

July 26, 1999

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Mr. Joseph Jones Remedial Section A. Bureau of Eastern Remedial Action Division of Environmental Conservation 50 Wolf Road Albany, New York 12233-7010

Re: 31 & 45A Sea Cliff Avenue, Glen Cove New York

Dear Mr. Jones:

On behalf of Photocircuits Corporation McLaren/Hart is enclosing three copies (one unbound) of the Draft Results Report for the pilot study of the air sparging/soil vapor extraction test. If you have any questions concerning this report please contact James Kerr of Photocircuits at (516) 609-1153.

Sincerel Bruce Mackie Principal Geoscientist

Enclosure

cc: Mark Pennington, Esq. Louis Stans Jim Kerr Jim Hadley Chittibabu Vasudevan, Ph.D., P.E. G. Anders Carlson, Ph.D. Robert Becherer, P.E. John F. Byrne, Esq.

RESULTS REPORT

PILOT STUDY OF AIR SPARGING/SOIL VAPOR EXTRACTION AT PHOTOCIRCUITS CORPORATION GLEN COVE, NEW YORK

July 26, 1999

Prepared for: Photocircuits Corporation 31 Sea Cliff Avenue Glen Cove, New York 11542

Prepared by: McLaren/Hart Environmental Services East, P.C. 25 Independence Boulevard Warren, New Jersey 07059



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1.0 INTRODUCTION

This report details McLaren/Hart Environmental Services East, P.C. (McLaren/Hart's) results from the Air Sparging/Soil Vapor Extraction (AS/SVE) pilot study conducted at Photocircuits Corporation Facility in Glen Cove, New York (the Site). The pilot study was conducted in accordance with an approved work plan submitted by McLaren/Hart to the New York State Department of Environmental Conservation (NYSDEC). This report details McLaren/Hart's implementation of the pilot-scale AS/SVE system, results generated from the pilot testing, and full-scale considerations.

Based on the Remedial Investigation (RI) conducted by McLaren/Hart in 1998, it was recommended that impacted soils and groundwater at two locations may be remediated using an AS/SVE system, coupled with natural attenuation. The first location is at the Photocircuits Site, near MW-7 and adjacent to the Photocircuits Main Building. The second location is at the 45A Site and is located near MW-4S beneath Building 7. The Photocircuits Site was the location of the pilot test because of ease of accessibility. Information obtained from the pilot test would then be used for the design and implementation of a full-scale AS/SVE system for both locations.

1.1 **PURPOSE OF STUDY**

The purpose of the pilot study was to technically evaluate the effectiveness of the AS/SVE technology to remediate the Compounds of Concern (COCs) and to obtain sufficient engineering design information for the subsequent design, installation and successful operation of a full-scale AS/SVE system at the site. As part of this evaluation, McLaren/Hart also examined parameters such as soil geotechnical properties to assist in the evaluation of enhancement/complementary techniques that may improve and/or supplement the efficiency of the AS/SVE process.

McLaren/Hart conducted a flexible, dynamic approach to the design, construction and operation of the pilot test system. This approach has cost-effectively yielded information necessary for the design and implementation of a full-scale treatment system. The primary objective of the pilot study was to determine the viability, suitability and costeffectiveness of using *in situ* AS/SVE technology to:

- Remediate unsaturated and saturated zone soils and groundwater impacted with the COCs at the Site; and
- Obtain the necessary design parameters for the design, construction and operation of a full-scale treatment system.

1.2 SITE LOCATION AND BACKGROUND

The Photocircuits Site and the 45A Site are located on the south side of Sea Cliff Avenue in Glen Cove, New York. The Photocircuits Site is the site of Photocircuits present operations. The 45A Site was owned by Pass & Seymour Inc., followed by Alpha Forty-Five L.L.C. and is currently owned by Photocircuits. *(For purposes of this document, this site will be referred to as the 45A Site.)* The Photocircuits Site, located at 31 Sea Cliff Avenue, is bordered by Pall Corporation to the north, Cedar Swamp Road to the east, the Glen Head Country Club to the south, and the 45A Site to the west. The 45A Site is bordered by the Associated Drapery site to the north, Photocircuits to the east and south, and Planet Waste Removal to the west. A Site location map is provided as Figure 1-1. A Site Plan showing details of both the 31 and 45A Sea Cliff Avenue Sites is provided as Figure 1-2. Note that only the location of the pilot test will be discussed in detail for this report.

