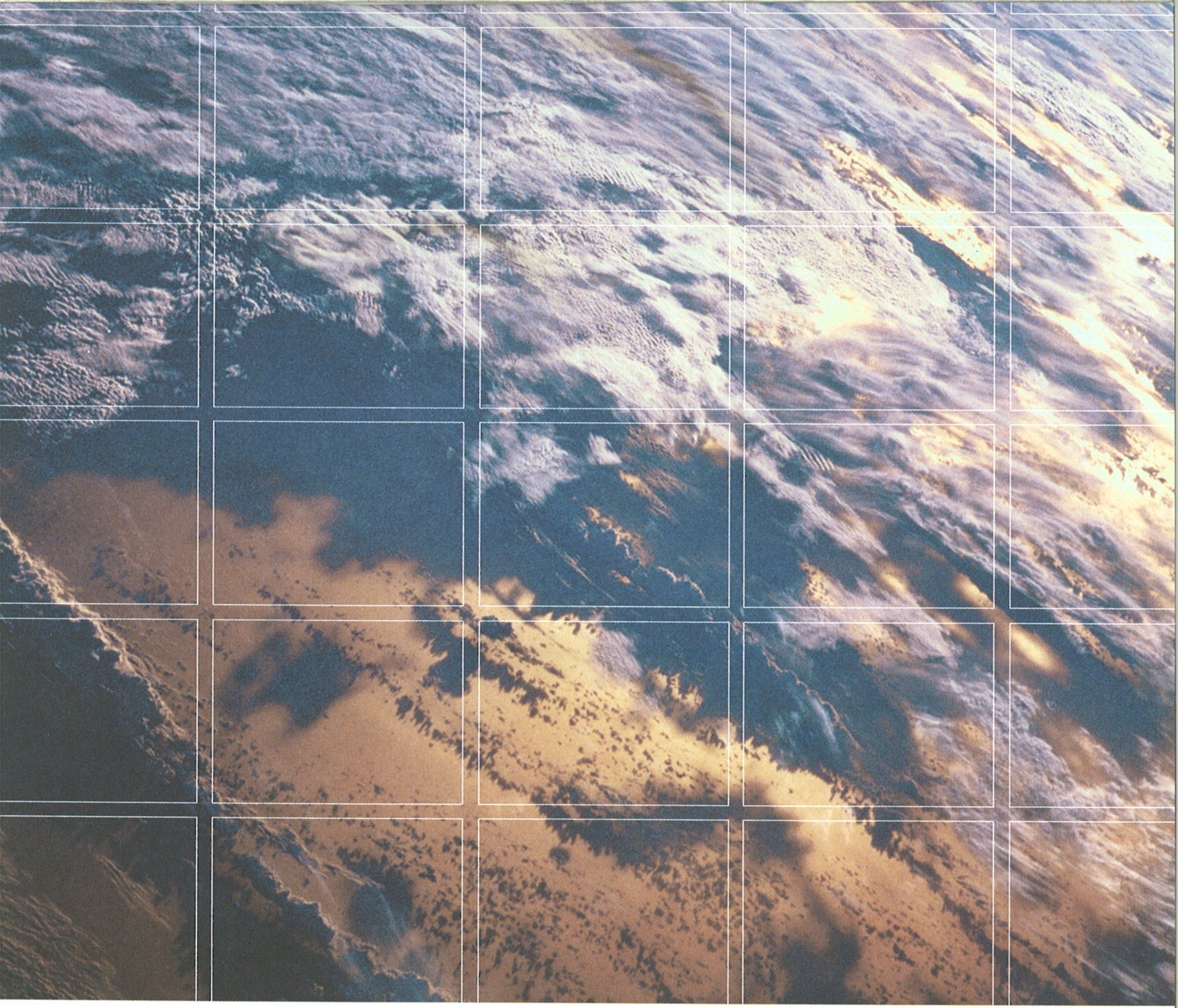

Sonoco Products Company

DNAPL RECOVERY IRM PILOT TEST REPORT

Greif Bros. Facility
Town of Tonawanda, Erie County New York
NYSDEC Voluntary Cleanup Program #V00334-9

May 2005

Prepared By:

Environmental Resources Management
5788 Widewaters Parkway
DeWitt, New York 13214

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ERM

Sonoco Products Company

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2122 Colvin Boulevard
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Erie County, New York

New York State Department of
Environmental Conservation
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ABBREVIATIONS AND ACRONYMS

ASP	Analytical Services Protocol
BGS	Below Ground Surface
CA	Chloroethane
CD	Compact Disc
DCA	Dichloroethane
DCE	Dichloroethene
DGI	Data Gap Investigation
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
DUSR	Data Usability Summary Report
ERM	Environmental Ressources Management
ESP	Environmentalist's Subsoil Probe (JMC Corporation)
eV	Electron Volt
EVS	Environmental Visualization System® (C-Tech Development)
FID	Flame Ionization Detector
FS	Feasibility Study
gpm	gallons per minute
HASP	Health and Safety Plan
HSA	Hollow-Stem Auger
IRM	Interim Remedial Measure
LNAPL	Light Non-Aqueous Phase Liquid
MEK	Methyl Ethyl Ketone (2-Butanone)
mg/kg	milligrams per kilogram (parts per million)
mg/l	milligrams per liter (parts per million)
NRCC	Northeast Regional Climate Center
NTU	Nephelometric Turbidity Unit
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSGS	New York State Geological Survey
O&M	Operations and Maintenance
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PID	Photoionization Detector
POTW	Publicly-Owned Treatment Works
ppb	parts per billion
ppm	parts per million
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RBC	Risk-Based Concentration
RI	Remedial Investigation
ROI	Radius of Influence

ABBREVIATIONS AND ACRONYMS *(Continued)*

RSCO	Recommended Soil Cleanup Objective
SCG	Standards, Criteria, and Guidance
SVE	Soil Vacuum Extraction
SVOC	Semivolatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCA	Trichloroethane
TCE	Trichloroethene
TCL	Target Compound List
TMB	Trimethylbenzene
TOGS	Technical Operations Guidance Series
TPH	Total Petroleum Hydrocarbons
µg/kg	micrograms per kilogram (parts per billion)
µg/L	micrograms per liter (parts per billion)
µs/cm	microsiemens per centimeter
USEPA	United States Environmental Protection Agency
USGS	United Stated Geological Survey
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound

1.0 INTRODUCTION

This dense, non-aqueous phase liquid (DNAPL) Recovery Interim Remedial Measure (IRM) Pilot Test Report has been prepared by Environmental Resources Management (ERM) on behalf of Sonoco Products Company (Sonoco) in association with environmental remediation activities at the Greif Brothers Corporation (Greif Bros.) Facility located at 2122 Colvin Boulevard in the Town of Tonawanda, Erie County, New York (the Site). The Site is currently used for the manufacture and processing of fiber drums and associated equipment maintenance and administrative activities. Several volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) of potential concern have been identified in Site soil and/or ground water. Environmental remediation activities are being performed at the Site pursuant to Voluntary Cleanup Agreement (VCA) Index Number B9-0574-00-03 between Sonoco and the New York State Department of Environmental Conservation (NYSDEC). NYSDEC has identified the Site as Voluntary Cleanup Program (VCP) Number V00334-9. A detailed description of Site history, background, previous investigation at the Site, and areas of concern is presented in the Data Gap Investigation (DGI) Report dated December 2003 (ERM, 2003).

The DNAPL Recovery IRM is being conducted in the Varnish Pit Area of the Site. A map showing the layout of the Varnish Pit Area and selected Site features is presented in Figure 1. Previous investigations have shown that varnish residuals, 1,1,1-trichloroethane (1,1,1-TCA), and trichloroethene (TCE) were released into the subsurface from the varnish pit. Therefore, the DNAPL Recovery IRM is being conducted to address this source area for VOCs.

1.1 IRM REMEDIAL ACTION OBJECTIVE

ERM discovered the presence of a DNAPL pool in the vicinity of the Varnish Pit Area during performance of the Data Gap Investigation (ERM, 2003). The primary remedial objective of the DNAPL Recovery IRM is to facilitate protection of human health and the environment by addressing this source area through removal of DNAPL to the extent practicable. This IRM will result in recovery of DNAPL contaminant mass and should minimize or prevent additional migration of DNAPL and/or dissolved-phase VOCs of potential concern.

The proposed IRM is designed primarily as temporary or partial remedy for the Varnish Pit Area. DNAPL Recovery IRM results will be interpreted in consideration of results from the NYSDEC-approved Remedial Investigation (RI) Report (ERM, 2001), the DGI Report (ERM, 2003), and a Focused Feasibility Study (FS) Report (to be prepared) into a Remedial Action Work Plan (RAWP) for the Site as required in the VCA. A Remedial Action Selection (RAS) Report will be submitted shortly after or concurrent with submission of the RAWP as outlined in NYSDEC's Draft Voluntary Cleanup Program Guide (NYSDEC, 2002b). The RAS Report will present an engineering analysis documenting that the proposed RAWP can achieve remedial goals consistent with the contemplated use of the Site (restricted commercial).

1.1.1 *Varnish Pit Area DNAPL Recovery IRM Pilot Test*

A map showing the layout of the Varnish Pit Area and selected Site features is presented in Figure 1. The IRM for this area consists of DNAPL recovery involving the installation of recovery wells for phased DNAPL recovery through several stages of pumping and/or vacuum-enhanced recovery. Three stainless steel recovery wells were installed in areas corresponding to subsurface structural lows as mapped on the top of the native silty clay/clay unit. Three vapor monitoring points were installed to provide vacuum data and liquid level measurements during DNAPL recovery pilot test operations. The pilot test consisted of five distinct phases or tests:

1. high vacuum dual-phase extraction;
2. DNAPL pumping;
3. ground water pumping;
4. simultaneous DNAPL and ground water pumping; and
5. low vacuum-enhanced DNAPL recovery.

A summary of recovery well and vapor monitoring point installations, ground water and DNAPL measurements, and pilot testing procedures are provided in Section 2.0. Data and results derived from field work are presented and summarized in Section 3.0. Recommendations for additional DNAPL recovery operations are presented in Section 4.0.

2.0 *FIELD WORK*

The DNAPL Recovery IRM Pilot Test was completed in conformance with the NYSDEC-approved IRM Work Plan (ERM, 2004a) and the Addendum to the IRM Work Plan (ERM, 2004b). A NYSDEC representative authorized minor modifications to some procedures in these documents based on conditions encountered in the field. A representative from Greif Bros. and NYSDEC were present in the field to discuss location of private subsurface utilities and approve locations for all soil boring and well installations.

2.1 *RECOVERY WELL AND VAPOR MONITORING POINT INSTALLATIONS*

ERM previously filed a request through Dig Safely New York for subsurface utility clearance of member companies. Greif Bros. personnel also verified locations of private subsurface utilities through owner knowledge of Site conditions, review of site utility drawings, and review and approval of proposed drilling locations.

Soil borings for DNAPL recovery well and vapor monitoring point installations were initiated by ERM and its drilling subcontractor Nothnagle Drilling, Inc. of Scottsville, New York (Nothnagle) on 23 August 2004. A decontamination pad was constructed to facilitate cleaning of drilling equipment between soil boring locations. ERM monitored the breathing zone for VOCs and particulates before, during, and after intrusive activity in the work zone and at four established monitoring points in conformance with the Community Air Monitoring Plan (CAMP). A three-zone control system was established around the work area to control flow of personnel, equipment, and decontamination procedures for personal moving between zones. Nothnagle constructed three walls around the drilling area exclusion zone utilizing a lumber framework and polyethylene sheeting. Three 2000-cfm negative air units were sealed into the base of the walls to keep fresh air movement across the exclusion zone and direct any vapors to the outside through plastic ductwork.

The locations and designations of existing monitoring wells, DNAPL recovery wells, and vapor monitoring points installed to date are presented in Figure 1. Nothnagle advanced soil borings using a CME 75 drilling rig equipped with hollow-stem augers (HSA). Soil samples were not collected during well installations. Augers and drilling tools were steam-cleaned between soil boring locations. Soils, debris and liquids associated with cleaning operations were segregated and placed into 55-gallon steel drums for subsequent proper transport and disposal off-Site. An ERM geologist described soil cuttings from the augers regarding wells were selected based on the relative location of their well screens and their proximity to the Varnish Pit Area. The transducers were connected to a data logger in order to monitor and record "background" ground water level fluctuations for comparison with drawdown data collected during pilot testing.

2.3 *PILOT TESTING*

2.3.1 *Test #1 - High Vacuum Dual-Phase DNAPL Extraction*

ERM and its remedial subcontractor SLC Environmental Services (SLC) performed a high vacuum dual-phase extraction pilot test on recovery well RW-2 on 14 September 2004. This pilot test was conducted to evaluate the potential for application of this recovery approach at the Site. Wells MW-12, RW-1, VMP-1 and VMP-2 were used as observation wells during this pilot test.

A custom-made manifold was constructed to fit on the wellhead of RW-2. The RW-2 header manifold included an adjustable valve to control the amount of vacuum applied to the wellhead. A compression fitting was installed on the wellhead manifold to accommodate for movement of a two-inch diameter polyvinyl chloride (PVC) drop tube piping. The wellhead manifold was connected via flexible hose to a high vacuum source (a vacuum trailer) capable of providing vacuum of at least 25 inches of mercury (Hg). Specialized slip caps with magnehelic gauges were used on observation wells to measure subsurface vacuum.

Ground water, DNAPL, and vapors were extracted from RW-2 using the vacuum trailer. The liquid-phase dropped out within the trailer while the vapor-phase was exhausted through the high vacuum pump via flexible hose to a 2000-pound granular activated carbon (GAC) unit. Valves or sampling ports were located between the wellhead and the trailer, between the trailer and the GAC vessel, and on the exhaust stack after the GAC vessel to allow insertion of dilution air and/or for measurement of VOC concentrations, airflow rater, temperature, and relative humidity in the vapor phase. ERM recorded operating parameters during the pilot test, which included vacuum at the wellhead and blower, temperature at the blower, pressure, and temperature of vapor exhaust from the vacuum pump. Data collected during the high vacuum dual-phase extraction pilot test are presented in Appendix B.

Approximately 40 minutes after initiation of this test, the vacuum trailer operator decided to cease the test due to elevated temperatures at the vacuum pump. It was postulated that the airflow rate produced from the subsurface formation and frictional losses from flexible hose between the wellhead and the vacuum pump were inadequate for proper cooling of the vacuum pump. After discussion with SLC and NYSDEC, it was decided that the high vacuum-enhanced DNAPL extraction pilot test would not be continued.

2.3.2 *Test #2 - DNAPL Pumping*

The second pilot test involved pumping of DNAPL only from recovery wells RW-1 and RW-2 in order to evaluate the potential of this DNAPL recovery approach at the Site. This pilot test was initiated on 20 September 2004. A steel 500-gallon container with secondary containment was installed adjacent to the varnish pit for temporary storage of recovered waste fluids. The temporary waste container was vented to the outside via an existing two-inch diameter steel vent pipe formerly connected to two tanks previously used to store varnish for varnish pit operations. The connection was made after the vent line was confirmed to be open using compressed air.

Polyethylene tubing was inserted into RW-1 and connected to a peristaltic pump. DNAPL recovered from RW-1 was pumped directly into the temporary waste container. The bottom of the polyethylene tubing was set 0.5 feet above of the bottom of the recovery well. The pump was started at a low flow rate and liquid levels in the pumping well were measured and recorded at approximate five to ten minute intervals. Recovery well RW-2 and vapor monitoring point VMP-2 were used as observation wells due to their proximity to the pumping well. DNAPL and ground water levels in the observation wells were measured at opportune times and recorded. Several periods of pumping rate fluctuation were inadvertently encountered due to gradual loss in the structural integrity and elasticity of the polyethylene tubing. The tubing was periodically replaced and pumping continued. DNAPL was recovered from well RW-1 for approximately five hours and 19 minutes. ERM collected final DNAPL and ground water level measurements in the pumping well and the observation wells and also monitored DNAPL and ground water levels during the recovery period after pumping for approximately one hour and ten minutes.

DNAPL pumping was also performed on recovery well RW-2 on 22 September 2004. Recovery well RW-1 and vapor monitoring point VMP-2 were used as observation wells during this test. The tubing was upgraded to polypropylene during this test in order to provide greater structural performance during the pilot test. The polypropylene tubing also gradually lost elasticity during the pilot test; however the rate of tubing degradation for the polypropylene tubing decreased relative to the polyethylene tubing. DNAPL was pumped from recovery well RW-2 for approximately three hours and 42 minutes. DNAPL and ground water textural characteristics, moisture content, and other pertinent observations.

Three DNAPL recovery wells (RW-1, RW-2 and RW-3) and three DNAPL vapor-monitoring wells (VMP-1, VMP-2 and VMP-3) were installed inside the building proximal to the Varnish Pit Area and the Short Truck Bay (Figure 1). The recovery wells were constructed using 6-inch diameter Type 304 stainless steel with 10 feet of 0.020-inch factory pre-slotted well screen and five feet of riser. The vapor monitoring points were constructed using two-inch diameter Type 304 stainless steel with five feet of 0.020-inch factory pre-slotted well screen and five feet of riser. Number 0 sand was used to install a sand filter pack around the screened interval for both the recovery wells and the vapor monitoring points. The sand filter pack was installed to a height of one foot above the top of each well screen. A two-foot thick seal hydrated bentonite chips was installed above each filter pack. Cement-bentonite grout was emplaced above the bentonite seal. A flush-mounted, steel curb box was cemented in place over each recovery well and vapor monitoring point. Well construction logs for the recovery wells and vapor monitoring points installed as part of the DNAPL Recovery IRM are presented in Appendix A.

Recovery wells and vapor monitoring points were developed prior to initiation of pilot testing activities in a manner consistent with NYSDEC-approved methods used during previous work at the Site.

2.2 *GROUND WATER AND DNAPL LEVEL MEASUREMENTS*

ERM geologists collected a round of ground water and DNAPL level measurements on 26 August 2004. ERM returned to the Site on 9 September 2004 and collected another round of ground water and DNAPL level measurements. Additionally, an aqueous waste characterization sample was collected during the 9 September 2004 Site visit. A summary of all samples collected during DNAPL Recovery IRM pilot testing is presented in Table 1. Depth to water, depth to DNAPL, and total well depth were measured in each well using an electronic interface probe/water level indicator. Measurements and other relevant data were recorded on ERM observation well data sheets (Appendix B) and/or in a dedicated field notebook.

The electronic interface probe/water level indicator was thoroughly cleaned between wells using a phosphate-free detergent (Alconox® solution) and de-ionized water. All waste materials were segregated based on media and placed into appropriate polyethylene or steel drums.

Pressure transducers were installed in monitoring wells MW-7, MW-9 and MW-19 and connected to Hermit data loggers on 9 September 2004. These level monitoring continued during the recovery period in the pumped well for approximately two hours and 45 minutes.

Liquid levels inside the temporary waste container were also measured in order to allow quantification of liquid recovery rate and the total volume of fluids recovered. Fluid levels were measured inside the container using an electronic interface probe/water level indicator and/or a gradated tank gauge stick.

Liquid measurement data from recovery wells, observation wells, the temporary waste container, and other relevant data collected during the DNAPL pumping pilot tests are summarized in Tables 2-6.

2.3.3 *Test #3 - Ground Water Pumping*

The second pilot test involved pumping of ground water only from recovery wells RW-1 and RW-2 in order to evaluate the impact of ground water removal on potential DNAPL recovery rates at the Site. The ground water recovery pilot test was initiated on 12 October 2004. ERM utilized two peristaltic pumps to recover ground water from recovery well RW-2 and transfer the recovered ground water directly into the temporary waste container. ERM used wells RW-1, VMP-2, MW-12 and VMP-1 as observation wells due to their proximity to the pumping well.

One pump intake was set approximately half way through the ground water column within RW-2 and secured to the well's specially-designed protective steel cover. The second pump intake was set approximately one-half foot from the bottom of the ground water column and secured to the specially designed protective steel cover. The pumps were run for approximately four hours. The DNAPL level gradually rose during ground water recovery; therefore, the pump intakes were periodically increased in elevation to avoid pumping of DNAPL. Pumping was stopped when the ground water column was essentially removed from the well and DNAPL rose to the elevation of the intakes. The recovery of ground water and DNAPL levels in RW-2 was recorded for approximately two hours after the cessation of pumping.

Liquid levels inside the temporary waste container were also measured in order to allow quantification of liquid recovery rate and the total volume of fluids recovered. Fluid levels were measured inside the container using an electronic interface probe/water level indicator and/or a gradated tank gauge stick.

Liquid measurement data from recovery wells, observation wells, the temporary waste container, and other relevant data collected during the DNAPL pumping pilot tests are summarized in Tables 7-11.

2.3.4 *Test #4 - Simultaneous DNAPL and Ground Water Pumping*

An additional pilot test involving simultaneous pumping of DNAPL and ground water was initiated on 13 October 2004 in order to evaluate the potential of this DNAPL recovery approach at the Site. ERM utilized two peristaltic pumps to recover liquids from recovery well RW-2 directly from the well to the temporary waste container. ERM again used recovery well RW-1 and vapor monitoring point VMP-2 as observation wells due to their proximity to the pumping well. Vapor monitoring point VMP-1 and monitoring well MW- 12 were also used as observation wells.

The ground water pump intake was set in the approximate middle of the ground water column within RW-2 and secured to the well's protective steel cover. The DNAPL pump intake was set in the approximate middle of the DNAPL column within RW-2 and secured to the well's protective steel cover. Both pumps were run for approximately eight hours and five minutes. Liquid levels in RW-2 were measured at more frequent intervals using an electronic interface probe/water level indicator. Pump speeds and the depths of intakes of each of the pumps where modified as necessary in an attempt to obtain a balance between recovery and recharge rates. ERM measured the liquid levels in the primary and secondary observation wells at opportune times utilizing an electronic interface probe/water level indicator. The recovery of the liquids within RW-2 and the primary observation wells were measured and recorded for approximately two hours and 20 minutes after the cessation of pumping.

Liquid levels inside the temporary waste container were also measured in order to allow quantification of liquid recovery rate and the total volume of fluids recovered. Fluid levels were measured inside the container using an electronic interface probe/water level indicator and/or a gradated tank gauge stick.

Liquid measurement data from recovery wells, observation wells, the temporary waste container, and other relevant data collected during the simultaneous DNAPL and ground water pumping pilot tests are summarized in Tables 12-16.

2.3.5 *Test #5 - Low Vacuum-Enhanced DNAPL And Ground Water Pumping*

The low vacuum-enhanced DNAPL pumping pilot test was conducted on RW-2 on 16 November 2004 in order to evaluate the potential of this DNAPL recovery approach at the Site. Wells MW-12, RW-1, VMP-1 and VMP-2 were used as observation wells during this pilot test. A specialized wellhead manifold was constructed to fit over the recovery well. The wellhead manifold included magnehelic gauges to allow measurement of vacuum on recovery well RW-2. The RW-2 manifold also contained an adjustable valve to control the amount of vacuum applied to the wellhead, two compression fittings for tubing from the peristaltic pumps, and a opening with an adjustable seal to accommodate the movement required to utilize an electronic interface probe/water level indicator within the well. Observation well headers incorporated magnehelic gauges to allow measurement of subsurface vacuum at those locations.

A vacuum was applied to the wellhead of RW-2 using an EG&G Rotron Model EN 454 explosion-proof regenerative blower mounted inside a trailer that was temporarily located west of the main building. Four-inch PVC piping was utilized to connect the trailer to the wellhead manifold on RW-2. A sample port in the PVC piping was installed at approximately half the distance between the blower trailer and the wellhead to measure air flow rate, relative humidity, and temperature using a Velocicalc Plus portable air velocity meter.

Recovered vapors were piped through a MS200D moisture separator. From the separator, recovered vapors went through the blower and were subsequently piped to an 1800-pound GAC vessel temporarily staged adjacent to the blower trailer. A sample port was installed between the blower and the GAC vessel to allow measurement of field concentrations of VOCs in the influent vapor phase with a calibrated flame ionization detector (FID), and to collect air samples in Tedlar® bags for laboratory analysis. ERM measured and recorded operating parameters of the blower system including vacuum at the blower, temperature at the blower, pressure out of the blower, and temperature out of the blower.

A four-inch diameter, ten-foot tall PVC stack was erected on top of the effluent port of the GAC vessel. A sample port was installed in the side of the effluent stack to allow measurement of VOC concentrations using a calibrated FID. Airflow rate, temperature, and relative humidity were also measured using an electronic air velocity meter. A thermometer was installed in the effluent stack for monitoring of effluent temperature from the GAC vessel. A Dawson Model I-300 electronic air sampling pump was utilized to pull samples from the effluent stack for field screening of VOC with a calibrated FID. Vapor samples were also collected from this port for subsequent analysis of VOCs of potential concern at the project laboratory.

Two peristaltic pumps were utilized to remove liquids from recovery well RW-2 after initiation of vacuum at the wellhead. One pump intake was placed in the approximate center of the ground water column and the other pump intake was placed in the DNAPL column within the recovery well. Both peristaltic pumps were started simultaneously and run for approximately two hours and 31 minutes. ERM monitored liquid levels in the pumping well and the temporary waste container as described above. ERM geologists adjusted pump speeds as appropriate based on field conditions in an attempt to achieve a balance between liquid recovery and recharge into the well.

Vacuum was initially applied to the recovery well with the wellhead manifold valve opened approximately 25 percent. ERM recorded the vacuum at the wellhead (3.75 inches of mercury). ERM measured the various parameters mentioned above at regular intervals. Influent and effluent air samples were collected in Tedlar® bags for laboratory analysis shortly after the initiation of the test (samples collected at 1625). The pilot test was run at this vacuum for approximately three hours and 31 minutes. ERM subsequently opened the valve on the wellhead manifold fully, which resulted in a vacuum of approximately three inches of mercury at the wellhead. ERM continued monitoring the above-referenced parameters. A second influent and effluent air sample were collected near the end of the test (samples collected at 2235). ERM ran this later portion of the pilot test for approximately four hours and 50 minutes.

Liquid levels inside the temporary waste container were also measured in order to allow quantification of liquid recovery rate and the total volume of fluids recovered. Fluid levels were measured inside the container using an electronic interface probe/water level indicator and/or a gradated tank gauge stick.

Liquid measurement data from recovery wells, observation wells, and the temporary waste container, system operating parameters, subsurface vacuum measurements, and other relevant data collected during the low vacuum-enhanced DNAPL and ground water pumping pilot test are summarized in Tables 17-23.

2.4 *WASTE MANAGEMENT*

Management practices for wastes generated during implementation of DNAPL Product Recovery IRM at the Site were focused on the primary goals of proper waste determinations and minimizing the volume of waste requiring off-Site management or disposal to the extent practicable. ERM anticipated that both non-hazardous and hazardous wastes would be generated during the pilot tests.

Liquid and solid wastes were contained in steel 55-gallon drums or other appropriate containers and tested for appropriate waste characterization parameters if generator knowledge, existing laboratory analytical data, or information from previous disposal of similar wastes from the Site were not available.

Wastes determined to be non-hazardous that were generated during the DNAPL Product Recovery IRM activities at the Site included:

- water from concrete floor coring operations during drilling;
- some solid debris from drilling and other DNAPL Product Recovery IRM operations;
- some personal protective equipment; and
- some disposable sampling equipment.

Non-hazardous solid wastes were placed into heavy-duty plastic bags and placed into the facility's existing municipal waste dumpster. Non-hazardous liquid wastes were poured into a floor drain connected to the sanitary sewer in the facility's normal wash area.

Wastes determined to be hazardous that were generated during the DNAPL Recovery IRM included:

- soil cuttings from well installations;
- waste fluids from drilling, well installation and development, and pilot testing (DNAPL and ground water pumping) activities;
- personal protective equipment (PPE) and disposable sampling equipment that came into contact with other hazardous wastes; and
- spent GAC associated with the dual-phase and low vacuum-enhanced pilot tests.

A summary of hazardous wastes generated during DNAPL Recovery IRM pilot testing is presented in Table 24. Hazardous wastes were temporarily staged inside the facility's RCRA 90-day accumulation area. Access was limited to authorized personnel pending off-Site transport and disposal at a permitted facility. Waste manifests are presented in Appendix C.

3.0 *RESULTS*

Data and information generated during DNAPL Recovery IRM pilot testing have been summarized to evaluate each potential method for DNAPL recovery in the Former Varnish Pit Area. Results demonstrate that additional DNAPL recovery is appropriate at the Site to address this source area and minimize or prevent additional migration of DNAPL and/or dissolved-phase VOCs of potential concern.

Data and results derived from DNAPL Recovery IRM pilot test activities have been incorporated into results obtained from previous work to refine the conceptual Site model of the estimated amount and distribution of the DNAPL. These data and results are ultimately used to facilitate cost effective recovery of DNAPL from the subsurface to the extent practicable as described in Section 4.0.

3.1 *RECOVERY WELL AND VAPOR MONITORING POINT INSTALLATIONS*

ERM and its drilling subcontractor installed three, six-inch diameter stainless steel recovery wells and three, two-inch diameter stainless steel vapor monitoring points (see Figure 1). Well construction logs are presented in Appendix A. The recovery wells and vapor monitoring points were developed prior to initiation of pilot testing activities in a manner consistent with NYSDEC-approved methods used during previous work.

Geologic units encountered during installation of the recovery wells and vapor monitoring points are consistent with units previously encountered at the Site. Subsurface geology in the Varnish Pit Area can be characterized as consisting of the following stratigraphic units in descending order from ground surface to depth:

- a heterogeneous fill unit consisting predominantly of brown to gray or black sand, vitreous slag-like or limestone-like gravel, and/or ash-like material with localized areas dominated by silt or silty clay (typically 2-12 feet thick); and
- an orange-brown to red-brown, very soft to medium stiff silty clay/clay unit consisting predominantly of clay and silt, locally mottled gray, with occasional, apparently discontinuous lenses of silt or sand (typically 10-32 feet thick).

The fill unit is more permeable that the underlying silty clay/clay unit. The difference in permeability has resulted in the accumulation of DNAPL at the contact between these units. The recovery wells are screened across this geologic contact, indicating that some recovery wells will act as a sump for the collection of DNAPL. Therefore, the location of the geologic contact between the fill unit and the silty clay/clay unit should be considered when reviewing DNAPL thicknesses in recovery wells and vapor monitoring points. The vapor monitoring points are generally screened entirely or mostly in the fill unit.

3.2 *GROUND WATER AND DNAPL LEVEL MEASUREMENTS*

Additional data generated from the recovery well and vapor monitoring point installations and subsequent measurements of ground water and DNAPL level measurements were used to construct updated contour maps and geologic cross sections to evaluate and refine our understanding of Site geology and hydrogeology, particularly as they relate to the potential migration and accumulation of DNAPL in the subsurface near the varnish pit. Table 25 presents a summary of ground water and DNAPL level measurements collected during recent pilot testing at the Site.

3.2.1 *Evaluation of Hydrogeological Characteristics*

Figure 2 is a map showing static shallow overburden ground water contours in the Varnish Pit Area measured on 14 September 2004. Review of Figure 2 suggests that shallow ground water appears to be mounded in the vicinity of the varnish pit, and therefore that the estimated lateral ground water flow direction is radial away from the varnish pit. This estimated flow direction is consistent with flow directions previously mapped in the Varnish Pit Area (ERM, 2001; ERM, 2003).

Figure 3 is a map showing static DNAPL contours in the Varnish Pit Area also measured on 14 September 2004. Review of Figure 3 suggests that DNAPL is present in the subsurface in a pool that is centered around the varnish pit. This indicates that the likely source of DNAPL in the subsurface is the varnish pit. The top of the DNAPL pool appears to be mounded with the highest elevations on the south side of the pit. However, data is limited to the north and west of the pit. This geometry is comparable to the mapped geometry of ground water above the DNAPL (Figure 2). Figure 3 also shows that the lateral extent of DNAPL is greater than the limits of the varnish pit. The lack of DNAPL in wells VMP-1, MW-12, MW-13, and MW-14 indicates that DNAPL has not migrated laterally to those locations. Additional evaluation of the apparent geometry of the DNAPL pool beneath the varnish pit is presented in Section 3.2.1 below entitled "Geologic Cross Sections and DNAPL Volume Estimates".

Ground water levels in shallow monitoring well MW-19 were monitored prior to and during the start-up of pilot testing at the Site in order to provide data that would allow for an evaluation of "background" (i.e., presumably unaffected by the pilot test) ground water level trends prior to and during testing. Figure 4 illustrates variation in ground water levels measured in monitoring well MW-19. These data are graphed so that falling ground water levels relative to time "0" at the start of monitoring on 9 September 2004 are indicated by negative numbers. Conversely, positive numbers for change in water level indicates rising ground water levels. Review of Figure 4 suggests that ground water levels in shallow overburden at the Site were falling several feet prior to and during the initial pilot test (started on 14 September at approximately 7200 minutes on Figure 4). A significant, definable trend in water levels is not apparent at the start of Test #1. These data suggest that water levels measured in monitoring well MW-19 were not affected by Test #1.

A graph showing shallow ground water levels in well MW-19 versus precipitation data obtained from the Northeast Regional Climate Center (NRCC) in Ithaca, New York is presented in Figure 5. Ground water level monitoring and precipitation data both start on 9 September 2004. Review of Figure 5 indicates that a major precipitation event of approximately 3.8 inches of rain occurred on 9 September 2004, followed by no significant precipitation events during the remainder of the ground water level monitoring period. Monitoring well MW-19 is screened in the upper silty clay/clay unit, which is characterized by a very low permeability matrix (saturated hydraulic conductivity previously measured as 10^{-8} cm/s; see ERM, 2001; ERM, 2003). The observed data are consistent with shallow ground water levels being increased during and shortly after the 9 September 2004 precipitation event and subsequently falling to more typical levels in the following days. This interpretation suggests that the upper silty clay/clay unit at the Site is fractured (i.e., macroporous) and therefore responds relatively quickly to precipitation events, even though it has a very low matrix permeability.

A graph showing shallow ground water levels in well MW-19 versus barometric pressure data obtained from the nearby Buffalo Airport (data also obtained from NRCC) is presented in Figure 6. Ground water level monitoring and barometric pressure data both start on 9 September 2004. Review of Figure 6 indicates that barometric pressure varied randomly while shallow ground water levels were either declining or remaining relatively constant. There data suggest that there is no obvious correlation between barometric pressure and shallow ground water levels at the Site.

In order to similarly evaluate the intermediate ground water zone, ERM monitored ground water levels in monitoring well MW-7 prior to and during the start-up of the pilot test. MW-7 is screened in the upper silty sand unit, which is the geologic unit that is beneath the upper silty clay/clay unit. A graph showing the variation in intermediate ground water level in MW-7 is presented in Figure 7. Review of Figure 7 indicates that intermediate ground water levels were in a rising trend prior to the start of the first pilot test on 14 September 2004 (approximately 7200 minutes). Intermediate ground water levels subsequently remained relatively constant for several days and then fell for several more days. The initial rise in intermediate ground water levels prior to the start of the first pilot test may represent recharge into the intermediate ground water zone from the shallow ground water zone above.

Figure 8 shows intermediate ground water levels from monitoring well MW-7 graphed with precipitation. The initial increase in intermediate ground water levels occurs after the significant precipitation event that occurred on 9 September 2004. The subsequent fall in intermediate ground water level in well MW-7 may represent an equilibrium adjustment after the effects of the initial large recharge event were dispersed through advection.

Figure 9 shows intermediate ground water levels from monitoring well MW-7 graphed with barometric pressure. As with the previous graphs, ground water level monitoring and barometric pressure data both start on 9 September 2004 (the "0" point). Review of Figure 6 indicates that barometric pressure varied randomly while intermediate ground water levels initially increased significantly and then later fell. These data suggest that there is no obvious correlation between barometric pressure and intermediate ground water levels at the Site.

3.2.2 *Geologic Cross Sections and DNAPL Volume Estimates*

VOC-affected soil identified to date in the Varnish Pit Area occurs in the fill unit and to a lesser extent in the upper silty clay/clay unit. As described in the previous section and in ERM (2001) and ERM (2003), the silty clay/clay unit is characterized by low permeability relative to the fill unit (although available data also indicates that the fill unit is relatively heterogeneous; therefore, significant permeability variations likely exist in the fill unit). ERM prepared several geologic cross sections based on additional data collected during the pilot test that present an updated conceptual model of the structural contact on the top of the silty clay/clay unit in the Varnish Pit Area (Figures 10-14). The geometry of the geologic contact between the fill material and the underlying silty clay/clay unit is very important as it represents a geologic barrier to vertical-downward DNAPL migration that subsequently facilitates lateral DNAPL migration due to the sharp contrast in permeability between these two units.

Figure 10 shows the locations of four new geologic cross sections that incorporate all previously available data supplemented by new data obtained during pilot testing. Cross sections A-A′ (Figure 11), B-B′ (Figure 12), C-C′ (Figure 13) and D-D′ (Figure 14) were constructed to pass through the varnish pit in order to illustrate the apparent geometry of the geologic contact between the fill unit and the underlying native silty clay/clay unit. ERM also reviewed DNAPL elevation measurements in the vicinity of the varnish pit and superimposed these data onto the geologic cross sections. This approach renders the cross sections useful for illustrating potential DNAPL thicknesses and trends in the distribution of DNAPL in the vicinity of the varnish pit.

Review of Figures 11 through 14 reveals that the lowest elevations occur in the immediate vicinity of the varnish pit (i.e., directly beneath it). This geometry is consistent with excavation that would have been required in order to construct the varnish pit. Geologic mapping on the top of the upper silty clay/clay unit suggests that DNAPLs released in the more permeable fill unit within the varnish pit area of the Site would likely tend to migrate vertically downward under the influence of gravity to the top of the less permeable silty clay/clay unit. The relatively low permeability of the upper silty clay/clay unit would act as a barrier to additional downward migration that would favor lateral migration towards and into the low areas around varnish pit.

ERM reviewed relevant geotechnical data previously collected at the Site (ERM, 2001; ERM, 2003) and input these data into a geostatistical model entitled Environmental Visualization System® (EVS), developed by C-Tech Development. This three-dimensional (3D) geostatistical analysis was performed in an effort to estimate the likely volume of DNAPL present in the varnish pit area. This estimate will facilitate planning regarding the degree of the remedial effort that may be required to recover the DNAPL and will also facilitate evaluation of the effectiveness of the proposed DNAPL recovery system (Section 4.0). A compact disc (CD) containing the results and instructions for viewing the 3D computer modeling generated using EVS is presented in Appendix F.

The depth of the geologic contact between the fill unit and the silty clay/clay unit was interpreted by an ERM geologist and input into the EVS model. The measured elevation of the DNAPL/ground water contact on 9 September 2004 was also input into the EVS model. The estimated density of the DNAPL mixture in the subsurface at the Site is 1.3785 gm/cm3 based on a three-to-one 1,1,1-trichloroethane (1,1,1-TCA) to trichloroethene (TCE) mixture (this ratio is used based on laboratory analysis of a product sample collected at the Site as reported in ERM, 2003). Another primary model input parameter for estimation of the volume of DNAPL is the effective porosity of the geologic material. Based on geotechnical analyses performed during the RI and the DGI, the range of porosity measured in the fill unit and/or the silty clay/clay unit was input into the EVS software.

A lower-end estimate for the effective porosity in the subsurface around the varnish pit was selected as three percent based on review of published scientific literature for fine-grained soil (Adamski et al., 2005; Domenico and Schwartz, 1990; Johnson, 1967). This lower-end estimate would be most reasonable if the DNAPL-saturated area was entirely within fine-grained soil where the only significant porosity and permeability exist within macropores or fractures. Similarly, a lower-end estimate for the elevation of the top of the DNAPL pool would be the lowest measured DNAPL elevation (577.61). Incorporation of these values into the EVS model results in an estimated DNAPL volume of 915 gallons.

The upper-end estimate for the effective porosity in the subsurface near the varnish pit was selected as the highest actual measured porosity (54 percent). This upper-end estimate would be the most reasonable if the DNAPL-saturated area was entirely within a very clean granular soil (consistent with some samples of fill material collected at the Site) where effective porosity is approximately equal to total porosity. Similarly, a higher-end estimate for the elevation of the top of the DNAPL pool would be the highest measured elevation (579.55 feet). Incorporation of these values into the EVS model results in an estimated DNAPL volume of 24,693 gallons.

It is most likely that the DNAPL-saturated area contains a combination of geologic materials that is represented by parameters somewhere between these end members. Therefore, it is reasonable to substitute "mid-range" values for effective porosity and DNAPL elevation in order to refine the estimated volume of DNAPL present in the subsurface near the varnish pit. Review of published scientific literature reveals that the typical range in effective porosity for fine-grained soil is 0-5 percent and that the typical range in effective porosity for coarse-grained soil is 15 to 20 percent. Using an "average" effective porosity of 10 percent and an "average" DNAPL elevation of 578.69 feet results in an estimated DNAPL volume of 4,162 gallons.

In summary, ERM estimates based on currently available data that the volume of DNAPL present in the subsurface of the Varnish Pit Area is between 915 and 24,693 gallons. Consideration of "typical" values for geologic materials that are similar to the materials encountered in the subsurface near the varnish pit suggests that a possible "mid-range" estimate for the volume of DNAPL present in the subsurface in the Varnish Pit Area is approximately 4,162 gallons.

3.3 *PILOT TESTING*

3.3.1 *Test #1 - High Vacuum Dual-Phase Extraction*

The vacuum pump was run for approximately 40 minutes, during which time 58 gallons of liquid were recovered (approximately 22 gallons of DNAPL and 36 gallons of water based on measurement by the vacuum trailer operator). These data indicate that the average liquid recovery rate during the high vacuum dual-phase extraction pilot test was 1.45 gallons per minute (gpm), the average DNAPL recovery rate was 0.55 gpm, and the average ground water recovery rate was 0.9 gpm. As expected, the average liquid recovery rates observed during Test #1 were the highest of all five pilot tests due to the application of high vacuum.

There was insufficient time to collect a complete round of vacuum measurements and ground water levels during Test #1 due to the overheating of the vacuum pump. However, vacuum was measured at vapor monitoring point VMP-1 located approximately 16 feet south-southeast from the extraction well (RW-2) and at recovery well RW-1, located approximately 17 feet east-northeast of extraction well RW-2. Mapping of subsurface vacuum distribution near the varnish pit (Figure 23) suggests that vacuum propagated into the subsurface a minimum distance of 19 feet and a maximum distance of 34 feet during the test, which was short in duration. Therefore, the vacuum radius of influence might be larger during a longer test or during routine operation.

However, the application of high vacuum at this Site resulted in emulsification of recovered DNAPL, ground water, and vapors, which resulted in operational issues for some of the high vacuum equipment and the associated vapor treatment media. This emulsification effect is also likely for some distance into the subsurface formation from the well screen (particularly in the more hydraulically transmissive zones of the formation that intersect the well bore), possibly resulting in water saturation of previously DNAPL-saturated areas. This effect, if present, may inhibit migration of DNAPL into the recovery wells over time. Therefore, while DNAPL recovery rates may be initially greater, it is possible that DNAPL recovery rates may drop off significantly after continued operation. Additionally, this approach requires treatment of extracted vapors and increased volumes of ground water requiring off-Site transport and disposal as hazardous waste. Therefore, application of high vacuum dual-phase extraction appears to be problematical at this

Site and is not recommended for additional product recovery operations based on currently available data and information.

3.3.2 *Test #2 - DNAPL Pumping*

DNAPL was pumped from recovery well RW-2 during Test #2 for a total of 217 minutes. A total of 39.75 gallons of DNAPL were recovered from RW-2 during Test #2, resulting in an average DNAPL recovery rate of 0.18 gpm. There is no average ground water recovery rate for this test because ground water was not pumped from recovery well RW-2 during this test.

The maximum ground water drawdown observed in pumping well RW-2 was 1.50 feet and the maximum DNAPL drawdown observed was 5.27 feet. Drawdown was also monitored and recorded in nearby observation wells. Figures 15 and 16 present drawdown contour maps showing the estimated extent of ground water drawdown and the estimated extent of DNAPL drawdown, respectively, near the end of this test (i.e., the "maximum" drawdown for this test). Review of Figure 15 suggests that ground water drawdown is estimated to have occurred radial away from pumping well RW-2 for distances ranging from 4 to 18 feet. Review of Figure 16 suggests that DNAPL drawdown is estimated to have occurred radial away from pumping well RW-2 for distances ranging from 6 to 7 feet.

3.3.3 *Test #3 - Ground Water Pumping*

Ground water was pumped from recovery well RW-2 during Test #3 for 210 minutes. A total of 28.5 gallons of ground water were recovered from RW-2 during Test #3, resulting in an average ground water recovery rate of 0.14 gpm. DNAPL thickness in RW-2 increased significantly during pumping of ground water from the well. The pump was turned off when DNAPL rose to the bottom of the pump intake tubing. There is no average DNAPL recovery rate for this test because DNAPL was not pumped from recovery well RW-2 during this test.

The maximum ground water drawdown observed in pumping well RW-2 was 1.96 feet and the maximum DNAPL drawdown observed was -2.02 feet (note that negative drawdown indicates a rise in DNAPL level). Drawdown was also monitored and recorded in nearby observation wells. Figures 17 and 18 present drawdown contour maps showing the estimated extent of ground water drawdown and the estimated extent of DNAPL drawdown, respectively, near the end of this test (i.e., the "maximum" drawdown for this test). Review of Figure 17 suggests that ground water drawdown is estimated to have occurred radial away from pumping well RW-2 for distances ranging from 7 to 22 feet. Review of

Figure 16 suggests that DNAPL drawdown is estimated to have occurred radial away from pumping well RW-2 for distances ranging from 6 to 17 feet.

ERM monitored the recovery of ground water and DNAPL elevations in the pumping well for 113 minutes after the pumps were turned off. The ground water level returned towards its original elevation and recovered 63% of the drawdown observed during this test. The DNAPL level continued to rise (indicated by "negative" drawdown) for 71 minutes after pumping ceased. The DNAPL level subsequently appeared to return back towards its original pre-test level but only recovered 2 percent relative to its original pre-test level.

ERM analyzed data from this pilot test using the AQTESOLVE for Windows Pro 3.5© software in order to estimate relevant aquifer parameter characteristics in the area influence by pumping. Based on assumed conditions in the Varnish Pit Area saturated zone, the analysis was performed using Neuman's method for unsteady-state flow in an unconfined aquifer (Neuman, 1974). The results of the computer analysis of these data are presented in Appendix G. Review of AQTESOLV software output in Appendix G results in the following estimates:

- hydraulic conductivity (K) = 5.09 X 10^{-5} centimeters per second;
- anisotropy ratio (K_z/K_r) = 3.051;
- transmissivity (T) = 1.505 X 10^{-3} square feet per minute; and
- specific yield (S_y) = 0.0153.

The calculated anisotropy ratio suggests that vertical fluid flow dominates over horizontal fluid flow. These model-estimated parameters are consistent with a saturated zone within fine-grained silt and clay with predominantly vertical fractures or macropores (Adamski et al., 2005).

The model-estimated value for specific yield, which is equivalent to effective porosity, is lower than the "mid-range" value for effective porosity obtained from published scientific literature as described above in Section 3.2.1. However, the model-estimated value is within the published range for effective porosity in fine-grained unconsolidated geologic materials (i.e., silt and clay). Consideration of the model-estimated specific yield (0.0153) for the subsurface near the varnish pit could be used to revise the lower end of the estimated range for the volume of DNAPL present in the subsurface near the varnish pit from 915 gallons to 467 gallons. This revised "lower-end" estimate does not affect the previous "mid-range" estimated volume of DNAPL present in the Varnish Pit Area of 4,162 gallons, as this estimated volume is based on an assumed "representative" effective porosity (i.e., specific yield) of 0.1000 (10 percent).

3.3.4 *Test #4 - Simultaneous DNAPL and Ground Water Pumping*

Ground water and DNAPL were pumped from recovery well RW-2 during Test #4 for 484 minutes. A total of 41.4 gallons of ground water were recovered from RW-2 during Test #4, resulting in an average ground water recovery rate of 0.09 gpm. A total of 28.6 gallons of DNAPL were recovered from RW-2 during Test #4, resulting in an average DNAPL recovery rate of 0.06 gpm. These data indicate that the total fluid recovery rate was 0.15 gpm.

The maximum ground water drawdown observed in pumping well RW-2 was 5.86 feet and the maximum DNAPL drawdown observed was 5.40 feet. Drawdown was also monitored and recorded in nearby observation wells. Figures 19 and 20 present drawdown contour maps showing the estimated extent of ground water drawdown and the estimated extent of DNAPL drawdown, respectively, near the end of this test (i.e., the "maximum" drawdown for this test). Review of Figure 19 suggests that ground water drawdown is estimated to have occurred radial away from pumping well RW-2 for distances ranging from 4 to 21 feet. Review of Figure 20 suggests that DNAPL drawdown is estimated to have occurred radial away from pumping well RW-2 for a distance of 6 feet (apparently equal in all directions).

ERM monitored the recovery of ground water and DNAPL elevations in the pumping well for 145 minutes after the pumps were turned off. The ground water level returned towards its original elevation and recovered 68% of the drawdown observed during this test. The DNAPL level returned towards its pre-test level and recovered 33 percent of the drawdown observed during this test.

3.3.5 *Test #5 - Low Vacuum-Enhanced DNAPL and Ground Water Pumping*

Ground water and DNAPL were pumped from recovery well RW-2 during Test #5 for 705 minutes while simultaneously applying relatively low vacuum at the wellhead. A total of 92 gallons of ground water were recovered from RW-2 during Test #5, resulting in an average ground water recovery rate of 0.13 gpm. A total of 35 gallons of DNAPL were recovered from RW-2 during Test #5, resulting in an average DNAPL recovery rate of 0.05 gpm. These data indicate that the total fluid recovery rate was 0.18 gpm.

The maximum ground water drawdown observed in pumping well RW-2 was 4.68 feet and the maximum DNAPL drawdown observed was 5.44 feet. Drawdown was also monitored and recorded in nearby observation wells. Figures 21 and 22 present drawdown contour maps showing the estimated extent of ground water drawdown and the estimated extent of DNAPL drawdown, respectively, near the end of this test (i.e., the "maximum" drawdown for this test). Review of Figure 21 suggests that ground water drawdown is estimated to have occurred radial away from pumping well RW-2 for distances ranging from 5 to 21 feet. Review of Figure 22 suggests that DNAPL drawdown is estimated to have occurred radial away from pumping well RW-2 for distances ranging from 4 to 13 feet.

System operating parameters and subsurface vacuum measurements are summarized in Tables 22 and 23, respectively. Subsurface vacuum readings were mapped to evaluate the distribution of vacuum in the subsurface during Test #5 (Figure 23). Review of Figure 23 suggests that vacuum propagated through the subsurface in a generally elliptical geometry apparently oriented along a northeast/southwest-trending axis. Vacuum influence is estimated to have occurred radial away from the recovery wellhead for distances ranging from 22 to 32 feet.

ERM collected influent and effluent air samples for laboratory analysis during Test #5. The laboratory analytical results are presented in Appendix G and are summarized in Table 28. The total influent VOC concentration in extracted vapors during the earlier portion of this test was 1708 ppm. The total influent VOC concentration in the second influent sample collected during the later portion of this test was 2607.8 ppm. The VOC concentrations in both effluent vapor samples after treatment with GAC were 0 ppm. The individual VOCs detected are consistent with VOCs detected in soil and ground water samples previously collected near the varnish pit, with the majority of the mass being derived from 1,1,1-TCA, TCE and xylenes.

3.4 *WASTE MANAGEMENT*

Non-hazardous waste materials generated during DNAPL recovery pilot testing operations were managed on-Site in accordance with the NYSDEC-approved IRM Work Plan (ERM, 2004a and ERM, 2004b). Non-hazardous waste materials generated during pilot testing operations included:

- wastewater from concrete floor coring operations;
- debris from drilling activities, typical office-type wastes, and other non-intrusive activities;
- selected personal protective equipment; and

- selected disposable sampling equipment.

The various types and quantities of hazardous waste generated during DNAPL recovery pilot testing operations are itemized in Table 24. Hazardous waste materials generated during pilot testing operations were managed in accordance with the NYSDEC-approved IRM Work Plan (ERM, 2004a and ERM, 2004b). The following hazardous wastes requiring off-Site transport and disposal were generated during the DNAPL Product Recovery IRM activities:

- soil from drill cuttings;
- wastewater from well development and purging;
- selected PPE that came in contact with hazardous wastes described above; and
- spent GAC used to treat extracted vapors prior to discharge.

4.0 PROPOSED ADDITIONAL DNAPL RECOVERY OPERATIONS

Table 29 presents a summary of salient results derived from completion of all five pilot tests conducted at the Site. Evaluation of these data and consideration of properties relevant to subsurface migration of DNAPL result in the identification of five primary considerations deemed highly relevant to facilitation of successful additional DNAPL recovery operations at the Site:

1. average DNAPL recovery rate;
2. radius of influence from pumping well;
3. avoidance or minimization of excessive disturbance of the subsurface (likely resulting in homogenization of DNAPL, ground water, and/or extracted vapors);
4. types and amount of waste media generated; and
5. types, amount, and sophistication of mechanical and/or electrical equipment required for DNAPL recovery operations.

Review of Site data under these considerations suggests that DNAPL pumping appears most likely to result in enhanced yet cost effective DNAPL recovery from the subsurface in the Varnish Pit Area. The following. Specific data and observations that support this conclusion include the following:

1. The highest DNAPL recovery rate was observed during Test #1 (high vacuum dual-phase extraction). However, excessive disturbance of the subsurface was observed with this method along with significant operational difficulties. Additionally, the types and amounts of remedial wastes generated are high.
2. Excluding Test #1, Test #2 (DNAPL pumping) resulted in the highest average DNAPL recovery rate.
3. Values for "minimum estimated radius of influence" are similar for all tests. Test durations were relatively short, suggesting that radius of influence will likely increase over longer pumping durations.
4. Higher "maximum estimated radius of influence" values were observed for Test #3 (ground water pumping) and Test #5 (low vacuum-enhanced DNAPL and ground water pumping). However, ground water pumping alone will not recover DNAPL and appears to significantly affect and contort the DNAPL pool. Additionally, Test #5 resulted in significantly lower average DNAPL recovery rate and generation of significant volumes of remediation wastes.
5. The similarity in minimum and maximum estimated radius of influence for DNAPL pumping suggests that this DNAPL recovery

method propagates more evenly throughout the subsurface relative to other methods. This suggests that this recovery approach may induce less turbulence in the DNAPL pool.

6. Test #2 (DNAPL pumping) is the only approach that results in recovery of one media, thereby resulting in decreased waste generation and disposal costs.

Therefore, ERM proposes DNAPL pumping as the approach for additional product recovery operations at the Site. Details regarding the proposed approach for additional DNAPL recovery system design and implementation are presented below. The proposed approach involves installation of two additional recovery wells and utilization of low-flow DNAPL pumping systems at each recovery well.

4.1 *ADDITIONAL RECOVERY WELL AND MONITORING POINT INSTALLATIONS*

ERM proposes to install two additional six-inch diameter stainless steel recovery wells on the north and west side of the varnish pit. ERM also proposes to install three additional two-inch diameter stainless steel vapor monitoring points. The proposed locations and designations of additional recovery wells and monitoring points (that will function as monitoring wells or possibly recovery wells if needed in the future) are illustrated in Figure 24. Proposed well construction and installation procedures will be consistent with previous installations in the Varnish Pit Area as outlined in the NYSDEC-approved IRM Work Plan (ERM, 2004a and ERM, 2004b).

4.2 *PROPOSED DNAPL RECOVERY SYSTEM*

A wide variety of DNAPL pumping systems are commercially available. ERM reviewed various commercially available models based on ERM previous experience with DNAPL recovery systems and specifications provided by vendors. Table 30 presents a summary of relevant specifications for the models reviewed.

Major system components and the general layout of the DNAPL recovery system is presented in Figure 25. ERM proposes to install a variable-speed, low-flow metering pump at each recovery wellhead that is capable of pumping between 10 milliliters (ml) to 500 ml per minute. The metering pump was chosen over other pumps based on its variable speed ability, self-priming dry run capability, corrosion-resistant wetted materials, and typically long period of low-maintenance operation. A seven-day programmable timer will be installed to control each DNAPL pump. Each pump is to be installed within a metallic sump drained into the recovery well to provide secondary containment at the wellhead. A foot valve will be installed at the intake of the drop tube to prevent back-flow during periods of shut-down. A well seal with a vapor-tight lock and drain check valve shall be placed within the well casing to contain DNAPL vapors within the well. The well seal will also contain a two-inch diameter port with a sealed cap that can be used to access the well to measure and record liquid levels, and also accommodate soil vapor extraction piping if warranted in the future. Piping from the DNAPL pump to the DNAPL storage container shall be secondarily contained with corrosion resistant tubing installed within two-inch diameter schedule 80 PVC pipe. The DNAPL storage container will be equipped with a high-liquid level switch that shall shut down the DNAPL product pumps when the storage container approaches no more than 90% of its nominal capacity.

Recovery system equipment, electrical wiring, and construction will follow applicable codes, rules, and standards. All electrical work will be performed by a licensed electrical subcontractor. Catalog cut sheets for major DNAPL product recovery system components are included in Appendix H.

4.3 *OPERATIONS AND MAINTENANCE*

The efficient operation and maintenance (O&M) of the DNAPL product recovery system will require routine monitoring. Information recorded and maintained should contain the data necessary to control and modify as necessary system operation and provide data for determining system patterns and DNAPL recovery trends.

Process Operating Report (POR) and Equipment Status Log (ESL) forms will be implemented based on the final system design and will list operational and equipment parameters that require routine monitoring. ERM personnel will complete a POR and ESL for each O&M Site visit. Apparent problems shall be noted on the reports and shall be addressed in a timely manner. The POR and ESL documents will be maintained on site in a secure location and shall be routinely available for inspection by Department personnel.

A preventative maintenance program shall be implemented and shall consist of a preventative maintenance task list and schedule for accomplishing these tasks. The preventive maintenance program will be based on manufacturer O&M literature and on-going experience obtained during operation of the system.

4.4 EFFECTIVENESS MONITORING

DNAPL recovery system effectiveness monitoring will be conducted during O&M Site visits. DNAPL and ground water levels will be obtained using an electronic interface probe/ water level indicator and shall be recorded on POR and/or ESL forms. The liquid levels in the DNAPL waste storage container will also be monitored and measured using an electronic interface probe/water level indicator and/or a tank stick in an effort to measure and record the volume of DNAPL recovered from the subsurface. These data will also be recorded and evaluated to monitor the effectiveness of the DNAPL recovery system. Results will be summarized and provided to NYSDEC in the Monthly Progress Report. System operation may be pulsed or modified appropriately in an effort to maximize the amount of DNAPL recovered from the subsurface. ERM will consult with NYSDEC prior to implementation of a significant change in the method or approach to DNAPL recovery.

4.5 SYSTEM SHUTDOWN CRITERIA

Apparent DNAPL levels in the subsurface and DNAPL recovery data will be periodically evaluated to determine when additional product recovery operations appear impracticable. ERM will petition NYSDEC for permission to cease additional product recovery operations when available data suggest that continued operation of the DNAPL recovery system would be ineffective or cost prohibitive based primarily on observation of significantly decreased DNAPL recovery rates or other appropriate considerations.

4.6 WASTE MANAGEMENT

Management practices for wastes generated during implementation of DNAPL Product Recovery IRM at the Site will focus on the primary goal of minimizing the volume of waste that requires off-site management and disposal. ERM anticipates that both non-hazardous and hazardous wastes consistent with those identified above in Section 3.5 may be generated during implementation of the DNAPL Product Recovery IRM at the Site. Non-hazardous and hazardous waste management practices will be consistent with those previously implemented at the Site and will be in conformance with the NYSDEC-approved IRM Work Plan (ERM, 2004a and ERM, 2004b).

4.7 ESTIMATED REMEDIAL PROJECT SCHEDULE

An estimated remedial project schedule for additional DNAPL recovery operations at the Site is presented as a Gantt chart in Figure 26. The estimated project schedule is tentative and subject to revision based on Site-specific conditions and considerations.

4.6 *REPORTING*

Reporting on the status and effectiveness of the DNAPL IRM product recovery system will be accomplished in the existing Monthly Progress Reports, which will continue to be submitted to NYSDEC on or before the 10th day of each month in accordance with the VCA.

5.0 REFERENCES CITED

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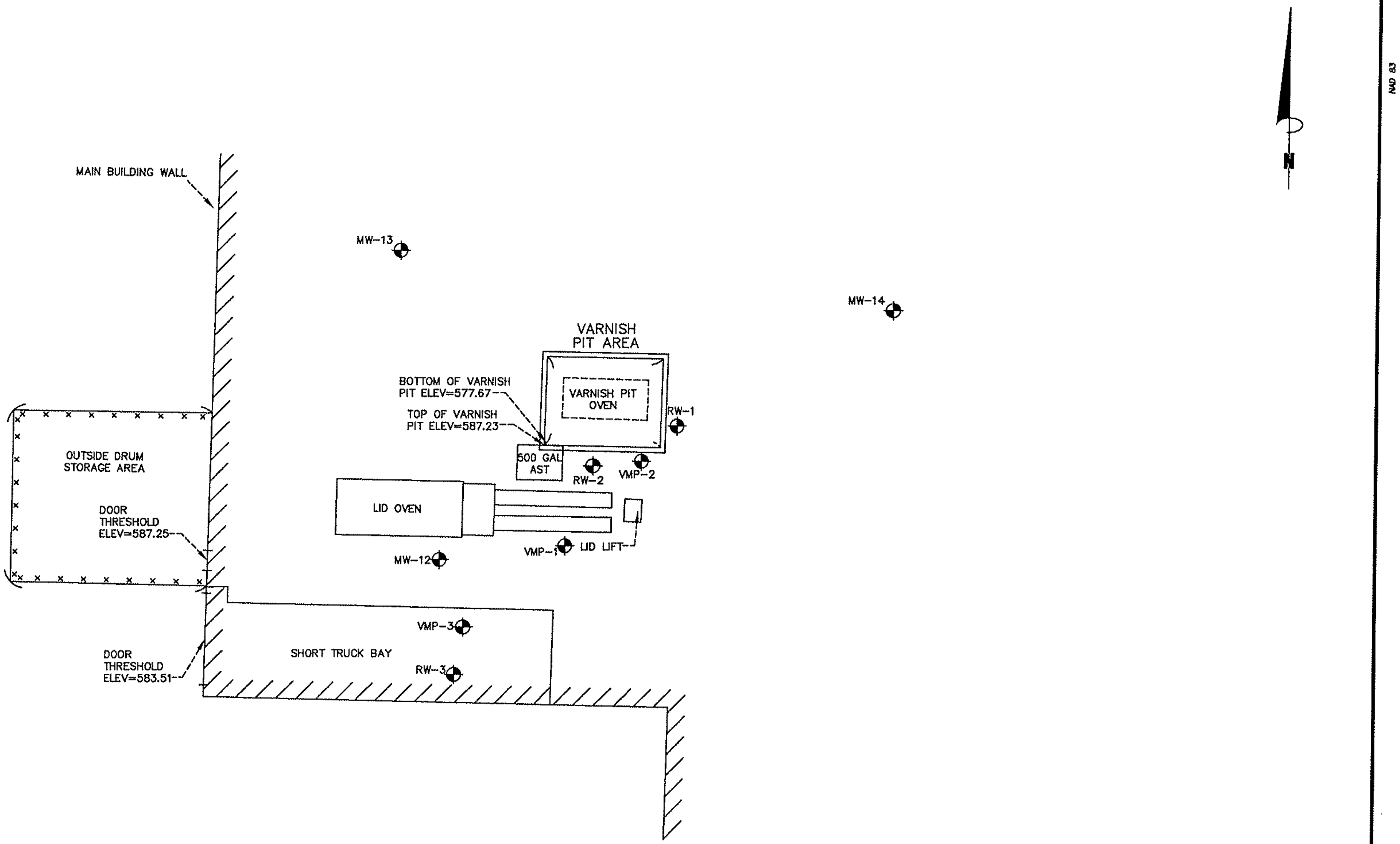
Figures



LEGEND

VMP-3 ⊕ VAPOR MONITORING POINT LOCATION
—×—×— CHAIN LINK FENCE
RW-1 ⊕ RECOVERY WELL LOCATION
MW-12 ⊕ SHALLOW MONITORING WELL LOCATION

0 20
FEET

AREA LAYOUT
DNAPL RECOVERY IRM

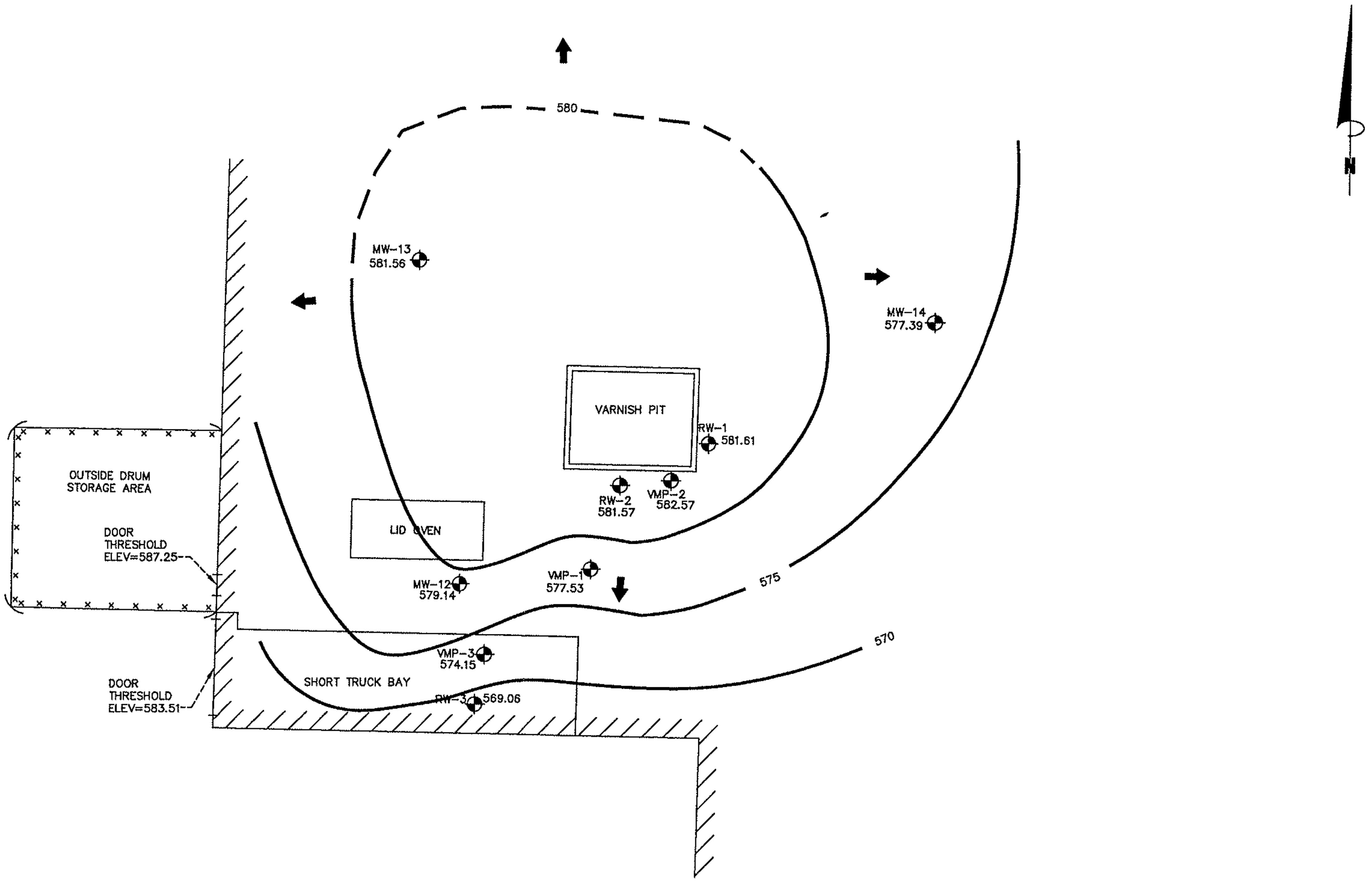
Greif Brothers Facility
2122 Colvin Boulevard
Tonawanda, New York

PREPARED FOR
SONOCO PRODUCTS COMPANY

ERM
ERM
5788 WIDEWATERS PARKWAY
DEWITT, NEW YORK 13214

SCALE 1" = 20'
DATE 04/05
FIGURE 1

PROJECT#0021621



NAD 83

LEGEND

VMP-3 ⊕ VAPOR MONITORING POINT LOCATION
—×—×— CHAIN LINK FENCE
RW-1 ⊕ RECOVERY WELL LOCATION
MW-12 ⊕ SHALLOW MONITORING WELL LOCATION
570 —— GROUND WATER CONTOUR (FEET AMSL)
574.15 GROUND WATER ELEVATION (FEET AMSL)
➡ ESTIMATED DIRECTION OF GROUND WATER FLOW

0 20
FEET

BASED ON GROUND WATER LEVEL MEASUREMENTS COLLECTED ON 14 SEPTEMBER 2004

STATIC GROUND WATER CONTOURS

Greif Brothers Facility
Tonawanda, New York

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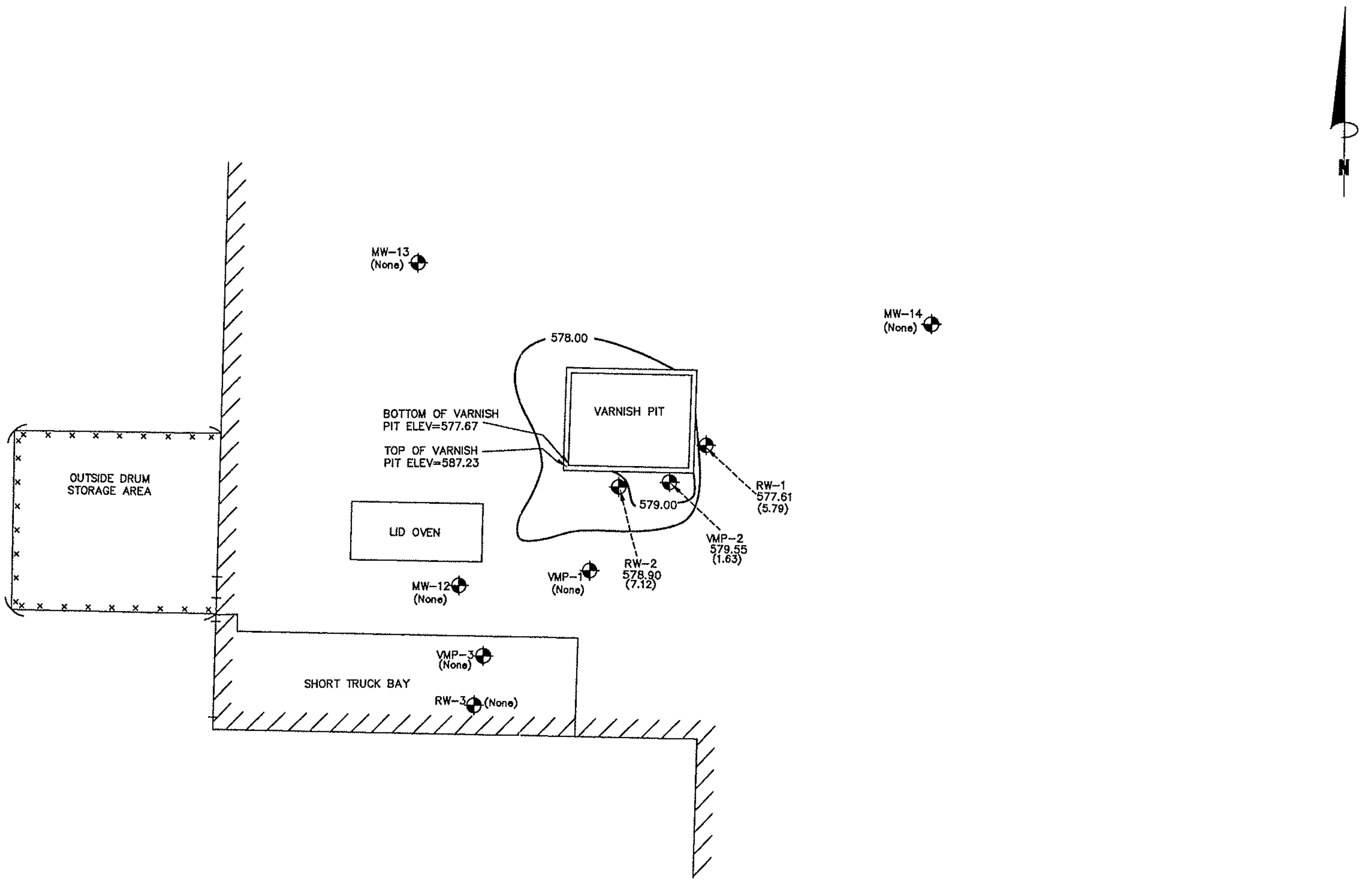
5788 WIDEWATERS PARKWAY
DEWITT, NEW YORK 13214

SCALE 1" = 20'
DATE 04/05
FIGURE 2

PROJECT#0021621



LEGEND

VMP-3 ⊕	VAPOR MONITORING POINT LOCATION
—×—×—	CHAIN LINK FENCE
RW-1 ⊕	RECOVERY WELL LOCATION
MW-12 ⊕	SHALLOW MONITORING WELL LOCATION
578.00 —	DNAPL CONTOUR (FEET AMSL)
574.15	DNAPL ELEVATION (FEET AMSL)
(7.12)	APPARENT DNAPL THICKNESS (FEET)
NM	NOT MEASURED
(None)	DRAWDOWN NOT OBSERVED

STATIC DNAPL CONTOURS

Greif Brothers Facility
Tonawanda, New York

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DEWITT, NEW YORK 13214

SCALE 1" = 20'
DATE 04/05
FIGURE 3

PROJECT#0021621

FIGURE 4
BACKGROUND VARIATION IN SHALLOW GROUND WATER LEVELS
MONITORING WELL MW-19
9 SEPTEMBER 2004 - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

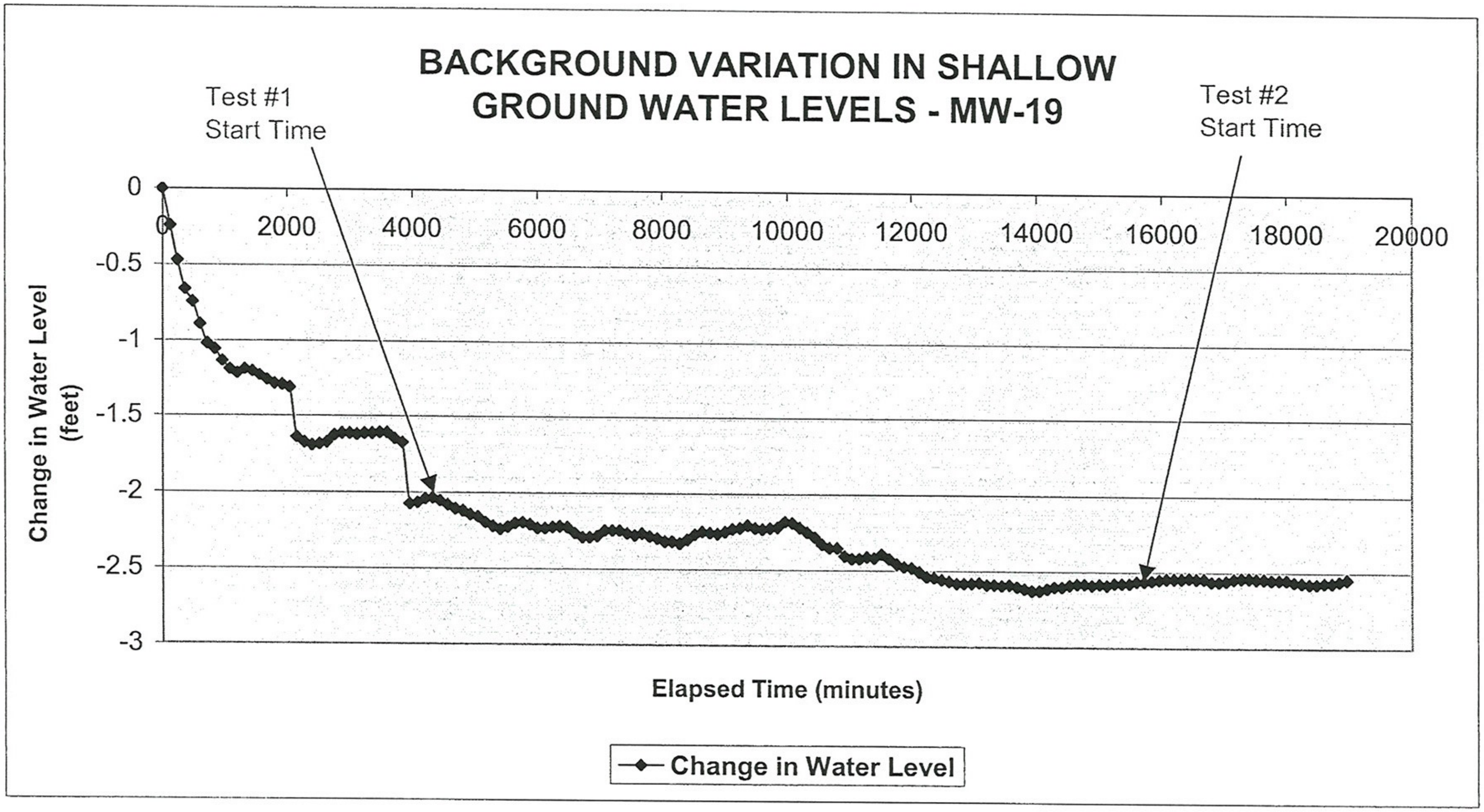


FIGURE 5
BACKGROUND VARIATION IN SHALLOW GROUND WATER LEVELS WITH PRECIPITATION
MONITORING WELL MW-19
9 SEPTEMBER 2004 - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

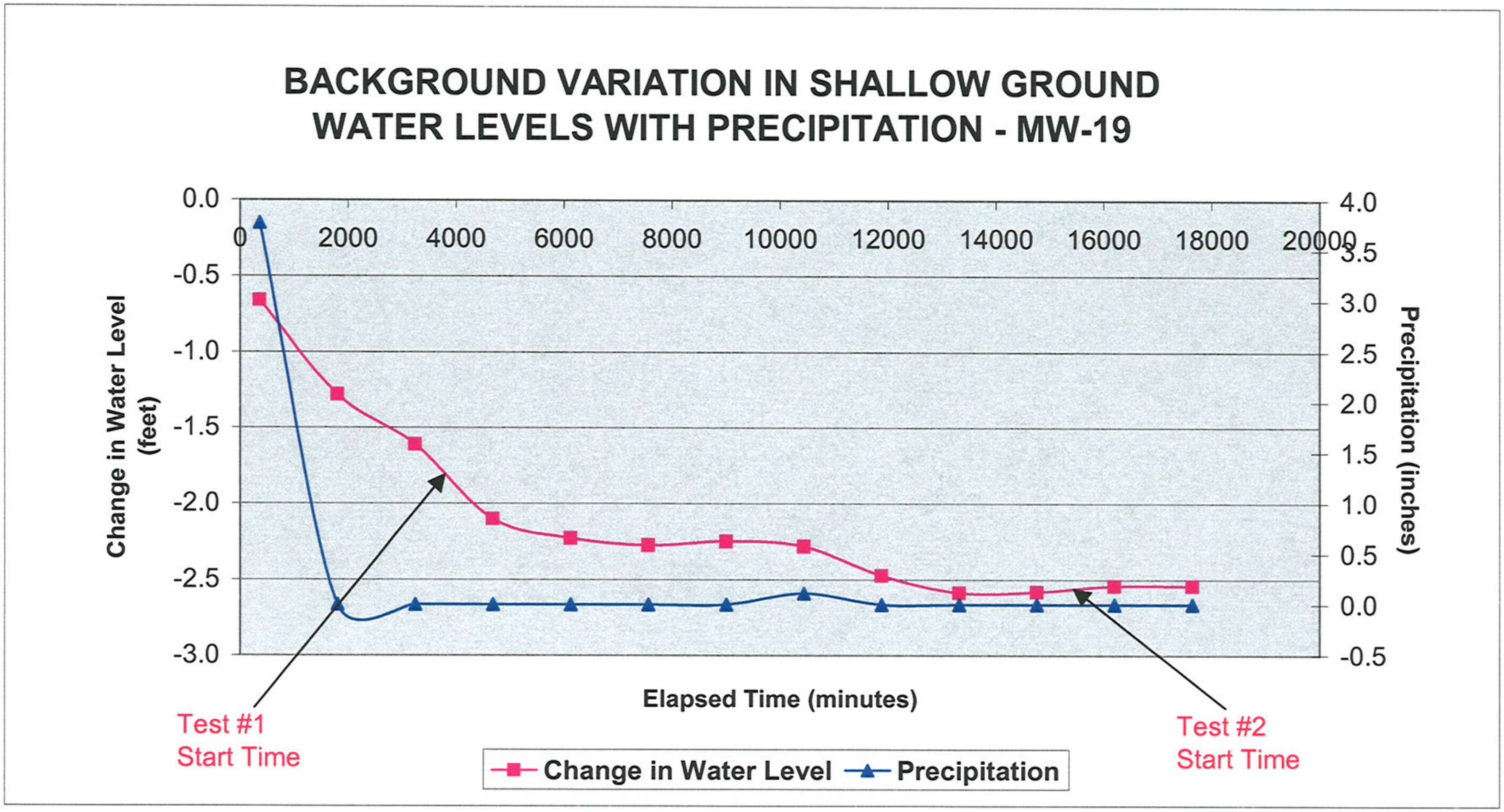


FIGURE 6
BACKGROUND VARIATION IN SHALLOW GROUND WATER LEVELS WITH BAROMETRIC PRESSURE
MONITORING WELL MW-19
9 SEPTEMBER 2004 - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

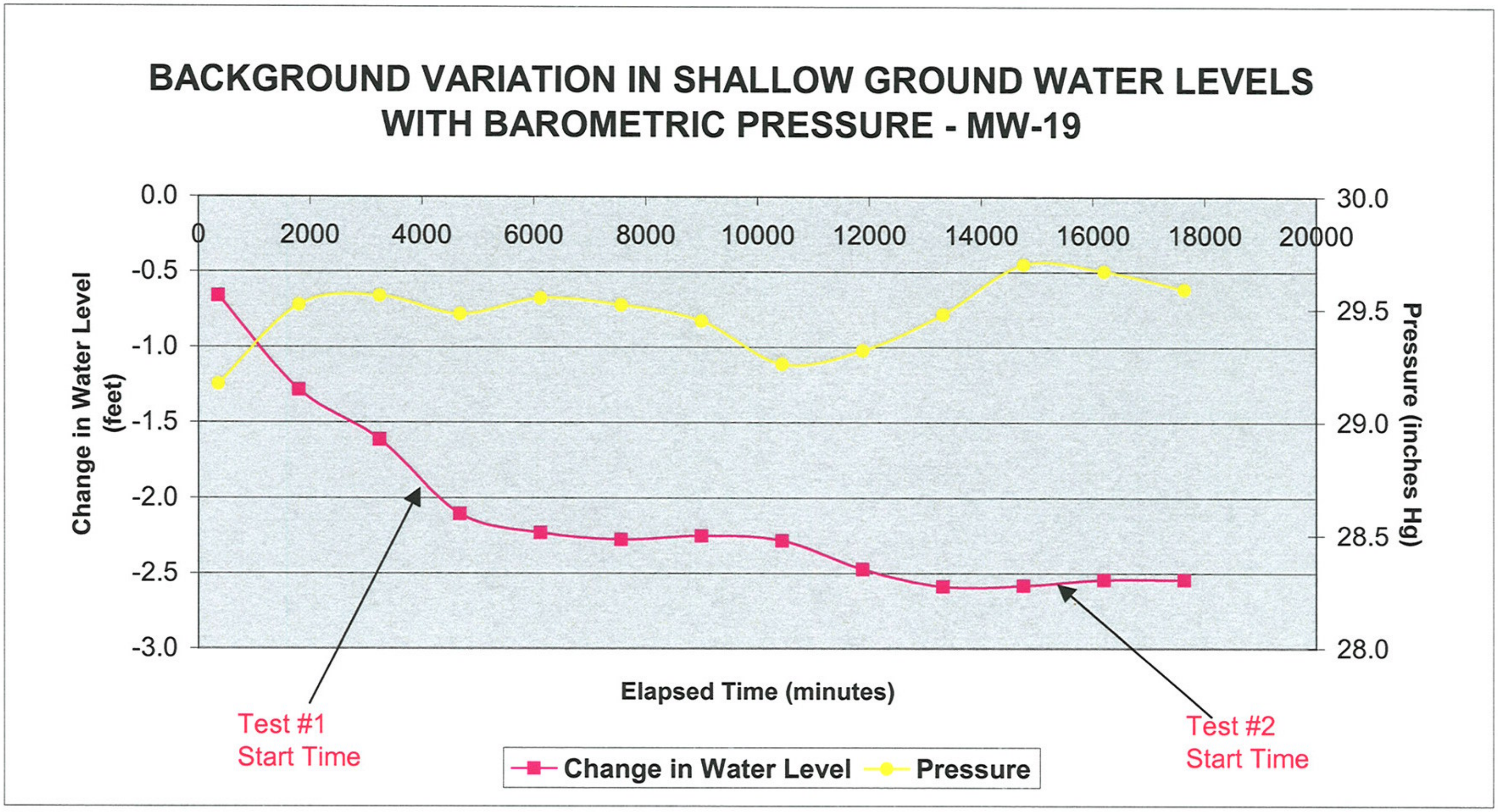


FIGURE 7
BACKGROUND VARIATION IN INTERMEDIATE GROUND WATER LEVELS
MONITORING WELL MW-7
9 SEPTEMBER 2004 - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

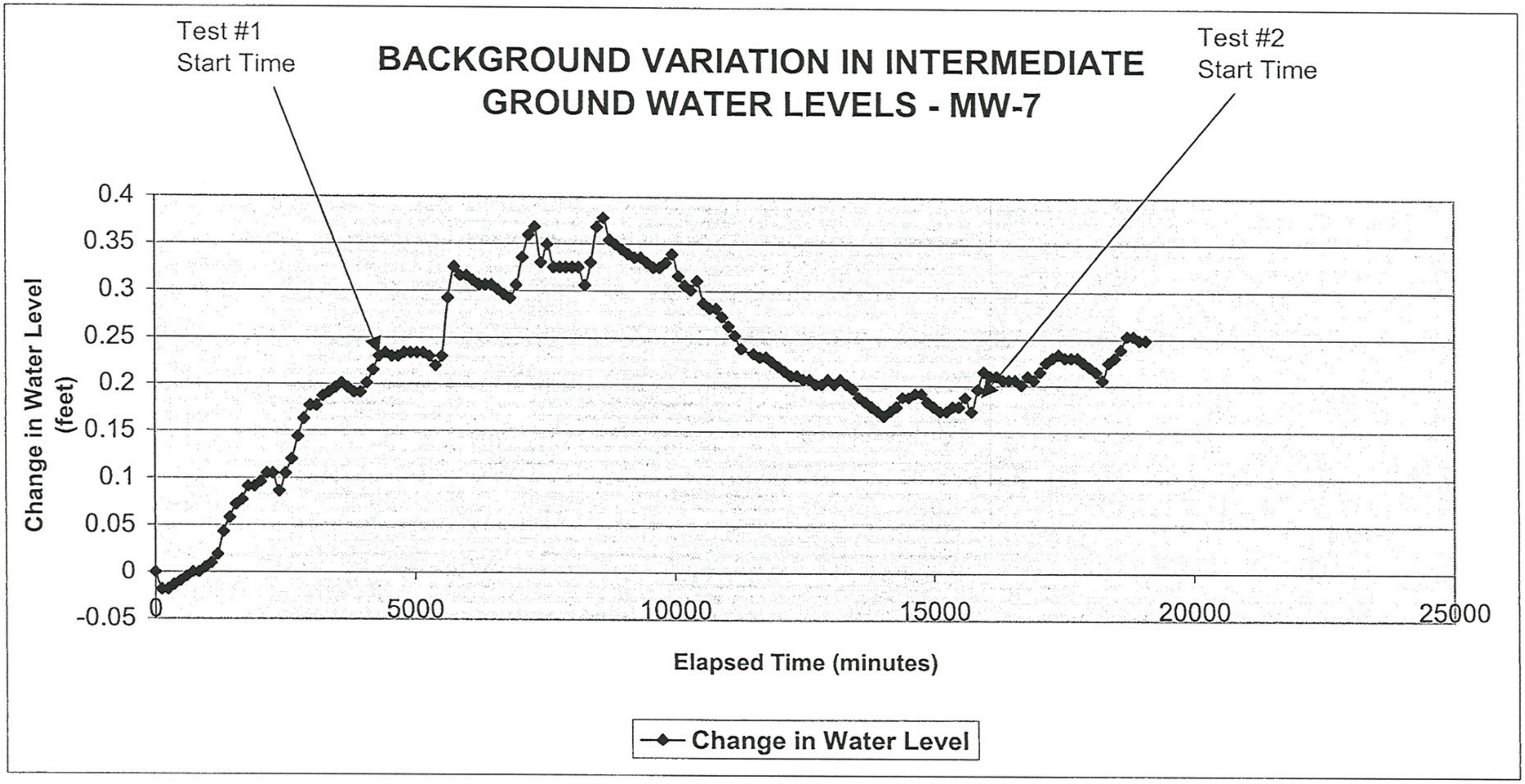


FIGURE 8
BACKGROUND VARIATION IN INTERMEDIATE GROUND WATER LEVELS WITH PRECIPITATION
MONITORING WELL MW-7
9 SEPTEMBER 2004 - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

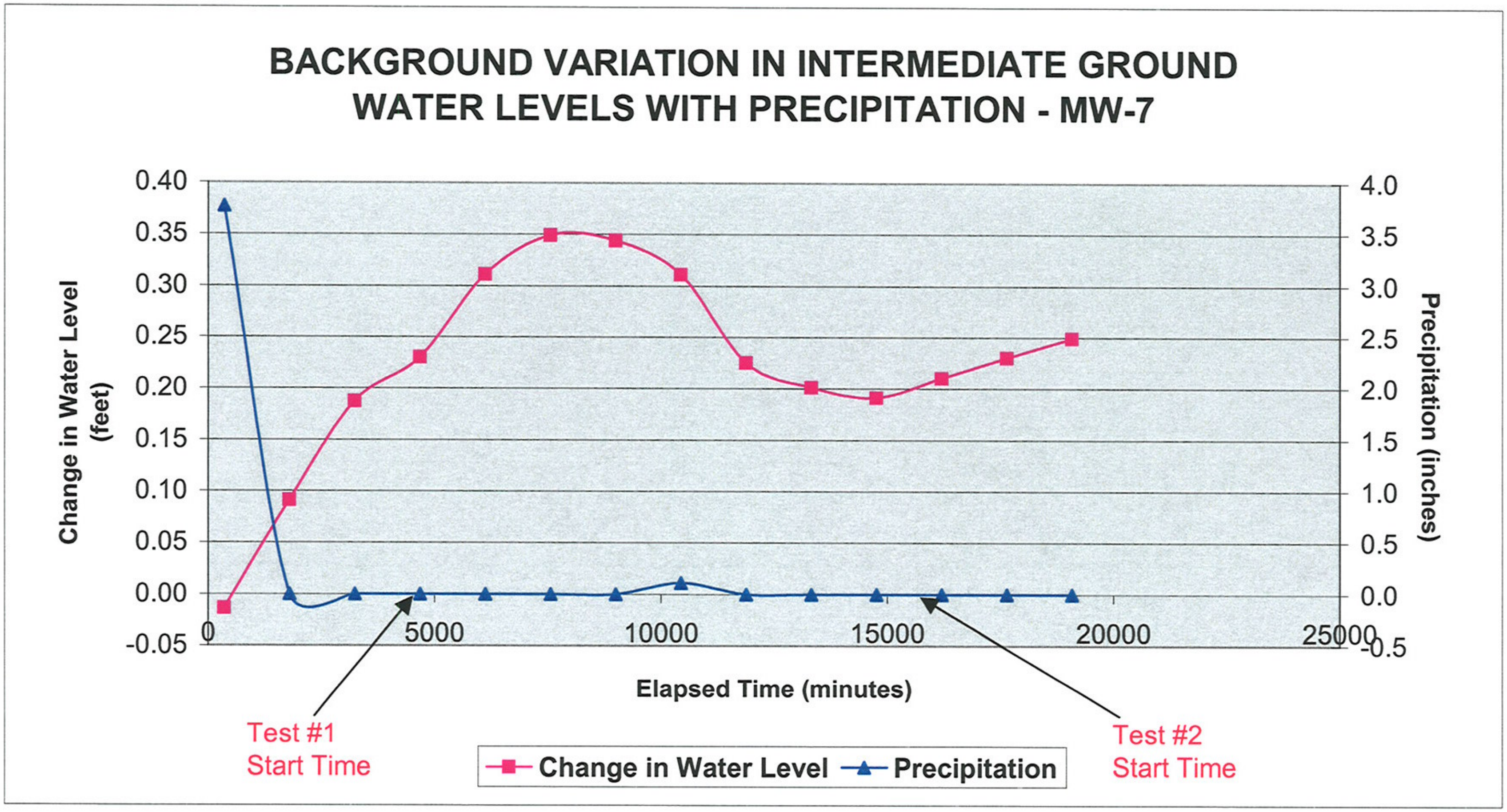


FIGURE 9
BACKGROUND VARIATION IN INTERMEDIATE GROUND WATER LEVELS WITH BAROMETRIC PRESSURE
MONITORING WELL MW-7
9 SEPTEMBER 2004 - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

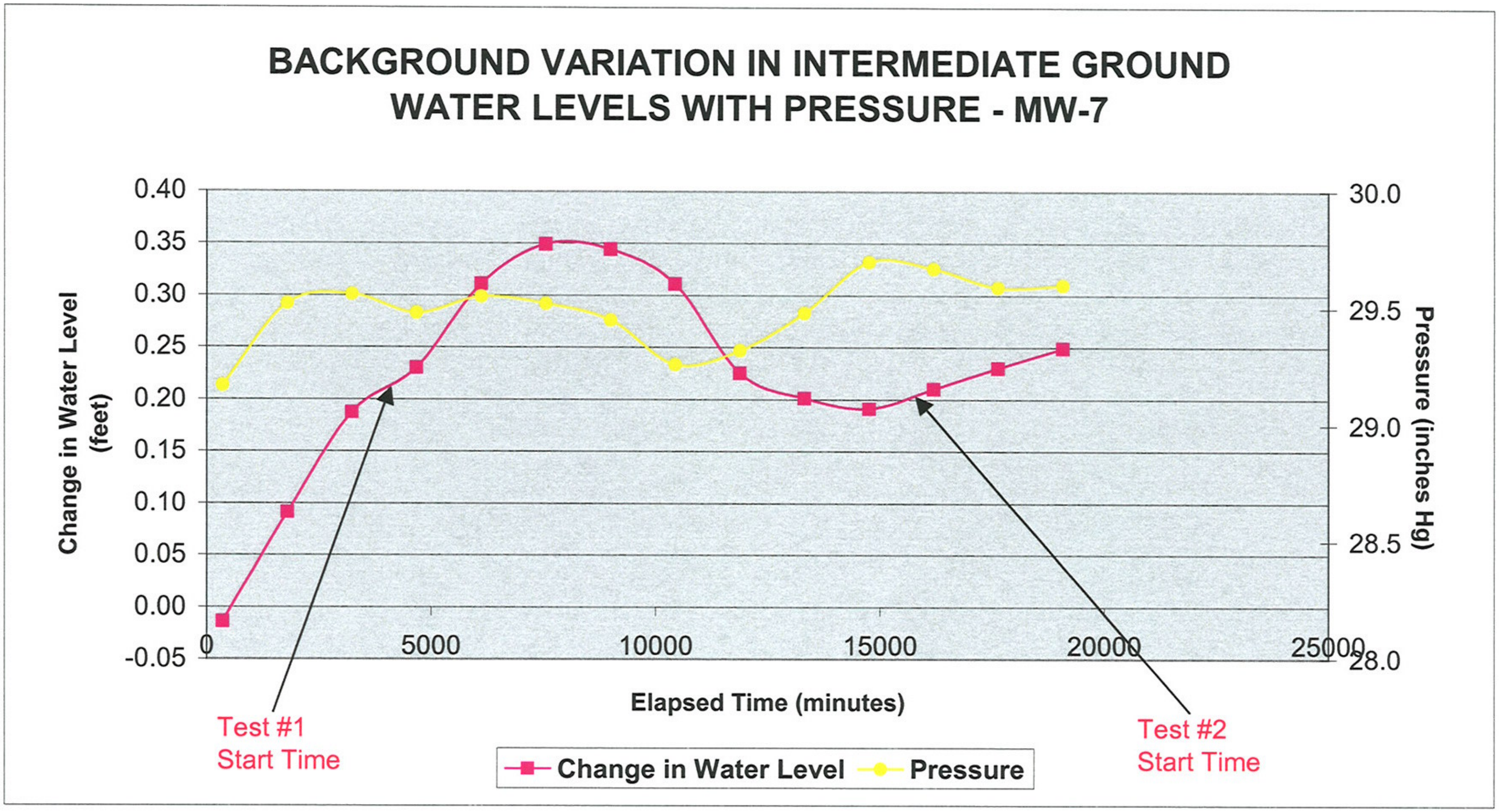
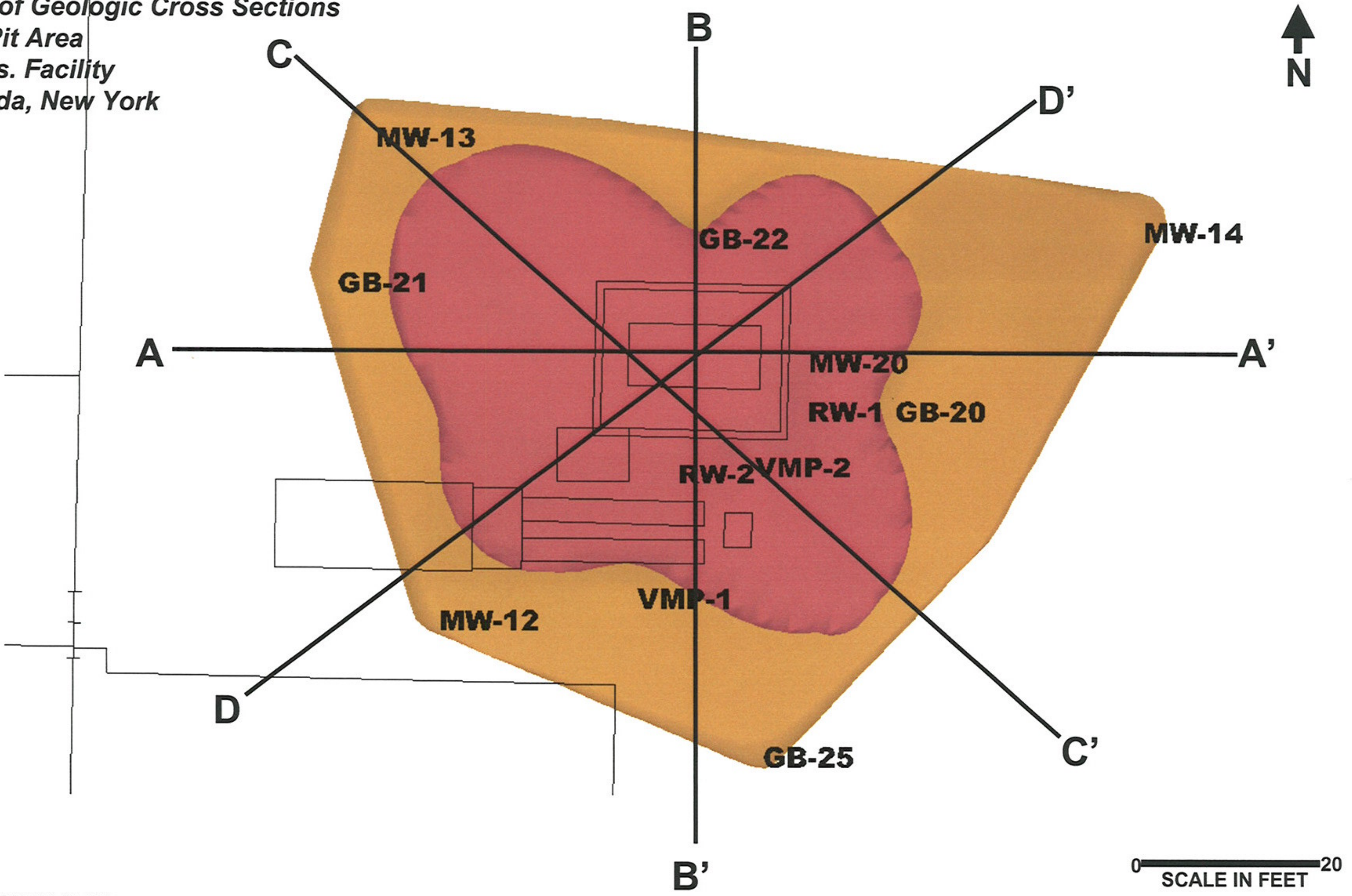


