiect NY91-820: SDG STW-202

1) The NYSDEC Form I, Analytical Requirement Summary has been revised to reflect the correct Pesticide/PCB's analysis. The amended form is enclosed.

2) Method Detection Limits are enclosed for insertion into the data package. We apologize for this over sight.

3) ICP Linear Ranges were determined on April 25, 1991, greater than 90 days prior to the analysis of this SDG. Due to a laboratory oversight, ranges were not established again until September 14, 1991, which was after the analysis of this SDG. I have provided a copy of the 9/14/91 Linear Ranges for comparison with those submitted. The values between the two do not vary appreciably, therefore, the data is still usable.

Proiect NY91-831R: SDG SS-201-D

1) The NYSDEC Form 3, Sample Preparation and Analysis Summary has been corrected to reflect an extraction date of August 23, 1991 for sample SS-204S. In reviewing this form we also noted that the extraction date for sample TP-201 should be August 9, 1991. This error has also been corrected.

Audubon Business Centre • 10 Hazelwood Drive • Amherst, New York 14228-2298 • (716) 691-2600 • FAX (716) 691-3011

2) As noted, samples SS-202S and SS-204S required re-extraction outside of holding times due to poor surrogate recoveries. Coincidentally, sample SS202S was initially extracted and analyzed in duplicate. The documented reproducibility between the results of the 8/7 and the 8/23 extractions of this sample attest to the fact that the longer holding time had little significant effect on precision or accuracy.

3) Appropriate Method Detection Limits are enclosed for insertion into the original data package.

4) The SDG number of 33201D should be SS201D. This is a typographical error which does not affect the validity of the data. Due to the short notice for this resubmittel, reprocessing of all forms could not be accomplished. If corrected forms are absolutely necessary please notify me.

5) Please see Item 3 of Project NY91-820; SDG STW202.

6) A legible copy of page 3373 is enclosed.

Project NY91-831R: SDG OW-101-D

1) All NYSDEC Summary Forms have been prepared and are enclosed for insertion into the original data package.

2) Appropriate Method Detection Limits are enclosed.

Project NY91-831R: SDG GSA8

1) NYSDEC Form 2, Sample Preparation and Analysis Summary, has been corrected to reflect the proper receipt and analysis dates. The date received for Trip Blank 4 was also incorrect on the Form IA and IE data sheets. These pages have also been corrected.

2) Appropriate Method Detection Limits are enclosed.

3) As stated on page E-55, paragraph 4.3.2 of the NYSDEC 1989 Analytical Services Protocol, no action is necessary by the laboratory for noncompliant surrogate recoveries unless:

a) "Recovery of any one surrogate compound in either base neutral or acid fraction is below 10%."

b) "Recoveries of two surrogate compounds in either base neutral or acid fractions are outside surrogate spike recovery limits."

Since the samples in question exhibited only <u>one</u> non-compliant recovery which was <u>greater</u> than 10%, repreparation and reanalysis were not required. The data is compliant with the NYSDEC Analytical Services Protocol as submitted.

4) Example calculation for Trichloroethene in sample GSB5 (4-6):

$$\text{Concentration(ug/Kg)} = \frac{(Ax)\ (Is)}{(Ais)\ (RF)\ (W)\ (\%D)}$$

Ax = Area of Compound
Is = Amount Internal Standard Injected (ng)
Ais = Area of Internal Standard
RF = Response Factor for Compound
W = Weight of Sample Purged
%D = Decimal Percent Dry Weight

$$\text{concentration(ug/Kg)} = \frac{61840 \times 250}{108084 \times 0.489 \times 1.0 \times 0.86}$$

$$= \frac{15460000}{45454}$$

$$= 340 \text{ ug/Kg}$$

The concentration of Trichloroethene is correct as submitted.

<u>Project NY91-831R: SDG OW-201-D</u>

1) NYSDEC Form 4, Sample Preparation and Analysis Summary has been reviewed and resubmitted. Volume for sample OW-201-S was submitted on two different days. The first aliquot was for sample analysis and the second for MS/MSD analysis. This dual submission has been designated on the Form 4 to clarify any confusion.

2) Appropriate Method Detection Limits are enclosed.

3) Corrected NYSDEC summary forms are enclosed reflecting documentation of the Field Blank sample.

4) A corrected page 33 is enclosed.

5) Samples for this SDG were originally received on September 7, 1991. Due to a laboratory accident, the original Pesticide/PCB extracts were destroyed during Organic Preparation. Additional volume was submitted on September 18, 1991, however, Field Blank volume was not included therefore, extraction and analysis of this sample could not be performed. A Chain of Custody from the September 18 sample receipt is not available.

This response should resolve any issues surrounding these data packages. If you have further questions please do not hesitate to contact me at **(716) 691-2600.**

Sincerely,

RECRA ENVIRONMENTAL, INC.

Verl D. Preston
Director/Customer Service

VDP/nmm

RECRA
ENVIRONMENTAL
INC.

APPENDIX G

NYSDEC Laboratory Data

Summary Table
NYSDEC Sample Organic Analyses
Dollinger - A Filtrona Company
Remedial Investigation

	50' Downstream of SW203		125' Downstream of SW203		Acid Bath Pit	Split (SS-201s)	Split (B-201s)	Split (OW-201s)
NYSDEC Sample No.	16W*1	16S*1	16W*2	16S*2	16W*3	16S*3	16S*4	16W*5
Parameter	Surfacewater	Sediment	Surfacewater	Sediment	Groundwater	Sediment	Soil	Groundwater
Volatiles								
	ND		ND					
1,1-Dichloroethene								0.016
1,2-Dichloroethene					0.029		0.040	9.8
Tetrachloroethene								0.018
1,1,1-Trichloroethane								0.004BJ
Trichloroethene					0.008	0.20	0.19	39
Vinyl Chloride								0.21E
Toluene						0.12		0.011
Ethylbenzene						40		
Xylenes						120		
Acetone		72B		56B		0.15B		
Carbon Disulfide						0.09		
Chloroform						0.33		0.004J
Styrene						0.088		
Semi-Volatiles								
	ND		ND		ND			
Bis(2-ethylhexyl)phthalate		3.1		2.4		210	1.5B	0.003BJ
Butylbenzylphthalate		1.3		0.69J		130		
Di-n-butylphthalate				0.31J		19J		
Acenaphthene						8.8J		
Anthracene						26J		
Benzo(a)anthracene		0.73J		0.8J		67		
Benzo(b)fluoroanthene		2.3		1.9J		68		
Benzo(k)fluoranthene		1.3		2.2		80		
Benzo(g,h,i)perylene		1.5		1.1J		44		
Benzo(a)pyrene		1.4		1.1J		69		
Chrysene		1.6		1.5J		86		
Dibenzo(a,h)anthracene		0.51J				16J		
Dibenzofuran						4.8J		
Fluoranthene		2.0		2.5		210		
Fluorene				0.26J		12J		
Indeno(123-cd)pyrene		1.4		1.OJ		44		
4-methylphenol				0.54J				
Phenanthrene		0.84J		1.4J		140		
Pyrene		1.8		2.0		170		
Pesticides\PCB								
	ND			ND	ND		ND	ND
Aldrin		0.018						
4,4' DDE						0.14D		
Dieldrin						0.10D		
Endrin						0.29D		
Lindane			0.000027					

NOTES:

1. B - Analyte detected in the method blank.
2. D - Sample dilution required.
3. ND or Blank Space - Analyte not detected as present.
4. Tentatively indentified compounds **(TICs)** were detected in **16S1, 16S2, 16S3** and **16S4.**
5. Samples **16S2, 16S3** and **16W5** were also run at dilutions. Only the most valid data is shown.
6. Data presented in parts per million (ppm).

dmc\123\nysdoll

Dollinger Corporation
NYSDEC Split Sample Results
Site # 828078
November 15, 1991

DEC Sample #	Location	Sample type
16W*1 & A955001	Offsite drainage swale approx. 50ft downstream of SW-203	Surface water
16S*1 & A955002	Offsite drainage swalo same as 16W*1	Sediment

Note: Inorganic sample lost in transport to lah

DEC Sample #	Location	Sample type
16W*2 & A955003	Offsite drainage swale approx. 125ft downstream of SW-203	Surface water
16S*2 & A955004	Offsite drainage swale same as 16W*2	Sediment
16W*3 & A955005	Acid Bath Pit Inside facility	Water
16S*3 & A955006	Split of SS-201	Sediment
16S*4 & A955007	Split of soil boring 201-S, inside facility	Soil
16W*5 & A955009	Spilt of groundwater well MW-201S	Groundwater

File: 70007-43

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

NOV 15 1991

RECEIVED
NOV 18 1991
H & A of New York

Mr. Steven Koorse
Hunton & Williams
Riverfront Plaza, East Tower
951 East Byrd Street
Richmond, VA 23219-4074

Re: Dollinger Corporation, Site #828075, Monroe County

Dear Mr. Koorse:

On November 15, 1991, I expressed mailed the split sample results to your clients consultant, H&A of New York. As we discussed on November 8, 1991, the Department agrees with you that the DEC split samples results should be evaluated in the RI report. As such, we will allow 10 days for you to incorporate this data into the RI report.

Please submit the RI report by November 29, 1991. To facilitate the project schedule please have your client's consultant contact me for instruction for mailing of copies of the report directly to various reviewers and we request you utilize overnight mail services. If you have any questions, please contact me at 518/457-3373.

Lisa Sutto to pursue this. Will advise of mailing list.

Sincerely,

David A. Crosby
David A. Crosby
Environmental Engineer
Remedial Section C
Bureau of Western Remedial Action
Div. of Hazardous Waste Remediation

cc: G. Bailey, w/out encl
M. Khalil, w/out encl
E. Belmore, w/out encl
T. Caffoe, w/ encl
L. Rafferty, DOH w/encl
V. Dick, H&A of New York, W/ encl

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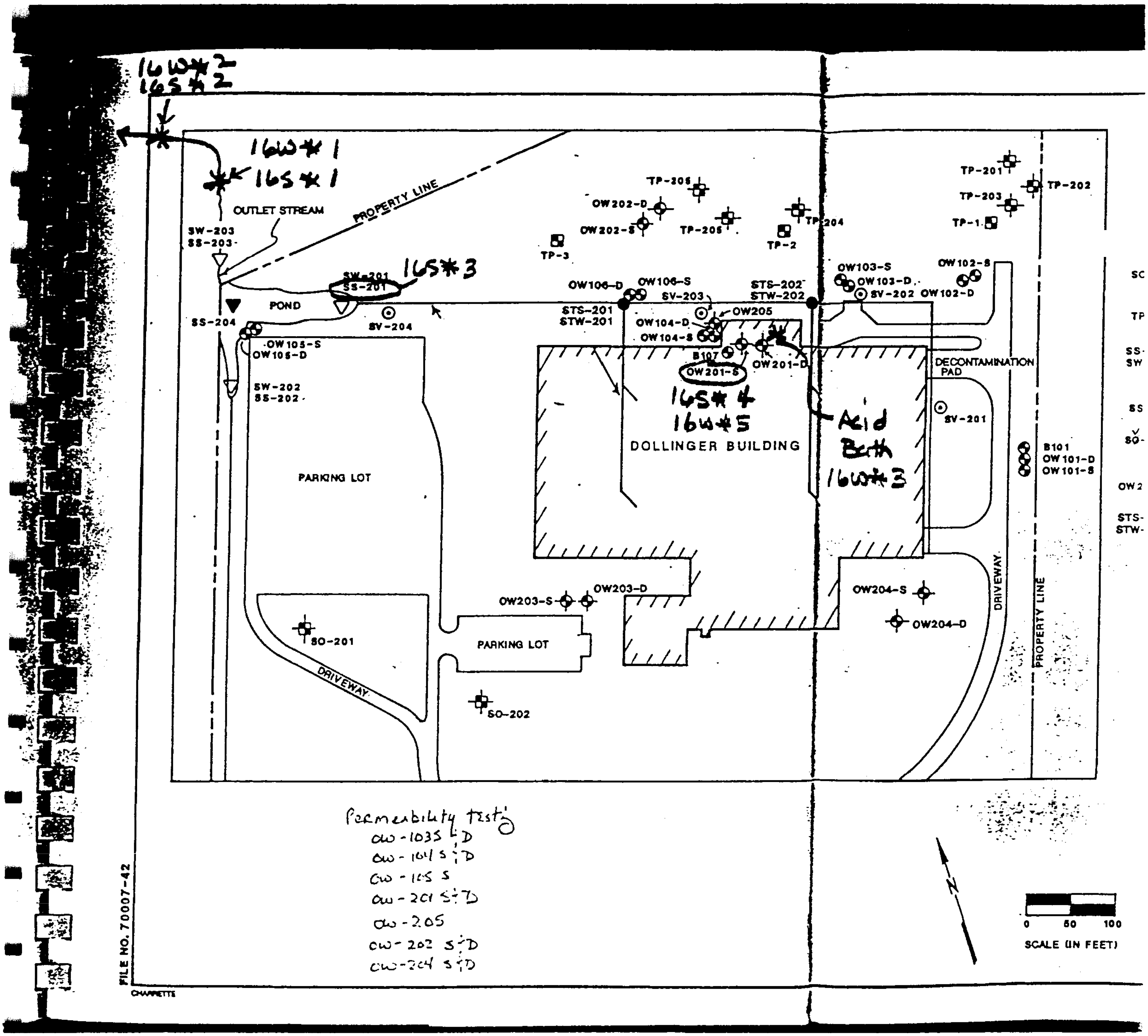
DEC Split Samples



EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: ESE [illegible] Contract: [illegible]

Lab Code: ESE Case No.: [illegible] SAS No.: [illegible] SDG No.: [illegible]

Matrix: (soil/water) WATER Lab Sample ID: [illegible]

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 100. Date Analyzed: 8/ 9/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

16W*1

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: ~~[illegible]~~ R6081 11-8-91 [illegible] SAS No.: SDG No.: ~~NY16W~~ A956 11-8-91 [illegible]

Matrix: (soil/water) WATER Lab Sample ID: NY16W*1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 91446

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 100. Date Analyzed: 8/ 9/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NY16W*1

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: RB091 SAS No.: SDG No.: A955

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000.0 (g/mL) ML Lab File ID: 61500

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 100. dec._____ Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 8/29/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NY16W*1

Lab Name: ESE   Contract: NYSDEC

Lab Code: ESE   Case No.: RB091   SAS No.:   SDG No.: A955

Matrix: (soil/water) WATER   Lab Sample ID:

Sample wt/vol: 1000.0 (g/mL) ML   Lab File ID: [illegible]00

Level: (low/med) LOW   Date Received: 8/[illegible]/91

% Moisture: not dec. 100.   dec.____   Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF   Date Analyzed: 8/29/91

GPC Cleanup: (Y/N) N   pH: 7.0   Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F
EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

NY16W*1

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: RB091 SAS No.: SDG No.: A955

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000.0 (g/mL) ML Lab File ID: 61500

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 100. dec. ____ Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 8/29/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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EPA SAMPLE NO

PESTICIDE ORGANICS ANALYSIS DATA SHEET

[illegible]A955002

Lab Name: [illegible]SL Contract: C002687

Lab Code: [illegible] Case No.: [illegible]8091 SAS No.: SDG No.: [illegible]A955

Matrix: (soil/water) WATER Lab Sample ID: NY[illegible]

Sample wt/vol: 1000. (g/ml) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 08/01/91

% Moisture: not dec. dec. Date Extracted: 08/07/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/05/91

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.025	U
58-89-9	gamma-BHC (Lindane)	0.025	U
319-85-7	beta-BHC	0.050	U
76-44-8	Heptachlor	0.050	U
319-86-8	delta-BHC	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
5566-34-7	gamma-Chlordane	0.050	U
5103-71-9	alpha-Chlordane	0.050	U
959-98-8	Endosulfan I	0.050	U
72-55-9	4,4'-DDE	0.050	U
60-57-1	Dieldrin	0.050	U
72-20-8	Endrin	0.050	U
72-54-8	4,4'-DDD	0.10	U
33213-65-9	Endosulfan II	0.10	U
50-29-3	4,4'-DDT	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	0.50	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16S*1

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: ~~NYCLP2~~ Rew WE RB091 11-8-91 SAS No.: SDG No.: ~~NY16S~~ Rew WE NY55 11-8-91

Matrix: (soil/water) SOIL Lab Sample ID: NY16S*1

Sample wt/vol: 5.000 (g/mL) G Lab File ID: 91470

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 50 Date Analyzed: 8/10/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	20.	U
74-83-9	Bromomethane	20.	U
75-01-4	Vinyl Chloride	20.	U
75-00-3	Chloroethane	20.	U
75-09-2	Methylene Chloride	10.	U
67-64-1	Acetone	72.	B
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	10.	U
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	10.	U
67-66-3	Chloroform	10.	U
107-06-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	20.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
108-05-4	Vinyl Acetate	20.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	10.	U
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-Pentanone	20.	U
591-78-6	2-Hexanone	20.	U
127-18-4	Tetrachloroethene	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	10.	U
100-42-5	Styrene	10.	U
1330-20-7	Xylene (total)	10.	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

[illegible]

Lab Name: ESE Contract: [illegible]

Lab Code: ESE Case No.: RB091 SAS No.: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: [illegible]/91

% Moisture: not dec. 50. dec. ____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: [illegible]/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	1300.	U
111-44-4	bis(2-Chloroethyl)ether	1300.	U
95-57-8	2-Chlorophenol	1300.	U
541-73-1	1,3-Dichlorobenzene	1300.	U
106-46-7	1,4-Dichlorobenzene	1300.	U
100-51-6	Benzyl alcohol	1300.	U
95-50-1	1,2-Dichlorobenzene	1300.	U
95-48-7	2-Methylphenol	1300.	U
108-60-1	bis(2-Chloroisopropyl)ether	1300.	U
106-44-5	4-Methylphenol	1300.	U
621-64-7	N-Nitroso-di-n-propylamine	1300.	U
67-72-1	Hexachloroethane	1300.	U
98-95-3	Nitrobenzene	1300.	U
78-59-1	Isophorone	1300.	U
88-75-5	2-Nitrophenol	1300.	U
105-67-9	2,4-Dimethylphenol	1300.	U
65-85-0	Benzoic acid	6300.	U
111-91-1	bis(2-Chloroethoxy)methane	1300.	U
120-83-2	2,4-Dichlorophenol	1300.	U
120-82-1	1,2,4-Trichlorobenzene	1300.	U
91-20-3	Naphthalene	1300.	U
106-47-8	4-Chloroaniline	1300.	U
87-68-3	Hexachlorobutadiene	1300.	U
59-50-7	4-Chloro-3-methylphenol	1300.	U
91-57-6	2-Methylnaphthalene	1300.	U
77-47-4	Hexachlorocyclopentadiene	1300.	U
88-06-2	2,4,6-Trichlorophenol	1300.	U
95-95-4	2,4,5-Trichlorophenol	6300.	U
91-58-7	2-Chloronaphthalene	1300.	U
88-74-4	2-Nitroaniline	6300.	U
131-11-3	Dimethylphthalate	1300.	U
208-96-8	Acenaphthylene	1300.	U
606-20-2	2,6-Dinitrotoluene	1300.	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NY16S*1

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: R8091 SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]546

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 50. dec. ____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	6300.	U
83-32-9	Acenaphthene	1300.	U
51-28-5	2,4-Dinitrophenol	6300.	U
100-02-7	4-Nitrophenol	6300.	U
132-64-9	Dibenzofuran	1300.	U
121-14-2	2,4-Dinitrotoluene	1300.	U
84-66-2	Diethylphthalate	1300.	U
7005-72-3	4-Chlorophenyl-phenylether	1300.	U
86-73-7	Fluorene	1300.	U
100-01-6	4-Nitroaniline	6300.	U
534-52-1	4,6-Dinitro-2-methylphenol	6300.	U
86-30-6	N-Nitrosodiphenylamine (1)	1300.	U
101-55-3	4-Bromophenyl-phenylether	1300.	U
118-74-1	Hexachlorobenzene	1300.	U
87-86-5	Pentachlorophenol	6300.	U
85-01-8	Phenanthrene	840.	J
120-12-7	Anthracene	1300.	U
84-74-2	Di-n-butylphthalate	1300.	U
206-44-0	Fluoranthene	2000.	
129-00-0	Pyrene	1800.	
85-68-7	Butylbenzylphthalate	1300.	
91-94-1	3,3'-Dichlorobenzidine	2600.	U
56-55-3	Benzo(a)anthracene	730.	J
218-01-9	Chrysene	1600.	
117-81-7	bis(2-Ethylhexyl)phthalate	3100.	
117-84-0	Di-n-octylphthalate	1300.	U
205-99-2	Benzo(b)fluoranthene	2300.	
207-08-9	Benzo(k)fluoranthene	1300.	
50-32-8	Benzo(a)pyrene	1400.	
193-39-5	Indeno(1,2,3-cd)pyrene	1400.	
53-70-3	Dibenzo(a,h)anthracene	510.	J
191-24-2	Benzo(g,h,i)perylene	1500.	

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

NY169*1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ESE Contract: [illegible]

Lab Code: ESE Case No.: 28091 SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]546

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 50. dec. ____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 19 (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN METHYL KETONE	5.34	4000.	BJ A
2.	- -	UNKNOWN METHYL KETONE	5.88	500.	J A
3.	- -	UNKNOWN	6.39	1000.	J
4.	- -	UNKNOWN METHYL KETONE	6.92	4000.	J A
5.	- -	UNKNOWN HYDROCARBON	16.14	900.	J
6.	- -	UNKNOWN	16.83	3000.	J
7.	- -	UNKNOWN	16.93	1000.	J
8.	- -	UNKNOWN ALKYL PHENOL	17.03	1000.	J
9.	- -	UNKNOWN ALKYL PHENOL	17.10	800.	J
10.	25154-52-3	Phenol, nonyl-	17.27	1000.	J
11.	- -	UNKNOWN	17.48	900.	J
12.	- -	UNKNOWN HYDROCARBON	19.42	800.	J
13.	57-10-3	Hexadecanoic acid	19.60	2000.	J
14.	- -	UNKNOWN	20.82	4000.	J
15.	- -	UNKNOWN	21.35	6000.	J
16.	- -	UNKNOWN	24.55	3000.	J
17.	- -	UNKNOWN HYDROCARBON	27.60	6000.	J
18.	- -	UNKNOWN HYDROCARBON	29.06	3000.	J
19.	83-47-6	Stigmast-5-en-3-01.	31.98	9000.	J
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1D EPA SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

A355001

Lab Name: ESE Contract: C00267

Lab Code: ESE Case No.: RB091 SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]1

Sample wt/vol: 30. (g/ml) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 08/01/91

% Moisture: not dec. dec. 50. Date Extracted: 08/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/11/91

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.3	U
58-89-9	gamma-BHC (Lindane)	3.3	U
319-85-7	beta-BHC	6.7	U
76-44-8	Heptachlor	6.7	U
319-86-8	delta-BHC	6.7	U
309-00-2	Aldrin	18.	
1024-57-3	Heptachlor epoxide	6.7	U
5566-34-7	gamma-Chlordane	6.7	U
5103-71-9	alpha-Chlordane	6.7	U
959-98-8	Endosulfan I	6.7	U
72-55-9	4,4'-DDE	6.7	U
60-57-1	Dieldrin	6.7	U
72-20-8	Endrin	6.7	U
72-54-8	4,4'-DDD	13.	U
33213-65-9	Endosulfan II	13.	U
50-29-3	4,4'-DDT	13.	U
1031-07-8	Endosulfan sulfate	13.	U
72-43-5	Methoxychlor	67.	U
53494-70-5	Endrin ketone	13.	U
8001-35-2	Toxapbtnt	130.	U
12674-11-2	Aroclor-1016	'67.	U
11104-28-2	Aroclor-1221	67.	U
11141-16-5	Aroclor-1232	67.	U
53469-21-9	Aroclor-1242	67.	U
12672-29-6	Aroclor-1248	67.	U
11097-69-I	Aroclor-1254	67.	U
11096-82-5	Azoclor-1260	67.	U

FORM I PBST 1/87 Rev.