The Photocircuits Site is an active facility that produces printed circuit boards. The facility is located at 31 Sea Cliff Avenue, in an industrialized area of Glen Cove, New York. The approximately eleven-acre site is located west of the Glen Cove - Massapequa Highway (Route 107), immediately south of Sea Cliff Avenue and north of the Glen Head Country Club. A fifty-foot County easement containing the Cedar Swamp Creek runs in a northwesterly direction through the center of the property. The northern portion of the facility is located within the boundaries of the city of Glen Cove, while the rest of the site is outside the City boundaries, located in the Town of Oyster Bay.

The facility has a number of on-site buildings, providing approximately 158,000 square feet of office and manufacturing space. The facility is comprised of the following: Main Building (offices, engineering and printed circuit board production); Butler Building I (machine shop, receiving, warehousing and material testing); Butler Building II (wastewater treatment); Butler Building III (offices, administration and storage); and a one-story complex located north of Butler Building II, occupied by utilities, chemical recovery and maintenance.

A chemical storage area, which was the location of the pilot test, is present on the Photocircuits Site in the vicinity of MW-7, which contains approximately 20 above ground storage tanks with capacities ranging from 1,000 to 8,000 gallons. Drums of new and spent chemicals and treated sludge from on-site waste water treatment are also staged in the chemical storage area. A 20,000 gallon above ground fuel oil tank is present in the parking area near the south side of the Photocircuits Site and an enclosed chemical storage building exists near the south perimeter.

1.3 GEOLOGY AND HYDROGEOLOGY

The 31 and 45A Sites are underlain by the following sequences, in descending order: the Upper Glacial Aquifer, the Port Washington confining unit, the Port Washington aquifer, the Lloyd Aquifer, and bedrock.

The Upper Glacial aquifer is composed of stratified beds of fine to coarse sand and gravel with some interbedded lenses of silt and clay and extends to a depth of approximately 200 feet below the Sites. The Port Washington confining unit, which extends approximately 100 feet below the Upper Glacial aquifer, consists of silt and clay with some interbedded sand and gravel lenses. The Port Washington aquifer is composed of sand and gravel with variable amounts of interbedded clay and silt. The Port Washington aquifer is approximately 50 feet thick. The Lloyd aquifer, which is approximately 200 feet thick, consists of discontinuous layers of gravel, sand, sandy clay, silt, and clay. It roughly parallels the crystalline bedrock, which is present at a depth of approximately 550 feet below the Site (Geraghty and Miller, 1989).

Essentially, both properties are underlain by the unconfined Upper Glacial Aquifer (roughly 200 feet in thickness); the aquifer generally consists of high permeability sediments. The aquifer is

underlain by the Port Washington Confining Unit. Localized lithology ranges from a very fine to fine silty sand to a fine to coarse sand with gravel.

As discussed above, the uppermost hydrogeological unit beneath the Photocircuits and 45A Sea Cliff Sites is the Upper Glacial aquifer. Depth to water measurements collected during groundwater sampling by McLaren/Hart indicate that groundwater is present at 4 to 10 feet below ground surface beneath the Photocircuits Site (McLaren/Hart Preliminary Site Investigation Report, November 11, 1996). Hydraulic conductivity generally ranges from 10 to 300 ft/day.

Groundwater contour maps have been generated from depth to water measurements collected from the monitoring wells at the 31 and 45A Sites on several occasions. Measurements from deep wells indicate that groundwater flow is to the northwest. Shallow groundwater also flows predominantly toward the northwest, however, precipitation events may influence the shallow groundwater and thus fluctuations may also be observable under certain precipitation and recharge conditions.

1.4 **REPORT ORGANIZATION**

This document reports on the activities and results of the AS/SVE pilot study, conclusions of the pilot testing, and future design considerations for the full-scale implementation of an AS/SVE system.