Figure 10
Location of Geologic Cross Sections
Varnish Pit Area
Greif Bros. Facility
Tonawanda, New York



🟥 DNAPL
🟫 NATIVE SILTY CLAY

ESTIMATED TOP ELEVATION OF DNAPL IN FORMER VARNISH PIT = 578.69

0017521/JW/3.1.05, 1

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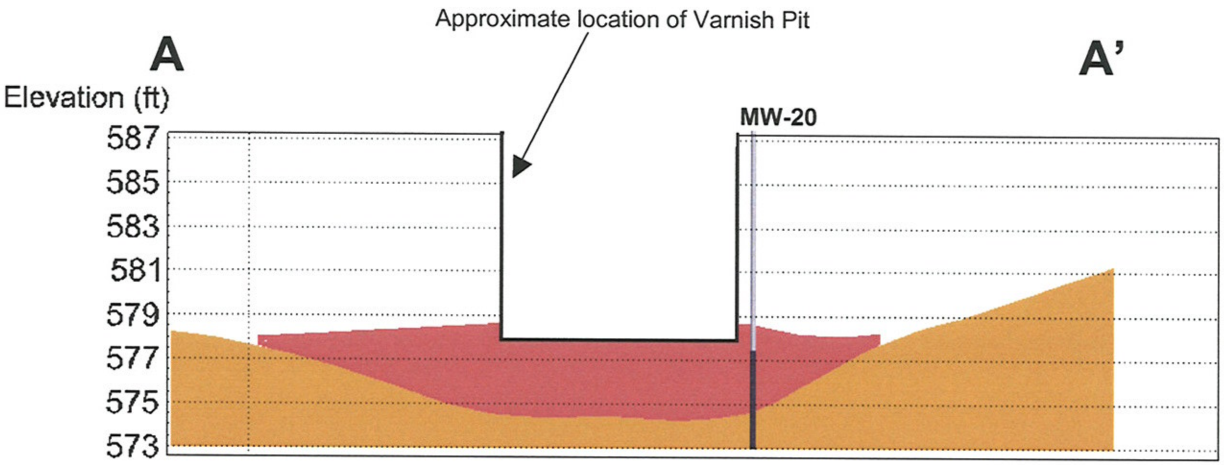
Figure 11
Cross Section A-A’
Static Distribution of DNAPL
Greif Bros. Facility
Tonawanda, New York



🟥 DNAPL
🟫 NATIVE SILTY CLAY

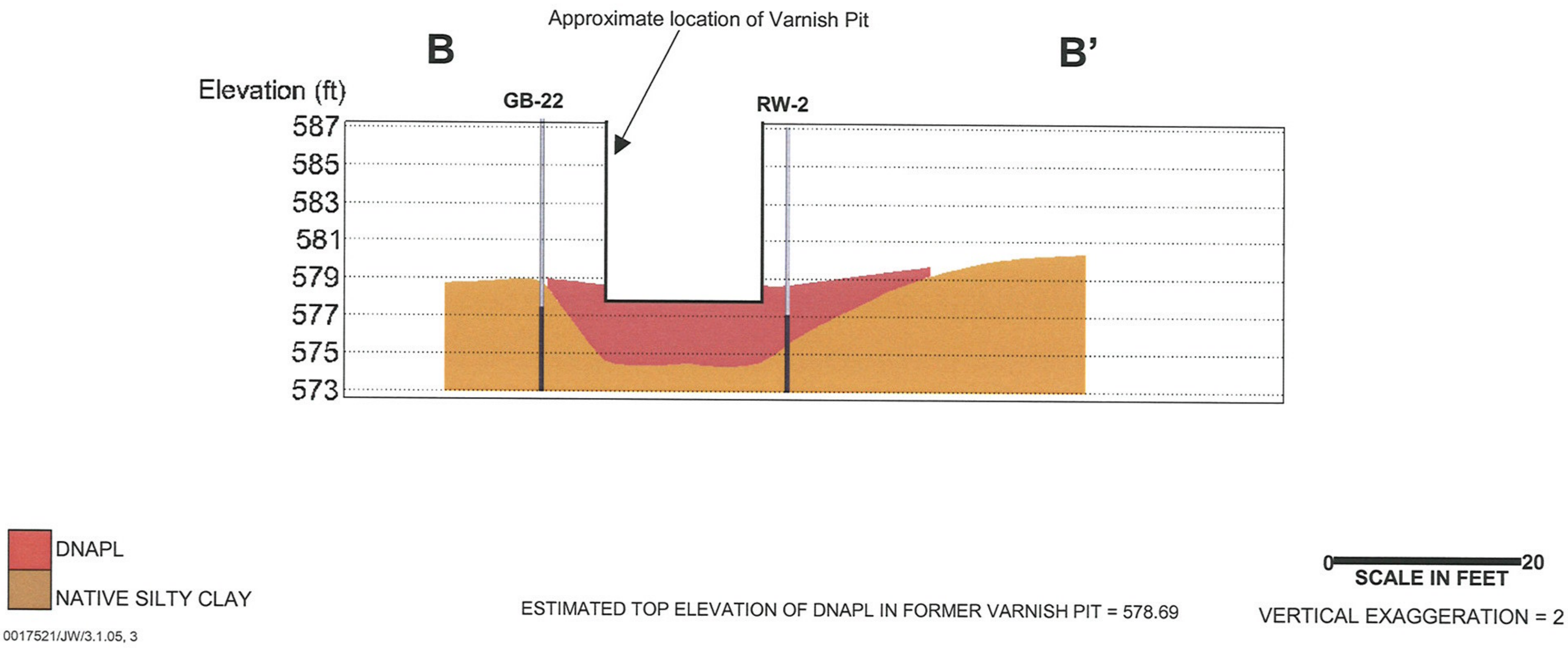
0017521/JW/3.1.05, 2

ESTIMATED TOP ELEVATION OF DNAPL IN FORMER VARNISH PIT = 578.69

0 20
SCALE IN FEET

VERTICAL EXAGGERATION = 2

Figure 12
Cross Section B-B’
Static Distribution of DNAPL
Greif Bros. Facility
Tonawanda, New York

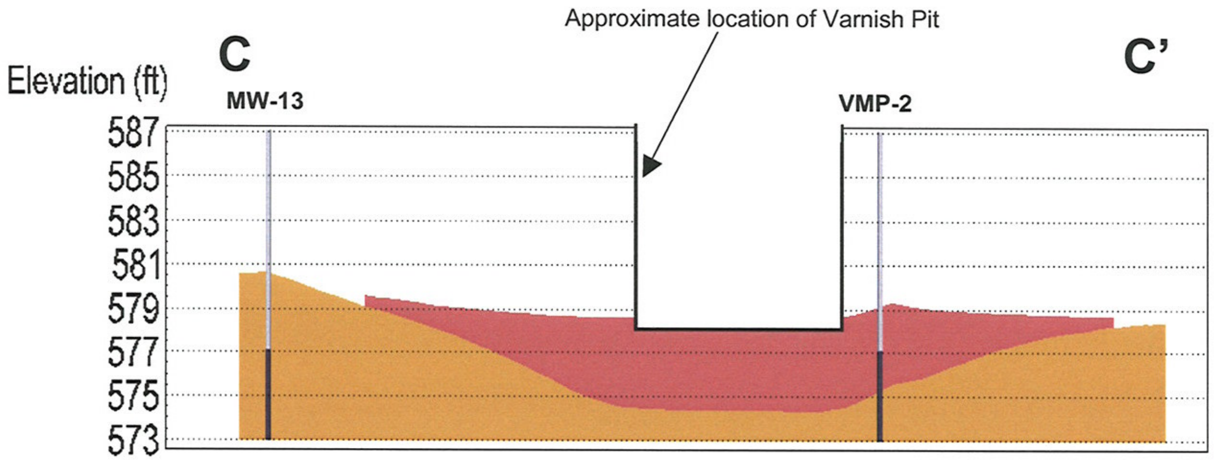


ESTIMATED TOP ELEVATION OF DNAPL IN FORMER VARNISH PIT = 578.69

VERTICAL EXAGGERATION = 2

0017521/JW/3.1.05, 3

Figure 13
Cross-Section C-C'
Static Distribution of DNAPL
Greif Bros. Facility
Tonawanda, New York



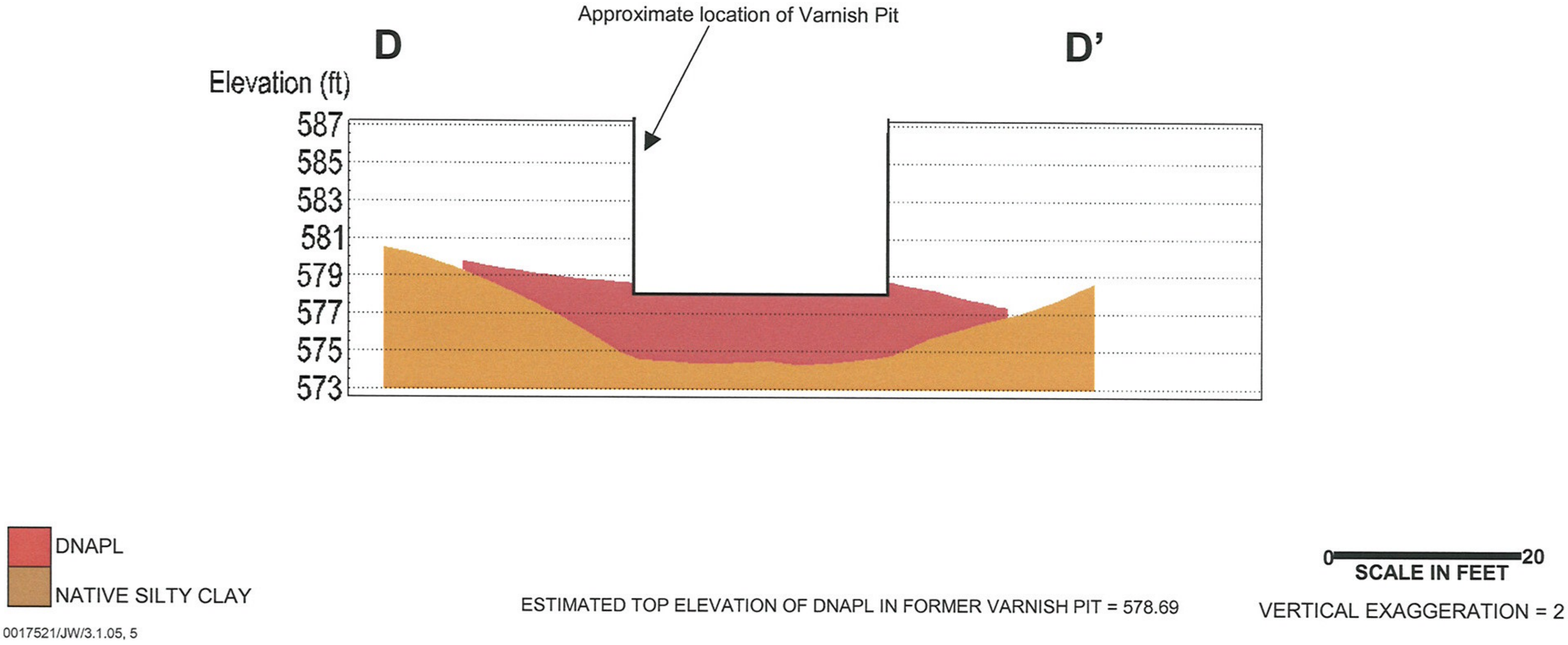
🟥 DNAPL
🟫 NATIVE SILTY CLAY

0017521/JW/3.1.05, 4

ESTIMATED TOP ELEVATION OF DNAPL IN FORMER VARNISH PIT = 578.69

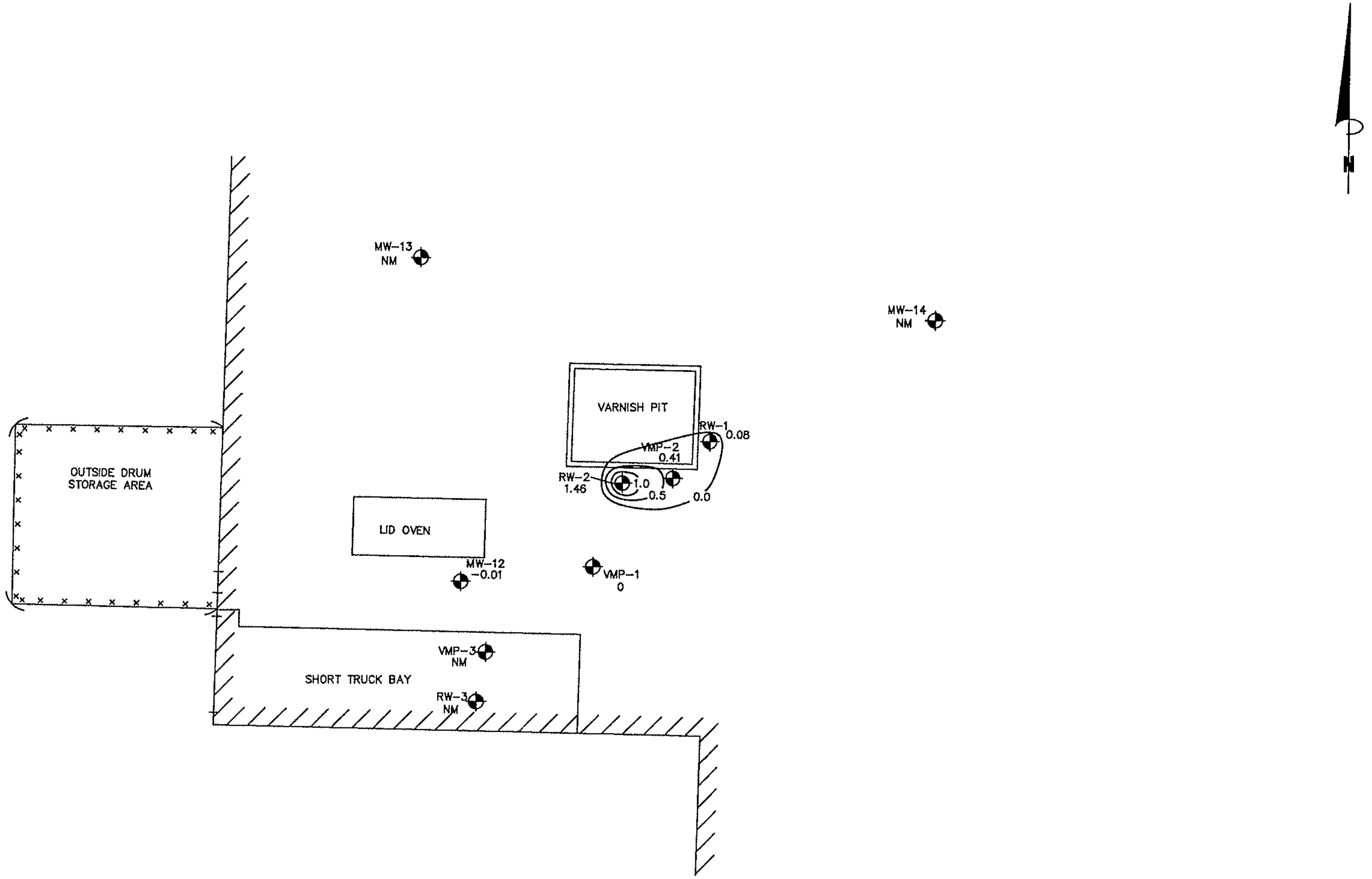
0 20
SCALE IN FEET
VERTICAL EXAGGERATION = 2

Figure 14
Cross-Section D-D'
Static Distribution of DNAPL
Greif Bros. Facility
Tonawanda, New York



ESTIMATED TOP ELEVATION OF DNAPL IN FORMER VARNISH PIT = 578.69

0017521/JW/3.1.05, 5



NAD 83

0 20
FEET

LEGEND

VMP-3 ⊕ VAPOR MONITORING POINT LOCATION
—×—×—×— CHAIN LINK FENCE
RW-1 ⊕ RECOVERY WELL LOCATION
MW-12 ⊕ SHALLOW MONITORING WELL LOCATION
1.46 GROUND WATER DRAWDOWN (FEET)
0.5 —— GROUND WATER DRAWDOWN CONTOUR (FEET)
NM NOT MEASURED

FINAL GROUND WATER DRAWDOWN TEST #2 (DNAPL PUMPING)

Greif Brothers Facility
Tonawanda, New York

PREPARED FOR

SONOCO PRODUCTS COMPANY

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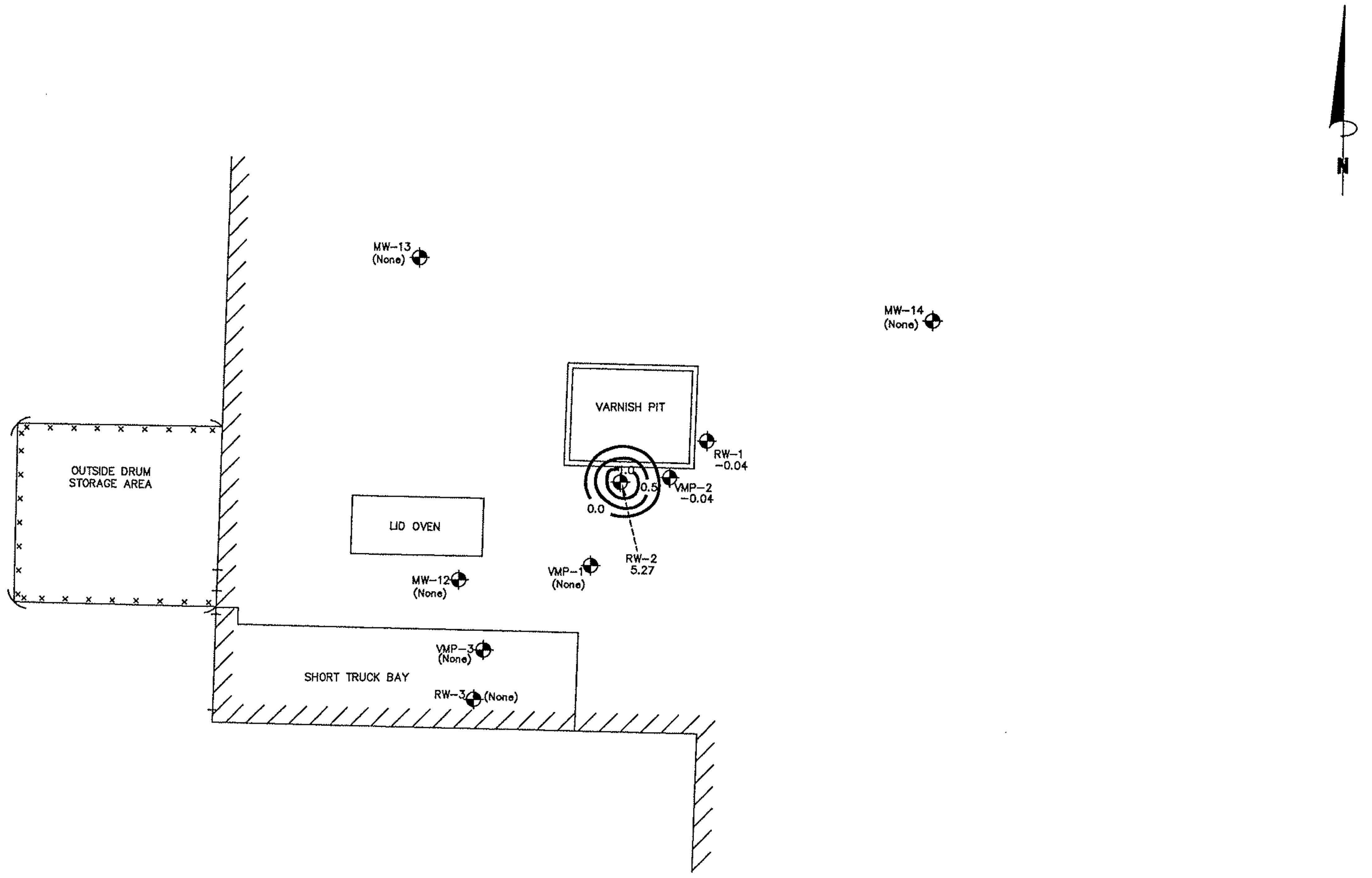
DEWITT, NEW YORK 13214

SCALE	FIGURE
1" = 20'	15
DATE 04/05	

PROJECT#0021621



LEGEND

VMP-3 ⊕ VAPOR MONITORING POINT LOCATION
—x—x—x— CHAIN LINK FENCE
RW-1 ⊕ RECOVERY WELL LOCATION
MW-12 ⊕ SHALLOW MONITORING WELL LOCATION
5.27 DNAPL DRAWDOWN (FEET)
0.5 — DNAPL DRAWDOWN CONTOUR (FEET)
(None) DRAWDOWN NOT OBSERVED

0 20
FEET

FINAL DNAPL DRAWDOWN TEST #2 (DNAPL PUMPING)

Greif Brothers Facility
Tonawanda, New York

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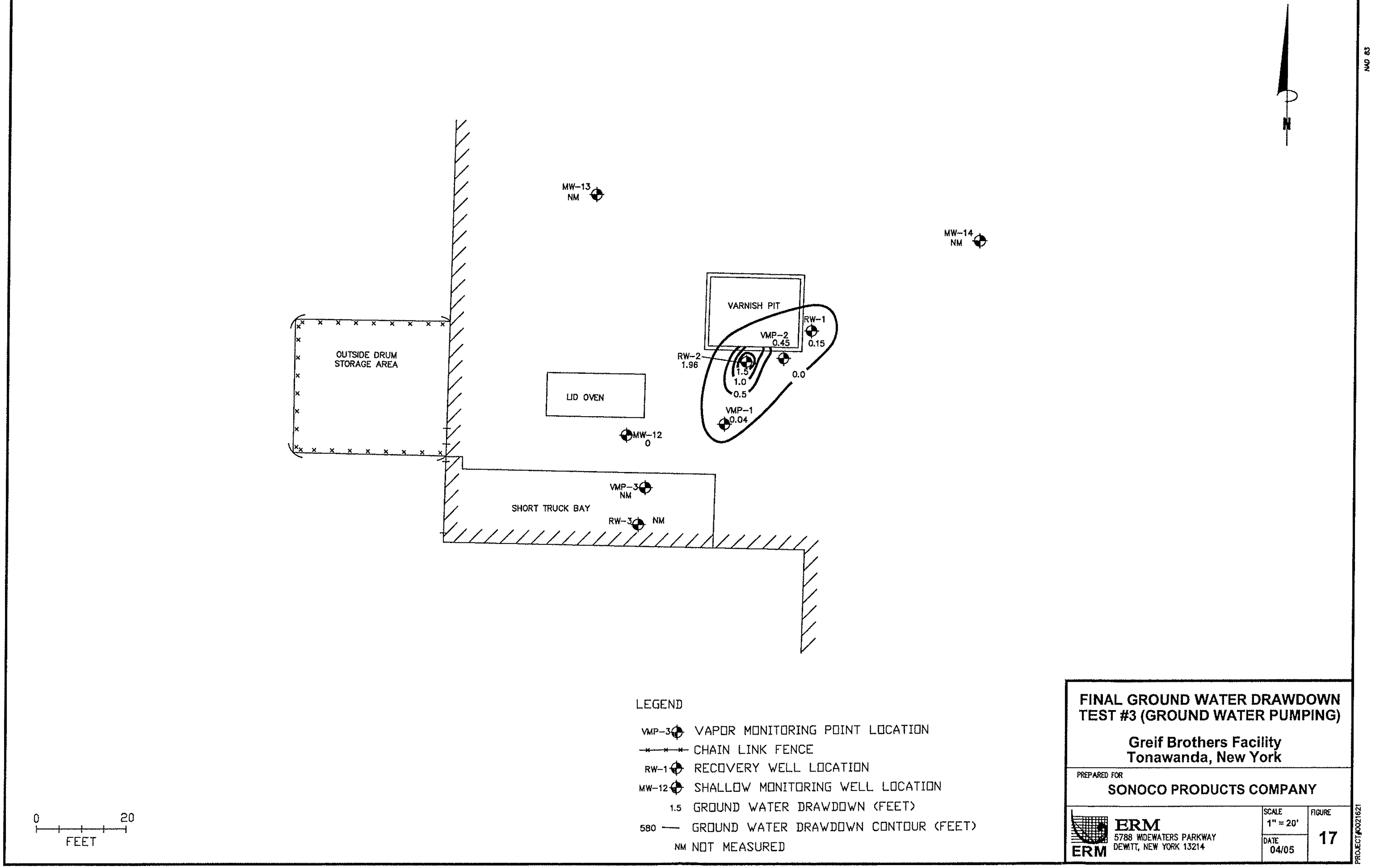
DEWITT, NEW YORK 13214

SCALE 1" = 20'	FIGURE 16
DATE 04/05	

PROJECT #0021621



FINAL GROUND WATER DRAWDOWN TEST #3 (GROUND WATER PUMPING)

Greif Brothers Facility
Tonawanda, New York

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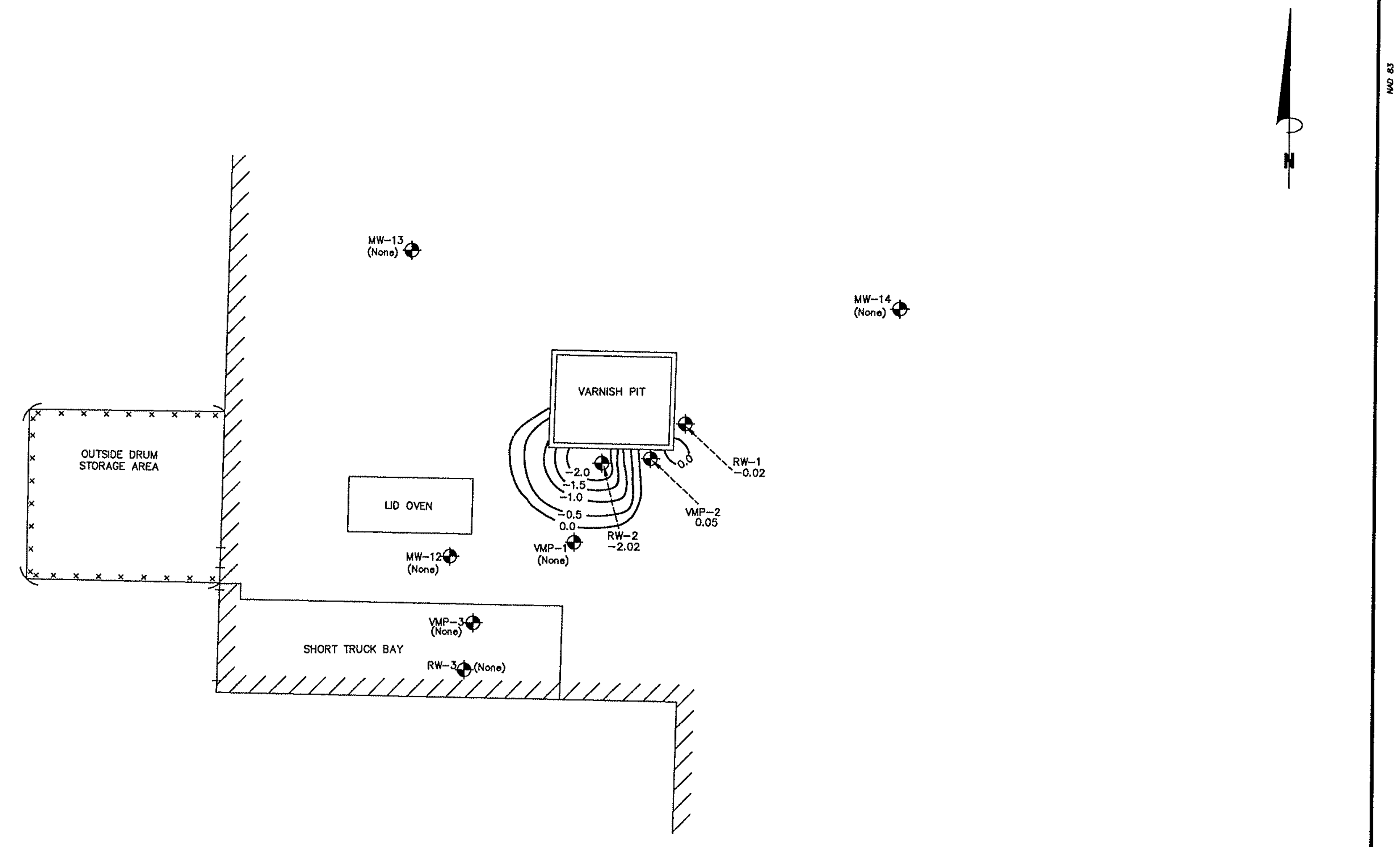
DEWITT, NEW YORK 13214

SCALE 1" = 20'
DATE 04/05
FIGURE 17

PROJECT#0021621



LEGEND

VMP-3 VAPOR MONITORING POINT LOCATION
CHAIN LINK FENCE
RW-1 RECOVERY WELL LOCATION
MW-12 SHALLOW MONITORING WELL LOCATION
-2.02 DNAPL DRAWDOWN (FEET)
-2.0 DNAPL DRAWDOWN CONTOUR (FEET)
(None) DRAWDOWN NOT OBSERVED (FEET)

0 20
FEET

FINAL GROUND WATER DRAWDOWN TEST #3 (GROUND WATER PUMPING)

Greif Brothers Facility
Tonawanda, New York

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SONOCO PRODUCTS COMPANY

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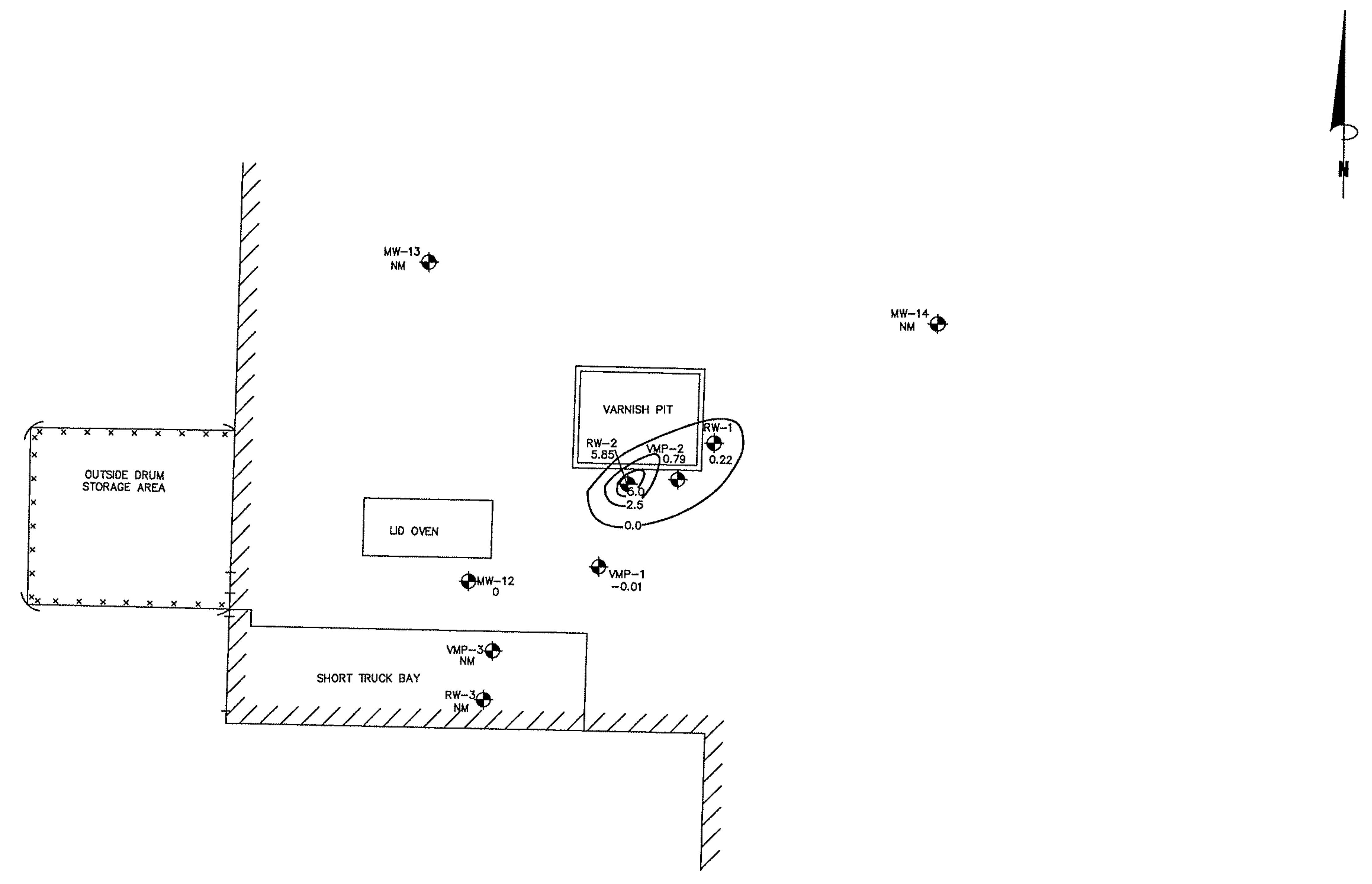
5788 WIDEWATERS PARKWAY
DEWITT, NEW YORK 13214

SCALE 1" = 20'
DATE 04/05
FIGURE 18

PROJECT#0021621



NAD 83

LEGEND

VMP-3 ⊕ VAPOR MONITORING POINT LOCATION
—×—×— CHAIN LINK FENCE
RW-1 ⊕ RECOVERY WELL LOCATION
MW-12 ⊕ SHALLOW MONITORING WELL LOCATION
5.85 GROUND WATER DRAWDOWN (FEET)
2.5 —— GROUND WATER DRAWDOWN CONTOUR (FEET)
NM NOT MEASURED

0 20
FEET

FINAL GROUND WATER DRAWDOWN TEST #4 (GROUND WATER & DNAPL PUMPING)

Greif Brothers Facility
Tonawanda, New York

PREPARED FOR
SONOCO PRODUCTS COMPANY

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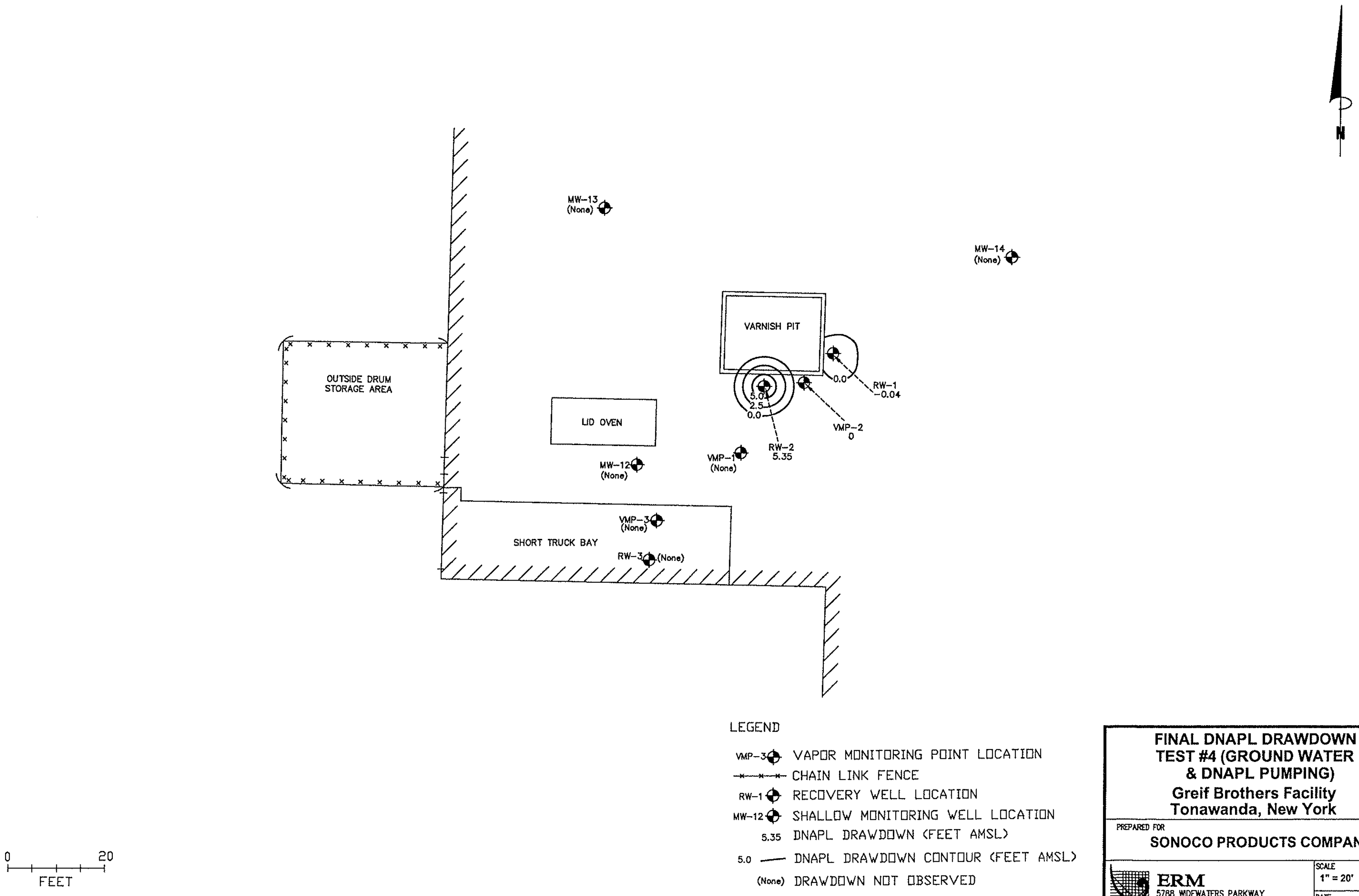
5788 WIDEWATERS PARKWAY
DEWITT, NEW YORK 13214

SCALE 1" = 20'	FIGURE 19
DATE 04/05	

PROJECT#0021621



LEGEND

VMP-3 ⊕	VAPOR MONITORING POINT LOCATION
—×—×—	CHAIN LINK FENCE
RW-1 ⊕	RECOVERY WELL LOCATION
MW-12 ⊕	SHALLOW MONITORING WELL LOCATION
5.35	DNAPL DRAWDOWN (FEET AMSL)
5.0 ——	DNAPL DRAWDOWN CONTOUR (FEET AMSL)
(None)	DRAWDOWN NOT OBSERVED

FINAL DNAPL DRAWDOWN TEST #4 (GROUND WATER & DNAPL PUMPING)

Greif Brothers Facility
Tonawanda, New York

PREPARED FOR
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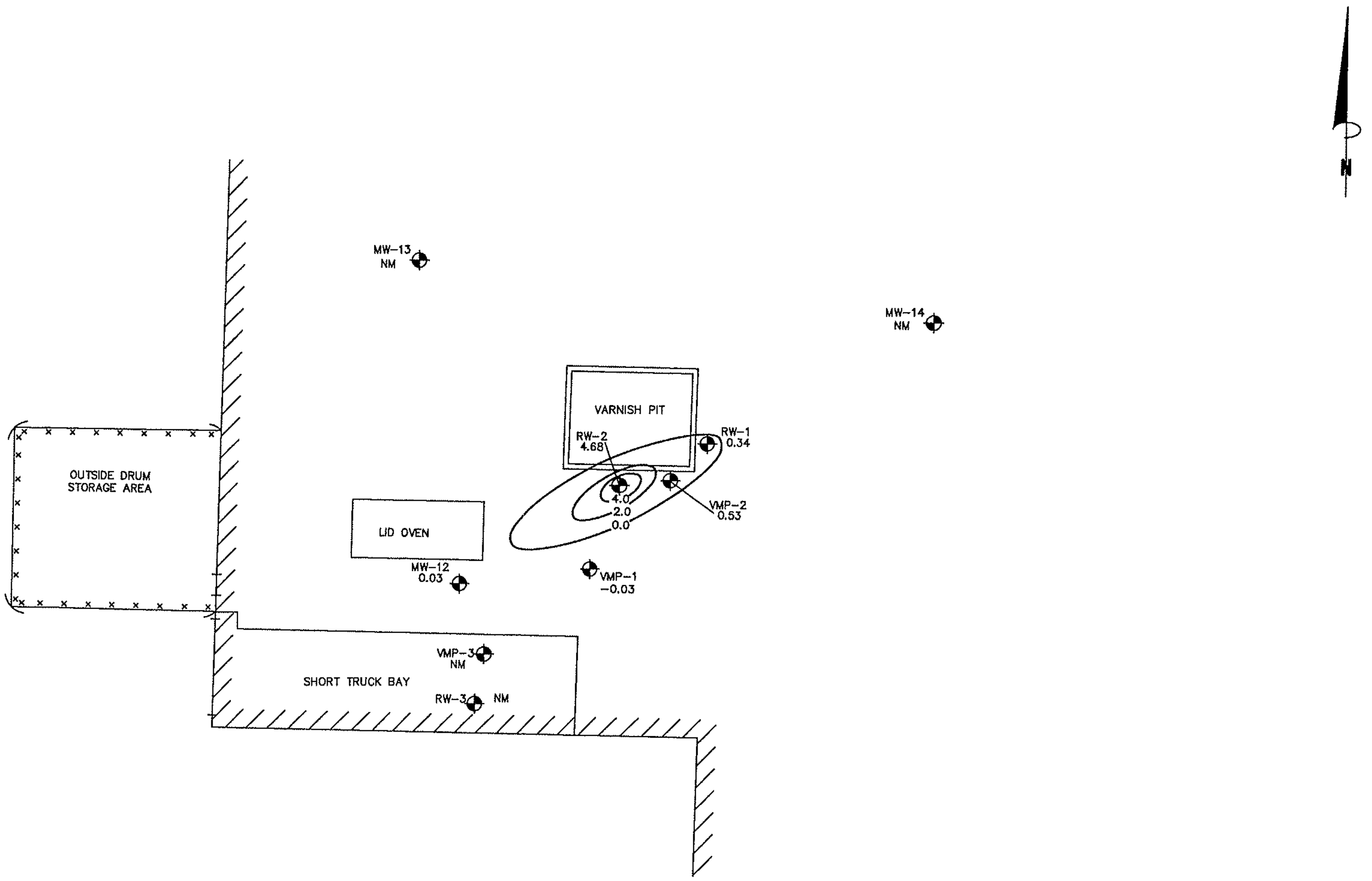
5788 WIDEWATERS PARKWAY
DEWITT, NEW YORK 13214

SCALE 1" = 20'
DATE 04/05
FIGURE 20

PROJECT #0021621



0 20
FEET

LEGEND

VMP-3 VAPOR MONITORING POINT LOCATION
CHAIN LINK FENCE
RW-1 RECOVERY WELL LOCATION
MW-12 SHALLOW MONITORING WELL LOCATION
4.68 GROUND WATER DRAWDOWN (FEET AMSL)
4.0 GROUND WATER DRAWDOWN CONTOUR (FEET AMSL)
NM NOT MEASURED

FINAL GROUND WATER DRAWDOWN
TEST #5 (Low-Vacuum Enhanced DNAPL
Extraction & Ground Water Pumping)
Greif Brothers Facility
Tonawanda, New York

PREPARED FOR
SONOCO PRODUCTS COMPANY

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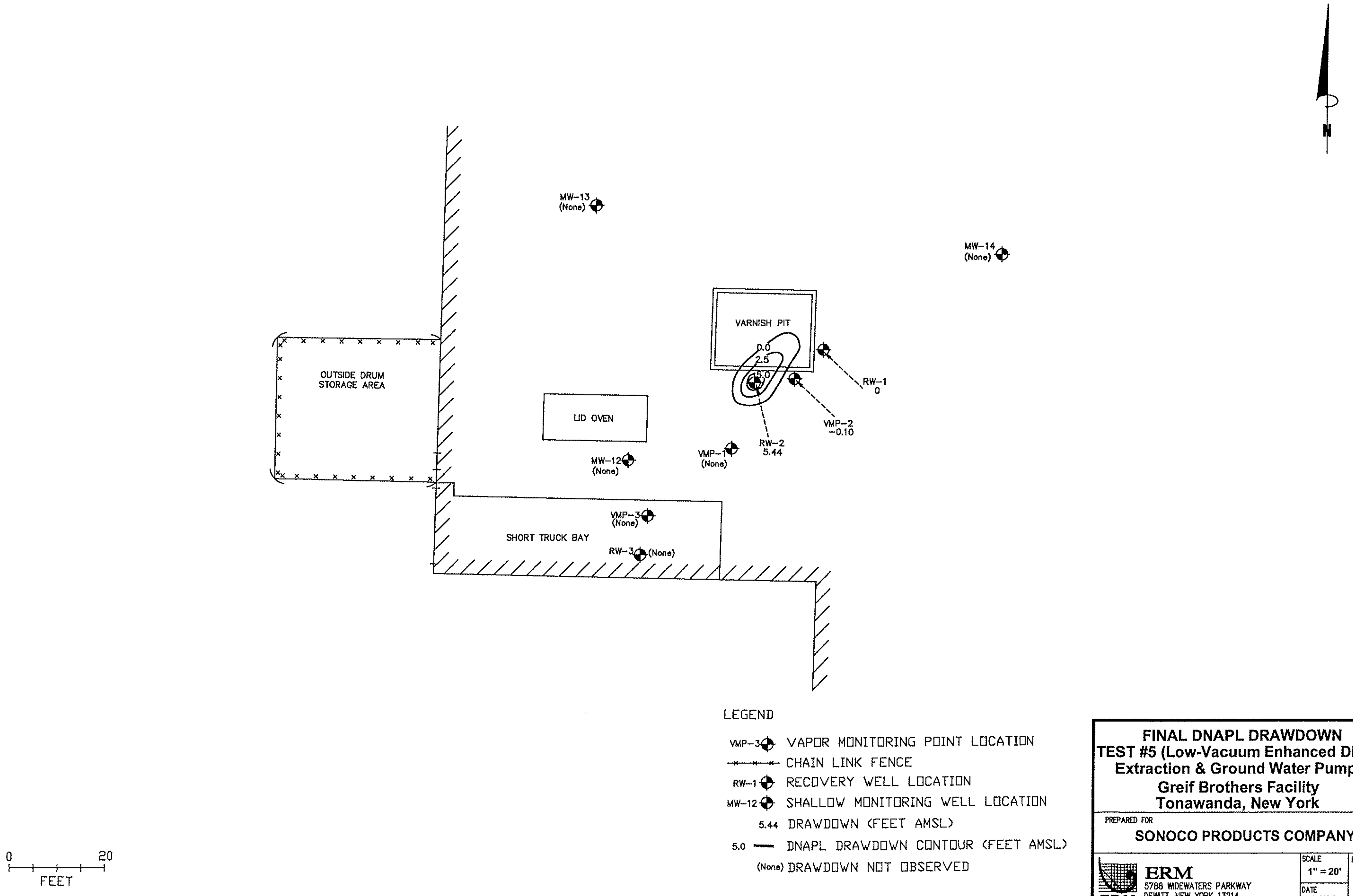
DEWITT, NEW YORK 13214

SCALE 1" = 20'
DATE 04/05
FIGURE 21

PROJECT#0021621



FINAL DNAPL DRAWDOWN
TEST #5 (Low-Vacuum Enhanced DNAPL Extraction & Ground Water Pumping)
Greif Brothers Facility
Tonawanda, New York

PREPARED FOR
SONOCO PRODUCTS COMPANY

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ERM
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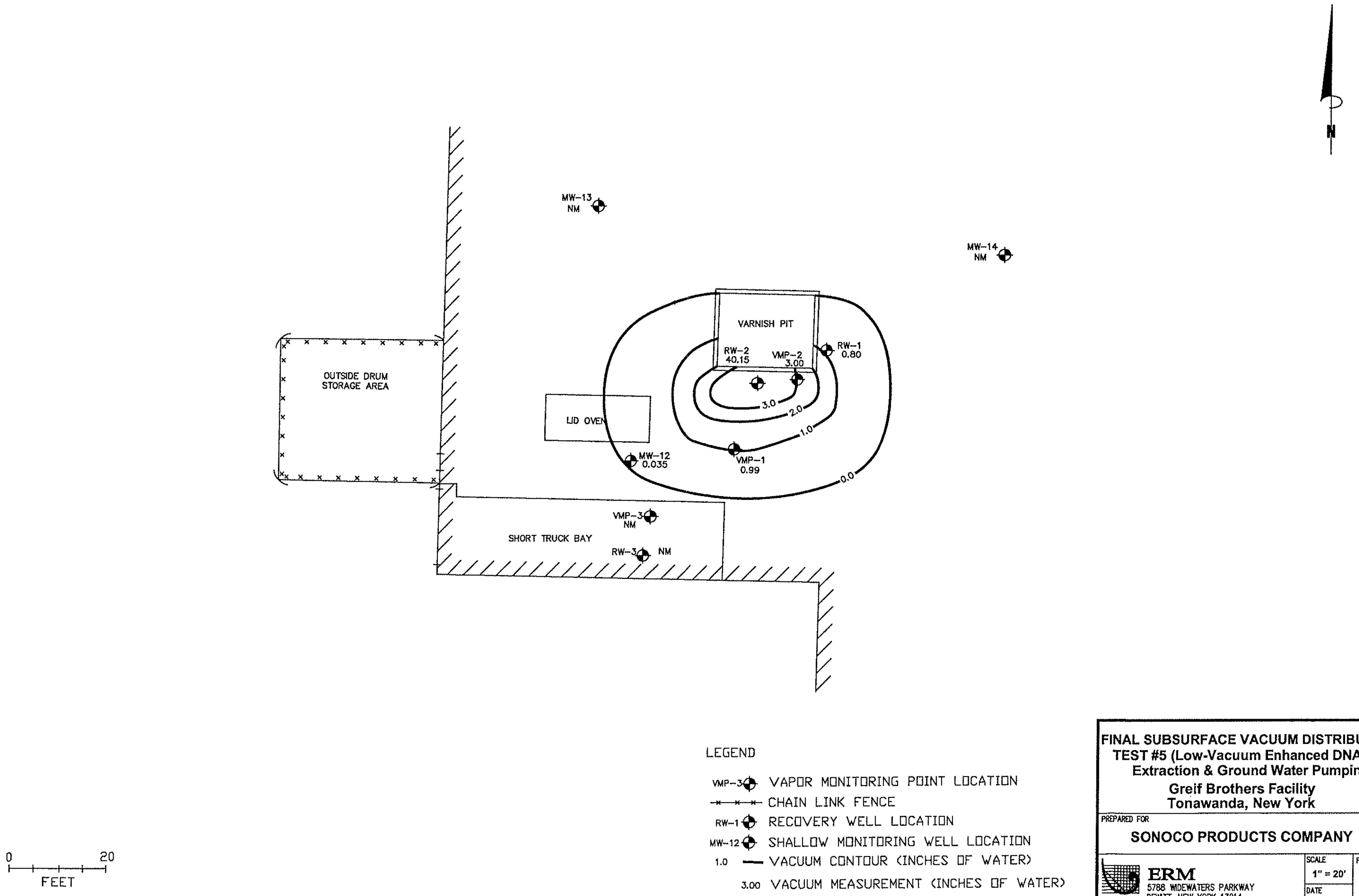
DEWITT, NEW YORK 13214

SCALE	FIGURE
1" = 20'	22
DATE 04/05	

PROJECT#0021621



FINAL SUBSURFACE VACUUM DISTRIBUTION TEST #5 (Low-Vacuum Enhanced DNAPL Extraction & Ground Water Pumping)

Greif Brothers Facility
Tonawanda, New York

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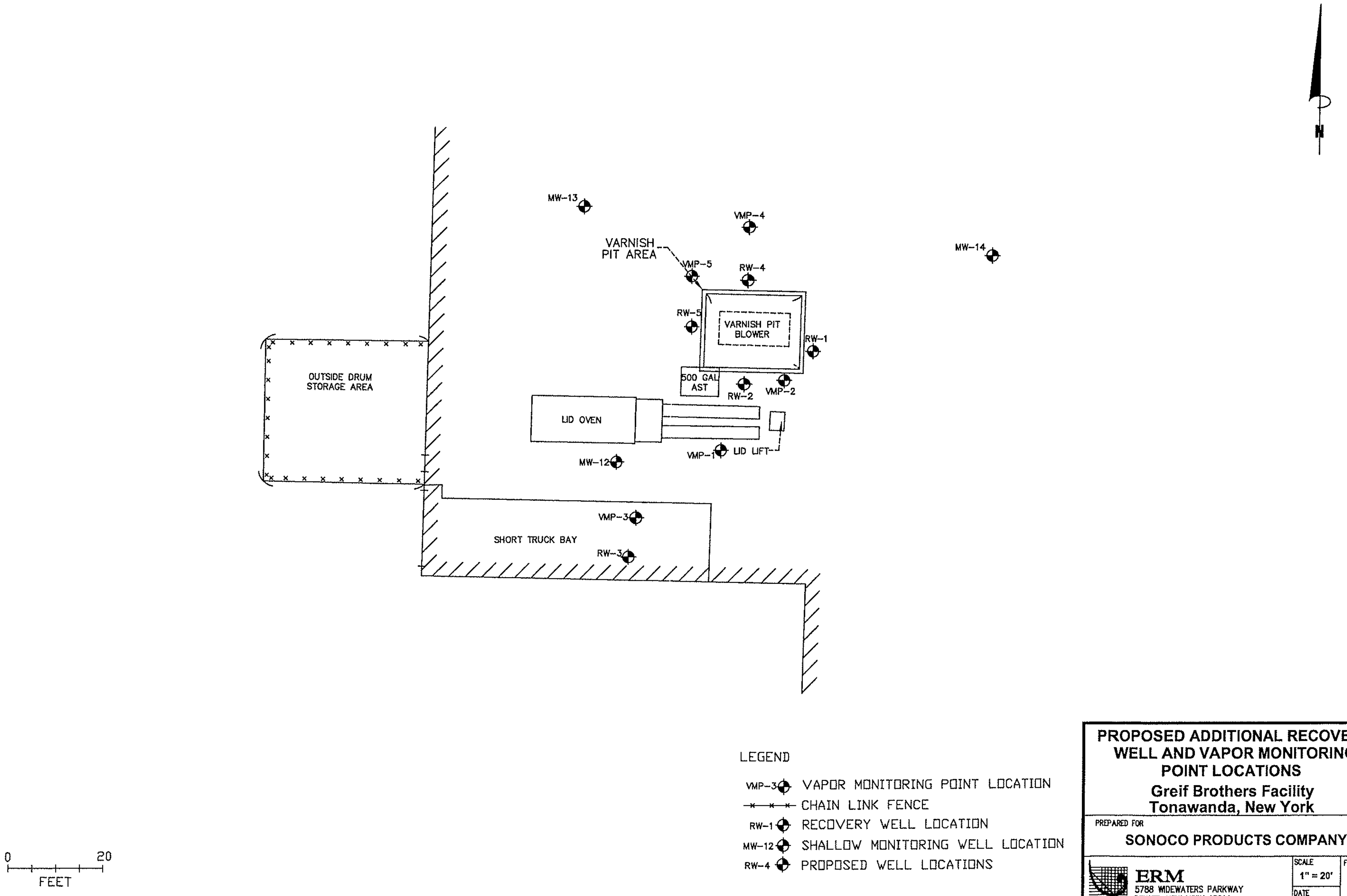
DEWITT, NEW YORK 13214

SCALE	1" = 20'
DATE	04/05
FIGURE	23

PROJECT#0021621



PROPOSED ADDITIONAL RECOVERY WELL AND VAPOR MONITORING POINT LOCATIONS

Greif Brothers Facility
Tonawanda, New York

PREPARED FOR
SONOCO PRODUCTS COMPANY

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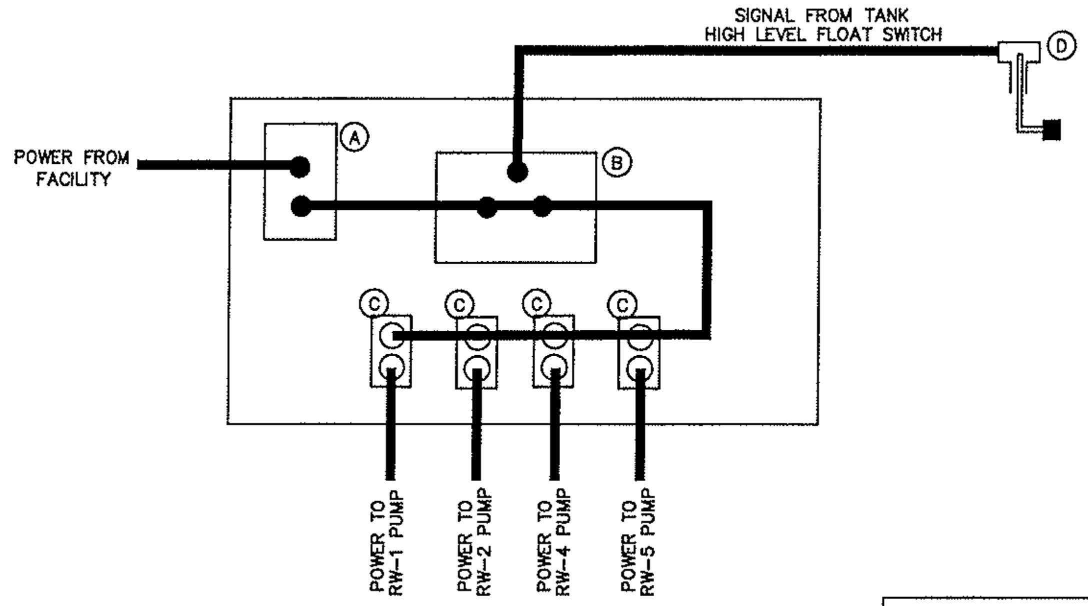
5788 WIDEWATERS PARKWAY
DEWITT, NEW YORK 13214

SCALE 1" = 20'
DATE 04/05
FIGURE 24
PROJECT#0021621

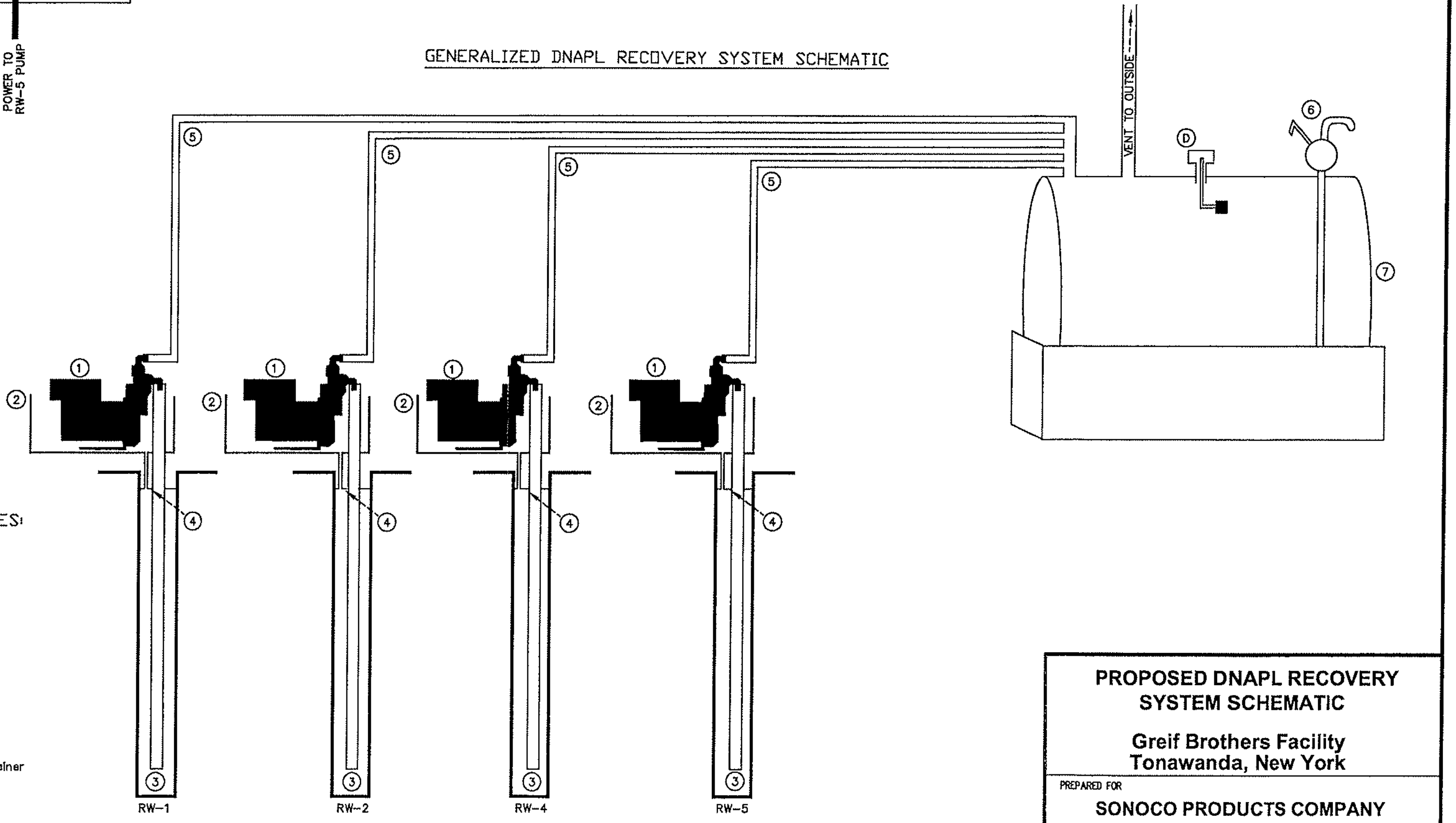
GENERALIZED ELECTRICAL CONTROLS SCHEMATIC



GENERALIZED ELECTRICAL NOTES:

- Ⓐ Circut Breaker
- Ⓑ Intrinsically Safe Liquid Level Relay Switch Control
- Ⓒ Programmable Timer
- Ⓓ High Liquid Level Switch

GENERALIZED DNAPL RECOVERY SYSTEM SCHEMATIC



GENERALIZED DNAPL RECOVERY SYSTEM NOTES:

- ① Dial–A–Flow Metering Pump
- ② Secondary Containment with Drain Into Recovery Well
- ③ Foot Valve
- ④ Well Seal with Vapor Lock and Drain Check Valve
- ⑤ Secondarily–Contained Piping
- ⑥ DNAPL Product Removal Pump
- ⑦ Secondarily–Contained 500–Gallon Steel Waste Storage Container

GENERAL NOTE: All DNAPL recovery system electrical and construction work shall follow applicable codes, regulations and standards.

NAD 83

**PROPOSED DNAPL RECOVERY
SYSTEM SCHEMATIC**

**Greif Brothers Facility
Tonawanda, New York**

PREPARED FOR

SONOCO PRODUCTS COMPANY

ERM
5788 WIDEWATERS PARKWAY
DEWITT, NEW YORK 13214

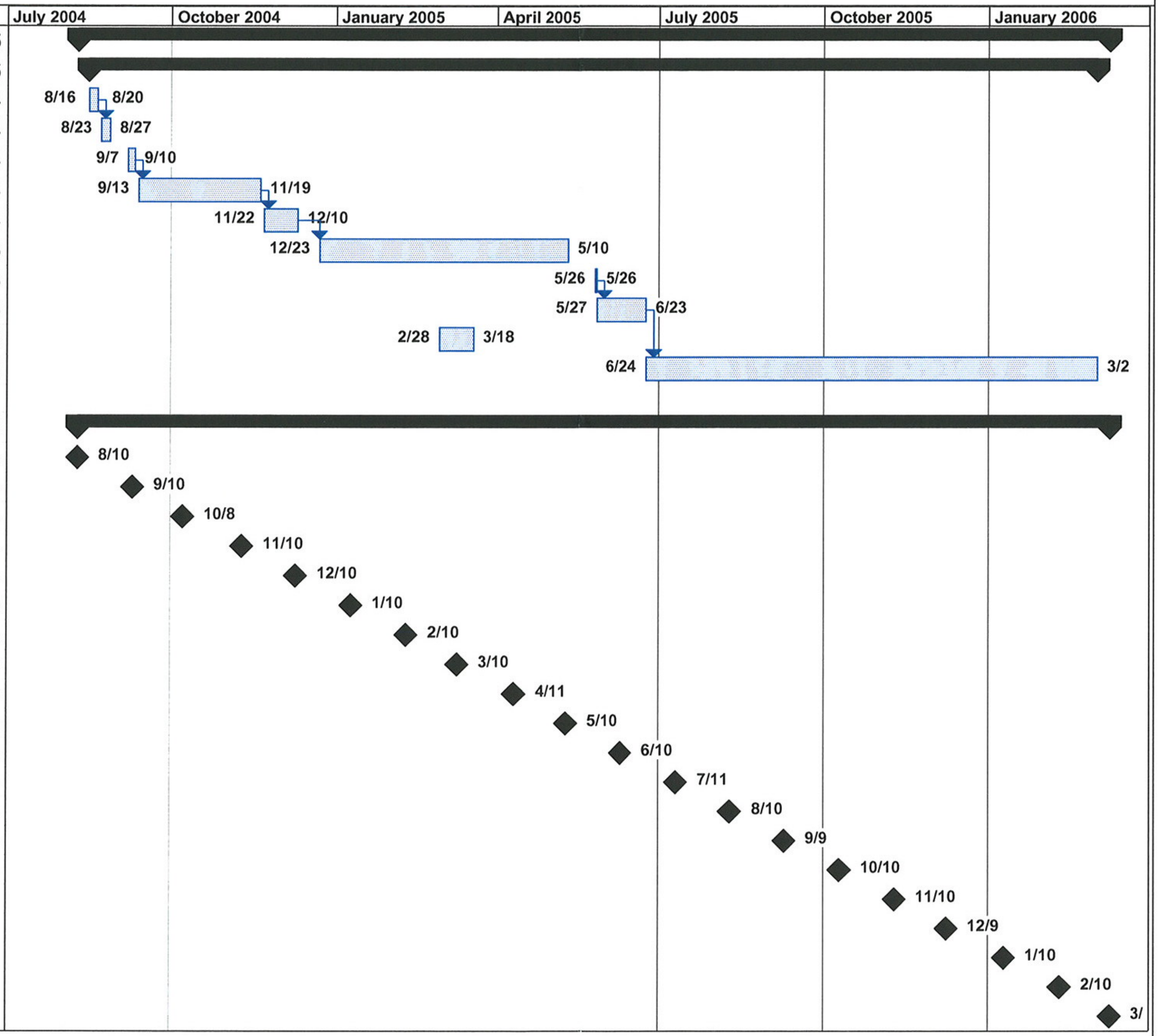
SCALE	NTS	FIGURE 25
DATE	04/05	

PROJECT#0021621

Figure 26 - Estimated DNAPL Recovery IRM Project Schedule
Greif Bros. Facility - Tonawanda, NY

NYSDEC VCP NUMBER V00334-9

ID	Task Name	Duration	Start	Finish
1	**Greif Bros. Facility**	**413 days**	**Tue 8/10/04**	**Fri 3/10/06**
2	**Product Recovery IRM**	**404 days**	**Mon 8/16/04**	**Thu 3/2/06**
3	*Preparations and Mobilization*	1 wk	Mon 8/16/04	Fri 8/20/04
4	*Install Recovery Wells and Vapor Monitoring Points*	1 wk	Mon 8/23/04	Fri 8/27/04
5	*Preparations for Pilot Testing*	4 days	Tue 9/7/04	Fri 9/10/04
6	*Pilot Testing*	10 wks	Mon 9/13/04	Fri 11/19/04
7	*Laboratory Analysis of Samples*	3 wks	Mon 11/22/04	Fri 12/10/04
8	*Pilot Test Data Interpretation and Report Preparation*	99 days	Thu 12/23/04	Tue 5/10/05
9	*Submit Pilot Test Data Report to NYSDEC*	1 day	Thu 5/26/05	Thu 5/26/05
10	NYSDEC Review and Approval of Pilot Test Data Report	4 wks	Fri 5/27/05	Thu 6/23/05
11	*Site Surveying*	3 wks	Mon 2/28/05	Fri 3/18/05
12	Additional Product Recovery Operations	180 days	Fri 6/24/05	Thu 3/2/06
13				
14	**Monthly Progress Reports to NYSDEC**	**413 days**	**Tue 8/10/04**	**Fri 3/10/06**
15	*Monthly Progress Report to NYSDEC 1*	0 days	Tue 8/10/04	Tue 8/10/04
16	*Monthly Progress Report to NYSDEC 2*	0 days	Fri 9/10/04	Fri 9/10/04
17	*Monthly Progress Report to NYSDEC 3*	0 days	Fri 10/8/04	Fri 10/8/04
18	*Monthly Progress Report to NYSDEC 4*	0 days	Wed 11/10/04	Wed 11/10/04
19	*Monthly Progress Report to NYSDEC 5*	0 days	Fri 12/10/04	Fri 12/10/04
20	*Monthly Progress Report to NYSDEC 6*	0 days	Mon 1/10/05	Mon 1/10/05
21	*Monthly Progress Report to NYSDEC 7*	0 days	Thu 2/10/05	Thu 2/10/05
22	*Monthly Progress Report to NYSDEC 8*	0 days	Thu 3/10/05	Thu 3/10/05
23	*Monthly Progress Report to NYSDEC 9*	0 days	Mon 4/11/05	Mon 4/11/05
24	*Monthly Progress Report to NYSDEC 10*	0 days	Tue 5/10/05	Tue 5/10/05
25	Monthly Progress Report to NYSDEC 11	0 days	Fri 6/10/05	Fri 6/10/05
26	Monthly Progress Report to NYSDEC 12	0 days	Mon 7/11/05	Mon 7/11/05
27	Monthly Progress Report to NYSDEC 13	0 days	Wed 8/10/05	Wed 8/10/05
28	Monthly Progress Report to NYSDEC 14	0 days	Fri 9/9/05	Fri 9/9/05
29	Monthly Progress Report to NYSDEC 15	0 days	Mon 10/10/05	Mon 10/10/05
30	Monthly Progress Report to NYSDEC 16	0 days	Thu 11/10/05	Thu 11/10/05
31	Monthly Progress Report to NYSDEC 17	0 days	Fri 12/9/05	Fri 12/9/05
32	Monthly Progress Report to NYSDEC 18	0 days	Tue 1/10/06	Tue 1/10/06
33	Monthly Progress Report to NYSDEC 19	0 days	Fri 2/10/06	Fri 2/10/06
34	Monthly Progress Report to NYSDEC 20	0 days	Fri 3/10/06	Fri 3/10/06



Task	▨	Milestone	◆	Rolled Up Task	▨	Rolled Up Progress	▬	External Tasks	▨	Group By Summary	▬
Progress	▬	Summary	▬	Rolled Up Milestone	◇	Split		Project Summary	▬	Deadline	⇩

ENVIRONMENTAL RESOURCES MANAGEMENT

0021621/fig26_DNAPL IRM Project Schedule 13-Apr-05 - Thu 5/26/05

Tables

TABLE 1
SUMMARY OF SAMPLES
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE DATE	ANALYSES											
			TCL VOCs	TCL SVOCs	Methanol	pH	% Cl	RCRA Metals	TS	TOC	PCBs	Chloride	Nitrate	Sulfate
WCS-01	Soil	8/24/2004	X	X	X	X *								
DNAPL AQUEOUS	Liquid	9/9/2004	X			X		X		X				
DNAPL PRODUCT	Soil	9/9/2004	X				X		X		X			
CARBON UNIT #1-#2	Liquid	9/20/2004				X						X	X	X
WC-GAC LIQUID	Liquid	11/15/2004	X			X								
WC-DRUMS 5,6,7,11,12,13	Soil	11/15/2004	X	X										
V1C-1-1625	Air	11/16/2004	X **											
VEC-1-1625	Air	11/16/2004	X **											
V1C-1-2235	Air	11/16/2004	X **											
VEC-1-2235	Air	11/16/2004	X **											

NOTES:

TCL VOCs = Target Compound List Volatile Organic Compounds.

TCL SVOCs = Target Compound List Semi-Volatile Organic Compounds.

% CI = Percent Chlorine.

RCRA Metals = Resource Conservation and Recovery Act Metals (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver and Mercury).

TS = Total Solids.

TOC = Total Organic Carbon.

PCBs = Polychlorinated Biphenyls.

* Sample was analyzed for leachable pH.

** Samples were analyzed for an abbreviated VOC list (not TCL).

- All soil and liquid samples were analyzed for waste characterization purposes.
- All air samples were collected during low vacuum dual-phase extraction.

TABLE 2

SUMMARY OF LIQUID MEASUREMENT DATA
TEST #2, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TL (INCHES)	TV_{DNAPL} (GAL)	F_{DNAPL} (GAL/MIN)	COMMENTS
Static	5.30	9.43	4.13	5.57	0	0	0	0	0	
5	5.73	10.03	4.30	4.97	0.43	0.60	NM	NM	NM	
11	5.94	10.40	4.46	4.60	0.64	0.97	NM	NM	NM	
16	6.01	10.56	4.55	4.44	0.71	1.13	NM	NM	NM	
21	6.07	10.66	4.59	4.34	0.77	1.23	NM	NM	NM	
27	6.11	10.80	4.69	4.20	0.81	1.37	NM	NM	NM	
32	6.11	10.89	4.78	4.11	0.81	1.46	NM	NM	NM	
37	6.11	10.96	4.85	4.04	0.81	1.53	NM	NM	NM	
42	6.09	11.01	4.92	3.99	0.79	1.58	NM	NM	NM	
47	6.04	11.02	4.98	3.98	0.74	1.59	NM	NM	NM	
53	6.02	11.06	5.04	3.94	0.72	1.63	NM	NM	NM	
58	6.01	11.08	5.07	3.92	0.71	1.65	NM	NM	NM	
63	5.98	11.10	5.12	3.90	0.68	1.67	NM	NM	NM	
66	NM	NM	NM	NM	NM	NM	4.25	26	0.39	Pump speed increased at ET 72 & 73
76	5.94	11.12	5.18	3.88	0.64	1.69	NM	NM	NM	ET 78 - pump off; ET 86 - pump on
88	5.88	11.15	5.27	3.85	0.58	1.72	NM	NM	NM	
93	5.88	11.19	5.31	3.81	0.58	1.76	NM	NM	NM	ET 93 - pump off; ET 98 - pump on at a lower speed
101	6.04	11.48	5.44	3.52	0.74	2.05	4.50	28.5	0.07	
106	6.30	11.73	5.43	3.27	1.00	2.30	NM	NM	NM	
111	6.40	11.92	5.52	3.08	1.10	2.49	NM	NM	NM	
122	6.44	12.05	5.61	2.95	1.14	2.62	NM	NM	NM	
127	6.45	12.16	5.71	2.84	1.15	2.73	NM	NM	NM	Pump speed increased
133	6.45	12.22	5.77	2.78	1.15	2.79	NM	NM	NM	
138	6.40	12.30	5.90	2.70	1.10	2.87	NM	NM	NM	
141	6.35	12.32	5.97	2.68	1.05	2.89	NM	NM	NM	
145	6.30	12.35	6.05	2.65	1.00	2.92	NM	NM	NM	
150	6.26	12.36	6.10	2.64	0.96	2.93	NM	NM	NM	
155	6.26	12.38	6.12	2.62	0.96	2.95	NM	NM	NM	
162	6.22	12.40	6.18	2.60	0.92	2.97	NM	NM	NM	
167	NM	NM	NM	NM	NM	NM	5.125	34	0.08	ET 170 - pump off; ET 174 - pump on at a higher speed
178	6.40	12.80	6.40	2.20	1.10	3.37	NM	NM	NM	
184	6.58	13.10	6.52	1.90	1.28	3.67	NM	NM	NM	
189	6.60	13.25	6.65	1.75	1.30	3.82	NM	NM	NM	

NOTES:
Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TL = tank level; thickness of fluid in temporary waste storage tank (DNAPL only for Phase 2).
TV = tank volume (DNAPL only for Phase I).
F = flowrate; indicates average flowrate between measurements (DNAPL only for Phase 2).
NM = not measured.

TABLE 2 (Continued)
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #2, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TL (INCHES)	TV_{DNAPL} (GAL)	F_{DNAPL} (GAL/MIN)	COMMENTS
194	6.58	13.35	6.77	1.65	1.28	3.92	NM	NM	NM	
200	6.51	13.40	6.89	1.60	1.21	3.97	NM	NM	NM	
205	6.47	13.41	6.94	1.59	1.17	3.98	NM	NM	NM	
213	6.40	13.43	7.03	1.57	1.10	4.00	NM	NM	NM	ET 213 - pump off; ET 219 - pump on
222	6.58	13.85	7.27	1.15	1.28	4.42	NM	NM	NM	
227	6.80	14.42	7.62	0.58	1.50	4.99	NM	NM	NM	
238	6.76	14.70	7.94	0.30	1.46	5.27	NM	NM	NM	Pump turned off for the day
240	NM	NM	NM	NM	NM	NM	5.75	39.75	0.08	Recovery Data
248	6.51	14.66	8.15	0.34	1.21	5.23	NM	NM	NM	"
259	6.25	14.30	8.05	0.70	0.95	4.87	NM	NM	NM	"
265	6.17	14.25	8.08	0.75	0.87	4.82	NM	NM	NM	"
272	6.15	14.17	8.02	0.83	0.85	4.74	NM	NM	NM	"
278	6.11	14.10	7.99	0.90	0.81	4.67	NM	NM	NM	"
288	6.01	13.94	7.93	1.06	0.71	4.51	NM	NM	NM	"
298	5.88	13.86	7.98	1.14	0.58	4.43	NM	NM	NM	"
312	5.86	13.73	7.87	1.27	0.56	4.30	NM	NM	NM	"
328	5.78	13.62	7.84	1.38	0.48	4.19	NM	NM	NM	"
348	5.73	13.53	7.80	1.47	0.43	4.10	NM	NM	NM	"
368	5.68	13.32	7.64	1.68	0.38	3.89	NM	NM	NM	"
388	5.64	13.39	7.75	1.61	0.34	3.96	NM	NM	NM	"
412	5.63	13.37	7.74	1.63	0.33	3.94	NM	NM	NM	"

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TL = tank level; thickness of fluid in temporary waste storage tank (DNAPL only for Phase 2).
TV = tank volume (DNAPL only for Phase I).
F = flowrate; indicates average flowrate between measurements (DNAPL only for Phase 2).
NM = not measured.

TABLE 3
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #2, OBSERVATION WELL RW-1
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.32	12.26	6.94	2.73	0	0
66	5.34	12.25	6.91	2.74	0.02	-0.01
167	5.36	12.22	6.86	2.77	0.04	-0.04
252 *	5.40	12.22	6.82	2.77	0.08	-0.04

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 238).

TABLE 4
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #2, OBSERVATION WELL VMP-1
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	9.10	NA	0.78	NA	0	NA
58	9.10	NA	0.78	NA	0	NA
254 *	9.10	NA	0.78	NA	0	NA

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 238).
NA = not applicable; VMP-1 did not contain product.

TABLE 5
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #2, OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.46	8.35	2.89	1.62	0	0
64	5.66	8.33	2.67	1.64	0.20	-0.02
165	5.77	8.31	2.54	1.66	0.31	-0.04
250 *	5.87	8.31	2.44	1.66	0.41	-0.04

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 238).

TABLE 6
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #2, OBSERVATION WELL MW-12
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.82	NA	10.23	NA	0	NA
59	5.82	NA	10.23	NA	0	NA
256 *	5.81	NA	10.24	NA	-0.01	NA

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 238).
NA = not applicable; MW-12 did not contain product.

TABLE 7
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #3, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TL (INCHES)	TV (GAL)	F_w (GAL/MIN)
Static	5.26	9.24	3.98	5.74	0	0	5.875	40	0
5	5.85	9.23	3.38	5.75	0.59	-0.01	NM	NM	NM
10	6.30	9.25	2.95	5.73	1.04	0.01	NM	NM	NM
15	6.48	9.21	2.73	5.77	1.22	-0.03	NM	NM	NM
20	6.75	9.22	2.47	5.76	1.49	-0.02	NM	NM	NM
24	NM	NM	NM	NM	NM	NM	6.5	47	0.37
25	7.00	9.16	2.16	5.82	1.74	-0.08	NM	NM	NM
30	7.17	9.06	1.89	5.92	1.91	-0.18	NM	NM	NM
37	7.18	8.98	1.80	6.00	1.92	-0.26	NM	NM	NM
42	7.20	8.88	1.68	6.10	1.94	-0.36	NM	NM	NM
47	7.20	8.76	1.56	6.22	1.94	-0.48	NM	NM	NM
51	NM	NM	NM	NM	NM	NM	7.0	52	0.19
52	7.18	8.70	1.52	6.28	1.92	-0.54	NM	NM	NM
57	7.20	8.61	1.41	6.37	1.94	-0.63	NM	NM	NM
64	7.20	8.53	1.33	6.45	1.94	-0.71	NM	NM	NM
70	7.20	8.45	1.25	6.53	1.94	-0.79	NM	NM	NM
75	7.20	8.37	1.17	6.61	1.94	-0.87	NM	NM	NM
80	7.20	8.31	1.11	6.67	1.94	-0.93	NM	NM	NM
85	7.20	8.26	1.06	6.72	1.94	-0.98	7.375	56	0.12
90	7.20	8.23	1.03	6.75	1.94	-1.01	NM	NM	NM
95	7.22	8.15	0.93	6.83	1.96	-1.09	NM	NM	NM
102	7.21	8.11	0.90	6.87	1.95	-1.13	NM	NM	NM
107	7.20	8.05	0.85	6.93	1.94	-1.19	NM	NM	NM
112	7.20	7.99	0.79	6.99	1.94	-1.25	NM	NM	NM
116	NM	NM	NM	NM	NM	NM	7.625	59	0.10
117	7.20	7.96	0.76	7.02	1.94	-1.28	NM	NM	NM
122	7.20	7.94	0.74	7.04	1.94	-1.30	NM	NM	NM
129	7.21	7.87	0.66	7.11	1.95	-1.37	NM	NM	NM
137	7.22	7.80	0.58	7.18	1.96	-1.44	NM	NM	NM
143	7.21	7.76	0.55	7.22	1.95	-1.48	NM	NM	NM
148	7.22	7.71	0.49	7.27	1.96	-1.53	NM	NM	NM
153	7.22	7.66	0.44	7.32	1.96	-1.58	NM	NM	NM

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TL = Tank level; thickness of fluid in temporary waste storage tank (DNAPL & water; static level is DNAPL only).
TV = tank volume (DNAPL & water; static level is DNAPL only).
F = flowrate; indicates average flowrate between measurements (water only for Phase 2).
NM = not measured.
* pump turned off for the day at this time (all subsequent data represents recovery data).

TABLE 7 (Continued)
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #3, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TL (INCHES)	TV (GAL)	F_w (GAL/MIN)
157	NM	NM	NM	NM	NM	NM	8.125	64	0.12
143	7.21	7.76	0.55	7.22	1.95	-1.48	NM	NM	NM
148	7.22	7.71	0.49	7.27	1.96	-1.53	NM	NM	NM
153	7.22	7.66	0.44	7.32	1.96	-1.58	NM	NM	NM
157	NM	NM	NM	NM	NM	NM	8.125	64	0.12
159	7.22	7.63	0.41	7.35	1.96	-1.61	NM	NM	NM
165	7.22	7.57	0.35	7.41	1.96	-1.67	NM	NM	NM
170	7.22	7.52	0.30	7.46	1.96	-1.72	NM	NM	NM
176	7.22	7.50	0.28	7.48	1.96	-1.74	8.25	66	0.11
181	7.22	7.45	0.23	7.53	1.96	-1.79	NM	NM	NM
186	7.22	7.42	0.20	7.56	1.96	-1.82	NM	NM	NM
190	NM	NM	NM	NM	NM	NM	8.375	67.5	0.11
191	7.22	7.38	0.16	7.60	1.96	-1.86	NM	NM	NM
197	7.22	7.32	0.10	7.66	1.96	-1.92	NM	NM	NM
203	7.22	7.27	0.05	7.71	1.96	-1.97	NM	NM	NM
209	7.22	7.22	0.00	7.76	1.96	-2.02	NM	NM	NM
210 *	NM	NM	NM	NM	NM	NM	8.5	68.5	0.05
211	7.18	7.22	0.04	7.76	1.92	-2.02	NM	NM	NM
212	7.16	7.23	0.07	7.75	1.90	-2.01	NM	NM	NM
212.5	7.14	7.24	0.10	7.74	1.88	-2.00	NM	NM	NM
213	7.12	7.24	0.12	7.74	1.86	-2.00	NM	NM	NM
214	7.10	7.23	0.13	7.75	1.84	-2.01	NM	NM	NM
215	7.08	7.23	0.15	7.75	1.82	-2.01	NM	NM	NM
216	7.05	7.23	0.18	7.75	1.79	-2.01	NM	NM	NM
221	6.94	7.20	0.26	7.78	1.68	-2.04	NM	NM	NM
226	6.82	7.18	0.36	7.80	1.56	-2.06	NM	NM	NM
231	6.75	7.17	0.42	7.81	1.49	-2.07	NM	NM	NM
236	6.66	7.15	0.49	7.83	1.40	-2.09	NM	NM	NM
241	6.60	7.14	0.54	7.84	1.34	-2.10	NM	NM	NM
246	6.53	7.14	0.61	7.84	1.27	-2.10	NM	NM	NM
251	6.46	7.14	0.68	7.84	1.20	-2.10	NM	NM	NM
257	6.40	7.13	0.73	7.85	1.14	-2.11	NM	NM	NM

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TL = Tank level; thickness of fluid in temporary waste storage tank (DNAPL & water; static level is DNAPL only).
TV = tank volume (DNAPL & water; static level is DNAPL only).
F = flowrate; indicates average flowrate between measurements (water only for Phase 2).
NM = not measured.
* pump turned off for the day at this time (all subsequent data represents recovery data).

TABLE 7 (Continued)
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #3, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TL (INCHES)	TV (GAL)	F_w (GAL/MIN)
262	6.35	7.12	0.77	7.86	1.09	-2.12	NM	NM	NM
267	6.29	7.11	0.82	7.87	1.03	-2.13	NM	NM	NM
273	6.25	7.11	0.86	7.87	0.99	-2.13	NM	NM	NM
278	6.21	7.10	0.89	7.88	0.95	-2.14	NM	NM	NM
282	6.19	7.10	0.91	7.88	0.93	-2.14	NM	NM	NM
287	6.14	7.11	0.97	7.87	0.88	-2.13	NM	NM	NM
292	6.12	7.11	0.99	7.87	0.86	-2.13	NM	NM	NM
302	6.08	7.12	1.04	7.86	0.82	-2.12	NM	NM	NM
312	6.01	7.13	1.12	7.85	0.75	-2.11	NM	NM	NM
324	5.98	7.14	1.16	7.84	0.72	-2.10	NM	NM	NM

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TL = Tank level; thickness of fluid in temporary waste storage tank (DNAPL & water; static level is DNAPL only).
TV = tank volume (DNAPL & water; static level is DNAPL only).
F = flowrate; indicates average flowrate between measurements (water only for Phase 2).
NM = not measured.
* pump turned off for the day at this time (all subsequent data represents recovery data).

TABLE 8
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #3, OBSERVATION WELL RW-1
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.28	10.90	5.62	4.08	0	0
23	5.31	10.90	5.59	4.08	0.03	0
50	5.31	10.90	5.59	4.08	0.03	0
79	5.32	10.90	5.58	4.08	0.04	0
114	5.35	10.90	5.55	4.08	0.07	0
155	5.37	10.90	5.53	4.08	0.09	0
189	5.40	10.90	5.50	4.08	0.12	0
223 *	5.40	10.90	5.50	4.08	0.12	0
233 *	5.41	10.90	5.49	4.08	0.13	0
249 *	5.41	10.90	5.49	4.08	0.13	0
264 *	5.42	10.89	5.47	4.09	0.14	-0.01
286 *	5.43	10.90	5.47	4.08	0.15	0
328 *	5.43	10.88	5.45	4.1	0.15	-0.02

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 210).

TABLE 9
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #3, OBSERVATION WELL VMP-1
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	8.32	NA	1.52	NA	0	NA
26	8.36	NA	1.48	NA	0.04	NA
53	8.36	NA	1.48	NA	0.04	NA
92	8.36	NA	1.48	NA	0.04	NA
119	8.36	NA	1.48	NA	0.04	NA
159	8.36	NA	1.48	NA	0.04	NA
289 *	8.36	NA	1.48	NA	0.04	NA

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 210).
NA = not applicable; VMP-1 did not contain product.

TABLE 10
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #3, OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.43	8.31	2.88	1.68	0	0
21	5.62	8.34	2.72	1.65	0.19	0.03
49	5.80	8.32	2.52	1.67	0.37	0.01
78	5.85	8.33	2.48	1.66	0.42	0.02
113	5.91	8.33	2.42	1.66	0.48	0.02
154	5.97	8.36	2.39	1.63	0.54	0.05
187	6.00	8.36	2.36	1.63	0.57	0.05
222 *	6.00	8.32	2.32	1.67	0.57	0.01
232 *	6.00	8.32	2.32	1.67	0.57	0.01
247 *	5.97	8.31	2.34	1.68	0.54	0
263 *	5.95	8.31	2.36	1.68	0.52	0
283 *	5.89	8.31	2.42	1.68	0.46	0
326 *	5.88	8.31	2.43	1.68	0.45	0

NOTES:

Static = paramters before test start-up.

Elapsed time = time elapsed from the start of the test, or 0.

DTW = depth to water.

DTP = depth to product.

b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).

s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).

* represents data after pump was stopped (pump stopped at 210).

TABLE 11
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #3, OBSERVATION WELL MW-12
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.56	NA	10.33	NA	0	NA
28	5.56	NA	10.33	NA	0	NA
54	5.56	NA	10.33	NA	0	NA
94	5.56	NA	10.33	NA	0	NA
121	5.56	NA	10.33	NA	0	NA
151	5.56	NA	10.33	NA	0	NA
291 *	5.56	NA	10.33	NA	0	NA

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 210).
NA = not applicable; MW-12 did not contain product.

TABLE 12
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TV_W (GAL)	F_W (GAL/MIN)	TV_{DNAPL} (GAL)	F_{DNAPL} (GAL/MIN)	COMMENTS
Static	5.42	7.68	2.26	7.30	0	0	26.4	0	36.6	0	
0.5	5.56	7.68	2.12	7.30	0.14	0	NM	NM	NM	NM	
1	5.76	7.78	2.02	7.20	0.34	0.10	NM	NM	NM	NM	
2	5.81	7.79	1.98	7.19	0.39	0.11	NM	NM	NM	NM	
3	5.87	7.85	1.98	7.13	0.45	0.17	NM	NM	NM	NM	
4	5.93	7.87	1.94	7.11	0.51	0.19	NM	NM	NM	NM	
5	6.00	7.89	1.89	7.09	0.58	0.21	NM	NM	NM	NM	
6	6.08	7.93	1.85	7.05	0.66	0.25	NM	NM	NM	NM	
7	6.17	7.96	1.79	7.02	0.75	0.28	NM	NM	NM	NM	
8	6.26	8.00	1.74	6.98	0.84	0.32	NM	NM	NM	NM	
9	6.35	8.05	1.70	6.93	0.93	0.37	NM	NM	NM	NM	
10	6.43	8.07	1.64	6.91	1.01	0.39	NM	NM	NM	NM	
11	6.52	8.10	1.58	6.88	1.10	0.42	NM	NM	NM	NM	
12	6.58	8.14	NM	6.84	1.16	0.46	NM	NM	NM	NM	
13	6.64	8.16	1.52	6.82	1.22	0.48	NM	NM	NM	NM	
14	6.70	8.20	1.50	6.78	1.28	0.52	NM	NM	NM	NM	
15	6.77	8.23	1.46	6.75	1.35	0.55	NM	NM	NM	NM	
16	6.82	8.28	1.46	6.70	1.40	0.60	NM	NM	NM	NM	
17	6.83	8.29	1.46	6.69	1.41	0.61	NM	NM	NM	NM	
18	6.85	8.33	1.48	6.65	1.43	0.65	NM	NM	NM	NM	
19	6.86	8.36	1.50	6.62	1.44	0.68	NM	NM	NM	NM	
20	6.88	8.40	1.52	6.58	1.46	0.72	NM	NM	NM	NM	
21	6.90	8.45	1.55	6.53	1.48	0.77	NM	NM	NM	NM	
22	NM	NM	NM	NM	NM	NM	31.8	0.25	40.2	0.16	
25	7.00	8.66	1.66	6.32	1.58	0.98	NM	NM	NM	NM	
31	7.07	8.85	1.78	6.13	1.65	1.17	NM	NM	NM	NM	
35	7.15	9.03	1.88	5.95	1.73	1.35	NM	NM	NM	NM	
40	7.38	9.26	1.88	5.72	1.96	1.58	NM	NM	NM	NM	
44	NM	NM	NM	NM	NM	NM	32.0	0.01	43.0	0.13	
45	7.57	9.47	1.90	5.51	2.15	1.79	NM	NM	NM	NM	
51	7.75	9.73	1.98	5.25	2.33	2.05	NM	NM	NM	NM	
56	7.80	9.90	2.10	5.08	2.38	2.22	NM	NM	NM	NM	
61	7.78	10.17	2.39	4.81	2.36	2.49	NM	NM	NM	NM	
68	8.00	10.40	2.40	4.58	2.58	2.72	NM	NM	NM	NM	

<u>NOTES:</u>

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TV = tank volume (W = water; DNAPL = dense non-aqueous phase liquid).
F = flowrate; indicates average flowrate between measurements (W = water; DNAPL = dense non-aqueous phase liquid).
NM = not measured.