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

A95501

Lab Name: ESE, Inc. Contract: NY DEC

Lab Code: ESE Case No.: SAS No.: SDG No.: A955

Matrix (soil/water): SOIL Lab Sample ID: NY16S*1

Level (low/med): LOW Date Received: 08/01/91

% Solids: 50.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11300			P
7440-36-0	Antimony	6.2	B	N	P
7440-38-2	Arsenic	3.1		NS	F
7440-39-3	Barium	95.8			P
7440-41-7	Beryllium	1.5			P
7440-43-9	Cadmium	1.9			P
7440-70-2	Calcium	28900			P
7440-47-3	Chromium	19.4			P
7440-48-4	Cobalt	8.0	B		P
7440-50-8	Copper	83.0			P
7439-89-6	Iron	17.600			P
7439-92-1	Lead	55.3			P
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese	302		N	P
7439-97-6	Mercury	0.19	U		CV
7440-02-0	Nickel	23.8			P
7440-09-7	Potassium	1460			P
7782-49-2	Selenium	0.39	U	NW	F
7440-22-4	Silver	0.94	U		P
7440-23-5	Sodium	784	B		P
7440-28-0	Thallium	0.50	U		F
7440-62-2	Vanadium	24.8			P
7440-66-6	Zinc	575			P
	Cyanide				

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN 3/90

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

[illegible]6W-2

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: [illegible] SAS No.: SDG No.: [illegible]

Matrix: (soil/water) WATER Lab Sample ID: [illegible]2

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]7

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 100. Date Analyzed: 8/ 9/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

16W*2

Lab Name: ESE   Contract: NEW YORK

Lab Code: ESE   Case No.: ~~NYCLP*~~ [illegible] 11-8-91   SAS No.:   SDG No.: ~~NY16W~~ [illegible] 11-8-91

Matrix: (soil/water) WATER   Lab Sample ID: NY16W*2

Sample wt/vol: 5.000 (g/mL) ML   Lab File ID: 91447

Level: (low/med) LOW   Date Received: 8/ 1/91

% Moisture: not dec. 100.   Date Analyzed: 8/ 9/91

Column: (pack/cap) PACK   Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0   (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC   1/87 Rev.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

[illegible]

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible] SDG No.: A955

Matrix: (soil/water) WATER Lab Sample ID: [illegible]

Sample wt/vol: [illegible]950.0 (g/mL) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. [illegible] dec. [illegible] Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 8/29/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	53.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	53.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	53.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

NY16W-2

Lab Name: ESE [illegible]

Lab Code: ESE [illegible] RB05[illegible] SAS No. [illegible] [illegible]355

Matrix: (soil/water) WATER Lab Sample [illegible]

Sample wt/vol: 950.0 (g/mL) ML Lab File [illegible]

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 100. dec. ____ Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sont) SEPF Date Analyzed: 8/29/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	53.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	53.	U
100-02-7	4-Nitrophenol	53.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	53.	U
534-52-1	4,6-Dinitro-2-methylphenol	53.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	53.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	21.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

[illegible]

Lab Name: [illegible]   Contract: [illegible]

Lab Code: ESE   Case No.: RB091   SAS No.: [illegible]   SDG No.: [illegible]955

Matrix: (soil/water) WATER   Lab Sample ID: [illegible]

Sample wt/vol: 950.0 (g/mL) ML   Lab File ID: [illegible]1501

Level: (low/med) LOW   Date Received: 8/ 1/91

% Moisture: not dec. 100.   dec. ____   Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF   Date Analyzed: 8/29/91

GPC Cleanup: (Y/N) N   pH: 7.0   Dilution Factor: 1.00

CONCENTRATION UNITS:
Number TICs found: 0   (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

A955003

Lab Name: [illegible] Contract: C002687

Lab Code: [illegible] Case No.: [illegible]8091 SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30. (g/ml) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 08/01/91

% Moisture: not dec. [illegible] dec. [illegible]6. Date Extracted: 08/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/11/91

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.9	U
58-89-9	gamma-BHC (Lindane)	4.9	U
319-85-7	beta-BHC	9.8	U
76-44-8	Heptachlor	9.8	U
319-86-8	delta-BHC	9.8	U
309-00-2	Aldrin	9.8	U
1024-57-3	Heptachlor epoxide	9.8	U
5566-34-7	gamma-Chlordane	9.8	U
5103-71-9	alpha-Chlordane	9.8	U
959-98-8	Endosulfan I	9.8	U
72-55-9	4,4'-DDE	9.8	U
60-57-1	Dieldrin	9.8	U
72-20-8	Endrin	9.8	U
72-54-8	4,4'-DDD	20.	U
33213-65-9	Endosulfan II	20.	U
50-29-3	4,4'-DDT	20.	U
1031-07-8	Endosulfan sulfate	20.	U
72-43-5	Methoxychlor	98.	U
53494-70-5	Endrin ketone	20.	U
8001-35-2	Toxaphene	200.	U
12674-11-2	Aroclor-1016	98.	U
11104-28-2	Aroclor-1221	98.	U
11141-16-5	Aroclor-1232	98.	U
53469-21-9	Aroclor-1242	98.	U
12672-29-6	Aroclor-1248	98.	U
11097-69-1	Aroclor-1254	98.	U
11096-82-5	Aroclor-1260	98.	U

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

A95503

Lab Name: ESE, Inc. Contract: [illegible]

Lab Code: ESE Case No.: SAS No.: SDG No.: A955

Matrix (soil/water): SOIL Lab Sample ID: NY165*2

Level (low/med): LOW Date Received: 08/01/91

% Solids: 34.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12500			P
7440-36-0	Antimony	8.9	B	N	P
7440-38-2	Arsenic	3.6		N	F
7440-39-3	Barium	97.7			P
7440-41-7	Beryllium	0.95	B		P
7440-43-9	Cadmium	1.5			P
7440-70-2	Calcium	38500			P
7440-47-3	Chromium	20.0			P
7440-48-4	Cobalt	10.1	B		P
7440-50-8	Copper	43.0			P
7439-89-6	Iron	25400			P
7439-92-1	Lead	53.3			P
7439-95-4	Magnesium	11200			P
7439-96-5	Manganese	459		N	P
7439-97-	Mercury	0.29	U		CV
7440-02-0	Nickel	22.6			P
7440-09-7	Potassium	1500			P
7782-49-2	Selenium	0.48	U	NW	F
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	1030	B		P
7440-28-0	Thallium	0.62	U		F
7440-62-2	Vanadium	35.4			P
7440-66-6	Zinc	346			P
	Cyanide				

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN 3/90

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

[illegible]16S*2

Lab Name: ESE Contract: [illegible]

Lab Code: ESE Case No.: NYCLP2 SAS No.: [illegible] SDG No.: NY16S

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]16S*2

Sample wt/vol: 5.000 (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 69. Date Analyzed: 8/10/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	32.	U
74-83-9	Bromomethane	32.	U
75-01-4	Vinyl Chloride	32.	U
75-00-3	Chloroethane	32.	U
75-09-2	Methylene Chloride	16.	U
67-64-1	Acetone	56.	B
75-15-0	Carbon Disulfide	16.	U
75-35-4	1,1-Dichloroethene	16.	U
75-34-3	1,1-Dichloroethane	16.	U
540-59-0	1,2-Dichloroethene (total)	16.	U
67-66-3		16.	U
107-06-2	1,2-Dichloroethane	16.	U
78-93-3	2-Butanone	32.	U
71-55-6	1,1,1-Trichloroethane	16.	U
56-23-5	Carbon Tetrachloride	16.	U
108-05-4	Vinyl Acetate	32.	U
75-27-4	Bromodichloromethane	16.	U
78-87-5	1,2-Dichloropropane	16.	U
10061-01-5	cis-1,3-Dichloropropene	16.	U
79-01-6	Trichloroethene	16.	U
124-48-1	Dibromochloromethane	1 6	U
79-00-5	1,1,2-Trichloroethane	16.	U
71-43-2	Benzene	16.	U
10061-02-6	trans-1,3-Dichloropropene	16.	U
75-25-2	Bromoform	16.	U
108-10-1	4-Methyl-2-Pentanone	32.	U
591-78-6	2-Hexanone	32.	U
127-18-4	Tetrachloroethene	16.	U
79-34-5	1,1,2,2-Tetrachloroethane	16.	U
108-88-3	Toluene	16.	U
108-90-7	Chlorobenzene	16.	U
100-41-4	Ethylbenzene	16.	U
100-42-5	Styrene	16.	U
1330-20-7	Xylene (total)	16.	U

94

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: 16S*2

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: NYCLP2 SAS No.: SDG No.: ~~NY16S~~ NY55 11-8-91

Matrix: (soil/water) SOIL Lab Sample ID: NY16S*2

Sample wt/vol: 5.000 (g/mL) G Lab File ID: 91467

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 69. Date Analyzed: 8/10/91

Column: (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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FORM I VOA-TIC 1/87 Rev.

Lab Name: [illegible]

Matrix: (soil/water) SOIL | Lab Sample ID: [illegible]

Sample wt/vol: [illegible]0.0 (g/mL) G | Lab File ID: [illegible]

Level: (low/med) LOW | Date Received: 8/ 1/91

% Moisture: not dec. [illegible] dec. ____ | Date Extracted: 8/[illegible]/91

Extraction: (SepF/Cont/Sonc) SONC | Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y pH: 7.0 | Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	1900.	U
111-44-4	bis(2-Chloroethyl)ether	1900.	U
95-57-8	2-Chlorophenol	1900.	U
541-73-1	1,3-Dichlorobenzene	1900.	U
106-46-7	1,4-Dichlorobenzene	1900.	U
100-51-6	Benzyl alcohol	1900.	U
95-50-1	1,2-Dichlorobenzene	1900.	U
95-48-7	2-Methylphenol	1900.	U
108-60-1	bis(2-Chloroisopropyl)ether	1900.	U
106-44-5	4-Methylphenol	540.	J
621-64-7	N-Nitroso-di-n-propylamine	1900.	U
67-72-1	Hexachloroethane	1900.	U
98-95-3	Nitrobenzene	1900.	U
78-59-1	Isophorone	1900.	U
88-75-5	2-Nitrophenol	1900.	U
105-67-9	2,4-Dimethylphenol	1900.	U
65-85-0	Benzoic acid	9400.	U
111-91-1	bis(2-Chloroethoxy)methane	1900.	U
120-83-2	2,4-Dichlorophenol	1900.	U
120-82-1	1,2,4-Trichlorobenzene	1900.	U
91-20-3	Naphthalene	1900.	U
106-47-8	4-Chloroaniline	1900.	U
87-68-3	Hexachlorobutadiene	1900.	U
59-50-7	4-Chloro-3-methylphenol	1900.	U
91-57-6	2-Methylnaphthalene	1900.	U
77-47-4	Hexachlorocyclopentadiene	1900.	U
88-06-2	2,4,6-Trichlorophenol	1900.	U
95-95-4	2,4,5-Trichlorophenol	9400.	U
91-58-7	2-Chloronaphthalene	1900.	U
88-74-4	2-Nitroaniline	9400.	U
131-11-3	Dimethylphthalate	1900.	U
208-96-8	Acenaphthylene	1900.	U
606-20-2	2,6-Dinitrotoluene	1900.	U

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

[illegible]0592

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: RBOSI SAS No.: [illegible] SDG No.: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]19