The report is divided into four major sections, which are identified below and are presented in subsequent chapters of this report.

- Section 2.0 discusses the Implementation of Air Sparging/Soil Vapor Extraction pilot testing, including the test plot layout, well construction, and pilot test implementation;
- Section 3.0 discusses the results and conclusions of the AS/SVE pilot tests; and
- Section 4.0 presents a summary of the conclusions and a discussion of future design considerations for full-scale design, installation and operation of an AS/SVE.

This section presents a discussion of the objectives of the AS/SVE pilot testing, the design of the test plot and well construction, the implementation of the pilot test, and the results generated from the operation of the AS/SVE pilot test. McLaren/Hart, in conjunction with Photocircuits, has evaluated the AS/SVE pilot testing results to determine the viability, suitability and cost-effectiveness of the technologies to treat the area of dissolved phase COCs beneath the Site. The AS/SVE pilot test was conducted in accordance with the NYSDEC approved work plan to evaluate the technology's effectiveness prior to full-scale application to remediate the COCs in the affected medias. Any revisions/alterations from the work plan are documented and justified.

2.1 PURPOSE AND OBJECTIVE OF AS/SVE

Upon reviewing the existing site data, it is likely that the "source" area in the soil and the groundwater can be effectively addressed using an AS/SVE system. However, prior to installing and operating a full-scale system, a pilot test was necessary to confirm whether AS/SVE can effectively remediate the site. Furthermore, pilot testing helps determine the optimum conditions and necessary design parameters to implement an efficient and cost-effective operation of a full-scale system.

2.2 THEORY OF APPLICATION OF AIR SPARGING

AS/SVE is a proven technology that has been extensively used to remove COCs from groundwater. The remediation process involves the controlled injection of air in the saturated zone to:

- Strip the volatile compounds from the dissolved phase;
- Increase the dissolved oxygen concentration of the impacted saturated zone to enhance aerobic degradation through bio-sparging; and
- Enhance the partitioning of the compounds from the liquid phase to vapor phase for removal via vapor extraction.

2.3 DESIGN OF AIR SPARGING/SOIL VAPOR EXTRACTION PILOT TEST

This section describes the activities involved in the well installation and test plot layout as discussed in the approved work plan. The pilot test plot layout and well construction activities are described in detail below. Any variations from the work plan regarding well construction are documented and explained.

2.3.1 Test Plot Layout

This activity involved the construction of the test well network. The construction activities included drilling, groundwater sampling, and construction of AS/SVE well(s) and the monitoring points in accordance with the approved work plan. The pilot test work was conducted in the vicinity of the hazardous waste storage area between the main building and the maintenance shop on the Photocircuits Site. The entire test plot was distributed over a 45 foot by 20 foot area, south of MW-7, to provide a wider region for the demonstration and to obtain more site-specific information essential for the design and implementation of the full-scale system. MW-7 was incorporated in the pilot test as a monitoring point, which was monitored for AS effectiveness. Figure 2-1 presents the aerial view of the wells and monitoring point locations. Table 2-1 summarizes the details of the wells and monitoring points. The pilot test well network was installed with the anticipation that the pilot-scale could be incorporated into the full-scale system.

2.3.2 Pilot Test Well Construction

Pilot test plot activities involved the construction of the following:

- One (1) Shallow Air Sparge well (SAS)
- One (1) Deep Air Sparge well (DAS);
- One (1) horizontal SVE well;
- Four (4) Vapor Monitoring Points (VMP);
- Three (3) Shallow Depth Air Sparge Monitoring Points (SMP); and
- Three (3) Deep Depth Air Sparge Monitoring Points (DMP).

Details of the well installation are discussed below.

2.3.2.1 DAS/SAS Well Construction

The DAS well is within the SAS well in the same borehole, which was drilled to a depth of 32 feet below ground surface. The 1 ¹/₂-inch DAS well is within the three-inch SAS well and sealed at a ten-foot interval from the bottom of the DAS to the bottom of the SAS with a reducing bushing. The DAS well was installed to a depth of 32 feet bgs and is screened from 30 feet to 32 feet bgs. The SAS was, therefore, at a depth of 22 feet bgs and is screened from 20 feet to 22 feet bgs. The well depths were adjusted from the work plan based on conditions encountered during drilling activities. Figure 2-2 presents the construction details of the DAS/SAS well.