TABLE 12 (Continued)
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TV_W (GAL)	F_W (GAL/MIN)	TV_{DNAPL} (GAL)	F_{DNAPL} (GAL/MIN)	COMMENTS
72	NM	NM	NM	NM	NM	NM	33.2	0.04	48.0	0.18	
73	8.20	10.63	2.43	4.35	2.78	2.95	NM	NM	NM	NM	
79	8.55	10.80	2.25	4.18	3.13	3.12	NM	NM	NM	NM	
84	8.85	11.00	2.15	3.98	3.43	3.32	NM	NM	NM	NM	
87	NM	NM	NM	NM	NM	NM	37.0	0.25	49.0	0.07	
90	9.13	11.16	2.03	3.82	3.71	3.48	NM	NM	NM	NM	
95	9.33	11.33	2.00	3.65	3.91	3.65	NM	NM	NM	NM	increased and water pump speed decreased
101	9.60	11.48	1.88	3.50	4.18	3.80	NM	NM	NM	NM	
106	9.73	11.51	1.78	3.47	4.31	3.83	NM	NM	NM	NM	
111	9.68	11.54	1.86	3.44	4.26	3.86	NM	NM	NM	NM	
116	9.62	11.54	1.92	3.44	4.20	3.86	37.8	0.03	53.0	0.14	ET 118 - Water pump speed increased
122	9.72	11.58	1.86	3.40	4.30	3.90	NM	NM	NM	NM	
130	9.75	11.64	1.89	3.34	4.33	3.96	NM	NM	NM	NM	
136	9.75	11.65	1.90	3.33	4.33	3.97	NM	NM	NM	NM	
139	NM	NM	NM	NM	NM	NM	40.2	0.10	54.2	0.05	
140	9.74	11.65	1.91	3.33	4.32	3.97	NM	NM	NM	NM	
146	9.74	11.67	1.93	3.31	4.32	3.99	NM	NM	NM	NM	
152	9.74	11.75	2.01	3.23	4.32	4.07	NM	NM	NM	NM	
158	9.75	11.75	2.00	3.23	4.33	4.07	NM	NM	NM	NM	
163	NM	NM	NM	NM	NM	NM	41.5	0.05	55.3	0.05	
164	9.75	11.78	2.03	3.20	4.33	4.10	NM	NM	NM	NM	
175	9.75	11.85	2.10	3.13	4.33	4.17	NM	NM	NM	NM	
185	9.75	11.88	2.13	3.10	4.33	4.20	NM	NM	NM	NM	
189	NM	NM	NM	NM	NM	NM	45.3	0.15	55.3	0.00	
198	9.75	11.97	2.22	3.01	4.33	4.29	NM	NM	NM	NM	
208	10.03	12.03	2.00	2.95	4.61	4.35	NM	NM	NM	NM	
220	10.07	12.10	2.03	2.88	4.65	4.42	NM	NM	NM	NM	
223	NM	NM	NM	NM	NM	NM	45.9	0.02	58.6	0.10	
230	10.07	12.19	2.12	2.79	4.65	4.51	NM	NM	NM	NM	increased and product pump speed decreased
240	10.20	12.22	2.02	2.76	4.78	4.54	NM	NM	NM	NM	
254	10.62	12.30	1.68	2.68	5.20	4.62	NM	NM	NM	NM	
265	10.68	12.25	1.57	2.73	5.26	4.57	NM	NM	NM	NM	
269	NM	NM	NM	NM	NM	NM	51.5	0.12	60.8	0.05	

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TV = tank volume (W = water; DNAPL = dense non-aqueous phase liquid).
F = flowrate; indicates average flowrate between measurements (W = water; DNAPL = dense non-aqueous phase liquid).
NM = not measured.

TABLE 12 (Continued)
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TV_W (GAL)	F_W (GAL/MIN)	TV_{DNAPL} (GAL)	F_{DNAPL} (GAL/MIN)	COMMENTS
276	10.68	12.28	1.60	2.70	5.26	4.60	NM	NM	NM	NM	ET 282 - Product pump speed increased
286	10.70	12.30	1.60	2.68	5.28	4.62	NM	NM	NM	NM	
296	10.70	12.40	1.70	2.58	5.28	4.72	NM	NM	NM	NM	
306	10.70	12.40	1.70	2.58	5.28	4.72	NM	NM	NM	NM	
309	NM	NM	NM	NM	NM	NM	55.4	0.10	60.8	0.00	
318	10.68	12.56	1.88	2.42	5.26	4.88	NM	NM	NM	NM	
332	10.70	12.65	1.95	2.33	5.28	4.97	NM	NM	NM	NM	
343	10.70	12.74	2.04	2.24	5.28	5.06	NM	NM	NM	NM	
346	NM	NM	NM	NM	NM	NM	55.8	0.01	63.0	0.06	
353	10.70	12.90	2.20	2.08	5.28	5.22	NM	NM	NM	NM	
363	11.02	12.94	1.92	2.04	5.60	5.26	NM	NM	NM	NM	
373	11.28	13.00	1.72	1.98	5.86	5.32	NM	NM	NM	NM	
388	11.28	13.03	1.75	1.95	5.86	5.35	NM	NM	NM	NM	
398	11.27	13.08	1.81	1.90	5.85	5.40	61.4	0.11	65.2	0.04	
408	11.27	13.05	1.78	1.93	5.85	5.37	NM	NM	NM	NM	
426	11.27	13.03	1.76	1.95	5.85	5.35	NM	NM	NM	NM	
437	11.27	13.03	1.76	1.95	5.85	5.35	NM	NM	NM	NM	
447	11.27	13.03	1.76	1.95	5.85	5.35	NM	NM	NM	NM	
451	NM	NM	NM	NM	NM	NM	64.0	0.05	65.2	0.00	
459	11.27	13.03	1.76	1.95	5.85	5.35	NM	NM	NM	NM	
469	11.27	13.03	1.76	1.95	5.85	5.35	NM	NM	NM	NM	
479	11.27	13.03	1.76	1.95	5.85	5.35	NM	NM	NM	NM	
482	NM	NM	NM	NM	NM	NM	67.8	0.12	65.2	0.00	
484	11.27	13.03	1.76	1.95	5.85	5.35	NM	NM	NM	NM	Pump turned off for the day
485	11.26	13.02	1.76	1.96	5.84	5.34	NM	NM	NM	NM	Recovery Data
486	11.23	13.00	1.77	1.98	5.81	5.32	NM	NM	NM	NM	"
487	11.21	13.02	1.81	1.96	5.79	5.34	NM	NM	NM	NM	"
488	11.18	13.00	1.82	1.98	5.76	5.32	NM	NM	NM	NM	"
489	11.16	13.00	1.84	1.98	5.74	5.32	NM	NM	NM	NM	"
490	11.13	12.99	1.86	1.99	5.71	5.31	NM	NM	NM	NM	"
491	11.09	12.98	1.89	2.00	5.67	5.30	NM	NM	NM	NM	"
492	11.07	12.98	1.91	2.00	5.65	5.30	NM	NM	NM	NM	"
493	11.03	12.97	1.94	2.01	5.61	5.29	NM	NM	NM	NM	"
494	11.00	12.96	1.96	2.02	5.58	5.28	NM	NM	NM	NM	"

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TV = tank volume (W = water; DNAPL = dense non-aqueous phase liquid).
F = flowrate; indicates average flowrate between measurements (W = water; DNAPL = dense non-aqueous phase liquid).
NM = not measured.

TABLE 12 (Continued)
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TV_W (GAL)	F_W (GAL/MIN)	TV_{DNAPL} (GAL)	F_{DNAPL} (GAL/MIN)	COMMENTS
495	10.97	12.95	1.98	2.03	5.55	5.27	NM	NM	NM	NM	Recovery Data
496	10.95	12.95	2.00	2.03	5.53	5.27	NM	NM	NM	NM	"
497	10.92	12.93	2.01	2.05	5.50	5.25	NM	NM	NM	NM	"
498	10.88	12.93	2.05	2.05	5.46	5.25	NM	NM	NM	NM	"
499	10.85	12.93	2.08	2.05	5.43	5.25	NM	NM	NM	NM	"
500	10.81	12.92	2.11	2.06	5.39	5.24	NM	NM	NM	NM	"
505	10.64	12.88	2.24	2.10	5.22	5.20	NM	NM	NM	NM	"
510	10.48	12.87	2.39	2.11	5.06	5.19	NM	NM	NM	NM	"
515	10.33	12.80	2.47	2.18	4.91	5.12	NM	NM	NM	NM	"
520	10.18	12.80	2.62	2.18	4.76	5.12	NM	NM	NM	NM	"
525	9.99	12.72	2.73	2.26	4.57	5.04	NM	NM	NM	NM	"
530	9.84	12.69	2.85	2.29	4.42	5.01	NM	NM	NM	NM	"
540	9.53	12.63	3.10	2.35	4.11	4.95	NM	NM	NM	NM	"
550	9.24	12.60	3.36	2.38	3.82	4.92	NM	NM	NM	NM	"
568	8.72	12.54	3.82	2.44	3.30	4.86	NM	NM	NM	NM	"
578	8.43	12.51	4.08	2.47	3.01	4.83	NM	NM	NM	NM	"
589	8.16	12.52	4.36	2.46	2.74	4.84	NM	NM	NM	NM	"
599	7.94	12.42	4.48	2.56	2.52	4.74	NM	NM	NM	NM	"
610	7.67	12.35	4.68	2.63	2.25	4.67	NM	NM	NM	NM	"
620	7.45	11.62	4.17	3.36	2.03	3.94	NM	NM	NM	NM	"
630	7.30	11.30	4.00	3.68	1.88	3.62	NM	NM	NM	NM	"

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TV = tank volume (W = water; DNAPL = dense non-aqueous phase liquid).
F = flowrate; indicates average flowrate between measurements (W = water; DNAPL = dense non-aqueous phase liquid).
NM = not measured.

TABLE 13
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, OBSERVATION WELL RW-1
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.38	10.89	5.51	4.09	0	0
25	5.38	10.87	5.49	4.11	0	-0.02
42	5.38	10.85	5.47	4.13	0	-0.04
64	5.39	10.87	5.48	4.11	0.01	-0.02
86	5.40	10.86	5.46	4.12	0.02	-0.03
113	5.42	10.84	5.42	4.14	0.04	-0.05
138	5.42	10.85	5.43	4.13	0.04	-0.04
160	5.43	10.85	5.42	4.13	0.05	-0.04
187	5.45	10.86	5.41	4.12	0.07	-0.03
210	5.47	10.85	5.38	4.13	0.09	-0.04
223	5.47	10.85	5.38	4.13	0.09	-0.04
242	5.47	10.85	5.38	4.13	0.09	-0.04
267	5.50	10.85	5.35	4.13	0.12	-0.04
288	5.50	10.85	5.35	4.13	0.12	-0.04
309	5.56	10.85	5.29	4.13	0.18	-0.04
345	5.52	10.85	5.33	4.13	0.14	-0.04
375	5.55	10.85	5.30	4.13	0.17	-0.04
411	5.55	10.85	5.30	4.13	0.17	-0.04
450	5.57	10.85	5.28	4.13	0.19	-0.04
481	5.57	10.85	5.28	4.13	0.19	-0.04
506 *	5.57	10.85	5.28	4.13	0.19	-0.04
512 *	5.57	10.85	5.28	4.13	0.19	-0.04
517 *	5.58	10.85	5.27	4.13	0.20	-0.04
532 *	5.60	10.86	5.26	4.12	0.22	-0.03
551 *	5.59	10.85	5.26	4.13	0.21	-0.04
581 *	5.60	10.85	5.25	4.13	0.22	-0.04
612 *	5.60	10.85	5.25	4.13	0.22	-0.04

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 484).

TABLE 14
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, OBSERVATION WELL VMP-1
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	8.32	NA	1.52	NA	0	NA
102	8.32	NA	1.52	NA	0	NA
141	8.32	NA	1.52	NA	0	NA
212	8.31	NA	1.53	NA	-0.01	NA
311	8.31	NA	1.53	NA	-0.01	NA
415	8.31	NA	1.53	NA	-0.01	NA
502 *	8.31	NA	1.53	NA	-0.01	NA

NOTES:

Static = paramters before test start-up.

Elapsed time = time elapsed from the start of the test, or 0.

DTW = depth to water.

DTP = depth to product.

b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).

s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).

* represents data after pump was stopped (pump stopped at 484).

NA = not applicable; VMP-1 did not contain product.

TABLE 15
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.53	8.30	2.77	1.69	0	0
0.5	5.50	NM	NM	NM	-0.03	NM
1	5.46	NM	NM	NM	-0.07	NM
2	5.47	NM	NM	NM	-0.06	NM
3	5.48	NM	NM	NM	-0.05	NM
4	5.48	NM	NM	NM	-0.05	NM
5	5.48	NM	NM	NM	-0.05	NM
6	5.50	NM	NM	NM	-0.03	NM
7	5.50	NM	NM	NM	-0.03	NM
8	5.50	NM	NM	NM	-0.03	NM
9	5.52	NM	NM	NM	-0.01	NM
10	5.53	NM	NM	NM	0	NM
11	5.54	NM	NM	NM	0.01	NM
12	5.54	NM	NM	NM	0.01	NM
13	5.55	NM	NM	NM	0.02	NM
14	5.56	NM	NM	NM	0.03	NM
15	5.56	NM	NM	NM	0.03	NM
16	5.57	NM	NM	NM	0.04	NM
17	5.58	NM	NM	NM	0.05	NM
18	5.59	NM	NM	NM	0.06	NM
19	5.60	NM	NM	NM	0.07	NM
20	5.60	NM	NM	NM	0.07	NM
21	5.60	NM	NM	NM	0.07	NM
22	5.68	8.30	2.62	1.69	0.15	0
41	5.77	8.30	2.53	1.69	0.24	0
62	5.89	8.30	2.41	1.69	0.36	0
85	5.97	8.30	2.33	1.69	0.44	0
112	6.02	8.31	2.29	1.68	0.49	0.01
137	6.06	8.30	2.24	1.69	0.53	0
159	6.09	8.30	2.21	1.69	0.56	0
186	6.12	8.31	2.19	1.68	0.59	0.01
209	6.15	8.30	2.15	1.69	0.62	0

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 484).
NM = not measured.

TABLE 15 (Continued)
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
222	6.15	8.30	2.15	1.69	0.62	0
241	6.17	8.30	2.13	1.69	0.64	0
266	6.20	8.30	2.10	1.69	0.67	0
287	6.20	8.30	2.10	1.69	0.67	0
308	6.21	8.30	2.09	1.69	0.68	0
344	6.23	8.30	2.07	1.69	0.70	0
374	6.25	8.30	2.05	1.69	0.72	0
410	6.26	8.30	2.04	1.69	0.73	0
448	6.27	8.30	2.03	1.69	0.74	0
480	6.29	8.30	2.01	1.69	0.76	0
485 *	6.23	NM	NM	NM	0.70	NM
486 *	6.23	NM	NM	NM	0.70	NM
487 *	6.23	NM	NM	NM	0.70	NM
488 *	6.23	NM	NM	NM	0.70	NM
489 *	6.24	NM	NM	NM	0.71	NM
490 *	6.24	NM	NM	NM	0.71	NM
491 *	6.24	NM	NM	NM	0.71	NM
492 *	6.24	NM	NM	NM	0.71	NM
493 *	6.24	NM	NM	NM	0.71	NM
494 *	6.24	NM	NM	NM	0.71	NM
495 *	6.24	NM	NM	NM	0.71	NM
496 *	6.23	NM	NM	NM	0.70	NM
497 *	6.24	NM	NM	NM	0.71	NM
498 *	6.24	NM	NM	NM	0.71	NM
499 *	6.23	NM	NM	NM	0.70	NM
500 *	6.23	NM	NM	NM	0.70	NM
505 *	6.29	8.30	2.01	1.69	0.76	0
516 *	6.30	8.30	2.00	1.69	0.77	0
531 *	6.31	8.25	1.94	1.74	0.78	-0.05
551 *	6.30	8.30	2.00	1.69	0.77	0
580 *	6.31	8.31	2.00	1.68	0.78	0.01
611 *	6.32	8.28	1.96	1.71	0.79	-0.02
631 *	6.30	8.30	2.00	1.69	0.77	0

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 484).
NM = not measured.

TABLE 16
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #4, OBSERVATION WELL MW-12
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.56	NA	10.33	NA	0	NA
103	5.56	NA	10.33	NA	0	NA
142	5.56	NA	10.33	NA	0	NA
214	5.56	NA	10.33	NA	0	NA
313	5.56	NA	10.33	NA	0	NA
416	5.56	NA	10.33	NA	0	NA
503 *	5.56	NA	10.33	NA	0	NA

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
* represents data after pump was stopped (pump stopped at 484).
NA = not applicable; MW-12 did not contain product.

TABLE 17
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #5, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TV_W (GAL)	F_W (GAL/MIN)	TV_{DNAPL} (GAL)	F_{DNAPL} (GAL/MIN)	COMMENTS
Static	5.52	8.66	3.14	6.32	0	0	70.0	0	63.0	0	
5	6.09	9.00	2.91	5.98	0.57	0.34	NM	NM	NM	NM	
10	6.81	9.35	2.54	5.63	1.29	0.69	NM	NM	NM	NM	
15	7.15	9.55	2.40	5.43	1.63	0.89	NM	NM	NM	NM	
20	7.19	9.76	2.57	5.22	1.67	1.10	NM	NM	NM	NM	
25	7.29	10.01	2.72	4.97	1.77	1.35	NM	NM	NM	NM	
27	NM	NM	NM	NM	NM	NM	72.5	0.09	68.5	0.20	
30	7.39	10.26	2.87	4.72	1.87	1.60	NM	NM	NM	NM	
35	7.43	10.56	3.13	4.42	1.91	1.90	NM	NM	NM	NM	
40	7.49	10.66	3.17	4.32	1.97	2.00	NM	NM	NM	NM	
45	7.56	10.89	3.33	4.09	2.04	2.23	NM	NM	NM	NM	
48	7.64	11.09	3.45	3.89	2.12	2.43	NM	NM	NM	NM	
50	7.68	11.29	3.61	3.69	2.16	2.63	NM	NM	NM	NM	
55	7.71	11.35	3.64	3.63	2.19	2.69	NM	NM	NM	NM	
60	7.74	11.45	3.71	3.53	2.22	2.79	NM	NM	NM	NM	
65	7.82	11.66	3.84	3.32	2.30	3.00	NM	NM	NM	NM	
72	7.90	11.93	4.03	3.05	2.38	3.27	NM	NM	NM	NM	
77	7.99	12.16	4.17	2.82	2.47	3.50	NM	NM	NM	NM	
82	8.03	12.29	4.26	2.69	2.51	3.63	NM	NM	NM	NM	
89	8.24	12.65	4.41	2.33	2.72	3.99	NM	NM	NM	NM	
94	8.63	12.73	4.10	2.25	3.11	4.07	NM	NM	NM	NM	
99	8.89	12.97	4.08	2.01	3.37	4.31	NM	NM	NM	NM	
107	9.50	13.30	3.80	1.68	3.98	4.64	NM	NM	NM	NM	ET 109 - Product pump and water pump speeds decreased
112	9.75	13.36	3.61	1.62	4.23	4.70	76.0	0.04	82.4	0.17	
117	9.90	13.54	3.64	1.44	4.38	4.88	NM	NM	NM	NM	ET 118 - Water pump speed decreased
123	9.90	13.58	3.68	1.40	4.38	4.92	NM	NM	NM	NM	
127	9.88	13.64	3.76	1.34	4.36	4.98	NM	NM	NM	NM	
132	9.92	13.65	3.73	1.33	4.40	4.99	NM	NM	NM	NM	
137	9.90	13.65	3.75	1.33	4.38	4.99	NM	NM	NM	NM	
144	9.89	13.69	3.80	1.29	4.37	5.03	NM	NM	NM	NM	
149	9.89	13.75	3.86	1.23	4.37	5.09	NM	NM	NM	NM	ET 150 - Product pump speed decreased; ET 155 - water & product pump speeds increased
154	9.89	13.80	3.91	1.18	4.37	5.14	NM	NM	NM	NM	
160	10.00	13.90	3.90	1.08	4.48	5.24	NM	NM	NM	NM	
164	10.00	13.93	3.93	1.05	4.48	5.27	NM	NM	NM	NM	

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TV = tank volume (W = water; DNAPL = dense non-aqueous phase liquid).
F = flowrate; indicates average flowrate between measurements (W = water; DNAPL = dense non-aqueous phase liquid).
NM = not measured.

TABLE 17 (Continued)
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #5, PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ET (MIN)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)	TV_W (GAL)	F_W (GAL/MIN)	TV_{DNAPL} (GAL)	F_{DNAPL} (GAL/MIN)	COMMENTS
175	NM	NM	NM	NM	NM	NM	78.0	0.03	86.0	0.06	
207	NM	NM	NM	NM	NM	NM	82.0	0.13	86.0	0.00	
209	10.14	13.88	3.74	1.10	4.62	5.22	NM	NM	NM	NM	
236	10.08	13.90	3.82	1.08	4.56	5.24	NM	NM	NM	NM	
261	NM	NM	NM	NM	NM	NM	94.0	0.22	86.0	0.00	
335	NM	NM	NM	NM	NM	NM	108.0	0.19	86.0	0.00	
410	NM	NM	NM	NM	NM	NM	122.0	0.19	86.0	0.00	
428	10.14	13.96	3.82	1.02	4.62	5.30	NM	NM	NM	NM	
468	9.89	13.98	4.09	1.00	4.37	5.32	NM	NM	NM	NM	
543	NM	NM	NM	NM	NM	NM	146.0	0.18	91.0	0.04	
617	NM	NM	NM	NM	NM	NM	156.6	0.14	94.4	0.05	
703	10.20	14.10	3.90	0.88	4.68	5.44	NM	NM	NM	NM	
705	NM	NM	NM	NM	NM	NM	162.0	0.06	98.0	0.04	Pumps turned off for the day

NOTES:

Static = paramters before test start-up.
ET = Elapsed time; time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
TV = tank volume (W = water; DNAPL = dense non-aqueous phase liquid).
F = flowrate; indicates average flowrate between measurements (W = water; DNAPL = dense non-aqueous phase liquid).
NM = not measured.

TABLE 18
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #5, OBSERVATION WELL RW-1
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.46	9.36	3.90	5.62	0	0
23	5.46	9.36	3.90	5.62	0	0
67	5.47	9.36	3.89	5.62	0.01	0
102	5.48	9.39	3.91	5.59	0.02	0.03
119	5.50	9.38	3.88	5.60	0.04	0.02
140	5.51	9.35	3.84	5.63	0.05	-0.01
701	5.80	9.36	3.56	5.62	0.34	0

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).

TABLE 19
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #5, OBSERVATION WELL VMP-1
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	7.44	NA	2.40	NA	0	NA
38	7.44	NA	2.40	NA	0	NA
152	7.44	NA	2.40	NA	0	NA
698	7.41	NA	2.43	NA	-0.03	NA

NOTES:
Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
NA = not applicable; VMP-1 did not contain product.

TABLE 20

SUMMARY OF LIQUID MEASUREMENT DATA
TEST #5, OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.59	8.33	2.74	1.66	0	0
7	5.63	8.29	2.66	1.70	0.04	-0.04
12	5.72	8.29	2.57	1.70	0.13	-0.04
18	5.80	8.29	2.49	1.70	0.21	-0.04
22	5.80	8.29	2.49	1.70	0.21	-0.04
37	5.83	8.29	2.46	1.70	0.24	-0.04
48	5.97	8.31	2.34	1.68	0.38	-0.02
57	6.02	8.30	2.28	1.69	0.43	-0.03
67	6.04	8.31	2.27	1.68	0.45	-0.02
93	6.02	8.28	2.26	1.71	0.43	-0.05
100	6.02	8.28	2.26	1.71	0.43	-0.05
118	6.08	8.28	2.20	1.71	0.49	-0.05
134	6.09	8.31	2.22	1.68	0.50	-0.02
142	6.12	8.29	2.17	1.70	0.53	-0.04
700	5.94	8.23	2.29	1.76	0.35	-0.10

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).

TABLE 21
SUMMARY OF LIQUID MEASUREMENT DATA
TEST #5, OBSERVATION WELL MW-12
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	DTW (FEET)	DTP (FEET)	b_W (FEET)	b_{DNAPL} (FEET)	s_W (FEET)	s_{DNAPL} (FEET)
Static	5.66	NA	10.23	NA	0	NA
44	5.66	NA	10.23	NA	0	NA
156	5.66	NA	10.23	NA	0	NA
699	5.69	NA	10.20	NA	0.03	NA

NOTES:

Static = paramters before test start-up.
Elapsed time = time elapsed from the start of the test, or 0.
DTW = depth to water.
DTP = depth to product.
b = saturated thickness (W = water; DNAPL = dense non-aqueous phase liquid).
s = drawdown (W = water; DNAPL = dense non-aqueous phase liquid).
NA = not applicable; MW-12 did not contain product.

TABLE 22
SUMMARY OF SYSTEM OPERATING PARAMETERS - TEST #5
LOW VACUUM - ENHANCED DNAPL AND GROUND WATER PUMPING
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME	VH-1	VIG-1			VBI-1	TBI-1	VBO-1	TBO-1	VIC-1	VEC-1	VEG-1			VET-1	Total VOCs
(MINUTES)	(in. H_2O)	(ft/min)	(°F)	(%)	(in. H_2O)	(°F)	(in. H_2O)	(°F)	(PPM)	(PPM)	(ft/min)	(°F)	(%)	(°F)	(PPM)
246	47.6	332	68.1	37.5	38	54.5	46	91	2015	17.4	785	57.3	21	37	NM
285	47.6	325	68	38.6	38	54	45	91	1829	8.1	745	55	19.7	37	NM
318	44.9	324	67.8	39.5	37	54	44	89	1650	7.4	750	54.3	17.5	35	1,708
350	44.9	325	68.3	39.1	37	53	44	88	1509	4.9	770	57.8	17.7	33	NM
388	43.5	315	66.5	41.4	38	54	43	86	1428	6.3	715	52	16.3	33	NM
415	40.8	446	64.4	42.4	33	54	40	84	1695	4.2	810	51	16.6	33	NM
455	40.8	450	63	45.5	33	53	40	83	1560	7.6	750	53	37.2	44	NM
495	40.8	452	62.4	45.9	33	52	40	81	1627	7.3	725	54.2	48	53	NM
535	40.8	455	62.2	47.4	33	52	40	82	1609	6.7	730	58.7	40.9	55	NM
575	40.8	455	62.2	49.3	33	52	40	82	1562	7.3	720	56.2	42	59	NM
605	40.8	463	63.3	47.8	33	54	40	82	1559	6.7	695	57	38.4	61	NM
645	40.8	460	63.2	47.4	33	54	40	81	1473	5.6	665	56.2	33.7	64	NM
690	40.8	459	63.4	48.6	33	54	40	81	1434	6.5	675	56.8	31.4	66	2,608

NOTES:

Elapsed time = time elapsed from the start of the test, or 0.
VH-1 = Vacuum at header.
VIG-1 = Vapor influent general.
VBI-1 = Vacuum at blower - in.
TBI-1 = Temperature at blower - in.
VBO-1 = Vacuum at blower - out.
TBO-1 = Temperature at blower - out.

VIC-1 = Vapor influent concentration.
VEC-1 = Vapor effluent concentration.
VEG-1 = Vapor effluent general.
VET-1 = Vapor effluent temperature.
Total VOCs = total volatile organic compunds (vapor influent concentrations) per laboratory analysis; vapor effluent concentrations are 0 ppm.
NM = Not measured.

TABLE 23
SUMMARY OF VACUUM MEASUREMENTS - TEST #5
LOW VACUUM - ENHANCED DNAPL AND GROUND WATER PUMPING
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

ELAPSED TIME (MINUTES)	MAGNEHELIC READINGS (inches H_2O)				
	RW-2 *	RW-1	VMP-2	VMP-1	MW-12
262	46.24	0.50	1.90	0.60	0.035
295	46.24	0.50	1.90	0.61	0.035
328	44.88	0.50	1.90	0.61	0.035
370	44.88	0.50	1.80	0.60	0.035
405	43.52	0.50	1.80	0.60	0.035
415	40.80	0.78	2.75	0.93	0.035
463	40.90	0.78	2.80	0.98	0.035
500	40.10	0.78	2.90	0.98	0.035
541	40.11	0.78	2.90	0.98	0.035
580	40.12	0.80	3.00	0.98	0.035
615	40.13	0.80	3.00	0.99	0.035
656	40.14	0.80	3.00	0.99	0.035
695	40.15	0.80	3.00	0.99	0.035

NOTES:

Elapsed time = time elapsed from the start of the test, or 0.

* RW-2 is the pumping well; all other wells are observation wells.

TABLE 24
SUMMARY OF HAZARDOUS WASTES
DNAPL RECOVERY IRM PILOT TEST
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

USDOT WASTE DESCRIPTION	MANIFEST DOC. NUMBER	TRANSPORT DATE	CONTAINER TYPE	CONTAINER QUANTITY	USEPA WASTE CODE	ACCUMULATION START DATE
Hazardous Waste Liquid (Carbon Rinse Water)	NYG 5259411	23-Nov-04	Drum	5	U226, U228, F002, D040	15-Sep-04
Hazardous Waste Liquid (DNAPL Product)	NYG 5259411	23-Nov-04	Drum	3	F005, U226, U228, D022, F002, D039, D040	25-Aug-04
Hazardous Waste Solid (Soil Drill Cuttings)	NYG 5259411	23-Nov-04	Drum	4	D040, U226, U228, F002	23-Aug-04
Hazardous Waste Solid (PPE & Miscellaneous Debris)	NYG 5259411	23-Nov-04	Drum	2	F002, D040, U226, U228	24-Aug-04
Hazardous Waste Solid (Soil Drill Cuttings)	NYG 5258628	23-Nov-04	Drum	6	F002, D040, U226, U228	24-Aug-04
Hazardous Waste Liquid (Purge/Decon Water)	NYG 5258628	23-Nov-04	Drum	8	F002, D040, U226, U228	23-Aug-04
Hazardous Waste Solid (Spent Activated Carbon)	PAH 126900	7-Dec-04	Tank	2	F002, D040, U226, U228	14-Sep-04
Haazardous Waste Liquid (DNAPL Product)	NYG 5258277	6-Jan-05	Drum	2	D022, D039, D040, F002, F005, U226, U228	12-Oct-04
Hazardous Waste Liquid (Purge/Decon Water)	NYG 5258277	6-Jan-05	Drum	3	D040, F002, U226, U228	12-Oct-04

NOTES:
USDOT = United States Department of Transportation
USEPA = United States Environmental Protection Agency

TABLE 25
SUMMARY OF GROUND WATER AND DNAPL ELEVATION DATA
DNAPL RECOVERY IRM PILOT TEST
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

WELL DESIGNATION	RISER ELEVATION (FT)	9/14/2004 Static Conditions		9/22/2004 DNAPL Pumping		10/12/2004 GW Pumping		10/13/2004 GW & DNAPL Pumping		11/16/2004 Low Vacuum Dual-Phase Extraction	
		ELEVATION (FT)		ELEVATION (FT)		ELEVATION (FT)		ELEVATION (FT)		ELEVATION (FT)	
		GW	DNAPL	GW	DNAPL	GW	DNAPL	GW	DNAPL	GW	DNAPL
RW-1	586.80	581.61	577.61	581.44	574.58	581.40	575.90	581.23	575.95	581.00	577.44
RW-2	586.78	581.57	578.90	580.02	572.08	579.56	579.56	575.51	573.75	576.58	572.68
RW-3	583.19	569.06	NA	NM	NM	NM	NM	NM	NM	NM	NM
VMP-1	587.06	577.53	NA	577.96	NA	578.70	NA	578.75	NA	579.65	NA
VMP-2	587.92	582.57	579.55	582.15	579.61	581.92	579.56	581.63	579.62	581.98	579.69
VMP-3	583.34	574.15	NA	NM	NM	NM	NM	NM	NM	NM	NM
MW-12	586.84	579.14	NA	581.02	NA	581.28	NA	581.28	NA	581.15	NA
MW-13	586.84	581.56	NA	NM	NM	NM	NM	NM	NM	NM	NM
MW-14	586.84	577.39	NA	NM	NM	NM	NM	NM	NM	NM	NM

NOTES:

- All elevations are measured in feet.

NM = not measured.

NA = not applicable; these wells did not contain product.

TABLE 26
SUMMARY OF LABORATORY ANALYTICAL RESULTS - SOIL SAMPLES
DNAPL RECOVERY IRM PILOT TEST
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

SAMPLE ID	WCS-01	WC-DRUMS 5,6,7,11,12,13
SAMPLE DATE	8/24/2004	11/15/2004
TCL VOCs (UG/KG)		
Acetone	31 J	990
2-Butanone	-----	460
Carbon Disulfide	4 J	2 J
Chloroethane	-----	6
Chloroform	-----	45
1,1-Dichloroethane	69 D	7,500 D
1,2-Dichloroethane	19	160
1,1-Dichloroethene	14 DJ	2,000 DJ
1,2-Dichloroethene (total)	-----	110
Ethylbenzene	-----	4,400 DJ
Methylene Chloride	7 B	10
4-Methyl-2-Pentanone	-----	28
Tetrachloroethene	-----	110
Toluene	3 J	110
1,1,1-Trichloroethane	46 D	940,000 D
1,1,2-Trichloroethane	-----	56
Trichloroethene	25	310,000 D
Vinyl Chloride	16	4 J
Total Xylenes	-----	62,000 D
TCL SVOCs (UG/KG)		
Benzo(k)fluoranthene	-----	260 J
Fluoranthene	180 J	190 J
Phenanthrene	140 J	-----
Pyrene	200 J	-----
Wet Chemistry		
Leachable pH	8.30	NS
% Chlorine	NS	NS

NOTES:

TCL VOCs = Target Compound List Volatile Organic Compounds

TCL SVOCs = Target Compound List Semi-Volatile Organic Compounds

UG/KG = micrograms per kilogram.

----- = compound was not detected above the laboratory quantitation limit.

J = indicates an estimated value.

D = indicates that the result was identifed in an analysis at a secondary dilution factor.

B = inidicates that the analyte was found in the associated blank as well as the sample.

NS = not sampled for this parameter.

- Only those analytes that were detected in at least one sample are presented.

TABLE 27
SUMMARY OF LABORATORY ANALYTICAL RESULTS - LIQUID SAMPLES
DNAPL RECOVERY IRM PILOT TEST
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

SAMPLE ID SAMPLE DATE	DNAPL AQUEOUS 9/9/2004	DNAPL PRODUCT 9/9/2004	CARBON UNIT #1-#2 9/20/2004	WC-GAC LIQUID 11/15/2004
TCL VOCs (UG/L or UG/KG)				
Acetone	7,900	-----	NS	-----
2-Butanone	3,100	-----	NS	97
Carbon Disulfide	-----	8,400 J	NS	2.7 J
Chloroethane	-----	-----	NS	-----
Chloroform	450 J	42,000	NS	-----
1,1-Dichloroethane	18,000	1,200,000 E	NS	1.6 J
1,2-Dichloroethane	2,000	-----	NS	-----
1,1-Dichloroethene	17,000	7,500,000 E	NS	2.7 J
cis-1,2-Dichloroethene	1,200	120,000	NS	-----
Ethylbenzene	320 J	430,000	NS	-----
Methylene Chloride	-----	-----	NS	-----
4-Methyl-2-Pentanone	-----	-----	NS	-----
Tetrachloroethene	-----	130,000	NS	-----
Toluene	200 J	120,000	NS	-----
1,1,1-Trichloroethane	760,000 D	450,000,000 D	NS	29
1,1,2-Trichloroethane	280 J	-----	NS	-----
Trichloroethene	210,000 D	120,000,000 D	NS	12
Vinyl Chloride	-----	-----	NS	-----
Total Xylenes	1,900	-----	NS	-----
RCRA Metals (MG/L)				
Barium	0.23	NS	NS	NS
Wet Chemistry				
pH	6.62	NS	< 1	4.04
Total Organic Carbon (MG/L)	261	NS	NS	NS
Chloride (MG/L)	NS	NS	850,000	NS
% Chlorine	NS	2.7	NS	NS

NOTES:

TCL VOCs = Target Compound List Volatile Organic Compounds.

RCRA Metals = Resource Conservation and Recovery Act Metals (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver and Mercury).

UG/L = micrograms per liter.

UG/KG = micrograms per kilogram.

MG/L = milligrams per liter.

----- = compound was not detected above the laboratory quantitation limit.

J = indicates an estimated value.

D = indicates that the result was identifed in an analysis at a secondary dilution factor.

E = indicated that the concentration exceeds the calibration range of the instrument.

NS = not sampled for this parameter.

- Only those analytes that were detected in at least one sample are presented.

TABLE 28
SUMMARY OF LABORATORY ANALYTICAL RESULTS - AIR SAMPLES
LOW VACUUM - ENHANCED DNAPL AND GROUND WATER PUMPING
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

SAMPLE ID	VIC-1-1625	VEC-1-1625	VIC-1-2235	VEC-1-2235
SAMPLE DATE	11/16/2004	11/16/2004	11/16/2004	11/16/2004
ELAPSED TIME (MIN)	320	320	690	690
VOCs (PPM)				
1,1-Dichloroethane	24	-----	20	-----
1,1-Dichloroethene	86	-----	82	-----
cis-1,2-Dichloroethene	-----	-----	5.2	-----
trans-1,2-Dichloroethene	86	-----	81	-----
Ethylbenzene	-----	-----	7.4	-----
Toluene	-----	-----	4.2	-----
1,1,1-Trichloroethane	800	-----	1200	-----
Trichloroethene	600	-----	1100	-----
o-Xylene	24	-----	23	-----
m+p-Xylene	88	-----	85	-----
TOTAL VOCs (PPM)	1708	0.0	2607.8	0.0

<u>NOTES:</u>

Elapsed time = time elapsed from the start of the test, or 0.

VOCs = Volatile Organic Compounds.

PPM = parts per million.

----- = compound was not detected above the laboratory quantitation limit.

- Only those analytes that were detected in at least one sample are presented.

TABLE 29
SUMMARY OF PILOT TEST RESULTS
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

TEST IDENTIFICATION	High Vacuum Dual-Phase Extraction TEST #1	DNAPL Pumping TEST #2	Ground Water Pumping TEST #3	Simultaneous DNAPL Ground Water Pumping TEST #4	Low vacuum-Enhanced DNAPL and Ground Water Pumping TEST #5
Pumping Well ID	RW-2	RW-1 *, RW-2	RW-2	RW-2	RW-2
Duriation of Pumping (minutes)	40	215	210	484	705
Volume of Ground Water Recovered (gallons)	36.3	NA	28.5	41.4	92
Average Ground Water Recovery Rate (gpm)	0.91	NA	0.14	0.09	0.13
Maximum Ground Water Drawdown (feet)	NM	1.50	1.96	5.86	4.68
Volume DNAPL recovered (gallons)	21.8	39.8	NA	28.6	35
Average DNAPL Recovery Rate (gpm)	0.54	0.18	NA	0.06	0.05
Maximum DNAPL drawdown (feet)	NM	5.27	-2.02	5.40	5.44
Maximum Estimated ROI - Ground Water (feet)	NM	18	22	21	21
Minimum Estimated ROI - Ground Water (feet)	NM	4	7	4	5
Maximum Estimated ROI - DNAPL (feet)	NM	7	17	6	13
Minimum Estimated ROI - DNAPL (feet)	NM	6	6	6	4
Recovery Period (minutes)	NA	172	113	145	0
Percent Recovery of Ground Water in Pumping Well	NA	78	63	68	NA
Percent Recovery of DNAPL Product in Pumping Well	NA	25	6/2 **	33	NA
Types of Waste Media Generated (see footnotes)	1,2,3	2	1	2,3	1,2,3
Significant Operational Issues Encountered?	Yes	No	No	No	No

NOTES:

NM = not measured.

NA = not applicable; due to data recorded in the field.

GAC = granular actived carbon units.

Waste Media Generated: 1= Drummed Ground Water; 2= Drummed DNAPL Product, 3= Granular Active Carbon Vessil was utilized.

RH = Relative humidity.

ROI = Radius of Influence.

* All data presented for Test #2 was obtained during the pumping of RW-2.

** After pumping ceased, the DNAPL elevation continued to fluctuate, rising to a maximum of -2.14 feet, or 6 % of the maximum drawdown at the end of the pumping period; between this time and the end of data measurement, the DNAPL level fell from -2.14 feet to -2.10 feet, or 2%

TABLE 30
COMPARISON OF POTENTIAL DNAPL RECOVERY SYSTEMS
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

MANUFACTORY	Geotech/ORS Environmental Equipment			
PUMP MODEL	3.5 Auto Reclaimer Pump 36" LA	3.5 Auto Reclaimer Pump 36"	3.5 Auto Reclaimer Pump 48"	3.5 Auto Reclaimer Pump 60"
Specifications				
Mode of Operation	pneumatic	pneumatic	pneumatic	pneumatic
Operates	automatically- no control required	automatically- no control required	automatically- no control required	automatically- no control required
Power Required	None Required	None Required	None Required	None Required
Loading	Bottom	Bottom	Bottom	Bottom
Head	> 500ft	500ft	500ft	500ft
Min. Activation Level	13	33	39	51
Min Well ID (inches)	4	4	4	4
Operation Pressure rates	5-275psi	5-275psi	5-275psi	5-275psi
Volume/Cycle (gallons)	0.114	0.54	0.93	1.45
Max. Pump Rate (gpm)	1.17	16.25	16.50	18.00
Pump Particulate	Yes	Yes	Yes	Yes
Housing Material	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Outside Diameter (inches)	3.5	3.5	3.5	3.5
Length (inches)	38.5	45	56.5	69
Std. Fittings	SS Barb	SS Barb	SS Barb	SS Barb
Cost	$1,975.00	$1,975.00	$2,000.00	$225.00
Options (cost if available)				
Std well Caps 4 inch	$50.00	$50.00	$50.00	$50.00
Flanged Well Caps 4 inch	$160.00	$160.00	$160.00	$160.00
Bound Vent Tubing	$6.75 per ft	$6.75 per ft	$6.75 per ft	$6.75 per ft
Filter/ Regulator	$150.00	$150.00	$150.00	$150.00
Pneumatic Cycle Counter	$165.00	$165.00	$165.00	$165.00
Timer/ controller	---	---	---	---
Accessories per well	---	---	---	---
Contact Information				
Phone	800-833-7958	800-833-7958	800-833-7958	800-833-7958
Website	geotechenv.com	geotechenv.com	geotechenv.com	geotechenv.com
Comments	Total Fluid Pump, runs on a float switch with in pump.			
Recommendiation	Rick Lewis has been looking into ORS pumps and recovery systems			

TABLE 30 (Continued)
COMPARISON OF POTENTIAL DNAPL RECOVERY SYSTEMS
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

MANUFACTORY	QED Environmental Systems			
PUMP MODEL	Pulse Pump LP1001	Pulse Pump LP1301	Pulse Pump LP1401	Pulse Pump LP1601
Specifications				
Mode of Operation	pneumatic displacement	pneumatic displacement	pneumatic displacement	pneumatic displacement
Operates	Auto (C100 Digital controller)	Auto (C100 Digital controller)	Auto (C100 Digital controller)	Auto (C100 Digital controller)
Power Required	110VAC and supplies 3VDC	110VAC and supplies 3VDC	110VAC and supplies 3VDC	110VAC and supplies 3VDC
Loading	Bottom	Bottom	Bottom	Bottom
Head	230	230	230	230
Min. Activation Level	2.88	1.66	1.25	2.88
Min Well ID (inches)	2	2	2	2
Operation Pressure rates	40-100psi	40-100psi	40-100psi	40-100psi
Volume/Cycle (gallons)	0.17	0.09	0.08	0.53
Max. Pump Rate (gpm)	3.00	2.00	1.80	7.50
Pump Particulate	Yes	yes	Yes	Yes
Housing Material	PVC	Stainless Steel/ Teflon	Brass	Nylon
Outside Diameter (inches)	---	---	---	---
Length (inches)	15.5	20	20	49.5
Std. Fittings	Compression Nylon	Compression SS	Brass Barb	Compression Nylon
Cost	$505.00	$620.00	$465.00	$715.00
Options (cost if available)				
Std well Caps 4 inch	---	---	---	---
Flanged Well Caps 4 inch	---	---	---	---
Bound Vent Tubing	---	---	---	---
Filter/ Regulator	---	---	---	---
Pneumatic Cycle Counter	---	---	---	---
Timer/ controller	$1,050	$1,050	$1,050	$1,050
Accessories per well	$400-500	$400-501	$400-502	$400-503
Contact Information				
Phone	866-223-0100	866-223-0100	866-223-0100	866-223-0100
Website	qedenv.com	qedenv.com	qedenv.com	qedenv.com
Comments	C100 can controll two pumps, with a pilot valve ($170), QED can work up a more accurate price			
	when specific needs are addressed.			
Recommendiation				

TABLE 30 (Continued)
COMPARISON OF POTENTIAL DNAPL RECOVERY SYSTEMS
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

MANUFACTORY	Xitech Instruments, Inc.		Geotech/ ORS Environmental Equipment
PUMP MODEL	2" Smart Pump	4" Smart Pump	Small Diameter Probe Scavenger
Specifications			
Mode of Operation	pneumatic diaphram	pneumatic diaphram	Product Recovery System
Operates	auto (ADJ2550ES)	auto (ADJ2550ES)	---
Power Required	110	110	230V single or 230/460V Three phase
Loading	Bottom	Bottom	Bottom
Head	200	200	150 ft
Min. Activation Level	---	---	----
Min Well ID (inches)	2	4	4*
Operation Pressure rates	35-125psi	35-125psi	---
Volume/Cycle (gallons)	Adjustable	Adjustable	---
Max. Pump Rate (gpm)	0.20	1.00	0.50
Pump Particulate	Yes	Yes	No
Housing Material	Al (w/ protective coating)	Al (w/ protective coating)	---**
Outside Diameter (inches)	1.8	3.5	3.5
Length (inches)	9	9	41
Std. Fittings	barb or compression	barb or compression	---
Cost	$1,750.00	$1,750.00	$6,264.00
Options (cost if available)			
Std well Caps 4 inch	---	---	---
Flanged Well Caps 4 inch	---	---	---
Bound Vent Tubing	---	---	---
Filter/ Regulator	---	---	---
Pneumatic Cycle Counter	---	---	---
Timer/ controller	$2,495.00	$2,495.00	Included in Above $$
Accessories per well	---	---	$180.00
			$275.00
Contact Information			
Phone	888-867-9483	888-867-9483	800-833-7958
Website	xitechinc.com	xitechinc.com	geotechenv.com
Comments	Pump is designed to recover 2/3 of verticle DNAPL colume to		* Will fit in 4" well, however manufacture
	prevent recovery of water. Xitech will customize pump		suggests 6" well. They have had the system
	to suit site. Coated aluminium housing suited for chlorinated		get stuck in a 4" well.
	solvents. Controller have tank level shut off and can run 8 stations.		** made for clorinated solvents
Recommendiation			

TABLE 30 (Continued)
COMPARISON OF POTENTIAL DNAPL RECOVERY SYSTEMS
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

MANUFACTORY	Blackhawk Environmental Company			
PUMP MODEL	Electric Anchor Pump (101E)	Electric Anchor Pump (102E)	Electric Anchor Pump (103E)	Trident Model DT01
Specifications				
Mode of Operation	Piston Pump	Piston Pump	Piston Pump	pneumatic displacement
Operates	automatic	automatic	automatic	automatic
Power Required	230V single or 230/460V Three phase	230V single or 230/460V Three phase	230V single or 230/460V Three phase	
Loading	Bottom	Bottom	Bottom	Bottom
Head	280	120	60	880
Min. Activation Level	---	---	---	---
Min Well ID (inches)	4	4	4	3
Operation Pressure rates	---	---	---	25-280 psi
Volume/Cycle (gallons)	0.025	0.06	0.13	0.05
Max. Pump Rate (gpm)	0.3	0.7	1.6	10
Pump Particulate	Yes	Yes	Yes	Yes
Housing Material	Stainless Steel	Stainless Steel/ Aluminium	Stainless Steel/ Aluminium	Stainless Steel/ Aluminium
Outside Diameter (inches)	1.9	2.9	3.9	1.9
Length (inches)	13"	13"	13"	13"
Std. Fittings	Yes	Yes	Yes	Yes
Cost	$7,500.00	$8,000.00	$8,500.00	$4,000.00
Options (cost if available)				
Std well Caps 4 inch	---	---	---	---
Flanged Well Caps 4 inch	---	---	---	---
Bound Vent Tubing	---	---	---	---
Filter/ Regulator	---	---	---	---
Pneumatic Cycle Counter	---	---	---	---
Timer/ controller	Included in Above $$	Included in Above $$	Included in Above $$	Included in Above $$
Accessories per well	Included in Above $$	Included in Above $$	Included in Above $$	Included in Above $$
Contact Information				
Phone	630-469-4916	630-469-4916	630-469-4916	630-469-4916
Website	blackhawkco.com	blackhawkco.com	blackhawkco.com	blackhawkco.com
Comments	All Blackhawk Pumps are housed outside of well casing with will cut down on effect of DNAPL on pumps.			
	Price quotes are rough estimates and including control units and accessories required to fit the well.			
Recommendiation	Mark Seaman (ERM) has used Blackhawk pump and they have had a good operational history.			

TABLE 30 (Cc .nued)
COMPARISON OF POTENTIAL DNAPL RECOVERY SYSTEMS
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621

MANUFACTORY	Watson-Marlow Bredel Pumps		Bellows Metering Pump
PUMP MODEL	SPX25 Hosepump	520 series Auto/ Manual Pump	Dial-A-Flow 1.5" Model
Specifications			
Mode of Operation	Peristaltic Style Pump	Peristaltic Style Pump	Positive Displacement
Operates	auto/ manual	auto/ manual	auto/manual
Power Required	115/230 single or 230/460 three phase	115/230 V	115VAC
Loading	Peristaltic Style Pump	Peristaltic Style Pump	Bellows
Head	28	30 psi	11 (dry)/20 (wet)
Min. Activation Level	---	---	---
Min Well ID (inches)	1	1	1
Operation Pressure rates	---	---	20 psi
Volume/Cycle (gallons)	---	---	---
Max. Pump Rate (gpm)	11.00	0.93	630 ml/min
Pump Particulate	Yes	Yes	Yes
Housing Material	Galvanized Steel/ Cast Iron	Mis.	KEL-F
Outside Diameter (inches)	---	---	---
Length (inches)	---	---	9
Std. Fittings	1" 150# flange	---	0.5'
Cost	$4,040.00	$2265.00 to $4800.00	$850.00
Options (cost if available)			
Std well Caps 4 inch	---	---	---
Flanged Well Caps 4 inch	---	---	---
Bound Vent Tubing	---	---	---
Filter/ Regulator	---	---	---
Pneumatic Cycle Counter	---	---	---
Timer/ controller	---	---	---
Accessories per well	---	---	---
Contact Information			
Phone	315-638-4734		585-396-3340
Website	watson-marlow.com/watson-marlow/jumpenv.htm		force@forceproducts.com
Comments	The 520 series of peristaltic pump comes in several sets up which would be applicable. Both the hose and 520 series and have optional control unit, options in flex tubing and are regularly used in the chemical industry, waste water treatment, ect.		Corrosive Resistant, Dry Run Capability Self Priming, No Dynamic Seals Long, Maintenance-free Operation
Recommendiation	Jim Rocco (Melville) suggests a peristaltic pump is used, he also suggests staying away from air operated equipment. Melville may have a pump available to use, which is a explosion proof peristaltic pump. Dan Petersen (ERM- Veron Hills, IL) suggests a peristaltic.		C. Wunderlich recommended this pump based on cost, design, size, simplicity of maintenance & operation, and corrosion resistant parts.

Appendix A
Recovery Well and Vapor Monitoring Point Construction Logs

ERM

5788 Widewaters Parkway, Dewitt, NY 13214 (315) 445-2554

MONITORING WELL CONSTRUCTION LOG

WELL: RW-1

Project Name & Location: Greif Bros

Project No.: 0021621

Drilling Company: Nothnagle Drilling

Foreman: Jay Stockhlom

Surveyor:

Date and Time of Completion: 8/25/04 2320

Geologist: R. Santis

Water Level(s) *(ft below top of PVC casing)*

Date	Time	Level (feet)
26 Aug 04	2055	H2O 5.44 DAWPC 11.17

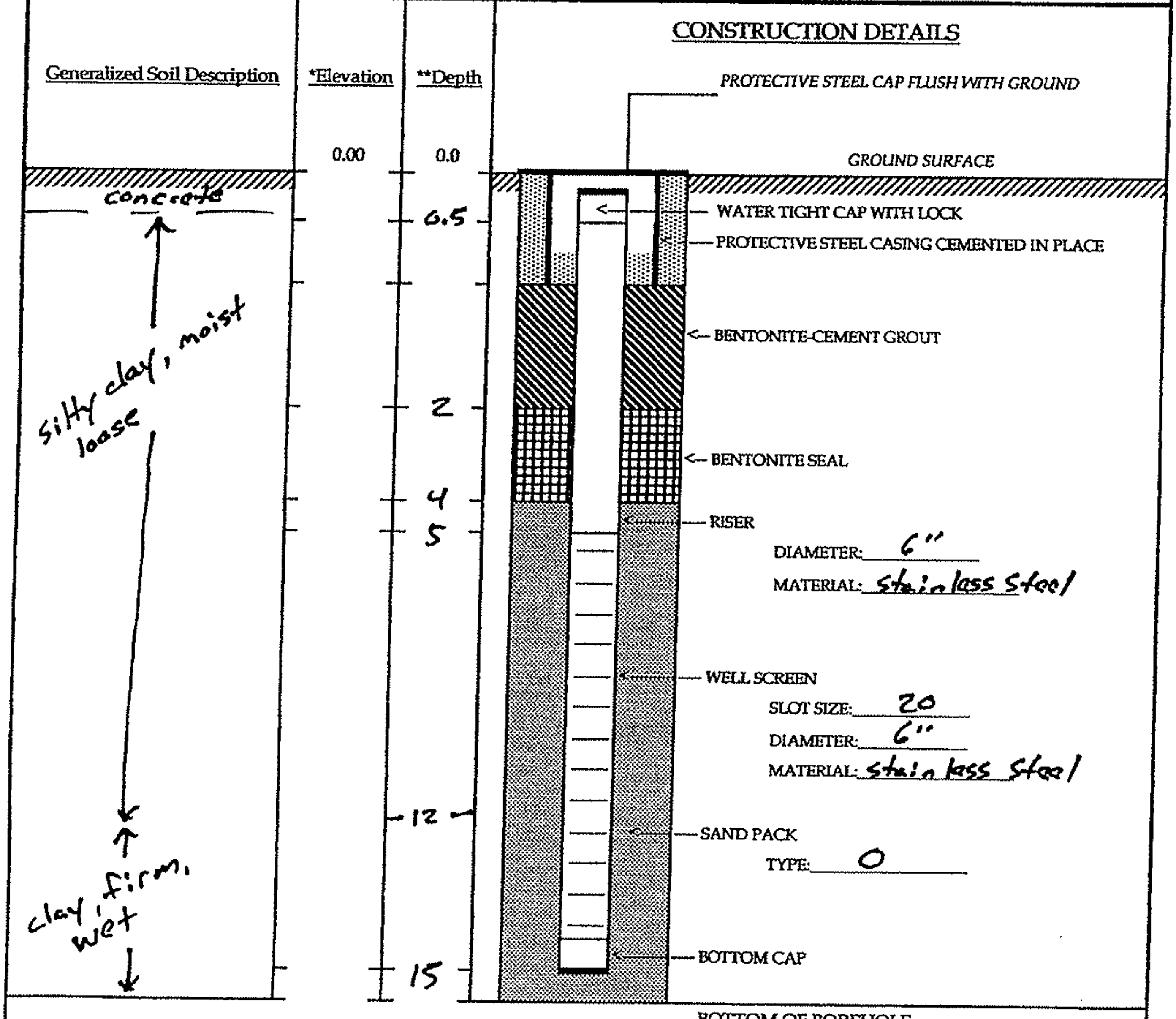
Site Elevation Datum (feet): —

Ground Elevation (feet): —

Top of Protective Steel Cap Elevation (feet): —

Top of Riser Pipe Elevation (feet): —

CONSTRUCTION DETAILS



RISER

DIAMETER: 6"

MATERIAL: stainless steel

WELL SCREEN

SLOT SIZE: 20

DIAMETER: 6"

MATERIAL: stainless steel

SAND PACK

TYPE: 0

BOTTOM OF BOREHOLE

REMARKS

* Elevation (feet) above mean sea level unless noted

** Depth in feet below ground surface

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ERM

WELL : RW-2

5788 Widewaters Parkway, Dewitt, NY 13214 (315) 445-2554

MONITORING WELL CONSTRUCTION LOG

Project Name & Location Greif Bros

Project No. 0021621

Drilling Company Nothnangle Drilling

Foreman Jay Stockhlom

Surveyor —

Date and Time of Completion 8/25/04 2300

Geologist R. Sants

Water Level(s) *(ft below top of PVC casing)*

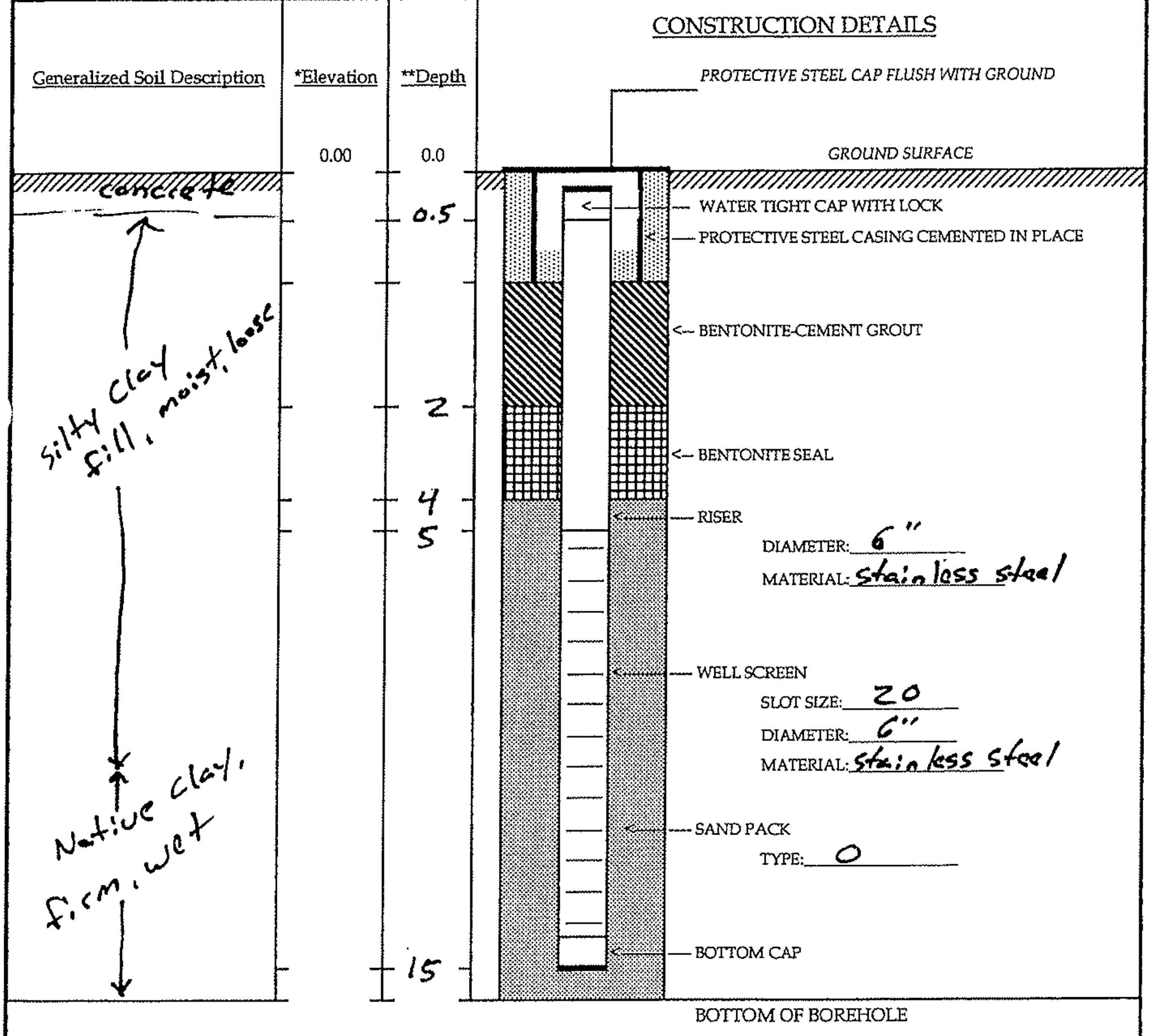
Date	Time	Level (feet)
26 Aug 04	1920	H_2O: 5.48 ONAPL 8.00

Site Elevation Datum (feet) —

Ground Elevation (feet) —

Top of Protective Steel Cap Elevation (feet) —

Top of Riser Pipe Elevation (feet) —



RISER

DIAMETER: 6"

MATERIAL: stainless steel

WELL SCREEN

SLOT SIZE: 20

DIAMETER: 6"

MATERIAL: stainless steel

SAND PACK

TYPE: 0

REMARKS

* Elevation (feet) above mean sea level unless noted

** Depth in feet below ground surface

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ERM

WELL : RW-3

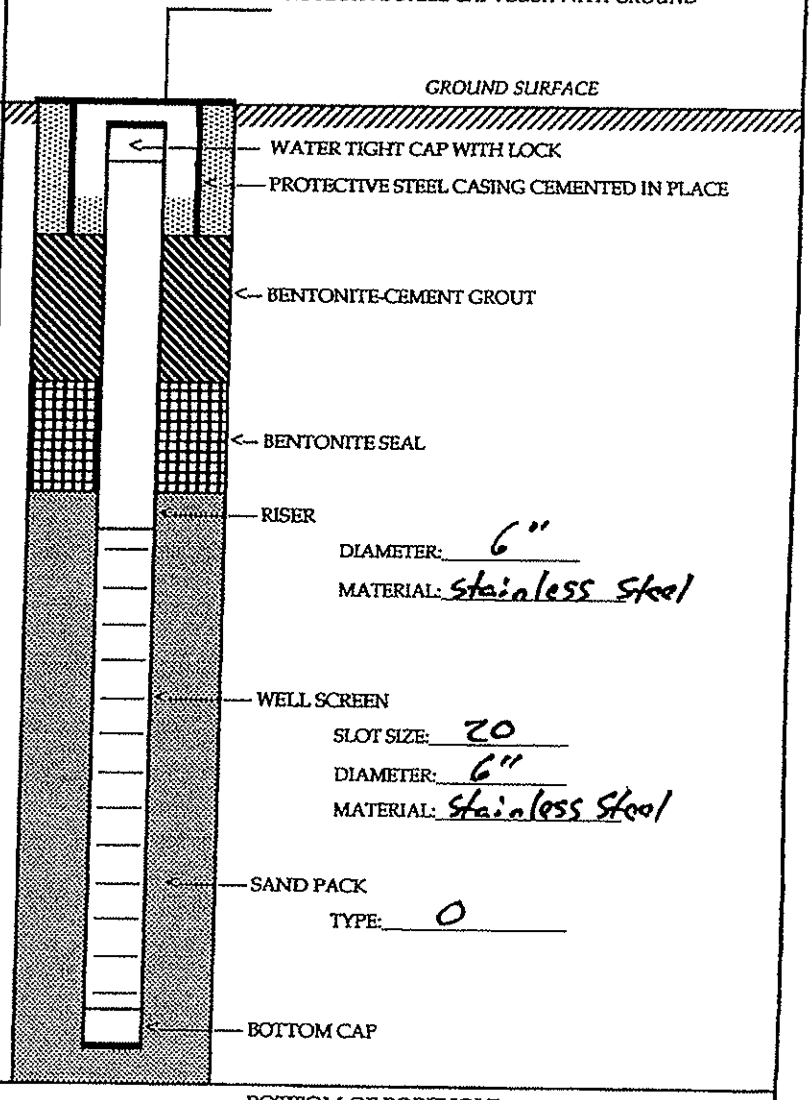
5788 Widewaters Parkway, Dewitt, NY 13214 (315) 445-2554

MONITORING WELL CONSTRUCTION LOG

Project Name & Location Greif Bros.	*Project No.* 0021621	*Water Level(s)* *(ft below top of PVC casing)*			*Site Elevation Datum (feet)* —
Drilling Company Nothnagle Drilling	*Foreman* Jay Stockhlem	Date	Time	Level (feet)	*Ground Elevation (feet)* —
Surveyor —		8/24/04	1710	14.14'	*Top of Protective Steel Cap Elevation (feet)* —
Date and Time of Completion 8/23/04 2300	*Geologist* R. Sents				*Top of Riser Pipe Elevation (feet)* —

Generalized Soil Description	*Elevation	**Depth
	0.00	0.0
concrete		0.5
Silty clay moist, loose		2
		4
		5
Red Brown, clay firm, moist		8
		15

CONSTRUCTION DETAILS



RISER
DIAMETER: 6"
MATERIAL: Stainless Steel

WELL SCREEN
SLOT SIZE: 20
DIAMETER: 6"
MATERIAL: Stainless Steel

SAND PACK
TYPE: 0

BOTTOM OF BOREHOLE

REMARKS

* Elevation (feet) above mean sea level unless noted   ** Depth in feet below ground surface

ERM

WELL: VMP-1

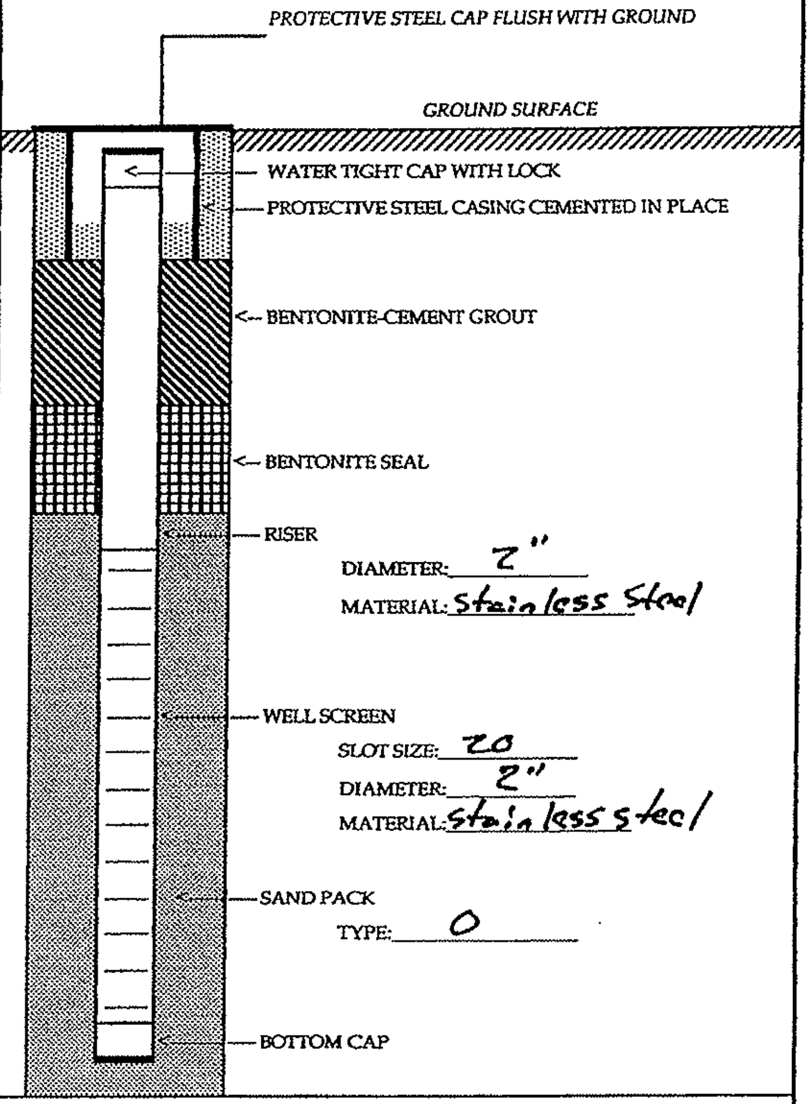
5788 Widewaters Parkway, Dewitt, NY 13214 (315) 445-2554

MONITORING WELL CONSTRUCTION LOG

Project Name & Location Greif Bros	*Project No.* 0021621	*Water Level(s)* *(ft below top of PVC casing)*			*Site Elevation Datum (feet)* —
Drilling Company Nothnagle	*Foreman* Jay Stockholm	Date	Time	Level (feet)	*Ground Elevation (feet)* —
Surveyor —		26 Aug 04	2050	Dry	*Top of Protective Steel Cap Elevation (feet)* —
Date and Time of Completion 8/26/04 1930	*Geologist* R. Sents				*Top of Riser Pipe Elevation (feet)* —

Generalized Soil Description	*Elevation	**Depth
	0.00	0.0
Concrete		
Silty sand Loose, moist		0.5
		2
		4
		5
		10

CONSTRUCTION DETAILS



RISER
DIAMETER: 2"
MATERIAL: Stainless Steel

WELL SCREEN
SLOT SIZE: 20
DIAMETER: 2"
MATERIAL: stainless steel

SAND PACK
TYPE: 0

BOTTOM OF BOREHOLE

REMARKS

* Elevation (feet) above mean sea level unless noted ** Depth in feet below ground surface

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ERM

WELL: VMP-2

5788 Widewaters Parkway, Dewitt, NY 13214 (315) 445-2554

MONITORING WELL CONSTRUCTION LOG

Project Name & Location: Greif Bros
Project No.: 0021671
Drilling Company: Nothnagle Drilling
Foreman: Jay Stockhlom
Surveyor: —
Date and Time of Completion: 8/25/04 2325
Geologist: R. Sents

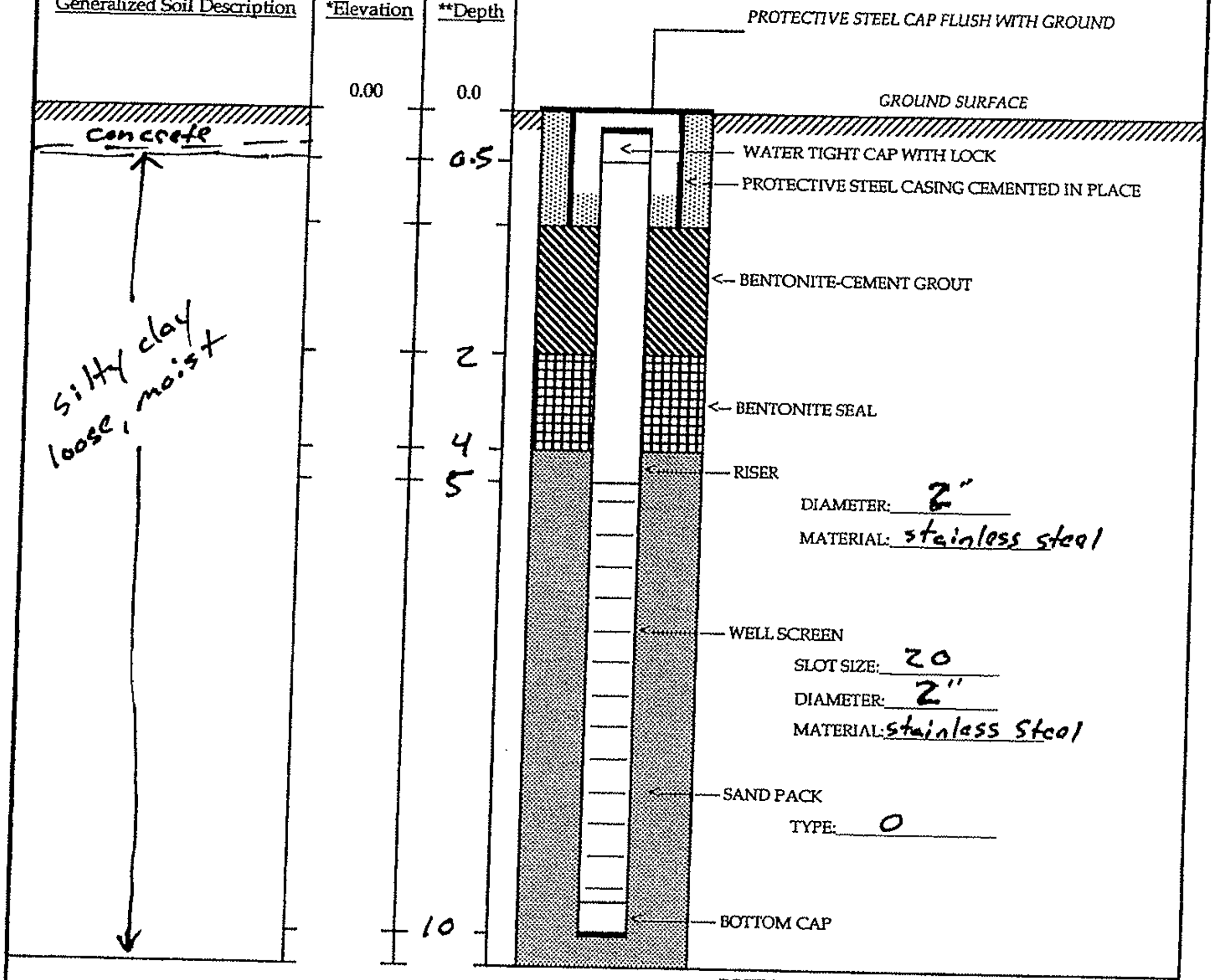
Water Level(s) (ft below top of PVC casing)

Date	Time	Level (feet)
26 Aug 04	1824	5.48
		No DNAPL

Site Elevation Datum (feet): —
Ground Elevation (feet): —
Top of Protective Steel Cap Elevation (feet): —
Top of Riser Pipe Elevation (feet):

CONSTRUCTION DETAILS

Generalized Soil Description | *Elevation | **Depth



RISER
DIAMETER: 2"
MATERIAL: stainless steel

WELL SCREEN
SLOT SIZE: 20
DIAMETER: 2"
MATERIAL: stainless steel

SAND PACK
TYPE: 0

BOTTOM OF BOREHOLE

REMARKS

* Elevation (feet) above mean sea level unless noted

** Depth in feet below ground surface

ERM

WELL: VMP-3

5788 Widewaters Parkway, Dewitt, NY 13214 (315) 445-2554

MONITORING WELL CONSTRUCTION LOG

Project Name & Location: Greif Bros.

Project No.: 0021621

Drilling Company: Nothnagle Drilling

Foreman: Jay Stockhlom

Surveyor: —

Date and Time of Completion: 8/24/04 1720

Geologist: R. Sents

Water Level(s) (ft below top of PVC casing)

Date	Time	Level (feet)
26 Aug 04	1725	Dry

Site Elevation Datum (feet): —

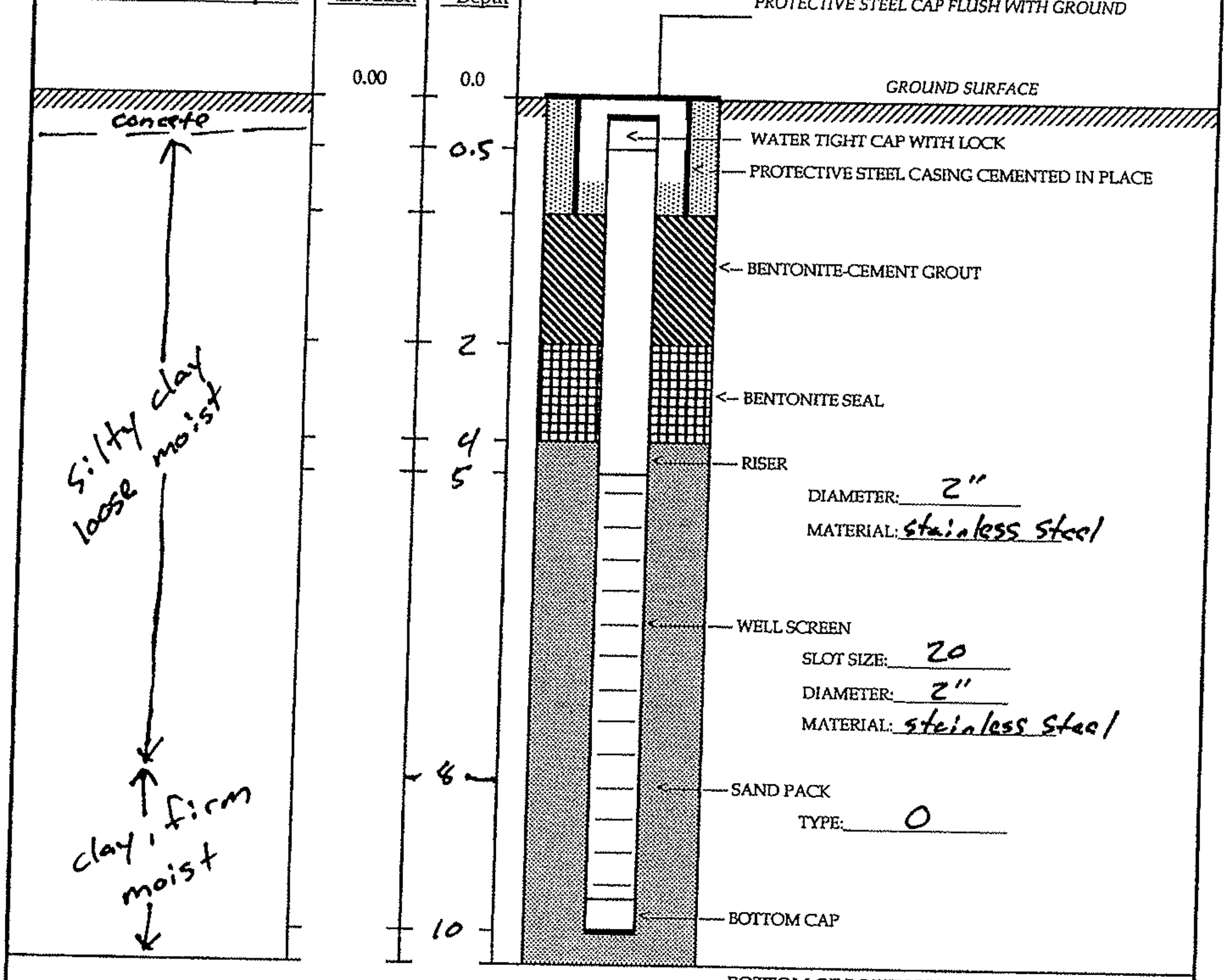
Ground Elevation (feet): —

Top of Protective Steel Cap Elevation (feet): —

Top of Riser Pipe Elevation (feet): —

CONSTRUCTION DETAILS

Generalized Soil Description | *Elevation | **Depth



RISER DIAMETER: 2"

MATERIAL: stainless steel

WELL SCREEN SLOT SIZE: 20

DIAMETER: 2"

MATERIAL: steinless steel

SAND PACK TYPE: 0

REMARKS

* Elevation (feet) above mean sea level unless noted

** Depth in feet below ground surface

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Appendix B
Pilot Test Data Sheets

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

Contractor: SLC
PROJECT NUMBER: 21621
Location: RW-2
Operator:
PROJECT NAME:
Equipment: VAC TRUCK.
Geologist: CHRIS.W, J.MOORE.

DATE/TIME
Date: 9/14/04
Time Start: 1727
Time Finish:
Note:

WEATHER OBSERVATIONS
Temperature: ~80°F
Precipitation: NONE
Wind: SOUTH EAST 10MPH
Ground Conditions: DRY

TEMP HUMIDITY FID.

	Time	Vac Truck	Gage-1(h)	Gage-2(a)	RW-1	RW-2	RW-3	VMP-1	VMP-2	VMP-3	MW-12	MW-20	MW-13	MW-14	mw-20
START	1727														
	1731	19 Hg	9.5	0.0	82.3	90.6		204.5							36-1/19 ft³/m.
FF TO	1752	19 Hg.	10.5	6.0	—	—	—	—	—	—	—	—	—	—	
LACE EE IW	1810	19 Hg.	7.5	7.0	—	—	—	—	—	—	—	—	—	—	
SAMPLE RT	/														
ESTART	1825	19 Hg.	6.0	0.0											0.20
	1855	19	6.5	4.5	1.3			1.6	5.5						
	1905														

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: Greif Bros.
PROJECT NAME: 0021621
Geologist: C. Wunderlich
R. Sonts

Location: Greif Bros
2122 Colvin Blvd.
Tonawanda, NY

DATE/TIME

Date: 9/20/04
Time Start: 1833
me Finish:
Note:

WEATHER OBSERVATIONS

Temperature:
Precipitation:
Wind:
Ground Conditions:

	Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW	
	1702	5.30	8.32	15.0	6.68	5.30	9.96	15.0	5.04	5.43	8.32	9.97	
start	1838	5.48	8.50	15.0	6.50								
	1843	5.50	8.50	15.0	6.50								
	1848	5.53	8.54	15.0	6.46								
	1902	5.50	8.56	15.0	6.44								
	1910	5.62	8.64	15.0	6.36								
	1920	5.60	8.63	15.0	6.37								RS
	1933	5.57	8.60	15.0	6.40								0.03
	1951	6.15	9.30	15.0	5.70								
restart	2022	6.28	9.52	15.0	5.48								
	2032	6.65	9.94	15.0	5.06								
	2042	6.75	10.12	15.0	4.88								
	2045									5.46	8.33	9.97	
	2048					5.29	9.90	15.0	5.10				0.15ft
	2052	6.64	10.10	15.0	4.90								
RS	~~2102~~	~~6.72~~											
	2102	6.72	10.23	15.0	4.77								
	2112	6.62	10.18	15.0	4.82								
restart	2127	6.78	10.40	15.0	4.60								
	2132	7.40	11.23	15.0	3.77								0.22ft
	2137	8.00	11.80	15.0	3.20								
	2142	8.30	12.10	15.0	2.90								
	2145									5.53	8.33	9.97	
	2146					5.30	9.93	15.0	5.07				
	2147	8.40	12.28	15.0	2.72								
	2152	8.50	12.52	15.0	2.48								0.32
	2157	8.54	12.65	15.0	2.35								
	2207	8.65	13.10	15.0	1.90								
	2211	9.37	13.88	15.0	1.12								
	2216	9.73	14.20	15.0	0.80								0.33
stop	2221	9.90	14.30	15.0	0.70								
	2240	9.65	14.05	15.0	0.95	5.33	9.90	15.0	5.10	5.60	8.34	9.97	

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros.
Geologist:

Location: Greif Bros.
2122 Colvin Blvd.
Tonawanda, NY

DATE/TIME
Date:
Time Start:
me Finish:
Note:

WEATHER OBSERVATIONS
Temperature:
Precipitation:
Wind:
Ground Conditions:

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW
2245	9.50	14.0	15.0	1.00							
2250	9.40	13.95	15.0	1.05							
2255	9.32	13.87	15.0	1.13							
2300	9.14	13.84	15.0	1.16							
2305	9.06	13.79	15.0	1.21							
2310	8.98	13.76	15.0	1.24							
2315	8.88	13.73	15.0	1.27							
2320	8.79	13.69	15.0	1.31							
2325	8.69	13.68	15.0	1.32							
2330	8.61	13.67	15.0	1.33							
2350	8.25	13.57	15.0	1.43							

METEOROLOGICAL DATA

Page 2 of

Project No.: 0021621
Project Name: Greif Bros - DNAPL IRM

ERM

Site Location: Tonawanda NY
Work Task: DNAPL - IRM -

Date	Time (24-hrs)	Duration (min)	Collected By	Temperature (degrees F)	Barometric Pressure (in)	Rel. Humidity (percent)	Wind (dir/speed-mph)	Precipitation (type/amount)
9-20-04	915	~	CW	59.9°	29.68	44%	173°/ 5.4	None
9-20-04	11:00	~	CW	76.1°	29.68	33%	119°/ 3.6	None
9-20-04	1351	~	CW	77.4°	29.62	33%	353°/1.2	None
9-20-04	1515	~	RS	77.9°	29.62	32%	12°/ 4.0	None
9-20-04	1203	~	RS	66.7	29.56	48%	151°/0.0	None
9-21-04	952	~	CW	71.4	29.59	47%	241°/6.7	None.

1 of 2

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment
PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: C. Wunderlich
R. Sents
Location: Greif Bros
2122 Colvin Blvd.
Tonawanda, NY

DATE/TIME
Date: 22 Sept. 04
ime Start: 1552
me Finish:
Note: Product in UST before start 3 3/4"

WEATHER OBSERVATIONS
Temperature: 76.3°f
Precipitation: None
Wind: 196° / 9.8mph
Ground Conditions: moist

- lost power 1710
- Pump restarted 1718 from different power source
- Pump stop 1725 flex tube Δ
- Pump restart ~~1730~~ 1730

	Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW	
spaed 2	1552	5.32	12.26	14.99	2.73	5.30	9.43	15.0	5.57	5.46	8.35	9.97	
	1557					5.73	10.03	15.0	4.97				
	1603					5.94	10.40	15.0	4.60				
	1608					6.01	10.56	15.0	4.44				
	1613					6.07	10.66	15.0	4.34				
	1619					6.11	10.80	15.0	4.20				
	1624					6.11	10.89	15.0	4.11				
	1629					6.11	10.96	15.0	4.04				
	1634					6.09	11.01	15.0	3.99				
	1639					6.04	11.02	15.0	3.98				
	1645					6.02	11.06	15.0	3.94				
	1650					6.01	11.08	15.0	3.92				
	1655					5.98	11.10	15.0	3.90				
	1656									5.66	8.33	9.97	4 1/4" product in tank
	1658	5.34	12.25	14.99	2.74								
ew speed 8	1708	.25				5.94	11.12	15.0	3.88				
	1720					5.88	11.15	15.0	3.85				
mp stoped	1725					5.88	11.19	15.0	3.81				
restart peed 5	1733					6.04	11.48	15.0	3.52				4 1/2" in ast
	1738					6.30	11.73	15.0	3.27				
	1743					6.40	11.92	15.0	3.08				
	1754					6.44	12.05	15.0	2.95				
paed 8	1759					6.45	12.16	15.0	2.84				
	1805					6.45	12.22	15.0	2.78				
	1810					6.40	12.30	15.0	2.70				
	1813					6.35	12.32	15.0	2.68				
	1817					5.30	12.35	15.0	2.65				
	1822					6.26	12.36	15.0	2.64				
	1827					6.26	12.38	15.0	2.62				
	1834					6.22	12.40	15.0	2.60				
	1837									5.77	8.31	9.97	
	1839	5.36	12.22	14.99									5 1/8" product in aST

- Pump shut down @ 1842 to Δ Masterflex tubing

2 of 2

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: C. Wunderlich
R. Sonts

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME

Date: 22 Sept 04
Time Start: 1552
me Finish: 2244
Note: pumping stopped at 1950

WEATHER OBSERVATIONS

Temperature: 76.3 °F
Precipitation: None
Wind: 196°/ 9.8mph
Ground Conditions: moist

- Pump restarted @ 1846
- Pump stopped @ 1925 to Δ flex tubing
- Pump restarted @ 1931 speed 10

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW
1850					6.40	12.80	15.00	2.20			
1856					6.58	13.10	15.00	1.90			
1901					6.60	13.25	15.00	1.75			
1906					6.58	13.35	15.00	1.65			
1912					6.51	13.40	15.00	1.60			
1917					6.47	13.41	15.00	1.59			
1925					6.40	13.43	15.00	1.57			
1934					6.58	13.85	15.00	1.15			
1939					6.80	14.42	15.00	0.58			
1950					6.76	14.70	15.00	0.30			
						Pump Stopped					
2000					6.51	14.66	15.00				
2002									5.87	8.31	9.97
2004	5.40	12.22	14.99								
2011					6.25	14.30	15.00	0.70			
2017					6.17	14.25	15.00	0.75			
2024					6.15	14.17	15.00	0.83			
2030					6.11	14.10	15.00	0.90			
2040					6.01	13.94	15.00	1.06			
2050					5.88	13.86	15.00	1.14			
2104					5.86	13.73	15.00	1.27			
2120					5.78	13.62	15.00	1.38			
2140					5.73	13.53	15.00	1.47			
2200					5.68	13.32	15.00	1.68			
2220	RS				5.64	13.39	15.00	1.61			
2244					5.63	13.37	15.00	1.63			
						End of Pump Test					

RW-2
1 of 3

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Sents
C Wunderlich

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME

Date: 10/12/04
Time Start: 1650
me Finish: 2020
Note:

WEATHER OBSERVATIONS

Temperature: 73.4°f
Precipitation: none
Wind: 288° 8.3mph
Ground Conditions: dry

- 1644 Tank level before test: 5⅞in
- 1714 Tank level product to 5⅞ water to 6½"
1741 Tank level Product 5⅞" water 7"
1815 Tank level Product 5⅞ water 7⅜"

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TØP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TØP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW	Tank leve
1547					5.26	9.24	14.98	5.74				
1553									5.43	8.31	9.99	
1600	5.28	10.90	14.98	4.08								
1650					Water Recovery Started							5⅞
1655					5.85	9.23	14.98	5.75				
1700					6.30	9.25	14.98	5.73				
1705					6.48	9.21	14.98	5.77				
1710					6.75	9.22	14.98	5.76				
1711									5.62	8.34	9.99	
1713	5.31	10.90	14.98	4.08								
1714												6½"
1715					7.00	9.16	14.98	5.82				
1720					7.17	9.06	14.98	5.92				
1727					7.18	8.98	14.98	6.00				
1732					7.20	8.88	14.98	6.10				
1737					7.20	8.76	14.98	6.22				
1739									5.80	8.32	9.99	
1740	5.31	10.90	14.98	4.08								
1741												7"
1742					7.18	8.70	14.98	6.28				
1747					7.20	8.61	14.98	6.37				
1754					7.20	8.53	14.98	6.45				
1800					7.20	8.45	14.98	6.53				
1805					7.20	8.37	14.98	6.61				
1808	~~5.32~~ RS	~~10.90~~							5.85	8.33		
1809	5.32	10.90	14.98	4.08								
1810					7.20	8.31	14.98	6.67				
1815					7.20	8.26	14.98	6.72				7⅜"
1820					7.20	8.23	14.98	6.75				
1825					7.22	8.15	14.98	6.83				
1832					7.21	8.11	14.98	6.87				
1837					7.20	8.05	14.98	6.93				

notes: - At start of pumptest water intake set at 7.1ft below casing.
- Product intake set @ 12.66ft below ~~[illegible]~~ RS casing.

RW-2
2 of 3

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Sents
C. Wunderlich

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME

Date: 10/12/04
ime Start: 1650
me Finish: 2020
Note:

WEATHER OBSERVATIONS

Temperature:
Precipitation:
Wind:
Ground Conditions:

note: 8½" in tank when water recovery finished

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TØP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TØP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW	Tank level inch
1842					7.20	7.99	14.98	6.99				
1843									5.96	8.33	9.99	
1844	5.35	10.90	14.98	4.08								
1846												7 5/8
1847					7.20	7.96	14.98	7.02				
1852					7.20	7.94	14.98	7.04				
1859					7.21	7.87	14.98	7.11				
1907					7.22	7.80	14.98	7.18				
1913					7.21	7.76	14.98	7.22				
1918					7.22	7.71	14.98	7.27				
1923					7.22	7.66	14.98	7.32				
1924									5.97	8.36	9.99	
1925	5.37	10.90	14.98	4.08								
1927												8 1/8
1929					7.22	7.63	14.98	7.35				
1935					7.22	7.57	14.98	7.41				
1940					7.22	7.52	14.98	7.46				
1946					7.22	7.50	14.98	7.48				8 1/4
1951					7.22	7.45	14.98	7.53				
1956					7.22	7.42	14.98	7.56				
1957									6.00	8.36	9.99	
1959	5.40	10.90	14.98	4.08								
2000												8 3/8
2001					7.22	7.38	14.98	7.60				
2007					7.22	7.32	14.98	7.66				
2013					7.22	7.27	14.98	7.71				
2019					—	7.22	14.98	7.76				
2020					Pump turned off							8 1/2
2021					7.18	7.22	14.98	7.76				
2022					7.16	7.23	14.98	7.75				
30 sec 2022.5					7.14	7.24	14.98	7.74				
30 sec 2023					7.12	7.24	14.98	7.74				

RW-2
3 of 3

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Sants
C Wunderlich

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME

Date: 10/12/04
ime Start: 1650
me Finish: 2020
Note:

WEATHER OBSERVATIONS

Temperature:
Precipitation: Same
Wind:
Ground Conditions:

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW
2024					7.10	7.23	14.98	7.75			
2025					7.08	7.23	14.98	7.75			
2026					7.05	7.23	14.98	7.75			
2031					6.94	7.20	14.98	7.78			
2032									6.00	8.32	9.99
2033	5.40	10.90	14.98	4.08							
2036					6.82	7.18	14.98	7.80			
2041					6.75	7.17	14.98	7.81			
2042									6.00	8.32	9.97
2043	5.40 RS	10.90	14.98	4.08							
2046					6.66	7.15	14.98	7.83			
2051					6.60	7.14	14.98	7.84			
2056					6.53	7.14	14.98	7.84			
2057									5.97	8.31	9.99
2059	5.41	10.90	14.98	4.08							
2101					6.46	7.14	14.98	7.84			
2107					6.40	7.13	14.98	7.85			
2112					6.35	7.12	14.98	7.86			
2113									5.95	8.31	9.99
2114	5.42	10.89	14.98	4.09							
2117					6.29	7.11	14.98	7.87			
2123					6.25	7.11	14.98	7.87			
2128					6.21	7.10	14.98	7.88			
2132					6.19	7.10	14.98	7.88			
2133									5.89	8.31	9.99
2136	5.43	10.90	14.98	4.08							
2137					6.14	7.11	14.98	7.87			
2142					6.12	7.11	14.98	7.87			
2152					6.08	7.12	14.98	7.85			
2202					6.01	7.13	14.98	7.84			
2214					5.98	7.14	14.98	7.83			
2216									5.88	8.31	9.99
2218	5.43	10.88	14.98	4.10							

RW-2
1 of 6

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment
PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Sonts
C. Wunderlich
Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME
Date: 10/13/04
Time Start: 1407
me Finish: 2211
Note:

WEATHER OBSERVATIONS
Temperature: 71.6°F
Precipitation: none
Wind: 122°/ 4.0mph
Ground Conditions: Dry

* Level in Recovery tank to top of liquid see field book for addition info.
- Pumps start at speed 6

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW	Tank level
1327									5.53	8.30	9.99	
1328	5.38	10.89	14.98	4.09								
1329					5.42	7.68	14.98	7.30				
1407	5.38	10.89	14.98	4.09	5.42	7.68	14.98	7.30	5.53	8.30	9.89	3.12ft
1407					5.56	7.68	14.98	7.30	5.50			
1408					5.76	7.78	14.98	7.20	5.46			
1409					5.81	7.79	14.98	7.19	5.47			
1410					5.87	7.85	14.98	7.13	5.48			
1411					5.93	7.87	14.98	7.11	5.48			
1412					6.00	7.89	14.98	7.09	5.48			
1413					6.08	7.93	14.98	7.05	5.50			
1414					6.17	7.96	14.98	7.02	5.50			
1415					6.26	8.00	14.98	6.98	5.50			
1416					6.35	8.05	14.98	6.93	5.52			
1417					6.43	8.07	14.98	6.91	5.53			
1418					6.52	8.10	14.98	6.88	5.54			
1419					6.58	8.14	14.98	6.84	5.54			
1420					6.64	8.16	14.98	6.82	5.55			
1421					6.70	8.20	14.98	6.78	5.56			
1422					6.77	8.23	14.98	6.75	5.56			
1423					6.82	8.28	14.98	6.70	5.57			
1424					6.83	8.29	14.98	6.69	5.58			
1425					6.85	8.33	14.98	6.65	5.59			
1426					6.86	8.36	14.98	6.62	5.60			
1427					6.88	8.40	14.98	6.58	5.60			
1428					6.90	8.45	14.98	6.53	5.60			
1429									5.68	8.30	9.99	3.06ft*
1431												
1432	5.38	10.87	14.98	4.11	7.00	8.66	14.98	6.32				
1438					7.07	8.85	14.98	6.13				
1442					7.15	9.03	14.98	5.95				
1447					7.38	9.26	14.98	5.72				

tart Pumps

o intake
lling air

w lower
o intake
5ft

RW-2
2 of 6

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Sonts
C. Wunderlich

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME
Date: 10/13/04
ime Start: 1407
me Finish: 2211
Note:

WEATHER OBSERVATIONS
Temperature:
Precipitation: Same
Wind:
Ground Conditions:

* Level to top liquid see field book. ~~[illegible]~~ (RS)

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW	Tank level
1448									5.77	8.30	9.99	
1449	5.38	10.85	14.98	4.13								
1451												3.03 *
1452					7.57	9.47	14.98	5.91				
1458					7.75	9.73	14.98	5.25				
1503					7.80	9.90	14.98	5.08				
1508					7.87	10.17	14.98	4.81				
1509	(RS)								5.89	8.30	9.99	
1511	5.39	10.87	14.98	4.18								
1515					8.00	10.40	14.98	4.58				
1519												2.99 *
1520					8.20	10.63	14.98	4.35				
1526					8.55	10.80	14.98	4.18				
1531					8.85	11.00	14.98	3.98				
1532									5.97	8.30	9.99	
1533	5.40	10.86	14.98	4.12								
1534												2.96*
1537					9.13	11.16	14.98	3.82				
1542					9.33	11.33	14.98	3.65				
1548					9.60	11.48	14.98	3.50				
1553					9.73	11.51	14.98	3.47				
1558					9.68	11.54	14.98	3.44				
1559									6.02	8.31	9.99	
1600	5.42	10.84	14.98	4.11								
1603					9.62	11.54	14.98	3.44				2.92
1609					9.72	11.58	14.98	3.40				
1617					9.75	11.64	14.98	3.34				
1623					9.75	11.65	14.98	3.33				
1624									6.06	8.30	9.99	
1625	5.42	10.85	14.98									
1626												2.90
1627					9.74	11.65	14.98					

(1512) take H. lower. 0.8ft

(1528) H₂O intake lowered 0.3ft

(1544) product intake lowered 0.3ft
Product pump speed ↑ to 8
H₂O pump speed ↓ to 5

RW-2
3 of 6

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
PROJECT NUMBER: 0021621
Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY
Operator:
PROJECT NAME: Greif Bros
uipment:
Geologist:

DATE/TIME
Date: 10/13/04
Time Start: 1407
me Finish: 2211
Note:

WEATHER OBSERVATIONS
Temperature:
Precipitation:
Wind: Seml
Ground Conditions:

* see field notes for tank level. Levels measured w/ interface Probe

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW	Tank level*
1633					9.74	11.67	14.98	3.31				
~~1639~~	RS				~~9.74~~	~~11.76~~	~~14.98~~	RS				
1639					9.74	11.75	14.98	3.23				
1645					9.75	11.75	14.98	3.23				
1646									6.09	8.30	9.99	
1647	5.43	10.85	14.98	4.13								
1650												2.88f
1651					9.75	11.78	14.98	3.20				
1702					9.75	11.85	14.98	3.13				
1712					9.75	11.88	14.98	3.10				
1713									6.12	8.31	9.99	
1714	5.45	10.86	14.98	4.12								
1725					9.75	11.97	14.98					
1735					10.03	12.03	14.98	2.97				
1736									6.15	8.30	9.99	
1737	5.47	10.85	14.98	4.13								
1747					10.07	12.10	14.98	2.88				
1749									6.15	8.30	9.99	
1750	5.47	10.85	14.98	4.13								2.83ft
1757					10.07	1219	14.98	2.79				
1807					10.70	12.22	14.98	2.76				
1808									6.17	8.30	9.99	
1809	5.47	10.85	14.98	4.13								
1821					10.62	12.30	14.98	2.68				
1832					10.68	12.25	14.98	2.73				
1833									6.20	8.30	9.99	
1834	5.50	10.85	14.98	4.13								
1836												2.78ft
1843					10.68	12.28	14.98	2.70				
1853					10.70	12.30	14.98	2.68				
1854									6.20	8.30	9.99	
1855	5.50	10.85	14.98	4.13								

H2O intake lowered 0.3ft

H2O intake
owered
oduct pump
SP

RW-2
4 of 6

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Sants
C. Wunderlich

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME
Date: 10/12/04
Time Start: 1407
me Finish: 2211
Note:

WEATHER OBSERVATIONS
Temperature:
Precipitation: Same
Wind:
Ground Conditions:

* see field book for additional tank measurements collected w/ Interface Probe.