Level: (low/med) LOW Date Received: [illegible]/ 1/91

% Moisture: not dec. 66. dec.____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	9400.	U
83-32-9	Acenaphthene	1900.	U
51-28-5	2,4-Dinitrophenol	9400.	U
100-02-7	4-Nitrophenol	9400.	U
132-64-9	Dibenzofuran	1900.	U
121-14-2	2,4-Dinitrotoluene	1900.	U
84-66-2	Diethylphthalate	1900.	U
7005-72-3	4-Chlorophenyl-phenylether	1900.	U
86-73-7	Fluorene	260.	J
100-01-6	4-Nitroaniline	9400.	U
534-52-1	4,6-Dinitro-2-methylphenol	9400.	U
86-30-6	N-Nitrosodiphenylamine (1)	1900.	U
101-55-3	4-Bromophenyl-phenylether	1900.	U
118-74-1	Hexachlorobenzene	1900.	U
87-86-5	Pentachlorophenol	9400.	U
85-01-8	Phenanthrene	1400.	J
120-12-7	Anthracene	1900.	U
84-74-2	Di-n-butylphthalate	1900.	U
206-44-0	Fluoranthene	2400.	
129-00-0	Pyrene	1500.	J
85-68-7	Butylbenzylphthalate	480.	J
91-94-1	3,3'-Dichlorobenzidine	3900.	U
56-55-3	Benzo(a)anthracene	800.	J
218-01-9	Chrysene	1500.	J
117-81-7	bis(2-Ethylhexyl)phthalate	2200.	
117-84-0	Di-n-octylphthalate	1900.	U
205-99-2	Benzo(b)fluoranthene	1800.	J
207-08-9	Benzo(k)fluoranthene	1100.	J
50-32-8	Benzo(a)pyrene	1100.	J
193-39-5	Indeno(1,2,3-cd)pyrene	1000.	J
53-70-3	Dibenzo(a,h)anthracene	1900.	U
191-24-2	Benzo(g,h,i)perylene	1100.	J

(1) - Cannot be separated from diphenylamine

[illegible]

Matrix: [illegible]

Sample wt/vol: [illegible] (g/mL) G [illegible] Lab [illegible]

Level: (low/med) LOW [illegible] Date Received: [illegible]/91

% Moisture: not dec. 56. dec. ___ Date Extracted: 8/14/91

Extraction: [illegible] Date Analyzed: [illegible]/5/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

Number TICs found: 22

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	116-53-0	Butanoic acid, 2-methyl-	4.57	2000.	J
2.	- -	UNKNOWN METHYL KETONE	5.35	6000.	BJ A
3.	- -	UNKNOWN HYDROCARBON	10.25	1000.	J
4.	103-82-2	Benzeneacetic acid	10.84	1000.	J
5.	- -	UNKNOWN HYDROCARBON	11.43	3000.	J
6.	- -	UNKNOWN HYDROCARBON	11.81	1000.	J
7.	- -	UNKNOWN	12.22	2000.	J
8.	- -	UNKNOWN HYDROCARBON	13.01	3000.	J
9.	- -	UNKNOWN HYDROCARBON	13.05	2000.	J
10.	581-40-8	Naphthalene, 2,3-dimethyl-	13.41	2000.	J
11.	- -	UNKNOWN	13.66	3000.	J
12.	- -	UNKNOWN HYDROCARBON	13.80	8000.	J
13.	- -	UNKNOWN HYDROCARBON	16.15	7000.	J
14.	- -	UNKNOWN HYDROCARBON	16.82	10000.	J
15.	544-63-8	Tetradecanoic acid	17.45	4000.	J
16.	57-10-3	Hexadecanoic acid	19.65	20000.	J
17.		UNKNOWN	20.82	4000.	J
18.	- -	UNKNOWN	24.53	8000.	J
19.	- -	UNKNOWN HYDROCARBON	26.14	10000.	J
20.	- -	UNKNOWN HYDROCARBON	27.60	10000.	J
21.	- -	UNKNOWN HYDROCARBON	29.06	7000.	J
22.	83-47-6	Stigmast-5-en-3-ol	31.96	10000.	J
23.					
24.					
25.					
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EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

[illegible] RE

Lab Name: ES[illegible]　　Contract: NYSD[illegible]

Lab Code: ESI　　Case No.: [illegible]　　SAS No.: [illegible]　　SDG No.: A9[illegible]

Matrix: (soil/water) SOIL　　Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G　　Lab File ID: 61036

Level: (low/med) LOW　　Date Received: 8/ 1/91

% Moisture: not dec. [illegible] dec. ____　　Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SEPF　　Date Analyzed: 9/12/91

GPC Cleanup: (Y/N) Y　　pH: 7.0　　Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
108-95-2	Phenol	1900.	U
111-44-4	bis(2-Chloroethyl)ether	1900.	U
95-57-8	2-Chlorophenol	1900.	U
541-73-1	1,3-Dichlorobenzene	1900.	U
106-46-7	1,4-Dichlorobenzene	1900.	U
100-51-6	Benzyl alcohol	1900.	U
95-50-1	1,2-Dichlorobenzene	1900.	U
95-48-7	2-Methylphenol	1900.	U
108-60-1	bis(2-Chloroisopropyl)ether	1900.	U
106-44-5	4-Methylphenol	410.	J
621-64-7	N-Nitroso-di-n-propylamine	1900.	U
67-72-1	Hexachloroethane	1900.	U
98-95-3	Nitrobenzene	1900.	U
78-59-1	Isophorone	1900.	U
88-75-5	2-Nitrophenol	1900.	U
105-67-9	2,4-Dimethylphenol	1900.	U
65-85-0	Benzoic acid	9400.	U
111-91-1	bis(2-Chloroethoxy)methane	1900.	U
120-83-2	2,4-Dichlorophenol	1900.	U
120-82-1	1,2,4-Trichlorobenzene	1900.	U
91-20-3	Naphthalene	1900.	U
106-47-8	4-Chloroaniline	1900.	U
87-68-3	Hexachlorobutadiene	1900.	U
59-50-7	4-Chloro-3-methylphenol	1900.	U
91-57-6	2-Methylnaphthalene	1900.	U
77-47-4	Hexachlorocyclopentadiene	1900.	U
88-06-2	2,4,6-Trichlorophenol	1900.	U
95-95-4	2,4,5-Trichlorophenol	9400.	U
91-58-7	2-Chloronaphthalene	1900.	U
88-74-4	2-Nitroaniline	9400.	U
131-11-3	Dimethylphthalate	1900.	U
208-96-8	Acenaphthylene	1900.	U
606-20-2	2,6-Dinitrotoluene	1900.	U

[illegible] ANALYSIS DATA SHEET [illegible]

[illegible]

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible] SDG No.: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5163[illegible]

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. [illegible] dec. ____ Date Extracted: [illegible]/14/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 9/12/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	9400.	U
83-32-9	Acenaphthene	1900.	U
51-28-5	2,4-Dinitrophenol	9400.	U
100-02-7	4-Nitrophenol	9400.	U
132-64-9	Dibenzofuran	1900.	U
121-14-2	2,4-Dinitrotoluene	1900.	U
84-66-2	Diethylphthalate	1900.	U
7005-72-3	4-Chlorophenyl-phenylether	1900.	U
86-73-7	Fluorene	1900.	U
100-01-6	4-Nitroaniline	9400.	U
534-52-1	4,6-Dinitro-2-methylphenol	9400.	U
86-30-6	N-Nitrosodiphenylamine (1)	1900.	U
101-55-3	4-Bromophenyl-phenylether	1900.	U
118-74-1	Hexachlorobenzene	1900.	U
87-86-5	Pentachlorophenol	9400.	U
85-01-8	Phenanthrene	1200.	J
120-12-7	Anthracene	1900.	U
84-74-2	Di-n-butylphthalate	310.	J
206-44-0	Fluoranthene	2500.	
129-00-0	Pyrene	2000.	
85-68-7	Butylbenzylphthalate	690.	J
91-94-1	3,3'-Dichlorobenzidine	3900.	U
56-55-3	Benzo(a)anthracene	760.	J
218-01-9	Chrysene	1500.	J
117-81-7	bis(2-Ethylhexyl)phthalate	2400.	
117-84-0	Di-n-octylphthalate	1900.	U
205-99-2	Benzo(b)fluoranthene	1900.	J
207-08-9	Benzo(k)fluoranthene	2200.	
50-32-8	Benzo(a)pyrene	1100.	J
193-39-5	Indeno(1,2,3-cd)pyrene	910.	J
53-70-3	Dibenzo(a,h)anthracene	1900.	U
191-24-2	Benzo(g,h,i)perylene	1000.	J

(1) - Cannot be separated from diphenylamine

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ESL [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible] SDG No.: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: [illegible] (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. [illegible] dec. ____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 9/12/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
Number TICs found: 22 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 116-53-0	Butanoic acid, 2-methyl-	4.33	1000.	J
2. - -	UNKNOWN METHYL KETONE	5.13	6000.	BJ A
3. - -	UNKNOWN METHYL KETONE	6.67	2000.	J A
4. - -	UNKNOWN HYDROCARBON	10.02	1000.	J
5. - -	UNKNOWN	10.59	1000.	J
6. - -	UNKNOWN HYDROCARBON	10.90	3000.	J
7. - -	UNKNOWN HYDROCARBON	11.56	1000.	J
8. 501-52-0	Benzenepropanoic acid	11.84	2000.	J
9. - -	UNKNOWN	11.97	2000.	J
10. - -	UNKNOWN HYDROCARBON	12.77	3000.	J
11. - -	UNKNOWN HYDROCARBON	12.83	2000.	J
12. - -	UNKNOWN	13.41	4000.	J
13. - -	UNKNOWN HYDROCARBON	13.55	7000.	J
14. - -	UNKNOWN HYDROCARBON	15.88	4000.	J
15. - -	UNKNOWN HYDROCARBON	16.57	10000.	J
16. 57-10-3	Hexadecanoic acid	19.35	20000.	J
17. - -	UNKNOWN	20.55	4000.	J
18. - -	UNKNOWN HYDROCARBON	25.84	7000.	J
19. - -	UNKNOWN HYDROCARBON	27.31	20000.	J
20. - -	UNKNOWN HYDROCARBON	28.72	10000.	J
21. - -	UNKNOWN	31.37	20000.	J
22. - -	UNKNOWN	34.55	10000.	J
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FORM I SV-TIC 1/87 Rev.