Split spoon sampling was conducted during the installation of the SAS/DAS well. Split spoon samples were collected continuously throughout the borehole and visually inspected in accordance with American Standard Testing Methods (ASTM) standards. Subsurface soils were logged during the installation of the air sparging wells, documenting any changes in soil conditions that might affect the pattern of air flow during sparging. Additionally, head space analyses were conducted on the soil collected from the boring with a hand held PID to verity the vertical extent of the COCs in the soil. From one foot bgs to approximately ten feet bgs, the PID exhibited readings between 14 and 77 parts per million volume (ppmv). From ten feet bgs to approximately 24 feet bgs, the PID indicated readings of 1000 ppmv or more. At 24 to 26 feet bgs, the readings decreased to approximately 300 ppmv. At 28.5 to 32 feet bgs, the readings decreased approximately 30 ppmv. Therefore, the well was set at this depth. Appendix A presents the well construction logs.

2.3.2.2 SVE Well Construction

A horizontal SVE well was placed in an excavation measuring five feet long, three feet wide, and 2.5 feet deep. The SVE well consisted of four-inch Sch 40 PVC piping. Because of the presence of a large boulder at one end of the excavation at 1.5 feet bgs, prohibiting the SVE well to lay

flush, the screen length was adjusted from four feet to two feet. Construction details of the SVE well is presented in Figure 2-3.

2.3.2.3 VMP Construction

Four (4) VMPs with two feet of screen were installed. The VMPs were installed at various distances from the SVE well: VMP-1 at 12 feet, VMP-2 at 25 feet, VMP-3 at seven feet, and VMP-4 at 18 feet. The monitoring points were constructed of 1 ¹/₄-inch PVC piping screened at 1.5 feet to 3.5 feet bgs. Details of a typical vapor monitoring point are presented in Figure 2-4. [Note: Throughout this report, the VMPs were referred to as VMP-x, where x represents the location.]

2.3.2.4 SMP Construction

Three (3) SMPs were installed at various distances from the AS wells: SMP-1 at ten feet, SMP-3 at five feet, and SMP-4 at 15 feet. MW-7, which is screened from 15 to 25 feet bgs, was incorporated in the pilot test as a monitoring point and was located 20 feet from the AS wells. SMP-1 was drilled to ten feet bgs, and SMP-3 and SMP-4 were drilled to 15 feet bgs. The monitoring points were constructed of 1 ¹/₄-inch PVC piping and had two-feet of screen. Details of a typical shallow monitoring point are presented in **Figure 2-5**. No sampling was conducted during the construction of these wells. [Note: Throughout this report, the SMPs were referred to as SMP-x, where x represents the location.]

2.3.2.5 DMP Construction

Three (3) DMPs were installed at various distances from the AS wells: DMP-1 at ten feet, DMP-3 at five feet, and DMP-4 at 15 feet. MW-7, which is screened from 15 to 25 feet bgs was incorporated in the pilot test as a monitoring point and was located 20 feet from the AS wells. DMP-1 was drilled to 20 feet bgs, DMP-3 was drilled to 25 feet bgs and DMP-4 was drilled to 22 feet bgs. The monitoring points were constructed of 1 ¹/₄-inch PVC piping and had two-feet of screen. Details of a typical deep monitoring point are presented in **Figure 2-5**. No sampling was conducted during the construction of these wells. [Note: Throughout this report, the DMPs were referred to as DMP-x, where x represents the location.]