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW	Tank level
1903					10.70	12.40	14.98	2.58				
1913					10.70	12.40	14.98	2.58				
1915									6.21	8.30	9.99	
1916	5.56	10.85	14.98	4.13								2.76
1925					10.68	12.56	14.98	2.42				
1939					10.70	12.65	14.98	2.33				
1950					10.70	12.74	14.98	2.24				
1951									6.23	8.30	9.99	
1952	5.52	10.85	14.98	4.13								
1953												2.24
2006					10.70	12.90	14.98	2.08				
2010					11.02	12.94	14.98	2.04				
	RS				~~11.02~~ RS							
2020					11.28	13.00	14.98	1.98				
2021									6.25	8.30	9.99	
2022	5.55	10.85	14.98	4.13				RS				
2035	RS				11.28	13.03	14.98	1.95				
2045					11.27	13.08	14.98	1.90				2.69
2055					11.27	13.05	14.98	1.87				
2057									6.26	8.30	9.99	
2058	5.55	10.85	14.98	4.13								
2113					11.27	13.03	14.98	1.95				
2124					11.27	13.03	14.98	1.95				
2134					11.27	13.03	14.98	1.95				
2135									6.27	8.30	9.99	
2136												
2137	5.57	10.85	14.98	4.13								
2138												2.67
2146					11.27	13.03	14.98	1.95				
2156					11.27	13.03	14.98	1.95				
2206					11.27	13.03	14.98	1.95				
2207									6.29	8.30	9.99	
2208	5.57	10.85	14.98	4.13								
2209												

H2O intake lowered 0.3ft

Product intake lowered 0.3ft

RW-2
5 of 6

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment
PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Sonts
C. Wanderlich
Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME
Date: 10/13/04
Time Start: 1407
me Finish: 2211
Note: VMP-2 water level measured w/ H2O indicator 2211 → 2227

WEATHER OBSERVATIONS
Temperature:
Precipitation: Some
Wind:
Ground Conditions:

Final tank levels
Bottom: 3.79 ft
Top H2O: 2.64 ft
Top DNAPL: 3.12

Stop

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW
22.11					11.27	13.03	14.98		6.22		
					Pump Turned off						
2212					11.26	13.02	14.98	1.96	6.23		
2213					11.23	13.00	14.98	1.98	6.23		
2214					11.21	13.02	14.98	1.96	6.23		
2215					11.18	13.00	14.98	1.98	6.23		
2216					11.16	13.00	14.98	1.98	6.24		
2217					11.13	12.98	14.98	1.99	6.24		
2218					11.09	12.98	14.98	2.00	6.24		
2219					11.07	12.98	14.98	2.00	6.24		
2220					11.03	12.97	14.98	2.01	6.24		
2221					11.00	12.96	14.98	2.02	6.24		
2222					10.97	12.95	14.98	2.03	6.24		
2223					10.95	12.95	14.98	2.03	6.23		
2224					10.92	12.93	14.98	2.05	6.24		
2225					10.88	12.93	14.98	2.05	6.24		
2226					10.85	12.93	14.98	2.05	6.23		
2227					10.81	12.92	14.98	2.06	6.23		
2232					10.64	12.88	14.98	2.10	6.29	8.30	9.99
2233	5.57	10.85	14.98	4.13							
2237					10.48	12.87	14.98	2.11			
2238									6.30	8.30	9.99
2239	5.57	10.85	14.98	4.13							
2242					10.33	12.80	14.98	2.18			
2243									6.30	8.30	9.99
2244	5.58	10.85	14.98	4.13							
2247					10.18	12.80	14.98	2.18			
2252					9.99	12.72	14.98	2.26			
2257					9.84	12.69	14.98			~~8.25~~	
2258									6.31	8.25	9.99
2259	5.60	10.86	14.98	4.12							
2307					9.53	12.63	14.98	2.35			

RW-2
6 of 6

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Sonts
C. Wunderlich

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME

Date: 10/13/04
Time Start: 1407
me Finish: 2211
Note:

WEATHER OBSERVATIONS

Temperature:
Precipitation: Same
Wind:
Ground Conditions:

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW
2317					9.24	12.60	14.98	2.38			
2318	5.59	10.85	14.98	4.13					6.30	8.30	9.99
2335					8.72	12.54	14.98	2.44			
2345					8.43	12.51	14.98	2.47			
2347									6.31	8.31	9.99
2348	5.60	10.85	14.98	4.13							
2356					8.16	12.52	14.98	2.46			
0006					7.94	12.42	14.98	2.56			
0017					7.67	12.35	14.98	2.63			
0018									6.32	8.28	9.99
0019	5.60	10.85	14.98	4.13							
0027					7.45	11.62	14.98	3.36			
0037					7.30	11.30	14.98				
0038									6.30	8.30	9.99

Pumping started: 1105
Vac 1/4 head started: 1436
Vac Full head: 1757
''ac off: 2247
umps off: 2249

1 of 2

9a

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist: R. Scats
C. Wunderlich

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME
Date: 11/16/04
ime Start: 1105
me Finish:
Note:

WEATHER OBSERVATIONS
Temperature: 55°
Precipitation: none
Wind:
Ground Conditions: moist

Pump started at full Power

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW
10.35	5.46	9.36	14.98	5.62	5.52	8.66	14.98	6.32	5.59	8.35	9.99
1110		RS			6.09	9.00	14.98	5.98			
1112									5.63	8.29	9.99
1115					6.81	9.35	14.98	5.63			
1117									5.72	8.29	9.99
1120					7.15	9.55	14.98	5.43			
1123									5.80	8.29	9.99
1125					7.19	9.76	14.98	5.22			
1127									5.80	8.29	9.99
1128	5.46	9.36	14.98	5.62							
1130		RS			7.29	10.01	14.98	4.97			
1135					7.39	10.26	14.98	4.72			
1140					7.43	10.56	14.98	4.42			
1142									5.83	8.29	9.99
1145					7.49	10.66	14.98	4.32			
1150					7.56	10.89	14.98	4.09			
1153					7.64	11.09	14.98	3.89	5.97	8.31	9.99
1155					7.68	11.29	14.98	3.69			
1200					7.71	11.35	14.98	3.63	~~6.02~~	~~8.30~~	~~9.99~~ RS
1202									6.02	8.30	9.99
1205					7.74	11.45	14.98	3.53			
1210					7.82	11.66	14.98	3.52			
1212	5.47	9.36	14.98	5.62					6.04	8.31	9.99
1217		RS			7.90	11.93	14.98	3.05			
1222					7.99	12.16	14.98	2.82			
1227					8.03	12.29	14.98				
1234					8.24	12.65	14.98	2.33			
1238					~~8.63~~	~~12.73~~	~~14.98~~	RS	6.02	8.28	9.99
1239					8.63	12.73	14.98	2.25			
1244					8.89	12.97	14.98	2.01			
1245									6.02	8.28	9.99
1247	5.48	9.39	14.98	5.59							

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2of2

GREIF Bros.

2122 COLVIN BLVD. TONAWANDA, NY

IRM PILOT TEST

ontractor:
Operator:
uipment:

PROJECT NUMBER: 0021621
PROJECT NAME: Greif Bros
Geologist:

Location: Greif Bros
2122 Colvin Blvd
Tonawanda, NY

DATE/TIME
Date: 11/16/05
Time Start: 1105
me Finish:
Note:

WEATHER OBSERVATIONS
Temperature:
Precipitation: Same
Wind:
Ground Conditions:

Vacuum started
@ 1436

Time	RW-1 DTW	RW-1 DTP	RW-1 TDW	RW-1 TDP	RW-2 DTW	RW-2 DTP	RW-2 TDW	RW-2 TDP	VMP-2 DTW	VMP-2 DTP	VMP-2 TDW
1252					9.50	13.30	14.98	1.68			
1257					9.75	13.36	14.98	1.62			
1302					9.90	13.54	14.98	1.44			
1303									6.08	8.28	9.99
1304	5.50	9.38	14.98	5.60							
1308					9.90	13.58	14.98	1.40			
1312					9.88	13.64	14.98	1.34			
1317					9.92	13.65	14.98	1.33			
1319					~~9.90~~	~~13.65~~	~~14.98~~	~~1.33~~	6.09	8.31	9.99
1322					9.90	13.65	14.98	1.33			
1325	5.51	9.35	14.98	5.63							
1327									6.12	8.29	9.99
1329					9.89	13.69	14.98	1.29			
1334					9.89	13.75	14.98	1.23			
1339					9.89	13.80	14.98	1.18			
1345					10.00	13.90	14.98	1.08			
1349					10.00	13.93	14.98	1.05			
1434					10.14	13.88	14.98	1.10			
1501					10.08	13.90	14.98	1.08			
1813					10.14	13.96	14.98	1.02			
1853					9.89	13.98	14.98	1.00			

1 of 1

ERM

Well Quantification Testing Log
Primary Observation Wells

Well ID: RW-2

Well Orientation: [✓ vertical] horizontal angled

Date 11/16
Time Start ____
Time End ____
Total Test Time ____

Pumping started: 1105
Vac 1/4 head: 1436
Vac full head: 1757
Vac off: 2247
Pumps off: 2249

	RW-2		RW-1		VMP2		VMP-1		MW-12							
Time	Depth to Water (ft)	Mag Readings (inHg)	Depth to Water (ft)	Mag Readings (inH2O)	Depth to Water (ft)	Mag Readings (inH2O)	Depth to Water (ft)	Mag Readings (inH2O)	Depth to Water (ft)	Mag Readings (inH2O)	Depth to Water (ft)	Mag Readings (inH2O)	Depth to Water (ft)	Mag Readings (inH2O)	Depth to Water (ft)	Mag Readings (inH2O)
1527		3.4 in Hg		0.5 in H2O		1.9 in H2O		0.6 in H2O		0.035 in H2O						
1600		3.4 in Hg		0.5 in H2O		1.9 in H2O		0.61 in H2O		0.035 in H2O						
1633		3.3 in Hg		0.5 in H2O		1.9 in H2O		0.61 in H2O		0.035 in H2O						
1715		3.3 in Hg		0.5 in H2O		1.8 in H2O		0.6 in H2O		0.035 in H2O						
1750		3.2 in Hg		0.5 in H2O		1.8 in H2O		0.60 in H2O		0.035 in H2O						
1800		3 in Hg		0.78 in H2O		2.75 in H2O		0.93 in H2O		0.035 in H2O						
1848		3 in Hg		0.78 in H2O		2.80 in H2O		0.98 in H2O		0.035 in H2O						
1825		3 in Hg		0.78 in H2O		2.90 in H2O		0.98 in H2O		0.035 in H2O						
2006		3 in Hg		0.78 in H2O		2.90 in H2O		0.98 in H2O		0.035 in H2O						
2045		3 in Hg		0.80 in H2O		2.90 in H2O		0.98 in H2O		0.035 in H2O						
2120		3 in Hg		0.80 in H2O		3.00 in H2O		0.99 in H2O		0.035 in H2O						
2201		3 in Hg		0.80 in H2O		3.00 in H2O		0.99 in H2O		0.035 in H2O						
2240		3 in Hg		0.80 in H2O		3.00 in H2O		0.99 in H2O		0.035 in H2O						

General Comments:

Pumping started: 1105
Vac 1/4 head started: 1436
Vac full head started: 1757
Vac off: 2247

Pumps off: 2249

1 of 3

ERM

Project Greif Bros. Facility – Tonawanda, NY W.O. No. 0021621 Sheet ___ of ___
Subject DNAPL Recovery IRM Pilot Test By ___ Date 16-Nov-04
Vacuum-Enhanced Test Parameter Data Chkd. by ___ Date ___

Parameter	Symbol	1511	1550	1523	1655	1733
Vacuum @ Header (in. Hg)	VH-1	3.5	3.5	3.3	3.3	3.2
Vapor Influent General	VIG-1	332 ft/min 68.1°f 37.5%	325 ft/min 68°f 38.6%	324 ft/min 67.8°f 39.5%	325 ft/min 68.3° 39.1%	27.5 cu ft 315 ft/min 66.5° 41.4%
~~Vapor Influent Temp.~~	~~VIT-1~~					
Vacuum @ Blower - In (in ~~Hg~~ H2O)	VBI-1	38	38	37	37	38
Temp. @ Blower - In °f	TBI-1	54.5	54.	54	53	54
Pressure ~~Vacuum~~ @ Blower - Out (in ~~Hg~~ H2O)	VBO-1	~~91.5~~ 46	45	44	44	43
Temp. @ Blower - Out °f	TBO-1	91	91	89	88	86
Vapor Influent Conc. ppm	VIC-1	2015	1829	1650	1509	1428
Vapor Effluent Conc. ppm	VEC-1	17.4	8.1	7.4	4.9	~~0.0~~ 6.3
Vapor Effluent General	VEG-1	785 ft/min 57.3°f 21.0%	745 ft/min 55.0°f 19.7%	750 ft/min 54.3°f 17.5%	770 ft/min 51.8°f 17.7%	715 ft/min 62.5 cf ~~59°~~ 52° 16.3%
Vapor Effluent Temp. °f	VET-1	37°f	37°f	35°	33°	33°

NOTES: VIG-1 and VEG-1 include velocity, humidity, and pressure
Concentrations reported in parts per million
Temperatures reported in [illegible]grees F

2 of 3

ERM

Project Greif Bros. Facility - Tonawanda NY W.O. No. 0021621 Sheet ___ of ___
Subject DNAPL Recovery IRM Pilot Test By ___ Date 16-Nov-04
Vacuum-Enhanced Test Parameter Data Chkd. by ___ Date ___

Parameter	Symbol	1800	1840	1920	2000	2040
Vacuum @ Header (in. Hg)	VH-1	3 in Hg.	3 in Hg	3 in Hg	3 in Hg	3 in Hg
Vapor Influent General	VIG-1	446 ft/min 64.4 35.7 cfm ~~38~~ 42.4%	450 ft/min 39.9 cfm 63.0° 45.5%	452 ft/m 39.9 cfm 62.8° 45.9%	455 ft/min 40.1 cfm 62.2°F 47.4%	455 ft/min 40.5 62.2°F 49.3%
~~Vapor Influent Temp.~~	~~VIT-1~~					
Vacuum @ Blower - In (in Hg)	VBI-1	33	33	33	33	33
Temp. @ Blower - In	TBI-1	54°	53°	52	52	52
Vacuum @ Blower - Out (in Hg)	VBO-1	40	40°	40	40	40
Temp. @ Blower - Out	TBO-1	84°	83°	81	82	82
Vapor Influent Conc.	VIC-1	1695	1560	1627	1609	1562
Vapor Effluent Conc.	VEC-1	4.2 ppm	7.6 ppm	7.3 ppm	6.7 ppm	7.3 ppm
Vapor Effluent General	VEG-1	810 ft/min 70.5 cfm 51.0° 16.6%	750 ft/m 66.5 cfm 53.0° 37.2%	725 ft/min 64.5 cfm 54.2 48%	730 ft/min 64 cfm 58.7°F 40.9%	720 ft/min 64.0 cfm 56.2° 42%
Vapor Effluent Temp.	VET-1	33	44	53	55	59

NOTES: VIG-1 and VEG-1 include velocity, humidity, and pressure
Concentrations reported in parts per million
Temperatures reported in degrees F

3 of 3

ERM

Project Greif Bros. Facility - Tonawanda NY W.O. No. 0021621 Sheet ___ of ___
Subject DNAPL Recovery IRM Pilot Test By ___ Date 16-Nov-04
Vacuum-Enhanced Test Parameter Data Chkd. by ___ Date ___

Parameter	Symbol	2110	2150	2235		
Vacuum @ Header (in. Hg)	VH-1	3 in hg	3 in hg	3 in Hg		
Vapor Influent General	VIG-1	463 ft/min 40.9 cfm 63.3° 47.8%	460 ft/min 39.9 cfm 63.2° 47.4%	459 ft/min 20.1 cfm 63.4° 48.6%		
~~Vapor Influent Temp.~~	~~VIT-1~~					
Vacuum @ Blower - In (in Hg)	VBI-1	33	33	33		
Temp. @ Blower - In	TBI-1	54	54	54		
Vacuum @ Blower - Out (in Hg)	VBO-1	82	40	40		
Temp. @ Blower - Out	TBO-1	40	81	81		
Vapor Influent Conc.	VIC-1	1559 ppm	1473 ppm	1434 ppm		
Vapor Effluent Conc.	VEC-1	6.7 ppm	5.6 ppm	6.5 ppm		
Vapor Effluent General	VEG-1	695 ft/min 64 cfm 57.0° 38.4%	665 ft/min 63.5 cfm 56.2° 33.7%	673 ft/min 60.5 cfm 56.8° 31.9%		
Vapor Effluent Temp.	VET-1	61°	64°	66°		

NOTES: VIG-1 and VEG-1 include velocity, humidity, and pressure
Concentrations reported in parts per million
Temperatures reported in egrees F

Appendix C
Waste Manifests

PRESS HARD — You Are Writing Through Eight Copies (See Reverse Side)

NYG 5259411

Please type or print. Do not staple

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID & HAZARDOUS MATERIALS

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

(Hazardous Waste Manifest 1/23/03)

Spill immediately call the National Response Center (800) 424-8802 and the NYS Department of Environmental Conservation (518) 457-7362

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NYD099340408
Manifest Doc. No. 59411
2. Page 1 of 1

Information within heavy bold line is not required by Federal Law.

3. Generator's Name and Mailing Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

4. Generator's Telephone Number (176) 836-4200

A. NYG 5259411

B. Generator's ID SAME

5. Transporter 1 (Company Name) Hazmat Environmental Group Inc.

6. US EPA ID Number NYD980769947

C. State Transporter's ID 1220B7NY

D. Transporter's Telephone (716) 827-7200

7. Transporter 2 (Company Name)

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Telephone ( )

9. Designated Facility Name and Site Address
CWM Chemical Services, LLC
1550 Balmer Road, PO Box 200
Model City NY 14107

10. US EPA ID Number NYD049836679

G. State Facility ID

H. Facility Telephone (716) 754-8231

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers Number	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Hazardous waste, liquid, n.o.s. (U226,U228,F002) 9, NA3082, III	005	D ~~M~~ F	est 02000	P	EPA F002 STATE NONE
b. RQ Hazardous waste, liquid, n.o.s. (U226,U228) 9, NA3082, III	003	DM	est 1500	P	EPA F005 STATE NONE
c. RQ Hazardous waste, solid, n.o.s. (U226,U228) 9, NA3077, III	004	DM	est 2000	P	EPA D040 STATE NONE
d. RQ Hazardous waste, solid, n.o.s. (U228,U226,D040,F002) 9, NA3077, III	002	DM	est 600	P	EPA F002 STATE NONE

J. Additional Descriptions for Materials listed Above
a. (E,T) carbon rinse water
b. (I,E,T) DNAPL Product
c. (E,T) Drill Cutting Soils
d. (E,T) Hazardous Debris

K. Handling Codes for Wastes Listed Above
a. T
b. B
c. L
d. L

15. Special Handling Instructions and Additional Information
a)VA7480 ERG#171 (Also: D040, U228, U226) b)VA7479 ERG#171 (Also: D022, F002, D039, D040, U228, U226) c)VA7496 ERG#171 (Also: U228, U226, F002) d)VA7498 ERG#171 (Also: D040, U228, U226) NYSDEC VCP# V00334-9

WTS# TBA DC
SR# TBA DC
Emergency Contact:

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above ~~by proper shipping~~ name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name DAVID PETERS
Signature David C. Peters
Mo. 1 Day 23 Year 04

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name NEAL HIBBITD
Signature
Mo. 1 Day 23 Year 04

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Mo. Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

171 Substances (Low to Moderate Hazard)

ID Number: 3082
Guide Number: 171

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- * Some may burn but none ignite readily.
- * Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
- * Containers may explode when heated.
- * Some may be transported hot.

HEALTH

- * Inhalation of material may be harmful.
- * Contact may cause burns to skin and eyes.
- * Inhalation of Asbestos dust may have a damaging effect on the lungs.
- * Fire may produce irritating, corrosive and/or toxic gases.
- * Runoff from fire control may cause pollution.

PUBLIC SAFETY

- * CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- * Isolate spill or leak area immediately for at least 10 to 25 meters (30 to 80 feet) in all directions.
- * Keep unauthorized personnel away.
- * Stay upwind.

PROTECTIVE CLOTHING

- * Wear positive pressure self-contained breathing apparatus (SCBA).
- * Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Fire

- * If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires

- * Dry chemical, CO2, water spray or regular foam.

Large Fires

- * Water spray, fog or regular foam.
- * Move containers from fire area if you can do it without risk.
- * Do not scatter spilled material with high pressure water streams.
- * Dike fire-control water for later disposal.

Fire involving Tanks

- * Cool containers with flooding quantities of water until well after fire is out.
- * Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- * ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- * Do not touch or walk through spilled material.
- * Stop leak if you can do it without risk.
- * Prevent dust cloud.
- * Avoid inhalation of asbestos dust.

Small Dry Spills

(c) 2004 Terralink Software Systems

171 Substances (Low to Moderate Hazard)

ID Number: 3082
Guide Number: 171

* With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spills

* Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Large Spills

* Dike far ahead of liquid spill for later disposal.
* Cover powder spill with plastic sheet or tarp to minimize spreading.
* Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

* Move victim to fresh air.
* Call 911 or emergency medical service.
* Apply artificial respiration if victim is not breathing.
* Administer oxygen if breathing is difficult.
* Remove and isolate contaminated clothing and shoes.
* In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
* Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

171 Substances (Low to Moderate Hazard)

ID Number: 3077
Guide Number: 171

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
- Containers may explode when heated.
- Some may be transported hot.

HEALTH

- Inhalation of material may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Isolate spill or leak area immediately for at least 10 to 25 meters (30 to 80 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires

- Dry chemical, CO2, water spray or regular foam.

Large Fires

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Do not scatter spilled material with high pressure water streams.
- Dike fire-control water for later disposal.

Fire involving Tanks

- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Avoid inhalation of asbestos dust.

Small Dry Spills

171 Substances (Low to Moderate Hazard)

ID Number: 3077
Guide Number: 171

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spills

- Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Large Spills

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Apply artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

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Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
1550 Balmer Road PO Box 200
del City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG5259411
Federal Manifest Number: 59411

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

Manifest Line Item: 1 a **Certification:** General Certificate

Profile Name: Carbon Rinse Water
Profile Number: VA7480 **Aproval Code:** VA7480 **Aproval Status:**

Treatability Group	
WW	NWW
X	

A. F001 - F005 Solvent Restrictions

This restricted waste category is banned from land disposal under 40 CFR 268.30 and is subject to one or more treatment standards under 40 CFR Subpart D.

EPA Code	Hazardous Constituent	CAS	WW Standard	NWW Standard
F002	1,1,1-Trichloroethane	71-55-6	0.054	6.0

F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or enes [except as specifically noted in other subcategories]. See further details of these listings in §261.31.

B. Other Regulated Waste Notification

This section includes all wastes restricted from land disposal not included in other sections. If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
U228	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

C. D001 - D043

If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
D040	Trichloroethylene	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

D. Underlying Hazardous Constituents

This section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - Universal Treatment Standards, except vanadium and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard.

Hazardous Constituent	WW Standard	NWW Standard
1,1-Dichloroethylene	0.025	6.0
l ethyl ketone	0.28	36

E. Non-Hazardous / Non-Restricted Waste

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Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
1550 Balmer Road PO Box 200
del City NY 14107
EPA Id: NYD049836679

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Federal Manifest Number: 59411

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

There are no EPA waste codes that are not subject to land disposal restrictions as specified in 40 CFR Subpart D or applicable prohibitions in 40 CFR 268.32 or RCRA.

I hereby notify that this shipment contains waste restricted under 40 CFR 268, Land Disposal Restrictions. I hereby certify that all information submitted in this and all attached documents is complete, contains true and accurate descriptions and is representative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

Signature David C. Peter

Date 11-23-04

Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
1550 Balmer Road PO Box 200
odel City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG5259411
Federal Manifest Number: 59411

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

Manifest Line Item: 1 b **Certification:** General Certificate

Profile Name: DNAPL Product
Profile Number: VA7479 **Aproval Code:** VA7479 **Aproval Status:**

Treatability Group	
WW	NWW
	X

A. F001 - F005 Solvent Restrictions

This restricted waste category is banned from land disposal under 40 CFR 268.30 and is subject to one or more treatment standards under 40 CFR Subpart D.

EPA Code	Hazardous Constituent	CAS	WW Standard	NWW Standard
F002	1,1,1-Trichloroethane	71-55-6	0.054	6.0
F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or ylenes [except as specifically noted in other subcategories]. See further details of these listings in §261.31.				
05	Carbon disulfide	75-15-0	3.8	NA
F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or xylenes [except as specifically noted in other subcategories]. See further details of these listings in §261.31.				

B. Other Regulated Waste Notification

This section includes all wastes restricted from land disposal not included in other sections. If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
U228	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

C. D001 - D043

If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
D022	Chloroform	Wastes that are TC for Chloroform based on the TCLP in SW846 Method 1311.	67-66-3	0.046 and meet §268.48 standards	6.0 and meet §268.48 standards
D039	Tetrachloroethylene	Wastes that are TC for Tetrachloroethylene based on the TCLP in SW846 Method 1311.	127-18-4	0.056 and meet §268.48 standards	6.0 and meet §268.48 standards
D040	Trichloroethylene	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

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Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
550 Balmer Road PO Box 200
del City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG5259411
Federal Manifest Number: 59411

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

D. Underlying Hazardous Constituents

This section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - Universal Treatment Standards, except vanadium and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard.

Hazardous Constituent	WW Standard	NWW Standard
1,1-Dichloroethylene	0.025	6.0
trans-1,2-Dichloroethylene	0.054	30
Xylenes-mixed isomers (sum of o-, m-, and p-xylene conc	0.32	30

E. Non-Hazardous / Non-Restricted Waste

There are no EPA waste codes that are not subject to land disposal restrictions as specified in 40 CFR Subpart D or applicable prohibitions in 40 CFR 268.32 or RCRA.

I hereby notify that this shipment contains waste restricted under 40 CFR 268, Land Disposal Restrictions. I hereby certify that all mation submitted in this and all attached documents is complete, contains true and accurate descriptions and is esentative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

Signature

Date 11-23-04

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Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
1550 Balmer Road PO Box 200
odel City NY 14107
EPA Id: NYD049836679

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Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

Manifest Line Item: 1 c **Certification:** Land Disposed

Profile Name: Drill Cutting Soils
Profile Number: VA7496 **Aproval Code:** VA7496 **Aproval Status:**

Treatability Group	
WW	NWW
	X

A. F001 - F005 Solvent Restrictions

This restricted waste category is banned from land disposal under 40 CFR 268.30 and is subject to one or more treatment standards under 40 CFR Subpart D.

EPA Code	Hazardous Constituent	CAS	WW Standard	NWW Standard
F002	1,1,1-Trichloroethane	71-55-6	0.054	6.0

F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or lenes [except as specifically noted in other subcategories]. See further details of these listings in §261.31.

B. Other Regulated Waste Notification

This section includes all wastes restricted from land disposal not included in other sections. If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
U228	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

C. D001 - D043

If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
D040	Trichloroethylene	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

D. Underlying Hazardous Constituents

This section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - Universal Treatment Standards, except vanadium and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard.

Hazardous Constituent	WW Standard	NWW Standard

Non-Hazardous / Non-Restricted Waste

There are no EPA waste codes that are not subject to land disposal restrictions as specified in 40 CFR Subpart D or applicable prohibitions in 40 CFR 268.32 or RCRA.

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Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
550 Balmer Road PO Box 200
odel City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG5259411
Federal Manifest Number: 59411

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR part 268, subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Signature ____________

Date 11-25-96

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Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
50 Balmer Road PO Box 200
del City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG5259411
Federal Manifest Number: 59411

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

Manifest Line Item: 1 d **Certification:** Hazardous Debris - Untreated

Profile Name: Hazardous debris
Profile Number: VA7498 **Aproval Code:** VA7498 **Aproval Status:**

Treatability Group	
WW	NWW
	X

A. F001 - F005 Solvent Restrictions

This restricted waste category is banned from land disposal under 40 CFR 268.30 and is subject to one or more treatment standards under 40 CFR Subpart D.

EPA Code	Hazardous Constituent	CAS	WW Standard	NWW Standard
F002	1,1,1-Trichloroethane	71-55-6	0.054	6.0

F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or lenes [except as specifically noted in other subcategories]. See further details of these listings in §261.31.

Other Regulated Waste Notification

This section includes all wastes restricted from land disposal not included in other sections. If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
U228	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

C. D001 - D043

If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
D040	Trichloroethylene	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

D. Underlying Hazardous Constituents

This section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - Universal Treatment Standards, except vanadium and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard.

Hazardous Constituent	WW Standard	NWW Standard

on-Hazardous / Non-Restricted Waste

There are no EPA waste codes that are not subject to land disposal restrictions as specified in 40 CFR Subpart D or applicable prohibitions in 40 CFR 268.32 or RCRA.

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Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
1550 Balmer Road PO Box 200
lel City NY 14107
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Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

I hereby notify that this shipment contains debris restricted under 40 CFR 268, Land Disposal Restrictions. I certify under penalty of law that I personally have examined this debris and it requires treatment to meet the treatment standards for hazardrous debris as provided by 40 CFR 268.45.

Signature David C.

Date 11-25-04

(c) 2004 Terralink Software Systems, Inc.

PRESS HARD — You Are Writing Through Eight Copies (See Reverse Side)

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID & HAZARDOUS MATERIALS

NYG 5258628

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

(Hazardous Waste Manifest 1/23/03)

Please type or print. Do not staple

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NYD099340408

Manifest Doc. No. 58628

2. Page 1 of 1

Information within heavy bold line is not required by Federal Law.

3. Generator's Name and Mailing Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda, NY 14150

4. Generator's Telephone Number (176) 836-4200

5. Transporter 1 (Company Name) Hazmat Environmental Group Inc.

6. US EPA ID Number NYD980769947

7. Transporter 2 (Company Name)

8. US EPA ID Number

9. Designated Facility Name and Site Address
CWM Chemical Services, LLC
1550 Balmer Road, PO Box 200
Model City, NY 14107

10. US EPA ID Number NYD049836679

A. NYG 5258628

B. Generator's ID SAME

C. State Transporter's ID 1220B7107

D. Transporter's Telephone (716) 827-7200

E. State Transporter's ID

F. Transporter's Telephone ( )

G. State Facility ID

H. Facility Telephone (716) 754-8231

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers Number	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Hazardous waste, solid, n.o.s. (U226,U228) 9, NA3077, III	6	DM	est 03000	P	EPA F002 STATE NONE
b. Hazardous waste, liquid, n.o.s. 9, NA3082, III	8	DM	est 03200	P	EPA F002 STATE NONE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials listed Above
a. (E,T) Hazardous drill cuttings
b. (E,T) Purge/Decon Water
c.
d.

K. Handling Codes for Wastes Listed Above
a. B
b. T
c.
d.

15. Special Handling Instructions and Additional Information
a)VA7497 ERG#171 (Also: D040, U228, U226) b)VA7499 ERG#171 (Also: D040, U228, U226) NYSDEC VCP# V00334-9

WTS# TBA 04
SR# TBA 04
Emergency Contact:

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name DAVID PETERS
Signature Dave C. P
Mo. 11 Day 23 Year 04

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name NEAL HIBBITTS
Signature
Mo. 11 Day 23 Year 04

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Mo. Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

...ill immediately call the National Response Center (800) 424-8802 and th... Department of Environmental Conservation (518) 457-7362

...f emergency

GENERATOR

...ANSPORTER

...CILITY

171 Substances (Low to Moderate Hazard)

ID Number: 3082
Guide Number: 171

POTENTIAL HAZARDS

FIRE OR EXPLOSION

* Some may burn but none ignite readily.
* Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
* Containers may explode when heated.
* Some may be transported hot.

HEALTH

* Inhalation of material may be harmful.
* Contact may cause burns to skin and eyes.
* Inhalation of Asbestos dust may have a damaging effect on the lungs.
* Fire may produce irritating, corrosive and/or toxic gases.
* Runoff from fire control may cause pollution.

PUBLIC SAFETY

* CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
* Isolate spill or leak area immediately for at least 10 to 25 meters (30 to 80 feet) in all directions.
* Keep unauthorized personnel away.
* Stay upwind.

PROTECTIVE CLOTHING

* Wear positive pressure self-contained breathing apparatus (SCBA).
* Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Fire

* If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires

* Dry chemical, CO2, water spray or regular foam.

Large Fires

* Water spray, fog or regular foam.
* Move containers from fire area if you can do it without risk.
* Do not scatter spilled material with high pressure water streams.
* Dike fire-control water for later disposal.

Fire involving Tanks

* Cool containers with flooding quantities of water until well after fire is out.
* Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
* ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

* Do not touch or walk through spilled material.
* Stop leak if you can do it without risk.
* Prevent dust cloud.
* Avoid inhalation of asbestos dust.

Small Dry Spills

(c) 2004 Terralink Software Systems

171 Substances (Low to Moderate Hazard)

ID Number: 3082
Guide Number: 171

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spills

- Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Large Spills

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Apply artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

171 Substances (Low to Moderate Hazard)

ID Number: 3077
Guide Number: 171

POTENTIAL HAZARDS

FIRE OR EXPLOSION

* Some may burn but none ignite readily.
* Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
* Containers may explode when heated.
* Some may be transported hot.

HEALTH

* Inhalation of material may be harmful.
* Contact may cause burns to skin and eyes.
* Inhalation of Asbestos dust may have a damaging effect on the lungs.
* Fire may produce irritating, corrosive and/or toxic gases.
* Runoff from fire control may cause pollution.

PUBLIC SAFETY

* CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
* Isolate spill or leak area immediately for at least 10 to 25 meters (30 to 80 feet) in all directions.
* Keep unauthorized personnel away.
* Stay upwind.

PROTECTIVE CLOTHING

* Wear positive pressure self-contained breathing apparatus (SCBA).
* Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Fire

* If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires

* Dry chemical, CO2, water spray or regular foam.

Large Fires

* Water spray, fog or regular foam.
* Move containers from fire area if you can do it without risk.
* Do not scatter spilled material with high pressure water streams.
* Dike fire-control water for later disposal.

Fire involving Tanks

* Cool containers with flooding quantities of water until well after fire is out.
* Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
* ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

* Do not touch or walk through spilled material.
* Stop leak if you can do it without risk.
* Prevent dust cloud.
* Avoid inhalation of asbestos dust.

Small Dry Spills

(c) 2004 Terralink Software Systems

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spills

- Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Large Spills

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Apply artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
550 Balmer Road PO Box 200
odel City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG5258628
Federal Manifest Number: 58628

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

Manifest Line Item: 1 a **Certification:** General Certificate

Profile Name: Hazardous Drill Cuttings Soils
Profile Number: VA7497 **Aproval Code:** VA7497 **Aproval Status:**

Treatability Group	
WW	NWW
	X

A. F001 - F005 Solvent Restrictions

This restricted waste category is banned from land disposal under 40 CFR 268.30 and is subject to one or more treatment standards under 40 CFR Subpart D.

EPA Code	Hazardous Constituent	CAS	WW Standard	NWW Standard
F002	1,1,1-Trichloroethane	71-55-6	0.054	6.0

F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or lenes [except as specifically noted in other subcategories]. See further details of these listings in §261.31.

B. Other Regulated Waste Notification

This section includes all wastes restricted from land disposal not included in other sections. If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
U228	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

C. D001 - D043

If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
D040	Trichloroethylene	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

D. Underlying Hazardous Constituents

This section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - Universal Treatment Standards, except vanadium and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard.

Hazardous Constituent	WW Standard	NWW Standard
enes-mixed isomers (sum of o-, m-, and p-xylene conc	0.32	30

E. Non-Hazardous / Non-Restricted Waste

There are no EPA waste codes that are not subject to land disposal restrictions as specified in 40 CFR Subpart D or applicable prohibitions in 40 CFR 268.32 or RCRA.

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Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
550 Balmer Road PO Box 200
odel City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG5258628
Federal Manifest Number: 58628

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

I hereby notify that this shipment contains waste restricted under 40 CFR 268, Land Disposal Restrictions. I hereby certify that all information submitted in this and all attached documents is complete, contains true and accurate descriptions and is representative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

Signature ______________ Date 11-23-04

(c) 2004 Terralink Software Systems, Inc.

Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
1550 Balmer Road PO Box 200
odel City NY 14107
EPA Id: NYD049836679

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Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

Manifest Line Item: 1 b **Certification:** General Certificate

Profile Name: Purge/Decontamination Wastewater
Profile Number: VA7499 **Aproval Code:** VA7499 **Aproval Status:**

Treatability Group	
WW	NWW
X	

A. F001 - F005 Solvent Restrictions

This restricted waste category is banned from land disposal under 40 CFR 268.30 and is subject to one or more treatment standards under 40 CFR Subpart D.

EPA Code	Hazardous Constituent	CAS	WW Standard	NWW Standard

B. Other Regulated Waste Notification

This section includes all wastes restricted from land disposal not included in other sections. If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
U228	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

C. D001 - D043

If any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
D040	Trichloroethylene	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

D. Underlying Hazardous Constituents

This section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - Universal Treatment Standards, except vanadium and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard.

Hazardous Constituent	WW Standard	NWW Standard
1,1-Dichloroethylene	0.025	6.0
Chloroform	0.046	6.0
Methyl ethyl ketone	0.28	36
Toluene	0.080	10
Xylenes-mixed isomers (sum of o-, m-, and p-xylene conc	0.32	30

E. Non-Hazardous / Non-Restricted Waste

e are no EPA waste codes that are not subject to land disposal restrictions as specified in 40 CFR Subpart D or applicable ibitions in 40 CFR 268.32 or RCRA.

(c) 2004 Terralink Software Systems, Inc.

Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
1550 Balmer Road PO Box 200
odel City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG5258628
Federal Manifest Number: 58628

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda. NY 14150

I hereby notify that this shipment contains waste restricted under 40 CFR 268, Land Disposal Restrictions. I hereby certify that all information submitted in this and all attached documents is complete, contains true and accurate descriptions and is representative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

Signature ______________ Date 11-25-04

(c) 2004 Terralink Software Systems, Inc.

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land Recycling and Waste Management
P.O. Box 8550
Harrisburg, PA 17105-8550
OFFICIAL PENNSYLVANIA MANIFEST FORM

IFORM HAZARDOUS
WASTE MANIFEST

NYD099340408 126900

1

PAH 126900

ıf Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
(176) 836-4200

SAME

Weavertown Transport Leasing, Inc. PAD980707442

PA-AH 0263

724 746-4850

PA AH

Envirotrol, Inc.
118 Park Road
Darlington PA 16115

PAD987270725

724 827-8181

X RQ Hazardous waste, solid, n.o.s. (F002, D040)
9, NA3077, III

(est)

002 TP 07100 P

F002
D040
U228

c.

d.

WTS-GRIF-NY-AF ERG#171 (Also: U226)

WTS# 14829
Emergency Contact
716-836-4200

GENERATOR'S CERTIFICATION

atrick Wolfe

12 7 04

chael E. McClellan

12 07 04

PAH 126900

Land Disposal Restriction Notification Form

ìrotrol, Inc.

PAD987270725

Federal Manifest# 26900

State Manifest# PAH126900 ___, Line Item 11a

:rator Information:

)099340408

if Brothers

2 Colvin Blvd.

awanda NY 14150

Greif Brothers

2212 Colvin Blvd.

Tonawanda NY 14150

ile Number: WTS-GRIF-NY-AF

Wastewater:

:e Name: Spent Carbon

Non-Wastewater: X

:e Codes:

2 D040 U226 U228

)01 - F005 Solvent Restrictions

:e-*ricted waste category *is* banned *from* land disposal under 40 CFR 268.30 and is
:) one or more treatment standards under 40 CFR Subpart D.

ode	Hazardous Constituent	CAS	WW Standard	NWW Standard
	1,1,1-Trichloroethane	71-55-6	0.054	6.0
	Trichloroethylene	79-01-6	0.054	6.0

escription and Treatment/Regulatory Subcategory

F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated :carbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, oromonofluoromethane, and/or xylenes (except as specifically noted in other subcategories). See further s of these listings in §261.31.

:her Regulated Waste Notification

:ection includes all wastes restricted from land disposal not included in other sections.
· treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents
sted in Section D.

ıde	Hazardous Constituent	Waste Description and Treatment / Regulatory Subcategory	CAS	WW Standard	NWW Standard
	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

001 - D043

y treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents isted in Section D.

Waste Description and Treatment / Regulatory Subcategory	Hazardous Constituent	CAS	WW Standard	NWW Standard
Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	Trichloroethylene	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

nderlying Hazardous Constituents

section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - ersal Treatment Standards, except vanadium and zinc, which can reasonably be expected to resent at the point of generation of the hazardous waste, at a concentration above the tituent-specific UTS treatment standard.

ardous Constituent	WW Standard	NWW Standard
-Dichloroethane	0.21	6.0
ns-1,2-Dichloroethylene	0.054	30

on-Hazardous / Non-Restricted Waste

e are no EPA waste codes that are not subject to land disposal restrictions as specified 0 CFR Subpart D or applicable prohibitions in 40 CFR 268.32 or RCRA.

eral Certificate

reby notify that this shipment contains waste restricted under 40 CFR 268, Land Disposal rictions. I hereby certify that all information submitted in this and all attached [illegible]s is complete, contains true and accurate descriptions and is representative of the [illegible]erial, and that all relevant information regarding known or suspected hazards in possession of the generator has been disclosed.

ture X ____________________ Date 12-7-04

171 Substances (Low to Moderate Hazard)

ID Number: 3077
Guide Number: 171

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
- Containers may explode when heated.
- Some may be transported hot.

HEALTH

- Inhalation of material may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Isolate spill or leak area immediately for at least 10 to 25 meters (30 to 80 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires

- Dry chemical, CO2, water spray or regular foam.

Large Fires

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Do not scatter spilled material with high pressure water streams.
- Dike fire-control water for later disposal.

Fire involving Tanks

- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Avoid inhalation of asbestos dust.

ll Dry Spills

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171 Substances (Low to Moderate Hazard)

ID Number: 3077
ide Number: 171

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spills

- Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Large Spills

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Apply artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

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Please type or print. Do not staple

P.O. Box 12820, Albany, New York 12212

(Hazardous Waste Manifest 1/23/05)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NYD099340408

Manifest Doc. No. 58277

2. Page 1 of 1

Information within heavy bold line is not required by Federal Law.

3. Generator's Name and Mailing Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

4. Generator's Telephone Number (716) 836-4200

5. Transporter 1 (Company Name) Hazmat Environmental Group Inc.

6. US EPA ID Number NYD980769947

7. Transporter 2 (Company Name)

8. US EPA ID Number

9. Designated Facility Name and Site Address
CWM Chemical Services, LLC
1550 Balmer Road, PO Box 200
Model City NY 14107

10. US EPA ID Number NYD049836679

A. NYG 5258277

B. Generator's ID SAME

C. State Transporter's ID NY-AH-70357

D. Transporter's Telephone (716) 827-7200

E. State Transporter's ID

F. Transporter's Telephone ( )

G. State Facility ID

H. Facility Telephone (716) 754-8231

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers Number	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ Hazardous waste, liquid, n.o.s. (U226,U228) 9, NA3082, III	002	DM	EST 00800	P	EPA D022 STATE NONE
b. Hazardous waste, liquid, n.o.s. 9, NA3082, III	003	DM	EST 01200	P	EPA D040 STATE NONE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials listed Above
a. (I,E,T) DNAPL Product
b. (E,T) Purge/Decon Water
c.
d.

K. Handling Codes for Wastes Listed Above
a. B
b. T
c.
d.

15. Special Handling Instructions and Additional Information
a)VA7479 ERG#171 (Also: D039, D040, F002, F005, U226, U228) b)VA7499 ERG#171 (Also: F002, U226, U228), WTS#15387, SR# 74644Z, NYSDEC VCP# V00334-9

Emergency Contact:
Name: PATRICK Wolfe
Number: 716-860-8300

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name PATRICK Wolfe
Signature Patrick Wolfe
Mo. 01 Day 06 Year 05

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Michael Stuart
Signature Michael Stuart
Mo. 01 Day 06 Year 05

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Mo. Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name
Signature
Mo. Day Year

COPY 1—Disposer State—Mailed by TSD Facility

COPY 3—Disposer State—Mailed by Generator

Land Disposal Restriction Notification Form

Facility Site Addres

CWM Chemical Services, LLC
Balmer Road PO Box 200
Model City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG 5258277
Federal Manifest Number: 58277

Generator Mail Addres

Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address

Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

Manifest Line Item: 1 a **Certification:** General Certificate

rofile Name: DNAPL Product
rofile Number: VA7479 **Aproval Code:** VA7479 **Aproval Status:** Approved

Treatability Group	
WW	NWW
	X

A. F001 - F005 Solvent Restrictions

his restricted waste category is banned from land disposal under 40 CFR 268.30 and is subject to one or more treatment tandards under 40 CFR Subpart D.

EPA Code	Hazardous Constituent	CAS	WW Standard	NWW Standard
F002	Tetrachloroethylene	127-18-4	0.056	6.0

F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1 1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or [illegible]s [except as specifically noted in other subcategories]. See further details of these listings in §261.31.

F	Carbon disulfide	75-15-0	3.8	NA

F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or xylenes [except as specifically noted in other subcategories]. See further details of these listings in §261.31.

B. Other Regulated Waste Notification

his section includes all wastes restricted from land disposal not included in other sections. If any treatment standards reference 0 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
U228	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

C. D001 - D043

any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
D022	Chloroform	Wastes that are TC for Chloroform based on the TCLP in SW846 Method 1311.	67-66-3	0.046 and meet §268.48 standards	6.0 and meet §268.48 standards
D039	Tetrachloroethylene	Wastes that are TC for Tetrachloroethylene based on the TCLP in SW846 Method 1311.	127-18-4	0.056 and meet §268.48 standards	6.0 and meet §268.48 standards
D040	Trichloroethylene	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
Balmer Road PO Box 200
Model City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG 5258277
Federal Manifest Number: 58277

Generator Mail Addres
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

). Underlying Hazardous Constituents

'his section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - Universal Treatment Standards, except anadium and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a oncentration above the constituent-specific UTS treatment standard.

Hazardous Constituent	WW Standard	NWW Standard
1,1-Dichloroethylene	0.025	6.0
(ylenes-mixed isomers (sum of o-, m-, and p-xylene conc	0.32	30

:. Non-Hazardous / Non-Restricted Waste

'here are no EPA waste codes that are not subject to land disposal restrictions as specified in 40 CFR Subpart D or applicable rohibitions in 40 CFR 268.32 or RCRA.

hereby notify that this shipment contains waste restricted under 40 CFR 268, Land Disposal Restrictions. I hereby certify that all ıf ation submitted in this and all attached documents is complete, contains true and accurate descriptions and is ep entative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of ne generator has been disclosed.

ignature Patrick Wolf

Date 1/6/05

Land Disposal Restriction Notification Form

Facility Site Addres
CWM Chemical Services, LLC
) Balmer Road PO Box 200
Model City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG 5258277
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Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address
Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

Manifest Line Item: 1 b **Certification:** General Certificate

Profile Name: Purge/Decontamination Wastewater
Profile Number: VA7499 Aproval Code: VA7499 Aproval Status: Approved

Treatability Group	
WW	NWW
X	

A. F001 - F005 Solvent Restrictions

his restricted waste category is banned from land disposal under 40 CFR 268.30 and is subject to one or more treatment tandards under 40 CFR Subpart D.

EPA Code	Hazardous Constituent	CAS	WW Standard	NWW Standard

B. Other Regulated Waste Notification

his section includes all wastes restricted from land disposal not included in other sections. If any treatment standards reference 0 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane	71-55-6	0.054	6.0
U228	Trichloroethylene	Trichloroethylene	79-01-6	0.054	6.0

C. D001 - D043

any treatment standards reference 40 CFR 268.48, then all underlying hazardous constituents are listed in Section D.

EPA Code	Hazardous Constituent	Waste Description and Treatment/ Regulatory Subcategory	CAS	WW Standard	NWW Standard
D040	Trichloroethylene	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311.	79-01-6	0.054 and meet §268.48 standards	6.0 and meet §268.48 standards

D. Underlying Hazardous Constituents

his section contains the list of all constituents listed in 40 CFR 268.48, Table UTS - Universal Treatment Standards, except anadium and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a oncentration above the constituent-specific UTS treatment standard.

Hazardous Constituent	WW Standard	NWW Standard
1,1-Dichloroethylene	0.025	6.0
Chloroform	0.046	6.0
Methyl ethyl ketone	0.28	36
Toluene	0.080	10
Xylenes-mixed isomers (sum of o-, m-, and p-xylene conc	0.32	30

E. Non-Hazardous / Non-Restricted Waste

h re no EPA waste codes that are not subject to land disposal restrictions as specified in 40 CFR Subpart D or applicable onditions in 40 CFR 268.32 or RCRA.

Land Disposal Restriction Notification Form

Facility Site Addres

CWM Chemical Services, LLC
Balmer Road PO Box 200
Model City NY 14107
EPA Id: NYD049836679

State Manifest Number: NYG 5258277
Federal Manifest Number: 58277

Generator Mail Addres

Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150
EPA Id: NYD099340408

Generator Site Address

Greif Brothers
2212 Colvin Blvd.
Tonawanda NY 14150

hereby notify that this shipment contains waste restricted under 40 CFR 268, Land Disposal Restrictions. I hereby certify that all nformation submitted in this and all attached documents is complete, contains true and accurate descriptions and is epresentative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of he generator has been disclosed.

ignature ______________________ Date 1/12/05

171 Substances (Low to Moderate Hazard)

ID Number: 3082
Guide Number: 171

POTENTIAL HAZARDS

FIRE OR EXPLOSION

* Some may burn but none ignite readily.
* Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
* Containers may explode when heated.
* Some may be transported hot.

HEALTH

* Inhalation of material may be harmful.
* Contact may cause burns to skin and eyes.
* Inhalation of Asbestos dust may have a damaging effect on the lungs.
* Fire may produce irritating, corrosive and/or toxic gases.
* Runoff from fire control may cause pollution.

PUBLIC SAFETY

* CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
* Isolate spill or leak area immediately for at least 10 to 25 meters (30 to 80 feet) in all directions.
* Keep unauthorized personnel away.
* Stay upwind.

PROTECTIVE CLOTHING

* Wear positive pressure self-contained breathing apparatus (SCBA).
* Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Fire

* If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires

* Dry chemical, CO2, water spray or regular foam.

Large Fires

* Water spray, fog or regular foam.
* Move containers from fire area if you can do it without risk.
* Do not scatter spilled material with high pressure water streams.
* Dike fire-control water for later disposal.

Fire involving Tanks

* Cool containers with flooding quantities of water until well after fire is out.
* Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
* ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

* Do not touch or walk through spilled material.
* Stop leak if you can do it without risk.
* Prevent dust cloud.
* Avoid inhalation of asbestos dust.

Small Dry Spills

171 Substances (Low to Moderate Hazard)

ID Number: 3082
Guide Number: 171

* With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spills

* Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Large Spills

* Dike far ahead of liquid spill for later disposal.
* Cover powder spill with plastic sheet or tarp to minimize spreading.
* Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

* Move victim to fresh air.
* Call 911 or emergency medical service.
* Apply artificial respiration if victim is not breathing.
* Administer oxygen if breathing is difficult.
* Remove and isolate contaminated clothing and shoes.
* In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
* Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

SHIPPER

STREET 3122 COLVIN BLVD

CITY TONAWANDA STATE NY 14150 ZIP CODE

CONTACT NAME PHONE

SCHEDULED TIME

CONSIGNEE

STREET 1550 BALMER ROAD

CITY MODEL CITY STATE NY 14107 ZIP CODE

CONTACT NAME PHONE

[redacted]

ADDITIONAL INFORMATION / EQUIPMENT DAMAGE
If damaged at pickup site, did you send in Equipment Damage Report (EDR) via Qualcomm? Y N Explain damage below.

Pursuant to 6NYCRR 372.2 (b) (2) (iii) HazMat certifies that it is Authorized to deliver this shipment of manifested waste to the TSDF listed on this Bill of Lading. Shipment valuation limits apply from HazMat Rules Publication 101, Item 848.

ADDITIONAL INFORMATION / EQUIPMENT DAMAGE
If damaged at delivery site, did you send in Equipment Damage Report (EDR) via Qualcomm? Y N Explain damage below.

PURCHASE ORDER NO.	WORK ORDER NUMBER	MANIFEST NUMBER	H.M. NUMBER
15387		NYG-5258277	51038

LOAD NUMBER	TRACTOR	TRAILER	ROLL OFF BOX	DRIVER NUMBER	DRIVER'S NAME
	240	PT1		SHUAMIC	SHUART, MICHAEL

EQUIPMENT	MATERIAL DESCRIPTION / MANIFEST NUMBER	QUANTITY
EQUIPMENT TYPE ___ UNIT# DROPPED ___ UNIT# PICKED UP ___ 4-70357 JNDITION REPORT ___	5 OM Class 9	2000 P

PICK UP

PICK UP DATE 01-06-05

ARRIVAL TIME 0800 [✓ AM] PM RELEASE TIME 0900 [✓ AM] PM

DAY #2 DATE

ARRIVAL TIME AM PM RELEASE TIME AM PM

TRAILER EMPTY UPON ARRIVAL ☐ YES
(if not, explain below—)

DIP MEASUREMENT (Tankers Only) INCHES

COMMENTS: (EXPLAIN ALL DELAYS)

Load - PPW - Placard

HAZMAT MATERIALS USED (ex. overpacks, etc.): ☐ YES ☐ NO

IF YES EXPLAIN:

I, THE UNDERSIGNED, CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE.

Patti Wolfe 1/6/05

S ER'S SIGNATURE Date

DELIVERY

DRIVER DAY #1 DATE

ARRIVAL TIME AM PM RELEASE TIME AM PM

DAY #2 DATE ARRIVAL TIME AM PM RELEASE TIME AM PM

DAY #3 DATE ARRIVAL TIME AM PM RELEASE TIME AM PM

TRAILER CLEAN AND EMPTY UPON DEPARTURE ☐ YES ☐ NO
(if not, explain below—)

COMMENTS: (Explain all delays or discrepancies))

IF YES EXPLAIN:

I, THE UNDERSIGNED, CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE.

CONSIGNEE'S SIGNATURE Date

WASTE MANAGEMENT

MHG

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☒ YES ☐ NO

☒ Hazardous ☐ Non-Hazardous ☐ TSCA

Profile Number: VA 7497

Renewal Date: / /

A Waste Generator Information

1. Generator Name: Greif Brothers Corporation
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Blvd.
4. Phone: (716) 282-4100
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: -
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Cattieu
14. Customer Fax: (716) 282-6986
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092 ☐ Same as above

B Waste Stream Information

1. Description WTS# 22201

a. Name of Waste: Hazardous Drill Cuttings Soils (RW-2-RW-1)

b. Process Generating Waste: Remedial investigation drill cuttings were collected for analysis. Drum ID No. 005-007/ HWS011-013

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Brown	None	☒ Solid ☐ Liquid ☐ Gas ☐ Sludge ☐ Other ____	☒ Single Layer ☐ multi-layer	____ to 0 % h. pH: Range ____ to ____ %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☐ ≥ 200 F ☐ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Soil	99-100%		
see attachment for add'l constituents			

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☒ YES ☐ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☐ YES ☒ NO
Volatile organic concentration >500 ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☒ NO
If yes, is it a Table 8 ____ or Table 9 ____ compound?

2. **Quantity of Waste**
Estimated Annual Volume 10 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify) ____

3. **Shipping Information**
a. Packaging:
☐ Bulk Solid; Type/Size: ____ ☐ Bulk Liquid; Type/Size: ____
☒ Drum; Type; Size: 55 gallon UN Steel ☐ Other: ____

Form WM-4153 (08/99)

MHG

WM
WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☒ YES ☐ NO
☒ Hazardous ☐ Non-Hazardous ☐ TSCA

Profile Number: VA 7479
Renewal Date: / /

A. Waste Generator Information

1. Generator Name: Greif Brothers Corporation
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Blvd.
4. Phone: (716) 856-4200
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#:
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Catticu
14. Customer Fax: (716) 282-6986 ☐ Same as above
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092

B. Waste Stream Information

1. Description WTS# 22205

a. Name of Waste: DNAPL Product
b. Process Generating Waste: Remedial investigation produced DNAPL and DNAPL/Water Mixtures for disposal. See analysis attached "DNAPL Product A04-8627" Drum ID Nos. HWS 022-024.

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Turbid	Solvent	☐ Solid ☒ Liquid ☐ Gas ☐ Sludge ☐ Other	☐ Single Layer ☒ multi-layer	____ to 100 % h. pH: Range ____ to ~7 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☒ ≥ 200 F ☐ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents See attachment for Add'l	Concentration Range constituents	Constituents	Concentration Range
Water	98-99%	1,1-Dichloroethane	1200 mg/kg
Carbon Disulfide	8.4 mg/kg	1,1-Dichloroethane	7500 mg/kg
Chloroform	42 mg/kg	1,2-Dichloroethene	430 mg/kg

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%.

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO
m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO
n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable
o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO
p. Is the waste subject to RCRA Subpart CC controls? ☒ YES ☐ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☐ YES ☒ NO
Volatile organic concentration >2.0% ppmw
q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO
r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO
s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☒ NO
If yes, is it a Table 8 ____ or Table 9 ____ compound?

2. Quantity of Waste

Estimated Annual Volume 4-5 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify)

3. Shipping Information

a. Packaging:
☐ Bulk Solid; Type/Size:
☒ Drum; Type; Size: 55 gallon steel UN approved
☐ Bulk Liquid; Type/Size:
☐ Other:

Profile Addendum Additional Constituents

Generator: Greif Brothers Corp.

Description: Drill Cutting Soils (RW-3)

WTS #: 22202

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

VA 7496

WTS# 22202

b. Shipping Frequency: Units 4-10 Drums Per: ☐ Month ☐ Quarter ☒ Year ☐ One time ☐ Other

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☒ YES ☐ NO

d. Reportable Quantity (lbs.; kgs.): 10 lb. e. Hazard Class/ID #: 9, NA3077, PGIII

f. USDOT Shipping Name: RQ Hazardous Waste Solid, n.o.s. (U226, U228)

g. Personal Protective Equipment Requirements: gloves, safety glasses

h. Transporter/Transfer Station: Direct Landfill

[illegible]

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☒ YES ☐ NO
   a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) D040, F002 U228, U226
   b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.) ☐ YES ☒ NO
   c. Does this waste contain debris? (If yes, list size and type in Chemical Composition – B.1.) ☐ YES ☒ NO
2. Is this a state hazardous waste? ☐ YES ☒ NO
   Identify ALL state hazardous waste codes

WASTE MANAGEMENT

MHG

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☒ YES ☐ NO

☒ Hazardous ☐ Non-Hazardous ☐ TSCA

Profile Number: VA 7496

Renewal Date: / /

A. Waste Generator Information

1. Generator Name: Greif Brothers Corp.
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Boulevard
4. Phone: (716) 836-4200
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: –
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Cattien
14. Customer Fax: (716) 282-8868
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092 ☐ Same as above

B. Waste Stream Information

1. Description WTS# 22202
   a. Name of Waste: Drill Cutting Soils (RW-3)
   b. Process Generating Waste: Remedial investigation drill cuttings were collected for analysis. Drum ID Nos. 001-004 (Analytical WCS-01/A04-8227)

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Brown	None	☒ Solid ☐ Liquid ☐ Gas ☐ Sludge ☐ Other	☒ Single Layer ☐ multi-layer	to 0 % h. pH: Range to 8.3 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☐ ≥ 200 F ☒ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Soil	99-100%	1,1,1-Trichloroethane	0.850 mg/kg
1,1-Dichloroethane	0.730 mg/kg	Trichloroethene	0.025 mg/kg
1,2-Dichloroethene	0.019 mg/kg	Vinyl Chloride	0.016 mg/kg

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive ☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☐ YES ☒ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☒ YES ☐ NO
Volatile organic concentration <1.0 ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.) ☐ YES ☒ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☐ NO
If yes, is it a Table 8 ______ or Table 9 ______ compound?

2. Quantity of Waste
Estimated Annual Volume 4-10 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify)

3. Shipping Information
a. Packaging:
☐ Bulk Solid; Type/Size:
☒ Drum; Type: Size: 55 gal. UN Steel
☐ Bulk Liquid: Type/Size:
☐ Other:

Form WM-4113 (04/01)

Land Disposal Notification (Addendum)

Generator: Greif Brothers Corporation

Waste Stream: Drill Cutting Soils (RW-3) WTS# 22202

Identify all EPA codes applicable to this waste stream as per 40 CFR 261 / 6 NYCRR Part 371. Identify the corresponding subcategory or Indicate 'none' If the waste code has no subcategory.

US EPA Waste Codes	Subcategory (if applicable)	Wastewater (<1 % solids & <1 % TOC)	Non-wastewater (>1 % solids or > 1 % TOC)	How Must the Waste be Managed?
D040 F002	None		X	SC
U228 U226	None		X	SC

Underlying Hazardous Constituents (UHCs)	Concentration

How must the waste be managed? Enter letter (A, B, C, D, E, or F) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7)

A. Restricted Waste Requires Treatment to All Applicable Standards

B. Restricted Waste Has Been Treated to Comply with Performance Standards

C. Waste Meets Treatment Standards at the Original Point of Generation

D. Decharacterized Waste Requires Treatment for Underlying Hazardous Constituents

E. This Hazardous Debris Is Subject to the Alternative Treatment Standards of 40 CFR 268.45

F. This Restricted Waste Can Be Land Disposed Without Treatment.

SC. Contaminated Soil Complies with All Applicable Treatment Standards

SS. Contaminated Soil Is Subject to All Applicable Treatment Standards

Source Codes (e.g., G01, G21, G71, etc): G49

Form Codes (e.g., W101, W200, W301, etc): W301

Management Method Codes (e.g., H010, H111, H132, etc): H132

Handling Codes (e.g., L, T, B, R): L

MHG

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☒ YES ☐ NO
Profile Number: VA 7498
Renewal Date: / /
☒ Hazardous ☐ Non-Hazardous ☐ TSCA

A. Waste Generator Information

1. Generator Name: Greif Brothers Corp.
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Boulevard
4. Phone: (716) 836-4200
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: –
11. Customer Name: Waste Technology Services, Inc.
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Cardeu
14. Customer Fax: (716) 282-6986
☐ Same as above
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092

B. Waste Stream Information

1. Description WTS# 22206

a. Name of Waste: Hazardous Debris

b. Process Generating Waste: Remedial investigation produced containers of PPE, hose, etc. contaminated by Hazardous Waste Drum ID Nos. 014/HWS021

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Varies	None	☒ Solid ☐ Liquid ☐ Gas ☐ Sludge ☐ Other	☒ Single Layer ☐ multi-layer	to 0 % h. pH: Range to 7 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☐ ≥ 200 F ☒ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Personal Protective Equipment	0-100%	Chloroform	Trace
Hoses, tubing	0-100%	1,1-Dichloroethane	Trace
Carbon Disulfide	Trace	1,1-Dichloroethene	Trace

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable ☐ YES ☒ NO

o. Does the waste represented by this profile contain benzene?
If yes, concentration 0 ppm ☐ YES ☒ NO
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☐ YES ☒ NO
If no, does the waste meet the organic LDR Exemption? ☒ YES ☐ NO
If no, does the waste contain <500 ppmw volatile organic (VO)?
Volatile organic concentration <100 ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☒ YES ☐ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☒ NO
If yes, is it a Table 8 ______ or Table 9 ______ compound?

2. **Quantity of Waste**
Estimated Annual Volume 4 drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify)

3. **Shipping Information**

a. Packaging:
☐ Bulk Solid; Type/Size:
☐ Drum; Type; Size: UN1A2 55 gallon
☐ Bulk Liquid; Type/Size:
☐ Other:

Form WMI-4153 (05/99)

WM
WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

VA 7498
WTS# 22206

b. Shipping Frequency: Units 4 drums Per: ☐ Month ☐ Quarter ☒ Year ☐ One time ☐ Other ____

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☒ YES ☐ NO

d. Reportable Quantity (lbs.; kgs.): 10 lb. e. Hazard Class/ID #: 9, NA3077, PGIII

f. USDOT Shipping Name: RQ Hazardous Waste Solid, n.o.s. (U226, U228, F002, D040)

g. Personal Protective Equipment Requirements: gloves, tyveks, safety glasses

h. Transporter/Transfer Station: Debris Treatment/Subtitle C Secure Landfill, Model City

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☒ YES ☐ NO
   - a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) U226, U228 F002, D040
   - b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.) ☐ YES ☒ NO
   - c. Does this waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) ☒ YES ☐ NO
2. Is this a state hazardous waste? ☐ YES ☒ NO
   Identify ALL state hazardous waste codes ____
3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☐ YES ☒ NO
   If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up provide relevant documentation.
4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐ YES ☒ NO
5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761 ? (If yes, list in Chemical Composition - B.1.) ☐ YES ☒ NO
   - a. If yes, were the PCBs imported into the U.S.? ☐ YES ☐ NO
6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒ YES ☐ NO
7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒ YES ☐ NO

☐ Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WM to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: ____ Title: Plant Supervisor

Name (Type or Print): David Peters Company Name: Greif Brothers Corp. Date: 20

☐ Check if additional information is attached. Indicate the number of attached pages ____

D. WM Management's Decision

FOR WM USE ONLY

1. Management Method ☐ Landfill ☐ Non-hazardous Solidification ☐ Bioremediation ☐ Incineration ☐ Hazardous Stabilization ☐ Other (Specify) ____
2. Proposed Ultimate Management Facility: ____
3. Precautions, Special Handling Procedures, or Limitation on Approval: ____
4. Waste Form ____ 5. Source ____ 6. System Type ____

Special Waste Decision ☐ Approved ☐ Disapproved

Salesperson's Signature: ____ Date: ____

Division Approval Signature (Optional): ____ Date: ____

Special Waste Approvals Person Signature: ____ Date: ____

Form WMT-1153 (01/99)

Profile Addendum – Additional Constituents

Generator: Greif Brothers Corp.

Description: Hazardous Debris

WTS #: 22206

Approval Code: VA 7498

Constituent	Concentration
1,2-Dichloroethene	Trace
Ethylenezene	Trace
Tetrachloroethene	Trace
Toluene	Trace
1,1,1-Trichloroethane	Trace
1,1,2-Trichloroethane	Trace
Trichloroethene	Trace
Xylene (total)	Trace
Acetone	Trace
2-Butanone	Trace
Chloroform	Trace
CIS 1,2-Dichloroethene	Trace

Notes:

Land Disposal Notification (Addendum)

Generator: Greif Brothers Corp.

Waste Stream: Hazardous Debris WTS# 22206

Identify all EPA codes applicable to this waste stream as per 40 CFR 261 / 6 NYCRR Part 371. Identify the corresponding subcategory or Indicate 'none' If the waste code has no subcategory.

US EPA Waste Codes	Subcategory (if applicable)	Wastewater (<l % solids & <1 % TOC)	Non-wastewater (>1 % solids or > 1 % TOC)	How Must the Waste be Managed?
U226	Debris		X	E
U228	Debris		X	E
F002	Debris		X	E
D040	Debris		X	E

Underlying Hazardous Constituents (UHCs)	Concentration

How must the waste be managed? Enter letter (A, B, C, D, E, or F) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7)

A. Restricted Waste Requires Treatment to All Applicable Standards

B. Restricted Waste Has Been Treated to Comply with Performance Standards

C. Waste Meets Treatment Standards at the Original Point of Generation

D. Decharacterized Waste Requires Treatment for Underlying Hazardous Constituents

E. This Hazardous Debris Is Subject to the Alternative Treatment Standards of 40 CFR 268.45

F. This Restricted Waste Can Be Land Disposed Without Treatment.

SC. Contaminated Soil Complies with All Applicable Treatment Standards

SS. Contaminated Soil Is Subject to All Applicable Treatment Standards

Source Codes (e.g., G01, G21, G71, etc): G49

Form Codes (e.g., W101, W200, W301, etc): W002

Management Method Codes (e.g., H010, H111, H132, etc): H132

Handling Codes (e.g., L, T, B, R): L

WM WASTE MANAGEMENT

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Service Agreement on File? ☒ YES ☐ NO
☒ Hazardous ☐ Non-Hazardous ☐ TSCA

Profile Number: VA 7499
Renewal Date: / /

A Waste Generator Information

1. Generator Name: Greif Brothers Corp.
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Boulevard
4. Phone: (716) 282-4100
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: –
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Cattieu
14. Customer Fax: (716) 282-6986
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092 ☐ Same as above

B Waste Stream Information

1. Description WTS# 22203

a. Name of Waste: Purge/Decontamination Wastewater

b. Process Generating Waste: Remedial investigation produced containers of wastewater contaminated by Hazardous Wastes (Analytical DNAPL-AQUEOUS A04-8627) Drum ID Nos. HWS 009-010/015/016/017-020

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Turbid		☐ Solid ☒ Liquid ☐ Gas ☐ Sludge ☐ Other ____	☒ Single Layer ☐ multi-layer	____ to 100 %
	Slight Organic			h. pH: Range ____ to 6.62 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☒ ≥ 200 F ☐ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Water	99-100%	Chloroform	0.045ppm
Silt	<1%	1,1-Dichloroethane	1.9ppm
2-Butanone	3.1ppm	1,2-Dichloroethane	2.0ppm

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☐ YES ☒ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☒ YES ☐ NO
Volatile organic concentration <100 ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☐ NO
If yes, is it a Table 8 ____ or Table 9 ____ compound?

2. Quantity of Waste

Estimated Annual Volume 8-10 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify) ____

3. Shipping Information

a. Packaging:
☐ Bulk Solid; Type/Size: ____ ☐ Bulk Liquid; Type/Size: ____
☒ Drum; Type; Size: 8 - 55 gal. Steel ☐ Other: ____

Form WMI-4153 (05/98)

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

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VA 7499

WTS# 22203

b. Shipping Frequency: Units 8-10 Drums Per: ☐ Month ☐ Quarter ☒ Year ☐ One time ☐ Other

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☒ YES ☐ NO

d. Reportable Quantity (lbs.; kgs.): 10 lb. e. Hazard Class/ID #, 9, NA3082, PGIII

f. USDOT Shipping Name: RQ Hazardous Waste Liquid, n.o.s. (U226, U228)

g. Personal Protective Equipment Requirements: gloves, tyveks, safety glasses

h. Transporter/Transfer Station: Aqueous Treatment, Model City

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☒ YES ☐ NO

a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) U226, U228 F002, D040

b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.j) ☒ YES ☐ NO

c. Does this waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) ☐ YES ☒ NO

2. Is this a state hazardous waste? ☐ YES ☒ NO
Identify ALL state hazardous waste codes

3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☐ YES ☒ NO
If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up provide relevant documentation.

4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐ YES ☒ NO

5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761 ? (If yes, list in Chemical Composition - B.1.j) ☐ YES ☒ NO
a. If yes, were the PCBs imported into the U.S.? ☐ YES ☐ NO

6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒ YES ☐ NO

7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒ YES ☐ NO

☐ Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WM to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: Title: Plant Supervisor

Name (Type or Print): David Peters Company Name: Greif Brothers Corp. Date:

☐ Check if additional information is attached. Indicate the number of attached pages 20

D. WM Management's Decision

FOR WM USE ONLY

1. Management Method ☐ Landfill ☐ Non-hazardous Solidification ☐ Bioremediation ☐ Incineration ☐ Hazardous Stabilization ☐ Other (Specify)

2. Proposed Ultimate Management Facility:

3. Precautions, Special Handling Procedures, or Limitation on Approval;

4. Waste Form 5. Source 6. System Type

Special Waste Decision ☐ Approved ☐ Disapproved

Salesperson's Signature: Date:

Division Approval Signature (Optional): Date:

Special Waste Approvals Person Signature: Date:

Form WM-4155 (5/99)

Profile Addendum - Additional Constituents

Generator: Greif Brothers Corp.

Description: Purge/Decontamination Waste Water

WTS #: 22203

Approval Code: VA 7499

Constituent	Concentration
1,1-Dichloroethene	1.9ppm
CIS-1,2-Dichloroethene	0.012ppm
Ethylenezene	0.320ppm
Toluene	0.2ppm
1,1,1-Trichloroethane	160ppm
1,1,2-Trichloroethane	0.280ppm
Trichloroethene	210ppm
Xylene(s)	1.9ppm

Notes:

Land Disposal Notification (Addendum)

Generator: Greif Brothers Corp.

Waste Stream: Purge/Decontamination Water WTS# 22203

Identify all EPA codes applicable to this waste stream as per 40 CFR 261 / 6 NYCRR Part 371. Identify the corresponding subcategory or Indicate 'none' If the waste code has no subcategory.

US EPA Waste Codes	Subcategory (If applicable)	Wastewater (<l % solids & <1 % TOC)	Non-wastewater (>1 % solids or > 1 % TOC)	How Must the Waste be Managed?
U226				A
U228				A
F002				A
D040				A

Underlying Hazardous Constituents (UHCs)	Concentration

How must the waste be managed? Enter letter (A, B, C, D, E, or F) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7)

A. Restricted Waste Requires Treatment to All Applicable Standards

B. Restricted Waste Has Been Treated to Comply with Performance Standards

C. Waste Meets Treatment Standards at the Original Point of Generation

D. Decharacterized Waste Requires Treatment for Underlying Hazardous Constituents

E. This Hazardous Debris is Subject to the Alternative Treatment Standards of 40 CFR 268.45

F. This Restricted Waste Can Be Land Disposed Without Treatment.

SC. Contaminated Soil Complies with All Applicable Treatment Standards

SS. Contaminated Soil Is Subject to All Applicable Treatment Standards

Source Codes (e.g., G01, G21, G71, etc): G49

Form Codes (e.g., W101, W200, W301, etc): W113

Management Method Codes (e.g., H010, H111, H132, etc): H081

Handling Codes (e.g., L, T, B, R): T

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WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

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Profile Number: VA 7480
Renewal Date: / /

Service Agreement on File? ☒ YES ☐ NO
☒ Hazardous ☐ Non-Hazardous ☐ TSCA

A. Waste Generator Information

1. Generator Name: Greif Brothers Corp.
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Boulevard
4. Phone: (716) 282-4100
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: –
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Cattieu
14. Customer Fax: (716) 282-6986
☐ Same as above
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092

B. Waste Stream Information

WTS# 22204

1. Description

a. Name of Waste: Carbon Rinse Water

b. Process Generating Waste: On-site Vapor Extraction System Activated Carbon was soaked in water. Water was removed/collected for disposal.

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Turbid		☐ Solid ☒ Liquid ☐ Gas ☐ Sludge ☐ Other	☒ Single Layer ☐ multi-layer	to 100 %
	None			h. pH: Range to <1.0 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☐ ≥ 200 F ☐ Not applicable

j. Chemical Composition (List all constituents (including halogenated organics, debris, and UHC's) present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Water	95%	see attachment for add'l	
Hydrochloric Acid	<1%	constituents	
Activated Carbon	<1%		

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☐ YES ☒ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☒ YES ☐ NO
Volatile organic concentration < ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☒ NO
If yes, is it a Table 8 ______ or Table 9 ______ compound?

2. Quantity of Waste

Estimated Annual Volume 5 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify)

3. Shipping Information

a. Packaging:
☐ Bulk Solid; Type/Size:
☒ Drum; Type; Size: 55 gal. poly drums
☐ Bulk Liquid; Type/Size:
☐ Other:

Form WMI-4163 (06/99)

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

VA 7480

WTS# 22204

b. Shipping Frequency: Units 5 Drums Per: ☐Month ☐Quarter ☒Year ☐One time ☐Other

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☒YES ☐NO

d. Reportable Quantity (lbs.; kgs.): 10 lb. e. Hazard Class/ID #, 9 NA3082 III

f. USDOT Shipping Name: RQ Hazardous waste, liquid, n.o.s., (U228,U226,F002)

g. Personal Protective Equipment Requirements: rubber gloves, tyveks, goggles

h. Transporter/Transfer Station: Aqueous Treatment, Model City

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☒YES ☐NO
   a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) U228, U226, F002
   b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.) ☐YES ☒NO
   c. Does this waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) ☐YES ☒NO

2. Is this a state hazardous waste? ☐YES ☒NO
   Identify ALL state hazardous waste codes

3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☐YES ☒NO
   If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up provide relevant documentation.

4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐YES ☒NO

5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761 ? (If yes, list in Chemical Composition – B.1.) ☐YES ☒NO
   a. If yes, were the PCBs imported into the U.S.? ☐YES ☐NO

6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒YES ☐NO

7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒YES ☐NO

☐Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WM to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: Title: Plant Superintendent

Name (Type or Print): David Peters Company Name: Greif Brothers Corp. Date:

☒Check if additional information is attached. Indicate the number of attached pages

D. WM Management's Decision — FOR WM USE ONLY

1. Management Method ☐Landfill ☐Non-hazardous Solidification ☐Bioremediation ☐Incineration ☐Hazardous Stabilization ☐Other (Specify)
2. Proposed Ultimate Management Facility:
3. Precautions, Special Handling Procedures, or Limitation on Approval:
4. Waste Form 5. Source 6. System Type

Special Waste Decision ☐Approved ☐Disapproved

Salesperson's Signature: Date:

Division Approval Signature (Optional): Date:

Special Waste Approvals Person Signature: Date:

Form WMI-4153 (03/99)

Land Disposal Notification (Addendum)

Generator: Greif Brothers Corp.

Waste Stream: Carbon Rinse Water WTS# 22204

Identify all EPA codes applicable to this waste stream as per 40 CFR 261 / 6 NYCRR Part 371. Identify the corresponding subcategory or Indicate 'none' if the waste code has no subcategory.

US EPA Waste Codes	Subcategory (If applicable)	Wastewater (<1 % solids & <1 % TOC)	Non-wastewater (>1 % solids or > 1 % TOC)	How Must the Waste be Managed?
U228		X		
U226		X		
F002		X		

Underlying Hazardous Constituents (UHCs)	Concentration

How must the waste be managed? Enter letter (A, B, C, D, E, or F) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7)

A. Restricted Waste Requires Treatment to All Applicable Standards

B. Restricted Waste Has Been Treated to Comply with Performance Standards

C. Waste Meets Treatment Standards at the Original Point of Generation

D. Decharacterized Waste Requires Treatment for Underlying Hazardous Constituents

E. This Hazardous Debris is Subject to the Alternative Treatment Standards of 40 CFR 268.45

F. This Restricted Waste Can Be Land Disposed Without Treatment.

SC. Contaminated Soil Complies with All Applicable Treatment Standards

SS. Contaminated Soil is Subject to All Applicable Treatment Standards

Source Codes (e.g., G01, G21, G71, etc): G49

Form Codes (e.g., W101, W200, W301, etc): W113

Management Method Codes (e.g., H010, H111, H132, etc): H081

Handling Codes (e.g., L, T, B, R): T

Notes:

MHG

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Profile Number: VA 7497
Renewal Date: / /

Service Agreement on File? ☒ YES ☐ NO
☒ Hazardous ☐ Non-Hazardous ☐ TSCA

A. Waste Generator Information

1. Generator Name: Greif Brothers Corporation
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Blvd.
4. Phone: (716) 282-4100
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: -
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Catticu
14. Customer Fax: (716) 282-6986 ☐ Same as above
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092

B. Waste Stream Information

1. Description WTS# 22201

a. Name of Waste: Hazardous Drill Cuttings Soils (RW-2-RW-1)
b. Process Generating Waste: Remedial investigation drill cuttings were collected for analysis. Drum ID No. 005-007/ HWS0TT-013

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Brown	None	☒ Solid ☐ Liquid ☐ Gas ☐ Sludge ☐ Other	☒ Single Layer ☐ multi-layer	____ to 0 % h. pH: Range ____ to ____ %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☐ ≥ 200 F ☐ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Soil	99-100%		
see attachment for add'l constituents			

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO
m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO
n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable
o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO
p. Is the waste subject to RCRA Subpart CC controls? ☒ YES ☐ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☐ YES ☒ NO
Volatile organic concentration >500 ppmw
q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO
r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO
s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☒ NO
If yes, is it a Table 8 ______ or Table 9 ______ compound?

2. **Quantity of Waste**
Estimated Annual Volume 10 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify) ______

3. **Shipping Information**
a. Packaging:
☐ Bulk Solid; Type/Size: ______ ☐ Bulk Liquid; Type/Size: ______
☒ Drum; Type; Size: 55 gallon UN Steel ☐ Other: ______

Form WM-4153 (08/99)

MHG

WM
WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Profile Number: VA 7479
Renewal Date: / /

Service Agreement on File? ☒ YES ☐ NO
☒ **Hazardous** ☐ **Non-Hazardous** ☐ **TSCA**

A. Waste Generator Information

1. Generator Name: Greif Brothers Corporation
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Blvd.
4. Phone: (716) 836-4200
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: -
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Catticu
14. Customer Fax: (716) 282-6986
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092 ☐ Same as above

B. Waste Stream Information

1. Description WTS# 22205

a. Name of Waste: DNAPL Product

b. Process Generating Waste: Remedial investigation produced DNAPL and DNAPL/Water Mixtures for disposal. See analysis attached "DNAPL Product A04-8627" Drum ID Nos. HWS 022-024.

c. Color: Turbid

d. Strong odor (describe): Solvent

e. Physical state @ 70 F: ☐ Solid ☒ Liquid ☐ Gas ☐ Sludge ☐ Other

f. Layers: ☐ Single Layer ☒ multi-layer

g. Free liquid range ____ to 100 %

h. pH: Range ____ to ~7 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☒ ≥ 200 F ☐ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents See attachment for Add'l	Concentration Range constituents	Constituents	Concentration Range
Water	98-99%	1,1-Dichloroethane	1200 mg/kg
Carbon Disulfide	8.4 mg/kg	1,1-Dichloroethane	7500 mg/kg
Chloroform	42 mg/kg	1,2-Dichloroethene	430 mg/kg

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Carcinogen ☐ Pyrophoric ☐ Infectious ☐ Explosive ☐ Shock Sensitive ☐ Radioactive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☒ YES ☐ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☐ YES ☒ NO
Volatile organic concentration >2.0% ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☒ NO
If yes, is it a Table 8 ____ or Table 9 ____ compound?

2. Quantity of Waste
Estimated Annual Volume 4-5 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify) ____

3. Shipping Information
a. Packaging:
☐ Bulk Solid; Type/Size: ____
☒ Drum; Type; Size: 55 gallon steel UN approved
☐ Bulk Liquid; Type/Size: ____
☐ Other: ____

Form WMI-4163 (05/99)

Profile Addendum   Additional Constituents

Generator: Greif Brothers Corp.

Description: Drill Cutting Soils (RW-3)

WTS #: 22202

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

VA 7496

WTS# 22202

b. Shipping Frequency: Units 4-10 Drums Per: ☐ Month ☐ Quarter ☒ Year ☐ One time ☐ Other

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☒ YES ☐ NO

d. Reportable Quantity (lbs.; kgs.): 10 lb. e. Hazard Class/ID #: 9, NA3077, PGIII

f. USDOT Shipping Name: RQ Hazardous Waste Solid, n.o.s. (U226, U228)

g. Personal Protective Equipment Requirements: gloves, safety glasses

h. Transporter/Transfer Station: Direct Landfill

[illegible]

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☒ YES ☐ NO
   a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) D040, F002 U228, U226
   b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.) ☐ YES ☒ NO
   c. Does this waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) ☐ YES ☒ NO
2. Is this a state hazardous waste? ☐ YES ☒ NO
   Identify ALL state hazardous waste codes

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

MHC

Service Agreement on File? ☒ YES ☐ NO

☒ Hazardous ☐ Non-Hazardous ☐ TSCA

Profile Number: VA 7496

Renewal Date: / /

[illegible]

1. Generator Name: Greif Brothers Corp.
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Boulevard
4. Phone: (716) 836-4200
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: –
11. Customer Name: Waste Technology Services, Inc.
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Cattieu
14. Customer Fax: (716) 282-8986
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092 ☐ Same as above

[illegible] Information

1. Description WTS# 22202
   a. Name of Waste: Drill Cutting Soils (RW-3)
   b. Process Generating Waste: Remedial investigation drill cuttings were collected for analysis. Drum ID Nos. 001-004 (Analytical WCS-01/A04-8227)

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Brown	None	☒ Solid ☐ Liquid ☐ Gas ☐ Sludge ☐ Other	☒ Single Layer ☐ multi-layer	____ to 0 % h. pH: Range ____ to 8.3 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☐ ≥ 200 F ☒ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Soil	99-100%	1,1,1-Trichloroethane	0.850 mg/kg
1,1-Dichloroethane	0.730 mg/kg	Trichloroethene	0.023 mg/kg
1,2-Dichloroethane	0.019 mg/kg	Vinyl Chloride	0.016 mg/kg

TOTAL COMPOSITION MUST EQUAL OR [illegible]

k. ☐ Oxidizer ☐ Carcinogen ☐ Pyrophoric ☐ Infectious ☐ Explosive ☐ Shock Sensitive ☐ Radioactive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
   If yes ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
   If yes, concentration 0 ppm
   Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☐ YES ☒ NO
   If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
   If no, does the waste contain <500 ppmw volatile organic (VO)? ☒ YES ☐ NO
   Volatile organic concentration <1.0 ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.) ☐ YES ☒ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☐ NO
   If yes, is it a Table 8 ____ or Table 9 ____ compound?

2. Quantity of Waste
   Estimated Annual Volume 4-10 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify)

3. Shipping Information
   a. Packaging:
   ☐ Bulk Solid; Type/Size:
   ☒ Drum; Type: Size: 55 gal. UN Steel
   ☐ Bulk Liquid; Type/Size:
   ☐ Other

Form WMI-4165 (94/01)

Land Disposal Notification (Addendum)

Generator: Greif Brothers Corporation

Waste Stream: Drill Cutting Soils (RW-3) WTS# 23202

Identify all EPA codes applicable to this waste stream as per 40 CFR 261 / 6 NYCRR Part 371. Identify the corresponding subcategory or Indicate 'none' If the waste code has no subcategory.

US EPA Waste Codes	Subcategory (if applicable)	Wastewater (<1 % solids & <1 % TOC)	Non-wastewater (>1 % solids or > 1 % TOC)	How Must the Waste be Managed?
D040 F002	None		X	SC
U228 U226	None		X	SC

Underlying Hazardous Constituents (UHCs)	Concentration

How must the waste be managed? Enter letter (A, B, C, D, E, or F) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7)

A. Restricted Waste Requires Treatment to All Applicable Standards

B. Restricted Waste Has Been Treated to Comply with Performance Standards

C. Waste Meets Treatment Standards at the Original Point of Generation

D. Decharacterized Waste Requires Treatment for Underlying Hazardous Constituents

E. This Hazardous Debris Is Subject to the Alternative Treatment Standards of 40 CFR 268.45

F. This Restricted Waste Can Be Land Disposed Without Treatment.

SC. Contaminated Soil Complies with All Applicable Treatment Standards

SS. Contaminated Soil Is Subject to All Applicable Treatment Standards

Source Codes (e.g., G01, G21, G71, etc): G49

Form Codes (e.g., W101, W200, W301, etc): W301

Management Method Codes (e.g., H010, H111, H132, etc): H132

Handling Codes (e.g., L, T, B, R): L

MHG

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WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Profile Number: VA 7498
Renewal Date: / /

Service Agreement on File? ☒ YES ☐ NO
☒ Hazardous ☐ Non-Hazardous ☐ TSCA

A. Waste Generator Information

1. Generator Name: Greif Brothers Corp.
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Boulevard
4. Phone: (716) 836-4200
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: –
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Carrieu
14. Customer Fax: (716) 282-6986 ☐ Same as above
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092

B. Waste Stream Information

WTS# 22206

1. Description

a. Name of Waste: Hazardous Debris

b. Process Generating Waste: Remedial investigation produced containers of PPE, hose, etc. contaminated by Hazardous Waste Drum ID Nos. 014/HWS021

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Varies	None	☒ Solid ☐ Liquid ☐ Gas ☐ Sludge ☐ Other ____	☒ Single Layer ☐ multi-layer	____ to 0 % h. pH: Range ____ to 7 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☐ ≥ 200 F ☒ Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Personal Protective Equipment	0-100%	Chloroform	Trace
Hoses, tubing	0-100%	1,1-Dichloroethane	Trace
Carbon Disulfide	Trace	1,1-Dichloroethene	Trace

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable ☐ YES ☒ NO

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☐ YES ☒ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☒ YES ☐ NO
Volatile organic concentration <100 ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☒ YES ☐ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☒ NO
If yes, is it a Table 8 ____ or Table 9 ____ compound?

2. **Quantity of Waste**
Estimated Annual Volume 4 drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify) ____

3. **Shipping Information**

a. Packaging:
☐ Bulk Solid; Type/Size: ____
☐ Drum; Type: Size: UN1A2 55 gallon
☐ Bulk Liquid; Type/Size: ____
☐ Other: ____

Form WMI-4153 (05/99)

WM
WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

VA 7498
WTS# 22206

b. Shipping Frequency: Units 4 drums Per: ☐ Month ☐ Quarter ☒ Year ☐ One time ☐ Other

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d. e. and f) ☒ YES ☐ NO

d. Reportable Quantity (lbs.; kgs.): 10 lb. e. Hazard Class/ID #, 9, NA3077, PGIII

f. USDOT Shipping Name: RQ Hazardous Waste Solid, n.o.s. (U226, U228, F002, D040)

g. Personal Protective Equipment Requirements: gloves, tyveks, safety glasses

h. Transporter/Transfer Station: Debris Treatment/Subtitle C Secure Landfill, Model City

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☒ YES ☐ NO
   a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) U226, U228 F002, D040
   b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.) ☐ YES ☒ NO
   c. Does this waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) ☒ YES ☐ NO
2. Is this a state hazardous waste? ☐ YES ☒ NO
   Identify ALL state hazardous waste codes
3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☐ YES ☒ NO
   If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up provide relevant documentation.
4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐ YES ☒ NO
5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761 ? (If yes, list in Chemical Composition - B.1.) ☐ YES ☒ NO
   a. If yes, were the PCBs imported into the U.S.? ☐ YES ☐ NO
6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒ YES ☐ NO
7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒ YES ☐ NO

☐ Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WM to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: Title: Plant Supervisor

Name (Type or Print): David Peters Company Name: Greif Brothers Corp. Date:

☐ Check if additional information is attached. Indicate the number of attached pages 20

D. WM Management's Decision

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1. Management Method ☐ Landfill ☐ Non-hazardous Solidification ☐ Bioremediation ☐ Incineration ☐ Hazardous Stabilization ☐ Other (Specify)
2. Proposed Ultimate Management Facility:
3. Precautions, Special Handling Procedures, or Limitation on Approval;
4. Waste Form 5. Source 6. System Type

☐ Approved ☐ Disapproved

Special Waste Decision

Salesperson's Signature: Date:

Division Approval Signature (Optional): Date:

Special Waste Approvals Person Signature: Date:

Form WMT-4153 (05/99)

Profile Addendum – Additional Constituents

Generator: Greif Brothers Corp.

Description: Hazardous Debris

WTS #: 22206

Approval Code: VA 7498

Constituent	Concentration
1,2-Dichloroethene	Trace
Ethylenezene	Trace
Tetrachloroethene	Trace
Toluene	Trace
1,1,1-Trichloroethane	Trace
1,1,2-Trichloroethane	Trace
Trichloroethene	Trace
Xylene (total)	Trace
Acetone	Trace
2-Butanone	Trace
Chloroform	Trace
CIS 1,2-Dichloroethene	Trace

Notes:

Land Disposal Notification (Addendum)

Generator: Greif Brothers Corp.

Waste Stream: Hazardous Debris WTS# 22206

Identify all EPA codes applicable to this waste stream as per 40 CFR 261 / 6 NYCRR Part 371. Identify the corresponding subcategory or Indicate 'none' If the waste code has no subcategory.

US EPA Waste Codes	Subcategory (if applicable)	Wastewater (<l % solids & <1 % TOC)	Non-wastewater (>1 % solids or > 1 % TOC)	How Must the Waste be Managed?
U226	Debris		X	E
U228	Debris		X	E
F002	Debris		X	E
D040	Debris ·		X	E

Underlying Hazardous Constituents (UHCs)	Concentration

How must the waste be managed? Enter letter (A, B, C, D, E, or F) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7)

A. Restricted Waste Requires Treatment to All Applicable Standards

B. Restricted Waste Has Been Treated to Comply with Performance Standards

C. Waste Meets Treatment Standards at the Original Point of Generation

D. Decharacterized Waste Requires Treatment for Underlying Hazardous Constituents

E. This Hazardous Debris Is Subject to the Alternative Treatment Standards of 40 CFR 268.45

F. This Restricted Waste Can Be Land Disposed Without Treatment.

SC. Contaminated Soil Complies with All Applicable Treatment Standards

SS. Contaminated Soil Is Subject to All Applicable Treatment Standards

Source Codes (e.g., G01, G21, G71, etc): G49

Form Codes (e.g., W101, W200, W301, etc): W002

Management Method Codes (e.g., H010, H111, H132, etc): H132

Handling Codes (e.g., L, T, B, R): L

WM WASTE MANAGEMENT

MHG

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☒ YES ☐ NO
☒ Hazardous ☐ Non-Hazardous ☐ TSCA

Profile Number: VA 7499
Renewal Date: / /

A. Waste Generator Information

1. Generator Name: Greif Brothers Corp.
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Boulevard
4. Phone: (716) 282-4100
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: –
11. Customer Name: Waste Technology Services, Inc.
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Cattieu
14. Customer Fax: (716) 282-6986
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092 ☐ Same as above

B. Waste Stream Information

1. Description

a. Name of Waste: Purge/Decontamination Wastewater WTS# 22203

b. Process Generating Waste: Remedial investigation produced containers of wastewater contaminated by Hazardous Wastes (Analytical DNAPL-AQUEOUS A04-8627) Drum ID Nos. HWS 009-010/015/016/017-020

c. Color	d. Strong odor (describe):	e. Physical state @ 70 F	f. Layers	g. Free liquid range
Turbid	Slight Organic	☐ Solid ☒ Liquid ☐ Gas ☐ Sludge ☐ Other ______	☒ Single Layer ☐ multi-layer	______ to 100 % h. pH: Range ______ to 6.62 %

i. Liquid Flash Point: ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☒ ≥ 200 F ☐ Not applicable

j. Chemical Composition (List all constituents (including halogenated organics, debris, and UHC's) present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Water	99-100%	Chloroform	0.045ppm
Silt	<1%	1,1-Dichloroethane	1.9ppm
2-Butanone	3.1ppm	1,2-Dichloroethane	2.0ppm

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☐ YES ☒ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☒ YES ☐ NO
Volatile organic concentration <100 ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☐ NO
If yes, is it a Table 8 ______ or Table 9 ______ compound?