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A95500SDL

Lab Name: [illegible] Contract: C00260/

Lab Code: [illegible] Case No.: [illegible] SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30. (g/ml) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 08/01/91

% Moisture: not dec. dec. 62. Date Extracted: 08/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/13/91

GPC Cleanup: (Y/N) N pH: Dilution Factor: 10.0

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	44.	UD
58-89-9	gamma-BHC (Lindane)	44.	UD
319-85-7	beta-BHC	88.	UD
76-44-8	Heptachlor	88.	UD
319-86-8	delta-BHC	88.	UD
309-00-2	Aldrin	88.	UD
1024-57-3	Heptachlor epoxide	88.	UD
5566-34-7	gamma-Chlordane	88.	UD
5103-71-9	alpha-Chlordane	88.	UD
959-98-8	Endosulfan I	88.	UD
72-55-9	4,4'-DDE	140.	D
60-57-1	Dieldrin	100.	D
72-20-8	Endrin	290.	D
72-54-8	4,4'-DDD	180.	UD
33213-65-9	Endosulfan II	180.	UD
50-29-3	4,4'-DDT	180.	UD
1031-07-8	Endosulfan sulfate	180.	UD
72-43-5	Methoxychlor	880.	UD
53494-70-5	Endrin ketone	180.	UD
8001-35-2	Toxaphene	1800.	UD
12674-11-2	Aroclor-1016	880.	UD
11104-28-2	Aroclor-1221	880.	UD
11141-16-5	Aroclor-1232	880.	UD
53469-21-9	Aroclor-1242	880.	UD
12672-29-6	Aroclor-1248	880.	UD
11097-69-1	Aroclor-1254	880.	UD
11096-82-5	Aroclor-1260	880.	UD

U.S. EPA - CLP

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

A95505

Lab Name: ESE [illegible] Contract: NY DEC

Lab Code: ESE Case No.: SAS No.: SDG No.: A955

Matrix (soil/water): SOIL Lab Sample ID: NY165*3

Level (low/med): LOW Date Received: 08/01/91

% Solids: 38.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13400			P
7440-36-0	Antimony	13.1	B	N	P
7440-38-2	Arsenic	5.9		NS	F
7440-39-3	Barium	298			P
7440-41-7	Beryllium	1.2			P
7440-43-9	Cadmium	9.8			P
7440-70-2	Calcium	76900			P
7440-47-3	Chromium	89.3			P
7440-48-4	Cobalt	24.3			P
7440-50-8	Copper	411			P
7439-89-6	Iron	34400			P
7439-92-1	Lead	250			P
7439-95-4	Magnesium	19900			P
7439-96-5	Manganese	734		N	P
7439-97-6	Mercury	0.23	U		CV
7440-02-0	Nickel	121			P
7440-09-7	Potassium	1740			P
7782-49-2	Selenium	0.49	U	NW	F
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	1140	B		P
7440-28-0	Thallium	0.62	U		F
7440-62-2	Vanadium	34.6			P
7440-66-6	Zinc	3390			P
	Cyanide				

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

[illegible]15W*3

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: NYCL?4 [illegible] SAS No.: [illegible] SDG No.: NY15W [illegible] 8-13-91

Matrix: (soil/water) WATER Lab Sample ID: [illegible]Y15W*3

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]3

Level: (low/med) LOW Date Received: 8/ 6/91

% Moisture: not dec. 100. Date Analyzed: 8/ 9/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	29.	
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	8.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

16W*3

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: PARCIPP SAS No.: SDG No.: ~~NY16W~~ A955 11-8-9

Matrix: (soil/water) WATER Lab Sample ID: NY16W*3

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]91443

Level: (low/med) LOW Date Received: 8/ 6/91

% Moisture: not dec. 100. Date Analyzed: 8/ 9/91

Column: (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NY16W*3

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible] SDG No.: [illegible]A955

Matrix: (soil/water) WATER Lab Sample ID: [illegible]

Sample wt/vol: 1000.0 (g/mL) ML Lab File ID: [illegible]6504

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 100. dec. ____ Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 8/29/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET [illegible]

Lab Name: ESE [illegible]

Lab Code: ESE [illegible] 0955

Matrix: (soil/water) WATER [illegible]

Sample wt/vol: 1000.0 (g/mL) ML [illegible] 04

Level: (low/med) LOW Date Received: [illegible]/ 1/91

% Moisture: not dec. 100. dec.____ Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF [illegible] /29/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

NY18W#3

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ESE　　Contract: NYSDEC

Lab Code: ESE　　Case No.: RB091　　SAS No.:　　SDG No.: A955

Matrix: (soil/water) WATER　　Lab Sample ID: [illegible]

Sample wt/vol: 1000.0 (g/mL) ML　　Lab File ID: 61504

Level: (low/med) LOW　　Date Received: 8/ 1/91

% Moisture: not dec. 100.　dec. ____　　Date Extracted: 8/ 7/91

Extraction: (SepF/Cont/Sonc) SEPF　　Date Analyzed: 8/29/91

GPC Cleanup: (Y/N) N　　pH: 7.0　　Dilution Factor: 1.00

Number TICs found: 0　　CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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EPA SAMPLE NO.

[illegible] ANALYSIS DATA SHEET

[illegible]5D01

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible] SDG No.: [illegible]A955

Matrix: (soil/water) [illegible] Lab Sample ID: [illegible]

Sample wt/vol: [illegible] (g/mL) ML Lab File ID: [illegible]

Level: (low/med) [illegible] Date Received: [illegible]/01/91

% Moisture: not dec. [illegible] dec. [illegible] Date Extracted: 08/07/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 09/04/91

GPC Cleanup: (Y/N) [illegible] pH: [illegible] Dilution Factor: [illegible].00

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.025	U
58-89-9	gamma-BHC (Lindane)	0.027	
319-85-7	beta-BHC	0.050	U
76-44-8	Heptachlor	0.050	U
319-86-8	delta-BHC	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
5566-34-7	gamma-Chlordane	0.050	U
5103-71-9	alpha-Chlordane	0.050	U
959-98-8	Endosulfan I	0.050	U
72-55-9	4,4'-DDE	0.050	U
60-57-1	Dieldrin	0.050	U
72-20-8	Endrin	0.050	U
72-54-8	4,4'-DDD	0.10	U
33213-65-9	Endosulfan II	0.10	U
50-29-3	4,4'-DDT	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	0.50	U

U.S. EPA - CLP

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

A9550[illegible]

Lab Name: ESE, Inc. Contract: [illegible]

Lab Code: ESE Case No.: SAS No.: SDG No.: A955

Matrix (soil/water): WATER Lab Sample ID: [illegible]NY16W*2

Level (low/med): LOW Date Received: 08/01/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8140			P
7440-36-0	Antimony	25.1	U		P
7440-38-2	Arsenic	3.6	B		F
7440-39-3	Barium	120	B		P
7440-41-7	Beryllium	1.3	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	90400			P
7440-47-3	Chromium	11.7			P
7440-48-4	Cobalt	6.1	U		P
7440-50-8	Copper	26.2			P
7439-89-6	Iron	12000			P
7439-92-1	Lead	26.5			F
7439-95-4	Magnesium	31000			P
7439-96-5	Manganese	797			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	18.1	B		P
7440-09-7	Potassium	4520	B		P
7782-49-2	Selenium	2.1	U	W	F
7440-22-4	Silver	4.9	U		P
7440-23-5	Sodium	41800			P
7440-28-0	Thallium	2.7	U	W	F
7440-62-2	Vanadium	14.3	B		P
7440-66-6	Zinc	200			P
	Cyanide				

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN 3/90

VOLATILE [illegible] ANALYSIS [illegible] SHEET

[illegible]

Lab Name: ESE [illegible]

Lab Code: ESE Case No.: [illegible] SAS No.: [illegible] [illegible]

RB 11/18/91 *[illegible] 11-8-91*

Matrix: (soil/water) SOIL Lab Sample [illegible] [illegible]S#3

Sample wt/vol: 5.000 (g/mL) G Lab File [illegible]

Level: (low/med) LOW Date Received: 8/ 6/91

% Moisture: not dec. 62. Date Analyzed: 8/10/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	130.	U
74-83-9	Bromomethane	130.	U
75-01-4	Vinyl Chloride	130.	U
75-00-3	Chloroethane	130.	U
75-09-2	Methylene Chloride	66.	U
67-64-1	Acetone	150.	B
75-15-0	Carbon Disulfide	90.	
75-35-4	1,1-Dichloroethene	66.	U
75-34-3	1,1-Dichloroethane	66.	U
540-59-0	1,2-Dichloroethene (total)	66.	U
67-66-3	Chloroform	66.	U
107-06-2	1,2-Dichloroethane	66.	U
78-93-3	2-Butanone	130.	U
71-55-6	1,1,1-Trichloroethane	66.	U
56-23-5	Carbon Tetrachloride	66.	U
108-05-4	Vinyl Acetate	130.	U
75-27-4	Bromodichloromethane	66.	U
78-87-5	1,2-Dichloropropane	66.	U
10061-01-5	cis-1,3-Dichloropropene	66.	U
79-01-6	Trichloroethene	200.	
124-48-1	Dibromochloromethane	66.	U
79-00-5	1,1,2-Trichloroethane	66.	U
71-43-2	Benzene	66.	U
10061-02-6	trans-1,3-Dichloropropene	66.	U
75-25-2	Bromoform	66.	U
108-10-1	4-Methyl-2-Pentanone	130.	U
591-78-6	2-Hexanone	130.	U
127-18-4	Tetrachloroethene	66.	U
79-34-5	1,1,2,2-Tetrachloroethane	66.	U
108-88-3	Toluene	120.	
108-90-7	Chlorobenzene	66.	U
100-41-4	Ethylbenzene	8900.	E
100-42-5	Styrene	88.	
1330-20-7	Xylene (total)	12000.	E

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

16S*3

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: ~~NYCLP~~ R8491 [illegible] SAS No.: SDG No.: ~~NY16S~~ [illegible] 11-8-91

Matrix: (soil/water) SOIL Lab Sample ID: NY16S*3

Sample wt/vol: 5.000 (g/mL) G Lab File ID: [illegible]1458

Level: (low/med) LOW Date Received: 8/ 6/91

% Moisture: not dec. 62. Date Analyzed: 8/10/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC 1/87 Rev.

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: [illegible] Contract: NEW YORK

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible] SDG No.: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]3

Sample wt/vol: 4.000 (g/mL) G Lab File ID: [illegible]

Level: (low/med) MED Date Received: 8/ 6/91

% Moisture: not dec. [illegible] Date Analyzed: 8/10/91

Column: (pack/cap) PACK Dilution Factor: 100.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6600.	U
74-83-9	Bromomethane	6600.	U
75-01-4	Vinyl Chloride	6600.	U
75-00-3	Chloroethane	6600.	U
75-09-2	Methylene Chloride	3300.	U
67-64-1	Acetone	6600.	U
75-15-0	Carbon Disulfide	3300.	U
75-35-4	1,1-Dichloroethene	3300.	U
75-34-3	1,1-Dichloroethane	3300.	U
540-59-0	1,2-Dichloroethene (total)	3300.	U
67-66-3	Chloroform	330.	J
107-06-2	1,2-Dichloroethane	3300.	U
78-93-3	2-Butanone	6600.	U
71-55-6	1,1,1-Trichloroethane	3300.	U
56-23-5	Carbon Tetrachloride	3300.	U
108-05-4	Vinyl Acetate	6600.	U
75-27-4	Bromodichloromethane	3300.	U
78-87-5	1,2-Dichloropropane	3300.	U
10061-01-5	cis-1,3-Dichloropropene	3300.	U
79-01-6	Trichloroethene	3300.	U
124-48-1	Dibromachloromethane	3300.	U
79-00-5	1,1,2-Trichloroethane	3300.	U
71-43-2	Benzene	3300.	U
10061-02-6	trans-1,3-Dichloropropene	3300.	U
75-25-2	Bromoform	3300.	U
108-10-1	4-Methyl-2-Pentanone	6600.	U
591-78-6	2-Hexanone	6600.	U
127-18-4	Tetrachloroethene	3300.	U
79-34-5	1,1,2,2-Tetrachloroethane	3300.	U
108-88-3	Toluene	3000.	J
108-90-7	Chlorobenzene	3300.	U
100-41-4	Ethylbenzene	39000.	
100-42-5	Styrene	3300.	U
1330-20-7	Xylene (total)	120000.	

oil/water) SOIL   Lab Sample ID: 16503

/vol: 5.000 (g/mL) G   Lab File ID: [illegible]

(low/med) MED   Date Received: 8/ 6/91

% not dec. 62   Date Analyzed: 8/10/91

(pack/cap) PACK   Dilution Factor: 100.00

TICs found: 0   CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC   1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16S*3 RE

Lab Name: ESE   Contract: NEW YORK

Lab Code: ESE   Case No.: NYCLP2   SAS No.:   SDG No.: NY16S

Matrix: (soil/water) SOIL   Lab Sample ID: NY16S*3

Sample wt/vol: 4.000 (g/mL) G   Lab File ID: 01625

Level: (low/med) MED   Date Received: 8/ 6/91

% Moisture: not dec. 62.   Date Analyzed: 8/10/91

Column: (pack/cap) PACK   Dilution Factor: 100.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6600.	U
74-83-9	Bromomethane	6600.	U
75-01-4	Vinyl Chloride	6600.	U
75-00-3	Chloroethane	6600.	U
75-09-2	Methylene Chloride	3300.	U
67-64-1	Acetone	6600.	U
75-15-0	Carbon Disulfide	3300.	U
75-35-4	1,1-Dichloroethene	3300.	U
75-34-3	1,1-Dichloroethane	3300.	U
540-59-0	1,2-Dichloroethene (total)	3300.	U
67-66-3	Chloroform	3300.	U
107-06-2	1,2-Dichloroethane	3300.	U
78-93-3	2-Butanone	6600.	U
71-55-6	1,1,1-Trichloroethane	3300.	U
56-23-5	Carbon Tetrachloride	3300.	U
108-05-4	Vinyl Acetate	6600.	U
75-27-4	Bromodichloromethane	3300.	U
78-87-5	1,2-Dichloropropane	3300.	U
10061-01-5	cis-1,3-Dichloropropene	3300.	U
79-01-6	Trichloroethene	3300.	U
124-48-1	Dibromochloromethane	3300.	U
79-00-5	1,1,2-Trichloroethane	3300.	U
71-43-2	Benzene	3300.	U
10061-02-6	trans-1,3-Dichloropropene	3300.	U
75-25-2	Bromoform	3300.	U
108-10-1	4-Methyl-2-Pentanone	6600.	U
591-78-6	2-Hexanone	6600.	U
127-18-4	Tetrachloroethene	3300.	U
79-34-5	1,1,2,2-Tetrachloroethane	3300.	U
108-88-3	Toluene	3000.	J
108-90-7	Chlorobenzene	3300.	U
100-41-4	Ethylbenzene	40000.	
100-42-5	Styrene	3300.	U
1330-20-7	Xylene (total)	26000.	