The following field modifications were made to the approved work plan:

- The Deep Air Sparge (DAS) well screen depth was adjusted from 30 feet bgs to 32 feet below ground surface (bgs), based on vertical delineation of the borehole using a photoionization detector (PID) during drilling activities. The well was installed two-feet deeper to effectively target depths from 28 feet to the surface.
- The SVE well screen was shortened from four feet long to two feet long because of the presence of a large boulder in the excavation.
- The SVE excavation was changed from two feet bgs to 2.5 bgs based on the elevations of water level taken at MW-7. The work plan depth was referenced to the top of inner casing which is 0.5 feet bgs instead of ground surface.
- In response to lowering the depth of the SVE excavation, the Vapor Monitoring Points (VMPs) were changed in depth from 2.5 feet bgs to 3.5 feet bgs.
- The Shallow Monitoring Points (SMPs) and Deep Monitoring Points (DMPs) were changed in depth with respect to their proximity to the SAS/DAS wells to ensure the observations of any influences caused by the SAS/DAS wells.
- The work plan specified that groundwater samples will be obtained from all monitoring points hourly (i.e., SMPs/DMPs) for baseline field parameters. Collection of these samples was to be examined by McLaren/Hart to evaluate the applicability of other remedial alternatives. However, the monitoring points were not sampled this frequently for field parameters because sampling each monitoring point was not practical due to the amount of time it was taking to recover the proper volume of water and the data was not considered critical in evaluating the effectiveness of the AS/SVE technology.
- The individual SAS and DAS tests were implemented at two separate pressures each due to the permeability of the formation.
- All measured parameters and observations were used to determine the effectiveness of air sparging because the dissolved oxygen (D.O.) meter exhibited erratic readings during the start of the SAS/DAS step injection test.

2.4 PILOT TEST IMPLEMENTATION

This section describes pre-testing activities of the SAS and DAS pilot test, including the baseline field measurements. The individual tests are discussed as well as the testing conditions, measurements, configuration of testing equipment, and post-testing data collected. Three separate tests were to be conducted according to the work plan: SVE Test; DAS/SAS/SVE Test; and Combination or Constant Rate DAS/SAS/SVE Test. In addition, five tests were conducted to evaluate individual performance and the effectiveness of each of the air sparge wells. The eight (8) tests and their objectives included the following:

- SVE Test to determine the effectiveness of vapor extraction via measurements of COCs on the skid and determine the radius of influence (ROI) by examining the monitoring points;
- SAS Test to determine the effectiveness of air sparging at this depth and in this type of formation through pressures read from the monitoring points and to observe the effects of subsurface flow rates and pressures on the radius of influence of the AS well;
- DAS Test to determine the effectiveness of air sparging at this depth and in this type of formation through pressures read from the monitoring points and to observe the effects of subsurface flow rates and pressures on the radius of influence of the AS well;
- DAS/SAS/SVE and SAS/SVE Tests to determine the effects of operating both sparge wells simultaneously through pressures read from the monitoring points and the effects of subsurface flow rates and pressures on the radius of influence of the AS wells;
- Constant Rate DAS/SAS/SVE Test to determine if the flow rate and pressure determined from the prior test was the optimal combination or if either sparge well is impeding the effectiveness of the other;
- SVE Test to determine if the vacuum rate used throughout the testing process is the optimal rate;
- DAS/SVE Test to determine the effect of sparging at the DAS versus the SAS (*i.e.* mass removal rates, interferences, etc.)

2.4.1 Baseline Measurements

The pilot testing activities commenced with the collection of baseline data, which were analyzed for the same parameters that were evaluated during the pilot study. Specifically, the baseline measurements included:

- Collection of one groundwater sample each from DAS, SAS, SMP-1, -3, -4 and DMP-1, -3, -4 wells and MW-7 for field parameters (pH, conductivity, turbidity, dissolved oxygen (D.O.), temperature);
- Collection of one groundwater sample from the DAS, SAS, SMP-1, -3, -4 and DMP-1, -3, -4 wells and MW-7 for laboratory analysis of aqueous phase VOC concentrations via EPA Method 8260A;
- Baseline soil-gas sampling and field analysis using a PID with a 11.8 eV lamp; and
- > Depth to water measurements from all monitoring points and sparge wells.