2. Quantity of Waste

Estimated Annual Volume 8-10 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify) ______

3. Shipping Information

a. Packaging:
☐ Bulk Solid; Type/Size: ______ ☐ Bulk Liquid; Type/Size: ______
☒ Drum; Type; Size: 8 - 55 gal. Steel ☐ Other: ______

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

VA 7499
WTS# 22203

b. Shipping Frequency: Units 8-10 Drums Per: ☐ Month ☐ Quarter ☒ Year ☐ One time ☐ Other

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☒ YES ☐ NO

d. Reportable Quantity (lbs.; kgs.): 10 lb. e. Hazard Class/ID #: 9, NA3082, PGIII

f. USDOT Shipping Name: RQ Hazardous Waste Liquid, n.o.s. (U226, U228)

g. Personal Protective Equipment Requirements: gloves, tyveks, safety glasses

h. Transporter/Transfer Station: Aqueous Treatment, Model City

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☒ YES ☐ NO
   a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) U226, U228 F002, D040
   b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (if yes, list in Section B.1.j) ☒ YES ☐ NO
   c. Does this waste contain debris? (if yes, list size and type in Chemical Composition - B.1.) ☐ YES ☒ NO

2. Is this a state hazardous waste? ☐ YES ☒ NO
   Identify ALL state hazardous waste codes

3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☐ YES ☒ NO
   If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up provide relevant documentation.

4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐ YES ☒ NO

5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761 ? (If yes, list in Chemical Composition - B.1.j) ☐ YES ☒ NO
   a. If yes, were the PCBs imported into the U.S.? ☐ YES ☐ NO

6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒ YES ☐ NO

7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒ YES ☐ NO

☐ Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WM to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: Title: Plant Supervisor

Name (Type or Print): David Peters Company Name: Greif Brothers Corp. Date:

☐ Check if additional information is attached. Indicate the number of attached pages 20

D. WM Management's Decision

FOR WM USE ONLY

1. Management Method ☐ Landfill ☐ Non-hazardous Solidification ☐ Bioremediation ☐ Incineration ☐ Hazardous Stabilization ☐ Other (Specify)
2. Proposed Ultimate Management Facility:
3. Precautions, Special Handling Procedures, or Limitation on Approval:
4. Waste Form 5. Source 6. System Type

Special Waste Decision ☐ Approved ☐ Disapproved

Salesperson's Signature: Date:

Division Approval Signature (Optional): Date:

Special Waste Approvals Person Signature: Date:

Form WMI-4155 (5/99)

Profile Addendum - Additional Constituents

Generator: Greif Brothers Corp.

Description: Purge/Decontamination Waste Water

WTS #: 22203

Approval Code: VA 7499

Constituent	Concentration
1,1-Dichloroethene	1.9ppm
CIS-1,2-Dichloroethene	0.012ppm
Ethylenezene	0.320ppm
Toluene	0.2ppm
1,1,1-Trichloroethane	160ppm
1,1,2-Trichloroethane	0.280ppm
Trichloroethene	210ppm
Xylene(s)	1.9ppm

Notes:

Land Disposal Notification (Addendum)

Generator: Greif Brothers Corp.

Waste Stream: Purge/Decontamination Water WTS# 22203

Identify all EPA codes applicable to this waste stream as per 40 CFR 261 / 6 NYCRR Part 371. Identify the corresponding subcategory or indicate 'none' if the waste code has no subcategory.

US EPA Waste Codes	Subcategory (If applicable)	Wastewater (<l % solids & <1 % TOC)	Non-wastewater (>1 % solids or > 1 % TOC)	How Must the Waste be Managed?
U226				A
U228				A
F002				A
D040				A

Underlying Hazardous Constituents (UHCs)	Concentration

How must the waste be managed? Enter letter (A, B, C, D, E, or F) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7)

A. Restricted Waste Requires Treatment to All Applicable Standards

B. Restricted Waste Has Been Treated to Comply with Performance Standards

C. Waste Meets Treatment Standards at the Original Point of Generation

D. Decharacterized Waste Requires Treatment for Underlying Hazardous Constituents

E. This Hazardous Debris Is Subject to the Alternative Treatment Standards of 40 CFR 268.45

F. This Restricted Waste Can Be Land Disposed Without Treatment.

SC. Contaminated Soil Complies with All Applicable Treatment Standards

SS. Contaminated Soil Is Subject to All Applicable Treatment Standards

Source Codes (e.g., G01, G21, G71, etc): G49

Form Codes (e.g., W101, W200, W301, etc): W113

Management Method Codes (e.g., H010, H111, H132, etc): H081

Handling Codes (e.g., L, T, B, R): T

MHG

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☒ YES ☐ NO
☒ Hazardous ☐ Non-Hazardous ☐ TSCA

Profile Number: VA 7480
Renewal Date: / /

A. Waste Generator Information

1. Generator Name: Greif Brothers Corp.
2. SIC Code: 5085
3. Facility Street Address: 2212 Colvin Boulevard
4. Phone: (716) 282-4100
5. Facility City: Tonawanda
6. State/Province: NY
7. Zip/Postal Code: 14150
8. Generator USEPA/Federal ID #: NYD 099 340 408
9. County: Erie
10. State/Province ID#: -
11. Customer Name: Waste Technology Services, Inc
12. Customer Phone: (716) 282-4100
13. Customer Contact: Dean F. Cattieu
14. Customer Fax: (716) 282-6986 ☐ Same as above
15. Billing Address 435 North 2nd Street, Lewiston, NY 14092

B. Waste Stream Information

WTS# 22204

1. Description

a. Name of Waste: Carbon Rinse Water
b. Process Generating Waste: On-site Vapor Extraction System Activated Carbon was soaked in water. Water was removed/collected for disposal.

c. Color: Turbid

d. Strong odor (describe): None

e. Physical state @ 70 F: ☐ Solid ☒ Liquid ☐ Gas ☐ Sludge ☐ Other ______

f. Layers: ☒ Single Layer ☐ multi-layer

g. Free liquid range ______ to 100 %

h. pH: Range ______ to <1.0 %

i. Liquid Flash Point ☐ <73 F ☐ 73-99 F ☐ 100-139 F ☐ 140-199 F ☐ ≥ 200 F ☐ Not applicable

j. Chemical Composition (List all constituents (including halogenated organics, debris, and UHC's) present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Water	95%	see attachment for add'l	
Hydrochloric Acid	<1%	constituents	
Activated Carbon	<1%		

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐ Oxidizer ☐ Carcinogen ☐ Pyrophoric ☐ Infectious ☐ Explosive ☐ Shock Sensitive ☐ Radioactive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO
If yes ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene? ☐ YES ☒ NO
If yes, concentration 0 ppm
Is the waste subject to the benzene waste operations NESHAP? ☐ YES ☒ NO

p. Is the waste subject to RCRA Subpart CC controls? ☐ YES ☒ NO
If no, does the waste meet the organic LDR Exemption? ☐ YES ☒ NO
If no, does the waste contain <500 ppmw volatile organic (VO)? ☒ YES ☐ NO
Volatile organic concentration < ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO

s. Is the waste subject to controls as a Group 1 wastewater or residual under the HON? ☐ YES ☒ NO
If yes, is it a Table 8 ______ or Table 9 ______ compound?

2. Quantity of Waste

Estimated Annual Volume 5 Drums ☐ Tons ☐ Yards ☒ Drums ☐ Other (specify) ______

3. Shipping Information

a. Packaging:
☐ Bulk Solid; Type/Size: ______
☒ Drum; Type; Size: 55 gal. poly drums
☐ Bulk Liquid; Type/Size: ______
☐ Other: ______

Form WMI-4165 (06/99)

WM
WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

VA 7480
WTS# 22204

b. Shipping Frequency: Units 5 Drums Per: ☐ Month ☐ Quarter ☒ Year ☐ One time ☐ Other

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☒ YES ☐ NO

d. Reportable Quantity (lbs.; kgs.): 10 lb. e. Hazard Class/ID #, 9 NA3082 III

f. USDOT Shipping Name: RQ Hazardous waste, liquid, n.o.s., (U228,U226,F002)

g. Personal Protective Equipment Requirements: rubber gloves, tyveks, goggles

h. Transporter/Transfer Station: Aqueous Treatment, Model City

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☒ YES ☐ NO
   a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) U228, U226, F002
   b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.) ☐ YES ☒ NO
   c. Does this waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) ☐ YES ☒ NO
2. Is this a state hazardous waste? ☐ YES ☒ NO
   Identify ALL state hazardous waste codes
3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☐ YES ☒ NO
   If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up provide relevant documentation.
4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐ YES ☒ NO
5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761 ? (If yes, list in Chemical Composition - B.1.) ☐ YES ☒ NO
   a. If yes, were the PCBs imported into the U.S.? ☐ YES ☐ NO
6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒ YES ☐ NO
7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒ YES ☐ NO

☐ Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WM to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: Title: Plant Superintendent

Name (Type or Print): David Peters Company Name: Greif Brothers Corp. Date:

☒ Check if additional information is attached. Indicate the number of attached pages

D. WM Management's Decision FOR WM USE ONLY

1. Management Method ☐ Landfill ☐ Non-hazardous Solidification ☐ Bioremediation ☐ Incineration ☐ Hazardous Stabilization ☐ Other (Specify)
2. Proposed Ultimate Management Facility:
3. Precautions, Special Handling Procedures, or Limitation on Approval:
4. Waste Form 5. Source 6. System Type

Special Waste Decision ☐ Approved ☐ Disapproved

Salesperson's Signature: Date:

Division Approval Signature (Optional): Date:

Special Waste Approvals Person Signature: Date:

Form WM7-4153 (03/99)

Land Disposal Notification (Addendum)

Generator: Greif Brothers Corp.

Waste Stream: Carbon Rinse Water WTS# 22204

Identify all EPA codes applicable to this waste stream as per 40 CFR 261 / 6 NYCRR Part 371. Identify the corresponding subcategory or indicate 'none' if the waste code has no subcategory.

US EPA Waste Codes	Subcategory (if applicable)	Wastewater (<1 % solids & <1 % TOC)	Non-wastewater (>1 % solids or > 1 % TOC)	How Must the Waste be Managed?
U228		X		
U226		X		
F002		X		

Underlying Hazardous Constituents (UHCs)	Concentration

How must the waste be managed? Enter letter (A, B, C, D, E, or F) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7)

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Form Codes (e.g., W101, W200, W301, etc): W113

Management Method Codes (e.g., H010, H111, H132, etc): H081

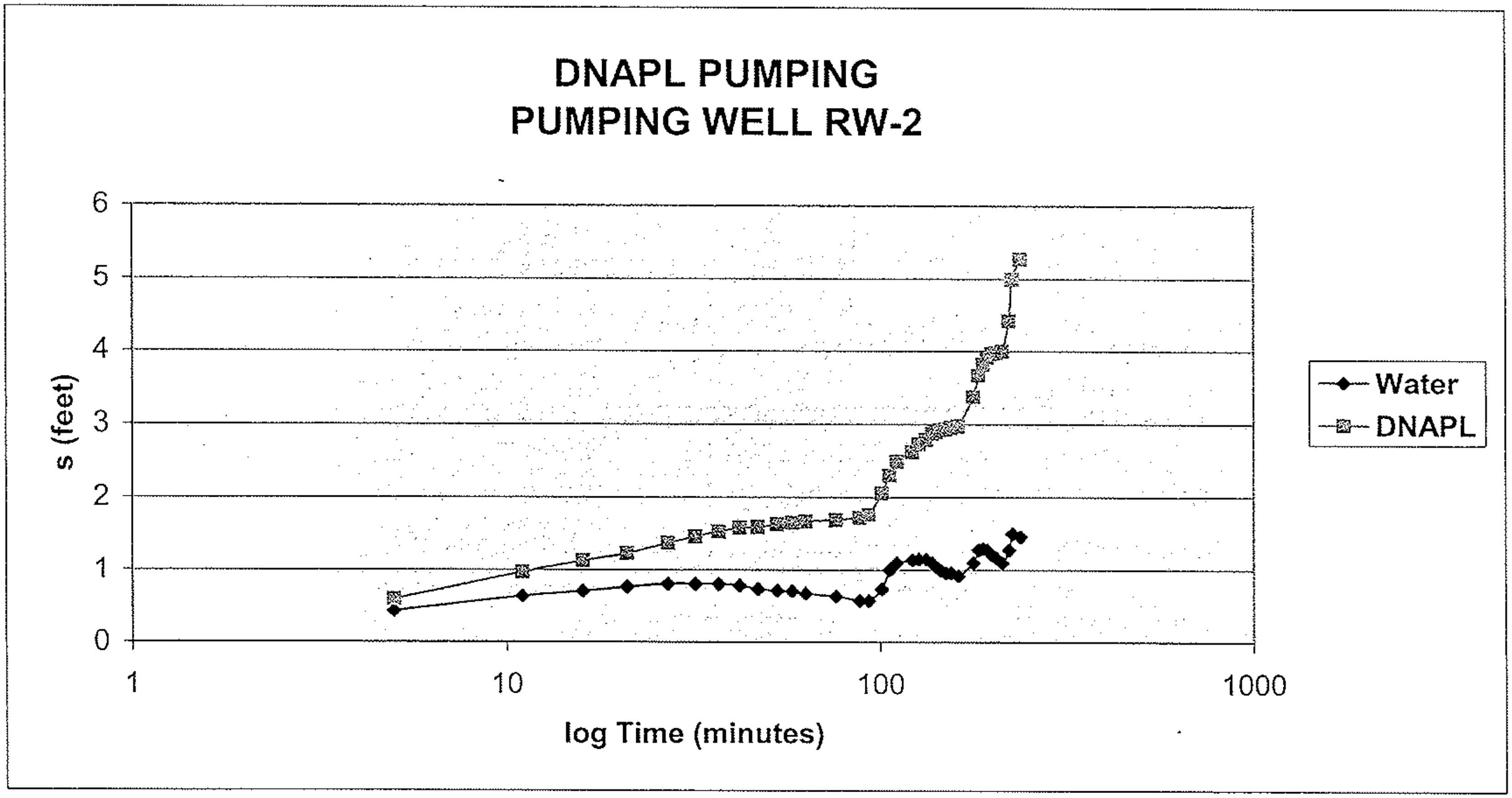
Handling Codes (e.g., L, T, B, R): T

11/18/2004 THU 12:26 FAX 1 716 282 6988 MTS 016

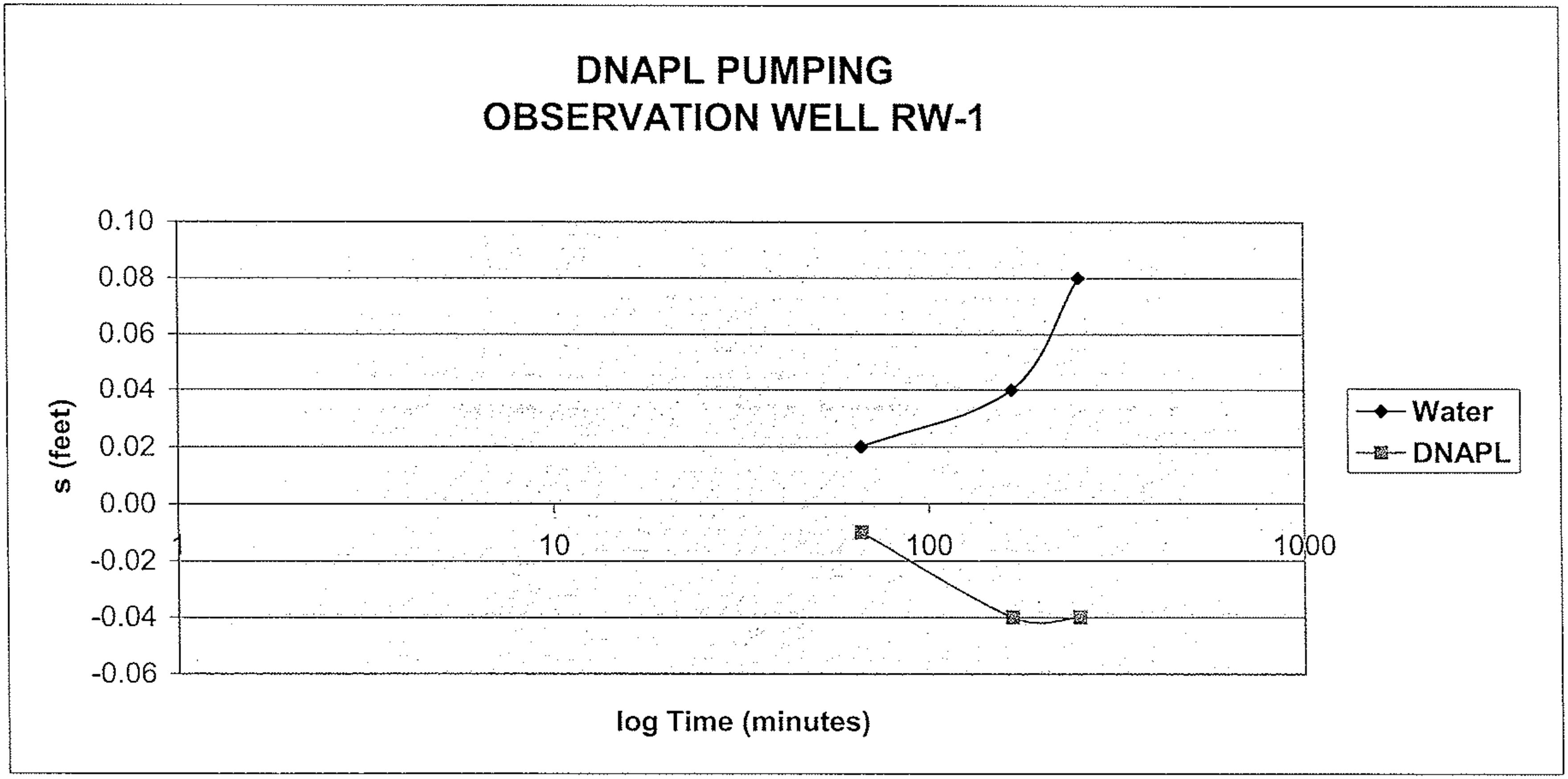
Notes:

Appendix D
Semi-Log Plots of Drawdown versus Time

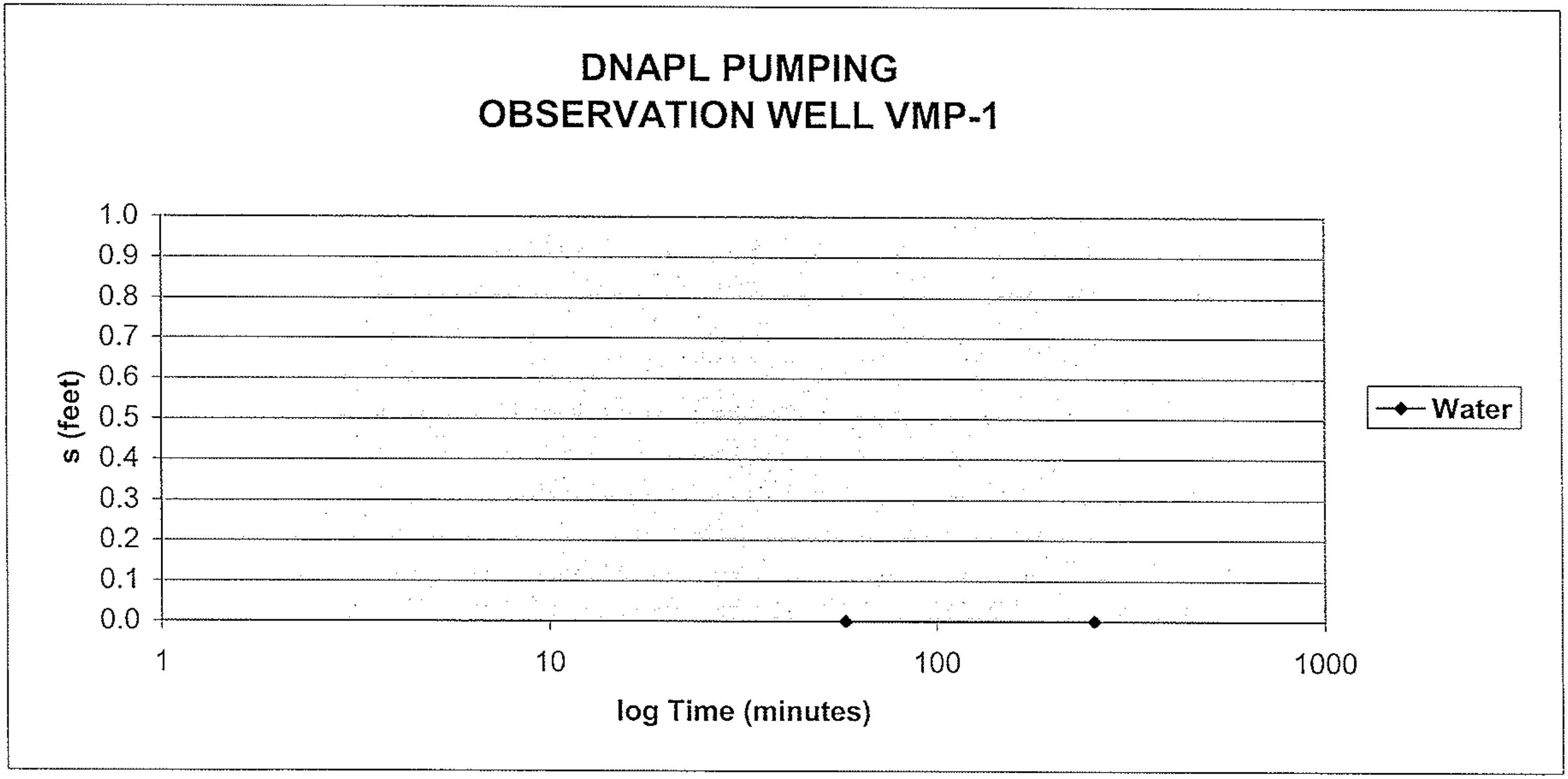
GRAPH 1
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
DNAPL PUMPING - PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



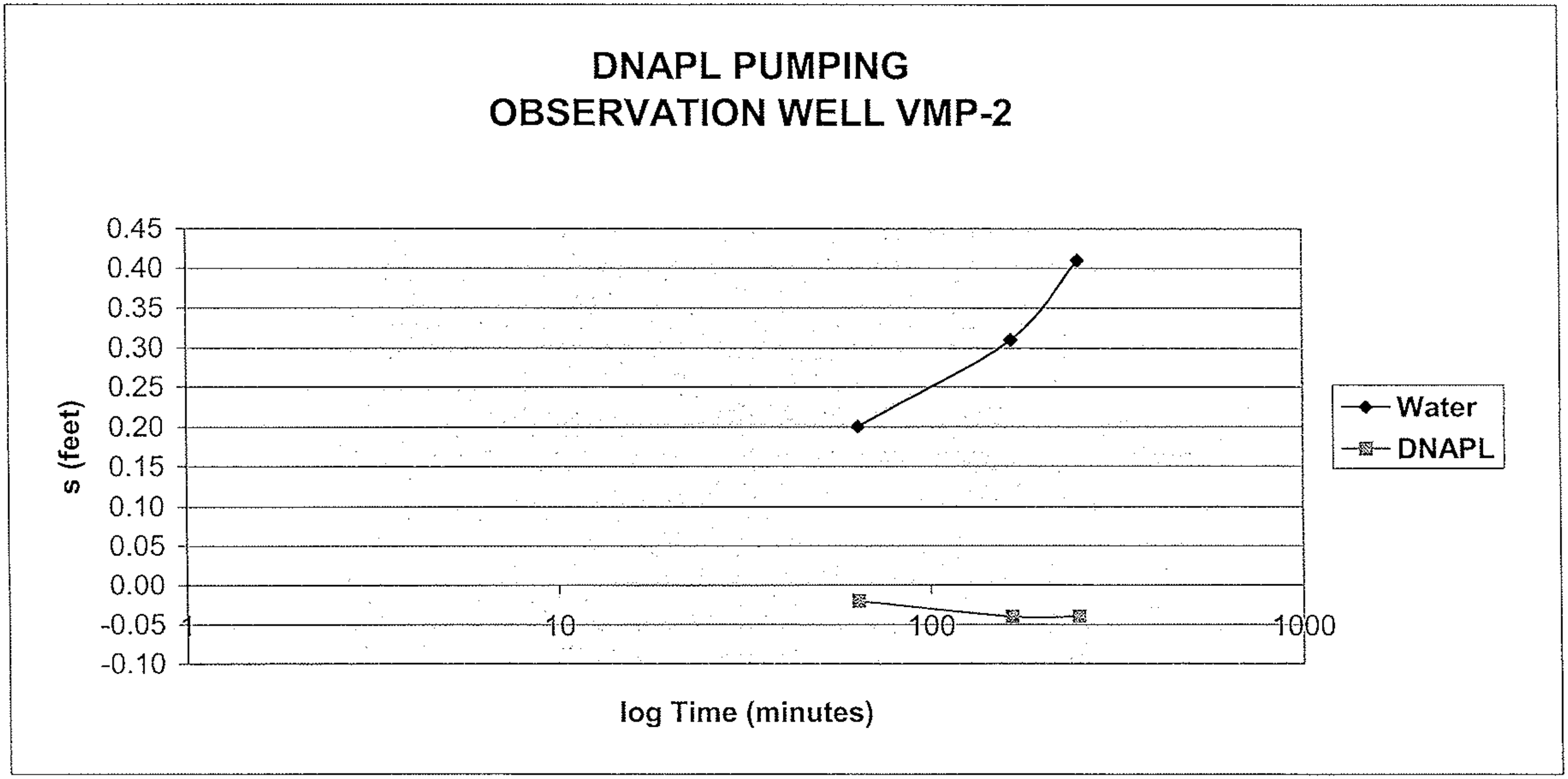
GRAPH 2
SEMIE-LOG PLOT OF DRAWDOWN VERSUS TIME
DNAPL PUMPING - OBSERVATION WELL RW-1
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



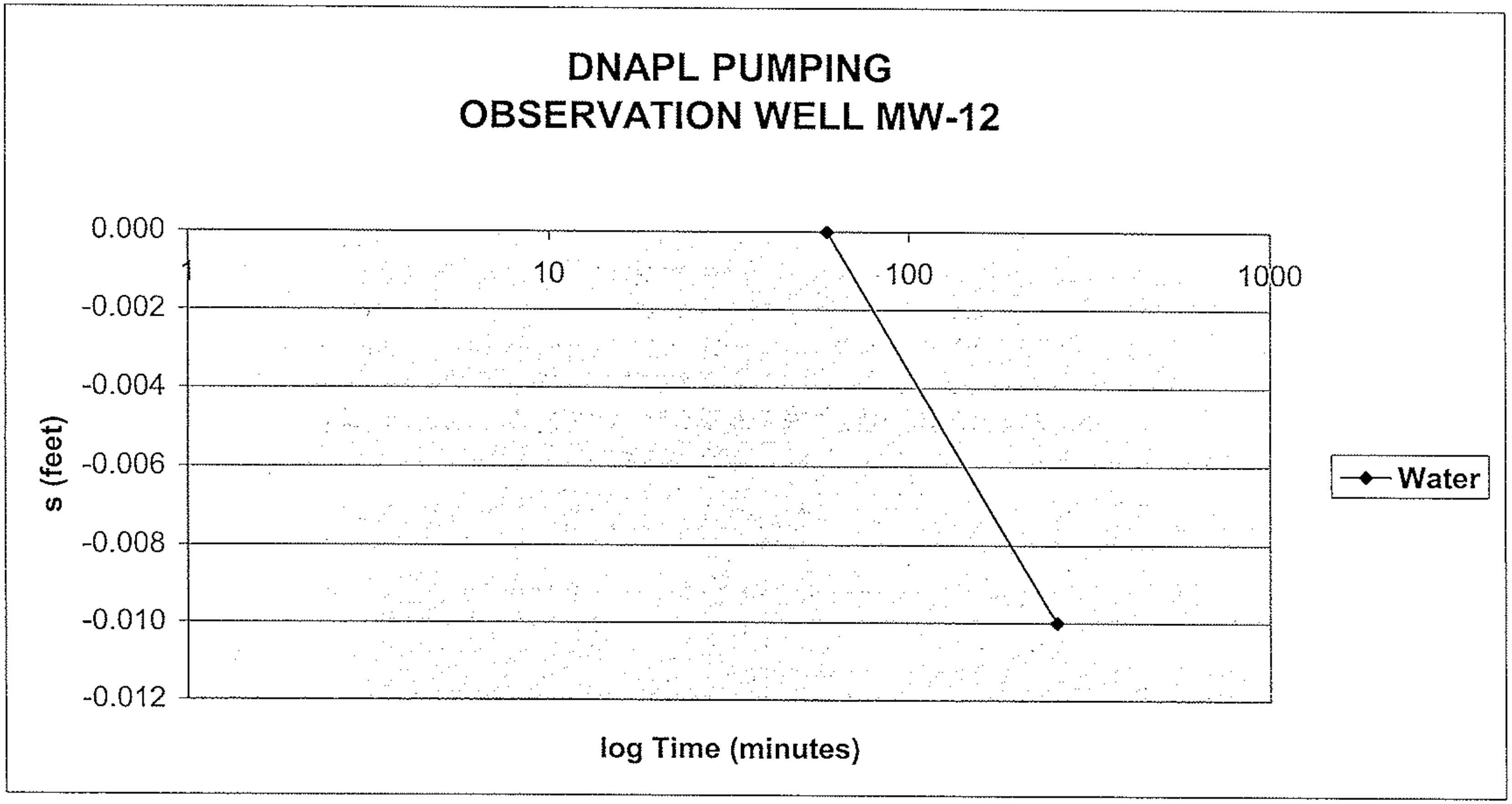
GRAPH 3
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
DNAPL PUMPING - OBSERVATION WELL VMP-1
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



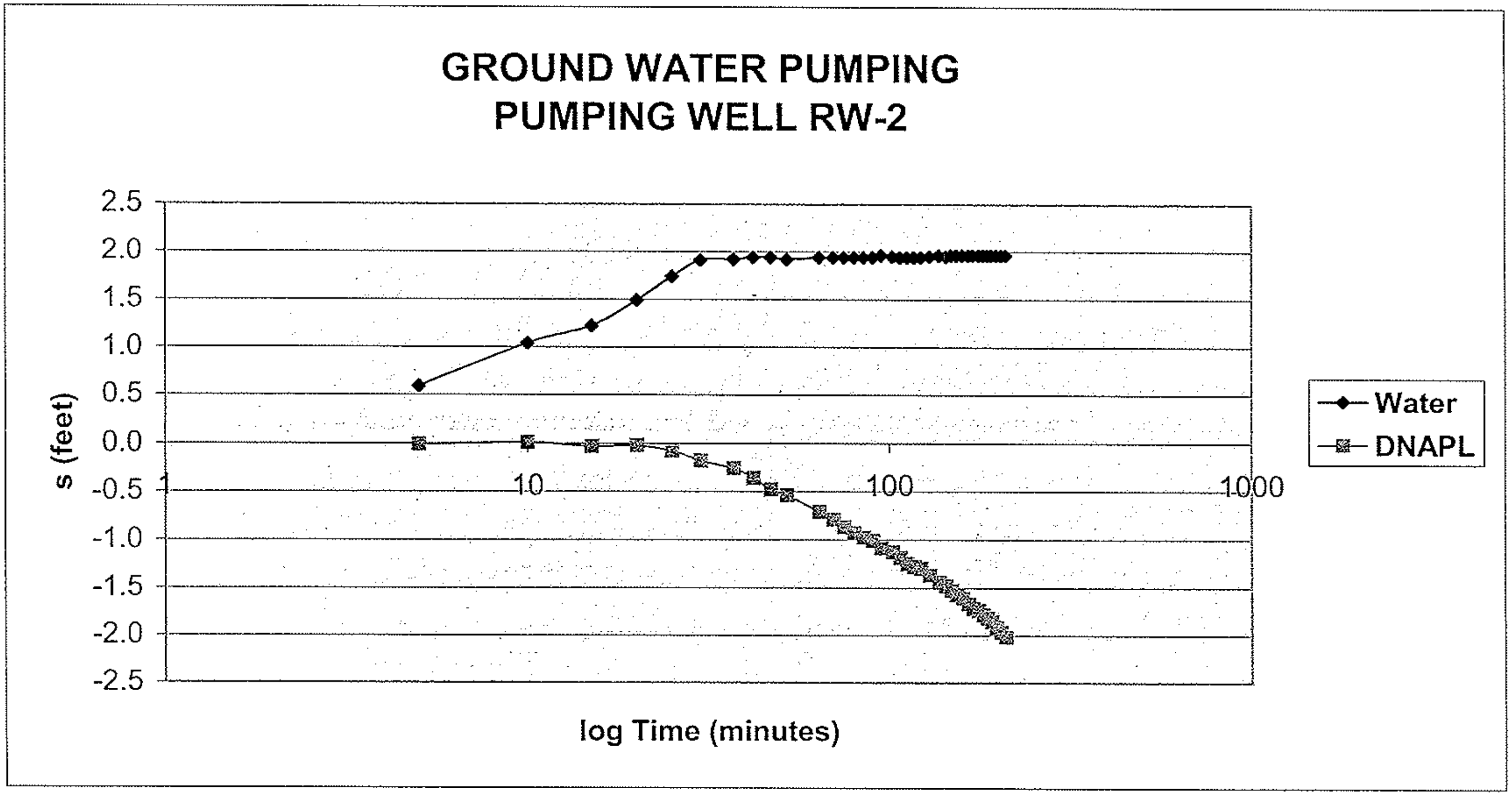
GRAPH 4
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
DNAPL PUMPING - OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



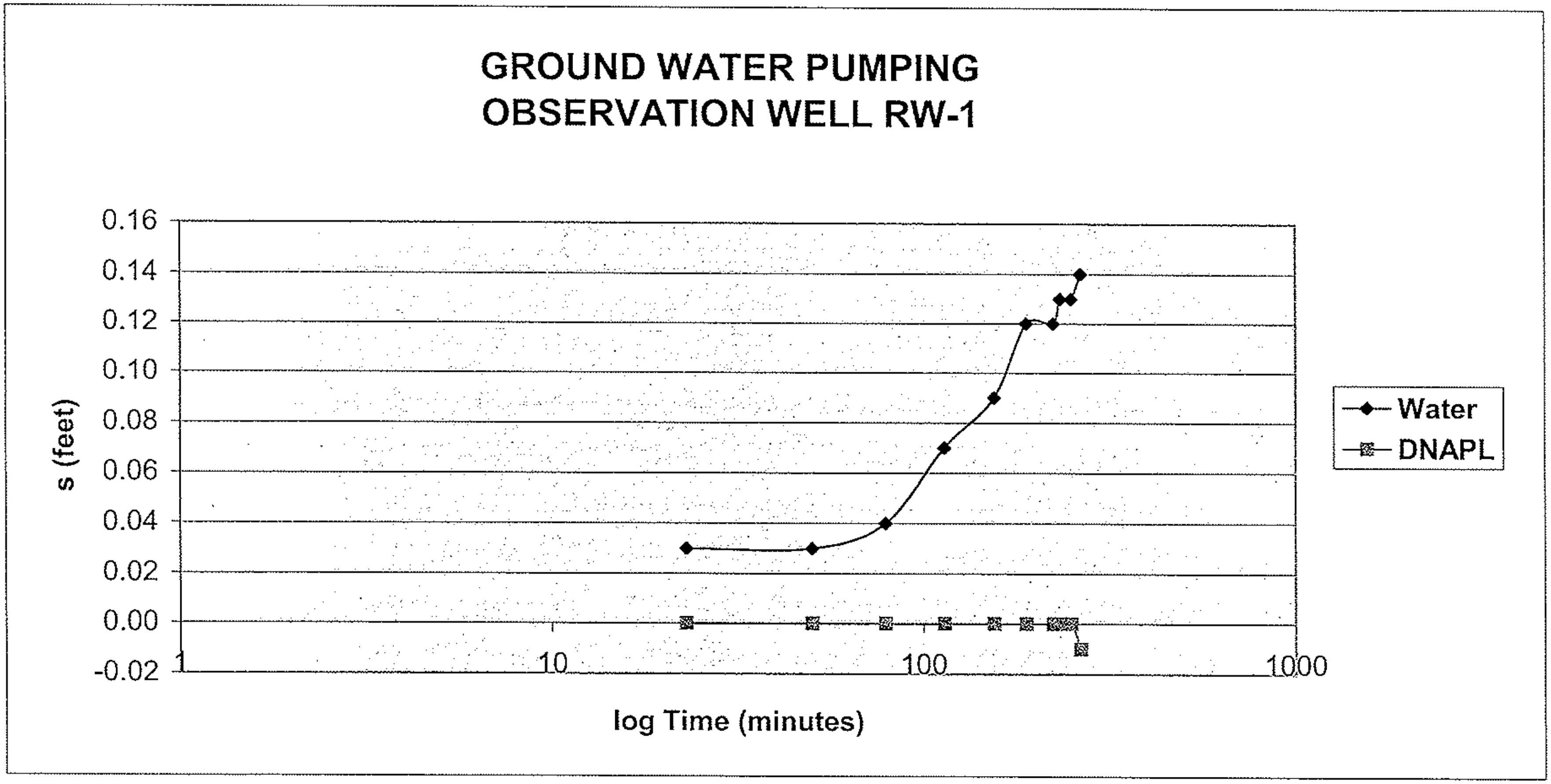
GRAPH 5
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
DNAPL PUMPING - OBSERVATION WELL MW-12
DNAPL RECOVERY IRM PILOT TEST - 22 SEPTEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



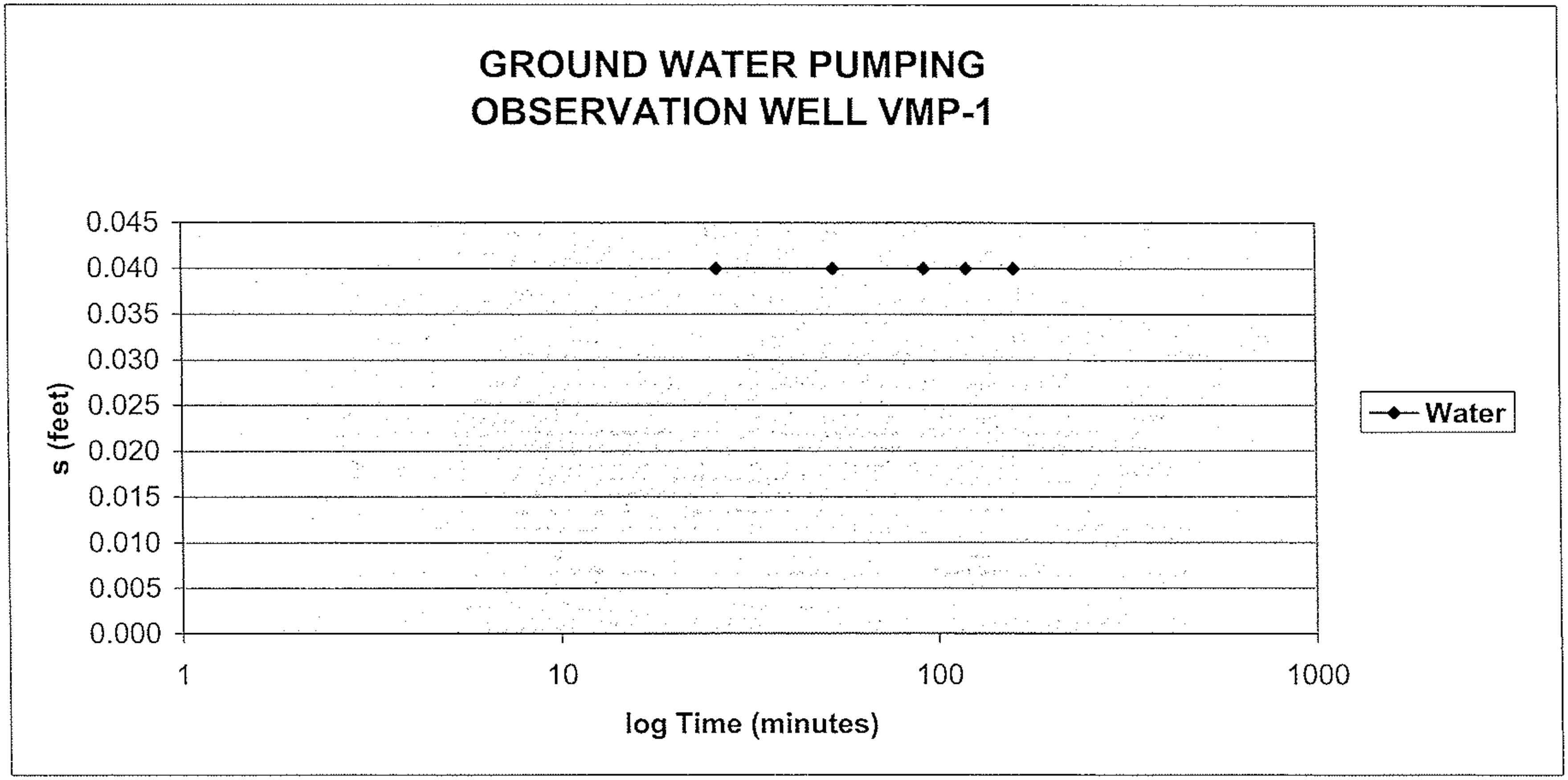
GRAPH 6
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER PUMPING - PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



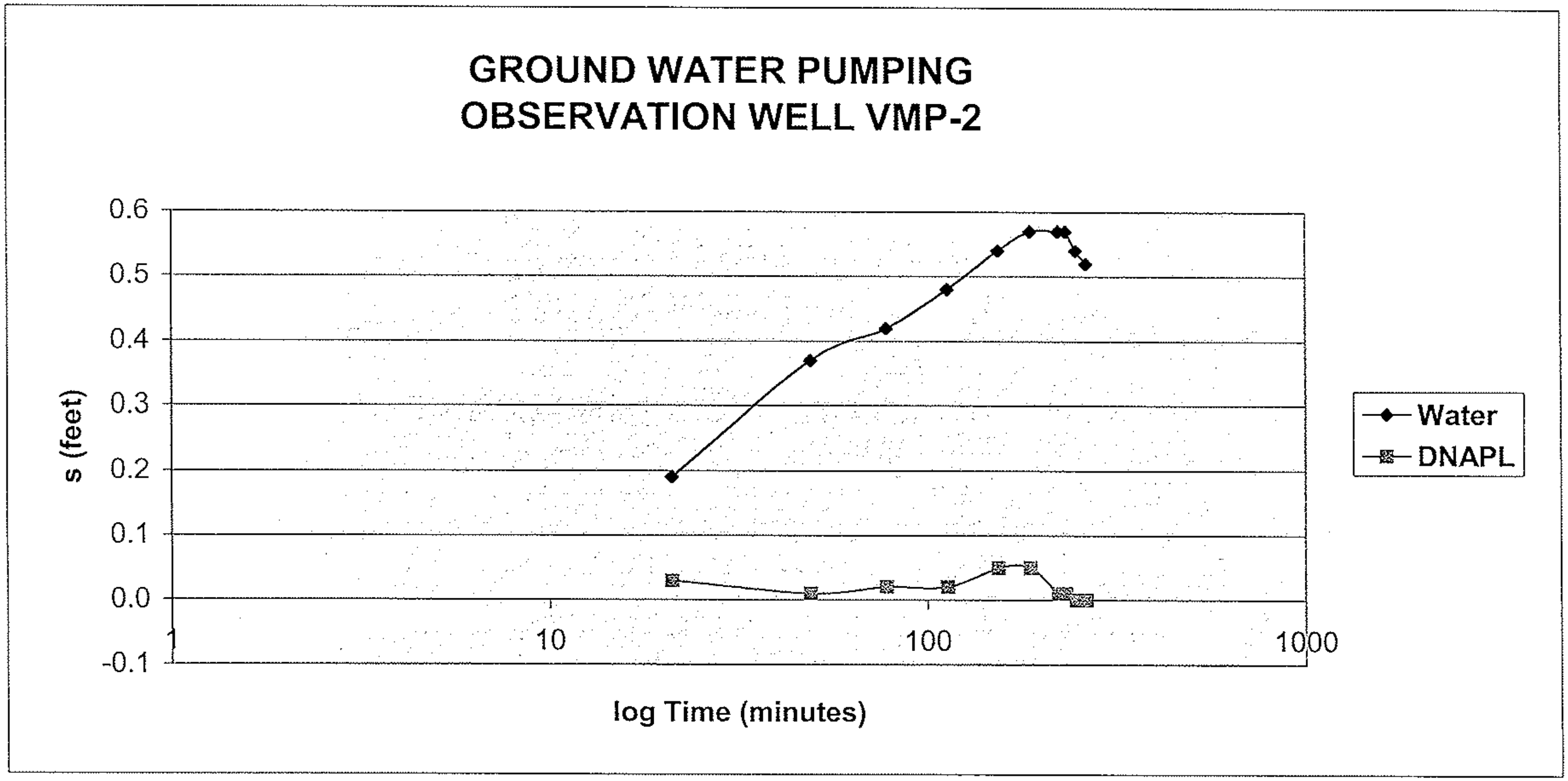
GRAPH 7
SEMIE-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER PUMPING - OBSERVATION WELL RW-1
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



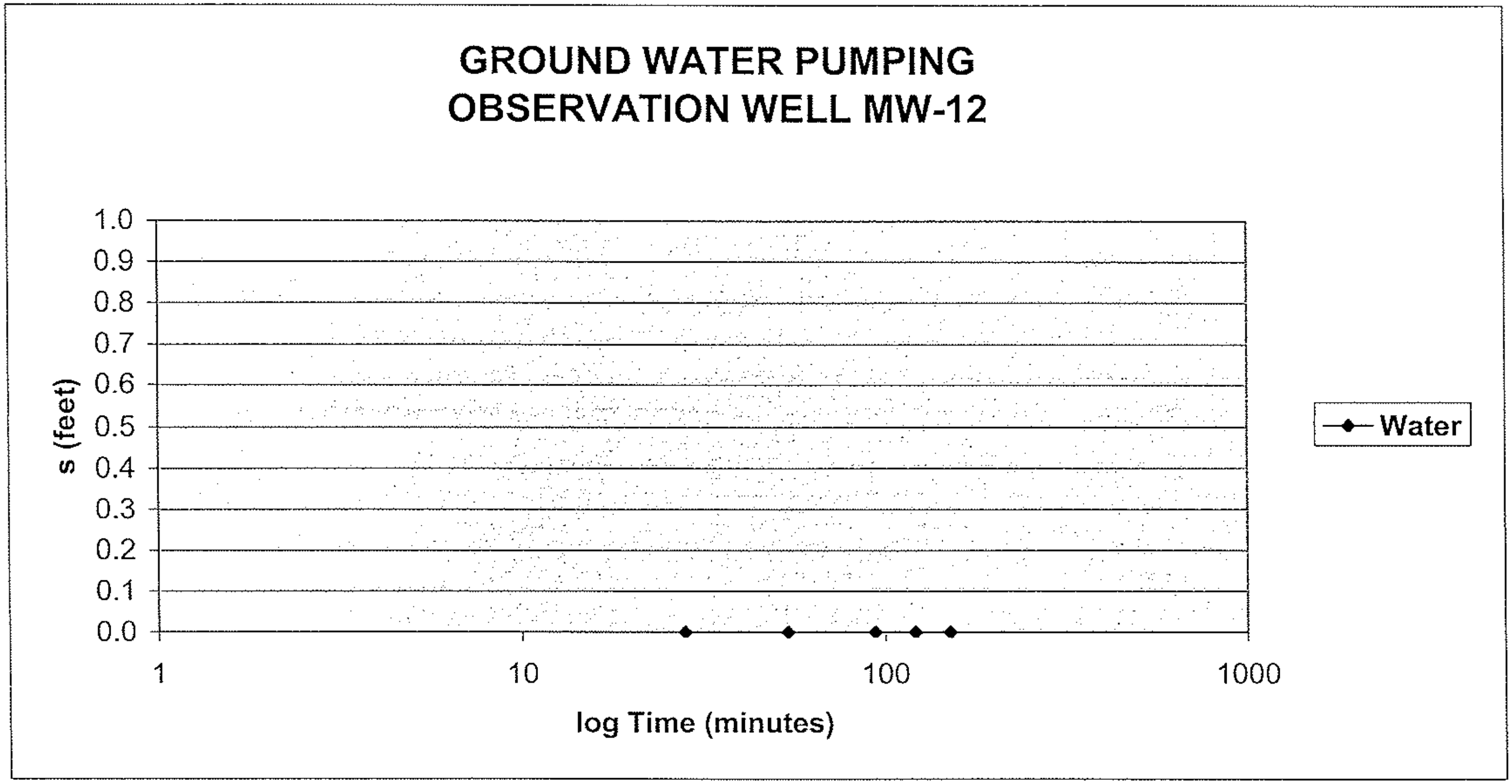
GRAPH 8
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER PUMPING - OBSERVATION WELL VMP-1
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



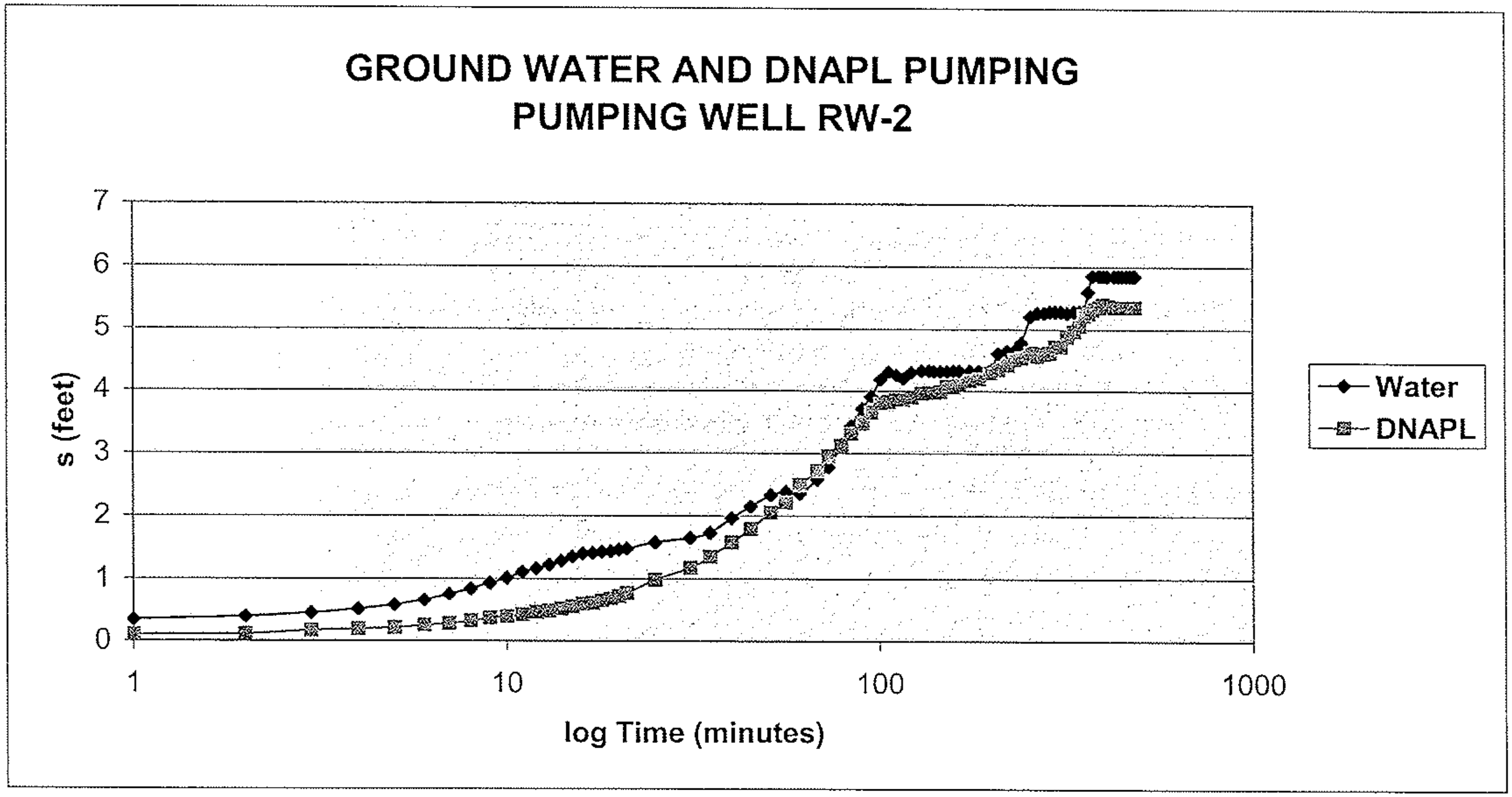
GRAPH 9
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER PUMPING - OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



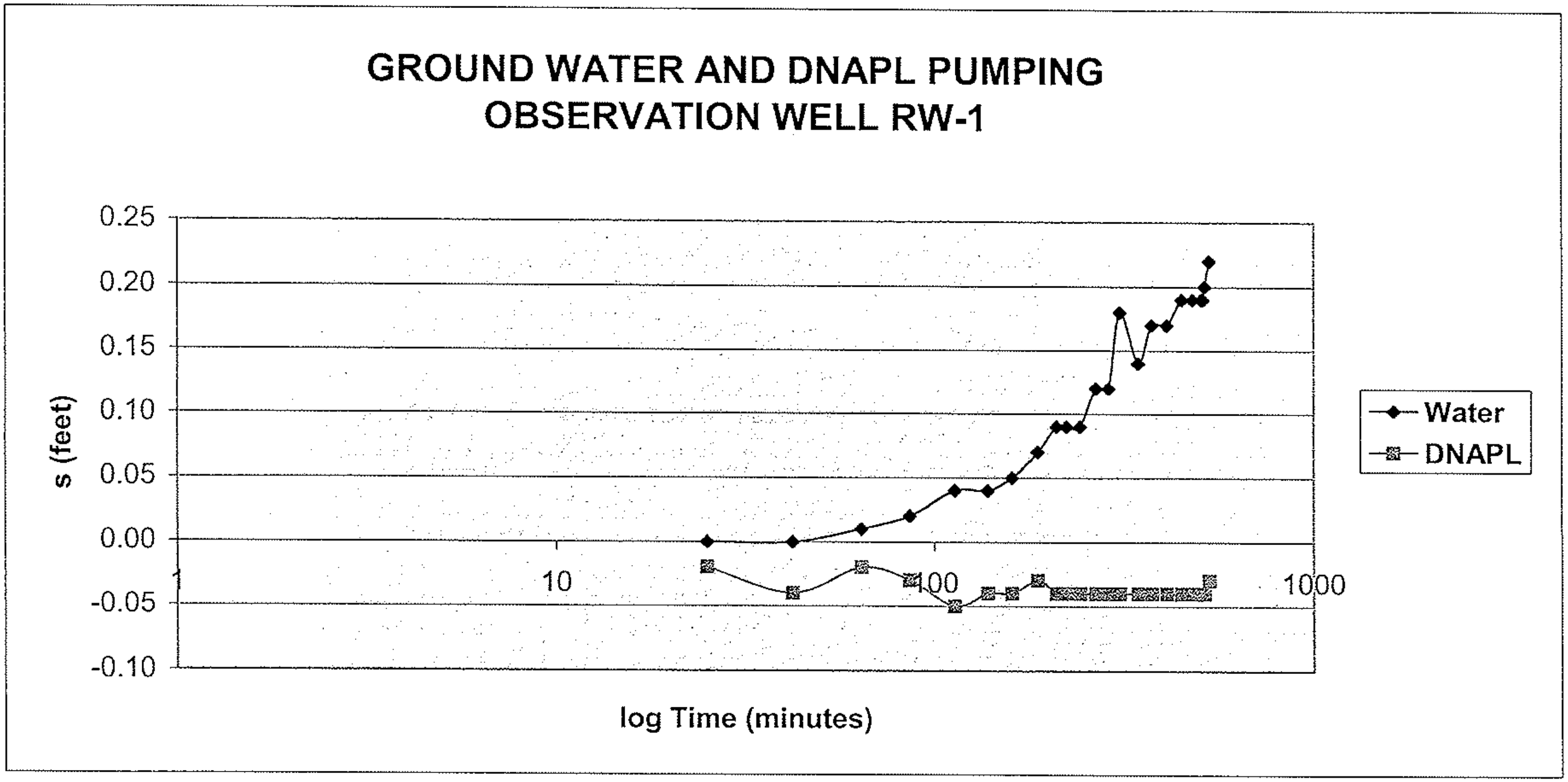
GRAPH 10
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER PUMPING - OBSERVATION WELL MW-12
DNAPL RECOVERY IRM PILOT TEST - 12 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



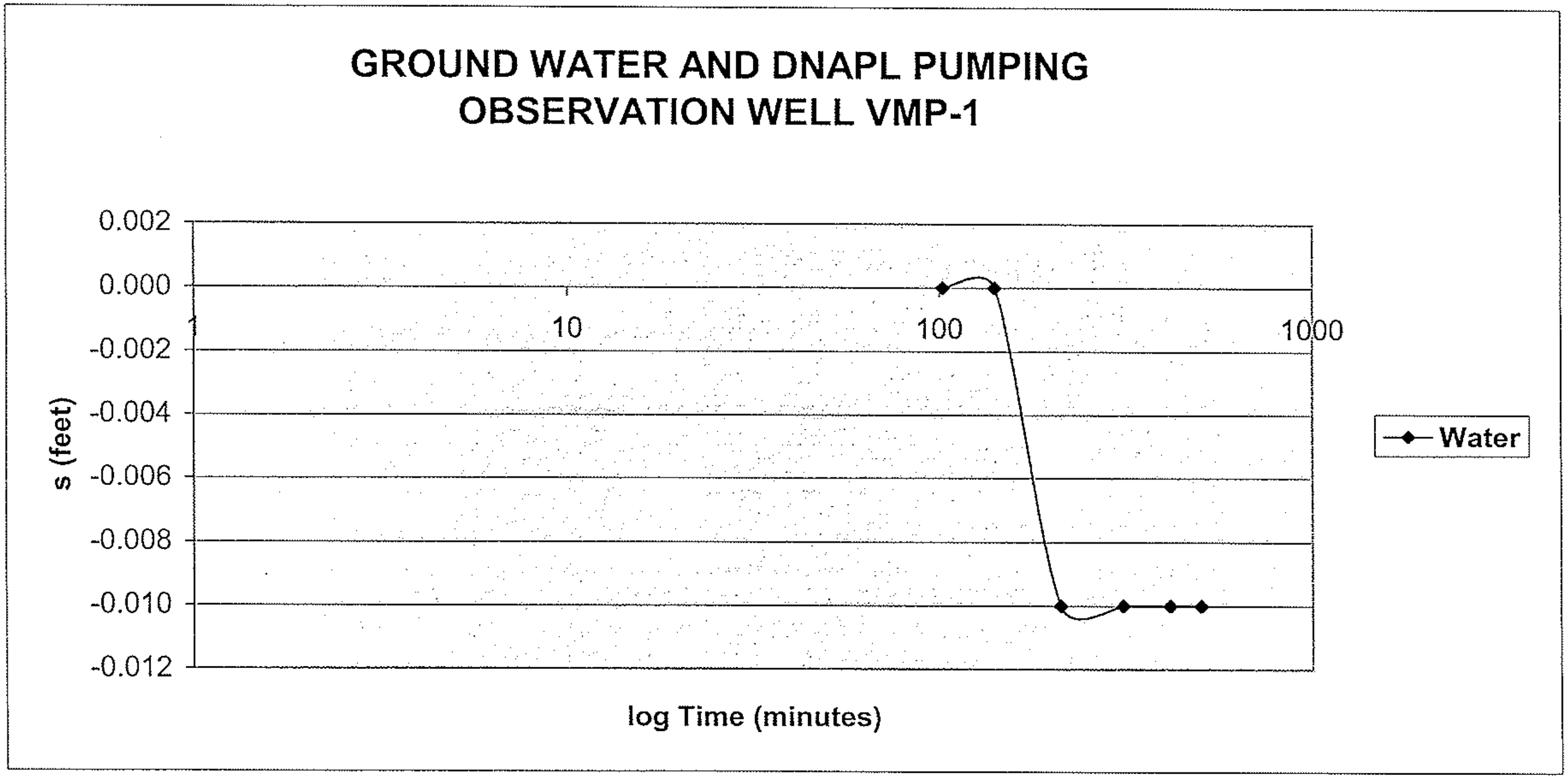
GRAPH 11
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER AND DNAPL PUMPING - PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



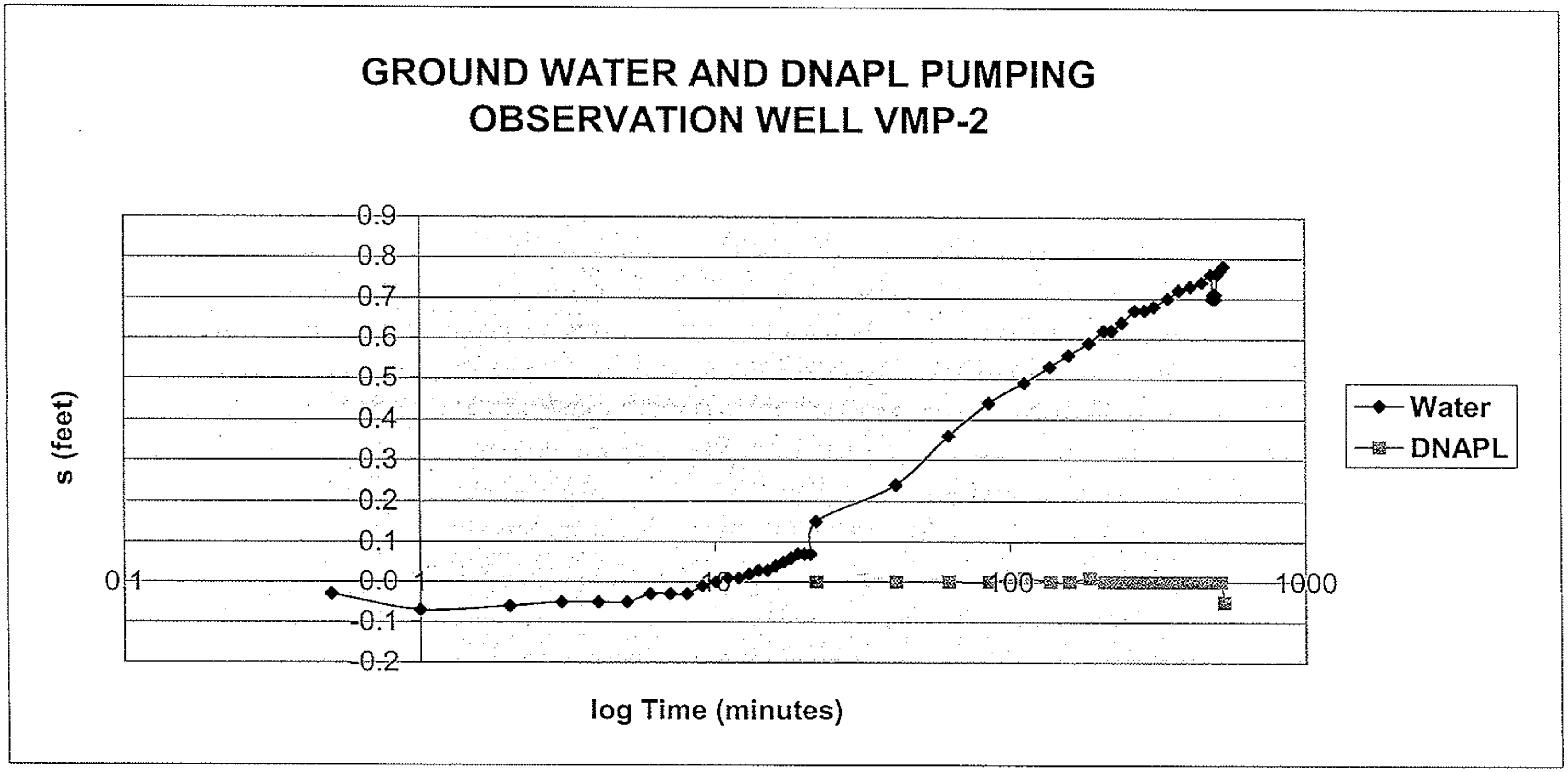
GRAPH 12
SEMIE-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER AND DNAPL PUMPING - OBSERVATION WELL RW-1
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



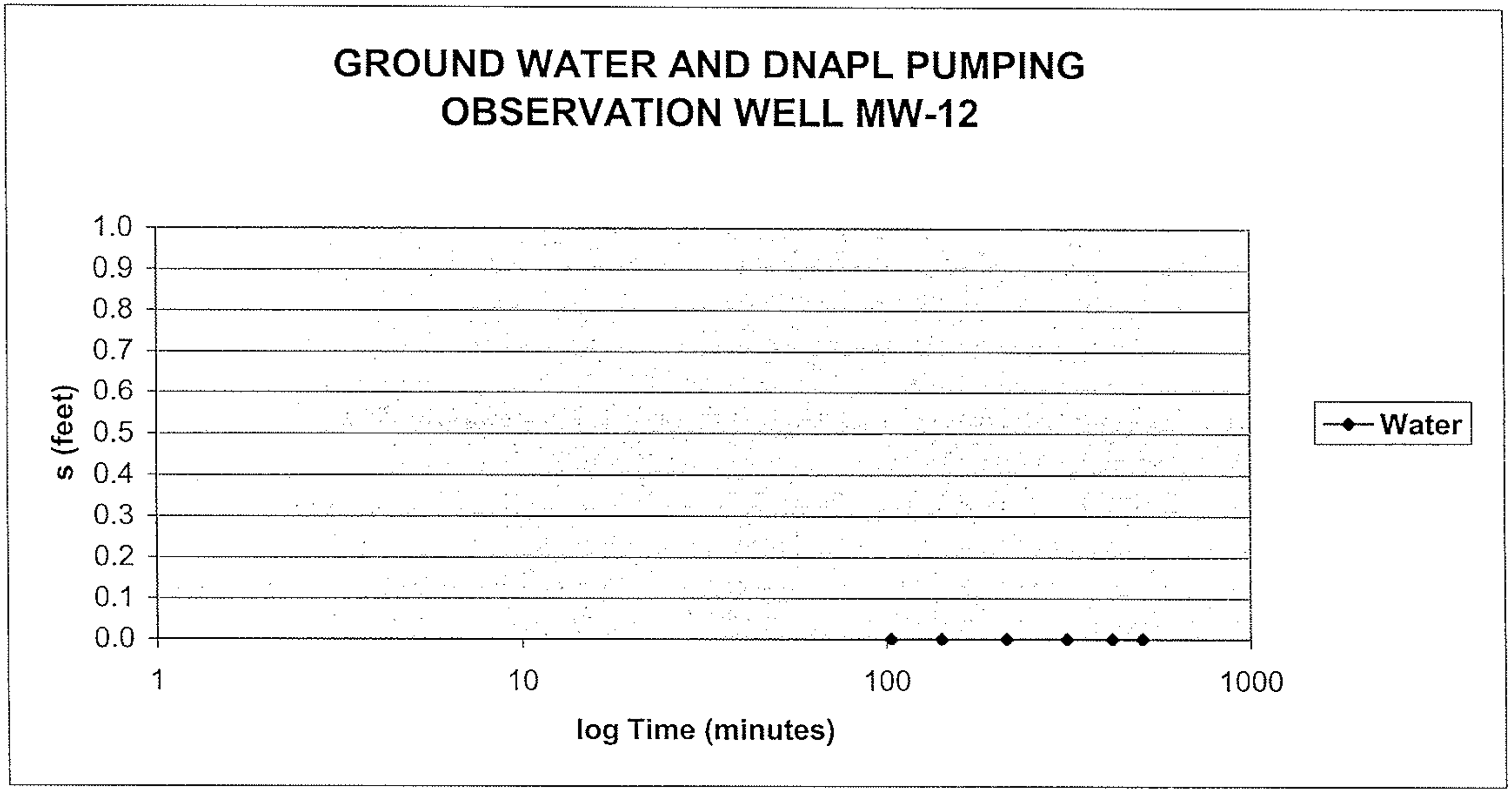
GRAPH 13
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER AND DNAPL PUMPING - OBSERVATION WELL VMP-1
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



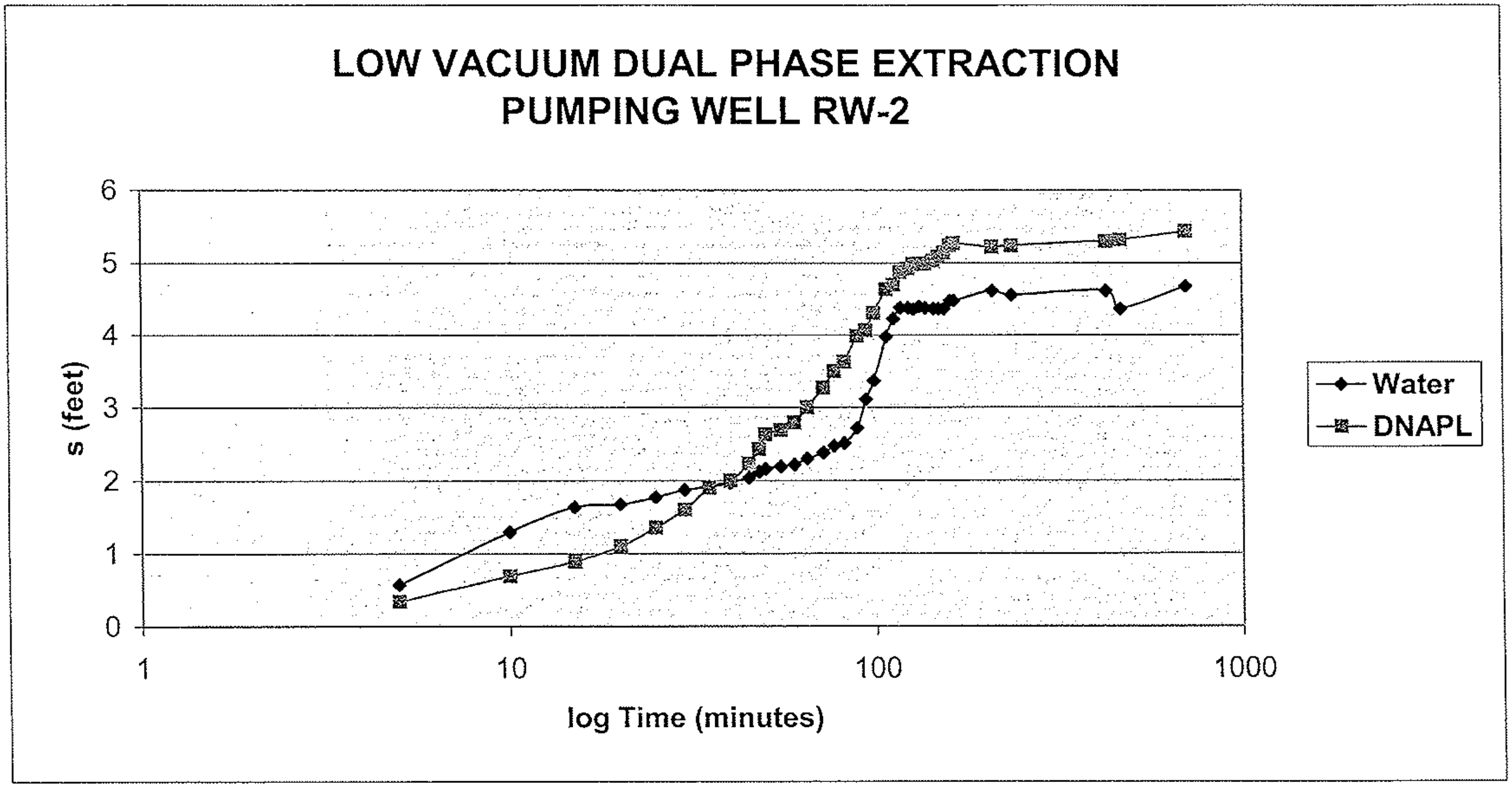
GRAPH 14
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER AND DNAPL PUMPING - OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



GRAPH 15
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
GROUND WATER AND DNAPL PUMPING - OBSERVATION WELL MW-12
DNAPL RECOVERY IRM PILOT TEST - 13 OCTOBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



GRAPH 16
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
LOW VACUUM DUAL-PHASE EXTRACTION - PUMPING WELL RW-2
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



GRAPH 17
SEMIE-LOG PLOT OF DRAWDOWN VERSUS TIME
LOW VACUUM DUAL-PHASE EXTRACTION - OBSERVATION WELL RW-1
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
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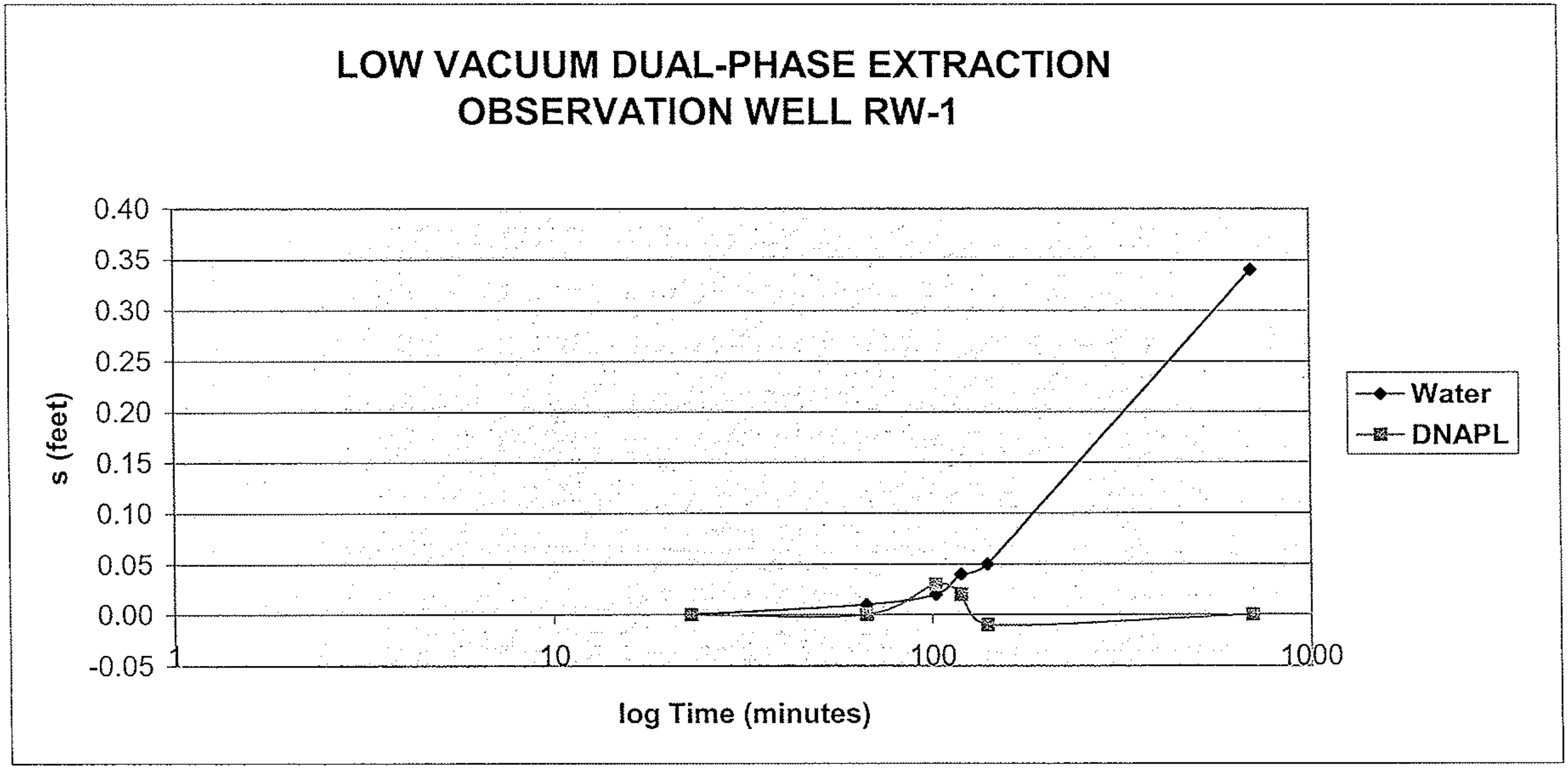
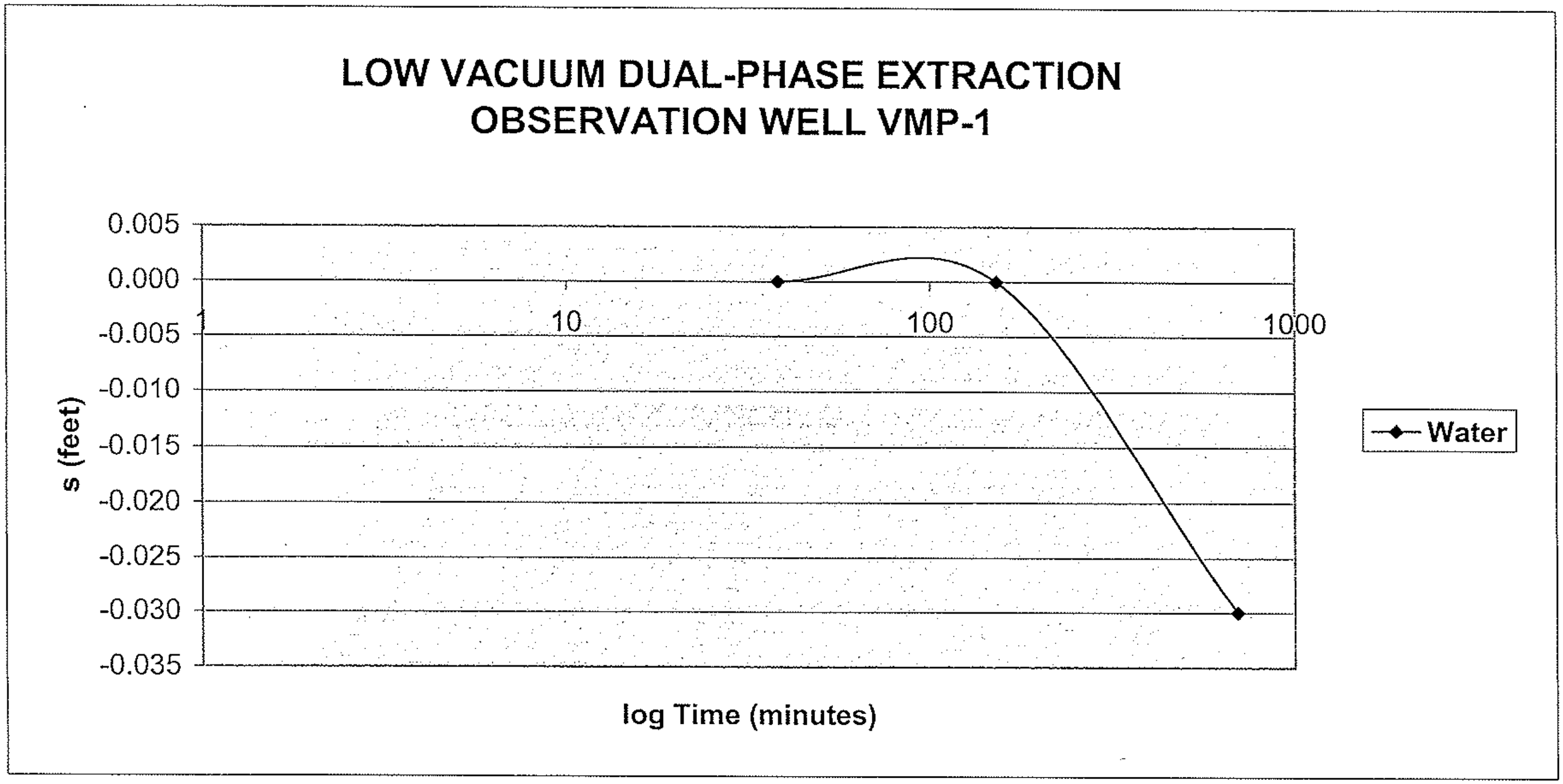
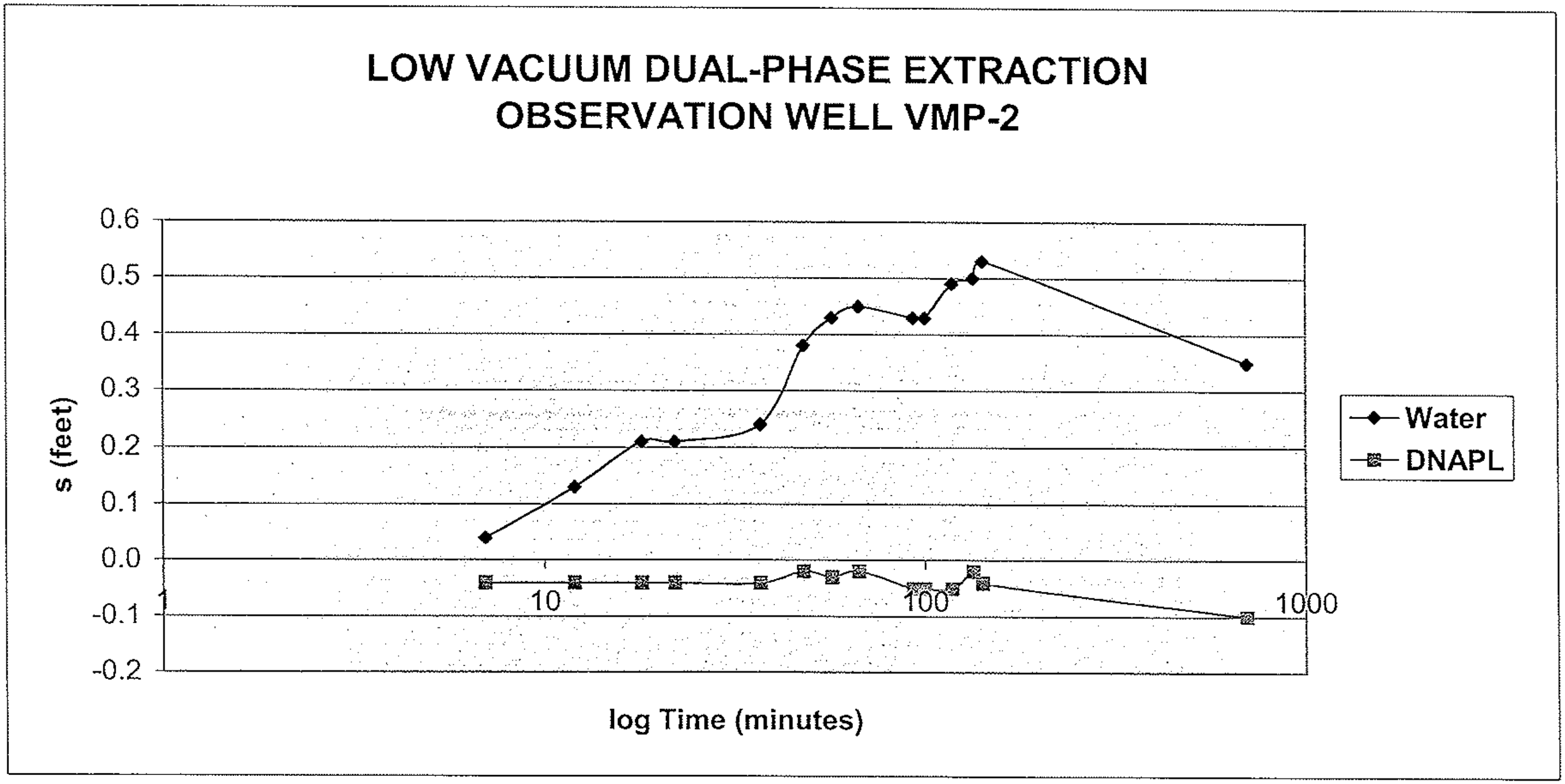


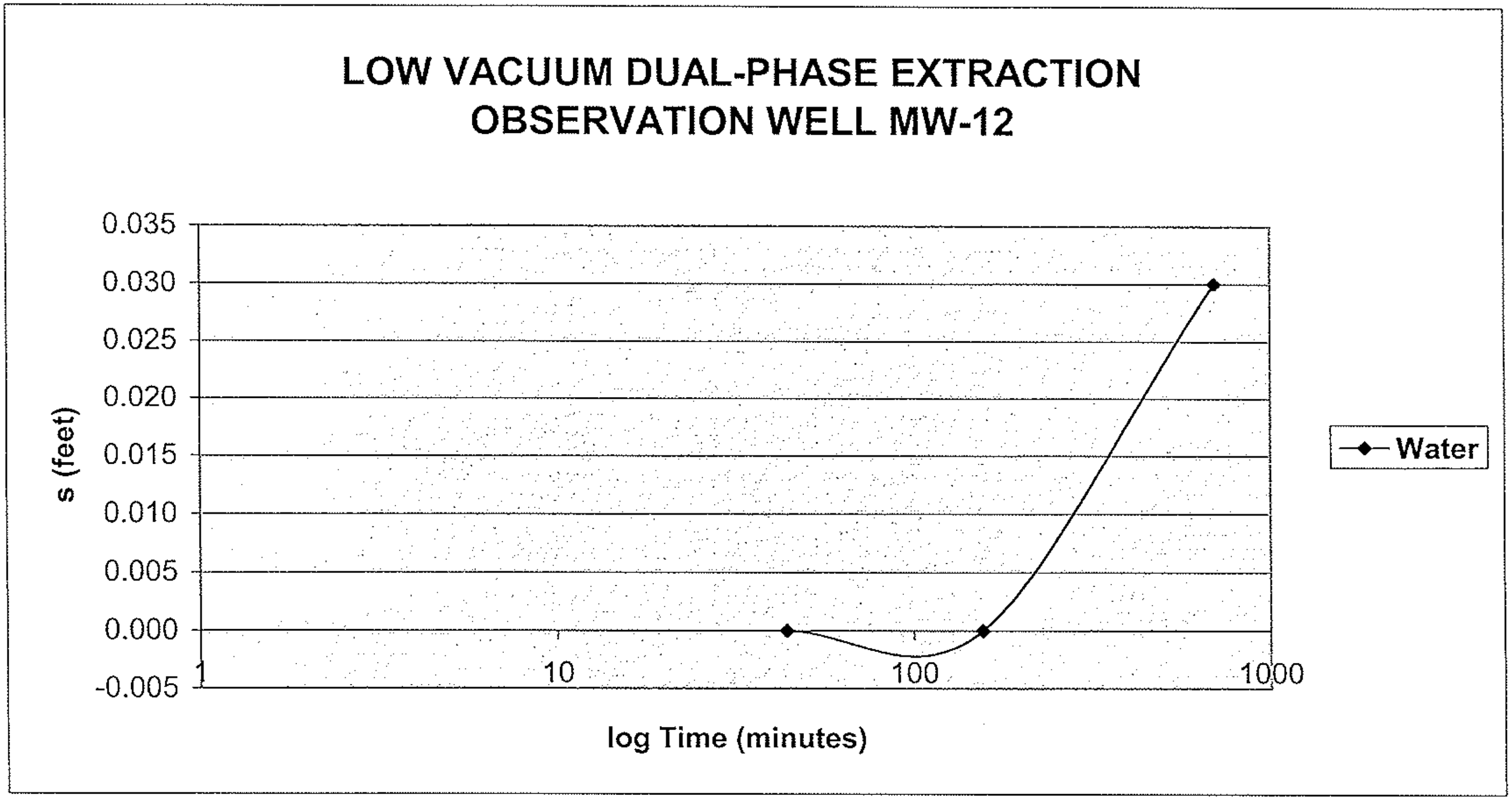
GRAPH 18
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
LOW VACUUM DUAL-PHASE EXTRACTION - OBSERVATION WELL VMP-1
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



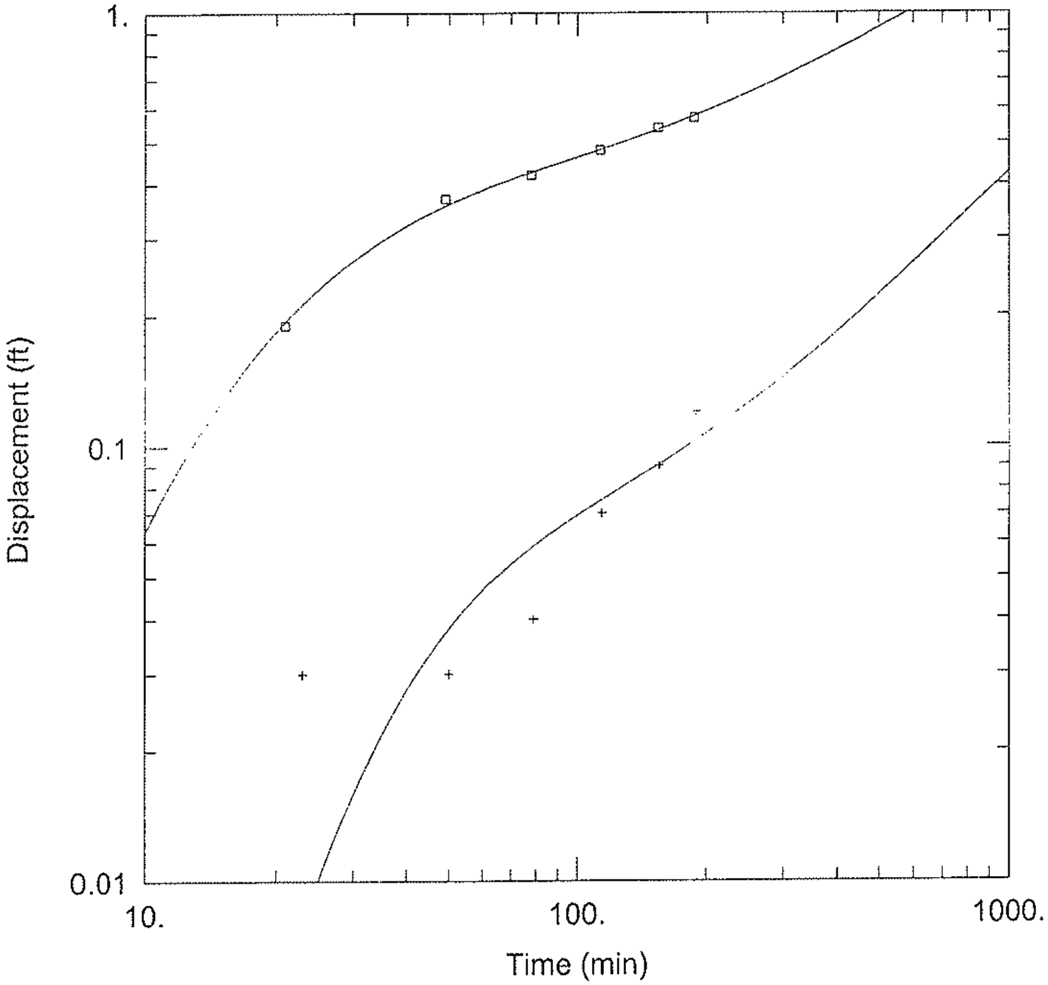
GRAPH 19
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
LOW VACUUM DUAL-PHASE EXTRACTION - OBSERVATION WELL VMP-2
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



GRAPH 20
SEMI-LOG PLOT OF DRAWDOWN VERSUS TIME
LOW VACUUM DUAL-PHASE EXTRACTION - OBSERVATION WELL MW-12
DNAPL RECOVERY IRM PILOT TEST - 16 NOVEMBER 2004
GREIF BROTHERS FACILITY - TONAWANDA, NEW YORK
NYSDEC VCP NUMBER V00334-9
ERM PROJECT NUMBER 0021621



Appendix E
Aquifer Characterization Software Output



DNAPL PILOT TEST PHASE 3 - WATER-ONLY PUMPING

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.5\WATER-ONLY.AQT
Date: 03/09/05 Time: 11:04:54

PROJECT INFORMATION

Company: ERM
Client: SONOCO
Project: 0021621
Location: TONAWANDA, NY
Test Well: RW-2
Test Date: 12 OCTOBER 2004

AQUIFER DATA

Saturated Thickness: 15. ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
RW-2	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ VMP-2	8	0
+ RW-1	16	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 0.001505 ft^2/min
Sy = 0.0153
S = 0.001475
Kz/Kr = 3.051

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.5\WATER-ONLY.AQT
Title: DNAPL PILOT TEST PHASE 3 - WATER-ONLY PUMPING
ate: 03/09/05
Time: 10:48:47

PROJECT INFORMATION

Company: ERM
Client: SONOCO
Project: 0021621
Location: TONAWANDA, NY
Test Date: 12 OCTOBER 2004
Test Well: RW-2

AQUIFER DATA

Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 3.051

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: RW-2

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Wellbore Radius: 1.25 ft

ully Penetrating Well

No. of pumping periods: 1

Pumping Period Data

Time (min)	Rate (gal/min)
0.	0.1357

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: VMP-2

X Location: 8. ft
Y Location: 0. ft

Radial distance from RW-2: 8. ft

Partially Penetrating Well
Depth to Top of Screen: 5. ft
Depth to Bottom of Screen: 10. ft

No. of Observations: 6

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
21.	0.19	113.	0.48
49.	0.37	154.	0.54
78.	0.42	187.	0.57

Observation Well No. 2: RW-1

X Location: 16. ft
Y Location: 0. ft

Radial distance from RW-2: 16. ft

Fully Penetrating Well

No. of Observations: 6

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
23.	0.03	114.	0.07
50.	0.03	155.	0.09
79.	0.04	189.	0.12

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.001505	ft^2/min
S	0.001475	
Sy	0.0153	
Kz/Kr	3.051	

K = T/b = 0.0001003 ft/min

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.001505	0.0001673	ft^2/min
S	0.001475	0.0001483	
Sy	0.0153	0.002273	
Kz/Kr	3.051	0.4157	

K = T/b = 0.0001003 ft/min

Parameter Correlations

	T	S	Sy	Kz/Kr
T	1.00	0.57	-0.31	-0.85
S	0.57	1.00	0.24	-0.81
Sy	-0.31	0.24	1.00	-0.18
Kz/Kr	-0.85	-0.81	-0.18	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . . 0.001521 ft^2
Variance . . . . 0.0001901 ft^2
Std. Deviation . . . . 0.01379 ft
Mean . . . . 0.0005698 ft
No. of Residuals 12
No. of Estimates 4

Neuman (1974) Solution

Neuman (1974) derived an analytical solution for unsteady flow to a partially penetrating well in an unconfined aquifer with delayed gravity response:

$$\overline{h} = \frac{(\gamma / 2)\Omega}{[1 + (\gamma / 2) p \Omega]}$$

$$\beta = \frac{r^2 K_z}{b^2 K_r}$$

$$\sigma = \frac{S}{S_y}$$

For a partially penetrating pumping well, the drawdown in a piezometer is found using the following equations:

$$\zeta = d / L$$

$$u_n(y) = \frac{\{1 - \exp[-t_s\beta(y^2 + \gamma_n^2)]\}\cos(\gamma_n z_D)}{\{y^2 - (1+\sigma)\gamma_n^2 - (y^2 + \gamma_n^2)^2 / \sigma\}\cos(\gamma_n)} \cdot \frac{\sin[\gamma_n(1 - d_D)] - \sin[\gamma_n(1 - l_D)]}{(l_D - d_D)\sin(\gamma_n)}$$

For a partially penetrating pumping well, the drawdown in a partially penetrating observation well is found using the following equations:

$$u_0(y) = \frac{\{1 - \exp[-t_s\beta(y^2 - \gamma_0^2)]\}\{\sinh(\gamma_0 z_{2D}) - \sinh(\gamma_0 z_{1D})\}}{\{y^2 + (1+\sigma)\gamma_0^2 - (y^2 - \gamma_0^2)^2 / \sigma\}\cosh(\gamma_0)} \cdot \frac{\sinh[\gamma_0(1 - d_D) - \sinh[\gamma_0(1 - l_D)]}{(z_{2D} - z_{1D})\gamma_0(l_D - d_D)\sin(\gamma_0)}$$

$$u_n(y) = \frac{\{1 - \exp[-t_s\beta(y^2 + \gamma_n^2)]\}\{\sin(\gamma_n z_{2D}) - \sin(\gamma_n z_{1D})\}}{\{y^2 - (1+\sigma)\gamma_n^2 - (y^2 + \gamma_n^2)^2 / \sigma\}\cos(\gamma_n)} \cdot \frac{\sin[\gamma_n(1 - d_D)] - \sin[\gamma_n(1 - l_D)]}{(z_{2D} - z_{1D})\gamma_n(l_D - d_D)\sin(\gamma_n)}$$

The gamma terms are the roots of the following equations:

$$\sigma\gamma_0 \sinh(\gamma_0) - (y^2 - \gamma_0^2)\cosh(\gamma_0) = 0, \gamma_0^2 < y^2$$

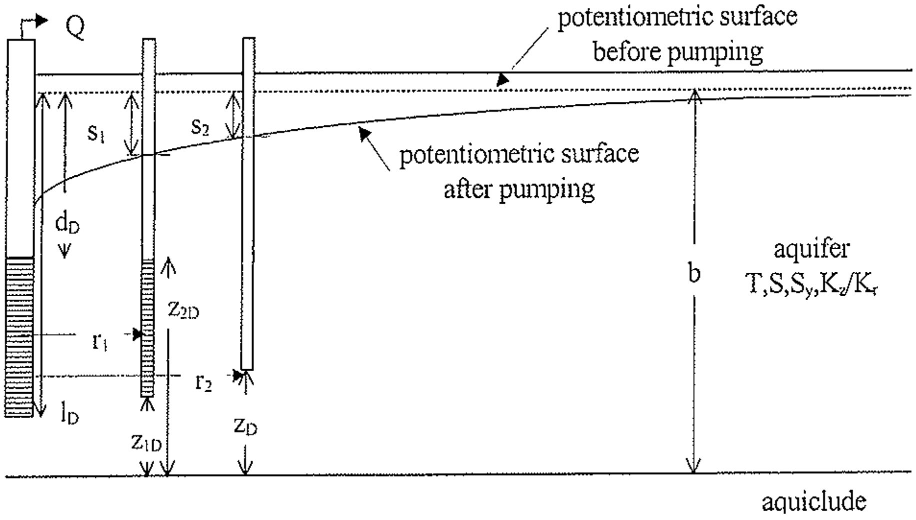
and

$$\sigma\gamma_n \sin(\gamma_n) + (y^2 + \gamma_n^2)\cos(\gamma_n) = 0, (2n - 1)/(\pi / 2) < \gamma_n < n\pi, n \geq 1$$

Refer to the List of Symbols for a description of the parameters and variables contained in the equations.