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. [illegible]

[illegible] ES*3 [illegible]

Lab Name: ESE [illegible] NEW YORK [illegible]

Lab Code: ESE [illegible] [illegible] NY165 [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible] ES*3

Sample wt/vol: 4.000 (g/mL) G Lab File ID: [illegible]

Level: (low/med) MED Date Received: 8/ 6/91

% Moisture: not dec. 62. Date Analyzed: 8/10/91

Column: (pack/cap) PACK Dilution Factor: 100.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NY16S*3

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: RB091 SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 61550

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 62. dec._____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	34000.	U
111-44-4	bis(2-Chloroethyl)ether	34000.	U
95-57-8	2-Chlorophenol	34000.	U
541-73-1	1,3-Dichlorobenzene	34000.	U
106-46-7	1,4-Dichlorobenzene	34000.	U
100-51-6	Benzyl alcohol	34000.	U
95-50-1	1,2-Dichlorobenzene	34000.	U
95-48-7	2-Methylphenol	34000.	U
108-60-1	bis(2-Chloroisopropyl)ether	34000.	U
106-44-5	4-Methylphenol	34000.	U
621-64-7	N-Nitroso-di-n-propylamine	34000.	U
67-72-1	Hexachloroethane	34000.	U
98-95-3	Nitrobenzene	34000.	U
78-59-1	Isophorone	34000.	U
88-75-5	2-Nitrophenol	34000.	U
105-67-9	2,4-Dimethylphenol	34000.	U
65-85-0	Benzoic acid	170000.	U
111-91-1	bis(2-Chloroethoxy)methane	34000.	U
120-83-2	2,4-Dichlorophenol	34000.	U
120-82-1	1,2,4-Trichlorobenzene	34000.	U
91-20-3	Naphthalene	34000.	U
106-47-8	4-Chloroaniline	34000.	U
87-68-3	Hexachlorobutadiene	34000.	U
59-50-7	4-Chloro-3-methylphenol	34000.	U
91-57-6	2-Methylnaphthalene	34000.	U
77-47-4	Hexachlorocyclopentadiene	34000.	U
88-06-2	2,4,6-Trichlorophenol	34000.	U
95-95-4	2,4,5-Trichlorophenol	170000.	U
91-58-7	2-Chloronaphthalene	34000.	U
88-74-4	2-Nitroaniline	170000.	U
131-11-3	Dimethylphthalate	34000.	U
208-96-8	Acenaphthylene	34000.	U
606-20-2	2,6-Dinitrotoluene	34000.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: NY16S*3

Lab Name: ESE   Contract: NYSDEC

Lab Code: ESE   Case No.: RB091   SAS No.:   SDG No.: A955

Matrix: (soil/water) SOIL   Lab Sample ID:

Sample wt/vol: 30.0 (g/mL) G   Lab File ID: [illegible]1550

Level: (low/med) LOW   Date Received: 8/ 1/91

% Moisture: not dec. 62. dec.____   Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SONC   Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y   pH: 7.0   Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	170000.	U
83-32-9	Acenaphthene	8800.	J
51-28-5	2,4-Dinitrophenol	170000.	U
100-02-7	4-Nitrophenol	170000.	U
132-64-9	Dibenzofuran	4800.	J
121-14-2	2,4-Dinitrotoluene	34000.	U
84-66-2	Diethylphthalate	34000.	U
7005-72-3	4-Chlorophenyl-phenylether	34000.	U
86-73-7	Fluorene	12000.	J
100-01-6	4-Nitroaniline	170000.	U
534-52-1	4,6-Dinitro-2-methylphenol	170000.	U
86-30-6	N-Nitrosodiphenylamine (1)	34000.	U
101-55-3	4-Bromophenyl-phenylether	34000.	U
118-74-1	Hexachlorobenzene	34000.	U
87-86-5	Pentachlorophenol	170000.	U
85-01-8	Phenanthrene	140000.	
120-12-7	Anthracene	26000.	J
84-74-2	Di-n-butylphthalate	17000.	J
206-44-0	Fluoranthene	150000.	
129-00-0	Pyrene	150000.	
85-68-7	Butylbenzylphthalate	130000.	
91-94-1	3,3'-Dichlorobenzidine	69000.	U
56-55-3	Benzo(a)anthracene	67000.	
218-01-9	Chrysene	84000.	
117-81-7	bis(2-Ethylhexyl)phthalate	210000.	
117-84-0	Di-n-octylphthalate	34000.	U
205-99-2	Benzo(b)fluoranthene	57000.	
207-08-9	Benzo(k)fluoranthene	77000.	
50-32-8	Benzo(a)pyrene	63000.	
193-39-5	Indeno(1,2,3-cd)pyrene	44000.	
53-70-3	Dibenzo(a,h)anthracene	16000.	J
191-24-2	Benzo(g,h,i)perylene	44000.	

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

NY16S*3

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: RB091 SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 61550

Level: (low/med) LOW Date Received: 8/ 1/91

% Moisture: not dec. 62. dec._____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 18 (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	611-14-3	Benzene, 1-ethyl-2-methyl-	6.14	400000.	J
2.	4536-86-1	Benzene, (1-propyloctyl)-	16.16	300000.	J
3.	629-78-7	Heptadecane	16.75	500000.	J
4.	- -	UNKNOWN	16.82	500000.	J
5.	- -	UNKNOWN	16.94	300000.	J
6.	- -	UNKNOWN ALKYL PHENOL	17.03	400000.	J
7.	25154-52-3	Phenol, nonyl-	17.11	300000.	J
8.	- -	UNKNOWN	17.38	300000.	J
9.	- -	UNKNOWN	17.77	400000.	J
10.	86-74-8	9-H-Carbazole	18.58	300000.	J
11.	- -	UNKNOWN	18.80	300000.	J
12.	- -	UNKNOWN HYDROCARBON	18.97	300000.	J
13.	- -	UNKNOWN AROMATIC	19.52	400000.	J
14.	612-94-2	Naphthalene, 2-phenyl-	20.01	300000.	J
15.	- -	UNKNOWN	22.49	800000.	J
16.	- -	UNKNOWN PHTHALATE	22.83	1000000.	J
17.	- -	UNKNOWN PHTHALATE	23.07	900000.	J
18.	- -	UNKNOWN PHTHALATE	24.22	1000000.	J
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1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

NY16S*3 RE

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: RB091 SAS No.: [illegible]: A955

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 61637

Level: (low/med) LOW Date Received: 8/ 6/91

% Moisture: not dec. 62. dec._____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 9/12/91

GPC Cleanup: (Y/N) Y pH: 7.5 Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	34000.	U
111-44-4	bis(2-Chloroethyl)ether	34000.	U
95-57-8	2-Chlorophenol	34000.	U
541-73-1	1,3-Dichlorobenzene	34000.	U
106-46-7	1,4-Dichlorobenzene	34000.	U
100-51-6	Benzyl alcohol	34000.	U
95-50-1	1,2-Dichlorobenzene	34000.	U
95-48-7	2-Methylphenol	34000.	U
108-60-1	bis(2-Chloroisopropyl)ether	34000.	U
106-44-5	4-Methylphenol	34000.	U
621-64-7	N-Nitroso-di-n-propylamine	34000.	U
67-72-1	Hexachloroethane	34000.	U
98-95-3	Nitrobenzene	34000.	U
78-59-1	Isophorone	34000.	U
88-75-5	2-Nitrophenol	34000.	U
105-67-9	2,4-Dimethylphenol	34000.	U
65-85-0	Benzoic acid	170000.	U
111-91-1	bis(2-Chloroethoxy)methane	34000.	U
120-83-2	2,4-Dichlorophenol	34000.	U
120-82-1	1,2,4-Trichlorobenzene	34000.	U
91-20-3	Naphthalene	34000.	U
106-47-8	4-Chloroaniline	34000.	U
87-68-3	Hexachlorobutadiene	34000.	U
59-50-7	4-Chloro-3-methylphenol	34000.	U
91-57-6	2-Methylnaphthalene	34000.	U
77-47-4	Hexachlorocyclopentadiene	34000.	U
88-06-2	2,4,6-Trichlorophenol	34000.	U
95-95-4	2,4,5-Trichlorophenol	170000.	U
91-58-7	2-Chloronaphthalene	34000.	U
88-74-4	2-Nitroaniline	170000.	U
131-11-3	Dimethylphthalate	34000.	U
208-96-8	Acenaphthylene	34000.	U
606-20-2	2,6-Dinitrotoluene	34000.	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: NY16S*3 RE

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: [illegible]091 SAS No.: [illegible] SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]1637

Level: (low/med) LOW Date Received: 8/ 6/91

% Moisture: not dec. 62. dec. ____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 9/12/91

GPC Cleanup: (Y/N) Y pH: 7.5 Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	170000.	U
83-32-9	Acenaphthene	8500.	J
51-28-5	2,4-Dinitrophenol	170000.	U
100-02-7	4-Nitrophenol	170000.	U
132-64-9	Dibenzofuran	4600.	J
121-14-2	2,4-Dinitrotoluene	34000.	U
84-66-2	Diethylphthalate	34000.	U
7005-72-3	4-Chlorophenyl-phenylether	34000.	U
86-73-7	Fluorene	11000.	J
100-01-6	4-Nitroaniline	170000.	U
534-52-1	4,6-Dinitro-2-methylphenol	170000.	U
86-30-6	N-Nitrosodiphenylamine (1)	34000.	U
101-55-3	4-Bromophenyl-phenylether	34000.	U
118-74-1	Hexachlorobenzene	34000.	U
87-86-5	Pentachlorophenol	170000.	U
85-01-8	Phenanthrene	140000.	
120-12-7	Anthracene	25000.	J
84-74-2	Di-n-butylphthalate	19000.	J
206-44-0	Fluoranthene	210000.	
129-00-0	Pyrene	170000.	
85-68-7	Butylbenzylphthalate	130000.	
91-94-1	3,3'-Dichlorobenzidine	69000.	U
56-55-3	Benzo(a)anthracene	67000.	
218-01-9	Chrysene	86000.	
117-81-7	bis(2-Ethylhexyl)phthalate	190000.	
117-84-0	Di-n-octylphthalate	34000.	U
205-99-2	Benzo(b)fluoranthene	68000.	
207-08-9	Benzo(k)fluoranthene	80000.	
50-32-8	Benzo(a)pyrene	69000.	
193-39-5	Indeno(1,2,3-cd)pyrene	41000.	
53-70-3	Dibenzo(a,h)anthracene	34000.	U
191-24-2	Benzo(g,h,i)perylene	40000.	