AQTESOLV for Windows allows you to analyze both constant- and variable-rate pumping tests using the Neuman solution. For tests with a variable discharge rate, the program uses the principle of superposition to compute drawdown in the aquifer. For more information concerning the application of the principle of superposition in variable-rate pumping tests, refer to the Theis (1935) Solution.

The Neuman solution supports observation wells and piezometers. Use this solution to estimate values of transmissivity, elastic storage coefficient, specific yield and beta (or Kz/Kr for a data set containing more than one pair of pumping and observation wells) in an unconfined aquifer.



The equations of Neuman (1974) for a partially penetrating observation well or a piezometer use elevations measured from the base of the unconfined aquifer; however, when entering partial penetration data for observation wells and piezometers into AQTESOLV for Windows, input depths measured from the potentiometric surface before pumping (static water table).

More:

Assumptions

Data Requirements

Solution Options

Visual Curve Matching Tips

Partial Penetration Type Curves

References

Tutorial

Data Requirements

- pumping and observation well locations
- pumping rate(s)
- observation well measurements (time and displacement)
- aquifer saturated thickness
- partial penetration depths (optional)

Assumptions

- aquifer has infinite areal extent
- aquifer is homogeneous and has uniform thickness
- aquifer potentiometric surface is initially horizontal
- aquifer is unconfined
- flow is unsteady
- diameter of pumping well is very small so that storage in the well can be neglected

List of Symbols

a=constant defining variation in thickness of wedge - shaped aquifer $[L^{-1}]$

b = thickness of aquifer [L]

b_0 = thickness of aquifer at pumping well [L]

b_s = thickness of fracture skin [L]

b' = thickness of aquitard overlying aquifer in leaky system or one - half thickness of blocks in fissured system [L]

b'' = thickness of aquitard underlying aquifer [L]

B = leakage factor $[L^{-1}]$

$B(r_e, t)$ = linear head - loss coefficient $[T/L^2]$

$B_1(r_w, t)$ = linear aquifer - loss coefficient $[T/L^2]$

B_2 = linear well - loss coefficient $[T/L^2]$

C = nonlinear well - loss coefficient $[T^2/L^5]$

C_D = dimensionless damping factor

d_D = vertical distance between top of perforations in pumping well and initial position of water table divided by initial saturated thickness of aquifer [L]

H = static height of water in well measured from base of well to static water level [L]

H_0 = initial displacement in well due to slug injection or extraction [L]

J_0 = Bessel function of first kind, zero order

J_1 = Bessel function of first kind, first order

K = hydraulic conductivity of fractures in fissured system [L/T]

K_0 = modified Bessel function of second kind, zero order

K_1 = modified Bessel function of second kind, first order

K_r = radial (horizontal) hydraulic conductivity of aquifer [L/T]

K_s = hydraulic conductivity of fracture skin [L/T]

K_z = vertical hydraulic conductivity of aquifer [L/T]

K' = hydraulic conductivity of aquitard overlying aquifer in leaky system or block system in fissured system [L/T]

K'' = hydraulic conductivity of aquitard underlying aquifer [L/T]

l_D = vertical distance between bottom of perforations in pumping well and initial position of water table divided by initial saturated thickness of aquifer [L]

L = length of well screen [L]

p = Laplace transform variable

P = order of nonlinear well - losses [dimensionless]

Q = pumping rate $[L^3 / T]$

r = radial distance [L]

r_c = well casing radius [L]

r_e = equivalent radius over which head loss occurs [L]

r_w = well radius [L]

s = displacement [L]
s_t = displacement at time t [L]
s_0 = initial displacement in well [L]
S = coefficient of storage of aquifer [dimensionless]
S_f = fracture skin [dimensionless]
S_s = specific storage of aquifer or fractures in fissured system [L^{-1}]
S'_s = specific storage of aquitard in leaky system or blocks in fissured system [L^{-1}]
S_w = wellbore skin [dimensionless]
S_y = specific yield of aquifer [dimensionless]
S' = coefficient of storage of aquitard overlying aquifer [dimensionless]
S'' = coefficient of storage of aquitard underlying aquifer [dimensionless]
t = time since pumping began [T]
t_s = dimensionless time with respect to S_s equal to Tt / Sr^2 [T]
t_y = dimensionless time with respect to S_y equal to $Tt / S_y r^2$ [T]
T = transmissivity [L^2 / T]
x_0 = x - coordinate location of pumping well [L]
y = variable of integration
y_0 = y - coordinate location of pumping well [L]
Y_0 = Bessel function of second kind, zero order
Y_1 = Bessel function of the second kind, first order
z_D = vertical distance above bottom of aquifer divided by initial saturated thickness of aquifer [L]
z_{1D} = vertical distance from bottom of aquifer to bottom of observation well perforations divided by initial saturated thicknessof aquifer [L]
z_{2D} = vertical distance from bottom of aquifer to top of observation well perforations divided by initial saturated thickness of aquifer [L]

Appendix F
3-D Computer Modeling of Estimated DNAPL Extent

Appendix G
Laboratory Analytical Results

SEVERN TRENT STL

ANALYTICAL REPORT

Job#: A04-8227

STL Project#: NY1A8821
SDG#: 8227
Site Name: ERM - GRIEF BROTHERS
Task: WASTE CHARACTERIZATION - SOIL/ WATER

Mr. Jon Fox
ERM
5788 Widewaters Pkwy
Dewitt, NY 13214

STL Buffalo

Brian J. Fischer
Project Manager

09/09/2004

STL Buffalo
Current Certifications

STATE	Program	Cert # / Lab ID
Arkansas	SDWA, CWA, RCRA, SOIL	03-054-D/88-0686
California	NELAP SDWA, CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida	NELAP RCRA	E87672
Georgia	SDWA	956
Illinois	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	CWA, RCRA	036-999-337
New Hampshire	NELAP SDWA, CWA	233701
New Jersey	SDWA, CWA, RCRA, CLP	NY455
New York	NELAP, AIR, SDWA, CWA, RCRA	10026
North Carolina	CWA	411
North Dakota	SDWA, CWA, RCRA	R-176
Oklahoma	CWA, RCRA	9421
Pennsylvania	Env. Lab Reg.	68-281
South Carolina	RCRA	91013
USDA	FOREIGN SOIL PERMIT	S-41579
Virginia	SDWA	278
Washington	CWA	C254
West Virginia	CWA	252
Wisconsin	CWA	998310390

SAMPLE SUMMARY

LAB SAMPLE ID	CLIENT SAMPLE ID	SAMPLED DATE	SAMPLED TIME	RECEIVED DATE	RECEIVED TIME
A4822701	WCS-01	08/24/2004	21:12	08/26/2004	13:56

METHODS SUMMARY

Job#: A04-8227

STL Project#: NY1A8821
SDG#: 8227
Site Name: ERM - GRIEF BROTHERS

PARAMETER	ANALYTICAL METHOD
ERM - METHOD 8260 - TCL VOLATILES + ADDS	SW8463 8260
ERM - SOIL-SW8463 8015 - METHANOL	SW8463 8015
ENSR - SOIL-SW8463 8270 - TCL SVOA + ADDS	SW8463 8270
Leachable pH	SW8463 9045

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A04-8227

STL Project#: NY1A8821
SDG#: 8227
Site Name: ERM - GRIEF BROTHERS

General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A04-8227
Sample Cooler(s) were received at the following temperature(s); 2.0 °C
All samples were received in good condition.

GC/MS Volatile Data

The analyte Methylene Chloride was detected in the Method Blank A4B1534602 (VBLK28) at a level below the project established reporting limit. No corrective action is necessary for any values in Method Blanks that are below the requested reporting limits.

The inconsistent volatile results for sample WCS-01 may be attributed to the non-homogenous nature of the sample.

GC Volatile Data

No deviations from protocol were encountered during the analytical procedures.

GC/MS Semivolatile Data

The analytes Naphthalene and 2-Methylnaphthalene was detected in the Method Blank A4B1527503 at a level below the project established reporting limit. No corrective action is necessary for any values in Method Blanks that are below the requested reporting limits.

Wet Chemistry Data

No deviations from protocol were encountered during the analytical procedures.

****

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Brian J. Fischer
Project Manager

Date

DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

ND or U	Indicates compound was analyzed for, but not detected at or above the reporting limit.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at the secondary dilution factor.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
P	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".
A	This flag indicates that a TIC is a suspected aldol-condensation product.
1	Indicates coelution.
*	Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U	Indicates element was analyzed for, but not detected at or above the reporting limit.
J or B	Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
N	Indicates spike sample recovery is not within the quality control limits.
K	Indicates the post digestion spike recovery is not within the quality control limits.
S	Indicates value determined by the Method of Standard Addition.
M	Indicates duplicate injection results exceeded quality control limits.
W	Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
E	Indicates a value estimated or not reported due to the presence of interferences.
H	Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
*	Indicates analysis is not within the quality control limits.
+	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

Sample Data Package

Date: 09/09/20
Time: 13:38:02

ERM - G[illegible] BROS.
WASTE CHARACTERIZATION - SOIL/ WATER
ERM - METHOD 8260 - TCL VOLATILES + ADDS

t: AN0326

9\42

Client ID Job No Sample Date	Lab ID	WCS-01 A04-8227 08/24/2004	A4822701	WCS-01 A04-8227 08/24/2004	A4822701DL				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	31 J	32	ND	150	NA		NA	
Benzene	UG/KG	ND	6	ND	29	NA		NA	
Bromodichloromethane	UG/KG	ND	6	ND	29	NA		NA	
Bromoform	UG/KG	ND	6	ND	29	NA		NA	
Bromomethane	UG/KG	ND	6	ND	29	NA		NA	
2-Butanone	UG/KG	ND	32	ND	150	NA		NA	
Carbon Disulfide	UG/KG	4 J	6	ND	29	NA		NA	
Carbon Tetrachloride	UG/KG	ND	6	ND	29	NA		NA	
Chlorobenzene	UG/KG	ND	6	ND	29	NA		NA	
Chloroethane	UG/KG	ND	6	ND	29	NA		NA	
Chloroform	UG/KG	ND	6	ND	29	NA		NA	
Chloromethane	UG/KG	ND	6	ND	29	NA		NA	
Dibromochloromethane	UG/KG	ND	6	ND	29	NA		NA	
1,1-Dichloroethane	UG/KG	730 E	6	69 D	29	NA		NA	
1,2-Dichloroethane	UG/KG	19	6	ND	29	NA		NA	
1,1-Dichloroethene	UG/KG	360 E	6	14 DJ	29	NA		NA	
1,2-Dichloroethene (Total)	UG/KG	ND	13	ND	58	NA		NA	
1,2-Dichloropropane	UG/KG	ND	6	ND	29	NA		NA	
cis-1,3-Dichloropropene	UG/KG	ND	6	ND	29	NA		NA	
trans-1,3-Dichloropropene	UG/KG	ND	6	ND	29	NA		NA	
Ethylbenzene	UG/KG	ND	6	ND	29	NA		NA	
2-Hexanone	UG/KG	ND	32	ND	150	NA		NA	
Methylene chloride	UG/KG	7 B	6	65 BD	29	NA		NA	
4-Methyl-2-pentanone	UG/KG	ND	32	ND	150	NA		NA	
Styrene	UG/KG	ND	6	ND	29	NA		NA	
1,1,2,2-Tetrachloroethane	UG/KG	ND	6	ND	29	NA		NA	
Tetrachloroethene	UG/KG	ND	6	ND	29	NA		NA	
Toluene	UG/KG	3 J	6	ND	29	NA		NA	
1,1,1-Trichloroethane	UG/KG	850 E	6	46 D	29	NA		NA	
1,1,2-Trichloroethane	UG/KG	ND	6	ND	29	NA		NA	
Trichloroethene	UG/KG	25	6	7 DJ	29	NA		NA	
Vinyl acetate	UG/KG	ND	32	ND	150	NA		NA	
Vinyl chloride	UG/KG	16	13	ND	58	NA		NA	
Total Xylenes	UG/KG	ND	19	ND	88	NA		NA	
n-Butyl alcohol	UG/KG	ND	250	ND	1200	NA		NA	
Cyclohexanone	UG/KG	ND	63	ND	290	NA		NA	
Ethyl acetate	UG/KG	ND	6	ND	29	NA		NA	
Ethyl ether	UG/KG	ND	32	ND	150	NA		NA	
Isobutanol	UG/KG	ND	250	ND	1200	NA		NA	
1,1,2-Trichloro-1,2,2-trifluor	UG/KG	ND	6	ND	29	NA		NA	
Trichlorofluoromethane	UG/KG	ND	6	ND	29	NA		NA	
==IS/SURROGATE(S)==									
Chlorobenzene-D5	%	85	50-200	101	50-200	NA		NA	
1,4-Difluorobenzene	%	86	50-200	102	50-200	NA		NA	

NA = Not Applicable   ND = Not Detected

Client ID Job No Sample Date	Lab ID	WCS-01 A04-8227 08/24/2004	A4822701	WCS-01 A04-8227 08/24/2004	A4822701DL				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene-D4	%	72	50-200	88	50-200	NA		NA	
Toluene-D8	%	97	71-125	98	71-125	NA		NA	
p-Bromofluorobenzene	%	96	68-124	100	68-124	NA		NA	
1,2-Dichloroethane-D4	%	102	61-136	96	61-136	NA		NA	

NA = Not Applicable ND = Not Detected

Date: 09/09/2C
Time: 13:38:0!

ERM - G BROS.
WASTE CHARACTERIZ...ON - SOIL/ WATER
ERM - SOIL-SW8463 8015 - METHANOL

pt: AN0326

Client ID Job No Sample Date	Lab ID	WCS-01 A04-8227 08/24/2004	A4822701						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Methanol	UG/KG	ND	1300	NA		NA		NA	
SURROGATE(S)									
2-Hexanone	%	108	60-126	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Client ID Job No Lab ID Sample Date		WCS-01 A04-8227 08/24/2004	A4822701						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	ND	410	NA		NA		NA	
Acenaphthylene	UG/KG	ND	410	NA		NA		NA	
Anthracene	UG/KG	ND	410	NA		NA		NA	
Benzo(a)anthracene	UG/KG	ND	410	NA		NA		NA	
Benzo(b)fluoranthene	UG/KG	ND	410	NA		NA		NA	
Benzo(k)fluoranthene	UG/KG	ND	410	NA		NA		NA	
Benzo(ghi)perylene	UG/KG	ND	410	NA		NA		NA	
Benzo(a)pyrene	UG/KG	ND	410	NA		NA		NA	
Benzoic acid	UG/KG	ND	6000	NA		NA		NA	
Benzyl alcohol	UG/KG	ND	410	NA		NA		NA	
Bis(2-chloroethoxy) methane	UG/KG	ND	410	NA		NA		NA	
Bis(2-chloroethyl) ether	UG/KG	ND	410	NA		NA		NA	
2,2'-Oxybis(1-Chloropropane)	UG/KG	ND	410	NA		NA		NA	
Bis(2-ethylhexyl) phthalate	UG/KG	ND	410	NA		NA		NA	
4-Bromophenyl phenyl ether	UG/KG	ND	410	NA		NA		NA	
Butyl benzyl phthalate	UG/KG	ND	410	NA		NA		NA	
4-Chloroaniline	UG/KG	ND	410	NA		NA		NA	
4-Chloro-3-methylphenol	UG/KG	ND	410	NA		NA		NA	
2-Chloronaphthalene	UG/KG	ND	410	NA		NA		NA	
2-Chlorophenol	UG/KG	ND	410	NA		NA		NA	
4-Chlorophenyl phenyl ether	UG/KG	ND	410	NA		NA		NA	
Chrysene	UG/KG	ND	410	NA		NA		NA	
Dibenzo(a,h)anthracene	UG/KG	ND	410	NA		NA		NA	
Dibenzofuran	UG/KG	ND	410	NA		NA		NA	
Di-n-butyl phthalate	UG/KG	ND	410	NA		NA		NA	
1,2-Dichlorobenzene	UG/KG	ND	410	NA		NA		NA	
1,3-Dichlorobenzene	UG/KG	ND	410	NA		NA		NA	
1,4-Dichlorobenzene	UG/KG	ND	410	NA		NA		NA	
3,3'-Dichlorobenzidine	UG/KG	ND	830	NA		NA		NA	
2,4-Dichlorophenol	UG/KG	ND	410	NA		NA		NA	
Diethyl phthalate	UG/KG	ND	410	NA		NA		NA	
2,4-Dimethylphenol	UG/KG	ND	410	NA		NA		NA	
Dimethyl phthalate	UG/KG	ND	410	NA		NA		NA	
4,6-Dinitro-2-methylphenol	UG/KG	ND	2000	NA		NA		NA	
2,4-Dinitrophenol	UG/KG	ND	2000	NA		NA		NA	
2,4-Dinitrotoluene	UG/KG	ND	410	NA		NA		NA	
2,6-Dinitrotoluene	UG/KG	ND	410	NA		NA		NA	
Di-n-octyl phthalate	UG/KG	ND	560	NA		NA		NA	
Fluoranthene	UG/KG	180 J	410	NA		NA		NA	
Fluorene	UG/KG	ND	410	NA		NA		NA	
Hexachlorobenzene	UG/KG	ND	410	NA		NA		NA	
Hexachlorobutadiene	UG/KG	ND	410	NA		NA		NA	
Hexachlorocyclopentadiene	UG/KG	ND	410	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Client ID Job No Sample Date	Lab ID	WCS-01 A04-8227 08/24/2004	A4822701						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Hexachloroethane	UG/KG	ND	410	NA		NA		NA	
Indeno(1,2,3-cd)pyrene	UG/KG	ND	410	NA		NA		NA	
Isophorone	UG/KG	ND	410	NA		NA		NA	
2-Methylnaphthalene	UG/KG	ND	410	NA		NA		NA	
2-Methylphenol	UG/KG	ND	410	NA		NA		NA	
3-Methylphenol	UG/KG	ND	410	NA		NA		NA	
4-Methylphenol	UG/KG	ND	410	NA		NA		NA	
Naphthalene	UG/KG	ND	410	NA		NA		NA	
2-Nitroaniline	UG/KG	ND	2000	NA		NA		NA	
3-Nitroaniline	UG/KG	ND	2000	NA		NA		NA	
4-Nitroaniline	UG/KG	ND	2000	NA		NA		NA	
Nitrobenzene	UG/KG	ND	410	NA		NA		NA	
2-Nitrophenol	UG/KG	ND	410	NA		NA		NA	
4-Nitrophenol	UG/KG	ND	2000	NA		NA		NA	
N-nitrosodiphenylamine	UG/KG	ND	410	NA		NA		NA	
N-Nitroso-Di-n-propylamine	UG/KG	ND	410	NA		NA		NA	
Pentachlorophenol	UG/KG	ND	2000	NA		NA		NA	
Phenanthrene	UG/KG	140 J	410	NA		NA		NA	
Phenol	UG/KG	ND	410	NA		NA		NA	
Pyrene	UG/KG	200 J	410	NA		NA		NA	
1,2,4-Trichlorobenzene	UG/KG	ND	410	NA		NA		NA	
2,4,5-Trichlorophenol	UG/KG	ND	1000	NA		NA		NA	
2,4,6-Trichlorophenol	UG/KG	ND	410	NA		NA		NA	
Pyridine	UG/KG	ND	1900	NA		NA		NA	
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	92	50-200	NA		NA		NA	
Naphthalene-D8	%	94	50-200	NA		NA		NA	
Acenaphthene-D10	%	91	50-200	NA		NA		NA	
Phenanthrene-D10	%	86	50-200	NA		NA		NA	
Chrysene-D12	%	73	50-200	NA		NA		NA	
Perylene-D12	%	106	50-200	NA		NA		NA	
Nitrobenzene-D5	%	88	30-127	NA		NA		NA	
2-Fluorobiphenyl	%	97	36-138	NA		NA		NA	
p-Terphenyl-d14	%	124	41-167	NA		NA		NA	
Phenol-D5	%	91	34-120	NA		NA		NA	
2-Fluorophenol	%	82	26-120	NA		NA		NA	
2,4,6-Tribromophenol	%	109	42-140	NA		NA		NA	

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NA = Not Applicable   ND = Not Detected

Date: 09/09/20
Time: 13:38:2

ERM - G BROS.
WASTE CHARACTERI. N - SOIL/ WATER
WET CHEMISTRY ANALYSIS

pt: AN0326

Client ID Job No Sample Date	Lab ID	WCS-01 A04-8227 08/24/2004	A4822701						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Leachable pH	S.U.	8.30	0.0100	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Chronology and QC Summary Package

ERM - GF BROS.
WASTE CHARACTERI. N - SOIL/ WATER
ERM - METHOD 8260 - CL VOLATILES + ADDS

Client ID Job No Sample Date	Lab ID	VBLK28 A04-8227	A4B1534602						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	ND	25	NA		NA		NA	
Benzene	UG/KG	ND	5	NA		NA		NA	
Bromodichloromethane	UG/KG	ND	5	NA		NA		NA	
Bromoform	UG/KG	ND	5	NA		NA		NA	
Bromomethane	UG/KG	ND	5	NA		NA		NA	
2-Butanone	UG/KG	ND	25	NA		NA		NA	
Carbon Disulfide	UG/KG	ND	5	NA		NA		NA	
Carbon Tetrachloride	UG/KG	ND	5	NA		NA		NA	
Chlorobenzene	UG/KG	ND	5	NA		NA		NA	
Chloroethane	UG/KG	ND	5	NA		NA		NA	
Chloroform	UG/KG	ND	5	NA		NA		NA	
Chloromethane	UG/KG	ND	5	NA		NA		NA	
Dibromochloromethane	UG/KG	ND	5	NA		NA		NA	
1,1-Dichloroethane	UG/KG	ND	5	NA		NA		NA	
1,2-Dichloroethane	UG/KG	ND	5	NA		NA		NA	
1,1-Dichloroethene	UG/KG	ND	5	NA		NA		NA	
1,2-Dichloroethene (Total)	UG/KG	ND	10	NA		NA		NA	
1,2-Dichloropropane	UG/KG	ND	5	NA		NA		NA	
cis-1,3-Dichloropropene	UG/KG	ND	5	NA		NA		NA	
trans-1,3-Dichloropropene	UG/KG	ND	5	NA		NA		NA	
Ethylbenzene	UG/KG	ND	5	NA		NA		NA	
2-Hexanone	UG/KG	ND	25	NA		NA		NA	
Methylene chloride	UG/KG	4 J	5	NA		NA		NA	
4-Methyl-2-pentanone	UG/KG	ND	25	NA		NA		NA	
Styrene	UG/KG	ND	5	NA		NA		NA	
1,1,2,2-Tetrachloroethane	UG/KG	ND	5	NA		NA		NA	
Tetrachloroethene	UG/KG	ND	5	NA		NA		NA	
Toluene	UG/KG	ND	5	NA		NA		NA	
1,1,1-Trichloroethane	UG/KG	ND	5	NA		NA		NA	
1,1,2-Trichloroethane	UG/KG	ND	5	NA		NA		NA	
Trichloroethene	UG/KG	ND	5	NA		NA		NA	
Vinyl acetate	UG/KG	ND	25	NA		NA		NA	
Vinyl chloride	UG/KG	ND	10	NA		NA		NA	
Total Xylenes	UG/KG	ND	15	NA		NA		NA	
n-Butyl alcohol	UG/KG	ND	200	NA		NA		NA	
Cyclohexanone	UG/KG	ND	50	NA		NA		NA	
Ethyl acetate	UG/KG	ND	5	NA		NA		NA	
Ethyl ether	UG/KG	ND	25	NA		NA		NA	
Isobutanol	UG/KG	ND	200	NA		NA		NA	
1,1,2-Trichloro-1,2,2-trifluor	UG/KG	ND	5	NA		NA		NA	
Trichlorofluoromethane	UG/KG	ND	5	NA		NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	86	50-200	NA		NA		NA	
1,4-Difluorobenzene	%	84	50-200	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Date: 09/09/200
Time: 13:38:2

ERM - G BROS.
WASTE CHARACTERI. JN - SOIL/ WATER
ERM - METHOD 8260 - TCL VOLATILES + ADDS

pt: AN0326

Client ID Job No Sample Date	Lab ID	VBLK28 A04-8227	A4B1534602						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene-D4	%	81	50-200	NA		NA		NA	
Toluene-D8	%	95	71-125	NA		NA		NA	
p-Bromofluorobenzene	%	101	68-124	NA		NA		NA	
1,2-Dichloroethane-D4	%	101	61-136	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Date: 09/09/2C
Time: 13:38:2C

ERM - G BROS.
WASTE CHARACTERIZ.. .ON - SOIL/ WATER
ERM - METHOD 8260 - TCL VOLATILES + ADDS

pt: AN0326

Client ID Job No Sample Date	Lab ID	MSB28 A04-8227	A4B1534601						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	ND	25	NA		NA		NA	
Benzene	UG/KG	55	5	NA		NA		NA	
Bromodichloromethane	UG/KG	ND	5	NA		NA		NA	
Bromoform	UG/KG	ND	5	NA		NA		NA	
Bromomethane	UG/KG	ND	5	NA		NA		NA	
2-Butanone	UG/KG	ND	25	NA		NA		NA	
Carbon Disulfide	UG/KG	ND	5	NA		NA		NA	
Carbon Tetrachloride	UG/KG	ND	5	NA		NA		NA	
Chlorobenzene	UG/KG	54	5	NA		NA		NA	
Chloroethane	UG/KG	ND	5	NA		NA		NA	
Chloroform	UG/KG	ND	5	NA		NA		NA	
Chloromethane	UG/KG	ND	5	NA		NA		NA	
Dibromochloromethane	UG/KG	ND	5	NA		NA		NA	
1,1-Dichloroethane	UG/KG	ND	5	NA		NA		NA	
1,2-Dichloroethane	UG/KG	ND	5	NA		NA		NA	
1,1-Dichloroethene	UG/KG	62	5	NA		NA		NA	
1,2-Dichloroethene (Total)	UG/KG	ND	10	NA		NA		NA	
1,2-Dichloropropane	UG/KG	ND	5	NA		NA		NA	
cis-1,3-Dichloropropene	UG/KG	ND	5	NA		NA		NA	
trans-1,3-Dichloropropene	UG/KG	ND	5	NA		NA		NA	
Ethylbenzene	UG/KG	ND	5	NA		NA		NA	
2-Hexanone	UG/KG	ND	25	NA		NA		NA	
Methylene chloride	UG/KG	4 BJ	5	NA		NA		NA	
4-Methyl-2-pentanone	UG/KG	ND	25	NA		NA		NA	
Styrene	UG/KG	ND	5	NA		NA		NA	
1,1,2,2-Tetrachloroethane	UG/KG	ND	5	NA		NA		NA	
Tetrachloroethene	UG/KG	ND	5	NA		NA		NA	
Toluene	UG/KG	54	5	NA		NA		NA	
1,1,1-Trichloroethane	UG/KG	ND	5	NA		NA		NA	
1,1,2-Trichloroethane	UG/KG	ND	5	NA		NA		NA	
Trichloroethene	UG/KG	55	5	NA		NA		NA	
Vinyl acetate	UG/KG	ND	25	NA		NA		NA	
Vinyl chloride	UG/KG	ND	10	NA		NA		NA	
Total Xylenes	UG/KG	ND	15	NA		NA		NA	
n-Butyl alcohol	UG/KG	ND	200	NA		NA		NA	
Cyclohexanone	UG/KG	ND	50	NA		NA		NA	
Ethyl acetate	UG/KG	ND	5	NA		NA		NA	
Ethyl ether	UG/KG	ND	25	NA		NA		NA	
Isobutanol	UG/KG	ND	200	NA		NA		NA	
1,1,2-Trichloro-1,2,2-trifluor	UG/KG	ND	5	NA		NA		NA	
Trichlorofluoromethane	UG/KG	ND	5	NA		NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	87	50-200	NA		NA		NA	
1,4-Difluorobenzene	%	88	50-200	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Date: 09/09/2
Time: 13:38:2

ERM - G BROS.
WASTE CHARACTERIZATION - SOIL/ WATER
ERM - METHOD 8260 - TCL VOLATILES + ADDS

pt: AN0326

Client ID Job No Lab ID Sample Date		MSB28 A04-8227	A4B1534601						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
1,4-Dichlorobenzene-D4	%	80	50-200	NA		NA		NA	
Toluene-D8	%	96	71-125	NA		NA		NA	
p-Bromofluorobenzene	%	99	68-124	NA		NA		NA	
1,2-Dichloroethane-D4	%	95	61-136	NA		NA		NA	

NA = Not Applicable ND = Not Detected

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Date: 09/09/2
Time: 13:38:2

ERM - G BROS.
WASTE CHARACTERIZ... ON - SOIL/ WATER
ERM - SOIL-SW8463 8015 - METHANOL

pt: AN0326

Client ID Job No Sample Date	Lab ID	VBLK082 A04-8227	A4822702						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Methanol	UG/KG	ND	1000	NA		NA		NA	
SURROGATE(S)									
2-Hexanone	%	96	60-126	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Date: 09/09/2
Time: 13:38:2

ERM - (BROS.
WASTE CHARACTERI...ON - SOIL/ WATER
ERM - SOIL-SW8463 8015 - METHANOL

:pt: AN0326

Client ID Job No Sample Date	Lab ID	MSB A04-8227	A4822703						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Methanol	UG/KG	20000	1000	NA		NA		NA	
SURROGATE(S)									
2-Hexanone	%	99	60-126	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Date: 09/09/2C
Time: 13:38:3

ERM - G BROS.
WASTE CHARACTERIZ ON - SOIL/ WATER
ENSR - SOIL-SW8463 8270 - TCL SVOA + ADDS

pt: AN0326

Client ID Job No Sample Date	Lab ID	S Blank A04-8227	A4B1527503						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	ND	320	NA		NA		NA	
Acenaphthylene	UG/KG	ND	320	NA		NA		NA	
Anthracene	UG/KG	ND	320	NA		NA		NA	
Benzo(a)anthracene	UG/KG	ND	320	NA		NA		NA	
Benzo(b)fluoranthene	UG/KG	ND	320	NA		NA		NA	
Benzo(k)fluoranthene	UG/KG	ND	320	NA		NA		NA	
Benzo(ghi)perylene	UG/KG	ND	320	NA		NA		NA	
Benzo(a)pyrene	UG/KG	ND	320	NA		NA		NA	
Benzoic acid	UG/KG	ND	4700	NA		NA		NA	
Benzyl alcohol	UG/KG	ND	320	NA		NA		NA	
Bis(2-chloroethoxy) methane	UG/KG	ND	320	NA		NA		NA	
Bis(2-chloroethyl) ether	UG/KG	ND	320	NA		NA		NA	
2,2'-Oxybis(1-Chloropropane)	UG/KG	ND	320	NA		NA		NA	
Bis(2-ethylhexyl) phthalate	UG/KG	ND	320	NA		NA		NA	
4-Bromophenyl phenyl ether	UG/KG	ND	320	NA		NA		NA	
Butyl benzyl phthalate	UG/KG	ND	320	NA		NA		NA	
4-Chloroaniline	UG/KG	ND	320	NA		NA		NA	
4-Chloro-3-methylphenol	UG/KG	ND	320	NA		NA		NA	
2-Chloronaphthalene	UG/KG	ND	320	NA		NA		NA	
2-Chlorophenol	UG/KG	ND	320	NA		NA		NA	
4-Chlorophenyl phenyl ether	UG/KG	ND	320	NA		NA		NA	
Chrysene	UG/KG	ND	320	NA		NA		NA	
Dibenzo(a,h)anthracene	UG/KG	ND	320	NA		NA		NA	
Dibenzofuran	UG/KG	ND	320	NA		NA		NA	
Di-n-butyl phthalate	UG/KG	ND	320	NA		NA		NA	
1,2-Dichlorobenzene	UG/KG	ND	320	NA		NA		NA	
1,3-Dichlorobenzene	UG/KG	ND	320	NA		NA		NA	
1,4-Dichlorobenzene	UG/KG	ND	320	NA		NA		NA	
3,3'-Dichlorobenzidine	UG/KG	ND	650	NA		NA		NA	
2,4-Dichlorophenol	UG/KG	ND	320	NA		NA		NA	
Diethyl phthalate	UG/KG	ND	320	NA		NA		NA	
2,4-Dimethylphenol	UG/KG	ND	320	NA		NA		NA	
Dimethyl phthalate	UG/KG	ND	320	NA		NA		NA	
4,6-Dinitro-2-methylphenol	UG/KG	ND	1600	NA		NA		NA	
2,4-Dinitrophenol	UG/KG	ND	1600	NA		NA		NA	
2,4-Dinitrotoluene	UG/KG	ND	320	NA		NA		NA	
2,6-Dinitrotoluene	UG/KG	ND	320	NA		NA		NA	
Di-n-octyl phthalate	UG/KG	ND	440	NA		NA		NA	
Fluoranthene	UG/KG	ND	320	NA		NA		NA	
Fluorene	UG/KG	ND	320	NA		NA		NA	
Hexachlorobenzene	UG/KG	ND	320	NA		NA		NA	
Hexachlorobutadiene	UG/KG	ND	320	NA		NA		NA	
Hexachlorocyclopentadiene	UG/KG	ND	320	NA		NA		NA	

NA = Not Applicable ND = Not Detected

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Client ID Job No Lab ID Sample Date		S Blank A04-8227	A4B1527503						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Hexachloroethane	UG/KG	ND	320	NA		NA		NA	
Indeno(1,2,3-cd)pyrene	UG/KG	ND	320	NA		NA		NA	
Isophorone	UG/KG	ND	320	NA		NA		NA	
2-Methylnaphthalene	UG/KG	100 J	320	NA		NA		NA	
2-Methylphenol	UG/KG	ND	320	NA		NA		NA	
3-Methylphenol	UG/KG	ND	320	NA		NA		NA	
4-Methylphenol	UG/KG	ND	320	NA		NA		NA	
Naphthalene	UG/KG	320	320	NA		NA		NA	
2-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
3-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
4-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
Nitrobenzene	UG/KG	ND	320	NA		NA		NA	
2-Nitrophenol	UG/KG	ND	320	NA		NA		NA	
4-Nitrophenol	UG/KG	ND	1600	NA		NA		NA	
N-nitrosodiphenylamine	UG/KG	ND	320	NA		NA		NA	
N-Nitroso-Di-n-propylamine	UG/KG	ND	320	NA		NA		NA	
Pentachlorophenol	UG/KG	ND	1600	NA		NA		NA	
Phenanthrene	UG/KG	ND	320	NA		NA		NA	
Phenol	UG/KG	ND	320	NA		NA		NA	
Pyrene	UG/KG	ND	320	NA		NA		NA	
1,2,4-Trichlorobenzene	UG/KG	ND	320	NA		NA		NA	
2,4,5-Trichlorophenol	UG/KG	ND	790	NA		NA		NA	
2,4,6-Trichlorophenol	UG/KG	ND	320	NA		NA		NA	
Pyridine	UG/KG	ND	1500	NA		NA		NA	
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	112	50-200	NA		NA		NA	
Naphthalene-D8	%	116	50-200	NA		NA		NA	
Acenaphthene-D10	%	110	50-200	NA		NA		NA	
Phenanthrene-D10	%	109	50-200	NA		NA		NA	
Chrysene-D12	%	108	50-200	NA		NA		NA	
Perylene-D12	%	172	50-200	NA		NA		NA	
Nitrobenzene-D5	%	74	30-127	NA		NA		NA	
2-Fluorobiphenyl	%	81	36-138	NA		NA		NA	
p-Terphenyl-d14	%	101	41-167	NA		NA		NA	
Phenol-D5	%	80	34-120	NA		NA		NA	
2-Fluorophenol	%	71	26-120	NA		NA		NA	
2,4,6-Tribromophenol	%	93	42-140	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Client ID Job No Lab ID Sample Date		Matrix Spike Blank A04-8227 A4B1527501		Matrix Spike Blk Dup A04-8227 A4B1527502					
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	2700	320	2700	320	NA		NA	
Acenaphthylene	UG/KG	ND	320	ND	320	NA		NA	
Anthracene	UG/KG	ND	320	ND	320	NA		NA	
Benzo(a)anthracene	UG/KG	ND	320	ND	320	NA		NA	
Benzo(b)fluoranthene	UG/KG	ND	320	ND	320	NA		NA	
Benzo(k)fluoranthene	UG/KG	ND	320	ND	320	NA		NA	
Benzo(ghi)perylene	UG/KG	ND	320	ND	320	NA		NA	
Benzo(a)pyrene	UG/KG	ND	320	ND	320	NA		NA	
Benzoic acid	UG/KG	ND	4700	ND	4700	NA		NA	
Benzyl alcohol	UG/KG	ND	320	ND	320	NA		NA	
Bis(2-chloroethoxy) methane	UG/KG	ND	320	ND	320	NA		NA	
Bis(2-chloroethyl) ether	UG/KG	ND	320	ND	320	NA		NA	
2,2'-Oxybis(1-Chloropropane)	UG/KG	ND	320	ND	320	NA		NA	
Bis(2-ethylhexyl) phthalate	UG/KG	ND	320	ND	320	NA		NA	
4-Bromophenyl phenyl ether	UG/KG	ND	320	ND	320	NA		NA	
Butyl benzyl phthalate	UG/KG	ND	320	ND	320	NA		NA	
4-Chloroaniline	UG/KG	ND	320	ND	320	NA		NA	
4-Chloro-3-methylphenol	UG/KG	2600	320	2800	320	NA		NA	
2-Chloronaphthalene	UG/KG	ND	320	ND	320	NA		NA	
2-Chlorophenol	UG/KG	2200	320	2500	320	NA		NA	
4-Chlorophenyl phenyl ether	UG/KG	ND	320	ND	320	NA		NA	
Chrysene	UG/KG	ND	320	ND	320	NA		NA	
Dibenzo(a,h)anthracene	UG/KG	ND	320	ND	320	NA		NA	
Dibenzofuran	UG/KG	ND	320	ND	320	NA		NA	
Di-n-butyl phthalate	UG/KG	ND	320	ND	320	NA		NA	
1,2-Dichlorobenzene	UG/KG	ND	320	ND	320	NA		NA	
1,3-Dichlorobenzene	UG/KG	ND	320	ND	320	NA		NA	
1,4-Dichlorobenzene	UG/KG	2100	320	2400	320	NA		NA	
3,3'-Dichlorobenzidine	UG/KG	ND	650	ND	640	NA		NA	
2,4-Dichlorophenol	UG/KG	ND	320	ND	320	NA		NA	
Diethyl phthalate	UG/KG	ND	320	ND	320	NA		NA	
2,4-Dimethylphenol	UG/KG	ND	320	ND	320	NA		NA	
Dimethyl phthalate	UG/KG	ND	320	ND	320	NA		NA	
4,6-Dinitro-2-methylphenol	UG/KG	ND	1600	ND	1600	NA		NA	
2,4-Dinitrophenol	UG/KG	ND	1600	ND	1600	NA		NA	
2,4-Dinitrotoluene	UG/KG	2800	320	2800	320	NA		NA	
2,6-Dinitrotoluene	UG/KG	ND	320	ND	320	NA		NA	
Di-n-octyl phthalate	UG/KG	ND	440	ND	440	NA		NA	
Fluoranthene	UG/KG	ND	320	ND	320	NA		NA	
Fluorene	UG/KG	ND	320	ND	320	NA		NA	
Hexachlorobenzene	UG/KG	ND	320	ND	320	NA		NA	
Hexachlorobutadiene	UG/KG	ND	320	ND	320	NA		NA	
Hexachlorocyclopentadiene	UG/KG	ND	320	ND	320	NA		NA	

NA = Not Applicable ND = Not Detected

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Client ID Job No Sample Date	Lab ID	Matrix Spike Blank A04-8227	A4B1527501	Matrix Spike Blk Dup A04-8227	A4B1527502				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Hexachloroethane	UG/KG	ND	320	ND	320	NA		NA	
Indeno(1,2,3-cd)pyrene	UG/KG	ND	320	ND	320	NA		NA	
Isophorone	UG/KG	ND	320	ND	320	NA		NA	
2-Methylnaphthalene	UG/KG	ND	320	ND	320	NA		NA	
2-Methylphenol	UG/KG	ND	320	ND	320	NA		NA	
3-Methylphenol	UG/KG	ND	320	ND	320	NA		NA	
4-Methylphenol	UG/KG	ND	320	ND	320	NA		NA	
Naphthalene	UG/KG	ND	320	140 BJ	320	NA		NA	
2-Nitroaniline	UG/KG	ND	1600	ND	1600	NA		NA	
3-Nitroaniline	UG/KG	ND	1600	ND	1600	NA		NA	
4-Nitroaniline	UG/KG	ND	1600	ND	1600	NA		NA	
Nitrobenzene	UG/KG	ND	320	ND	320	NA		NA	
2-Nitrophenol	UG/KG	ND	320	ND	320	NA		NA	
4-Nitrophenol	UG/KG	2500	1600	2400	1600	NA		NA	
N-nitrosodiphenylamine	UG/KG	ND	320	ND	320	NA		NA	
N-Nitroso-Di-n-propylamine	UG/KG	2500	320	2700	320	NA		NA	
Pentachlorophenol	UG/KG	2600	1600	2600	1600	NA		NA	
Phenanthrene	UG/KG	ND	320	ND	320	NA		NA	
Phenol	UG/KG	2100	320	2300	320	NA		NA	
Pyrene	UG/KG	3100	320	3100	320	NA		NA	
1,2,4-Trichlorobenzene	UG/KG	2200	320	2400	320	NA		NA	
2,4,5-Trichlorophenol	UG/KG	ND	790	ND	780	NA		NA	
2,4,6-Trichlorophenol	UG/KG	ND	320	ND	320	NA		NA	
Pyridine	UG/KG	ND	1500	ND	1500	NA		NA	
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	111	50-200	104	50-200	NA		NA	
Naphthalene-D8	%	116	50-200	110	50-200	NA		NA	
Acenaphthene-D10	%	108	50-200	105	50-200	NA		NA	
Phenanthrene-D10	%	107	50-200	102	50-200	NA		NA	
Chrysene-D12	%	108	50-200	107	50-200	NA		NA	
Perylene-D12	%	148	50-200	158	50-200	NA		NA	
Nitrobenzene-D5	%	65	30-127	75	30-127	NA		NA	
2-Fluorobiphenyl	%	77	36-138	83	36-138	NA		NA	
p-Terphenyl-d14	%	94	41-167	93	41-167	NA		NA	
Phenol-D5	%	72	34-120	82	34-120	NA		NA	
2-Fluorophenol	%	63	26-120	73	26-120	NA		NA	
2,4,6-Tribromophenol	%	94	42-140	97	42-140	NA		NA	

NA = Not Applicable ND = Not Detected

Date: 09/09/20
Time: 13:38:4

ERM - G BROS.
WASTE CHARACTERI JN - SOIL/ WATER
WET CHEMISTRY ANALYSIS

pt: AN0326

Client ID Job No Sample Date	Lab ID	LCS A04-8227	A4B1539501						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Leachable pH	S.U.	6.98	0.0100	NA		NA		NA	

NA = Not Applicable ND = Not Detected

SDG: 8227
Client Sample ID: VBLK28 MSB28
Lab Sample ID: A4B1534602 A4B1534601

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
ERM - METHOD 8260 - TCL VOLATILES + ADDS					
1,1-Dichloroethene	UG/KG	62.2	50.0	124	65-146
Trichloroethene	UG/KG	55.0	50.0	110	74-127
Benzene	UG/KG	55.3	50.0	111	74-128
Toluene	UG/KG	54.0	50.0	108	74-123
Chlorobenzene	UG/KG	54.3	50.0	109	76-124

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 8227
Client Sample ID: VBLK082 MSB
Lab Sample ID: A4822702 A4822703

Analyte	Units of Measure	Concentration		% Recovery Blank Spike	QC LIMITS
		Blank Spike	Spike Amount		
ERM - SOIL-SW8463 8015 - METHANOL					
Methanol	UG/KG	19889	20000	99	50-130

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

SDG: 8227
Client Sample ID: S Blank
Lab Sample ID: A4B1527503

Matrix Spike Blank
A4B1527501

Matrix Spike Blk Dup
A4B1527502

Analyte	Units of Measure	Concentration		Spike Amount		% Recovery			% RPD	QC LIMITS	
		Spike Blank	Spike Blank Dup	SB	SBD	SB	SBD	Avg		RPD	REC.
ENSR - SOIL-SW8463 8270 - TCL SVOA + ADD											
Phenol	UG/KG	2138	2343	3290	3250	65	72	69	10	25.0	35-120
2-Chlorophenol	UG/KG	2181	2462	3290	3250	66	76	71	14	26.0	34-118
1,4-Dichlorobenzene	UG/KG	2138	2355	3290	3250	65	72	69	10	30.0	30-120
N-Nitroso-Di-n-propylamine	UG/KG	2492	2721	3290	3250	76	84	80	10	20.0	42-131
1,2,4-Trichlorobenzene	UG/KG	2231	2411	3290	3250	68	74	71	8	24.0	32-120
4-Chloro-3-methylphenol	UG/KG	2611	2805	3290	3250	79	86	83	8	20.0	45-135
Acenaphthene	UG/KG	2663	2741	3290	3250	80	84	82	5	16.0	49-131
4-Nitrophenol	UG/KG	2495	2437	3290	3250	76	75	76	1	25.0	36-142
2,4-Dinitrotoluene	UG/KG	2849	2825	3290	3250	87	87	87	0	19.0	45-138
Pentachlorophenol	UG/KG	2644	2650	3290	3250	80	82	81	2	27.0	28-135
Pyrene	UG/KG	3145	3128	3290	3250	96	96	96	0	25.0	48-154

* Indicates Result is outside QC Limits
NC = Not Calculated   ND = Not Detected

ERM - METHOD 8260 - TCL VOLATILES + ADDS

Client Sample ID Job No & Lab Sample ID	WCS-01 A04-8227 A4822701	WCS-01 A04-8227 A4822701DL			
Sample Date	08/24/2004 21:12	08/24/2004 21:12			
Received Date	08/26/2004 13:56	08/26/2004 13:56			
Extraction Date					
Analysis Date	08/31/2004 13:25	08/31/2004 20:08			
Extraction HT Met?	-	-			
Analytical HT Met?	YES	YES			
Sample Matrix	SOIL LOW	SOIL LOW			
Dilution Factor	1.0	1.0			
Sample wt/vol	5.27 GRAMS	1.14 GRAMS			
% Dry	74.90	74.90			

NA = Not Applicable

ERM - METHOD 8260 - TCL VOLATILES + ADDS

Client Sample ID Job No & Lab Sample ID	MSB28 A04-8227 A4B1534601				
Sample Date					
Received Date					
Extraction Date					
Analysis Date	08/31/2004 12:20				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	5.0 GRAMS				
% Dry	100.00				

NA = Not Applicable

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ERM - METHOD 8260 - TCL VOLATILES + ADDS

Client Sample ID Job No & Lab Sample ID	VBLK28 A04-8227 A4B1534602				
Sample Date					
Received Date					
Extraction Date					
Analysis Date	08/31/2004 12:50				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	5.0 GRAMS				
% Dry	100.00				

NA = Not Applicable

ERM - SOIL-SW8463 8015 - METHANOL

Client Sample ID Job No & Lab Sample ID	WCS-01 A04-8227 A4822701				
Sample Date	08/24/2004 21:12				
Received Date	08/26/2004 13:56				
Extraction Date					
Analysis Date	08/31/2004 11:19				
Extraction HT Met?	-				
Analytical HT Met?	YES				
Sample Matrix	SOIL MED				
Dilution Factor	1.0				
Sample wt/vol	5.16 GRAMS				
% Dry	74.90				

NA = Not Applicable

ERM - SOIL-SW8463 8015 - METHANOL

Client Sample ID Job No & Lab Sample ID	MSB A04-8227 A4822703				
Sample Date					
Received Date					
Extraction Date					
Analysis Date	08/31/2004 11:08				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL MED				
Dilution Factor	1.0				
Sample wt/vol	5.0 GRAMS				
% Dry	100.00				

NA = Not Applicable

ERM - SOIL-SW8463 8015 - METHANOL

Client Sample ID	VBLK082				
Job No & Lab Sample ID	A04-8227 A4822702				
Sample Date					
Received Date					
Extraction Date					
Analysis Date	08/31/2004 10:59				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL MED				
Dilution Factor	1.0				
Sample wt/vol	5.0 GRAMS				
% Dry	100.00				

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NA = Not Applicable

ENSR - SOIL-SW8463 8270 - TCL SVOA + ADDS

Client Sample ID Job No & Lab Sample ID	WCS-01 A04-8227 A4822701				
Sample Date	08/24/2004 21:12				
Received Date	08/26/2004 13:56				
Extraction Date	08/31/2004 07:00				
Analysis Date	09/02/2004 11:16				
Extraction HT Met?	YES				
Analytical HT Met?	YES				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.79 GRAMS				
% Dry	77.75				

NA = Not Applicable

ENSR - SOIL-SW8463 8270 - TCL SVOA + ADDS

Client Sample ID Job No & Lab Sample ID	Matrix Spike Blank A04-8227 A4B1527501	Matrix Spike Blk Dup A04-8227 A4B1527502			
Sample Date					
Received Date					
Extraction Date	08/31/2004 07:00	08/31/2004 07:00			
Analysis Date	09/01/2004 12:47	09/01/2004 13:14			
Extraction HT Met?	-	-			
Analytical HT Met?	-	-			
Sample Matrix	SOIL LOW	SOIL LOW			
Dilution Factor	1.0	1.0			
Sample wt/vol	30.39 GRAMS	30.76 GRAMS			
% Dry	100.00	100.00			

NA = Not Applicable

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ENSR - SOIL-SW8463 8270 - TCL SVOA + ADDS

Client Sample ID Job No & Lab Sample ID	S Blank A04-8227 A4B1527503				
Sample Date					
Received Date					
Extraction Date	08/31/2004 07:00				
Analysis Date	09/01/2004 14:08				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.42 GRAMS				
% Dry	100.00				

NA = Not Applicable

Date: 09/09/2 13:39:15
Jobno: A04-82

E
SAMPLE NOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4822701	WCS-01	S.U.	Leachable pH	9045	1.00	08/24/2004 21:12	08/26 13:56	NA	NA	09/01 13:30	Yes	SOIL

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4B1539501	LCS	S.U.	Leachable pH	9045	1.00	-	- 13:56	NA	NA	09/01 13:30	Yes	SOIL

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

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Chain of Custody

Chain of Custody Record

STL-4124 (0901)

SEVERN TRENT SERVICES **Severn Trent Laboratories, Inc.**

Client: ERM-NORTHEAST
Project Manager: Jon Fox
Date: 8-24-04
Chain of Custody Number: 134718
Address: 5788 Widewaters Parkway
Telephone Number (Area Code)/Fax Number: 315-445-2554 / 315-445-2543
Lab Number:
Page 1 of 1
City: Dewitt
State: NY
Zip Code: 13214
Site Contact: Chris Wunderlich
Lab Contact: Brian Fisher
Project Name and Location (State): Greif Bros Facility; Tonawanda, NY
Carrier/Waybill Number:
Contract/Purchase Order/Quote No.: 0021621

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Ice	VOC's	SVOCs PH	+ Methanol	(VIA 8015)							
WCS-01	8-24-04	2112				X		X						X	X	X									

Special Instructions/ Conditions of Receipt

Call Jon Fox
To Confirm
Analytical
Parameters
315-445-2554

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☒ 14 Days ☐ 21 Days ☐ Other______

QC Requirements (Specify)

1. Relinquished By | Date 8-26-04 | Time 13:56
1. Received By | Date 08/26/04 | Time 1356
2. Relinquished By | Date | Time
2. Received By | Date | Time
3. Relinquished By | Date | Time
3. Received By | Date | Time

Comments: 2.0°C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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SEVERN TRENT STL

STL Buffalo
10 Hazelwood Drive, Suite 106
Amherst, NY 14228

Tel: 716 691 2600 Fax: 716 691 7991
www.stl-inc.com

ANALYTICAL REPORT

Job#: A04-8627

STL Project#: NY1A8821
Site Name: ERM - GRIEF BROTHERS
Task: WASTE CHARACTERIZATION - SOIL/ WATER

Mr. Jon Fox
ERM
5788 Widewaters Pkwy
Dewitt, NY 13214

STL Buffalo

Brian J. Fischer
Project Manager

09/22/2004

STL Buffalo
Current Certifications

STATE	Program	Cert # / Lab ID
Arkansas	SDWA, CWA, RCRA, SOIL	03-054-D/88-0686
California	NELAP SDWA, CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida	NELAP RCRA	E87672
Georgia	SDWA	956
Illinois	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	CWA, RCRA	036-999-337
New Hampshire	NELAP SDWA, CWA	233701
New Jersey	SDWA, CWA, RCRA, CLP	NY455
New York	NELAP, AIR, SDWA, CWA, RCRA	10026
North Carolina	CWA	411
North Dakota	SDWA, CWA, RCRA	R-176
Oklahoma	CWA, RCRA	9421
Pennsylvania	Env. Lab Reg.	68-281
South Carolina	RCRA	91013
USDA	FOREIGN SOIL PERMIT	S-41579
Virginia	SDWA	278
Washington	CWA	C254
West Virginia	CWA	252
Wisconsin	CWA	998310390

SAMPLE SUMMARY

		SAMPLED		RECEIVED	
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE	TIME	DATE	TIME
A4862702	DNAPL AQUEOUS	09/09/2004	12:50	09/09/2004	15:24
A4862701	DNAPL PRODUCT	09/09/2004	12:50	09/09/2004	15:24

METHODS SUMMARY

Job#: A04-8627

STL Project#: NY1A8821
Site Name: ERM - GRIEF BROTHERS

PARAMETER	ANALYTICAL METHOD
ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W	SW8463 8260/5ML
METHOD 8260 - TCL VOLATILE ORGANICS	SW8463 8260
ERM - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S	SW8463 8082
Arsenic - Total	
Barium - Total	SW8463 6010
Cadmium - Total	SW8463 6010
Chromium - Total	SW8463 6010
Lead - Total	SW8463 6010
Mercury - Total	SW8463 6010
Selenium - Total	SW8463 7470
Silver - Total	SW8463 6010
	SW8463 6010
Percent Chlorine	
pH	ASTM D-1253-87
Total Organic Carbon	SW8463 9040
Total Solids (103 C)	SW8463 9060
	SM18 2540G

ASTM	"Annual Book of ASTM Standards", American Society for Testing and Materials, Philadelphia, PA.
SM18	"Standard Methods for the Examination of Water and Wastewater", 18th Edition
SW8463	"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A04-8627

STL Project#: NY1A8821
Site Name: ERM - GRIEF BROTHERS

General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A04-8627
Sample Cooler(s) were received at the following temperature(s); 4.0 °C
All samples were received in good condition.

GC/MS Volatile Data

The analyte Chloromethane was detected in the methanol blank, METHANOL BLK 091504, at a level above the reporting limit. This analyte was not detected in any of the associated samples, therefore there is no impact on data usability.

Sample DNAPL PRODUCT was analyzed using modified medium level techniques.

The analytes 1,1-Dichloroethane and 1,1-Dichloroethene were detected in sample DNAPL PRODUCT at a concentration above the linear range of the initial calibration standard curve, requiring a dilution. Due to the high dilution dictated by the concentration of other analytes, 1,1-Dichloroethane and 1,1-Dichloroethene were diluted out in sample DNAPL PRODUCT DL.

GC Extractable Data

No deviations from protocol were encountered during the analytical procedures.

Metals Data

No deviations from protocol were encountered during the analytical procedures.

Wet Chemistry Data

No deviations from protocol were encountered during the analytical procedures.

****

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Brian J. Fischer
Project Manager

Date

te: 09/22/2004
me: 07:41:55

Dilution Log w/Code Information
For Job A04-8627

Client Sample ID	Lab Sample ID	Parameter (Inorganic)/Method (Organic)	Dilution	Code
DNAPL PRODUCT	A4862701	8260	50.00	008
DNAPL PRODUCT DL	A4862701DL	8260	40000.00	008
DNAPL AQUEOUS	A4862702	8260/5ML	100.00	008
DNAPL AQUEOUS	A4862702	Total Organic Carbon	4.00	008
DNAPL AQUEOUS DL	A4862702DL	8260/5ML	5000.00	008

---

lution Code Definition:

002 - sample matrix effects
003 - excessive foaming
004 - high levels of non-target compounds
005 - sample matrix resulted in method non-compliance for an Internal Standard
006 - sample matrix resulted in method non-compliance for Surrogate
007 - nature of the TCLP matrix
008 - high concentration of target analyte(s)
009 - sample turbidity
010 - sample color
011 - insufficient volume for lower dilution
012 - sample viscosity
013 - other

DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

ND or U	Indicates compound was analyzed for, but not detected at or above the reporting limit.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at the secondary dilution factor.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
P	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".
A	This flag indicates that a TIC is a suspected aldol-condensation product.
1	Indicates coelution.
*	Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U	Indicates element was analyzed for, but not detected at or above the reporting limit.
J or B	Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
N	Indicates spike sample recovery is not within the quality control limits.
K	Indicates the post digestion spike recovery is not within the quality control limits.
S	Indicates value determined by the Method of Standard Addition.
M	Indicates duplicate injection results exceeded quality control limits.
W	Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
E	Indicates a value estimated or not reported due to the presence of interferences.
H	Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
*	Indicates analysis is not within the quality control limits.
+	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

Sample Data Package

ERM - GREIF BROS.
WASTE CHARACTE[illegible]ION - SOIL/ WATER
METHOD 8260 - VOLATILE ORGANICS

Client ID Job No Sample Date	Lab ID	DNAPL PRODUCT A04-8627 09/09/2004	A4862701	DNAPL PRODUCT DL A04-8627 09/09/2004	A4862701DL				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	ND	120000	ND	98000000	NA		NA	
Benzene	UG/KG	ND	25000	ND	20000000	NA		NA	
Bromodichloromethane	UG/KG	ND	25000	ND	20000000	NA		NA	
Bromoform	UG/KG	ND	25000	ND	20000000	NA		NA	
Bromomethane	UG/KG	ND	25000	ND	20000000	NA		NA	
2-Butanone	UG/KG	ND	120000	ND	98000000	NA		NA	
Carbon Disulfide	UG/KG	8400 J	25000	ND	20000000	NA		NA	
Carbon Tetrachloride	UG/KG	ND	25000	ND	20000000	NA		NA	
Chlorobenzene	UG/KG	ND	25000	ND	20000000	NA		NA	
Chloroethane	UG/KG	ND	25000	ND	20000000	NA		NA	
Chloroform	UG/KG	42000	25000	ND	20000000	NA		NA	
Chloromethane	UG/KG	ND	25000	ND	20000000	NA		NA	
Dibromochloromethane	UG/KG	ND	25000	ND	20000000	NA		NA	
1,1-Dichloroethane	UG/KG	1200000 E	25000	ND	20000000	NA		NA	
1,2-Dichloroethane	UG/KG	ND	25000	ND	20000000	NA		NA	
1,1-Dichloroethene	UG/KG	7500000 E	25000	ND	20000000	NA		NA	
1,2-Dichloroethene (Total)	UG/KG	120000	49000	ND	39000000	NA		NA	
1,2-Dichloropropane	UG/KG	ND	25000	ND	20000000	NA		NA	
cis-1,3-Dichloropropene	UG/KG	ND	25000	ND	20000000	NA		NA	
trans-1,3-Dichloropropene	UG/KG	ND	25000	ND	20000000	NA		NA	
Ethylbenzene	UG/KG	430000	25000	ND	20000000	NA		NA	
2-Hexanone	UG/KG	ND	120000	ND	98000000	NA		NA	
Methylene chloride	UG/KG	ND	25000	ND	20000000	NA		NA	
4-Methyl-2-pentanone	UG/KG	ND	120000	ND	98000000	NA		NA	
Styrene	UG/KG	ND	25000	ND	20000000	NA		NA	
1,1,2,2-Tetrachloroethane	UG/KG	ND	25000	ND	20000000	NA		NA	
Tetrachloroethene	UG/KG	130000	25000	ND	20000000	NA		NA	
Toluene	UG/KG	120000	25000	ND	20000000	NA		NA	
1,1,1-Trichloroethane	UG/KG	24000000 E	25000	450000000 D	20000000	NA		NA	
1,1,2-Trichloroethane	UG/KG	22000 J	25000	ND	20000000	NA		NA	
Trichloroethene	UG/KG	12000000 E	25000	120000000 D	20000000	NA		NA	
Vinyl acetate	UG/KG	ND	120000	ND	98000000	NA		NA	
Vinyl chloride	UG/KG	ND	49000	ND	39000000	NA		NA	
Total Xylenes	UG/KG	2200000	74000	ND	59000000	NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	93	50-200	80	50-200	NA		NA	
1,4-Difluorobenzene	%	93	50-200	81	50-200	NA		NA	
1,4-Dichlorobenzene-D4	%	93	50-200	67	50-200	NA		NA	
Toluene-D8	%	102	71-125	108	71-125	NA		NA	
p-Bromofluorobenzene	%	98	68-124	95	68-124	NA		NA	
1,2-Dichloroethane-D4	%	96	61-136	110	61-136	NA		NA	

NA = Not Applicable ND = Not Detected

Date: 09/22/20C
Time: 07:42:04

ERM - GR BROS.
WASTE CHARACTERI: ‹ - SOIL/ WATER
ERM - METHOD 8260 - TC. VOLATILE ORGANICS - W

Rept: AN0326

Client ID Job No Lab ID Sample Date		DNAPL AQUEOUS A04-8627 A4862702 09/09/2004		DNAPL AQUEOUS DL A04-8627 A4862702DL 09/09/2004					
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/L	7900	2500	ND	120000	NA		NA	
Benzene	UG/L	ND	500	ND	25000	NA		NA	
Bromodichloromethane	UG/L	ND	500	ND	25000	NA		NA	
Bromoform	UG/L	ND	500	ND	25000	NA		NA	
Bromomethane	UG/L	ND	500	ND	25000	NA		NA	
2-Butanone	UG/L	3100	2500	ND	120000	NA		NA	
Carbon Disulfide	UG/L	ND	500	ND	25000	NA		NA	
Carbon Tetrachloride	UG/L	ND	500	ND	25000	NA		NA	
Chlorobenzene	UG/L	ND	500	ND	25000	NA		NA	
Chloroethane	UG/L	ND	500	ND	25000	NA		NA	
Chloroform	UG/L	450 J	500	ND	25000	NA		NA	
Chloromethane	UG/L	ND	500	ND	25000	NA		NA	
Dibromochloromethane	UG/L	ND	500	ND	25000	NA		NA	
1,1-Dichloroethane	UG/L	18000	500	19000 DJ	25000	NA		NA	
1,2-Dichloroethane	UG/L	2000	500	ND	25000	NA		NA	
1,1-Dichloroethene	UG/L	17000	500	19000 DJ	25000	NA		NA	
cis-1,2-Dichloroethene	UG/L	1200	500	ND	25000	NA		NA	
trans-1,2-Dichloroethene	UG/L	ND	500	ND	25000	NA		NA	
1,2-Dichloropropane	UG/L	ND	500	ND	25000	NA		NA	
cis-1,3-Dichloropropene	UG/L	ND	500	ND	25000	NA		NA	
trans-1,3-Dichloropropene	UG/L	ND	500	ND	25000	NA		NA	
Ethylbenzene	UG/L	320 J	500	ND	25000	NA		NA	
2-Hexanone	UG/L	ND	2500	ND	120000	NA		NA	
Methylene chloride	UG/L	ND	500	ND	25000	NA		NA	
4-Methyl-2-pentanone	UG/L	ND	2500	ND	120000	NA		NA	
Styrene	UG/L	ND	500	ND	25000	NA		NA	
1,1,2,2-Tetrachloroethane	UG/L	ND	500	ND	25000	NA		NA	
Tetrachloroethene	UG/L	ND	500	ND	25000	NA		NA	
Toluene	UG/L	200 J	500	ND	25000	NA		NA	
1,1,1-Trichloroethane	UG/L	160000 E	500	760000 D	25000	NA		NA	
1,1,2-Trichloroethane	UG/L	280 J	500	ND	25000	NA		NA	
Trichloroethene	UG/L	97000 E	500	210000 D	25000	NA		NA	
Vinyl chloride	UG/L	ND	500	ND	25000	NA		NA	
Total Xylenes	UG/L	1900	1500	ND	75000	NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	95	50-200	80	50-200	NA		NA	
1,4-Difluorobenzene	%	96	50-200	81	50-200	NA		NA	
1,4-Dichlorobenzene-D4	%	87	50-200	66	50-200	NA		NA	
Toluene-D8	%	102	77-122	106	77-122	NA		NA	
p-Bromofluorobenzene	%	95	74-120	93	74-120	NA		NA	
1,2-Dichloroethane-D4	%	97	73-136	110	73-136	NA		NA	

NA = Not Applicable ND = Not Detected

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.
DNAPL PRODUCT

Lab Name: STL Buffalo Contract: ________

Lab Code: RECNY Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) SOIL

Lab Sample ID: A4862701

Sample wt/vol: 2.54 (g/mL) G

Lab File ID: Q9400.RR

Level: (low/med) MED

Date Samp/Recv: 09/09/2004 09/09/2004

% Moisture: not dec. 0.0

Date Analyzed: 09/16/2004

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 50.00

Soil Extract Volume: 5000 (uL)

Soil Aliquot Volume: 100.00 (uL)

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	Compound Name	RT	Est. Conc.	Q
1.	SATURATED HYDROCARBON	14.02	200000	J
2.	SATURATED HYDROCARBON	15.93	1000000	J
3.	TRIMETHYLBENZENE ISOMER	16.02	370000	J
4.	ETHYLMETHYLBENZENE ISOMER	16.37	300000	J
5.	TRIMETHYLBENZENE ISOMER	16.60	590000	J
6.	ALKYLCYCLOALKANE	16.95	360000	J
7.	TRIMETHYLBENZENE ISOMER	17.26	260000	J
8.	UNKNOWN	17.59	290000	J
9.	SATURATED HYDROCARBON	17.70	200000	J

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

DNAPL PRODUCT DL

Lab Name: STL Buffalo Contract: ________

Lab Code: RECNY Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) SOIL Lab Sample ID: A4862701DL

Sample wt/vol: 2.54 (g/mL) G Lab File ID: Q9422.RR

Level: (low/med) MED Date Samp/Recv: 09/09/2004 09/09/2004

% Moisture: not dec. 0.0 Date Analyzed: 09/17/2004

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 40000.00

Soil Extract Volume: 5000 (uL) Soil Aliquot Volume: 100.00 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	Compound Name	RT	Est. Conc.	Q

FORM IE - GC/MS VOA TIC

Date: 09/22/20
Time: 07:42:1.

ERM - G BROS.
WASTE CHARACTERI JN - SOIL/ WATER
ERM - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S

pt: AN0326

Client ID Job No Sample Date	Lab ID	DNAPL PRODUCT A04-8627 09/09/2004	A4862701						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	860	NA		NA		NA	
Aroclor 1221	UG/KG	ND	860	NA		NA		NA	
Aroclor 1232	UG/KG	ND	860	NA		NA		NA	
Aroclor 1242	UG/KG	ND	860	NA		NA		NA	
Aroclor 1248	UG/KG	ND	860	NA		NA		NA	
Aroclor 1254	UG/KG	ND	860	NA		NA		NA	
Aroclor 1260	UG/KG	ND	860	NA		NA		NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	72	32-148	NA		NA		NA	
Decachlorobiphenyl	%	124	36-153	NA		NA		NA	

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NA = Not Applicable ND = Not Detected

Date: 09/22/2
Time: 07:42:1

ERM - BROS.
WASTE CHARACTERI...ION - SOIL/ WATER
ERM - SW8463 RCRA METALS - W

ept: AN0326

Client ID Job No Sample Date	Lab ID	DNAPL AQUEOUS A04-8627 09/09/2004	A4862702						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	NA		NA		NA	
Barium - Total	MG/L	0.23	0.0020	NA		NA		NA	
Cadmium - Total	MG/L	ND	0.0010	NA		NA		NA	
Chromium - Total	MG/L	ND	0.0040	NA		NA		NA	
Lead - Total	MG/L	ND	0.0050	NA		NA		NA	
Mercury - Total	MG/L	ND	0.00020	NA		NA		NA	
Selenium - Total	MG/L	ND	0.015	NA		NA		NA	
Silver - Total	MG/L	ND	0.0030	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

ERM - GREIF BROS.
WASTE CHARACTE ION - SOIL/ WATER
WET CHE Y ANALYSIS

Client ID Job No Sample Date Lab ID		DNAPL AQUEOUS A04-8627 09/09/2004 A4862702		DNAPL PRODUCT A04-8627 09/09/2004 A4862701					
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Total Organic Carbon	MG/L	261	4.0	NA		NA		NA	
Percent Chlorine	%	NA		2.7	0	NA		NA	
pH	S.U.	6.62	0	NA		NA		NA	
Total Solids (103 C)	%	NA		ND	0.010	NA		NA	

NA = Not Applicable ND = Not Detected

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Batch Quality Control Data

Date: 09/22/2004 07:49:36
Batch No: A4B16

MS/MSD . QC Results

Rept: AN1392

Lab Sample ID: A4865403 A4865403MS A4865403SD

Analyte	Units of Measure	Sample	Concentration		Spike Amount		% Recovery			% RPD	QC LIMITS	
			Matrix Spike	Spike Duplicate	MS	MSD	MS	MSD	Avg		RPD	REC.
METHOD 8260 - TCLP VOLATILES												
Benzene	MG/L	0.366	0.945	0.819	0.500	0.500	116	91	104	24 *	17.0	77-123
2-Butanone	MG/L	0	2.97	2.86	2.50	2.50	119	115	117	3	20.0	64-139
Carbon Tetrachloride	MG/L	0	0.527	0.450	0.500	0.500	106	90	98	16	20.0	75-128
Chlorobenzene	MG/L	0	0.546	0.485	0.500	0.500	109	97	103	12	19.0	77-121
Chloroform	MG/L	0	0.591	0.547	0.500	0.500	118	109	114	8	20.0	75-126
1,2-Dichloroethane	MG/L	0	0.590	0.551	0.500	0.500	118	110	114	7	20.0	74-126
1,1-Dichloroethene	MG/L	0	0.625	0.524	0.500	0.500	125	105	115	17	20.0	66-142
Tetrachloroethene	MG/L	0	0.511	0.426	0.500	0.500	102	85	94	18	20.0	77-120
Trichloroethene	MG/L	0	0.574	0.498	0.500	0.500	115	100	108	14	22.0	77-123
Vinyl chloride	MG/L	0	0.481	0.458	0.500	0.500	96	92	94	4	20.0	55-145

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* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 09/27 4 07:49:36
Batch No: A4B1

MS/MSD [illegible] QC Results

Rept: AN1392

Lab Sample ID: A4865402 A4865402MS A4865402SD

Analyte	Units of Measure	Concentration			Spike Amount		% Recovery			% RPD	QC LIMITS	
		Sample	Matrix Spike	Spike Duplicate	MS	MSD	MS	MSD	Avg		RPD	REC.
FORD TCLP METALS AQUEOUS												
FORD - TCLP TOTAL MERCURY - AQUEOUS	MG/L	0.00020	0.00608	0.00588	0.00666	0.00666	88	85	87	3	20.0	80-120

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* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 09/27 [illegible]4 07:49:36
Batch No: A4B1

MS/MSD [illegible]n QC Results

Rept: AN1392

Lab Sample ID: A4871302 A4871302MS A4871302SD

Analyte	Units of Measure	Concentration			Spike Amount		% Recovery			% RPD	QC LIMITS	
		Sample	Matrix Spike	Spike Duplicate	MS	MSD	MS	MSD	Avg		RPD	REC.
TOTAL PRIORITY POLLUTANT METALS TOTAL MERCURY	MG/L	0.00003	0.00630	0.00600	0.00666	0.00666	94	90	92	4	20.0	80-120

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* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 09/2⁻ ٦4 07:49:36
Batch No: A4B1

MS/MSD ʟ -n QC Results

Rept: AN1392

Lab Sample ID: A4826201 A4826201MS A4826201SD

Analyte	Units of Measure	Concentration			Spike Amount		% Recovery			% RPD	QC LIMITS	
		Sample	Matrix Spike	Spike Duplicate	MS	MSD	MS	MSD	Avg		RPD	REC.
TOTAL ORGANIC CARBON ANALYSIS METHOD 9060 - TOTAL ORGANIC CARBON	MG/L	3.64	22.76	21.38	20.00	20.00	96	89	93	8	20.0	54-131

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

MS/MSD ñ QC Results

Lab Sample ID: A4845301 A4845301MS A4845301SD

Analyte	Units of Measure	Concentration			Spike Amount		% Recovery			% RPD	QC LIMITS	
		Sample	Matrix Spike	Spike Duplicate	MS	MSD	MS	MSD	Avg		RPD	REC.
TOTAL ORGANIC CARBON ANALYSIS WVDP-METHOD 9060/NPOC	MG/L	5.18	24.68	24.16	20.00	20.00	97	95	96	2	20.0	54-131

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Chronology and QC Summary Package

ERM - G BROS.
WASTE CHARACTERIZ...ON - SOIL/ WATER
METHOD 8260 - TCL VOLATILE ORGANICS

Client ID Job No Lab ID Sample Date		METHANOL BLK 091504 A04-8627 A4862703		VBLK 12 A04-8627 A4B1609804		VBLK 13 A04-8627 A4B1616804		VBLK14 A04-8627 A4B1616904	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	ND	1500	ND	2500	ND	2500	ND	2500
Benzene	UG/KG	ND	310	ND	500	ND	500	ND	500
Bromodichloromethane	UG/KG	ND	310	ND	500	ND	500	ND	500
Bromoform	UG/KG	ND	310	ND	500	ND	500	ND	500
Bromomethane	UG/KG	ND	310	ND	500	ND	500	ND	500
2-Butanone	UG/KG	ND	1500	ND	2500	ND	2500	ND	2500
Carbon Disulfide	UG/KG	ND	310	ND	500	ND	500	ND	500
Carbon Tetrachloride	UG/KG	ND	310	ND	500	ND	500	ND	500
Chlorobenzene	UG/KG	ND	310	ND	500	ND	500	ND	500
Chloroethane	UG/KG	ND	310	ND	500	ND	500	ND	500
Chloroform	UG/KG	ND	310	ND	500	ND	500	ND	500
Chloromethane	UG/KG	330	310	ND	500	ND	500	ND	500
Dibromochloromethane	UG/KG	ND	310	ND	500	ND	500	ND	500
1,1-Dichloroethane	UG/KG	ND	310	ND	500	ND	500	ND	500
1,2-Dichloroethane	UG/KG	ND	310	ND	500	ND	500	ND	500
1,1-Dichloroethene	UG/KG	ND	310	ND	500	ND	500	ND	500
1,2-Dichloroethene (Total)	UG/KG	ND	610	ND	1000	ND	1000	ND	1000
1,2-Dichloropropane	UG/KG	ND	310	ND	500	ND	500	ND	500
cis-1,3-Dichloropropene	UG/KG	ND	310	ND	500	ND	500	ND	500
trans-1,3-Dichloropropene	UG/KG	ND	310	ND	500	ND	500	ND	500
Ethylbenzene	UG/KG	ND	310	ND	500	ND	500	ND	500
2-Hexanone	UG/KG	ND	1500	ND	2500	ND	2500	ND	2500
Methylene chloride	UG/KG	ND	310	ND	500	ND	500	ND	500
4-Methyl-2-pentanone	UG/KG	ND	1500	ND	2500	ND	2500	ND	2500
Styrene	UG/KG	ND	310	ND	500	ND	500	ND	500
1,1,2,2-Tetrachloroethane	UG/KG	ND	310	ND	500	ND	500	ND	500
Tetrachloroethene	UG/KG	ND	310	ND	500	ND	500	ND	500
Toluene	UG/KG	ND	310	ND	500	ND	500	ND	500
1,1,1-Trichloroethane	UG/KG	ND	310	ND	500	ND	500	ND	500
1,1,2-Trichloroethane	UG/KG	ND	310	ND	500	ND	500	ND	500
Trichloroethene	UG/KG	ND	310	ND	500	ND	500	ND	500
Vinyl acetate	UG/KG	ND	1500	ND	2500	ND	2500	ND	2500
Vinyl chloride	UG/KG	ND	610	ND	1000	ND	1000	ND	1000
Total Xylenes	UG/KG	ND	920	ND	1500	ND	1500	ND	1500
IS/SURROGATE(S)									
Chlorobenzene-D5	%	94	50-200	95	50-200	94	50-200	98	50-200
1,4-Difluorobenzene	%	96	50-200	96	50-200	96	50-200	99	50-200
1,4-Dichlorobenzene-D4	%	76	50-200	80	50-200	79	50-200	86	50-200
Toluene-D8	%	103	71-125	99	71-125	100	71-125	100	71-125
p-Bromofluorobenzene	%	90	68-124	92	68-124	88	68-124	89	68-124
1,2-Dichloroethane-D4	%	97	61-136	95	61-136	99	61-136	98	61-136

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NA = Not Applicable ND = Not Detected

ERM - BROS.
WASTE CHARACTERI...ION - SOIL/ WATER
ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

Client ID Job No Sample Date	Lab ID	VBLK 14 A04-8627	A4B1616902	VBLK13 A04-8627	A4B1616802				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/L	ND	25	ND	25	NA		NA	
Benzene	UG/L	ND	5.0	ND	5.0	NA		NA	
Bromodichloromethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Bromoform	UG/L	ND	5.0	ND	5.0	NA		NA	
Bromomethane	UG/L	ND	5.0	ND	5.0	NA		NA	
2-Butanone	UG/L	ND	25	ND	25	NA		NA	
Carbon Disulfide	UG/L	ND	5.0	ND	5.0	NA		NA	
Carbon Tetrachloride	UG/L	ND	5.0	ND	5.0	NA		NA	
Chlorobenzene	UG/L	ND	5.0	ND	5.0	NA		NA	
Chloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Chloroform	UG/L	ND	5.0	ND	5.0	NA		NA	
Chloromethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Dibromochloromethane	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1-Dichloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
1,2-Dichloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1-Dichloroethene	UG/L	ND	5.0	ND	5.0	NA		NA	
cis-1,2-Dichloroethene	UG/L	ND	5.0	ND	5.0	NA		NA	
trans-1,2-Dichloroethene	UG/L	ND	5.0	ND	5.0	NA		NA	
1,2-Dichloropropane	UG/L	ND	5.0	ND	5.0	NA		NA	
cis-1,3-Dichloropropene	UG/L	ND	5.0	ND	5.0	NA		NA	
trans-1,3-Dichloropropene	UG/L	ND	5.0	ND	5.0	NA		NA	
Ethylbenzene	UG/L	ND	5.0	ND	5.0	NA		NA	
2-Hexanone	UG/L	ND	25	ND	25	NA		NA	
Methylene chloride	UG/L	ND	5.0	ND	5.0	NA		NA	
4-Methyl-2-pentanone	UG/L	ND	25	ND	25	NA		NA	
Styrene	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1,2,2-Tetrachloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Tetrachloroethene	UG/L	ND	5.0	ND	5.0	NA		NA	
Toluene	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1,1-Trichloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1,2-Trichloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Trichloroethene	UG/L	ND	5.0	ND	5.0	NA		NA	
Vinyl chloride	UG/L	ND	5.0	ND	5.0	NA		NA	
Total Xylenes	UG/L	ND	15	ND	15	NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	98	50-200	94	50-200	NA		NA	
1,4-Difluorobenzene	%	99	50-200	96	50-200	NA		NA	
1,4-Dichlorobenzene-D4	%	86	50-200	79	50-200	NA		NA	
Toluene-D8	%	100	77-122	100	77-122	NA		NA	
p-Bromofluorobenzene	%	89	74-120	88	74-120	NA		NA	
1,2-Dichloroethane-D4	%	98	73-136	99	73-136	NA		NA	

NA = Not Applicable   ND = Not Detected

Date: 09/22/2004
Time: 07:42:27

ERM - GF BROS.
WASTE CHARACTERI N - SOIL/ WATER
METHOD 8260 - TCL VOLATILE ORGANICS

t: AN0326

26\61

Client ID Job No Sample Date	Lab ID	MSB 12 A04-8627	A4B1609803	MSB 13 A04-8627	A4B1616803	MSB14 A04-8627	A4B1616903		
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	24000	2500	25000	2500	23000	2500	NA	
Benzene	UG/KG	4900	500	4800	500	4700	500	NA	
Bromodichloromethane	UG/KG	4900	500	4800	500	4700	500	NA	
Bromoform	UG/KG	4800	500	4400	500	4600	500	NA	
Bromomethane	UG/KG	4300	500	4600	500	4500	500	NA	
2-Butanone	UG/KG	24000	2500	24000	2500	22000	2500	NA	
Carbon Disulfide	UG/KG	6400	500	6600	500	4300	500	NA	
Carbon Tetrachloride	UG/KG	4800	500	4400	500	4600	500	NA	
Chlorobenzene	UG/KG	5000	500	4400	500	4600	500	NA	
Chloroethane	UG/KG	5100	500	4800	500	5300	500	NA	
Chloroform	UG/KG	5000	500	4700	500	4700	500	NA	
Chloromethane	UG/KG	3900	500	4400	500	4700	500	NA	
Dibromochloromethane	UG/KG	4800	500	4400	500	4600	500	NA	
1,1-Dichloroethane	UG/KG	4900	500	4700	500	4600	500	NA	
1,2-Dichloroethane	UG/KG	4900	500	4800	500	4700	500	NA	
1,1-Dichloroethene	UG/KG	5000	500	4800	500	5000	500	NA	
1,2-Dichloroethene (Total)	UG/KG	9900	1000	9100	1000	9200	1000	NA	
1,2-Dichloropropane	UG/KG	4900	500	4900	500	4700	500	NA	
cis-1,3-Dichloropropene	UG/KG	5000	500	4800	500	4700	500	NA	
trans-1,3-Dichloropropene	UG/KG	5000	500	4500	500	4600	500	NA	
Ethylbenzene	UG/KG	5100	500	4600	500	4700	500	NA	
2-Hexanone	UG/KG	26000	2500	25000	2500	24000	2500	NA	
Methylene chloride	UG/KG	4900	500	4700	500	4600	500	NA	
4-Methyl-2-pentanone	UG/KG	26000	2500	25000	2500	24000	2500	NA	
Styrene	UG/KG	5100	500	4600	500	4700	500	NA	
1,1,2,2-Tetrachloroethane	UG/KG	4900	500	4600	500	4500	500	NA	
Tetrachloroethene	UG/KG	4800	500	4200	500	4300	500	NA	
Toluene	UG/KG	4900	500	4400	500	4500	500	NA	
1,1,1-Trichloroethane	UG/KG	4800	500	4500	500	4800	500	NA	
1,1,2-Trichloroethane	UG/KG	4900	500	4600	500	4600	500	NA	
Trichloroethene	UG/KG	5000	500	4500	500	4800	500	NA	
Vinyl acetate	UG/KG	26000	2500	24000	2500	25000	2500	NA	
Vinyl chloride	UG/KG	4600	1000	4500	1000	4800	1000	NA	
Total Xylenes	UG/KG	15000	1500	14000	1500	14000	1500	NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	99	50-200	99	50-200	101	50-200	NA	
1,4-Difluorobenzene	%	99	50-200	97	50-200	101	50-200	NA	
1,4-Dichlorobenzene-D4	%	99	50-200	97	50-200	102	50-200	NA	
Toluene-D8	%	100	71-125	99	71-125	100	71-125	NA	
p-Bromofluorobenzene	%	97	68-124	91	68-124	94	68-124	NA	
1,2-Dichloroethane-D4	%	94	61-136	100	61-136	96	61-136	NA	

NA = Not Applicable   ND = Not Detected

STL Buffalo

Date: 09/22/20
Time: 07:42:27

ERM - GI 3ROS.
WASTE CHARACTERIZ..JN - SOIL/ WATER
ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

t: AN0326

Client ID Job No Lab ID Sample Date		MSB 14 A04-8627	A4B1616901	MSB13 A04-8627	A4B1616801				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/L	230	25	250	25	NA		NA	
Benzene	UG/L	47	5.0	48	5.0	NA		NA	
Bromodichloromethane	UG/L	47	5.0	48	5.0	NA		NA	
Bromoform	UG/L	46	5.0	44	5.0	NA		NA	
Bromomethane	UG/L	45	5.0	46	5.0	NA		NA	
2-Butanone	UG/L	220	25	240	25	NA		NA	
Carbon Disulfide	UG/L	43	5.0	66	5.0	NA		NA	
Carbon Tetrachloride	UG/L	46	5.0	44	5.0	NA		NA	
Chlorobenzene	UG/L	46	5.0	44	5.0	NA		NA	
Chloroethane	UG/L	53	5.0	48	5.0	NA		NA	
Chloroform	UG/L	47	5.0	47	5.0	NA		NA	
Chloromethane	UG/L	47	5.0	44	5.0	NA		NA	
Dibromochloromethane	UG/L	46	5.0	44	5.0	NA		NA	
1,1-Dichloroethane	UG/L	46	5.0	47	5.0	NA		NA	
1,2-Dichloroethane	UG/L	47	5.0	48	5.0	NA		NA	
1,1-Dichloroethene	UG/L	50	5.0	48	5.0	NA		NA	
cis-1,2-Dichloroethene	UG/L	46	5.0	47	5.0	NA		NA	
trans-1,2-Dichloroethene	UG/L	46	5.0	44	5.0	NA		NA	
1,2-Dichloropropane	UG/L	47	5.0	49	5.0	NA		NA	
cis-1,3-Dichloropropene	UG/L	47	5.0	48	5.0	NA		NA	
trans-1,3-Dichloropropene	UG/L	46	5.0	45	5.0	NA		NA	
Ethylbenzene	UG/L	47	5.0	46	5.0	NA		NA	
2-Hexanone	UG/L	240	25	250	25	NA		NA	
Methylene chloride	UG/L	46	5.0	47	5.0	NA		NA	
4-Methyl-2-pentanone	UG/L	240	25	250	25	NA		NA	
Styrene	UG/L	47	5.0	46	5.0	NA		NA	
1,1,2,2-Tetrachloroethane	UG/L	45	5.0	46	5.0	NA		NA	
Tetrachloroethene	UG/L	43	5.0	42	5.0	NA		NA	
Toluene	UG/L	45	5.0	44	5.0	NA		NA	
1,1,1-Trichloroethane	UG/L	48	5.0	45	5.0	NA		NA	
1,1,2-Trichloroethane	UG/L	46	5.0	46	5.0	NA		NA	
Trichloroethene	UG/L	48	5.0	45	5.0	NA		NA	
Vinyl chloride	UG/L	48	5.0	45	5.0	NA		NA	
Total Xylenes	UG/L	140	15	140	15	NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	101	50-200	99	50-200	NA		NA	
1,4-Difluorobenzene	%	101	50-200	97	50-200	NA		NA	
1,4-Dichlorobenzene-D4	%	102	50-200	97	50-200	NA		NA	
Toluene-D8	%	100	77-122	99	77-122	NA		NA	
p-Bromofluorobenzene	%	94	74-120	91	74-120	NA		NA	
1,2-Dichloroethane-D4	%	96	73-136	100	73-136	NA		NA	

NA = Not Applicable ND = Not Detected

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

METHANOL BLK 091504

Lab Name: STL Buffalo Contract: ___

Lab Code: RECNY Case No.: ___ SAS No.: ___ SDG No.: ___

Matrix: (soil/water) SOIL

Lab Sample ID: A4862703

Sample wt/vol: 4.08 (g/mL) G

Lab File ID: Q9379.RR

Level: (low/med) MED

Date Samp/Recv: ___ ___

% Moisture: not dec. 0.0

Date Analyzed: 09/16/2004

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 1.00

Soil Extract Volume: 5000 (uL)

Soil Aliquot Volume: 100.00 (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	Compound Name	RT	Est. Conc.	Q

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

VBLK 12

Lab Name: STL Buffalo   Contract: ______

Lab Code: RECNY   Case No.: ______   SAS No.: ______   SDG No.: ______

Matrix: (soil/water) SOIL   Lab Sample ID: A4B1609804

Sample wt/vol: 2.50 (g/mL) G   Lab File ID: Q9374.RR

Level: (low/med) MED   Date Samp/Recv: ______ ______

% Moisture: not dec. ______   Date Analyzed: 09/15/2004

GC Column: DB-624   ID: 0.25 (mm)   Dilution Factor: 1.00

Soil Extract Volume: 5000 (uL)   Soil Aliquot Volume: 100.00 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	Compound Name	RT	Est. Conc.	Q

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

VBLK 13

Lab Name: STL Buffalo Contract: ______

Lab Code: RECNY Case No.: ______ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) SOIL Lab Sample ID: A4B1616804

Sample wt/vol: 2.50 (g/mL) G Lab File ID: Q9398.RR

Level: (low/med) MED Date Samp/Recv: ______ ______

% Moisture: not dec. ______ Date Analyzed: 09/16/2004

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.00

Soil Extract Volume: 5000 (uL) Soil Aliquot Volume: 100.00 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	Compound Name	RT	Est. Conc.	Q

FORM IE - GC/MS VOA TIC

E R M
ERM - GREIF BROS.
ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

VBLK 14

Lab Name: STL Buffalo Contract: ____________

Lab Code: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: A4B1616902

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: Q9409.RR

Level: (low/med) LOW Date Samp/Recv: __________ __________

% Moisture: not dec. ______ Date Analyzed: 09/16/2004

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.00

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ________ (uL)

CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NO.	Compound Name	RT	Est. Conc.	Q

FORM IE - GC/MS VOA TIC

E R M
ERM - GREIF BROS.
ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

VBLK13

Lab Name: STL Buffalo Contract: ____

Lab Code: RECNY Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) WATER Lab Sample ID: A4B1616802

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: Q9398.RR

Level: (low/med) LOW Date Samp/Recv: ____ ____

% Moisture: not dec. ____ Date Analyzed: 09/16/2004

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.00

Soil Extract Volume: ____ (uL) Soil Aliquot Volume: ____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	Compound Name	RT	Est. Conc.	Q

FORM IE - GC/MS VOA TIC

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

VBLK14

Lab Name: STL Buffalo Contract: ______

Lab Code: RECNY Case No.: ______ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) SOIL Lab Sample ID: A4B1616904

Sample wt/vol: 2.50 (g/mL) G Lab File ID: Q9409.RR

Level: (low/med) MED Date Samp/Recv: ______ ______

% Moisture: not dec. ______ Date Analyzed: 09/16/2004

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.00

Soil Extract Volume: 5000 (uL) Soil Aliquot Volume: 100.00 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	Compound Name	RT	Est. Conc.	Q

Date: 09/22/200
Time: 07:42:34

ERM - G!   3ROS.
WASTE CHARACTERIZ. .N - SOIL/ WATER
ERM - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S

pt: AN0326

Client ID Job No Sample Date	Lab ID	Method Blank A04-8627	A4B1587403						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	1000	NA		NA		NA	
Aroclor 1221	UG/KG	ND	1000	NA		NA		NA	
Aroclor 1232	UG/KG	ND	1000	NA		NA		NA	
Aroclor 1242	UG/KG	ND	1000	NA		NA		NA	
Aroclor 1248	UG/KG	ND	1000	NA		NA		NA	
Aroclor 1254	UG/KG	ND	1000	NA		NA		NA	
Aroclor 1260	UG/KG	ND	1000	NA		NA		NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	120	32-148	NA		NA		NA	
Decachlorobiphenyl	%	128	36-153	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Client ID Job No Sample Date	Lab ID	Matrix Spike Blank A04-8627	A4B1587401	Matrix Spike Blk Dup A04-8627	A4B1587402				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	1000	ND	1000	NA		NA	
Aroclor 1221	UG/KG	ND	1000	ND	1000	NA		NA	
Aroclor 1232	UG/KG	ND	1000	ND	1000	NA		NA	
Aroclor 1242	UG/KG	ND	1000	ND	1000	NA		NA	
Aroclor 1248	UG/KG	ND	1000	ND	1000	NA		NA	
Aroclor 1254	UG/KG	13000	1000	13000	1000	NA		NA	
Aroclor 1260	UG/KG	ND	1000	ND	1000	NA		NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	125	32-148	122	32-148	NA		NA	
Decachlorobiphenyl	%	122	36-153	122	36-153	NA		NA	

NA = Not Applicable ND = Not Detected

Client ID Job No Sample Date	Lab ID	Method Blank A04-8627	A4B1590102	Method Blank A04-8627	A4B1591206				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	ND	0.010	NA		NA		NA	
Barium - Total	MG/L	ND	0.0020	NA		NA		NA	
Chromium - Total	MG/L	ND	0.0040	NA		NA		NA	
Silver - Total	MG/L	ND	0.0030	NA		NA		NA	
Cadmium - Total	MG/L	ND	0.0010	NA		NA		NA	
Lead - Total	MG/L	ND	0.0050	NA		NA		NA	
Mercury - Total	MG/L	NA		ND	0.00020	NA		NA	
Selenium - Total	MG/L	ND	0.015	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Date: 09/22/2
Time: 07:42:3

ERM - G BROS.
WASTE CHARACTERIZATION - SOIL/ WATER
ERM - SW8463 RCRA METALS - W

pt: AN0326

Client ID Job No Sample Date	Lab ID	LCS A04-8627	A4B1591205	LFB A04-8627	A4B1590101				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Arsenic - Total	MG/L	NA		0.19	0.010	NA		NA	
Cadmium - Total	MG/L	NA		0.19	0.0010	NA		NA	
Selenium - Total	MG/L	NA		0.20	0.015	NA		NA	
Barium - Total	MG/L	NA		0.19	0.0020	NA		NA	
Chromium - Total	MG/L	NA		0.19	0.0040	NA		NA	
Lead - Total	MG/L	NA		0.20	0.0050	NA		NA	
Mercury - Total	MG/L	0.0032	0.00020	NA		NA		NA	
Silver - Total	MG/L	NA		0.048	0.0030	NA		NA	

NA = Not Applicable ND = Not Detected

Date: 09/22/200
Time: 07:42:4

ERM - G BROS.
WASTE CHARACTERI N - SOIL/ WATER
WET CHEMISTRY ANALYSIS

t: AN0326

Client ID Job No Sample Date	Lab ID	Method Blank A04-8627	A4B1621102						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Total Organic Carbon	MG/L	ND	1.0	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Date: 09/22/20
Time: 07:42:4

ERM - G BROS.
WASTE CHARACTERIZ ON - SOIL/ WATER
WET CHEMISTRY ANALYSIS

pt: AN0326

Client ID Job No Sample Date	Lab ID	LCS A04-8627	A4B1585501	LCS A04-8627	A4B1621101				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
pH	S.U.	7.02	0	NA		NA		NA	
Total Organic Carbon	MG/L	NA		25.8	1.0	NA		NA	

NA = Not Applicable ND = Not Detected

Client Sample ID: VBLK 12 MSB 12
Lab Sample ID: A4B1609804 A4B1609803

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260 - TCL VOLATILE ORGANICS					
1,1-Dichloroethene	UG/KG	4970	5000	99	65-146
Trichloroethene	UG/KG	4997	5000	100	74-127
Benzene	UG/KG	4946	5000	99	74-128
Toluene	UG/KG	4880	5000	98	74-123
Chlorobenzene	UG/KG	4963	5000	99	76-124

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: VBLK 13 MSB 13
Lab Sample ID: A4B1616804 A4B1616803

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260 - TCL VOLATILE ORGANICS					
1,1-Dichloroethene	UG/KG	4828	5000	96	65-146
Trichloroethene	UG/KG	4506	5000	90	74-127
Benzene	UG/KG	4757	5000	95	74-128
Toluene	UG/KG	4403	5000	88	74-123
Chlorobenzene	UG/KG	4412	5000	88	76-124

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: VBLK 14 MSB 14
Lab Sample ID: A4B1616902 A4B1616901

Analyte	Units of Measure	Concentration		% Recovery Blank Spike	QC LIMITS
		Blank Spike	Spike Amount		
ERM - METHOD 8260 - TCL VOLATILE ORGANIC					
1,1-Dichloroethene	UG/L	50.4	50.0	101	66-142
Trichloroethene	UG/L	47.9	50.0	96	72-120
Benzene	UG/L	46.8	50.0	94	71-120
Toluene	UG/L	45.3	50.0	91	69-120
Chlorobenzene	UG/L	45.5	50.0	91	73-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: VBLK13 MSB13
Lab Sample ID: A4B1616802 A4B1616801

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
ERM - METHOD 8260 - TCL VOLATILE ORGANIC					
1,1-Dichloroethene	UG/L	48.2	50.0	96	66-142
Trichloroethene	UG/L	45.0	50.0	90	72-120
Benzene	UG/L	47.5	50.0	95	71-120
Toluene	UG/L	44.0	50.0	88	69-120
Chlorobenzene	UG/L	44.1	50.0	88	73-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: VBLK14 MSB14
Lab Sample ID: A4B1616904 A4B1616903

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260 - TCL VOLATILE ORGANICS					
1,1-Dichloroethene	UG/KG	5048	5000	101	65-146
Trichloroethene	UG/KG	4792	5000	96	74-127
Benzene	UG/KG	4687	5000	94	74-128
Toluene	UG/KG	4535	5000	91	74-123
Chlorobenzene	UG/KG	4551	5000	91	76-124

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: Method Blank
Lab Sample ID: A4B1587403

Matrix Spike Blank
A4B1587401

Matrix Spike Blk Dup
A4B1587402

Analyte	Units of Measure	Concentration		Spike Amount		% Recovery			% RPD	QC LIMITS	
		Spike Blank	Spike Blank Dup	SB	SBD	SB	SBD	Avg		RPD	REC.
ERM - METHOD 8082 - POLYCHLORINATED BIPH											
Aroclor 1254	UG/KG	12668	12690	10000	10000	127	127	127	0	30.0	52-153

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: Method Blank LFB
Lab Sample ID: A4B1590102 A4B1590101

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
ERM - SW8463 RCRA METALS - W					
ERM - 6010 TOTAL ARSENIC - W	MG/L	0.189	0.200	95	80-120
ERM - 6010 TOTAL BARIUM - W	MG/L	0.194	0.200	97	80-120
ERM - 6010 TOTAL CADMIUM - W	MG/L	0.191	0.200	96	80-120
ERM - 6010 TOTAL CHROMIUM - W	MG/L	0.189	0.200	95	80-120
ERM - 6010 TOTAL LEAD - W	MG/L	0.195	0.200	97	80-120
ERM - 6010 TOTAL SELENIUM - W	MG/L	0.199	0.200	100	80-120
ERM - 6010 TOTAL SILVER - W	MG/L	0.0477	0.0500	95	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: Method Blank LCS
Lab Sample ID: A4B1591206 A4B1591205

Analyte	Units of Measure	Concentration		% Recovery Blank Spike	QC LIMITS
		Blank Spike	Spike Amount		
ERM - SW8463 RCRA METALS - W					
ERM - 7470 TOTAL MERCURY - W	MG/L	0.00323	0.00333	97	80-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: Method Blank LCS
Lab Sample ID: A4B1621102 A4B1621101

Analyte	Units of Measure	Concentration Blank Spike	 Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS ERM - METHOD 9060 - TOTAL ORGANIC CARB	MG/L	25.81	27.00	93	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	DNAPL AQUEOUS A04-8627 A4862702	DNAPL AQUEOUS DL A04-8627 A4862702DL	DNAPL PRODUCT A04-8627 A4862701	DNAPL PRODUCT DL A04-8627 A4862701DL	
Sample Date	NA	NA	09/09/2004 12:50	09/09/2004 12:50	
Received Date			09/09/2004 15:24	09/09/2004 15:24	
Extraction Date					
Analysis Date			09/16/2004 13:58	09/17/2004 02:51	
Extraction HT Met?			-	-	
Analytical HT Met?			YES	YES	
Sample Matrix			NAPL	NAPL	
Dilution Factor			50.0	40000.0	
Sample wt/vol			2.54 GRAMS	2.54 GRAMS	
% Dry			100.00	100.00	

ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

Client Sample ID Job No & Lab Sample ID	DNAPL AQUEOUS A04-8627 A4862702	DNAPL AQUEOUS DL A04-8627 A4862702DL	DNAPL PRODUCT A04-8627 A4862701	DNAPL PRODUCT DL A04-8627 A4862701DL	
Sample Date	09/09/2004 12:50	09/09/2004 12:50	NA	NA	
Received Date	09/09/2004 15:24	09/09/2004 15:24			
Extraction Date					
Analysis Date	09/16/2004 14:26	09/17/2004 03:20			
Extraction HT Met?	-	-			
Analytical HT Met?	YES	YES			
Sample Matrix	WOTHER	WOTHER			
Dilution Factor	100.0	5000.0			
Sample wt/vol	0.005 LITERS	0.005 LITERS			
% Dry					

NA = Not Applicable

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	MSB 12 A04-8627 A4B1609803	MSB 13 A04-8627 A4B1616803	MSB 14 A04-8627 A4B1616901	MSB13 A04-8627 A4B1616801	MSB14 A04-8627 A4B1616903
Sample Date			NA	NA	
Received Date					
Extraction Date					
Analysis Date	09/15/2004 22:56	09/16/2004 12:27			09/16/2004 19:44
Extraction HT Met?	-	-			-
Analytical HT Met?	-	-			-
Sample Matrix	SOIL MED	SOIL MED			SOIL MED
Dilution Factor	1.0	1.0			1.0
Sample wt/vol	2.5 GRAMS	2.5 GRAMS			2.5 GRAMS
% Dry	100.00	100.00			100.00

ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

Client Sample ID Job No & Lab Sample ID	MSB 12 A04-8627 A4B1609803	MSB 13 A04-8627 A4B1616803	MSB 14 A04-8627 A4B1616901	MSB13 A04-8627 A4B1616801	MSB14 A04-8627 A4B1616903
Sample Date	NA	NA			NA
Received Date					
Extraction Date					
Analysis Date			09/16/2004 19:44	09/16/2004 12:27	
Extraction HT Met?			-	-	
Analytical HT Met?			-	-	
Sample Matrix			WATER	WATER	
Dilution Factor			1.0	1.0	
Sample wt/vol			0.005 LITERS	0.005 LITERS	
% Dry					

NA = Not Applicable

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	METHANOL BLK 091504 A04-8627 A4862703	VBLK 12 A04-8627 A4B1609804	VBLK 13 A04-8627 A4B1616804	VBLK 14 A04-8627 A4B1616902	VBLK13 A04-8627 A4B1616802
Sample Date				NA	NA
Received Date					
Extraction Date					
Analysis Date	09/16/2004 02:17	09/15/2004 23:53	09/16/2004 12:55		
Extraction HT Met?	-	-	-		
Analytical HT Met?	-	-	-		
Sample Matrix	SOIL MED	SOIL MED	SOIL MED		
Dilution Factor	1.0	1.0	1.0		
Sample wt/vol	4.08 GRAMS	2.5 GRAMS	2.5 GRAMS		
% Dry	100.00	100.00	100.00		

ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

Client Sample ID Job No & Lab Sample ID	METHANOL BLK 091504 A04-8627 A4862703	VBLK 12 A04-8627 A4B1609804	VBLK 13 A04-8627 A4B1616804	VBLK 14 A04-8627 A4B1616902	VBLK13 A04-8627 A4B1616802
Sample Date	NA	NA	NA		
Received Date					
Extraction Date					
Analysis Date				09/16/2004 20:41	09/16/2004 12:55
Extraction HT Met?				-	-
Analytical HT Met?				-	-
Sample Matrix				WATER	WATER
Dilution Factor				1.0	1.0
Sample wt/vol				0.005 LITERS	0.005 LITERS
% Dry					

51\61

NA = Not Applicable

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	VBLK14 A04-8627 A4B1616904				
Sample Date					
Received Date					
Extraction Date					
Analysis Date	09/16/2004 20:41				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL MED				
Dilution Factor	1.0				
Sample wt/vol	2.5 GRAMS				
% Dry	100.00				

NA = Not Applicable

ERM - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S

Client Sample ID	DNAPL PRODUCT				
Job No & Lab Sample ID	A04-8627 A4862701				
Sample Date	09/09/2004 12:50				
Received Date	09/09/2004 15:24				
Extraction Date	09/13/2004 07:00				
Analysis Date	09/14/2004 12:09				
Extraction HT Met?	YES				
Analytical HT Met?	YES				
Sample Matrix	NAPL				
Dilution Factor	1.0				
Sample wt/vol	0.58 GRAMS				
% Dry	100.00				

53\61

NA = Not Applicable

ERM - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S

Client Sample ID Job No & Lab Sample ID	Matrix Spike Blank A04-8627 A4B1587401	Matrix Spike Blk Dup A04-8627 A4B1587402			
Sample Date					
Received Date					
Extraction Date	09/13/2004 07:00	09/13/2004 07:00			
Analysis Date	09/14/2004 10:53	09/14/2004 11:06			
Extraction HT Met?	-	-			
Analytical HT Met?	-	-			
Sample Matrix	OIL	OIL			
Dilution Factor	1.0	1.0			
Sample wt/vol	0.5 GRAMS	0.5 GRAMS			
% Dry	100.00	100.00			

NA = Not Applicable

ERM - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S

Client Sample ID	Method Blank				
Job No & Lab Sample ID	A04-8627 A4B1587403				
Sample Date					
Received Date					
Extraction Date	09/13/2004 07:00				
Analysis Date	09/14/2004 11:19				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	OIL				
Dilution Factor	1.0				
Sample wt/vol	0.5 GRAMS				
% Dry	100.00				

NA = Not Applicable

Date: 09/22/2 07:43:09
Jobno: A04-862

E
SAMPLE OLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4862702	DNAPL AQUEOUS	MG/L	Arsenic - Total	6010	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/15 06:51	Yes	WOTHER
		MG/L	Barium - Total	6010	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/15 06:51	Yes	WOTHER
		MG/L	Cadmium - Total	6010	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/15 06:51	Yes	WOTHER
		MG/L	Chromium - Total	6010	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/15 06:51	Yes	WOTHER
		MG/L	Lead - Total	6010	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/15 06:51	Yes	WOTHER
		MG/L	Mercury - Total	7470	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/14 11:43	Yes	WOTHER
		MG/L	Selenium - Total	6010	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/15 06:51	Yes	WOTHER
		MG/L	Silver - Total	6010	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/15 06:51	Yes	WOTHER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Date: 09/22/7   07:43:09
Jobno: A04-86

E
QC CH ,LOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4B1590102	Method Blank	MG/L	Arsenic - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:38	Yes	WATER
		MG/L	Barium - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:38	Yes	WATER
		MG/L	Cadmium - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:38	Yes	WATER
		MG/L	Chromium - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:38	Yes	WATER
		MG/L	Lead - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:38	Yes	WATER
		MG/L	Selenium - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:38	Yes	WATER
		MG/L	Silver - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:38	Yes	WATER
A4B1591206	Method Blank	MG/L	Mercury - Total	7470	1.00	-	- 15:24	NA	NA	09/14 11:55	Yes	WATER
A4B1591205	LCS	MG/L	Mercury - Total	7470	1.00	-	- 15:24	NA	NA	09/14 11:53	Yes	WATER
A4B1590101	LFB	MG/L	Arsenic - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:43	Yes	WATER
		MG/L	Barium - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:43	Yes	WATER
		MG/L	Cadmium - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:43	Yes	WATER
		MG/L	Chromium - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:43	Yes	WATER
		MG/L	Lead - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:43	Yes	WATER
		MG/L	Selenium - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:43	Yes	WATER
		MG/L	Silver - Total	6010	1.00	-	- 15:24	NA	NA	09/15 05:43	Yes	WATER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Date: 09/22/2 07:43:11
Jobno: A04-86

E
SAMPLE OLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4862702	DNAPL AQUEOUS	S.U.	pH	9040	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/11 10:59	No	WOTHER
		MG/L	Total Organic Carbon	9060	4.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/16 12:41	Yes	WOTHER
A4862701	DNAPL PRODUCT	%	Total Solids (103 C)	2540G	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/21 07:00	Yes	NAPL
		%	Percent Chlorine	D-1253-87	1.00	09/09/2004 12:50	09/09 15:24	NA	NA	09/16 17:58	Yes	NAPL

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Date: 09/22/ 07:43:11
Jobno: A04-8

QC CH...OLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4B1585501	LCS	S.U.	pH	9040	1.00	-	- 15:24	NA	NA	09/11 10:59	Yes	WATER
A4B1621101	LCS	MG/L	Total Organic Carbon	9060	1.00	-	- 15:24	NA	NA	09/16 12:41	Yes	WATER
A4B1621102	Method Blank	MG/L	Total Organic Carbon	9060	1.00	-	- 15:24	NA	NA	09/16 12:41	Yes	WATER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

STL Buffalo

Chain of Custody

Chain of Custody Record

SEVERN
TRENT
SERVICES
Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: ERM - Northeast
Project Manager: Jon Fox
Date: 9-9-2004
Chain of Custody Number: 134719
Address: 5788 Widewaters Parkway
Telephone Number (Area Code)/Fax Number: 315-445-2554
Lab Number:
Page 1 of 1
City: Dewitt
State: NY
Zip Code: 13214
Site Contact: Chris Wunderlich
Lab Contact: Brian Fisher
Project Name and Location (State): Grief Bros. Facility, Tonawanda NY
Carrier/Waybill Number:
Contract/Purchase Order/Quote No.: 0021621

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): 8260 (VOCs)	8260 Library Search	Total Cl / Halogens	Total Solids	PCBs	Pb	TOC	RCRA 8 Total Metals				
RW-1, RW-2, RW-3 - DNAPL Product	9-9-04	1250						X						X	X	+	X	X							
RW-1, RW-2, RW-3 - DNAPL AQUEOUS	9-9-04	1250						X		X	X			X					X	X	X				

Special Instructions/ Conditions of Receipt

Contact:
Dean Cattieu (WTS)
at 716-692-2111 for
any Questions on
analysis + Testing

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other 10 day

QC Requirements (Specify): Standard Report.

	Date	Time		Date	Time
1. Relinquished By	9-9-04	3:24pm	1. Received By	09/09/04	1524
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments
4.0°C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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SEVERN TRENT STL

STL Buffalo
10 Hazelwood Drive, Suite 106
Amherst, NY 14228

Tel: 716 691 2600 Fax: 716 691 7991
www.stl-inc.com

ANALYTICAL REPORT

Job#: A04-9682

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS
Task: WASTE CHARACTERIZATION - SOIL/ WATER

Mr. Jon Fox
ERM
5788 Widewaters Pkwy
Dewitt, NY 13214

STL Buffalo

Brian J. Fischer
Project Manager

10/15/2004

STL Buffalo
Current Certifications

STATE	Program	Cert # / Lab ID
Arkansas	SDWA, CWA, RCRA, SOIL	03-054-D/88-0686
California	NELAP SDWA, CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida	NELAP RCRA	E87672
Georgia	SDWA	956
Illinois	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	CWA, RCRA	036-999-337
New Hampshire	NELAP SDWA, CWA	233701
New Jersey	SDWA, CWA, RCRA, CLP	NY455
New York	NELAP, AIR, SDWA, CWA, RCRA	10026
North Carolina	CWA	411
North Dakota	SDWA, CWA, RCRA	R-176
Oklahoma	CWA, RCRA	9421
Pennsylvania	Env. Lab Reg.	68-281
South Carolina	RCRA	91013
USDA	FOREIGN SOIL PERMIT	S-41579
Virginia	SDWA	278
Washington	CWA	C254
West Virginia	CWA	252
Wisconsin	CWA	998310390

SAMPLE SUMMARY

		SAMPLED		RECEIVED	
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE	TIME	DATE	TIME
A4968201	CARBON UNIT#1-#2	09/20/2004	16:30	10/01/2004	11:01

METHODS SUMMARY

Job#: A04-9682

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS

PARAMETER	ANALYTICAL METHOD
Chloride	MCAWW 300.0
Nitrate	MCAWW 300.0
pH	SW8463 9040
Sulfate	MCAWW 300.0

MCAWW	"Methods for Chemical Analysis of Water and Wastes",EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/4-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993)
SW8463	"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A04-9682

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS

General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A04-9682
Sample Cooler(s) were received at the following temperature(s); 17.0 °C
All samples were received in good condition.

Wet Chemistry Data

No deviations from protocol were encountered during the analytical procedures.

****

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

____
Brian J. Fischer
Project Manager

____
Date

Date: 10/15/2004
Time: 14:58:27

Dilution Log w/Code Information
For Job A04-9682

Client Sample ID	Lab Sample ID	Parameter (Inorganic)/Method (Organic)	Dilution	Code
CARBON UNIT#1-#2	A4968201	Chloride	10000.00	008
CARBON UNIT#1-#2	A4968201	Nitrate	10000.00	008
CARBON UNIT#1-#2	A4968201	Sulfate	4000.00	002

Dilution Code Definition:

002 - sample matrix effects
003 - excessive foaming
004 - high levels of non-target compounds
005 - sample matrix resulted in method non-compliance for an Internal Standard
006 - sample matrix resulted in method non-compliance for Surrogate
007 - nature of the TCLP matrix
008 - high concentration of target analyte(s)
009 - sample turbidity
010 - sample color
011 - insufficient volume for lower dilution
012 - sample viscosity
013 - other

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DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

ND or U	Indicates compound was analyzed for, but not detected at or above the reporting limit.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at the secondary dilution factor.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
P	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".
A	This flag indicates that a TIC is a suspected aldol-condensation product.
1	Indicates coelution.
*	Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U	Indicates element was analyzed for, but not detected at or above the reporting limit.
J or B	Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
N	Indicates spike sample recovery is not within the quality control limits.
K	Indicates the post digestion spike recovery is not within the quality control limits.
S	Indicates value determined by the Method of Standard Addition.
M	Indicates duplicate injection results exceeded quality control limits.
W	Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
E	Indicates a value estimated or not reported due to the presence of interferences.
H	Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
*	Indicates analysis is not within the quality control limits.
+	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

Sample Data Package

Date: 10/15/2(
Time: 14:58:39

ERM - G BROS.
WASTE CHARACTERIZA ION - SOIL/ WATER
WET CHEMISTRY ANALYSIS

pt: AN0326

Client ID Job No Sample Date	Lab ID	CARBON UNIT#1-#2 A04-9682 09/20/2004	A4968201						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Chloride	MG/L	850000	5000	NA		NA		NA	
Nitrate	MG/L-N	ND	500	NA		NA		NA	
Sulfate	MG/L	ND	8000	NA		NA		NA	
pH	S.U.	<1	1.00	NA		NA		NA	

10\31

NA = Not Applicable ND = Not Detected

Batch Quality Control Data

Date: 10/1 , 14:29:48
Batch No: A4B17

MS/MSD Batch QC Results

Rept: AN1392

Lab Sample ID: A4942217 A4942217MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 300.0 - SULFATE	MG/L	59.85	109.6	50.00	100	75-125

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

MS/MSD Batch QC Results

Lab Sample ID: A4953805 A4953805MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 300.0 - SULFATE	MG/L	30.55	83.82	50.00	106	75-125

* Indicates Result is outside QC Limits
NC = Not Calculated   ND = Not Detected

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Date: 10/1 4 14:29:48
Batch No: A4B1

MS/MSD Ba..n QC Results

Rept: AN1392

Lab Sample ID: A4953806 A4953806MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 300.0 - SULFATE	MG/L	55.37	98.44	50.00	86	75-125

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 10/1 4 14:29:48
Batch No: A4B1

MS/MSD Batch QC Results

Rept: AN1392

Lab Sample ID: A4962202 A4962202MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 300.0 - SULFATE	MG/L	74.88	137.9	50.00	126 *	75-125

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 10/1/ 14:29:48
Batch No: A4B17

MS/MSD Batch QC Results

Rept: AN1392

Lab Sample ID: A4969701 A4969701MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 300.0 - SULFATE	MG/L	84.23	142.6	50.00	117	75-125

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 10/1   4 14:29:48
Batch No: A4B1,

MS/MSD Batch QC Results

Rept: AN1392

Lab Sample ID: A4969702   A4969702MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 340.2 - FLUORIDE	MG/L	0.0600	4.72	5.00	93	77-119

* Indicates Result is outside QC Limits
NC = Not Calculated   ND = Not Detected

Date: 10/14' 04 14:29:48
Batch No: A4B1

MS/MSD [illegible] QC Results

Rept: AN1392

Lab Sample ID: A4969712 A4969712MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 300.0 - SULFATE	MG/L	54.65	94.72	50.00	80	75-125

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Lab Sample ID: A4969716 A4969716MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 300.0 - SULFATE	MG/L	48.03	94.80	50.00	94	75-125

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 10/14/04 14:29:48
Batch No: A481

MS/MSD Batch QC Results

Rept: AN1392

Lab Sample ID: A4982003 A4982003MS

Analyte	Units of Measure	Concentration Sample	 Matrix Spike	Spike Amount	% Recovery MS	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 300.0 - FLUORIDE	MG/L	0.270	4.40	5.00	83	77-119

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 10/1/ 4 14:29:48
Batch No: A4B17

MS/MSD Batch QC Results

Rept: AN1392

Lab Sample ID: A4982304 A4982304MS

Analyte	Units of Measure	Concentration		Spike Amount	% Recovery MS	QC LIMITS
		Sample	Matrix Spike			
WET CHEMISTRY ANALYSIS METHOD 300.0 - FLUORIDE	MG/L	0	4.14	5.00	83	77-119

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 10/1[illegible]4 14:29:48
Batch No: A4B1

MS/MSD Batch QC Results

Rept: AN1392

Lab Sample ID: A4984901 A4984901MS

Analyte	Units of Measure	Concentration				
		Sample	Matrix Spike	Spike Amount	% Recovery MS	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD SM4110C - SULFATE	MG/L	23.78	68.01	50.00	88	75-125

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Chronology and QC Summary Package

Date: 10/15/2
Time: 14:58:5

ERM - G BROS.
WASTE CHARACTERIZ..ON - SOIL/ WATER
WET CHEMISTRY ANALYSIS

pt: AN0326

Client ID Job No Sample Date	Lab ID	Method Blank A04-9682	A4B1728802	Method Blank A04-9682	A4B1765102				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Sulfate	MG/L	ND	2.0	NA		NA		NA	
Chloride	MG/L	NA		ND	0.50	NA		NA	
Nitrate	MG/L-N	NA		ND	0.050	NA		NA	

NA = Not Applicable   ND = Not Detected

Date: 10/15/2
Time: 14:58:51

ERM - G BROS.
WASTE CHARACTERIZATION - SOIL/ WATER
WET CHEMISTRY ANALYSIS

pt: AN0326

Client ID Job No Sample Date	Lab ID	LCS A04-9682	A4B1720801	LCS A04-9682	A4B1728801	LCS A04-9682	A4B1765101		
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
pH	S.U.	6.99	0	NA		NA		NA	
Sulfate	MG/L	NA		10.5	2.0	NA		NA	
Chloride	MG/L	NA		NA		ND	0.50	NA	
Nitrate	MG/L-N	NA		NA		0.94	0.050	NA	

NA = Not Applicable ND = Not Detected

Client Sample ID: Method Blank LCS
Lab Sample ID: A4B1728802 A4B1728801

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 300.0 - SULFATE	MG/L	10.53	10.0	103	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: Method Blank LCS
Lab Sample ID: A4B1765102 A4B1765101

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
WET CHEMISTRY ANALYSIS METHOD 300.0 - NITRATE	MG/L-N	0.940	1.00	94	90-110

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date: 10/15/2 '4:59:18
Jobno: A04-968.

E
SAMPLE CHRONOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4968201	CARBON UNIT#1-#2	S.U.	pH	9040	1.00	09/20/2004 16:30	10/01 11:01	NA	NA	10/05 09:24	No	WOTHER
		MG/L	Chloride	300.0	10000.00	09/20/2004 16:30	10/01 11:01	NA	NA	10/12 16:15	Yes	WOTHER
		MG/L	Sulfate	300.0	4000.00	09/20/2004 16:30	10/01 11:01	NA	NA	10/06 11:46	Yes	WOTHER
		MG/L-N	Nitrate	300.0	10000.00	09/20/2004 16:30	10/01 11:01	NA	NA	10/12 16:15	No	WOTHER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Date: 10/15/ 14:59:18
Jobno: A04-96

E
QC CHRONOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4B1720801	LCS	S.U.	pH	9040	1.00	-	- 11:01	NA	NA	10/05 09:24	Yes	WATER
A4B1728801	LCS	MG/L	Sulfate	300.0	1.00	-	- 11:01	NA	NA	10/06 11:46	Yes	WATER
A4B1765101	LCS	MG/L	Chloride	300.0	1.00	-	- 11:01	NA	NA	10/12 16:15	Yes	WATER
		MG/L-N	Nitrate	300.0	1.00	-	- 11:01	NA	NA	10/12 16:15	Yes	WATER
A4B1728802	Method Blank	MG/L	Sulfate	300.0	1.00	-	- 11:01	NA	NA	10/06 11:46	Yes	WATER
A4B1765102	Method Blank	MG/L	Chloride	300.0	1.00	-	- 11:01	NA	NA	10/12 16:15	Yes	WATER
		MG/L-N	Nitrate	300.0	1.00	-	- 11:01	NA	NA	10/12 16:15	Yes	WATER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Chain of Custody

Chain of Custody Record

TC?

SEVERN TRENT SERVICES Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: ERM - Nor[illegible]st
Project Manager: Jon Fox
Date: 10/30/04
Chain of Custody Number: 134720

Address: 5788 Widewaters Parkway
Telephone Number (Area Code)/Fax Number: 315-445-2554
Lab Number:
Page 1 of 1

City: Dewitt
State: NY
Zip Code: 13214
Site Contact: Chris Wunderlich
Lab Contact: Brian Fisher

Project Name and Location (State): Greif Bros, Tonawanda NY
Carrier/Waybill Number: —

Contract/Purchase Order/Quote No.: 0021621

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PH	Anionic (-) Acids	Phenolic Acids	Special Instructions/ Conditions of Receipt
(Liquid from SVE, Carbon Unit #1	9-20-04	16:30		X				X									"Acid-Like" Liquid
Outlet to Carbon Unit #2 Inlet																	"Toxic"
Pale #025)								(5 Gallon Pale									Additional parameters
								≈ 0.5 gal Liquid)									Check with
																	Brian Fisher (STL).

Possible Hazard Identification
☐ Non-Hazard ☒ Flammable ☒ Skin Irritant ☒ Poison B ☒ Unknown

Sample Disposal
☒ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other 10 days

QC Requirements (Specify)

1. Relinquished By: Chris D Wunderlich Date: 10-1-04 Time: 11:01
1. Received By: STL Buffalo Date: 10/01/04 Time: 11:01

2. Relinquished By: Date: Time:
2. Received By: Date: Time:

3. Relinquished By: Date: Time:
3. Received By: Date: Time:

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

SEVERN TRENT STL

STL Buffalo
10 Hazelwood Drive, Suite 106
Amherst, NY 14228

Tel: 716 691 2600 Fax: 716 691 7991
www.stl-inc.com

ANALYTICAL REPORT

Job#: A04-B335

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS
Task: WASTE CHARACTERIZATION - SOIL/ WATER

Mr. Jon Fox
ERM
5788 Widewaters Pkwy
Dewitt, NY 13214

STL Buffalo

Brian J. Fischer
Project Manager

11/17/2004

RECEIVED
NOV 22 2004

STL Buffalo
Current Certifications

STATE	Program	Cert # / Lab ID
Arkansas	SDWA, CWA, RCRA, SOIL	03-054-D/88-0686
California	NELAP SDWA, CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida	NELAP RCRA	E87672
Georgia	SDWA	956
Illinois	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	CWA, RCRA	036-999-337
New Hampshire	NELAP SDWA, CWA	233701
New Jersey	SDWA, CWA, RCRA, CLP	NY455
New York	NELAP, AIR, SDWA, CWA, RCRA	10026
North Carolina	CWA	411
North Dakota	SDWA, CWA, RCRA	R-176
Oklahoma	CWA, RCRA	9421
Pennsylvania	Env. Lab Reg.	68-281
South Carolina	RCRA	91013
USDA	FOREIGN SOIL PERMIT	S-41579
Virginia	SDWA	278
Washington	CWA	C254
West Virginia	CWA	252
Wisconsin	CWA	998310390

SAMPLE SUMMARY

		SAMPLED		RECEIVED	
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE	TIME	DATE	TIME
A4B33501	WC-GAC LIQUID	11/15/2004	11:30	11/15/2004	12:20

METHODS SUMMARY

Job#: A04-B335

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS

PARAMETER	ANALYTICAL METHOD
ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W	SW8463 8260/5ML
pH	SW8463 9040

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A04-B335

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS

General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual, Dissolved Oxygen, Sulfite, and Temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A04-B335
Sample Cooler(s) were received at the following temperature(s); 15.8 °C
All samples were received in good condition.

GC/MS Volatile Data

The internal standard 1,4-Dichlorobenzene exceeded quality control limits for sample WC-GAC LIQUID. This sample was reanalyzed, with now both the internal standard 1,4-Dichlorobenzene and the surrogate p-Bromofluorobenzene exceeding quality control limits, thus indicating a potential matrix effect. Both sets of data are reported in this data package.

Wet Chemistry Data

No deviations from protocol were encountered during the analytical procedures.

****

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Brian J. Fischer
Project Manager

Date

DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

ND or U	Indicates compound was analyzed for, but not detected at or above the reporting limit.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at the secondary dilution factor.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
P	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".
A	This flag indicates that a TIC is a suspected aldol-condensation product.
^{1}	Indicates coelution.
*	Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U	Indicates element was analyzed for, but not detected at or above the reporting limit.
J or B	Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
N	Indicates spike sample recovery is not within the quality control limits.
K	Indicates the post digestion spike recovery is not within the quality control limits.
S	Indicates value determined by the Method of Standard Addition.
M	Indicates duplicate injection results exceeded quality control limits.
W	Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
E	Indicates a value estimated or not reported due to the presence of interferences.
H	Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
*	Indicates analysis is not within the quality control limits.
+	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

Sample Data Package

Date: 11/17/2'
Time: 16:11:1

ERM - BROS.
WASTE CHARACTER. ION - SOIL/ WATER
ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

ept: AN0326

Client ID Job No Lab ID Sample Date		WC-GAC LIQUID A04-B335 A4B33501 11/15/2004		WC-GAC LIQUID RI A04-B335 A4B33501RI 11/15/2004					
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/L	ND	25	ND	25	NA		NA	
Benzene	UG/L	ND	5.0	ND	5.0	NA		NA	
Bromodichloromethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Bromoform	UG/L	ND	5.0	ND	5.0	NA		NA	
Bromomethane	UG/L	ND	5.0	ND	5.0	NA		NA	
2-Butanone	UG/L	97	25	72	25	NA		NA	
Carbon Disulfide	UG/L	2.7 J	5.0	2.6 J	5.0	NA		NA	
Carbon Tetrachloride	UG/L	ND	5.0	ND	5.0	NA		NA	
Chlorobenzene	UG/L	ND	5.0	ND	5.0	NA		NA	
Chloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Chloroform	UG/L	ND	5.0	ND	5.0	NA		NA	
Chloromethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Dibromochloromethane	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1-Dichloroethane	UG/L	1.6 J	5.0	1.4 J	5.0	NA		NA	
1,2-Dichloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1-Dichloroethene	UG/L	2.7 J	5.0	2.5 J	5.0	NA		NA	
cis-1,2-Dichloroethene	UG/L	ND	5.0	ND	5.0	NA		NA	
trans-1,2-Dichloroethene	UG/L	ND	5.0	ND	5.0	NA		NA	
1,2-Dichloropropane	UG/L	ND	5.0	ND	5.0	NA		NA	
cis-1,3-Dichloropropene	UG/L	ND	5.0	ND	5.0	NA		NA	
trans-1,3-Dichloropropene	UG/L	ND	5.0	ND	5.0	NA		NA	
Ethylbenzene	UG/L	ND	5.0	ND	5.0	NA		NA	
2-Hexanone	UG/L	ND	25	ND	25	NA		NA	
Methylene chloride	UG/L	ND	5.0	ND	5.0	NA		NA	
4-Methyl-2-pentanone	UG/L	ND	25	ND	25	NA		NA	
Styrene	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1,2,2-Tetrachloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Tetrachloroethene	UG/L	ND	5.0	ND	5.0	NA		NA	
Toluene	UG/L	ND	5.0	ND	5.0	NA		NA	
1,1,1-Trichloroethane	UG/L	29	5.0	20	5.0	NA		NA	
1,1,2-Trichloroethane	UG/L	ND	5.0	ND	5.0	NA		NA	
Trichloroethene	UG/L	12	5.0	8.8	5.0	NA		NA	
Vinyl chloride	UG/L	ND	5.0	ND	5.0	NA		NA	
Total Xylenes	UG/L	ND	15	ND	15	NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	89	50-200	87	50-200	NA		NA	
1,4-Difluorobenzene	%	95	50-200	90	50-200	NA		NA	
1,4-Dichlorobenzene-D4	%	44 *	50-200	45 *	50-200	NA		NA	
Toluene-D8	%	109	77-122	82	77-122	NA		NA	
p-Bromofluorobenzene	%	83	74-120	66 *	74-120	NA		NA	
1,2-Dichloroethane-D4	%	108	73-136	83	73-136	NA		NA	

NA = Not Applicable ND = Not Detected

Date: 11/17/20
Time: 16:11:45

ERM - GF ROS.
WASTE CHARACTERIZA..ON - SOIL/ WATER
WET CHEMISTRY ANALYSIS

t: AN0326

Client ID Job No Sample Date	Lab ID	WC-GAC LIQUID A04-B335 11/15/2004	A4B33501						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
pH	S.U.	4.04	0	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Chronology and QC Summary Package

Client ID Job No Lab ID Sample Date		VBLK53 A04-B335	A4B1943702						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/L	ND	25	NA		NA		NA	
Benzene	UG/L	ND	5.0	NA		NA		NA	
Bromodichloromethane	UG/L	ND	5.0	NA		NA		NA	
Bromoform	UG/L	ND	5.0	NA		NA		NA	
Bromomethane	UG/L	ND	5.0	NA		NA		NA	
2-Butanone	UG/L	ND	25	NA		NA		NA	
Carbon Disulfide	UG/L	ND	5.0	NA		NA		NA	
Carbon Tetrachloride	UG/L	ND	5.0	NA		NA		NA	
Chlorobenzene	UG/L	ND	5.0	NA		NA		NA	
Chloroethane	UG/L	ND	5.0	NA		NA		NA	
Chloroform	UG/L	ND	5.0	NA		NA		NA	
Chloromethane	UG/L	ND	5.0	NA		NA		NA	
Dibromochloromethane	UG/L	ND	5.0	NA		NA		NA	
1,1-Dichloroethane	UG/L	ND	5.0	NA		NA		NA	
1,2-Dichloroethane	UG/L	ND	5.0	NA		NA		NA	
1,1-Dichloroethene	UG/L	ND	5.0	NA		NA		NA	
cis-1,2-Dichloroethene	UG/L	ND	5.0	NA		NA		NA	
trans-1,2-Dichloroethene	UG/L	ND	5.0	NA		NA		NA	
1,2-Dichloropropane	UG/L	ND	5.0	NA		NA		NA	
cis-1,3-Dichloropropene	UG/L	ND	5.0	NA		NA		NA	
trans-1,3-Dichloropropene	UG/L	ND	5.0	NA		NA		NA	
Ethylbenzene	UG/L	ND	5.0	NA		NA		NA	
2-Hexanone	UG/L	ND	25	NA		NA		NA	
Methylene chloride	UG/L	ND	5.0	NA		NA		NA	
4-Methyl-2-pentanone	UG/L	ND	25	NA		NA		NA	
Styrene	UG/L	ND	5.0	NA		NA		NA	
1,1,2,2-Tetrachloroethane	UG/L	ND	5.0	NA		NA		NA	
Tetrachloroethene	UG/L	ND	5.0	NA		NA		NA	
Toluene	UG/L	ND	5.0	NA		NA		NA	
1,1,1-Trichloroethane	UG/L	ND	5.0	NA		NA		NA	
1,1,2-Trichloroethane	UG/L	ND	5.0	NA		NA		NA	
Trichloroethene	UG/L	ND	5.0	NA		NA		NA	
Vinyl chloride	UG/L	ND	5.0	NA		NA		NA	
Total Xylenes	UG/L	ND	15	NA		NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	88	50-200	NA		NA		NA	
1,4-Difluorobenzene	%	88	50-200	NA		NA		NA	
1,4-Dichlorobenzene-D4	%	70	50-200	NA		NA		NA	
Toluene-D8	%	106	77-122	NA		NA		NA	
p-Bromofluorobenzene	%	100	74-120	NA		NA		NA	
1,2-Dichloroethane-D4	%	113	73-136	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Client ID Job No Sample Date	Lab ID	MSB53 A04-B335	A4B1943701						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/L	260	25	NA		NA		NA	
Benzene	UG/L	50	5.0	NA		NA		NA	
Bromodichloromethane	UG/L	54	5.0	NA		NA		NA	
Bromoform	UG/L	52	5.0	NA		NA		NA	
Bromomethane	UG/L	46	5.0	NA		NA		NA	
2-Butanone	UG/L	250	25	NA		NA		NA	
Carbon Disulfide	UG/L	52	5.0	NA		NA		NA	
Carbon Tetrachloride	UG/L	56	5.0	NA		NA		NA	
Chlorobenzene	UG/L	52	5.0	NA		NA		NA	
Chloroethane	UG/L	46	5.0	NA		NA		NA	
Chloroform	UG/L	53	5.0	NA		NA		NA	
Chloromethane	UG/L	46	5.0	NA		NA		NA	
Dibromochloromethane	UG/L	54	5.0	NA		NA		NA	
1,1-Dichloroethane	UG/L	54	5.0	NA		NA		NA	
1,2-Dichloroethane	UG/L	54	5.0	NA		NA		NA	
1,1-Dichloroethene	UG/L	54	5.0	NA		NA		NA	
cis-1,2-Dichloroethene	UG/L	54	5.0	NA		NA		NA	
trans-1,2-Dichloroethene	UG/L	53	5.0	NA		NA		NA	
1,2-Dichloropropane	UG/L	52	5.0	NA		NA		NA	
cis-1,3-Dichloropropene	UG/L	52	5.0	NA		NA		NA	
trans-1,3-Dichloropropene	UG/L	53	5.0	NA		NA		NA	
Ethylbenzene	UG/L	51	5.0	NA		NA		NA	
2-Hexanone	UG/L	260	25	NA		NA		NA	
Methylene chloride	UG/L	56	5.0	NA		NA		NA	
4-Methyl-2-pentanone	UG/L	260	25	NA		NA		NA	
Styrene	UG/L	52	5.0	NA		NA		NA	
1,1,2,2-Tetrachloroethane	UG/L	51	5.0	NA		NA		NA	
Tetrachloroethene	UG/L	49	5.0	NA		NA		NA	
Toluene	UG/L	51	5.0	NA		NA		NA	
1,1,1-Trichloroethane	UG/L	54	5.0	NA		NA		NA	
1,1,2-Trichloroethane	UG/L	51	5.0	NA		NA		NA	
Trichloroethene	UG/L	50	5.0	NA		NA		NA	
Vinyl chloride	UG/L	48	5.0	NA		NA		NA	
Total Xylenes	UG/L	150	15	NA		NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	98	50-200	NA		NA		NA	
1,4-Difluorobenzene	%	98	50-200	NA		NA		NA	
1,4-Dichlorobenzene-D4	%	96	50-200	NA		NA		NA	
Toluene-D8	%	106	77-122	NA		NA		NA	
p-Bromofluorobenzene	%	104	74-120	NA		NA		NA	
1,2-Dichloroethane-D4	%	110	73-136	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Date: 11/17/200'
Time: 16:12:00

ERM - GR' ROS.
WASTE CHARACTERIZ, , - SOIL/ WATER
WET CHEMISTRY ANALYSIS

t: AN0326

Client ID Job No Sample Date	Lab ID	LCS A04-B335	A4B1944001						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
pH	S.U.	6.98	0	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Client Sample ID: VBLK53 MSB53
Lab Sample ID: A4B1943702 A4B1943701

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
ERM - METHOD 8260 - TCL VOLATILE ORGANIC					
1,1-Dichloroethene	UG/L	53.8	50.0	108	66-142
Trichloroethene	UG/L	50.0	50.0	100	72-120
Benzene	UG/L	50.3	50.0	101	71-120
Toluene	UG/L	51.2	50.0	102	69-120
Chlorobenzene	UG/L	51.5	50.0	103	73-120

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

Client Sample ID Job No & Lab Sample ID	WC-GAC LIQUID A04-B335 A4B33501	WC-GAC LIQUID RI A04-B335 A4B33501RI			
Sample Date	11/15/2004 11:30	11/15/2004 11:30			
Received Date	11/15/2004 12:20	11/15/2004 12:20			
Extraction Date					
Analysis Date	11/16/2004 14:19	11/16/2004 14:48			
Extraction HT Met?	-	-			
Analytical HT Met?	YES	YES			
Sample Matrix	WATER	WATER			
Dilution Factor	1.0	1.0			
Sample wt/vol	0.005 LITERS	0.005 LITERS			
% Dry					

NA = Not Applicable

ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

Client Sample ID Job No & Lab Sample ID	MSB53 A04-B335 A4B1943701				
Sample Date					
Received Date					
Extraction Date					
Analysis Date	11/16/2004 10:44				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	WATER				
Dilution Factor	1.0				
Sample wt/vol	0.005 LITERS				
% Dry					

NA = Not Applicable

ERM - METHOD 8260 - TCL VOLATILE ORGANICS - W

Client Sample ID Job No & Lab Sample ID	VBLK53 A04-B335 A4B1943702				
Sample Date					
Received Date					
Extraction Date					
Analysis Date	11/16/2004 12:04				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	WATER				
Dilution Factor	1.0				
Sample wt/vol	0.005 LITERS				
% Dry					

NA = Not Applicable

Date: 11/17/2004 16:12:28
Jobno: A04-B

SAMPLE CHRONOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4B33501	WC-GAC LIQUID	S.U.	pH	9040	1.00	11/15/2004 11:30	11/15 12:20	NA	NA	11/16 09:18	Yes	WATER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Date: 11/17/20 6:12:28
Jobno: A04-B33

E
QC CHR JGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A4B1944001	LCS	S.U.	pH	9040	1.00	-	- 12:20	NA	NA	11/16 09:18	Yes	WATER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Chain of Custody

[redacted] [redacted]

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client ERM	Project Manager Jon Fox	Date 11-15-04	Chain of Custody Number 134747
Address 5788 Widewaters Parkway	Telephone Number (Area Code)/Fax Number 315-445-2554	Lab Number	Page 1 of 1

City: Dewitt
State: NY
Zip Code: 13214
Site Contact: Chris Wunderlich
Lab Contact: Brian Fisher
Project Name and Location (State): Greif Bros, Tonawanda NY
Carrier/Waybill Number:
Contract/Purchase Order/Quote No.: 0021621

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Matrix:	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: TCL VOCs 8260	Analysis: ph	Special Instructions/ Conditions of Receipt
WC-GAC Liquid	11-15-04	11:30		X				X			X			X	X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☒ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other____

QC Requirements (Specify)

1. Relinquished By	Date 11-15-04	Time 12:20	1. Received By STL Buffalo	Date 11/15/04	Time 1220
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments
Fax Results to Jon Fox at 315-445-2543

15.8°C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

1\44

SEVERN TRENT STL

STL Buffalo
10 Hazelwood Drive, Suite 106
Amherst, NY 14228

Tel: 716 691 2600 Fax: 716 691 7991
www.stl-inc.com

ANALYTICAL REPORT

Job#: A04-B340

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS
Task: WASTE CHARACTERIZATION - SOIL/ WATER

Mr. Jon Fox
ERM
5788 Widewaters Pkwy
Dewitt, NY 13214

STL Buffalo

Brian J. Fischer
Project Manager

11/22/2004

STL Buffalo
Current Certifications

STATE	Program	Cert # / Lab ID
Arkansas	SDWA, CWA, RCRA, SOIL	03-054-D/88-0686
California	NELAP SDWA, CWA, RCRA	01169CA
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida	NELAP RCRA	E87672
Georgia	SDWA	956
Illinois	NELAP SDWA, CWA, RCRA	200003
Iowa	SW/CS	374
Kansas	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	CWA, RCRA	036-999-337
New Hampshire	NELAP SDWA, CWA	233701
New Jersey	SDWA, CWA, RCRA, CLP	NY455
New York	NELAP, AIR, SDWA, CWA, RCRA	10026
North Carolina	CWA	411
North Dakota	SDWA, CWA, RCRA	R-176
Oklahoma	CWA, RCRA	9421
Pennsylvania	Env. Lab Reg.	68-281
South Carolina	RCRA	91013
USDA	FOREIGN SOIL PERMIT	S-41579
Virginia	SDWA	278
Washington	CWA	C254
West Virginia	CWA	252
Wisconsin	CWA	998310390

SAMPLE SUMMARY

		SAMPLED		RECEIVED	
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE	TIME	DATE	TIME
A4B34001	WC-DRUMS5,6,7,11,12	11/15/2004	13:50	11/15/2004	15:40

METHODS SUMMARY

Job#: A04-B340

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS

PARAMETER	ANALYTICAL METHOD
METHOD 8260 - TCL VOLATILE ORGANICS	SW8463 8260
GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS	SW8463 8270

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A04-B340

STL Project#: NY1A8821
Site Name: ERM - GREIF BROTHERS

General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual, Dissolved Oxygen, Sulfite, and Temperature analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A04-B340
Sample Cooler(s) were received at the following temperature(s); 18.2 NOICE °C
All samples were received in good condition.

GC/MS Volatile Data

The dilution and secondary dilution of sample WC-DRUMS5,6,7,11,12, were analyzed using medium level techniques due to high concentrations of target analytes.

Initial calibration standard curve A4I0001089-1 exhibited the %RSD of several compounds as greater than 15%. However, the mean RSD of all compounds is 9.99%.

Initial calibration standard curve A4I0001069-1 exhibited the %RSD of several compounds as greater than 15%. However, the mean RSD of all compounds is 9.17%.

GC/MS Semivolatile Data

No deviations from protocol were encountered during the analytical procedures.

****

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Brian J. Fischer
Project Manager

11-24-04
Date

Dilution Log w/Code Information
For Job A04-B340

Client Sample ID	Lab Sample ID	Parameter (Inorganic)/Method (Organic)	Dilution	Code
WC-DRUMS5,6,7,11,12	A4B34001D2	8260	50.00	008
WC-DRUMS5,6,7,11,12	A4B34001DL	8260	10.00	008

Dilution Code Definition:

002 - sample matrix effects
003 - excessive foaming
004 - high levels of non-target compounds
005 - sample matrix resulted in method non-compliance for an Internal Standard
006 - sample matrix resulted in method non-compliance for Surrogate
007 - nature of the TCLP matrix
008 - high concentration of target analyte(s)
009 - sample turbidity
010 - sample color
011 - insufficient volume for lower dilution
012 - sample viscosity
013 - other

DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

ND or U	Indicates compound was analyzed for, but not detected at or above the reporting limit.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at the secondary dilution factor.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
P	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".
A	This flag indicates that a TIC is a suspected aldol-condensation product.
^{1}	Indicates coelution.
*	Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U	Indicates element was analyzed for, but not detected at or above the reporting limit.
J or B	Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
N	Indicates spike sample recovery is not within the quality control limits.
K	Indicates the post digestion spike recovery is not within the quality control limits.
S	Indicates value determined by the Method of Standard Addition.
M	Indicates duplicate injection results exceeded quality control limits.
W	Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
E	Indicates a value estimated or not reported due to the presence of interferences.
H	Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
*	Indicates analysis is not within the quality control limits.
+	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

Sample Data Package

Date: 11/22/2C
Time: 18:29:05

ERM - G 3ROS.
WASTE CHARACTERIZ.. .JN - SOIL/ WATER
METHOD 8260 - TCL VOLATILE ORGANICS

pt: AN0326

Client ID Job No Lab ID Sample Date		WC-DRUMS5,6,7,11,12 A04-B340 A4B34001 11/15/2004		WC-DRUMS5,6,7,11,12 A04-B340 A4B34001D2 11/15/2004		WC-DRUMS5,6,7,11,12 A04-B340 A4B34001DL 11/15/2004			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	990	28	ND	170000	ND	35000	NA	
Benzene	UG/KG	ND	6	ND	35000	ND	7000	NA	
Bromodichloromethane	UG/KG	ND	6	ND	35000	ND	7000	NA	
Bromoform	UG/KG	ND	6	ND	35000	ND	7000	NA	
Bromomethane	UG/KG	ND	6	ND	35000	ND	7000	NA	
2-Butanone	UG/KG	460	28	ND	170000	ND	35000	NA	
Carbon Disulfide	UG/KG	2 J	6	ND	35000	ND	7000	NA	
Carbon Tetrachloride	UG/KG	ND	6	ND	35000	ND	7000	NA	
Chlorobenzene	UG/KG	ND	6	ND	35000	ND	7000	NA	
Chloroethane	UG/KG	6	6	ND	35000	ND	7000	NA	
Chloroform	UG/KG	45	6	ND	35000	ND	7000	NA	
Chloromethane	UG/KG	ND	6	ND	35000	ND	7000	NA	
Dibromochloromethane	UG/KG	ND	6	ND	35000	ND	7000	NA	
1,1-Dichloroethane	UG/KG	2100 E	6	7800 DJ	35000	7500 D	7000	NA	
1,2-Dichloroethane	UG/KG	160	6	ND	35000	ND	7000	NA	
1,1-Dichloroethene	UG/KG	1200 E	6	ND	35000	2000 DJ	7000	NA	
1,2-Dichloroethene (Total)	UG/KG	110	11	ND	70000	ND	14000	NA	
1,2-Dichloropropane	UG/KG	ND	6	ND	35000	ND	7000	NA	
cis-1,3-Dichloropropene	UG/KG	ND	6	ND	35000	ND	7000	NA	
trans-1,3-Dichloropropene	UG/KG	ND	6	ND	35000	ND	7000	NA	
Ethylbenzene	UG/KG	360 E	6	ND	35000	4400 DJ	7000	NA	
2-Hexanone	UG/KG	ND	28	ND	170000	ND	35000	NA	
Methylene chloride	UG/KG	10	6	ND	35000	ND	7000	NA	
4-Methyl-2-pentanone	UG/KG	28	28	ND	170000	ND	35000	NA	
Styrene	UG/KG	ND	6	ND	35000	ND	7000	NA	
1,1,2,2-Tetrachloroethane	UG/KG	ND	6	ND	35000	ND	7000	NA	
Tetrachloroethene	UG/KG	110	6	ND	35000	ND	7000	NA	
Toluene	UG/KG	110	6	ND	35000	ND	7000	NA	
1,1,1-Trichloroethane	UG/KG	7800 E	6	940000 D	35000	840000 DE	7000	NA	
1,1,2-Trichloroethane	UG/KG	56	6	ND	35000	ND	7000	NA	
Trichloroethene	UG/KG	6500 E	6	310000 D	35000	290000 DE	7000	NA	
Vinyl acetate	UG/KG	ND	28	ND	170000	ND	35000	NA	
Vinyl chloride	UG/KG	4 J	11	ND	70000	ND	14000	NA	
Total Xylenes	UG/KG	1300 E	17	64000 DJ	100000	62000 D	21000	NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	124	50-200	102	50-200	100	50-200	NA	
1,4-Difluorobenzene	%	123	50-200	98	50-200	98	50-200	NA	
1,4-Dichlorobenzene-D4	%	101	50-200	88	50-200	92	50-200	NA	
Toluene-D8	%	99	71-125	104	71-125	104	71-125	NA	
p-Bromofluorobenzene	%	81	68-124	105	68-124	103	68-124	NA	
1,2-Dichloroethane-D4	%	80	61-136	103	61-136	102	61-136	NA	

NA = Not Applicable ND = Not Detected

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

WC-DRUMS5,6,7,11,12

Lab Name: STL Buffalo Contract: ____

Lab Code: RECNY Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) SOIL Lab Sample ID: A4B34001

Sample wt/vol: 5.12 (g/mL) G Lab File ID: P8918.RR

Level: (low/med) LOW Date Samp/Recv: 11/15/2004 11/15/2004

% Moisture: not dec. 11.8 Date Analyzed: 11/16/2004

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.00

Soil Extract Volume: ____ (uL) Soil Aliquot Volume: ____ (uL)

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	Compound Name	RT	Est. Conc.	Q
1.	SATURATED HYDROCARBON	16.07	140	J
2.	ALKYLSUBSTITUTED COMPOUND	16.51	65	J
3.	TRIMETHYLBENZENE ISOMER	16.74	84	J
4.	CHLORINATED COMPOUND	16.96	74	J
5.	TRIMETHYLBENZENE ISOMER	17.40	55	J
6.	UNKNOWN	17.73	66	J
7.	SATURATED HYDROCARBON	17.84	88	J

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

WC-DRUMS5,6,7,11,12

Lab Name: STL Buffalo

Contract: ____________

Lab Code: RECNY

Case No.: ____

SAS No.: ____

SDG No.: ____

Matrix: (soil/water) SOIL

Lab Sample ID: A4B34001D2

Sample wt/vol: 4.06 (g/mL) G

Lab File ID: R2033.RR

Level: (low/med) MED

Date Samp/Recv: 11/15/2004 11/15/2004

% Moisture: not dec. 11.8

Date Analyzed: 11/17/2004

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 50.00

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.00 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	Compound Name	RT	Est. Conc.	Q

FORM IE - GC/MS VOA TIC

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

WC-DRUMS5,6,7,11,12

Lab Name: STL Buffalo   Contract: ____________

Lab Code: RECNY   Case No.: _____   SAS No.: ______   SDG No.: ______

Matrix: (soil/water) SOIL   Lab Sample ID: A4B34001DL

Sample wt/vol: 4.06 (g/mL) G   Lab File ID: R2027.RR

Level: (low/med) MED   Date Samp/Recv: 11/15/2004 11/15/2004

% Moisture: not dec. 11.8   Date Analyzed: 11/17/2004

GC Column: DB-624   ID: 0.25 (mm)   Dilution Factor: 10.00

Soil Extract Volume: 10000 (uL)   Soil Aliquot Volume: 100.00 (uL)

Number TICs found: 1   CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	Compound Name	RT	Est. Conc.	Q
1.	UNKNOWN	7.34	13000	J

ERM - G BROS.
WASTE CHARACTERI JN - SOIL/ WATER
GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS

Client ID Job No Lab ID Sample Date		WC-DRUMS5,6,7,11,12 A04-B340 A4B34001 11/15/2004							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	ND	390	NA		NA		NA	
Acenaphthylene	UG/KG	ND	390	NA		NA		NA	
Acetophenone	UG/KG	ND	390	NA		NA		NA	
Anthracene	UG/KG	ND	390	NA		NA		NA	
Atrazine	UG/KG	ND	390	NA		NA		NA	
Benzaldehyde	UG/KG	ND	390	NA		NA		NA	
Benzo(a)anthracene	UG/KG	ND	390	NA		NA		NA	
Benzo(b)fluoranthene	UG/KG	ND	390	NA		NA		NA	
Benzo(k)fluoranthene	UG/KG	260 J	390	NA		NA		NA	
Benzo(ghi)perylene	UG/KG	ND	390	NA		NA		NA	
Benzo(a)pyrene	UG/KG	ND	390	NA		NA		NA	
Benzoic acid	UG/KG	ND	5600	NA		NA		NA	
Benzyl alcohol	UG/KG	ND	390	NA		NA		NA	
Biphenyl	UG/KG	ND	390	NA		NA		NA	
Bis(2-chloroethoxy) methane	UG/KG	ND	390	NA		NA		NA	
Bis(2-chloroethyl) ether	UG/KG	ND	390	NA		NA		NA	
2,2'-Oxybis(1-Chloropropane)	UG/KG	ND	390	NA		NA		NA	
Bis(2-ethylhexyl) phthalate	UG/KG	ND	390	NA		NA		NA	
4-Bromophenyl phenyl ether	UG/KG	ND	390	NA		NA		NA	
Butyl benzyl phthalate	UG/KG	ND	390	NA		NA		NA	
Caprolactam	UG/KG	ND	390	NA		NA		NA	
4-Chloroaniline	UG/KG	ND	390	NA		NA		NA	
4-Chloro-3-methylphenol	UG/KG	ND	390	NA		NA		NA	
2-Chloronaphthalene	UG/KG	ND	390	NA		NA		NA	
2-Chlorophenol	UG/KG	ND	390	NA		NA		NA	
4-Chlorophenyl phenyl ether	UG/KG	ND	390	NA		NA		NA	
Chrysene	UG/KG	ND	390	NA		NA		NA	
Dibenzo(a,h)anthracene	UG/KG	ND	390	NA		NA		NA	
Dibenzofuran	UG/KG	ND	390	NA		NA		NA	
Di-n-butyl phthalate	UG/KG	ND	390	NA		NA		NA	
1,2-Dichlorobenzene	UG/KG	ND	390	NA		NA		NA	
1,3-Dichlorobenzene	UG/KG	ND	390	NA		NA		NA	
1,4-Dichlorobenzene	UG/KG	ND	390	NA		NA		NA	
3,3'-Dichlorobenzidine	UG/KG	ND	770	NA		NA		NA	
2,4-Dichlorophenol	UG/KG	ND	390	NA		NA		NA	
Diethyl phthalate	UG/KG	ND	390	NA		NA		NA	
2,4-Dimethylphenol	UG/KG	ND	390	NA		NA		NA	
Dimethyl phthalate	UG/KG	ND	390	NA		NA		NA	
4,6-Dinitro-2-methylphenol	UG/KG	ND	1900	NA		NA		NA	
2,4-Dinitrophenol	UG/KG	ND	1900	NA		NA		NA	
2,4-Dinitrotoluene	UG/KG	ND	390	NA		NA		NA	
2,6-Dinitrotoluene	UG/KG	ND	390	NA		NA		NA	
Di-n-octyl phthalate	UG/KG	ND	520	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Date: 11/22/2
Time: 18:29:.

ERM - BROS.
WASTE CHARACTER. ION - SOIL/ WATER
GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS

ept: AN0326

15\44

Client ID Job No Lab ID Sample Date		WC-DRUMS5,6,7,11,12 A04-B340 A4B34001 11/15/2004							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Fluoranthene	UG/KG	190 J	390	NA		NA		NA	
Fluorene	UG/KG	ND	390	NA		NA		NA	
Hexachlorobenzene	UG/KG	ND	390	NA		NA		NA	
Hexachlorobutadiene	UG/KG	ND	390	NA		NA		NA	
Hexachlorocyclopentadiene	UG/KG	ND	390	NA		NA		NA	
Hexachloroethane	UG/KG	ND	390	NA		NA		NA	
Indeno(1,2,3-cd)pyrene	UG/KG	ND	390	NA		NA		NA	
Isophorone	UG/KG	ND	390	NA		NA		NA	
2-Methylnaphthalene	UG/KG	ND	390	NA		NA		NA	
2-Methylphenol	UG/KG	ND	390	NA		NA		NA	
4-Methylphenol	UG/KG	ND	390	NA		NA		NA	
Naphthalene	UG/KG	ND	390	NA		NA		NA	
2-Nitroaniline	UG/KG	ND	1900	NA		NA		NA	
3-Nitroaniline	UG/KG	ND	1900	NA		NA		NA	
4-Nitroaniline	UG/KG	ND	1900	NA		NA		NA	
Nitrobenzene	UG/KG	ND	390	NA		NA		NA	
2-Nitrophenol	UG/KG	ND	390	NA		NA		NA	
4-Nitrophenol	UG/KG	ND	1900	NA		NA		NA	
N-nitrosodiphenylamine	UG/KG	ND	390	NA		NA		NA	
N-Nitroso-Di-n-propylamine	UG/KG	ND	390	NA		NA		NA	
Pentachlorophenol	UG/KG	ND	1900	NA		NA		NA	
Phenanthrene	UG/KG	ND	390	NA		NA		NA	
Phenol	UG/KG	ND	390	NA		NA		NA	
Pyrene	UG/KG	ND	390	NA		NA		NA	
1,2,4-Trichlorobenzene	UG/KG	ND	390	NA		NA		NA	
2,4,5-Trichlorophenol	UG/KG	ND	940	NA		NA		NA	
2,4,6-Trichlorophenol	UG/KG	ND	390	NA		NA		NA	
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	84	50-200	NA		NA		NA	
Naphthalene-D8	%	87	50-200	NA		NA		NA	
Acenaphthene-D10	%	75	50-200	NA		NA		NA	
Phenanthrene-D10	%	75	50-200	NA		NA		NA	
Chrysene-D12	%	114	50-200	NA		NA		NA	
Perylene-D12	%	119	50-200	NA		NA		NA	
Nitrobenzene-D5	%	65	30-127	NA		NA		NA	
2-Fluorobiphenyl	%	88	36-138	NA		NA		NA	
p-Terphenyl-d14	%	97	41-167	NA		NA		NA	
Phenol-D5	%	64	34-120	NA		NA		NA	
2-Fluorophenol	%	56	26-120	NA		NA		NA	
2,4,6-Tribromophenol	%	102	42-140	NA		NA		NA	

NA = Not Applicable ND = Not Detected

E R M
ERM - GREIF BROS.
GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

WC-DRUMS5,6,7,11,12

Lab Name: STL Buffalo Contract: ________

Lab Code: RECNY Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) SOIL Lab Sample ID: A4B34001

Sample wt/vol: 30.63 (g/mL) G Lab File ID: V07477.RR

Level: (low/med) LOW Date Samp/Recv: 11/15/2004 11/15/2004

% Moisture: 16.3 decanted: (Y/N) N Date Extracted: 11/16/2004

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/2004

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: ____

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	Compound Name	RT	Est. Conc.	Q
1.	UNKNOWN XYLENE ISOMER	5.08	1300	J
2.	UNKNOWN BENZENE DERIVATIVE	5.41	440	J
3. 79-34-5	1,1,2,2-TETRACHLOROETHANE	5.67	380	JN
4. 124-18-5	DECANE	6.73	690	JN
5. 1120-21-4	UNDECANE	7.82	910	JN
6. 544-76-3	HEXADECANE	12.07	1400	JN
7. 3892-00-0	2,6,10-TRIMETHYL PENTADECANE	12.39	660	JN
8. 629-78-7	HEPTADECANE	12.69	2200	JN
9. 1921-70-6	2,6,10,14-TETRAMETHYL PENTAD	12.73	1300	JN
10. 6975-98-0	2-METHYL DECANE	12.94	360	JN
11. 593-45-3	OCTADECANE	13.23	2200	JN
12. 629-92-5	NONADECANE	13.71	2000	JN
13. 112-95-8	EICOSANE	14.12	1400	JN
14.	UNKNOWN ALKANE	14.42	610	J
15.	UNKNOWN ALKANE	14.51	1200	J
16.	UNKNOWN CYCLIC ALKANE	15.49	380	J
17.	UNKNOWN ALKANE	15.78	700	J
18. 629-97-0	DOCOSANE	15.87	650	JN
19.	UNKNOWN ALKANE	16.14	670	J
20.	UNKNOWN ALKANE	16.21	500	J

Batch Quality Control Data

MS/MSD b. .ı QC Results

Lab Sample ID: A4B34001 A4B34001MS A4B34001SD

Analyte	Units of Measure	Concentration			Spike Amount		% Recovery			%	QC LIMITS	
		Sample	Matrix Spike	Spike Duplicate	MS	MSD	MS	MSD	Avg	RPD	RPD	REC.
GREIF BROS - METHOD 8270 - TCL SVOA W/ T												
Phenol	UG/KG	0	3432	3339	3949	3925	87	85	86	2	25.0	35-120
2-Chlorophenol	UG/KG	0	3538	3500	3949	3925	90	89	90	1	26.0	34-118
1,4-Dichlorobenzene	UG/KG	0	2465	2436	3949	3925	62	62	62	0	30.0	30-120
N-Nitroso-Di-n-propylamine	UG/KG	0	2950	2822	3949	3925	75	72	74	4	20.0	42-131
1,2,4-Trichlorobenzene	UG/KG	0	2886	2876	3949	3925	73	73	73	0	24.0	32-120
4-Chloro-3-methylphenol	UG/KG	0	4603	4477	3949	3925	116	114	115	2	20.0	45-135
Acenaphthene	UG/KG	0	3655	3565	3949	3925	92	91	92	1	16.0	49-131
4-Nitrophenol	UG/KG	0	5439	4888	3949	3925	138	124	131	11	25.0	36-142
2,4-Dinitrotoluene	UG/KG	0	3961	3829	3949	3925	100	98	99	2	19.0	45-138
Pentachlorophenol	UG/KG	0	4608	4658	3949	3925	117	119	118	2	27.0	28-135
Pyrene	UG/KG	42.6	3615	3581	3949	3925	90	90	90	0	25.0	48-154

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Chronology and QC Summary Package

ERM - (BROS.
WASTE CHARACTERI.. ION - SOIL/ WATER
METHOD 8260 - TCL VOLATILE ORGANICS

Client ID Job No Lab ID Sample Date		METHANOL BLK 111604 A04-B340 A4B34002		VBLK53 A04-B340 A4B1943704		VBLK54 A04-B340 A4B1951902		VBLK85 A04-B340 A4B1950502	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	ND	3000	ND	3100	ND	3100	ND	25
Benzene	UG/KG	ND	600	ND	620	ND	620	ND	5
Bromodichloromethane	UG/KG	ND	600	ND	620	ND	620	ND	5
Bromoform	UG/KG	ND	600	ND	620	ND	620	ND	5
Bromomethane	UG/KG	ND	600	ND	620	ND	620	ND	5
2-Butanone	UG/KG	ND	3000	ND	3100	ND	3100	ND	25
Carbon Disulfide	UG/KG	ND	600	ND	620	ND	620	ND	5
Carbon Tetrachloride	UG/KG	ND	600	ND	620	ND	620	ND	5
Chlorobenzene	UG/KG	ND	600	ND	620	ND	620	ND	5
Chloroethane	UG/KG	ND	600	ND	620	ND	620	ND	5
Chloroform	UG/KG	ND	600	ND	620	ND	620	ND	5
Chloromethane	UG/KG	ND	600	ND	620	ND	620	ND	5
Dibromochloromethane	UG/KG	ND	600	ND	620	ND	620	ND	5
1,1-Dichloroethane	UG/KG	ND	600	ND	620	ND	620	ND	5
1,2-Dichloroethane	UG/KG	ND	600	ND	620	ND	620	ND	5
1,1-Dichloroethene	UG/KG	ND	600	ND	620	ND	620	ND	5
1,2-Dichloroethene (Total)	UG/KG	ND	1200	ND	1200	ND	1200	ND	10
1,2-Dichloropropane	UG/KG	ND	600	ND	620	ND	620	ND	5
cis-1,3-Dichloropropene	UG/KG	ND	600	ND	620	ND	620	ND	5
trans-1,3-Dichloropropene	UG/KG	ND	600	ND	620	ND	620	ND	5
Ethylbenzene	UG/KG	ND	600	ND	620	ND	620	ND	5
2-Hexanone	UG/KG	ND	3000	ND	3100	ND	3100	ND	25
Methylene chloride	UG/KG	ND	600	ND	620	ND	620	ND	5
4-Methyl-2-pentanone	UG/KG	ND	3000	ND	3100	ND	3100	ND	25
Styrene	UG/KG	ND	600	ND	620	ND	620	ND	5
1,1,2,2-Tetrachloroethane	UG/KG	ND	600	ND	620	ND	620	ND	5
Tetrachloroethene	UG/KG	ND	600	ND	620	ND	620	ND	5
Toluene	UG/KG	ND	600	ND	620	ND	620	ND	5
1,1,1-Trichloroethane	UG/KG	ND	600	ND	620	ND	620	ND	5
1,1,2-Trichloroethane	UG/KG	ND	600	ND	620	ND	620	ND	5
Trichloroethene	UG/KG	ND	600	ND	620	ND	620	ND	5
Vinyl acetate	UG/KG	ND	3000	ND	3100	ND	3100	ND	25
Vinyl chloride	UG/KG	ND	1200	ND	1200	ND	1200	ND	10
Total Xylenes	UG/KG	ND	1800	ND	1900	ND	1900	ND	15
IS/SURROGATE(S)									
Chlorobenzene-D5	%	96	50-200	88	50-200	99	50-200	88	50-200
1,4-Difluorobenzene	%	94	50-200	88	50-200	96	50-200	87	50-200
1,4-Dichlorobenzene-D4	%	80	50-200	70	50-200	80	50-200	88	50-200
Toluene-D8	%	104	71-125	106	71-125	104	71-125	101	71-125
p-Bromofluorobenzene	%	101	68-124	100	68-124	102	68-124	90	68-124
1,2-Dichloroethane-D4	%	105	61-136	113	61-136	104	61-136	111	61-136

20\44

NA = Not Applicable ND = Not Detected

Date: 11/22/2
Time: 18:29:ž

ERM - BROS.
WASTE CHARACTER. .ON - SOIL/ WATER
METHOD 8260 - TCL VOLATILE ORGANICS

ept: AN0326

Client ID Job No Lab ID Sample Date		MSB53 A04-B340	A4B1943703	MSB54 A04-B340	A4B1951901	MSB85 A04-B340	A4B1950501		
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	ND	3100	33000	3100	ND	25	NA	
Benzene	UG/KG	5400	620	6200	620	44	5	NA	
Bromodichloromethane	UG/KG	ND	620	6400	620	ND	5	NA	
Bromoform	UG/KG	ND	620	6200	620	ND	5	NA	
Bromomethane	UG/KG	ND	620	6200	620	ND	5	NA	
2-Butanone	UG/KG	ND	3100	32000	3100	ND	25	NA	
Carbon Disulfide	UG/KG	ND	620	6500	620	1 J	5	NA	
Carbon Tetrachloride	UG/KG	ND	620	6700	620	ND	5	NA	
Chlorobenzene	UG/KG	5500	620	6200	620	41	5	NA	
Chloroethane	UG/KG	ND	620	5300	620	ND	5	NA	
Chloroform	UG/KG	ND	620	6400	620	ND	5	NA	
Chloromethane	UG/KG	ND	620	7300	620	ND	5	NA	
Dibromochloromethane	UG/KG	ND	620	6400	620	ND	5	NA	
1,1-Dichloroethane	UG/KG	ND	620	6700	620	ND	5	NA	
1,2-Dichloroethane	UG/KG	ND	620	6600	620	ND	5	NA	
1,1-Dichloroethene	UG/KG	7600	620	6400	620	42	5	NA	
1,2-Dichloroethene (Total)	UG/KG	ND	1200	13000	1200	ND	10	NA	
1,2-Dichloropropane	UG/KG	ND	620	6500	620	ND	5	NA	
cis-1,3-Dichloropropene	UG/KG	ND	620	6400	620	ND	5	NA	
trans-1,3-Dichloropropene	UG/KG	ND	620	6400	620	ND	5	NA	
Ethylbenzene	UG/KG	ND	620	6100	620	ND	5	NA	
2-Hexanone	UG/KG	ND	3100	32000	3100	ND	25	NA	
Methylene chloride	UG/KG	ND	620	6700	620	4 J	5	NA	
4-Methyl-2-pentanone	UG/KG	ND	3100	32000	3100	ND	25	NA	
Styrene	UG/KG	ND	620	6300	620	ND	5	NA	
1,1,2,2-Tetrachloroethane	UG/KG	ND	620	6200	620	ND	5	NA	
Tetrachloroethene	UG/KG	ND	620	5800	620	ND	5	NA	
Toluene	UG/KG	5300	620	6200	620	38	5	NA	
1,1,1-Trichloroethane	UG/KG	ND	620	6700	620	ND	5	NA	
1,1,2-Trichloroethane	UG/KG	ND	620	6200	620	ND	5	NA	
Trichloroethene	UG/KG	5300	620	6200	620	42	5	NA	
Vinyl acetate	UG/KG	ND	3100	32000	3100	ND	25	NA	
Vinyl chloride	UG/KG	ND	1200	7200	1200	ND	10	NA	
Total Xylenes	UG/KG	ND	1900	19000	1900	ND	15	NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	75	50-200	102	50-200	94	50-200	NA	
1,4-Difluorobenzene	%	71	50-200	99	50-200	92	50-200	NA	
1,4-Dichlorobenzene-D4	%	68	50-200	102	50-200	95	50-200	NA	
Toluene-D8	%	102	71-125	107	71-125	97	71-125	NA	
p-Bromofluorobenzene	%	104	68-124	109	68-124	93	68-124	NA	
1,2-Dichloroethane-D4	%	106	61-136	108	61-136	108	61-136	NA	

NA = Not Applicable ND = Not Detected

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

METHANOL BLK 111604

Lab Name: STL Buffalo Contract: ____________

Lab Code: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) SOIL

Lab Sample ID: A4B34002

Sample wt/vol: 4.15 (g/mL) G

Lab File ID: R1995.RR

Level: (low/med) MED

Date Samp/Recv: __________ __________

% Moisture: not dec. 0.0

Date Analyzed: 11/16/2004

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 1.00

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.00 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 1

CAS NO.	Compound Name	RT	Est. Conc.	Q
1. 1868-53-7	DIBROMOFLUOROMETHANE	2.51	3100	BJN

FORM IE - GC/MS VOA TIC

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

VBLK53

Lab Name: STL Buffalo Contract: ______

Lab Code: RECNY Case No.: ______ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) SOIL

Lab Sample ID: A4B1943704

Sample wt/vol: 4.00 (g/mL) G

Lab File ID: R1993.RR

Level: (low/med) MED

Date Samp/Recv: ______ ______

% Moisture: not dec. ______

Date Analyzed: 11/16/2004

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 1.00

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.00 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 1

CAS NO.	Compound Name	RT	Est. Conc.	Q
1. 1868-53-7	DIBROMOFLUOROMETHANE	2.51	3400	JN

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

VBLK54

Lab Name: STL Buffalo Contract: ______

Lab Code: RECNY Case No.: ______ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) SOIL

Lab Sample ID: A4B1951902

Sample wt/vol: 4.00 (g/mL) G

Lab File ID: R2026.RR

Level: (low/med) MED

Date Samp/Recv: ______ ______

% Moisture: not dec. ______

Date Analyzed: 11/17/2004

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 1.00

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.00 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 1

CAS NO.	Compound Name	RT	Est. Conc.	Q
1. 1868-53-7	DIBROMOFLUOROMETHANE	2.51	3300	JN

E R M
ERM - GREIF BROS.
METHOD 8260 - TCL VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

VBLK85

Lab Name: STL Buffalo   Contract: ____

Lab Code: RECNY   Case No.: ____   SAS No.: ____   SDG No.: ____

Matrix: (soil/water) SOIL   Lab Sample ID: A4B1950502

Sample wt/vol: 5.00 (g/mL) G   Lab File ID: P8908.RR

Level: (low/med) LOW   Date Samp/Recv: ____ ____

% Moisture: not dec. ____   Date Analyzed: 11/16/2004

GC Column: DB-624   ID: 0.25 (mm)   Dilution Factor: 1.00

Soil Extract Volume: ____ (uL)   Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	Compound Name	RT	Est. Conc.	Q

ERM - GF BROS.
WASTE CHARACTERIL N - SOIL/ WATER
GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS

26\44

Client ID Job No Sample Date	Lab ID	s blank A04-8340	A4B1945702						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	ND	330	NA		NA		NA	
Acenaphthylene	UG/KG	ND	330	NA		NA		NA	
Acetophenone	UG/KG	ND	330	NA		NA		NA	
Anthracene	UG/KG	ND	330	NA		NA		NA	
Atrazine	UG/KG	ND	330	NA		NA		NA	
Benzaldehyde	UG/KG	ND	330	NA		NA		NA	
Benzo(a)anthracene	UG/KG	ND	330	NA		NA		NA	
Benzo(b)fluoranthene	UG/KG	ND	330	NA		NA		NA	
Benzo(k)fluoranthene	UG/KG	ND	330	NA		NA		NA	
Benzo(ghi)perylene	UG/KG	ND	330	NA		NA		NA	
Benzo(a)pyrene	UG/KG	ND	330	NA		NA		NA	
Benzoic acid	UG/KG	ND	4800	NA		NA		NA	
Benzyl alcohol	UG/KG	ND	330	NA		NA		NA	
Biphenyl	UG/KG	ND	330	NA		NA		NA	
Bis(2-chloroethoxy) methane	UG/KG	ND	330	NA		NA		NA	
Bis(2-chloroethyl) ether	UG/KG	ND	330	NA		NA		NA	
2,2'-Oxybis(1-Chloropropane)	UG/KG	ND	330	NA		NA		NA	
Bis(2-ethylhexyl) phthalate	UG/KG	ND	330	NA		NA		NA	
4-Bromophenyl phenyl ether	UG/KG	ND	330	NA		NA		NA	
Butyl benzyl phthalate	UG/KG	ND	330	NA		NA		NA	
Caprolactam	UG/KG	ND	330	NA		NA		NA	
4-Chloroaniline	UG/KG	ND	330	NA		NA		NA	
4-Chloro-3-methylphenol	UG/KG	ND	330	NA		NA		NA	
2-Chloronaphthalene	UG/KG	ND	330	NA		NA		NA	
2-Chlorophenol	UG/KG	ND	330	NA		NA		NA	
4-Chlorophenyl phenyl ether	UG/KG	ND	330	NA		NA		NA	
Chrysene	UG/KG	ND	330	NA		NA		NA	
Dibenzo(a,h)anthracene	UG/KG	ND	330	NA		NA		NA	
Dibenzofuran	UG/KG	ND	330	NA		NA		NA	
Di-n-butyl phthalate	UG/KG	ND	330	NA		NA		NA	
1,2-Dichlorobenzene	UG/KG	ND	330	NA		NA		NA	
1,3-Dichlorobenzene	UG/KG	ND	330	NA		NA		NA	
1,4-Dichlorobenzene	UG/KG	ND	330	NA		NA		NA	
3,3'-Dichlorobenzidine	UG/KG	ND	650	NA		NA		NA	
2,4-Dichlorophenol	UG/KG	ND	330	NA		NA		NA	
Diethyl phthalate	UG/KG	ND	330	NA		NA		NA	
2,4-Dimethylphenol	UG/KG	ND	330	NA		NA		NA	
Dimethyl phthalate	UG/KG	ND	330	NA		NA		NA	
4,6-Dinitro-2-methylphenol	UG/KG	ND	1600	NA		NA		NA	
2,4-Dinitrophenol	UG/KG	ND	1600	NA		NA		NA	
2,4-Dinitrotoluene	UG/KG	ND	330	NA		NA		NA	
2,6-Dinitrotoluene	UG/KG	ND	330	NA		NA		NA	
Di-n-octyl phthalate	UG/KG	ND	440	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Date: 11/22/2′
Time: 18:29:4

ERM - ‹ BROS.
WASTE CHARACTERI. .ON - SOIL/ WATER
GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS

ept: AN0326

Client ID Job No Lab ID Sample Date		s blank A04-8340	A481945702						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Fluoranthene	UG/KG	ND	330	NA		NA		NA	
Fluorene	UG/KG	ND	330	NA		NA		NA	
Hexachlorobenzene	UG/KG	ND	330	NA		NA		NA	
Hexachlorobutadiene	UG/KG	ND	330	NA		NA		NA	
Hexachlorocyclopentadiene	UG/KG	ND	330	NA		NA		NA	
Hexachloroethane	UG/KG	ND	330	NA		NA		NA	
Indeno(1,2,3-cd)pyrene	UG/KG	ND	330	NA		NA		NA	
Isophorone	UG/KG	ND	330	NA		NA		NA	
2-Methylnaphthalene	UG/KG	ND	330	NA		NA		NA	
2-Methylphenol	UG/KG	ND	330	NA		NA		NA	
4-Methylphenol	UG/KG	ND	330	NA		NA		NA	
Naphthalene	UG/KG	ND	330	NA		NA		NA	
2-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
3-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
4-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
Nitrobenzene	UG/KG	ND	330	NA		NA		NA	
2-Nitrophenol	UG/KG	ND	330	NA		NA		NA	
4-Nitrophenol	UG/KG	ND	1600	NA		NA		NA	
N-nitrosodiphenylamine	UG/KG	ND	330	NA		NA		NA	
N-Nitroso-Di-n-propylamine	UG/KG	ND	330	NA		NA		NA	
Pentachlorophenol	UG/KG	ND	1600	NA		NA		NA	
Phenanthrene	UG/KG	ND	330	NA		NA		NA	
Phenol	UG/KG	ND	330	NA		NA		NA	
Pyrene	UG/KG	ND	330	NA		NA		NA	
1,2,4-Trichlorobenzene	UG/KG	ND	330	NA		NA		NA	
2,4,5-Trichlorophenol	UG/KG	ND	790	NA		NA		NA	
2,4,6-Trichlorophenol	UG/KG	ND	330	NA		NA		NA	
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	97	50-200	NA		NA		NA	
Naphthalene-D8	%	102	50-200	NA		NA		NA	
Acenaphthene-D10	%	96	50-200	NA		NA		NA	
Phenanthrene-D10	%	105	50-200	NA		NA		NA	
Chrysene-D12	%	99	50-200	NA		NA		NA	
Perylene-D12	%	116	50-200	NA		NA		NA	
Nitrobenzene-D5	%	63	30-127	NA		NA		NA	
2-Fluorobiphenyl	%	81	36-138	NA		NA		NA	
p-Terphenyl-d14	%	141	41-167	NA		NA		NA	
Phenol-D5	%	65	34-120	NA		NA		NA	
2-Fluorophenol	%	57	26-120	NA		NA		NA	
2,4,6-Tribromophenol	%	93	42-140	NA		NA		NA	

NA = Not Applicable   ND = Not Detected

Client ID Job No Sample Date	Lab ID	Matrix Spike Blank A04-B340	A4B1945701	WC-DRUMS5,6,7,11,12 A04-B340 11/15/2004	A4B34001MS	WC-DRUMS5,6,7,11,12 A04-B340 11/15/2004	A4B34001SD		
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	2700	330	3600	390	3600	390	NA	
Acenaphthylene	UG/KG	ND	330	ND	390	ND	390	NA	
Acetophenone	UG/KG	ND	330	ND	390	ND	390	NA	
Anthracene	UG/KG	ND	330	ND	390	ND	390	NA	
Atrazine	UG/KG	ND	330	ND	390	ND	390	NA	
Benzaldehyde	UG/KG	ND	330	ND	390	ND	390	NA	
Benzo(a)anthracene	UG/KG	ND	330	ND	390	ND	390	NA	
Benzo(b)fluoranthene	UG/KG	ND	330	ND	390	ND	390	NA	
Benzo(k)fluoranthene	UG/KG	ND	330	270 J	390	260 J	390	NA	
Benzo(ghi)perylene	UG/KG	ND	330	ND	390	ND	390	NA	
Benzo(a)pyrene	UG/KG	ND	330	ND	390	ND	390	NA	
Benzoic acid	UG/KG	ND	4800	ND	5700	ND	5600	NA	
Benzyl alcohol	UG/KG	ND	330	ND	390	ND	390	NA	
Biphenyl	UG/KG	ND	330	ND	390	ND	390	NA	
Bis(2-chloroethoxy) methane	UG/KG	ND	330	ND	390	ND	390	NA	
Bis(2-chloroethyl) ether	UG/KG	ND	330	ND	390	ND	390	NA	
2,2'-Oxybis(1-Chloropropane)	UG/KG	ND	330	ND	390	ND	390	NA	
Bis(2-ethylhexyl) phthalate	UG/KG	ND	330	ND	390	ND	390	NA	
4-Bromophenyl phenyl ether	UG/KG	ND	330	ND	390	ND	390	NA	
Butyl benzyl phthalate	UG/KG	ND	330	ND	390	ND	390	NA	
Caprolactam	UG/KG	ND	330	ND	390	ND	390	NA	
4-Chloroaniline	UG/KG	ND	330	ND	390	ND	390	NA	
4-Chloro-3-methylphenol	UG/KG	3500	330	4600	390	4500	390	NA	
2-Chloronaphthalene	UG/KG	ND	330	ND	390	ND	390	NA	
2-Chlorophenol	UG/KG	2500	330	3500	390	3500	390	NA	
4-Chlorophenyl phenyl ether	UG/KG	ND	330	ND	390	ND	390	NA	
Chrysene	UG/KG	ND	330	ND	390	ND	390	NA	
Dibenzo(a,h)anthracene	UG/KG	ND	330	ND	390	ND	390	NA	
Dibenzofuran	UG/KG	ND	330	ND	390	ND	390	NA	
Di-n-butyl phthalate	UG/KG	ND	330	ND	390	ND	390	NA	
1,2-Dichlorobenzene	UG/KG	ND	330	ND	390	ND	390	NA	
1,3-Dichlorobenzene	UG/KG	ND	330	ND	390	ND	390	NA	
1,4-Dichlorobenzene	UG/KG	1700	330	2500	390	2400	390	NA	
3,3'-Dichlorobenzidine	UG/KG	ND	660	ND	780	ND	780	NA	
2,4-Dichlorophenol	UG/KG	ND	330	ND	390	ND	390	NA	
Diethyl phthalate	UG/KG	ND	330	ND	390	ND	390	NA	
2,4-Dimethylphenol	UG/KG	ND	330	ND	390	ND	390	NA	
Dimethyl phthalate	UG/KG	ND	330	ND	390	ND	390	NA	
4,6-Dinitro-2-methylphenol	UG/KG	ND	1600	ND	1900	ND	1900	NA	
2,4-Dinitrophenol	UG/KG	ND	1600	ND	1900	ND	1900	NA	
2,4-Dinitrotoluene	UG/KG	3200	330	4000	390	3800	390	NA	
2,6-Dinitrotoluene	UG/KG	ND	330	ND	390	ND	390	NA	
Di-n-octyl phthalate	UG/KG	ND	440	ND	530	ND	520	NA	

NA = Not Applicable ND = Not Detected

Client ID Job No Lab ID Sample Date		Matrix Spike Blank A04-B340 A4B1945701		WC-DRUMS5,6,7,11,12 A04-B340 A4B34001MS 11/15/2004		WC-DRUMS5,6,7,11,12 A04-B340 A4B34001SD 11/15/2004			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Fluoranthene	UG/KG	ND	330	210 J	390	190 J	390	NA	
Fluorene	UG/KG	ND	330	ND	390	ND	390	NA	
Hexachlorobenzene	UG/KG	ND	330	ND	390	ND	390	NA	
Hexachlorobutadiene	UG/KG	ND	330	ND	390	ND	390	NA	
Hexachlorocyclopentadiene	UG/KG	ND	330	ND	390	ND	390	NA	
Hexachloroethane	UG/KG	ND	330	ND	390	ND	390	NA	
Indeno(1,2,3-cd)pyrene	UG/KG	ND	330	ND	390	ND	390	NA	
Isophorone	UG/KG	ND	330	ND	390	ND	390	NA	
2-Methylnaphthalene	UG/KG	ND	330	ND	390	ND	390	NA	
2-Methylphenol	UG/KG	ND	330	ND	390	ND	390	NA	
4-Methylphenol	UG/KG	ND	330	ND	390	ND	390	NA	
Naphthalene	UG/KG	ND	330	ND	390	ND	390	NA	
2-Nitroaniline	UG/KG	ND	1600	ND	1900	ND	1900	NA	
3-Nitroaniline	UG/KG	ND	1600	ND	1900	ND	1900	NA	
4-Nitroaniline	UG/KG	ND	1600	ND	1900	ND	1900	NA	
Nitrobenzene	UG/KG	ND	330	ND	390	ND	390	NA	
2-Nitrophenol	UG/KG	ND	330	ND	390	ND	390	NA	
4-Nitrophenol	UG/KG	3900	1600	5400	1900	4900	1900	NA	
N-nitrosodiphenylamine	UG/KG	ND	330	ND	390	ND	390	NA	
N-Nitroso-Di-n-propylamine	UG/KG	2400	330	3000	390	2800	390	NA	
Pentachlorophenol	UG/KG	3700	1600	4600	1900	4600	1900	NA	
Phenanthrene	UG/KG	ND	330	ND	390	ND	390	NA	
Phenol	UG/KG	2600	330	3400	390	3300	390	NA	
Pyrene	UG/KG	4400	330	3600	390	3600	390	NA	
1,2,4-Trichlorobenzene	UG/KG	2000	330	2900	390	2900	390	NA	
2,4,5-Trichlorophenol	UG/KG	ND	800	ND	950	ND	940	NA	
2,4,6-Trichlorophenol	UG/KG	ND	330	ND	390	ND	390	NA	
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	92	50-200	95	50-200	95	50-200	NA	
Naphthalene-D8	%	97	50-200	99	50-200	98	50-200	NA	
Acenaphthene-D10	%	93	50-200	85	50-200	85	50-200	NA	
Phenanthrene-D10	%	100	50-200	86	50-200	86	50-200	NA	
Chrysene-D12	%	91	50-200	146	50-200	136	50-200	NA	
Perylene-D12	%	110	50-200	152	50-200	145	50-200	NA	
Nitrobenzene-D5	%	62	30-127	64	30-127	61	30-127	NA	
2-Fluorobiphenyl	%	79	36-138	90	36-138	81	36-138	NA	
p-Terphenyl-d14	%	142	41-167	94	41-167	90	41-167	NA	
Phenol-D5	%	63	34-120	66	34-120	62	34-120	NA	
2-Fluorophenol	%	54	26-120	54	26-120	52	26-120	NA	
2,4,6-Tribromophenol	%	97	42-140	106	42-140	104	42-140	NA	

NA = Not Applicable   ND = Not Detected

E R M
ERM - GREIF BROS.
GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

WC-DRUMS5,6,7,11,12

Lab Name: STL Buffalo Contract: ____________

Lab Code: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) SOIL Lab Sample ID: A4B34001MS

Sample wt/vol: 30.24 (g/mL) G Lab File ID: V07478.RR

Level: (low/med) LOW Date Samp/Recv: 11/15/2004 11/15/2004

% Moisture: 16.3 decanted: (Y/N) N Date Extracted: 11/16/2004

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/2004

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	Compound Name	RT	Est. Conc.	Q

E R M
ERM - GREIF BROS.
GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS
TENTATIVELY IDENTIFIED COMPOUNDS

Client No.

WC-DRUMS5,6,7,11,12

Lab Name: STL Buffalo Contract: ____________

Lab Code: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) SOIL Lab Sample ID: A4B34001SD

Sample wt/vol: 30.43 (g/mL) G Lab File ID: V07479.RR

Level: (low/med) LOW Date Samp/Recv: 11/15/2004 11/15/2004

% Moisture: 16.3 decanted: (Y/N) N Date Extracted: 11/16/2004

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/17/2004

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	Compound Name	RT	Est. Conc.	Q

FORM IF - GC/MS SVOA TIC

Client Sample ID: VBLK53 MSB53
Lab Sample ID: A4B1943704 A4B1943703

		Concentration			
Analyte	Units of Measure	Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260 - TCL VOLATILE ORGANICS					
1,1-Dichloroethene	UG/KG	7569	6250	121	65-146
Trichloroethene	UG/KG	5290	6250	85	74-127
Benzene	UG/KG	5372	6250	86	74-128
Toluene	UG/KG	5276	6250	84	74-123
Chlorobenzene	UG/KG	5518	6250	88	76-124

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: VBLK54 MSB54
Lab Sample ID: A4B1951902 A4B1951901

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260 - TCL VOLATILE ORGANICS					
1,1-Dichloroethene	UG/KG	6446	6250	103	65-146
Trichloroethene	UG/KG	6184	6250	99	74-127
Benzene	UG/KG	6253	6250	100	74-128
Toluene	UG/KG	6229	6250	100	74-123
Chlorobenzene	UG/KG	6238	6250	100	76-124

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Client Sample ID: VBLK85 MSB85
Lab Sample ID: A4B1950502 A4B1950501

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260 - TCL VOLATILE ORGANICS					
1,1-Dichloroethene	UG/KG	41.7	50.0	84	65-146
Trichloroethene	UG/KG	42.1	50.0	84	74-127
Benzene	UG/KG	44.3	50.0	89	74-128
Toluene	UG/KG	37.6	50.0	75	74-123
Chlorobenzene	UG/KG	40.8	50.0	82	76-124

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

Date : 11/22/ 18:29:55

SAMPLE DA._ 11/15/2004

Rept: AN0364

Client Sample ID: WC-DRUMS5,6,7,11,12   WC-DRUMS5,6,7,11,12   WC-DRUMS5,6,7,11,12
Lab Sample ID: A4B34001   A4B34001MS   A4B34001SD

Analyte	Units of Measure	Concentration			Spike Amount		% Recovery			%	QC LIMITS	
		Sample	Matrix Spike	Spike Duplicate	MS	MSD	MS	MSD	Avg	RPD	RPD	REC.
GREIF BROS - METHOD 8270 - TCL SVOA W/ T												
Phenol	UG/KG	0	3432	3339	3949	3925	87	85	86	2	25.0	35-120
2-Chlorophenol	UG/KG	0	3538	3500	3949	3925	90	89	90	1	26.0	34-118
1,4-Dichlorobenzene	UG/KG	0	2465	2436	3949	3925	62	62	62	0	30.0	30-120
N-Nitroso-Di-n-propylamine	UG/KG	0	2950	2822	3949	3925	75	72	74	4	20.0	42-131
1,2,4-Trichlorobenzene	UG/KG	0	2886	2876	3949	3925	73	73	73	0	24.0	32-120
4-Chloro-3-methylphenol	UG/KG	0	4603	4477	3949	3925	116	114	115	2	20.0	45-135
Acenaphthene	UG/KG	0	3655	3565	3949	3925	92	91	92	1	16.0	49-131
4-Nitrophenol	UG/KG	0	5439	4888	3949	3925	138	124	131	11	25.0	36-142
2,4-Dinitrotoluene	UG/KG	0	3961	3829	3949	3925	100	98	99	2	19.0	45-138
Pentachlorophenol	UG/KG	0	4608	4658	3949	3925	117	119	118	2	27.0	28-135
Pyrene	UG/KG	42.6	3615	3581	3949	3925	90	90	90	0	25.0	48-154

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* Indicates Result is outside QC Limits
NC = Not Calculated   ND = Not Detected

Client Sample ID: s blank
Lab Sample ID: A4B1945702

Matrix Spike Blank
A4B1945701

Analyte	Units of Measure	Concentration Blank Spike	Concentration Spike Amount	% Recovery Blank Spike	QC LIMITS
GREIF BROS - METHOD 8270 - TCL SVOA W/ T					
Phenol	UG/KG	2555	3317	77	35-120
2-Chlorophenol	UG/KG	2509	3317	76	34-118
1,4-Dichlorobenzene	UG/KG	1746	3317	53	30-120
N-Nitroso-Di-n-propylamine	UG/KG	2355	3317	71	42-131
1,2,4-Trichlorobenzene	UG/KG	1956	3317	59	32-120
4-Chloro-3-methylphenol	UG/KG	3498	3317	105	45-135
Acenaphthene	UG/KG	2678	3317	81	49-131
4-Nitrophenol	UG/KG	3906	3317	118	36-142
2,4-Dinitrotoluene	UG/KG	3173	3317	96	45-138
Pentachlorophenol	UG/KG	3716	3317	112	28-135
Pyrene	UG/KG	4360	3317	131	48-154

* Indicates Result is outside QC Limits
NC = Not Calculated ND = Not Detected

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	WC-DRUMS5,6,7,11,12 A04-B340 A4B34001	WC-DRUMS5,6,7,11,12 A04-B340 A4B34001D2	WC-DRUMS5,6,7,11,12 A04-B340 A4B34001DL		
Sample Date	11/15/2004 13:50	11/15/2004 13:50	11/15/2004 13:50		
Received Date	11/15/2004 15:40	11/15/2004 15:40	11/15/2004 15:40		
Extraction Date					
Analysis Date	11/16/2004 19:04	11/17/2004 13:11	11/17/2004 10:30		
Extraction HT Met?	-	-	-		
Analytical HT Met?	YES	YES	YES		
Sample Matrix	SOIL LOW	SOIL MED	SOIL MED		
Dilution Factor	1.0	50.0	10.0		
Sample wt/vol	5.12 GRAMS	4.06 GRAMS	4.06 GRAMS		
% Dry	88.17	88.17	88.17		

NA = Not Applicable

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	MSB53 A04-B340 A4B1943703	MSB54 A04-B340 A4B1951901	MSB85 A04-B340 A4B1950501		
Sample Date					
Received Date					
Extraction Date					
Analysis Date	11/16/2004 11:11	11/17/2004 09:10	11/16/2004 12:14		
Extraction HT Met?	-	-	-		
Analytical HT Met?	-	-	-		
Sample Matrix	SOIL MED	SOIL MED	SOIL LOW		
Dilution Factor	1.0	1.0	1.0		
Sample wt/vol	4.0 GRAMS	4.0 GRAMS	5.0 GRAMS		
% Dry	100.00	100.00	100.00		

NA = Not Applicable

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID	METHANOL BLK 111604	VBLK53	VBLK54	VBLK85	
Job No & Lab Sample ID	A04-B340 A4B34002	A04-B340 A4B1943704	A04-B340 A4B1951902	A04-B340 A4B1950502	
Sample Date					
Received Date					
Extraction Date					
Analysis Date	11/16/2004 12:58	11/16/2004 12:04	11/17/2004 10:03	11/16/2004 13:28	
Extraction HT Met?	-	-	-	-	
Analytical HT Met?	-	-	-	-	
Sample Matrix	SOIL MED	SOIL MED	SOIL MED	SOIL LOW	
Dilution Factor	1.0	1.0	1.0	1.0	
Sample wt/vol	4.15 GRAMS	4.0 GRAMS	4.0 GRAMS	5.0 GRAMS	
% Dry	100.00	100.00	100.00	100.00	

NA = Not Applicable

GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS

Client Sample ID	WC-DRUMS5,6,7,11,12				
Job No & Lab Sample ID	A04-B340 A4B34001				
Sample Date	11/15/2004 13:50				
Received Date	11/15/2004 15:40				
Extraction Date	11/16/2004 16:30				
Analysis Date	11/17/2004 11:47				
Extraction HT Met?	YES				
Analytical HT Met?	YES				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.63 GRAMS				
% Dry	83.72				

NA = Not Applicable

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GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS

Client Sample ID Job No & Lab Sample ID	Matrix Spike Blank A04-B340 A4B1945701	WC-DRUMS5,6,7,11,12 A04-B340 A4B34001MS	WC-DRUMS5,6,7,11,12 A04-B340 A4B34001SD		
Sample Date		11/15/2004 13:50	11/15/2004 13:50		
Received Date		11/15/2004 15:40	11/15/2004 15:40		
Extraction Date	11/16/2004 16:30	11/16/2004 16:30	11/16/2004 16:30		
Analysis Date	11/17/2004 10:56	11/17/2004 12:13	11/17/2004 12:38		
Extraction HT Met?	-	YES	YES		
Analytical HT Met?	-	YES	YES		
Sample Matrix	SOIL LOW	SOIL LOW	SOIL LOW		
Dilution Factor	1.0	1.0	1.0		
Sample wt/vol	30.14 GRAMS	30.24 GRAMS	30.43 GRAMS		
% Dry	100.00	83.72	83.72		

NA = Not Applicable

GREIF BROS - METHOD 8270 - TCL SVOA W/ TICS

Client Sample ID Job No & Lab Sample ID	s blank A04-B340 A4B1945702				
Sample Date					
Received Date					
Extraction Date	11/16/2004 16:30				
Analysis Date	11/17/2004 11:22				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.25 GRAMS				
% Dry	100.00				

42\44

NA = Not Applicable

Chain of Custody

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: ERM

Project Manager: Jon Fox

Date: 11-15-04

Chain of Custody Number: 134721

Address: 5788 Widewaters Parkway

Telephone Number (Area Code)/Fax Number: 315-445-2554

Lab Number:

Page 1 of 1

City: Dawitt

State: NY

Zip Code: 13214

Site Contact:

Lab Contact:

Project Name and Location (State): Greif Bros, Tonawanda, NY

Carrier/Waybill Number:

Contract/Purchase Order/Quote No.: 0021621

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): TCL VOC 8260*	TCL SVOC 8270*	Special Instructions/ Conditions of Receipt
WC-Drums 5, 6, 7, 11, 12, 13	11-15-04	1350				X	X						X	X	*Library Search

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☒ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Robert Sents	11-15-04	1540	1. Received By	11/15/04	1540
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: Fax Results to J. Fox 315-445-2543

18.2°C

NO ICE

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Columbia
Analytical
Services inc.