(1) - Cannot be separated from diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

NY16S-3 RE

Lab Name: EBE Contract: NYSDEC

Lab Code: EBE Case No.: RB091 SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 61637

Level: (low/med) LOW Date Received: 8/ 6/91

% Moisture: not dec. 62. dec. ____ Date Extracted: 8/14/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 9/12/91

GPC Cleanup: (Y/N) Y pH: 7.5 Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 17 (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	611-14-3	Benzene, 1-ethyl-2-methyl-	5.92	400000.	J
2.	- -	UNKNOWN HYDROCARBON	15.90	300000.	J
3.	- -	UNKNOWN HYDROCARBON	16.49	500000.	J
4.	- -	UNKNOWN HYDROCARBON	16.57	600000.	J
5.	- -	UNKNOWN ALKYL PHENOL	16.67	400000.	J
6.	104-40-5	Phenol, 4-nonyl-	16.77	400000.	J
7.	- -	UNKNOWN	17.51	400000.	J
8.	- -	UNKNOWN	18.55	400000.	J
9.	779-02-2	Anthracene, 9-methyl-	19.01	300000.	J
10.	- -	UNKNOWN AROMATIC	19.22	400000.	J
11.	612-94-2	Naphthalene, 2-phenyl-	19.73	500000.	J
12.	- -	UNKNOWN	22.56	600000.	J
13.	- -	UNKNOWN PHTHALATE	22.73	600000.	J
14.	- -	UNKNOWN PHTHALATE	22.47	600000.	J
15.	- -	UNKNOWN PHTHALATE	23.06	500000.	J
16.	- -	UNKNOWN PHTHALATE	23.93	900000.	J
17.	192-97-2	Benzo(e)pyrene	27.48	1000000.	J
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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

A955006

Lab Name: ESE   Contract: C002687

Lab Code: ESE   Case No.: RB091   SAS No.: [illegible]   SDG No.: A955

Matrix: (soil/water) WATER   Lab Sample ID: [illegible]

Sample wt/vol: 1000. (g/ml) ML   Lab File ID:

Level: (low/med) LOW   Date Received: 08/06/91

% Moisture: not dec. dec.   Date Extracted: 08/07/91

Extraction: (SepF/Cont/Sonc) SEPF   Date Analyzed: 09/05/91

GPC Cleanup: (Y/N) N   pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BRC	0.025	U
58-89-9	gamma-BHC (Lindane)	0.025	U
319-85-7	beta-BHC	0.050	U
76-44-8	Heptachlor	0.050	U
319-86-8	delta-BHC	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
5566-34-7	gamma-Chlordane	0.05010	
5103-71-9	alpha-Chlordane	0.050	U
959-98-8	Endosulfan I	0.050	U
72-55-9	4,4'-DDE	0.050	U
60-57-1	Dieldrin	0.05010	
72-20-8	Endrin	0.050	U
72-54-8	4,4'-DDD	0.10	U
33213-65-9	Endosulfan II	0.10	U
50-29-3	4,4'-DDT	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-I	Aroclor-1254	0.56	U
11096-82-5	Aroclor-1260	0.50	U

page 1 of 1

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

A95506

Lab Name: ESE, Inc Contract: NY DEC

Lab Code: ESE Case No.: SAS No.: SDG No.: A955

Matrix (soil/water): WATER Lab Sample ID: NY16W*3

Level (low/med): LOW Date Received: 08/06/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	31.0	U		P
7440-36-0	Antimony	25.1	U		P
7440-38-2	Arsenic	3.2	B		F
7440-39-3	Barium	2.9	B		P
7440-41-7	Beryllium	1.3	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	26800			P
7440-47-3	Chromium	5.7	U		P
7440-48-4	Cobalt	6.1	U		P
7440-50-8	Copper	21.0	B		P
7439-89-6	Iron	1020			P
7439-92-1	Lead	2.8	B		F
7439-95-4	Magnesium	8590			P
7439-96-5	Manganese	30.3			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	15.2	B		P
7440-09-7	Potassium	3430	B		P
7782-49-2	Selenium	2.1	U		F
7440-22-4	Silver	4.9	U		P
7440-23-5	Sodium	7730			P
7440-28-0	Thallium	2.7	U		F
7440-62-2	Vanadium	4.2	U		P
7440-66-6	Zinc	42.1			P
	Cyanide				

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN 3/90

EPA SAMPLE NO.

[illegible]ATILE ORGANICS ANALYSIS DATA SHEET

16S*4

Lab Name: ESE [illegible] NEW YORK

Lab Code: ESE Case No.: ~~DAVLP2~~ SAS No.: [illegible] ~~NY16S~~

K5891 11-8-91 ... [illegible]455 11/8/91

Matrix: (soil/water) SOIL Lab Sample ID: [illegible] NY16S*4

Sample wt/vol: 5.000 (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 8/22/91

% Moisture: not dec. [illegible] Date Analyzed: 8/28/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	UG/KG	Q
74-87-3	Chloromethane	12.	U
74-83-9	Bromomethane	12.	U
75-01-4	Vinyl Chloride	12.	U
75-00-3	Chloroethane	12.	U
75-09-2	Methylene Chloride	6.	U
67-64-1	Acetone	12.	U
75-15-0	Carbon Disulfide	6.	U
75-35-4	1,1-Dichloroethene	6.	U
75-34-3	1,1-Dichloroethane	6.	U
540-59-0	1,2-Dichloroethene (total)	40.	
67-66-3	Chloroform	6.	U
107-06-2	1,2-Dichloroethane	6.	U
78-93-3	2-Butanone	12.	U
71-55-6	1,1,1-Trichloroethane	6.	U
56-23-5	Carbon Tetrachloride	6.	U
108-05-4	Vinyl Acetate	12.	U
75-27-4	Bromodichloromethane	6.	U
78-87-5	1,2-Dichloropropane	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U
79-01-6	Trichloroethene	190.	
124-48-1	Dibromochloromethane	6.	U
79-00-5	1,1,2-Trichloroethane	6.	U
71-43-2	Benzene	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U
75-25-2	Bromoform	6.	U
108-10-1	4-Methyl-2-Pentanone	12.	U
591-78-6	2-Hexanone	12.	U
127-18-4	Tetrachloroethene	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U
108-88-3	Toluene	6.	U
108-90-7	Chlorobenzene	6.	U
100-41-4	Ethylbenzene	6.	U
100-42-5	Styrene	6.	U
1330-20-7	Xylene (total)	6.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

16S*4

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: ~~NYELP2~~ RW WI RB091 11-8-91 SAS No.: SDG No.: ~~NY165~~ RW WI A955 11-8-91

Matrix: (soil/water) SOIL Lab Sample ID: NY16S*4

Sample wt/vol: 5.000 (g/mL) G Lab File ID: 51664

Level: (low/med) LOW Date Received: 8/22/91

% Moisture: not dec. 14. Date Analyzed: 8/28/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NY16S*4

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: R8091 SAS No.: SDG No.: A955

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 61541

Level: (low/med) LOW Date Received: 8/22/91

% Moisture: not dec. 14. dec. _____ Date Extracted: 8/27/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	770.	U
111-44-4	bis(2-Chloroethyl)ether	770.	U
95-57-8	2-Chlorophenol	770.	U
541-73-1	1,3-Dichlorobenzene	770.	U
106-46-7	1,4-Dichlorobenzene	770.	U
100-51-6	Benzyl alcohol	770.	U
95-50-1	1,2-Dichlorobenzene	770.	U
95-48-7	2-Methylphenol	770.	U
108-60-1	bis(2-Chloroisopropyl)ether	770.	U
106-44-5	4-Methylphenol	770.	U
621-64-7	N-Nitroso-di-n-propylamine	770.	U
67-72-1	Hexachloroethane	770.	U
98-95-3	Nitrobenzene	770.	U
78-59-1	Isophorone	770.	U
88-75-5	2-Nitrophenol	770.	U
105-67-9	2,4-Dimethylphenol	770.	U
65-85-0	Benzoic acid	3700.	U
111-91-1	bis(2-Chloroethoxy)methane	770.	U
120-83-2	2,4-Dichlorophenol	770.	U
120-82-1	1,2,4-Trichlorobenzene	770.	U
91-20-3	Naphthalene	770.	U
106-47-8	4-Chloroaniline	770.	U
87-68-3	Hexachlorobutadiene	770.	U
59-50-7	4-Chloro-3-methylphenol	770.	U
91-57-6	2-Methylnaphthalene	770.	U
77-47-4	Hexachlorocyclopentadiene	770.	U
88-06-2	2,4,6-Trichlorophenol	770.	U
95-95-4	2,4,5-Trichlorophenol	3700.	U
91-58-7	2-Chloronaphthalene	770.	U
88-74-4	2-Nitroaniline	3700.	U
131-11-3	Dimethylphthalate	770.	U
208-96-8	Acenaphthylene	770.	U
606-20-2	2,6-Dinitrotoluene	770.	U

EPA SAMPLE NO.

Sample wt/vol: [illegible] (g/mL) [illegible]

Level: (low/med) LOW   Date Received: [illegible]/22/91

% Moisture: not dec. [illegible] dec. ____   Date Extracted: 8/27/91

Extraction: (SepF/Cont/Sonc) [illegible]   Date Analyzed: [illegible]/91

GPC Cleanup: (Y/N) Y   pH: 7.0   Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3700.	U
83-32-9	Acenaphthene	770.	U
51-28-5	2,4-Dinitrophenol	3700.	U
100-02-7	4-Nitrophenol	3700.	U
132-64-9	Dibenzofuran	770.	U
121-14-2	2,4-Dinitrotoluene	770.	U
84-66-2	Diethylphthalate	770.	U
7005-72-3	4-Chlorophenyl-phenylether	770.	U
86-73-7	Fluorene	770.	U
100-01-6	4-Nitroaniline	3700.	U
534-52-1	4,6-Dinitro-2-methylphenol	3700.	U
86-30-6	N-Nitrosodiphenylamine (1)	770.	U
101-55-3	4-Bromophenyl-phenylether	770.	U
118-74-1	Hexachlorobenzene	770.	U
87-86-5	Pentachlorophenol	3700.	U
85-01-8	Phenanthrene	770.	U
120-12-7	Anthracene	770.	U
84-74-2	Di-n-butylphthalate	770.	U
206-44-0	Fluoranthene	770.	U
129-00-0	Pyrene	770.	U
85-68-7	Butylbenzylphthalate	770.	U
91-94-1	3,3'-Dichlorobenzidine	1500.	U
56-55-3	Benzo(a)anthracene	770.	U
218-01-9	Chrysene	770.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1500.	B
117-84-0	Di-n-octylphthalate	770.	U
205-99-2	Benzo(b)fluoranthene	770.	U
207-08-9	Benzo(k)fluoranthene	770.	U
50-32-8	Benzo(a)pyrene	770.	U
193-39-5	Indeno(1,2,3-cd)pyrene	770.	U
53-70-3	Dibenzo(a,h)anthracene	770.	U
191-24-2	Benzo(g,h,i)perylene	770.	U

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

NY16S44

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ESE　　　Contract: NY[illegible]

Lab Code: ESE　　Case No.: [illegible]091　　SAS No.: [illegible]　　SDG No.: A955

Matrix: (soil/water) SOIL　　　Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G　　　Lab File ID: [illegible]41

Level: (low/med) LOW　　　Date Received: 8/22/91

% Moisture: not dec. 14.　dec. ____　　　Date Extracted: 8/27/91

Extraction: (SepF/Cont/Sonc) SONC　　　Date Analyzed: 9/ 5/91

GPC Cleanup: (Y/N) Y　　pH: 7.0　　　Dilution Factor: 1.00

CONCENTRATION UNITS:
Number TICs found: 2　　　(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN METHYL KETONE	5.36	3000.	BJ A
2.	123-79-5	Hexanedioic acid, dioctyl es	23.75	2000.	J I
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FORM I SV-TIC　　　1/87 Rev.

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

[illegible]

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible]RB09[illegible] SAS No.: SDG No.: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30. (g/ml) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: [illegible]/22/91

% Moisture: not dec. dec. [illegible]. Date Extracted: 08/27/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: [illegible]/05/91

GPC Cleanup: (Y/N) Y pH: Dilution Factor: [illegible].00

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
319-85-7	beta-BHC	3.9	U
76-44-8	Heptachlor	3.9	U
319-86-8	delta-BHC	3.9	U
309-00-2	Aldrin	3.9	U
1024-57-3	Heptachlor epoxide	3.9	U
5566-34-7	gamma-Chlordane	3.9	U
5103-71-9	alpha-Chlordane	3.9	U
959-98-8	Endosulfan I	3.9	U
72-55-9	4,4'-DDE	3.9	U
60-57-1	Dieldrin	3.9	U
72-20-8	Endrin	3.9	U
72-54-8	4,4'-DDD	7.8	U
33213-65-9	Endosulfan II	7.8	U
50-29-3	4,4'-DDT	7.8	U
1031-07-8	Endosulfan sulfate	7.8	U
72-43-5	Methoxychlor	39.	U
53494-70-5	Endrin ketone	7.8	U
8001-35-2	Toxaphene	78.	U
12674-11-2	Aroclor-1016	39.	U
11104-28-2	Aroclor-1221	39.	U
11141-16-5	Aroclor-1232	39.	U
53469-21-9	Aroclor-1242	39.	U
12672-29-6	Aroclor-1248	39.	U
11097-69-1	Aroclor-1254	39.	U
11096-82-5	Aroclor-1260	39.	U

[illegible] EPA - CLP

EPA SAMPLE NO.

[illegible] ANALYSIS DATA SHEET

A95507

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible] SDG No.: A955B

Matrix (soil/water): SOIL Lab Sample ID: NY16S*4

Level (low/med): LOW Date Received: 08/22/91

% Solids: 86.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6490			P
7440-36-0	Antimony	3.6	B		P
7440-38-2	Arsenic	2.4			F
7440-39-3	Barium	64.0			P
7440-41-7	Beryllium	0.14	B		P
7440-43-9	Cadmium	0.33	U		P
7440-70-2	Calcium	65900			P
7440-47-3	Chromium	11.7			P
7440-48-4	Cobalt	5.6			P
7440-50-8	Copper	12.6			P
7439-89-6	Iron	12300			P
7439-92-1	Lead	5.8		N+	F
7439-95-4	Magnesium	14500			P
7439-96-5	Manganese	420			P
7439-97-6	Mercury	0.02	U	N	AV
7440-02-0	Nickel	11.9			P
7440-09-7	Potassium	1050			P
7782-49-2	Selenium	1.2	U	NW	F
7440-22-4	Silver	0.54	U		P
7440-23-5	Sodium	358	B		P
7440-28-0	Thallium	0.30	U	W	F
7440-62-2	Vanadium	16.9			P
7440-66-6	Zinc	36.9			P
	Cyanide				

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

16W*5

Lab Name: ESE [illegible] NEW YORK

Lab Code: ESE [illegible] SAS No.: [illegible] SDG No.: [illegible]

Matrix: (soil/water) WATER Lab Sample ID: [illegible]16W*5

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]1960

Level: (low/med) LOW Date Received: 9/ 9/91

% Moisture: not dec. 100. Date Analyzed: 9/16/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	210.	E
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	16.	
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	3500.	E
67-66-3	Chloroform	4.	J
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	2.	BJ
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	3000.	E
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	18.	
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	11.	
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

16W#5

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: ~~NYCLP5~~ RB091 11-8-91 SAS No.: SDG No.: ~~NY16W~~ [illegible] #355 11-8-91

Matrix: (soil/water) WATER Lab Sample ID: NY16W#5

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]1960

Level: (low/med) LOW Date Received: 9/ 9/91

% Moisture: not dec. 100. Date Analyzed: 9/16/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16W*5 RE

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: ~~NYCLP5~~ K8091 11-8-91 SAS No.: SDG No.: ~~NY16W~~ A055 11-3-91

Matrix: (soil/water) WATER Lab Sample ID: NY16W*5

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]1567

Level: (low/med) LOW Date Received: 9/ 9/91

% Moisture: not dec. 100. Date Analyzed: 9/16/91

Column: (pack/cap) PACK Dilution Factor: 200.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2000.	U
74-83-9	Bromomethane	2000.	U
75-01-4	Vinyl Chloride	2000.	U
75-00-3	Chloroethane	2000.	U
75-09-2	Methylene Chloride	1000.	U
67-64-1	Acetone	2000.	U
75-15-0	Carbon Disulfide	1000.	U
75-35-4	1,1-Dichloroethene	1000.	U
75-34-3	1,1-Dichloroethane	1000.	U
540-59-0	1,2-Dichloroethene (total)	9800.	
67-66-3	Chloroform	1000.	U
107-06-2	1,2-Dichloroethane	1000.	U
78-93-3	2-Butanone	2000.	U
71-55-6	1,1,1-Trichloroethane	1000.	U
56-23-5	Carbon Tetrachloride	1000.	U
108-05-4	Vinyl Acetate	2000.	U
75-27-4	Bromodichloromethane	1000.	U
78-87-5	1,2-Dichloropropane	1000.	U
10061-01-5	cis-1,3-Dichloropropene	1000.	U
79-01-6	Trichloroethene	39000.	
124-48-1	Dibromochloromethane	1000.	U
79-00-5	1,1,2-Trichloroethane	1000.	U
71-43-2	Benzene	1000.	U
10061-02-6	trans-1,3-Dichloropropene	1000.	U
75-25-2	Bromoform	1000.	U
108-10-1	4-Methyl-2-Pentanone	2000.	U
591-78-6	2-Hexanone	2000.	U
127-18-4	Tetrachloroethene	1000.	U
79-34-5	1,1,2,2-Tetrachloroethane	1000.	U
108-88-3	Toluene	1000.	U
108-90-7	Chlorobenzene	1000.	U
100-41-4	Ethylbenzene	1000.	U
100-42-5	Styrene	1000.	U
1330-20-7	Xylene (total)	1000.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: 16W*5 RE

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: NYCLP5 SAS No.: SDG No.: ~~NY16W~~ RW wt AY55 11-8-91

Matrix: (soil/water) WATER Lab Sample ID: NY16W*5

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 91[illegible]57

Level: (low/med) LOW Date Received: 9/ 9/91

% Moisture: not dec. 100. Date Analyzed: 9/16/91

Column: (pack/cap) PACK Dilution Factor: 200.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

[illegible]

Lab Name: ESE Contract: [illegible]

Lab Code: ESE Case No.: RB091 SAS No.: [illegible] 955

Matrix: (soil/water) WATER Lab Sample ID: [illegible]

Sample wt/vol: 1000.0 (g/mL) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 9/ 9/91

% Moisture: not dec. 100. dec. ____ Date Extracted: [illegible]/12/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 9/24/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NY16W-5

Lab Name: ESE   Contract: NYSDEC

Lab Code: ESE   Case No.: RB091   SAS No.:   SDG No.: A955

Matrix: (soil/water) WATER   Lab Sample ID: [illegible]

Sample wt/vol: 1000.0 (g/mL) ML   Lab File ID: [illegible]986

Level: (low/med) LOW   Date Received: 9/ 9/91

% Moisture: not dec. 100.   dec. ____   Date Extracted: 9/12/91

Extraction: (SepF/Cont/Sonc) SEPF   Date Analyzed: 9/24/91

GPC Cleanup: (Y/N) N   pH: 7.0   Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	3.	BJ
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

NY16W*5

Lab Name: ESE Contract: NYSDEC

Lab Code: ESE Case No.: RB091 SAS No.: SDG No.: A955

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 1000.0 (g/mL) ML Lab File ID: 61686

Level: (low/med) LOW Date Received: 9/ 9/91

% Moisture: not dec. 100. dec. ____ Date Extracted: 9/12/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 9/24/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 105-60-2	2H-Azepin-2-one, hexahydro-	10.53	30.	J
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FORM I SV-TIC 1/87 Rev.

EPA SAMPLE NO

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

A955009

Lab Name: [illegible] Contract: C002687

Lab Code: [illegible] Case No.: [illegible]091 SAS No.: SDG No.: A955

Matrix: (soil/water) WATER Lab Sample ID: [illegible]5

Sample wt/vol: 1000. (g/ml) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 09/09/91

% Moisture: not dec. dec. Date Extracted: 09/13/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS (ug/L or ug/Kg) UG/L	Q
309-00-2	Aldrin	0.050	U
319-84-6	alpha-BHC	0.025	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.025	U
5566-34-7	gamma-Chlordane	0.050	U
5103-71-9	alpha-Chlordane	0.050	U
72-54-8	4,4'-DDD	0.10	U
72-55-9	4,4'-DDE	0.050	U
50-29-3	4,4'-DDT	0.10	U
60-57-1	Dieldrin	0.050	U
959-98-8	Endosulfan I	0.050	U
33213-65-9	Endosulfan II	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
72-20-8	Endrin	0.050	U
53494-70-5	Endrin ketone	0.10	U
76-44-8	Heptachlor	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
72-43-5	Methoxychlor	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	0.50	U

U.S. EPA - CLP

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

A95509

Lab Name: ESE, Inc. Contract: [illegible]

Lab Code: ESE Case No.: SAS No.: SDG No.: A955B

Matrix (soil/water): WATER Lab [illegible] ID: NY16W*5

Level (low/med): LOW Date [illegible]: 09/09/91

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3290			P
7440-36-0	Antimony	25.1	U		P
7440-38-2	Arsenic	2.6	U		F
7440-39-3	Barium	87.4	B		P
7440-41-7	Beryllium	1.3	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	57900			P
7440-47-3	Chromium	6.6	B		P
7440-48-4	Cobalt	6.1	U		P
7440-50-8	Copper	9.3	B		P
7439-89-6	Iron	4690			P
7439-92-1	Lead	7.4		S*	F
7439-95-4	Magnesium	31500			P
7439-96-5	Manganese	267			P
7439-97-6	Mercury	0.20	U	N	AV
7440-02-0	Nickel	28.2	B		P
7440-09-7	Potassium	4810	B		P
7782-49-2	Selenium	2.1	U	N	F
7440-22-4	Silver	4.9	U		P
7440-23-5	Sodium	28700			P
7440-28-0	Thallium	2.7	U		F
7440-62-2	Vanadium	8.9	B		P
7440-66-6	Zinc	55.6			P
	Cyanide				

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

[illegible] ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK[illegible]

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible]

Matrix: (soil/water) WATER Lab Sample ID: [illegible]NONE#0809

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]1439

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. [illegible] Date Analyzed: [illegible]/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	5.	J
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKW1

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE Case No.: NYELAP SAS No.: SDG No.: NYELAP

R2081 A955 11-?-91

Matrix: (soil/water) WATER Lab Sample ID: MB*NONE*0809

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]1439

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 8/ 9/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK[illegible]

Lab Name: EES [illegible]

Lab Code: EES Case No.: [illegible] SAS No.: [illegible]

Matrix: (soil/water) WATER Lab Sample ID: [illegible]#NONE#0916

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: [illegible]/16/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	7.	J
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	1.	J
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

FORM I VOA 1/87 Rev.

1E EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ESE Contract: NEW YORK

Lab Code: ESE [illegible] SAS No.: [illegible] SDG No.: [illegible]

Matrix: (soil/water) WATER Lab Sample ID: [illegible]

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: [illegible]

% Moisture: not dec. 100. Date Analyzed: 9/16/91

Column: (pack/cap) PACK Dilution Factor: [illegible]

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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EPA SAMPLE NO.

[illegible] SHEET

VBLKS1

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: [illegible] SDG No.: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]#NONE*0810

Sample wt/vol: [illegible].000 (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. [illegible] Date Analyzed: 8/10/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	11.	
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

[illegible]

Date Received: [illegible]

Date Analyzed: [illegible]/10/91

Column (pack/cap): [illegible]

Dilution Factor: [illegible].00

Number TICs found: [illegible]

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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