A FULL SERVICE ENVIRONMENTAL LABORATORY

December 9, 2004

Mr. Jon Fox
ERM Northeast
5788 Widewater Parkway
Dewitt, NY 13214

PROJECT:GREIF BROS.
Submission #:R2423922

Dear Mr. Fox:

Enclosed are the analytical results of the analyses requested. The analytical data was provided to you on 12/09/04 per a Facsimile transmittal. All data has been reviewed prior to report submission.

Should you have any questions please contact me at (585) 288-5380.

Thank you for letting us provide this service.

Sincerely,

COLUMBIA ANALYTICAL SERVICES

Michael K. Perry

Michael Perry
Laboratory Director

Enc.

Columbia Analytical Services Inc.
1 Mustard ST.
Suite 250
Rochester, NY 14609
(585) 288-5380

THIS IS AN ANALYTICAL TEST REPORT FOR:

Client : ERM Northeast
Project Reference: GREIF BROS.
Lab Submission # : R2423922
Project Manager : Michael Perry
Reported : 12/09/04

Report Contains a total of 19 pages

The results reported herein relate only to the samples received by the laboratory. This report may not be reproduced except in full, without the approval of Columbia Analytical Services.

This package has been reviewed by Columbia Analytical Services' QA Department/Laboratory Director to comply with NELAC standards prior to report submittal.

Columbia Analytical Services Inc.

CASE NARRATIVE

This report contains analytical results for the following samples:
Submission #: R2423922

Lab ID	Client ID
776408	VEC-1-1625
776409	VIC-1-1625
776410	VIC-1-2235
776411	VEC-1-2235

All samples were received in good condition unless otherwise noted on the cooler receipt and preservation check form located at the end of this report.

All samples were preserved in accordance with approved analytical methods.

All samples have been analyzed by the approved methods cited on the analytical results pages.

ll holding times and associated QC were within limits.

No analytical or QC problems were encountered.

All sampling activities performed by CAS personnel have been in accordance with "CAS Field Procedures and Measurements Manual" or by client specifications.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J - Indicates an estimated value. The flag is used either when estimating a concentration for tentatively identified compounds, or when the 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 the MDL.

N - Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search.

P - This flag is used for a pesticide/Aroclor target analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. The concentration is reported on the Form I and flagged with a "P".

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and ALL concentration values reported on that Form I are flagged with the "D" flag.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

X - As specified in Case Narrative.

* - This flag identifies compounds associated with a quality control parameter which exceeds laboratory limits.

CAS/Rochester Lab ID # for State Certifications

NELAP Accredited
Delaware Accredited
Connecticut ID # PH0556
Florida ID # E87674
Illinois ID #200047
Maine ID #NY0032
Massachusetts ID # M-NY032
Navy Facilities Engineering Service Center Approved
Nebraska Accredited
New Jersey ID # NY004
New York ID # 10145
New Hampshire ID # 294100 A/B
Pennsylvania Registration 68-786
Rhode Island ID # 158
South Carolina ID #91012
West Virginia ID # 292

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/09/04

ERM Northeast
Project Reference: GREIF BROS.
Client Sample ID : VEC-1-1625

Date Sampled : 11/16/04 16:25 **Order #:** 776408 **Sample Matrix:** AIR
Date Received: 11/17/04 **Submission #:** R2423922 **Analytical Run** 111233

DATE ANALYZED : 11/19/04
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
ACETONE	0.84	0.84 U	PPM
BENZENE	0.31	0.31 U	PPM
2-BUTANONE (MEK)	0.68	0.68 U	PPM
CHLOROETHANE	0.38	0.38 U	PPM
CHLOROFORM	0.21	0.21 U	PPM
1,1-DICHLOROETHANE	0.25	0.25 U	PPM
1,2-DICHLOROETHANE	0.25	0.25 U	PPM
1,1-DICHLOROETHENE	0.25	0.25 U	PPM
CIS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
ETHYLBENZENE	0.23	0.23 U	PPM
METHYLENE CHLORIDE	0.29	0.29 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	0.48 U	PPM
TETRACHLOROETHENE	0.16	0.16 U	PPM
TOLUENE	0.27	0.27 U	PPM
1,1,1-TRICHLOROETHANE	0.18	0.18 U	PPM
1,1,2-TRICHLOROETHANE	0.18	0.18 U	PPM
TRICHLOROETHENE	0.19	0.19 U	PPM
1,2,4-TRIMETHYLBENZENE	0.20	0.20 U	PPM
VINYL CHLORIDE	0.39	0.39 U	PPM
O-XYLENE	0.23	0.23 U	PPM
M+P-XYLENE	0.23	0.23 U	PPM

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/09/04

ERM Northeast
Project Reference: GREIF BROS.
Client Sample ID : VIC-1-1625

Date Sampled : 11/16/04 16:25 **Order #:** 776409 **Sample Matrix:** AIR
Date Received: 11/17/04 **Submission #:** R2423922 **Analytical Run** 111233

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 11/22/04			
ANALYTICAL DILUTION: 50.00			
ACETONE	0.84	42 U	PPM
BENZENE	0.31	16 U	PPM
2-BUTANONE (MEK)	0.68	34 U	PPM
CHLOROETHANE	0.38	19 U	PPM
CHLOROFORM	0.21	11 U	PPM
1,1-DICHLOROETHANE	0.25	24	PPM
1,2-DICHLOROETHANE	0.25	13 U	PPM
1,1-DICHLOROETHENE	0.25	86	PPM
CIS-1,2-DICHLOROETHENE	0.25	13 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	86	PPM
ETHYLBENZENE	0.23	12 U	PPM
METHYLENE CHLORIDE	0.29	15 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	24 U	PPM
TETRACHLOROETHENE	0.16	8.0 U	PPM
TOLUENE	0.27	14 U	PPM
1,1,1-TRICHLOROETHANE	0.18	910 E	PPM
1,1,2-TRICHLOROETHANE	0.18	9.0 U	PPM
TRICHLOROETHENE	0.19	830 E	PPM
1,2,4-TRIMETHYLBENZENE	0.20	10 U	PPM
VINYL CHLORIDE	0.39	20 U	PPM
O-XYLENE	0.23	24	PPM
M+P-XYLENE	0.23	88	PPM

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/09/04

ERM Northeast
Project Reference: GREIF BROS.
Client Sample ID : VIC-1-1625

Date Sampled : 11/16/04 16:25 **Order #:** 776409 **Sample Matrix:** AIR
Date Received: 11/17/04 **Submission #:** R2423922 **Analytical Run** 111233

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/08/04			
ANALYTICAL DILUTION: 250.00			
ACETONE	0.84	210 U	PPM
BENZENE	0.31	78 U	PPM
2-BUTANONE (MEK)	0.68	170 U	PPM
CHLOROETHANE	0.38	95 U	PPM
CHLOROFORM	0.21	53 U	PPM
1,1-DICHLOROETHANE	0.25	63 U	PPM
1,2-DICHLOROETHANE	0.25	63 U	PPM
1,1-DICHLOROETHENE	0.25	75	PPM
CIS-1,2-DICHLOROETHENE	0.25	63 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	75	PPM
ETHYLBENZENE	0.23	58 U	PPM
METHYLENE CHLORIDE	0.29	73 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	120 U	PPM
TETRACHLOROETHENE	0.16	40 U	PPM
TOLUENE	0.27	68 U	PPM
1,1,1-TRICHLOROETHANE	0.18	800	PPM
1,1,2-TRICHLOROETHANE	0.18	45 U	PPM
TRICHLOROETHENE	0.19	600	PPM
1,2,4-TRIMETHYLBENZENE	0.20	50 U	PPM
VINYL CHLORIDE	0.39	98 U	PPM
O-XYLENE	0.23	58 U	PPM
M+P-XYLENE	0.23	58 U	PPM

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/09/04

ERM Northeast
Project Reference: GREIF BROS.
Client Sample ID : VIC-1-2235

Date Sampled : 11/16/04 22:35 **Order #:** 776410 **Sample Matrix:** AIR
Date Received: 11/17/04 **Submission #:** R2423922 **Analytical Run** 111233

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 11/19/04			
ANALYTICAL DILUTION: 10.00			
ACETONE	0.84	8.4 U	PPM
BENZENE	0.31	3.1 U	PPM
2-BUTANONE (MEK)	0.68	6.8 U	PPM
CHLOROETHANE	0.38	3.8 U	PPM
CHLOROFORM	0.21	2.1 U	PPM
1,1-DICHLOROETHANE	0.25	20	PPM
1,2-DICHLOROETHANE	0.25	2.5 U	PPM
1,1-DICHLOROETHENE	0.25	82	PPM
CIS-1,2-DICHLOROETHENE	0.25	5.2	PPM
TRANS-1,2-DICHLOROETHENE	0.25	81	PPM
ETHYLBENZENE	0.23	7.4	PPM
METHYLENE CHLORIDE	0.29	2.9 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	4.8 U	PPM
TETRACHLOROETHENE	0.16	1.6 U	PPM
TOLUENE	0.27	4.2	PPM
1,1,1-TRICHLOROETHANE	0.18	740 E	PPM
1,1,2-TRICHLOROETHANE	0.18	1.8 U	PPM
TRICHLOROETHENE	0.19	540 E	PPM
1,2,4-TRIMETHYLBENZENE	0.20	2.0 U	PPM
VINYL CHLORIDE	0.39	3.9 U	PPM
O-XYLENE	0.23	23	PPM
M+P-XYLENE	0.23	85	PPM

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/09/04

ERM Northeast
Project Reference: GREIF BROS.
Client Sample ID : VIC-1-2235

Date Sampled : 11/16/04 22:35 **Order #:** 776410 **Sample Matrix:** AIR
Date Received: 11/17/04 **Submission #:** R2423922 **Analytical Run** 111233

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/08/04			
ANALYTICAL DILUTION: 250.00			
ACETONE	0.84	210 U	PPM
BENZENE	0.31	78 U	PPM
2-BUTANONE (MEK)	0.68	170 U	PPM
CHLOROETHANE	0.38	95 U	PPM
CHLOROFORM	0.21	53 U	PPM
1,1-DICHLOROETHANE	0.25	63 U	PPM
1,2-DICHLOROETHANE	0.25	63 U	PPM
1,1-DICHLOROETHENE	0.25	98	PPM
CIS-1,2-DICHLOROETHENE	0.25	63 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	95	PPM
ETHYLBENZENE	0.23	58 U	PPM
METHYLENE CHLORIDE	0.29	73 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	120 U	PPM
TETRACHLOROETHENE	0.16	40 U	PPM
TOLUENE	0.27	68 U	PPM
1,1,1-TRICHLOROETHANE	0.18	1200	PPM
1,1,2-TRICHLOROETHANE	0.18	45 U	PPM
TRICHLOROETHENE	0.19	1100	PPM
1,2,4-TRIMETHYLBENZENE	0.20	50 U	PPM
VINYL CHLORIDE	0.39	98 U	PPM
O-XYLENE	0.23	58 U	PPM
M+P-XYLENE	0.23	140	PPM

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/09/04

ERM Northeast
Project Reference: GREIF BROS.
Client Sample ID : VEC-1-2235

Date Sampled : 11/16/04 22:35 **Order #:** 776411 **Sample Matrix:** AIR
Date Received: 11/17/04 **Submission #:** R2423922 **Analytical Run** 111233

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 11/19/04			
ANALYTICAL DILUTION: 1.00			
ACETONE	0.84	0.84 U	PPM
BENZENE	0.31	0.31 U	PPM
2-BUTANONE (MEK)	0.68	0.68 U	PPM
CHLOROETHANE	0.38	0.38 U	PPM
CHLOROFORM	0.21	0.21 U	PPM
1,1-DICHLOROETHANE	0.25	0.25 U	PPM
1,2-DICHLOROETHANE	0.25	0.25 U	PPM
1,1-DICHLOROETHENE	0.25	0.25 U	PPM
CIS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
ETHYLBENZENE	0.23	0.23 U	PPM
METHYLENE CHLORIDE	0.29	0.29 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	0.48 U	PPM
TETRACHLOROETHENE	0.16	0.16 U	PPM
TOLUENE	0.27	0.27 U	PPM
1,1,1-TRICHLOROETHANE	0.18	0.18 U	PPM
1,1,2-TRICHLOROETHANE	0.18	0.18 U	PPM
TRICHLOROETHENE	0.19	0.19 U	PPM
1,2,4-TRIMETHYLBENZENE	0.20	0.20 U	PPM
VINYL CHLORIDE	0.39	0.39 U	PPM
O-XYLENE	0.23	0.23 U	PPM
M+P-XYLENE	0.23	0.23 U	PPM

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD: 8260B

LABORATORY CONTROL SAMPLE SUMMARY

REFERENCE ORDER #: 780669 ANALYTICAL RUN # : 111233

ANALYTE	TRUE VALUE	% RECOVERY	QC LIMITS
DATE ANALYZED : 11/19/04			
ANALYTICAL DILUTION: 1.0			
ACETONE	20.0	145	50 - 150
BENZENE	20.0	113	70 - 130
2-BUTANONE (MEK)	20.0	109	50 - 150
CHLOROETHANE	20.0	127	70 - 130
CHLOROFORM	20.0	113	70 - 130
1,1-DICHLOROETHANE	20.0	114	70 - 130
1,2-DICHLOROETHANE	20.0	102	70 - 130
1,1-DICHLOROETHENE	20.0	135 *	70 - 130
CIS-1,2-DICHLOROETHENE	20.0	112	70 - 130
TRANS-1,2-DICHLOROETHENE	20.0	130	70 - 130
ETHYLBENZENE	20.0	111	70 - 130
METHYLENE CHLORIDE	20.0	115	70 - 130
-METHYL-2-PENTANONE (MIBK)	20.0	92	50 - 150
ETRACHLOROETHENE	20.0	110	70 - 130
TOLUENE	20.0	107	70 - 130
1,1,1-TRICHLOROETHANE	20.0	114	70 - 130
1,1,2-TRICHLOROETHANE	20.0	99	70 - 130
TRICHLOROETHENE	20.0	111	70 - 130
1,2,4-TRIMETHYLBENZENE	20.0	NA	70 - 130
VINYL CHLORIDE	20.0	114	70 - 130
O-XYLENE	20.0	105	70 - 130
M+P-XYLENE	40.0	108	70 - 130

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD: 8260B

LABORATORY CONTROL SAMPLE SUMMARY

REFERENCE ORDER #: 780671

ANALYTICAL RUN # : 111233

DATE ANALYZED : 11/22/04
ANALYTICAL DILUTION: 1.0

ANALYTE	TRUE VALUE	% RECOVERY	QC LIMITS
ACETONE	20.0	126	50 - 150
BENZENE	20.0	111	70 - 130
2-BUTANONE (MEK)	20.0	99	50 - 150
CHLOROETHANE	20.0	118	70 - 130
CHLOROFORM	20.0	109	70 - 130
1,1-DICHLOROETHANE	20.0	107	70 - 130
1,2-DICHLOROETHANE	20.0	100	70 - 130
1,1-DICHLOROETHENE	20.0	132 *	70 - 130
CIS-1,2-DICHLOROETHENE	20.0	102	70 - 130
TRANS-1,2-DICHLOROETHENE	20.0	131 *	70 - 130
ETHYLBENZENE	20.0	104	70 - 130
METHYLENE CHLORIDE	20.0	106	70 - 130
4-METHYL-2-PENTANONE (MIBK)	20.0	99	50 - 150
TETRACHLOROETHENE	20.0	113	70 - 130
TOLUENE	20.0	107	70 - 130
1,1,1-TRICHLOROETHANE	20.0	106	70 - 130
1,1,2-TRICHLOROETHANE	20.0	102	70 - 130
TRICHLOROETHENE	20.0	114	70 - 130
1,2,4-TRIMETHYLBENZENE	20.0	NA	70 - 130
VINYL CHLORIDE	20.0	104	70 - 130
O-XYLENE	20.0	100	70 - 130
M+P-XYLENE	40.0	102	70 - 130

VOLATILE ORGANICS
METHOD: 8260B

LABORATORY CONTROL SAMPLE SUMMARY

REFERENCE ORDER #: 780674 ANALYTICAL RUN # : 111233

ANALYTE	TRUE VALUE	% RECOVERY	QC LIMITS
DATE ANALYZED : 11/23/04			
ANALYTICAL DILUTION: 1.0			
ACETONE	20.0	167 *	50 - 150
BENZENE	20.0	105	70 - 130
2-BUTANONE (MEK)	20.0	104	50 - 150
CHLOROETHANE	20.0	113	70 - 130
CHLOROFORM	20.0	103	70 - 130
1,1-DICHLOROETHANE	20.0	97	70 - 130
1,2-DICHLOROETHANE	20.0	96	70 - 130
1,1-DICHLOROETHENE	20.0	124	70 - 130
CIS-1,2-DICHLOROETHENE	20.0	97	70 - 130
TRANS-1,2-DICHLOROETHENE	20.0	121	70 - 130
ETHYLBENZENE	20.0	101	70 - 130
METHYLENE CHLORIDE	20.0	109	70 - 130
-METHYL-2-PENTANONE (MIBK)	20.0	84	50 - 150
ETRACHLOROETHENE	20.0	110	70 - 130
TOLUENE	20.0	101	70 - 130
1,1,1-TRICHLOROETHANE	20.0	100	70 - 130
1,1,2-TRICHLOROETHANE	20.0	94	70 - 130
TRICHLOROETHENE	20.0	106	70 - 130
1,2,4-TRIMETHYLBENZENE	20.0	NA	70 - 130
VINYL CHLORIDE	20.0	101	70 - 130
O-XYLENE	20.0	97	70 - 130
M+P-XYLENE	40.0	100	70 - 130

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD: 8260B

LABORATORY CONTROL SAMPLE SUMMARY

REFERENCE ORDER #: 781459   ANALYTICAL RUN # : 111233

DATE ANALYZED : 12/08/04
ANALYTICAL DILUTION: 1.0

ANALYTE	TRUE VALUE	% RECOVERY	QC LIMITS
ACETONE	20.0	120	50 - 150
BENZENE	20.0	109	70 - 130
2-BUTANONE (MEK)	20.0	107	50 - 150
CHLOROETHANE	20.0	101	70 - 130
CHLOROFORM	20.0	103	70 - 130
1,1-DICHLOROETHANE	20.0	95	70 - 130
1,2-DICHLOROETHANE	20.0	94	70 - 130
1,1-DICHLOROETHENE	20.0	120	70 - 130
CIS-1,2-DICHLOROETHENE	20.0	99	70 - 130
TRANS-1,2-DICHLOROETHENE	20.0	117	70 - 130
ETHYLBENZENE	20.0	105	70 - 130
METHYLENE CHLORIDE	20.0	96	70 - 130
-METHYL-2-PENTANONE (MIBK)	20.0	77	50 - 150
TETRACHLOROETHENE	20.0	114	70 - 130
TOLUENE	20.0	103	70 - 130
1,1,1-TRICHLOROETHANE	20.0	103	70 - 130
1,1,2-TRICHLOROETHANE	20.0	94	70 - 130
TRICHLOROETHENE	20.0	113	70 - 130
1,2,4-TRIMETHYLBENZENE	20.0	NA	70 - 130
VINYL CHLORIDE	20.0	105	70 - 130
O-XYLENE	20.0	102	70 - 130
M+P-XYLENE	40.0	106	70 - 130

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/10/04

Project Reference:
Client Sample ID : METHOD BLANK

Date Sampled : **Order #:** 780668 **Sample Matrix:** AIR
Date Received: **Submission #:** **Analytical Run** 111233

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 11/19/04			
ANALYTICAL DILUTION: 1.00			
ACETONE	0.84	0.84 U	PPM
BENZENE	0.31	0.31 U	PPM
2-BUTANONE (MEK)	0.68	0.68 U	PPM
CHLOROETHANE	0.38	0.38 U	PPM
CHLOROFORM	0.21	0.21 U	PPM
1,1-DICHLOROETHANE	0.25	0.25 U	PPM
1,2-DICHLOROETHANE	0.25	0.25 U	PPM
1,1-DICHLOROETHENE	0.25	0.25 U	PPM
CIS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
ETHYLBENZENE	0.23	0.23 U	PPM
METHYLENE CHLORIDE	0.29	0.29 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	0.48 U	PPM
TETRACHLOROETHENE	0.16	0.16 U	PPM
TOLUENE	0.27	0.27 U	PPM
,1,1-TRICHLOROETHANE	0.18	0.18 U	PPM
1,1,2-TRICHLOROETHANE	0.18	0.18 U	PPM
TRICHLOROETHENE	0.19	0.19 U	PPM
1,2,4-TRIMETHYLBENZENE	0.20	0.20 U	PPM
VINYL CHLORIDE	0.39	0.39 U	PPM
O-XYLENE	0.23	0.23 U	PPM
M+P-XYLENE	0.23	0.23 U	PPM

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/10/04

Project Reference:
Client Sample ID : METHOD BLANK

Date Sampled : **Order #:** 780670 **Sample Matrix:** AIR
Date Received: **Submission #:** **Analytical Run** 111233

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 11/22/04			
ANALYTICAL DILUTION: 1.00			
ACETONE	0.84	0.84 U	PPM
BENZENE	0.31	0.31 U	PPM
2-BUTANONE (MEK)	0.68	0.68 U	PPM
CHLOROETHANE	0.38	0.38 U	PPM
CHLOROFORM	0.21	0.21 U	PPM
1,1-DICHLOROETHANE	0.25	0.25 U	PPM
1,2-DICHLOROETHANE	0.25	0.25 U	PPM
1,1-DICHLOROETHENE	0.25	0.25 U	PPM
CIS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
ETHYLBENZENE	0.23	0.23 U	PPM
METHYLENE CHLORIDE	0.29	0.29 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	0.48 U	PPM
TETRACHLOROETHENE	0.16	0.16 U	PPM
TOLUENE	0.27	0.27 U	PPM
1,1,1-TRICHLOROETHANE	0.18	0.18 U	PPM
1,1,2-TRICHLOROETHANE	0.18	0.18 U	PPM
TRICHLOROETHENE	0.19	0.19 U	PPM
1,2,4-TRIMETHYLBENZENE	0.20	0.20 U	PPM
VINYL CHLORIDE	0.39	0.39 U	PPM
O-XYLENE	0.23	0.23 U	PPM
M+P-XYLENE	0.23	0.23 U	PPM

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/10/04

Project Reference:
Client Sample ID : METHOD BLANK

Date Sampled :
Order #: 780673
Sample Matrix: AIR
Date Received:
Submission #:
Analytical Run 111233

DATE ANALYZED : 11/23/04
ANALYTICAL DILUTION: 1.00

ANALYTE	PQL	RESULT	UNITS
ACETONE	0.84	0.84 U	PPM
BENZENE	0.31	0.31 U	PPM
2-BUTANONE (MEK)	0.68	0.68 U	PPM
CHLOROETHANE	0.38	0.38 U	PPM
CHLOROFORM	0.21	0.21 U	PPM
1,1-DICHLOROETHANE	0.25	0.25 U	PPM
1,2-DICHLOROETHANE	0.25	0.25 U	PPM
1,1-DICHLOROETHENE	0.25	0.25 U	PPM
CIS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
ETHYLBENZENE	0.23	0.23 U	PPM
METHYLENE CHLORIDE	0.29	0.29 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	0.48 U	PPM
TETRACHLOROETHENE	0.16	0.16 U	PPM
TOLUENE	0.27	0.27 U	PPM
1,1,1-TRICHLOROETHANE	0.18	0.18 U	PPM
1,1,2-TRICHLOROETHANE	0.18	0.18 U	PPM
TRICHLOROETHENE	0.19	0.19 U	PPM
1,2,4-TRIMETHYLBENZENE	0.20	0.20 U	PPM
VINYL CHLORIDE	0.39	0.39 U	PPM
O-XYLENE	0.23	0.23 U	PPM
M+P-XYLENE	0.23	0.23 U	PPM

VOLATILE ORGANICS
METHOD 8260B
Reported: 12/09/04

Project Reference:
Client Sample ID : METHOD BLANK

Date Sampled : Order #: 781458 Sample Matrix: AIR
Date Received: Submission #: Analytical Run 111233

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/08/04			
ANALYTICAL DILUTION: 1.00			
ACETONE	0.84	0.84 U	PPM
BENZENE	0.31	0.31 U	PPM
2-BUTANONE (MEK)	0.68	0.68 U	PPM
CHLOROETHANE	0.38	0.38 U	PPM
CHLOROFORM	0.21	0.21 U	PPM
1,1-DICHLOROETHANE	0.25	0.25 U	PPM
1,2-DICHLOROETHANE	0.25	0.25 U	PPM
1,1-DICHLOROETHENE	0.25	0.25 U	PPM
CIS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
TRANS-1,2-DICHLOROETHENE	0.25	0.25 U	PPM
ETHYLBENZENE	0.23	0.23 U	PPM
METHYLENE CHLORIDE	0.29	0.29 U	PPM
4-METHYL-2-PENTANONE (MIBK)	0.48	0.48 U	PPM
TETRACHLOROETHENE	0.16	0.16 U	PPM
TOLUENE	0.27	0.27 U	PPM
1,1,1-TRICHLOROETHANE	0.18	0.18 U	PPM
1,1,2-TRICHLOROETHANE	0.18	0.18 U	PPM
TRICHLOROETHENE	0.19	0.19 U	PPM
1,2,4-TRIMETHYLBENZENE	0.20	0.20 U	PPM
VINYL CHLORIDE	0.39	0.39 U	PPM
O-XYLENE	0.23	0.23 U	PPM
M+P-XYLENE	0.23	0.23 U	PPM

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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

PAGE 1 OF 1

SR #

CAS Contact

Project Name: Greif Bros
Project Number: 0021621
Project Manager: Jon Fox
Report CC:
Company/Address: ERM - Northeast
5788 Widewaters Parkway
Dewitt Ny 13214
Phone # 315-445-2554
FAX# 315-445-2543
Sampler's Signature:
Sampler's Printed Name:

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOA's ☒ 8260 ☐ 624 ☐ CLP	GC/MS SVOA's ☐ 8270 ☐ 625 ☐ CLP	GC VOA's ☐ 8021 ☐ 601/602	PESTICIDES ☐ 8081 ☐ 608 ☐ CLP	PCB's ☐ 8082 ☐ 608 ☐ CLP	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
PRESERVATIVE													
VIC-1-1625		11-16-04	1625	Air	1	X							See List Attached
VEC-1-1625		↓	1625	↓	1	X							Contact Jon Fox
VIC-1-2235			2233		1	X							With any
VEC-1-2235			2235		1	X							Questions

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other ______

SPECIAL INSTRUCTIONS/COMMENTS
Metals

See List Attached

See QAPP ☐

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
____ 24 hr ____ 48 hr ____ 5 day
X STANDARD
REQUESTED FAX DATE
REQUESTED REPORT DATE

REPORT REQUIREMENTS
X I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
____ V. Specialized Forms / Custom Report
Edata X Yes ____ No

INVOICE INFORMATION
PO# 0021621
BILL TO: ERM
R2423922
SUBMISSION #:

SAMPLE RECEIPT: CONDITION/COOLER TEMP: ________ CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name Robert Santis	Printed Name Heather Livezy	Printed Name	Printed Name	Printed Name	Printed Name
Firm ERM	Firm CAS	Firm	Firm	Firm	Firm
Date/Time 17 Nov 04 1215	Date/Time 11/17/04 1215	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Lab Copy; Pink - Retained by Client

SCOC-1102-08

Cooler Receipt And Preservation Check Form

Project/Client ERM Submission Number R2-23922.

Cooler received on 11/17/04 by **COURIER:** CAS UPS FEDEX CD&L [✓ CLIENT]

1. Were custody seals on outside of cooler? YES [✓ NO]
2. Were custody papers properly filled out (ink, signed, etc.)? [✓ YES] NO
3. Did all bottles arrive in good condition (unbroken)? [✓ YES] NO
4. Did any VOA vials have significant air bubbles? YES NO [✓ N/A]
5. Were **Ice** or **Ice packs** present? YES [✓ NO]
6. Where did the bottles originate? [✓ CAS/ROC] CLIENT
7. Temperature of cooler(s) upon receipt: 21 ______ ______ ______ ______

Is the temperature within 0° - 6° C?: Yes Yes Yes Yes Yes

If No, Explain Below [✓ No] No No No No

Date/Time Temperatures Taken: 11/17/04 1215

Thermometer ID: 161 or [✓ IR GUN] Reading From: Temp Blank or [✓ Sample Bottle]

If out of Temperature, Client Approval to Run Samples Air bags

Cooler Breakdown: Date : 11/17/04 by:

1. Were all bottle labels complete (*i.e.* analysis,.preservation, etc.)? [✓ YES] NO
2. Did all bottle labels and tags agree with custody papers? [✓ YES] NO
3. Were correct containers used for the tests indicated? [✓ YES] NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized [✓ Tedlar® Bags Inflated] N/A

Explain any discrepancies: ______

		YES	NO	Sample I.D.	Reagent	Vol. Added
pH	Reagent					
12	NaOH					
2	HNO_3					
2	H_2SO_4					
Residual Chlorine (+/-)	for TCN & Phenol					
5-9**	P/PCBs (608 only)					

YES = All samples OK NO = Samples were preserved at lab as listed PC OK to adjust pH______

**If pH adjustment is required, use NaOH and/or H_2SO_4

VOC Vial pH Verification (Tested after Analysis) Following Samples Exhibited pH > 2				

Other Comments:

Appendix H
Catalog Cuts for Major Components – Proposed DNAPL Recovery System

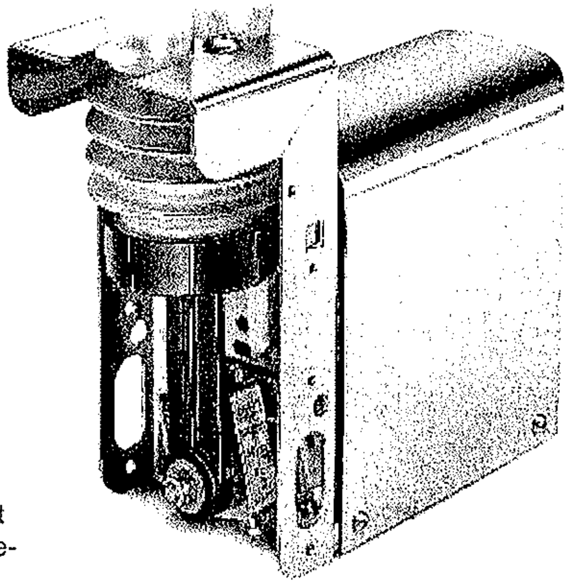
Bellows Metering *Pumps*

Bellows metering pumps operate on a positive displacement principle. Pumps are designed to displace both corrosive and noncorrosive fluids. Accurate to ± 0.5% from stroke to stroke, when pump is set 50% to 100% of full stroke. Discharge pressure is maintained over the entire flow range of the pump. Poppet valves are utilized to prevent backflow; and springs are available to provide a positive shutoff, preventing siphoning through the pump in applications where a positive suction head exists.

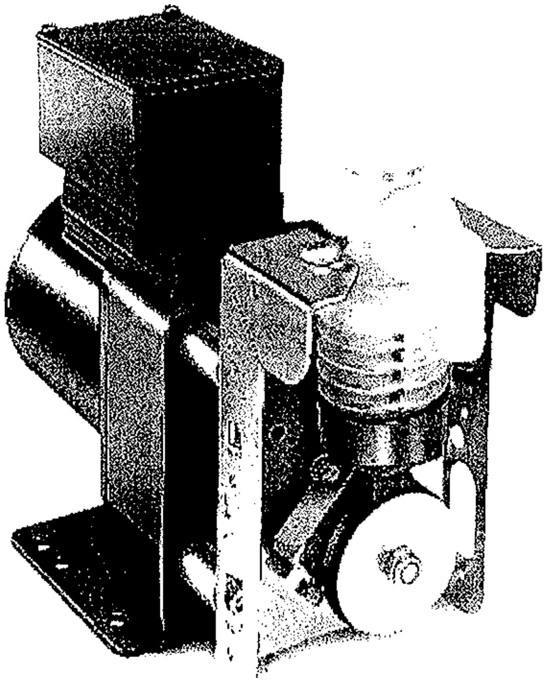
Typical applications include film and x-ray processors, silver recovery systems, wafer and silicon chip washers and processors, detergent dispensers, blood analyzing equipment, industrial floor scrubbers, thermo therapy equipment, waste removal systems, and wastewater and water treatment systems.

Features:

- Repeatability from stroke-to-stroke to ± 0.5%
- Dry run capability
- Self-priming
- No dynamic seals
- Corrosion resistant
- Long, maintenance-free operation



2½" STANDARD MODEL



1½" HEAVY-DUTY MODEL

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Bellows Metering Pump Operation:

The Bellows Metering Pumps operate on a positive displacement principle. The rotation of the motor shaft is transmitted into an up and down motion through a lever pivot crank mechanism. This motion provides a continuous squeezing and relaxing force on a bellows module, forcing fluid in and out of the module. Discharge pressure is maintained over the entire flow range of the pump.

Optimum Operating Conditions:

Optimum operating conditions consists of a 6" minimum suction lift and a discharge head of not less than 6". Pumps must be mounted vertically with the valve body at the top to obtain maximum metering accuracy.

Flow Rate and Discharge Pressure:

The flow rate of each bellows module is regulated by three factors:

1. *Diameter of the bellows,*
2. *Speed of the gearmotor, and*
3. *Adjustment of the module stroke length.*

Bellows are available in four different diameters.

The full stroke displacement and discharge pressure of the pump is dependent on the size of the bellows as shown below:

Size	½"	1"	1½"	2½" STD	2½" BOJ
Full Stroke Displacement in ml	.5	5	10.5	55	27.5
Maximum Discharge Pressure (psi)	50	40	20	5	5

BOJ - BEL O JUST® STD - Standard

Flow Adjustment:

The flow rate of all bellows pumps can be adjusted by modifying the length of the discharge stroke. Adjustments can be made down to 10% of full stroke on all models except ½" models which are limited to 20% of full stroke. Two styles of adjustment mechanisms are available.

Note: Best priming and metering accuracy occurs when the stroke length is 50% or greater.

Standard Crank — Adjustment cannot be made while pump is operating. An adjusting screw changes the stroke length of an eccentric crank.

BEL O JUST® — Can be adjusted while the pump is operating. A knob regulates drive arm motion which modifies the stroke length of the bellows module.

Pump Specifications:

Flow Rates — Range from 3.9 ml/min to 3000 ml/min, depending on pump configuration, gearmotor speed and stroke length.

Discharge Pressures — Range from 5 to 50 psi depending on bellows size.

Fluid Temperature — To 140°F (60°C)

Note: Reduce pressure rating by 50% for fluid temperatures over 120°F (49°C).

Viscosity/Slurries — Maximum fluid viscosity is 5,000 centistokes. Poppet valves can handle fine slurries. Duckbill valves are recommended for heavy slurries or fibrous materials. **Heavy slurries should be flushed from the pump before shutdown.**

MAXIMUM DRY AND WET PRIMING SPECIFICATIONS

Feet (Meters)

Bellows Size	Dry Prime 50% of Full Stroke	Dry Prime 100% of Full Stroke	Wet Prime 50% of Full Stroke	Wet Prime 100% of Full Stroke
½"	2.50 (.76)	8.67 (2.64)	5.83 (1.78)	17.17 (5.23)
1"	3.08 (.94)	8.33 (2.54)	6.25 (1.91)	14.25 (4.34)
1½"	4.33 (1.32)	11.00 (3.35)	9.58 (2.92)	20.58 (6.27)
2½"	9.17 (2.80)	18.50 (5.64)	15.25 (4.65)	27.58 (8.41)

Gearmotors:

Catalog gearmotors are available in 115V, 50/60 Hz or 240V, 50/60 Hz. Standard motor speeds are 39, 60, 90 and 165 RPM at 60 Hz. Motors are UL listed and continuous duty rated with a minimum life expectancy of 2000 hours. Perpetual running of motor is not recommended. If a non-stop application is encountered, the Gorman-Rupp Industries Heavy-Duty Bellows Metering Pump is recommended.

Materials in Contact with Solution:

Connectors —	Polypropylene
O-Rings (Elastomers) —	EPT/EPDM, Hypalon®, or Viton®/Fluoroelastomer
Poppet/Duckbill Valves —	EPT/EPDM, Hypalon®, or Viton®/Fluoroelastomer
Bellows —	Standard Polypropylene Materials

Additional materials available, refer to OEM Section.

Pump Selection:

Select a bellows size that meets your pressure requirements. Select a model with the bellows size that provides your required flow while operating closest to full stroke capacity. Best metering accuracy occurs when bellows modules operate at 50% or more of maximum output. For 24 hour continuous duty service, use one of the heavy-duty models.

Select a valve and O-ring combination and tubing connectors for each bellows from the selection charts at the end of this section. Specify duckbill valves if heavy slurries or fibrous materials are being pumped. Refer to the Chemical Resistance Section to help determine compatibility.

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BELLVILLE, OHIO 44813
DIVISION OF THE GORMAN-RUPP COMPANY
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grisales@gripumps.com • www.gripumps.com

SERVICE DATA SHEET

STANDARD BELLOWS METERING PUMP

DESCRIPTION

The bellows pump size is the actual outside diameter of the bellows. The pump operates on an adjustable stroke, positive displacement principle. Output is adjusted by changing the stroke. The pump is driven by a thermally protected gearmotor which is attached to an adjustable eccentric hub. The bellows, pump body, tubing connectors and valve seats are made of polypropylene (PPR).

Exposure of the motor to extremely dusty or corrosive environment may reduce life.

PRIMING

The pump is self-priming under most conditions: however, the priming ability lessens with greater suction lift, higher discharge head, or with reduced stroke. For dry start up on pumps with anti-siphon spring adjusted at low stroke, pump may not prime. Remove anti-siphon spring, prime pump and replace spring.

After the pump has been primed and is full of liquid, subsequent repriming ability will be improved.

FLOW ADJUSTMENT

Flow rate is modified with the adjustable screw on crank assembly. Loosen lock screw on crank assembly and rotate adjusting screw clockwise to increase flow and counterclockwise to decrease flow. Retighten lock screw when desired flow rate is achieved (10 in.-lbs. max.). Do not turn or loosen lock nut on adjusting screw.

Do not reduce output flow by restricting suction or discharge as this will cause excessive pressure within the pump.

PRESSURE

The bellows pump has the ability to discharge into a pressurized system; however, if system or discharge pressure exceeds maximum psi rating of bellows, it may cause damage to the bellows or gearbox.

Maximum PSI Rating:
½" modules pump – 50 psi
¾" modules pump – 5 psi
1" modules pump – 40 psi
1½" modules pump – 20 psi
2" modules pump – 5 psi
2½" modules pump – 5 psi

NOTE: Pumps are designed for use with liquid up to 120°F (49°C) at catalog rated pressure. Reduce the maximum psi rating by 50% for temperatures over 120°F. Not applicable in liquids over 140°F.

VISCOSITY

The pump has been designed to handle a wide range of liquid viscosities. It should be noted, however, that when pumping thicker liquids it may be necessary to increase the size of connectors and tubing to relieve the pressure buildup within the pump assembly. It is good practice when pumping the heavier liquids to keep the liquid velocity (pump speed) as low as possible.

When pumping heavy suspensions which may tend to settle out, extremely corrosive solutions or any liquid which may tend to become more viscous with time, flush pump after use to increase pump life.

CHEMICAL SERVICE

The bellows pump will handle many different kinds of liquids. For specific chemical service, refer to our Standard Pump Catalog, form no. 86230.

Special bellows materials (sodium hypochlorite resistant and acid resistant) are available. Sodium hypochlorite resistant bellows are available in ½", ¾", 1", 1½", 2" and 2½" sizes. Pumps using sodium hypochlorite resistant bellows should have pressure ratings shown in the paragraph under pressure heading reduced by 50%. Acid resistant bellows are available in 1" and 1½" sizes only, and standard pressures apply.

TEMPERATURE

Pumps are designed to operate in 80°F (27°C) ambient temperature. For higher ambient

---

TROUBLESHOOTING GUIDE

The troubleshooting guide is a suggestion or aid in helping solve problems that might arise.

NOTE: Never work on pump without making certain power is off.

PUMP LEAKS

1. Bellows loose – Turn adjusting screw to full stroke, then rotate crank assembly to maximum bellows compression. Tighten plastic nut on crank assembly to 14 in.-lbs. maximum. CAUTION: Overtightening will distort bellows and cause leaks.
2. Connectors loose – Tighten to 5½ to 6½ in.-lbs. torque (finger tight).
3. O-ring defective or missing – See illustration.

MOTOR WILL NOT RUN

1. Cord, plug or switch defective.
2. Wires pulled loose.
3. Motor overtemperature thermostat open, motor overheating or poor ventilation.

UNIT WILL NOT PRIME

1. Pump leaks on suction side (see "Pump Leaks" section).
2. Bellows ruptured.
3. O-ring defective or missing – See illustration.
4. Valves inverted or reversed.
5. Pump air-locked – Temporarily bleed off discharge pressure.
6. Stroke too short – Adjust screw to increase stroke.
7. Viscosity too high.
8. Anti-siphon spring with pump adjusted at low stroke.

PUMP NOISY

1. Fan hitting.
2. Gearmotor worn out.

ERRATIC OR LOW FLOW

1. Valves dirty – Dirt or foreign material in valves.
2. Crank set screw broken.
3. Valves not seating.
4. Connectors loose.

UNIT WILL NOT PUMP

1. Bellows ruptured.
2. Crank broken.
3. Crank set screw broken.
4. Valves dirty – Dirt or foreign material in valves.
5. Valves may have deteriorated.

WARRANTY

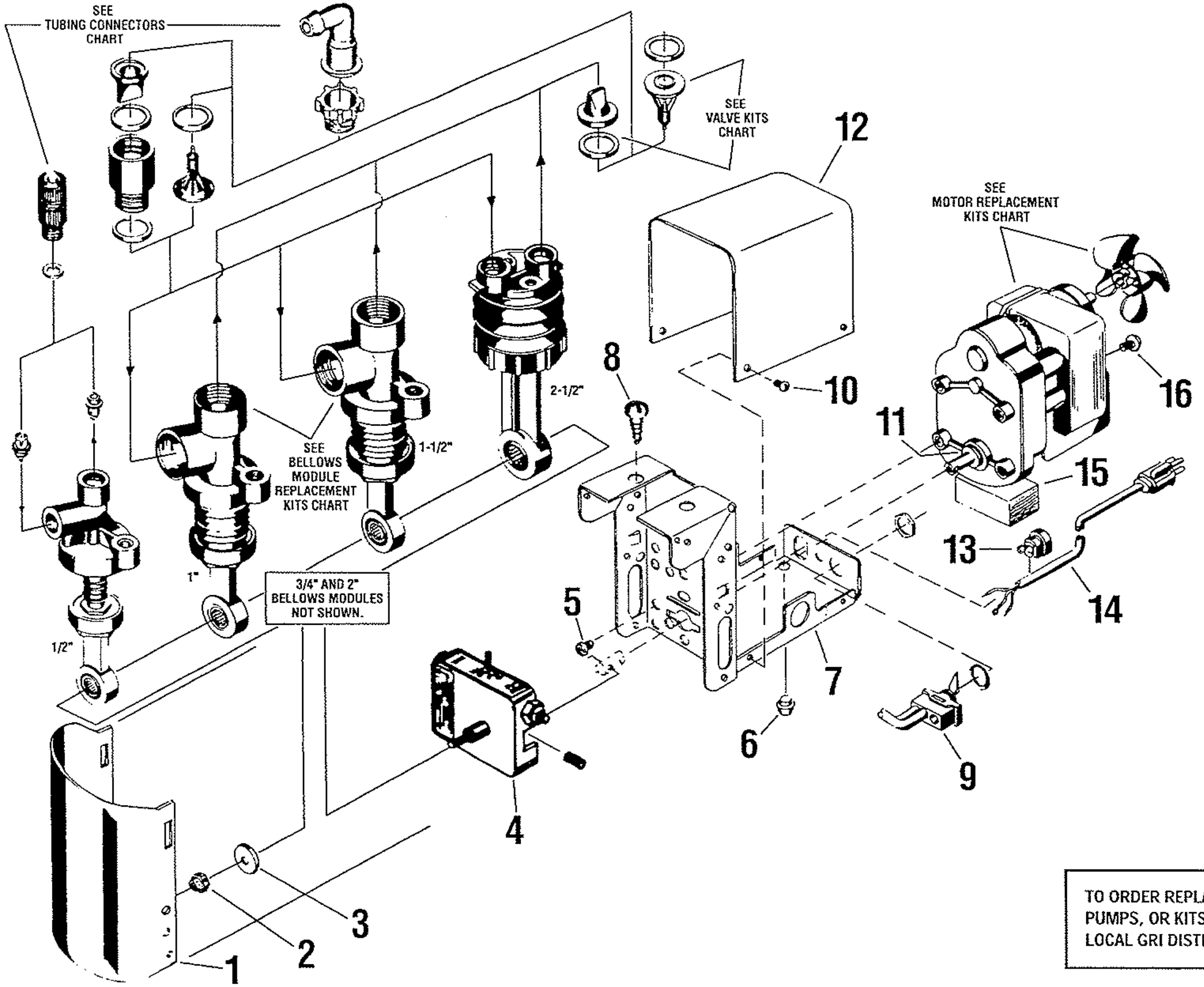
Gorman-Rupp Industries warrants to Buyer that products sold by it will upon shipment conform to the description on the face hereof and any written specifications expressly approved by Seller and be free from defects in title, material and workmanship. NO OTHER WARRANTY, WHETHER EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL EXIST IN CONNECTION WITH ANY PRODUCTS SOLD BY SELLER, AND ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY EXCLUDED.

WARNING

DANGER:
Improper application, installation, adjusting, or servicing can result in serious injury or death. Always disconnect power source before working on these products.

Caution:
Products with electric motors must be properly grounded and may start automatically at any time. For product information, consult Gorman-Rupp Industries, Bellville, Ohio 44813, Phone (419) 886-3001.

EXPLODED VIEW – STANDARD BELLOWS METERING PUMP



TO ORDER REPLACEMENT PUMPS, OR KITS, CALL YOUR LOCAL GRI DISTRIBUTOR.

PARTS LIST

ITEM	REQ.	DESCRIPTION	ORDERING INFORMATION
1	1	Splash Shield	See note below
2	1	10-32 Lock Nut	Included in Crank Assembly Replacement Kit - See Chart
3	1	Flat Washer	Included in Crank Assembly Replacement Kit - See Chart
4	1	Crank Assembly	Included in Crank Assembly Replacement Kit - See Chart
5	4	8-32 Motor Mounting Screw	Included in Motor Replacement Kit - See Chart
6	4	Bumper	See note below
7	1	Mounting Bracket	See note below
8	2	¼-14 Screw	Included in Bellows Module Replacement Kit - See Chart
9	1	Switch	See note below
10	4	6-32 Screw	See note below
11	1	Washer Slinger	See note below
12	1	Cover	See note below
13	1	Strain Relief	See note below
14	1	Cord & Plug 115V (240V w/o Plug)	See note below
15	1	Felt Pad	Included in Motor Replacement Kit - See Chart
16	1	8-32 Ground Screw	Included in Motor Replacement Kit - See Chart

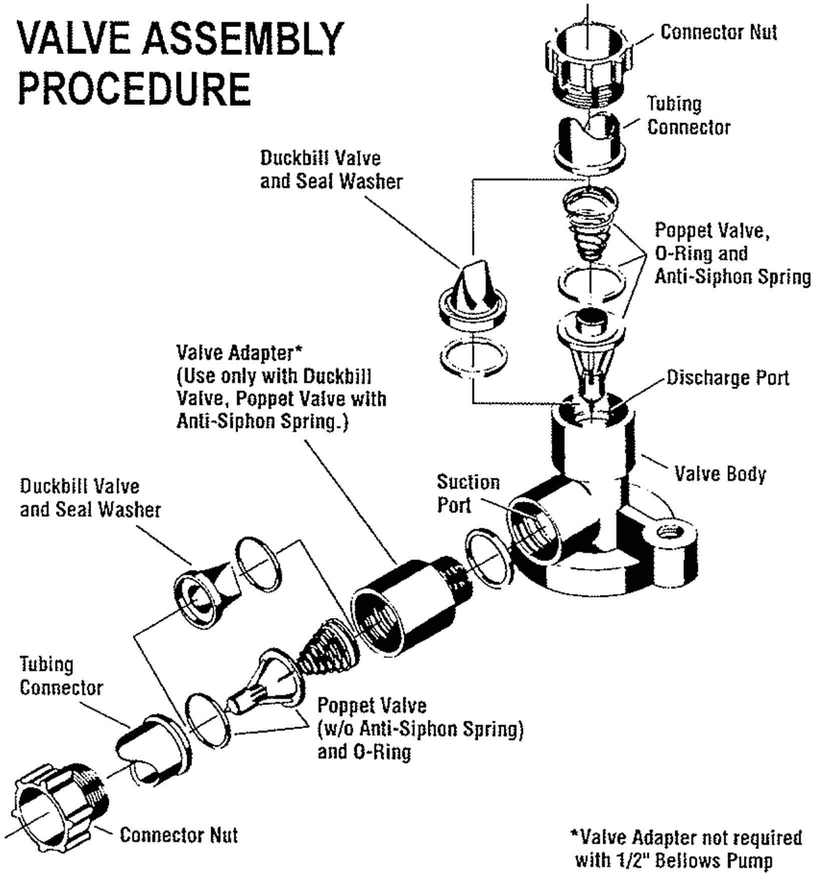
NOTE: Parts not available unless stocked by GRI Distributor or purchased in OEM quantities.

MOTOR REPLACEMENT KITS

115 VOLT		240 VOLT	
MOTOR	KIT NUMBER	MOTOR	KIT NUMBER
39 RPM	02500-996	39 RPM	02501-003
60 RPM	02500-995	60 RPM	02501-004
90 RPM	02500-999	90 RPM	02501-005
165 RPM	02501-000	165 RPM	02501-006

Kit includes Motor, Fan, Felt Pad, Ground Screw and Mounting Screws.

VALVE ASSEMBLY PROCEDURE



*Valve Adapter not required with 1/2" Bellows Pump

BELLOWS MODULE REPLACEMENT KITS

BELLOWS SIZE	HYPALON®	EPT	VITON®/ FLUOROELASTOMER
1/2"	02500-313	02500-315	02500-314
3/4"	02501-429	02501-426	02501-430
1"	02500-262	02500-274	02500-385
1-1/2"	02500-263	02500-279	02500-379
2"	02501-437	02501-434	02501-438
2-1/2"	02500-237	02500-284	02500-373

NOTE: Kit includes Connecting Rod Assembly, Bellows Module, Displacement Cup, Screws and O-Rings.

CRANK ASSEMBLY REPLACEMENT KITS

BELLOWS SIZE	KIT NUMBER
1/2"	02500-851
3/4"	02501-586
1", 1-1/2", 2"	02500-852
2-1/2"	02500-853

Kit includes 10-32 Lock Nut, Flat Washer and Crank Assembly.

TUBING CONNECTORS (2 PER KIT) – POLYPROPYLENE

				
BELLOWS SIZE	1/8" ID x 1/4" OD COMPRESSION (SMALL)	1/4" ID x 3/8" OD COMPRESSION (LARGE)	3/8" ID ELBOW	1/2" ID ELBOW
1/2"	T-001 (02500-312)			
3/4", 1", 1-1/2"		T-007 (02500-260)	T-008 (02500-261)	T-009 (02500-354)
2", 2-1/2"			T-008 (02500-261)	T-009 (02500-354)

NOTE: "T" codes are used for identification purposes only, to show tubing connectors used in pump. Use "T" code on label as a guide. Use 8-digit kit number beside corresponding "T" code when ordering replacement tubing connector kit.

Example: If T-008 is on pump label, order kit number 02500-261.

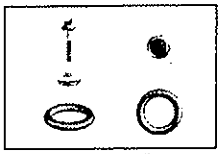
Kit includes (2) Connectors and (2) Connector Nuts.

POPPET AND DUCKBILL VALVE KITS

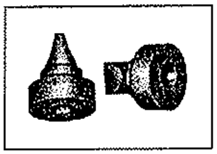
POPPET VALVE KITS			
BELLOWS SIZE	HYPALON®	EPT	VITON®/ FLUOROELASTOMER
1/2"	X-005 (02500-316)	X-002 (02500-318)	X-006 (02500-317)
3/4", 1", 1-1/2"	X-115 (02500-608)	X-112 (02500-605)	X-116 (02500-609)
2"	X-145 (02500-608)	X-142 (02500-605)	X-146 (02500-609)
2-1/2"	X-125 (02500-608)	X-122 (02500-605)	X-126 (02500-609)

DUCKBILL VALVE KITS			
BELLOWS SIZE	HYPALON®	EPT	VITON®/ FLUOROELASTOMER
1/2"	X-095 (02500-600)	X-092 (02500-597)	X-096 (02500-601)
3/4", 1", 1-1/2"	X-035 (02500-325)	X-032 (02500-322)	X-036 (02500-319)
2"	X-155 (02500-325)	X-152 (02500-322)	X-156 (02500-319)
2-1/2"	X-045 (02500-325)	X-042 (02500-322)	X-046 (02500-319)

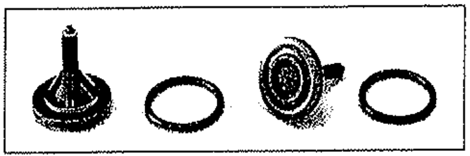
NOTE: "X" codes are used for identification purposes only, to show elastomer in pump. Use "X" codes on pump label as a guide. Use 8-digit kit number beside corresponding "X" code when ordering replacement valve kit.
Example: If X-005 is on pump label, order kit number 02500-316.



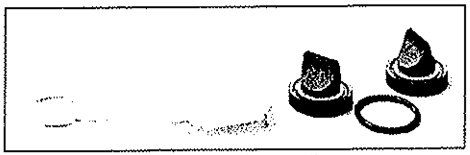
1/2" Poppet Valve Kit



1/2" Duckbill Valve Kit



3/4", 1", 1-1/2", 2" & 2-1/2" Poppet Valve Kit



3/4", 1", 1-1/2", 2" & 2-1/2" Duckbill Valve Kit

Registered Trademark Names

VITON®	DuPont Dow Elastomers
HYPALON®	DuPont Dow Elastomers

ISO 9001 REGISTERED COMPANY GORMAN-RUPP INDUSTRIES

GORMAN-RUPP™ INDUSTRIES
BELLVILLE, OHIO 44813
DIVISION OF THE GORMAN-RUPP COMPANY
Phone (419) 886-3001 • FAX (419) 886-2338
grisales@gripumps.com • www.gripumps.com

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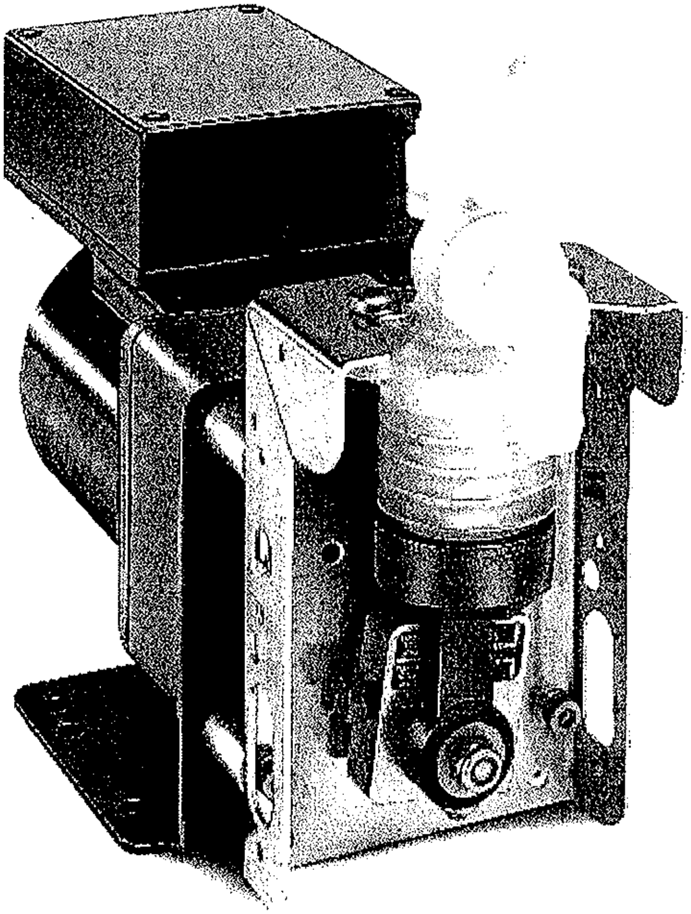
Dial-A-Flow® Pumps

The Dial-A-Flow® pump is supplied with an adjustable speed motor. Infinite speed adjustments can be made from 3 to 60 RPM. Speed control and adjustment of stroke length can be utilized to obtain desired flow rate. The Dial-A-Flow® pump uses a standard crank mechanism.



1½" DIAL-A- FLOW® MODEL

MODEL SPECIFICATIONS

Single Model Number		Bellows	Discharge Strokes per minute (Motor RPM)		Maximum Flow ml per minute		Gallons (Liters) per hour		Max. Pressure	Electrical Amps*	Approx. Wt.
115V/60 Hz	220V/50 Hz	Diameter Inches	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	PSI (kg/cm^2)	115V 60 Hz	lbs.
15950-001	N/A	1½	50	60	525	630	8.3 (31.5)	10 (37.8)	20 (1.5)	.85	6

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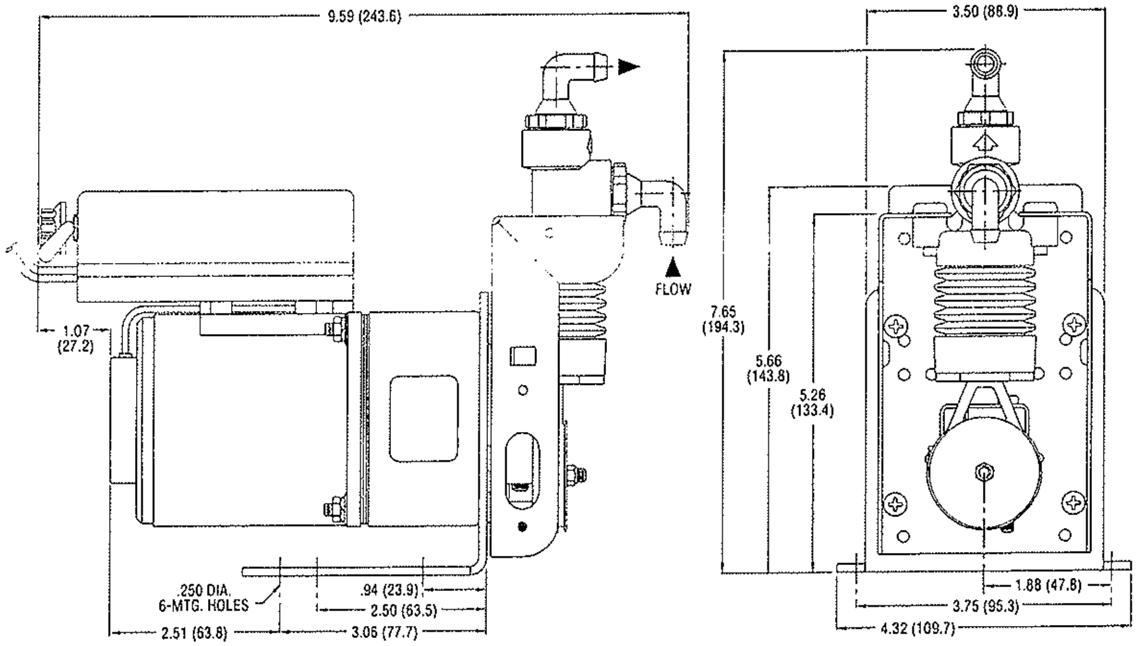
DIAL-A-FLOW® BELLOWS – TYPICAL DIMENSIONS

1½" Model



Dimensions in Inches
(Dimensions in Millimeters)

Order Notes: When ordering a Dial-A-Flow® model, add one "X" code for valve and O-ring material selection and one "T" code for connector selection from the Bellows Part Selection Guide.

Example: *15950-001 (1½" bellows model) with Hypalon® poppet valves and O-rings and elbow connectors for ½" I.D. tubing would be ordered as 15950-001 X-115 T-009.*

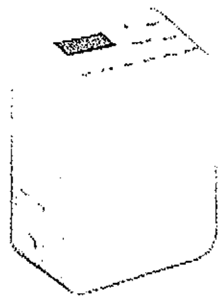
Digital programmable plug in timer

Digital programmable timers

Site Last Updated March 4, 2005

Home
Healthy ions
Ion Generator
Room Purifier
Closet Purifier
Superionizer
Mini Heat ion
Duct ionizer
Humidity Control
House Purifier
HEPA System 1
HEPA System 2
Silent Purifier
Español

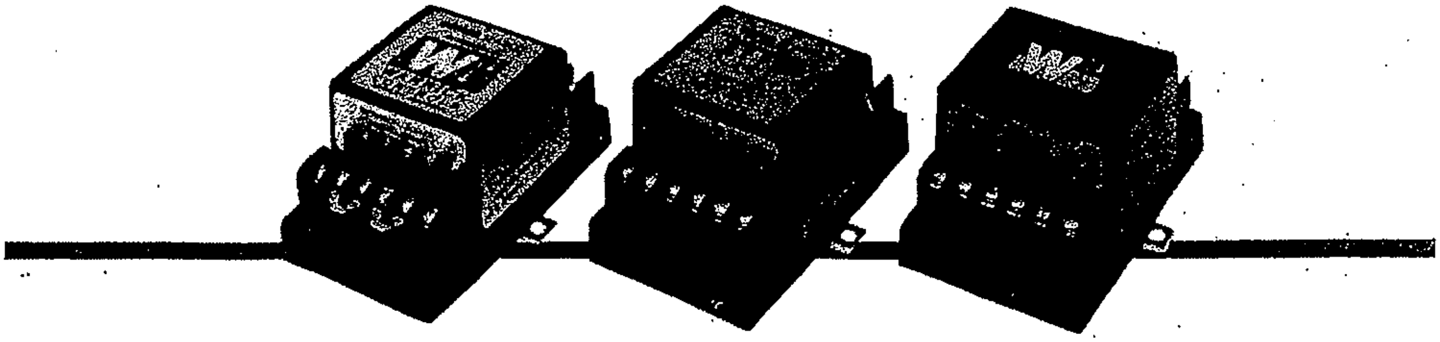
Shopping Cart



7 Day Heavy-Duty Grounded Programmable Digital Timer DT17C

- Controls lighting including fluorescent and heavy duty loads such as fans and appliances.
- Ratings: **15 Amp Resistive and Inductive, 500 Watts Tungsten, 1/3 H.P. 120 V.A.C**
- Manual override feature.
- 3-prong grounded plug and receptacle.
- Up to 14 ON / 14 OFF settings per 7-day period accurate to the exact minute - a total of 98 ON / 98 OFF settings per week.
  Can be used with four separate programming options:
  - Same settings Monday - Friday
  - Saturday and Sunday
  - All 7 days of the week
  - Individual daily settings
- Easy to set 6 button programming.
- LCD digital clock and readout.
- To-the-minute accuracy.
- Easy-to-set hand-held programming with battery backup.
- Random setting option avoids predictable "timer-controlled" look.

	930658 D17C Programmable Timer plug-in	**$59.99**	1	ADD



Series 17 Specifications

Contact Design: (1 Form A, 1 Form B): one normally open (N.O.) and one normally closed (N.C.).

Contact Ratings: 8 amperes resistive load at 250 volts A.C. and 5 amperes at 30 volts D.C.

Contact Life: Electrical at rated load = 100,000 cycles min. Mechanical = 10,000,000 cycles min.

Electronics Module: Solid state components epoxy encapsulated in nylon shell.

Primary (A.C. Supply Line):
- (a) Voltage: 24 volt, 120 volt, 240 volt A.C., plus 10% minus 15%
- (b) Frequency: 50/60 Hertz
- (c) Power: Relay-energized, 8 watts

Secondary: Nominal voltage 12 VAC, 3 milliamps. 'H' Option - 12 VDC

Sensitivity: Operates from 0-470,000 ohm maximum specific resistance. Field adjustable.

Temperature: −40 to + 120 degrees F. ambient.

Terminals: Size 6 pan head screws with captivated wire clamping plate.

Approval: Factory Mutual

Series 27, Series 37 Specifications

Contact Design: SPDT (1 Form C): one normally open (N.O.) and one normally closed (N.C.).

Contact Ratings: 8 amperes resistive load at 120 VAC, 250 volts A.C. and at 30 volts D.C.

Contact Life: Electrical at rated load = 100,000 cycles min. Mechanical = 10,000,000 cycles min.

Electronics Module: Solid state components epoxy encapsulated in nylon shell.

Primary (A.C. Supply Line):
- (a) Voltage: 120 volt, 240 volt A.C., plus 10% minus 15%
- (b) Frequency: 50/60 Hertz
- (c) Power: Relay-energized, 2.2 watts

Secondary: Nominal voltage 11.3 VAC, 2.3 milliamps.

Sensitivity: Operates from 0-100,000 ohm maximum specific resistance.

Temperature: −40 to + 150 degrees F. ambient.

Terminals: Size 6 pan head screws with captivated wire clamping plate.

Approval: Series 27—Underwriters Laboratory; Series 37—CSA

Options and how to order.

SERIES 17 X X X X

17 (H) X X X X
- **Enclosure: O** — open (no enclosure); **1** — Nema I enclosure
- **Sensitivity (ohms): C** — 3,300; **D** — 4,700; **E** — 10,000; **F** — 22,000; **G** — 47.000; **H** — 100,000; **J** — 220,000; **K** — 470,000
- **Power Supply: 1** — 120 VAC, 50/60 Hz; **2** — 240 VAC, 50/60 Hz; **3** — 24 VAC, 50/60 Hz
- **Mode of Operation: A** – Direct; **B** — Inverse
- **D.C. on Probes Sensing Circuit** (optional)
- **Control Series**

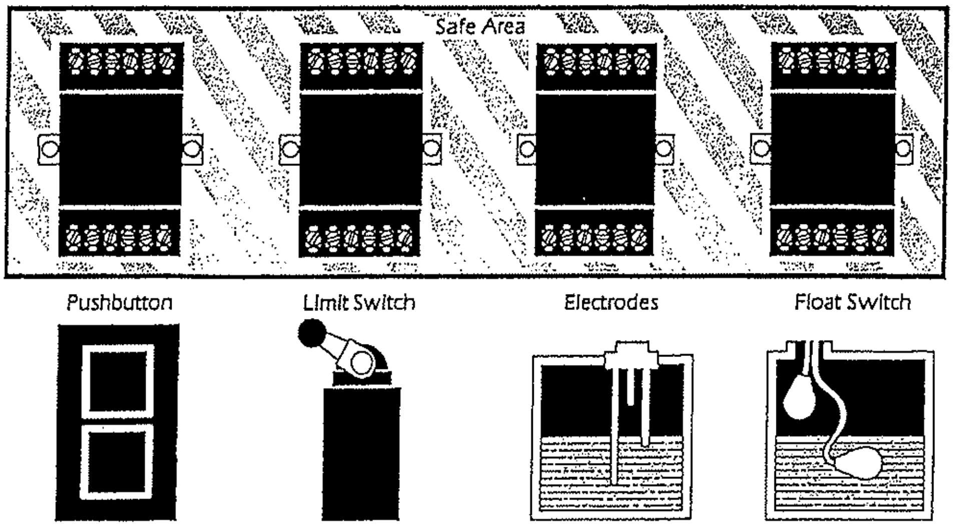
SERIES 27-37 X X X X

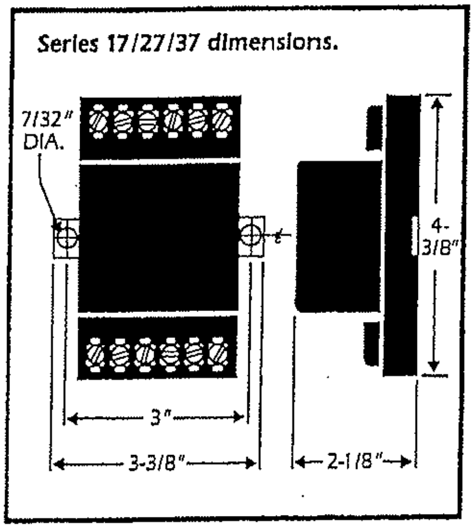
27 X X X X

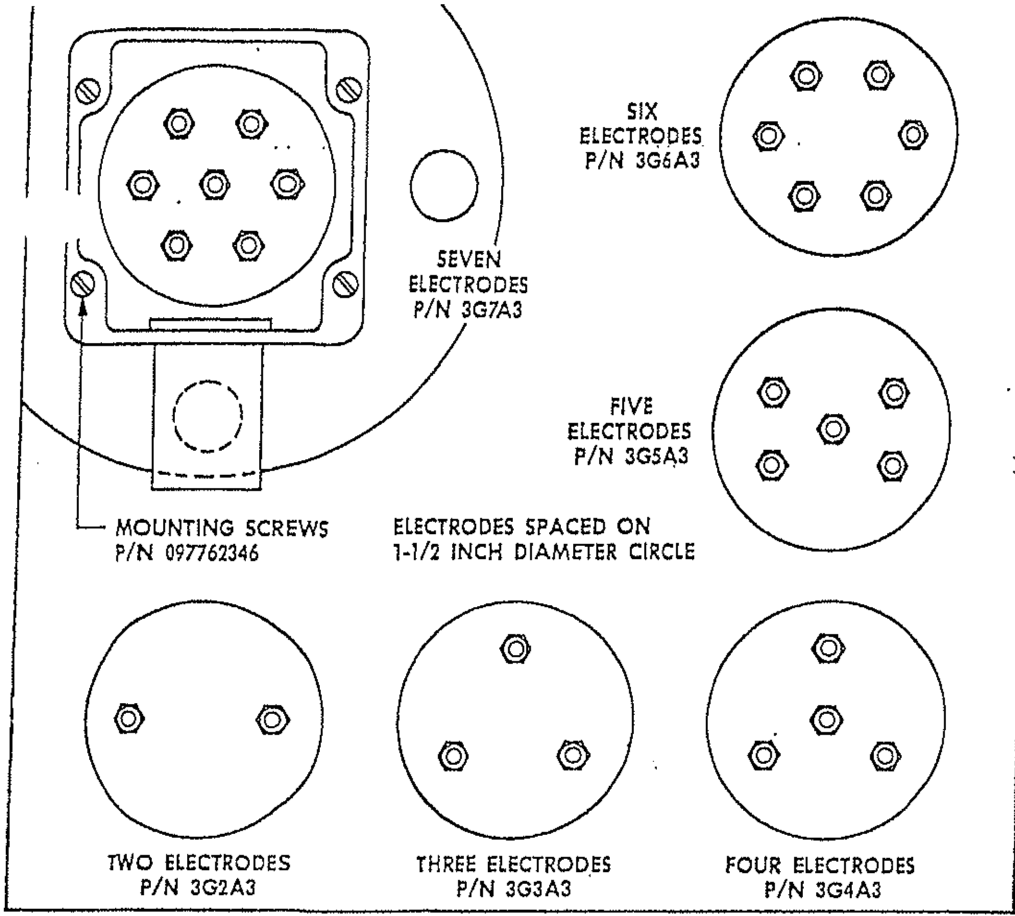
37 X X X X
- **Enclosure: O** — open (no enclosure); **1** — Nema I enclosure
- **Sensitivity (ohms): D** — 3,000; **E** — 10,000; **G** — 100,000; ***H** — 24,000
- **Primary AC Supply: 1** — 120 VAC; **2** — *240 VAC (50/60 Hz)
- **Mode of Operation: A** — Direct; **B** — Inverse
- **Control Series**

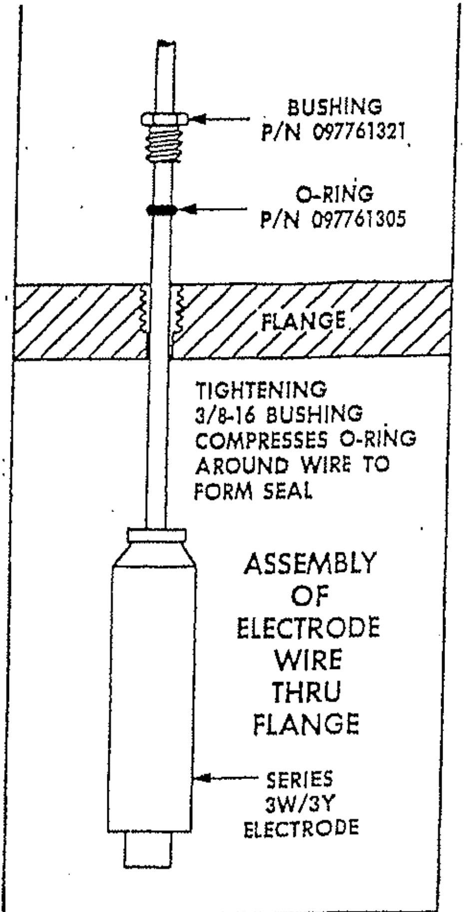
* Not available on Series 37

Series 17/27/37 Instrinsically safe systems. Locating the Series 17/27/37 control in a "safe" area and wiring it through an approved seal into "hazardous" areas provides an intrinsically safe circuit for a variety of applications.




Series 17/27/37 dimensions.

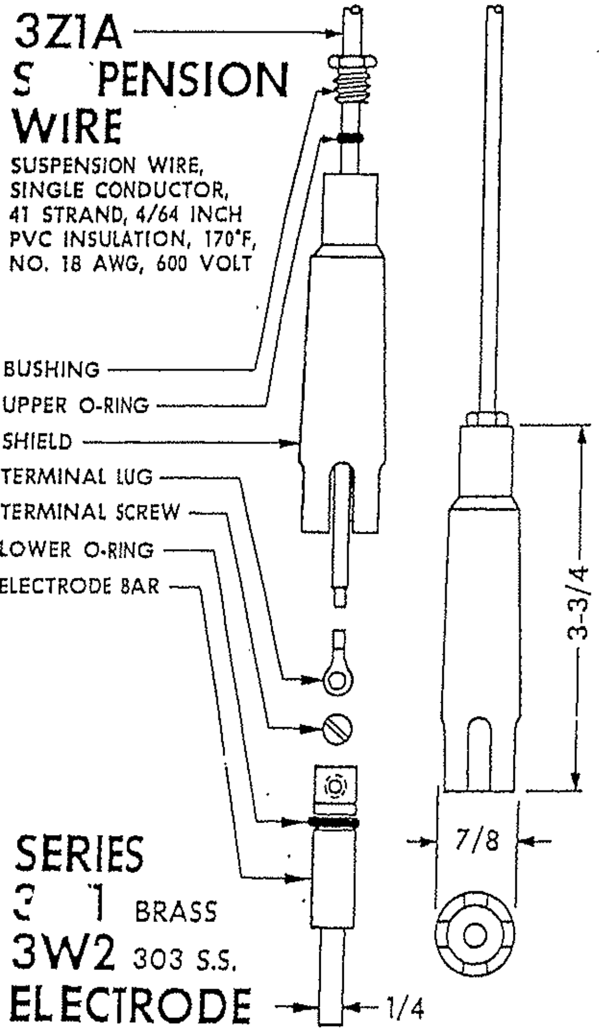




ASSEMBLY OF ELECTRODE WIRE THRU FLANGE

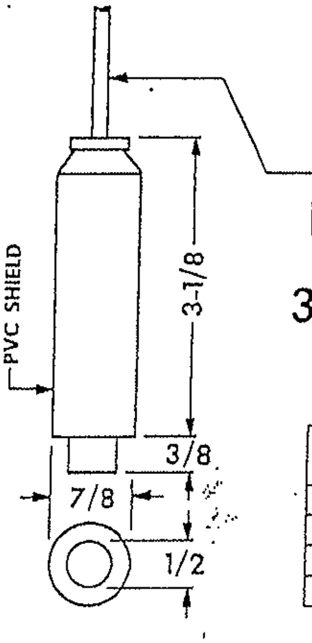
3Z1A SUSPENSION WIRE

SUSPENSION WIRE, SINGLE CONDUCTOR, 41 STRAND, 4/64 INCH PVC INSULATION, 170°F, NO. 18 AWG, 600 VOLT



SERIES 3 1 BRASS 3W2 303 S.S. ELECTRODE

SERIES 3Y1XX ELECTRODES



SUSPENSION WIRE, SINGLE CONDUCTOR, 41 STRAND, 4/64 INCH PVC INSULATION, 170°F, NO. 18 AWG, 600 VOLT

3Y1☐☐ ELECTRODE

●	ELECTRODE TIP MATERIAL
C	316 S.S.
D	CARPENTER 20
E	HASTELLOY B
F	HASTELLOY C

●	LENGTH OF WIRE
1	10 FEET
2	20 FEET
3	30 FEET
ET CETERA	

3Y3C10 (100') $164

3Y1C6
60' CABLE
$85
90'
103
100'
109

SYSTEM REQUIREMENTS

REQ'D	COMPONENT NUMBER	TAG NUMBER

Specifications

Contact Design:	One normally open (N.O.) and one normally closed (N.C.), isolated contacts
Contact Ratings:	8A @ 110 VAC resistive, 5Amps @ 30 VDC resistive
Contact Life:	Mechanical - 10 million operations. Electrical - 100,000 operations minimum at rated load.
Electronics Module:	Solid state components epoxy encapsulated in a black nylon shell
Supply Voltage:	24 VAC, 115 VAC or 230 VAC models +10% -15%, 50/60 Hz.
Supply Current:	Relays energized - 1.7 VA.
Secondary Circuit:	17XXX0 - 13 VAC RMS voltage on probes, 4 mA (nominal) 17HXXX0 - 13 VDC RMS voltage on probes, 4 MA (nominal)
Sensitivity:	Models operate from 0-470,000 ohms maximum specific resistance (factory set)
Temperature:	-40° to 150° F ambient.
Terminals:	Size 6 pan head screws with captivated wire clamping plate.
Time Delays:	Standard, 0.5 seconds rising level, LLCO probe, 3 seconds lowering level.
Listings:	FM File #1G9A1.AX - Approved for use in Class I or II, Division 1, Groups A-G hazardous atmospheres.

Gems Sensors
Gems Sensors Inc.
One Cowles Road
Plainville, CT 06062-1198
Tel: 860-793-4579
Fax: 860-793-4580

Form 170
Sheet P/N 7800578
Rev. E

Gems Sensors

Warrick® Series 17 Controls
Installation and Operation Bulletin

FM APPROVED

This bulletin should be used by experienced personnel as a guide to the installation of Series 17. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Gems Sensors or its local representative if further information is required. <u>Important</u>: **Completely read and thoroughly understand these instructions before proceeding to install and wire the control.**

When installed according to these instructions, the sensing circuit is intrinsically safe for Class I and II, Division 1, Groups A, B, C, D, E, F and G. ***Electrical equipment connected to associated apparatus should not exceed maximum voltage marked on product.***

Location:
The control must be situated in a non-hazardous area where an explosive atmosphere will not exist at any time.

Wiring:
1. Intrinsically safe wiring must be kept separate from non-intrinsically safe wiring.
2. Intrinsically safe and non-intrinsically safe wiring may occupy the same enclosure or raceway if they are at least 2 inches (50mm) apart and separately tied down. Inside panels, field wiring terminals for intrinsically safe circuits must be separated by at least 2 inches (50 mm) from non-intrinsically safe terminals.
3. Wire the control device(s) to the Series 17 relay as shown in the specific application wiring diagram on the inside pages. A separate rigid metallic conduit should be used to enclose the conductors of the intrinsically safe control circuit.
4. An approved seal should be used at the point where the intrinsically safe control circuit wiring enters the hazardous area.

For intrinsically safe output wiring, use #14 or #16 AWG type MTW or THHN wire. By using these wire types in conjunction with the following distance recommendations, you will not exceed the maximum capacitance for field wiring.

Use the following chart as a guide for maximum wire runs for differential level service (3-wire) field wiring.

		*Max Distance (FT)		
Model	Sensitivity K-ohms/ Probe Voltage	Primary Voltage 120,240 VAC	Primary Voltage 24 VAC	Sensitivity Resistor Ohm Value
17XXC0	3.3/A.C.	5000	1000	Jumper
17XXD0	4.7/A.C.	3500	1000	4.7 K
17XXE0	10/A.C.	1750	1000	10.0 K
17XXF0	22/A.C.	100	1000	22 K
17XXG0	47/A.C.	500	500	47 K
17XXH0	100/A.C.	250	250	100 K
17XXJ0	220/A.C.	100	100	220 K
17XXK0	470/A.C.	50	50	470 K
17HXXX0	D.C.	5000	1000	Jumper

* Longer distances may be possible Consult factory for assistance.

Grounding:
Both mounting tabs provide an electrical connection for earth grounding between the control's internal solid state circuitry and the enclosure chassis. To insure proper grounding, use only metal screws and lock washers when mounting this control.

One of the two grounding terminals provided on the intrinsically safe output terminal strip must be connected as reference to the same conductive media presented to terminals "H" and "L" (see applicable wiring diagram on inside pages). Terminal G1 on the supply line/load side terminal strip is a redundant system ground terminal and should be connected to the earth ground buss of the control's AC supply line feeder.

<u>Note:</u>
1. Intrinsically safe terminals can be connected to any non-energy generating or storing switch device such as a pushbutton, limit or float type switch or any Warrick electrode and fitting assembly.
2. To prevent electrical shock from supply line/load side powered connections, the Series 17 should be mounted in a tool accessible enclosure of proper NEMA rated integrity.
3. For additional guidance on "Hazardous Location Installation" and "Intrinsically Safe Devices", consult ANSI/ISA standard RP 12-6 or NEC articles 500-516.

Ordering Information:

17 X X X X
- Enclosure: 0- none, 1- NEMA 1, 4- NEMA 4, 7 - NEMA 7
- Sensitivity (Ohms): C- 3.3K D- 4.7K, E- 10K, F- 22K, G- 47K, H- 100K, J- 220K, K- 470K
- Voltage: 50/60HZ, 1- 120 VAC, 2 - 240 VAC, 3 - 24 VAC
- Mode of Operation: A- Direct, B- Inverse

17H X X X X
- Enclosure: 0- none, 1- NEMA 1, 4- NEMA 4, 7- NEMA 7
- Sensitivity (Ohms): C- 3.3K D- 4.7K, E- 10K, F- 22K, G- 47K, H- 100K, J- 220K, K- 470K
- Voltage: 1- 120 VAC, 2 - 240 VAC, 3 - 24 vac
- Mode of Operation: A- Direct, B- Inverse
- D.C. on probe sensing circuit

1742X0 $ 210

1) Connect terminals 1 & 2 to appropriate VAC supply line

2) Install sensitivity resistor between terminals RH & H and metallic jumper between terminals H and L. The resistor value determines the control sensilivy. *(See chart on Pg. 1)*

3) Connect terminal L to the electrode

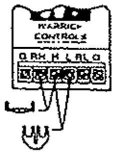
4) Wire contacts 3-4 normally open and 5 -6 normally closed into load circuit as required

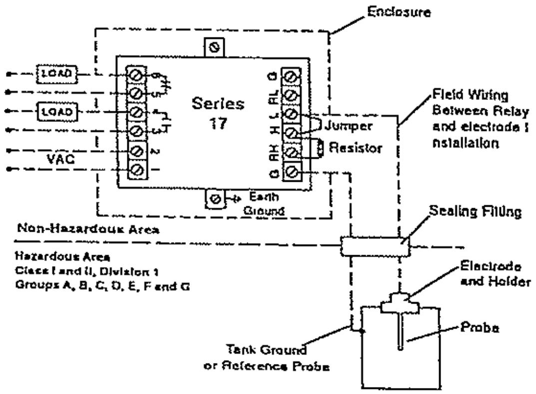
Terminal G must be grounded to the tank if metallic. When the tank is non-metallic, terminal G must be connected to an additional electrode of length equal to the longest electrode.

Note: Jumper and resistors must be installed as shown to insure proper operation.

Single Level Service: Conductance Actuated

Note: Jumper and resistor* must be installed as shown to insure proper operation.
*Jumper is used in lieu of resistor for control sensitivity of 3300 ohms (c).





1) Connect terminals 1 & 2 to appropriate VAC supply line

2) Install sensitivity resistor between terminals RH & H and RL & L. The resistor value determines the control sensitivy. *(See chart on Pg. 1)* Both resistors must be of equal value.

3) Connect terminal H to high electrode and terminal L to low electrode

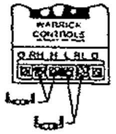
4) Wire contacts 3-4 normally open and 5 -6 normally closed into load circuit as required

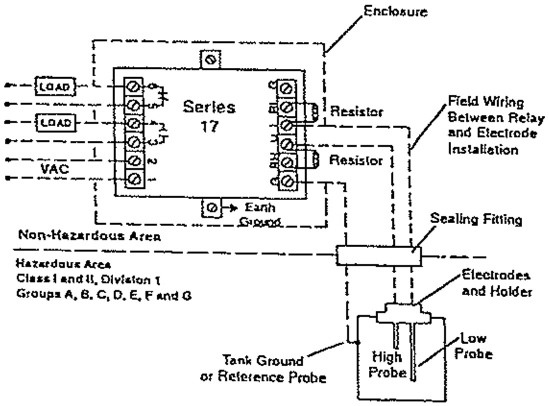
Terminal G must be grounded to the tank if metallic. When the tank is non-metallic, terminal G must be connected to an additional electrode of length equal to the longest electrode.

Note: Jumper and resistors must be installed as shown to insure proper operation.

Differential Level Service: Conductance Actuated

Note: Resistor*must be installed as shown to insure proper operation.
*Jumpers are used in lieu of resistor for control sensitivity of 3300 ohms (c).





1) Connect terminals 1 & 2 to appropriate VAC supply line.

2) Install metallic jumper between terminals RH & H and terminals H & L.

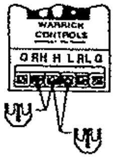
3) Wire contacts 3-4 normally open and 5 -6 normally closed into load circuit as required.

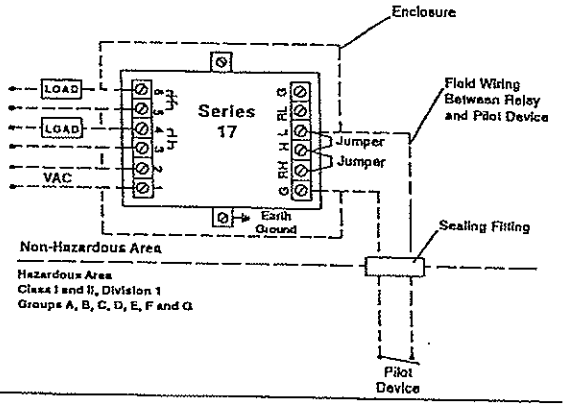
4) Connect the pilot contact to terminals G and L.

Note: Jumper and resistors must be installed as shown to insure proper operation.

Single Input (Non-Latching): Pilot Contact Actuated

Note: Jumpers must be installed as shown to insure proper operation.





1) Connect terminals 1 & 2 to appropriate VAC supply line.

2) Install metallic jumpers between terminals RH & H and terminals RL & L

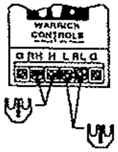
3) Wire contacts 3-4 normally open and 5 -6 normally closed into load circuit as required.

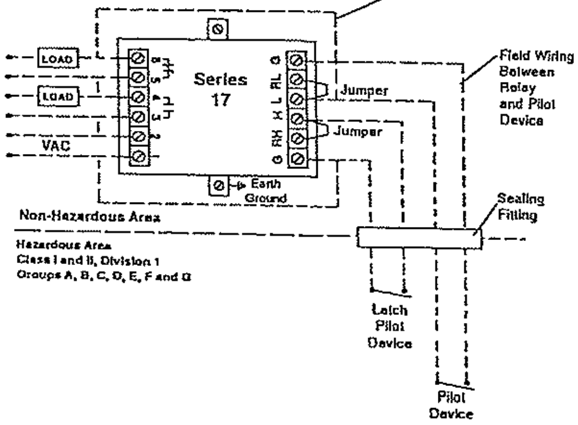
4) Connect the latch pilot contact to terminals G & H and the unlatch pilot contact to terminals G & L.

Note: Jumper and resistors must be installed as shown to insure proper operation.

Dual Input (Latching): Pilot Contact Actuated

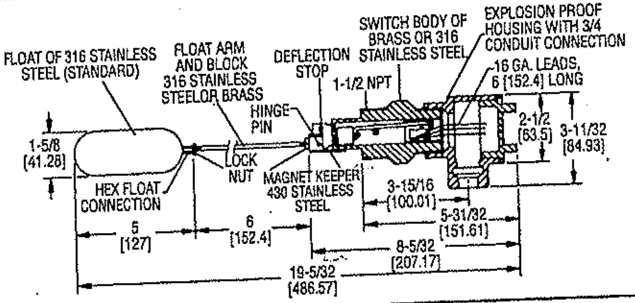
Note: Jumpers must be installed as shown to insure proper operation.





Series L4 FLOTECT® Float Switch

Magnetically Operated Switch, Leak Proof Body, Explosion-Proof



Rugged and reliable the Flotect® L4 Level switch operates automatically to indicate tank level. Perfect for starting or stopping pumps, opening or closing valves, or actuate level alarm signals. A unique magnetically actuated switching design gives superior performance. There are no bellows, springs, or seals to fail. Instead, the free-swinging float attracts a magnet within the solid metal switch body, actuating a snap switch by means of a simple lever arm. Float arm hinge design limits the arm angle to prevent vertical hangup.

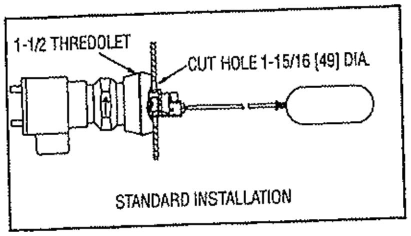
FEATURES

- Leak proof body machined from bar stock
- Choice of floats dependent on maximum pressure and specific gravity
- Weatherproof, designed to meet NEMA 4
- Explosion-proof (listings included in specifications)
- Installs directly and easily into tank with a thredolet or flange (see application drawings)
- Electrical assembly can be easily replaced without removing the unit from the installation so that the process does not have to be shut down.
- Horizontal installation or optional top mount vertical installation

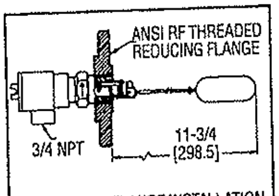
APPLICATIONS

- Direct pump control for maintaining level
- Automatic tank dump operations
- Control levels or provide alarms in sumps, scrubber systems, hydro-pneumatic tanks, low pressure boilers, and various waste water/sewage treatment processes

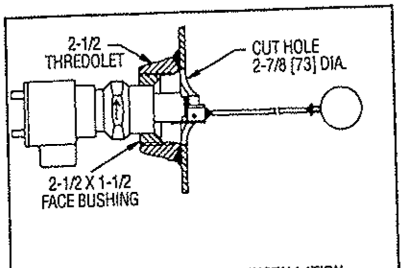
APPLICATION DRAWINGS FOR FLOTECT® FLOAT SWITCHES



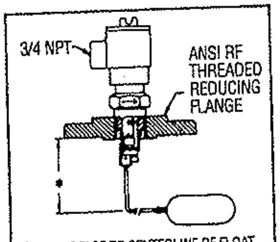
STANDARD INSTALLATION



HORIZONTAL, FLANGE INSTALLATION



HORIZONTAL, 2-1/2 THREDOLET INSTALLATION WITH OPTIONAL 2-1/2 [64] SPHERICAL FLOAT



*FLANGE FACE TO CENTERLINE OF FLOAT SPECIFIED BY CUSTOMER. NORMALLY SHOULD NOT EXCEED 20" [508 mm].

VERTICAL, FLANGE INSTALLATION

SPECIFICATIONS

Service: Liquids compatible with wetted materials.
Wetted Materials:
Float and Rod: 316 SS.
Body: Brass or 316 SS standard.
Magnet Keeper: 430 SS standard, 316 SS or Nickel optional.
Temperature Limits: 4 to 275°F (-20 to 135°C) standard, MT high temperature option 400°F (205°C) [MT option not UL, CSA, ATEX, or SAA].
Pressure Limit: Brass body 1000 psig (69 bar), 316 SS body 2000 psig (138 bar). Standard float rated 100 psig (6.9 bar). For other floats see options.
Enclosure Rating: Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups C and D; Class II, Groups E, F, and G.
ATEX CE 0344 ⟨Ex⟩ II 2 G EEx d IIB T6 -20°C≤Tamb≤75°C
EC-Type Certificate No.: KEMA 03 ATEX 2383
SAA: Exd II C T6 (T amb = 60°C). IP66 C1 I, Zone I. Also FM approved.
Switch Type: SPDT snap switch standard, DPDT snap switch optional.
Electrical Rating: UL, FM, ATEX and SAA models: 10A @ 125/250 VAC (V~). CSA models: 5A @ 125/250 VAC (V~); 5A res., 3A ind. @ 30 VDC (V⎓). MV option: 1A @ 125 VAC (V~); 1A res., .5A ind. @ 30 VDC (V⎓). MT option: 5A @ 125/250 VAC (V~). [MT and MV option not UL, CSA, FM, ATEX or SAA].
Electrical Connections: UL and CSA models: 16 AWG, 6" (152 mm) long. ATEX and SAA unit: terminal block.
Process Connection: 1-1/2" male NPT standard, 2-1/2" male NPT required for optional floats.
Mounting Orientation: Horizontal installation standard, optional vertical top mount.
Weight: 4 lb 9 oz (2.07 kg).
Dead Band: ¾" (19 mm) for standard float.
Specific Gravity: 0.7 minimum with standard float. For other floats see options.
Agency Approvals: UL, CSA, FM, CE and ATEX.

STOCKED MODELS

Model No.	Description	Price
L4	Brass body, side wall mounting	$250.00
L4SS	316SS* body, sidewall mounting	353.50

*316SS body and float with 430SS magnet keeper (wetted part).

Options for L4 Switches above — Add suffixes to model numbers
DPDT contacts, add suffix **-D** .... add $24.25
Gold Plated Contacts option for dry circuits, add suffix **-MV**
(see electrical rating in specifications, no listings or approvals) .... add 7.70
High Temperature option rated 400°F (204°C), add suffix **-MT**
(see electrical rating in specifications, no listings or approvals) .... add 23.25
Time Delay Relay option with 2 SPDT contacts, adjustable from 0-1
to 0-31 minutes. Add suffix **-TRI** (increasing flow) or
-TRD (decreasing flow) (no listings or approvals) .... add 315.00
316 SS Magnet Keeper option to replace standard 430 SS,
add suffix **-316** .... add 34.25
ATEX approved construction, add suffix **-AT** .... add 50.00
SAA approved construction, add suffix **-SAA** .... add 40.00
Top Mounted option for vertical flange installation
(distance from flange face to centerline of float to be specified,
20" (508 mm) maximum), add suffix **-TOP** .... add 5.00
Optional Floats (all 2-1/2" spherical):
304 SS rated 50 psig (3.5 bar) and 0.5 min. s.g., add suffix -50 .... add 20.75
316 SS rated 150 psig (10.3 bar) and 0.7 min. s.g., add suffix -150 .... add 20.75
304 SS rated 300 psig (20.7 bar) and 0.7 min. s.g., add suffix -300 .... add 20.75

Consult factory for price and availability of fittings for L4 installation. Thredolets, bushings, and flanges are available in a variety of sizes and materials.