2.4.2 Soil Vapor Extraction (SVE)

2.4.2.1 SVE Equipment

Prior to conducting pilot testing of the SAS well, the SVE well was tested to determine the effectiveness of vapor extraction. The key components of the SVE Pilot Testing System included:

- > Collection Piping and Manifold;
- > Air/Water Separator;
- Vapor-Phase Activated Carbon Adsorption Unit (Drum);
- Vacuum Pump; and
- > Instrumentation including flow meters, pressure and vacuum gauges.

The skid-mounted SVE test unit (equipped with a control panel) included an air/water separator, vacuum gauges, a bleed valve, two (2) sample ports, an outlet temperature gauge, and a blower.

The blower was capable of operating at vacuum pressure of up to 5 inches of mercury and extracting a maximum of 90 scfm of air. The airflow was measured using an in-line pitot tube and was a function of the vacuum drawn from the formation. Figure 2-6 presents a schematic of the SVE configuration.

Vacuum was measured directly at the SVE well head using a Magnehelic gauge. This same port was used to collect vapor samples to be measured with a PID. A flexible hose was used for connecting the well head of the SVE well to the vapor extraction skid prior to the air/water separator system. The air/water separator removed any moisture or free liquid extracted with the vapors. The air/water separator was connected to the vacuum pump. Another manifold connected the vacuum pump to the vapor-phase activated carbon unit to treat the extracted vapors. Following the completion of system hook up, the blower was turned on, and flow rate tests commenced.

2.4.2.2 SVE Pilot Test

The testing process was conducted in a feedback loop approach where the results from the tests were evaluated on-site to determine the next testing parameters. This feedback loop approach is described below.

Each test commenced with cursory optimization of the flow and vacuum parameters. This involved commencing the test at a pre-determined vacuum rate based on the site geology as observed during the well construction. Based on the radius of influence observed at the VMPs and the extraction effectiveness observed at this preliminary condition, the next set of testing conditions was determined. This included increasing/decreasing the vacuum and flow rates, as necessary.

Once the next testing conditions were achieved, the influence of vacuum rates on the radius of influence was monitored. Based on the results obtained, the extraction system was altered to evaluate the removal efficiency under the next set of operating conditions. This optimization

process continued until the optimal flow rate was determined based on the field test results and on the judgment of the field engineer.

Once the optimal conditions were determined, the testing process continued until the physical/chemical parameters had stabilized (i.e., no change in vacuum readings at monitoring points). During this period, the flow meters and vacuum gauges located at the VMPs and SVE well were monitored. Vapor samples were collected hourly from the sample port, using a Tedlar bag, to monitor the concentration levels using a PID.

The SVE pilot test was conducted at three (3) vacuum settings for approximately 2 hours each. The rationale of testing the SVE at three (3) separate vacuum settings was to examine the vapor extraction effectiveness through vacuum pressures observed at the VMPs with no obvious effect on the groundwater (i.e., mounding). The three (3) vacuum settings tested at the SVE well were the following: 30 inches water, 40 inches water, and 60 inches water. See **Table 2-2** for data collected during the SVE Test.

2.4.3 Shallow Depth Air Sparge (SAS) and Deep Depth Air Sparge (DAS)

Prior to implementing the integrated SAS/DAS/SVE test, a test was conducted on each of the air sparge wells. These tests were conducted to understand the pressures and flows required for sparging each zone effectively. A combination of flow rates and pressures were to be tested for each sparge well for approximately two (2) hours while the vacuum pump was not on. However, due to the permeability of the formation, only two separate pressures were necessary for each well in order to observe any flow entering the formation. The effects of subsurface flow rates on the radius of influence of the AS well and the effects of sparging as measured at the SMPs and DMPs were examined for each test.

2.4.3.1 AS Equipment

The air compressor was equipped with a coalescing filter. The compressor was capable of operating at pressures of 5 to 120 psi generating an airflow of 5 to 80 scfm. The manifold from

the compressor to the sparge point was fitted with a pressure regulator, a pressure gauge, and a gate valve (used for throttling the flow to the sparge points).

The manifold system following the air compressor served as the control for the pressure and flow to the SAS well. The pressure regulator was set at the required pressure for the test and the gate valve was throttled to adjust the flow to the SAS well. Another manifold system was connected to the DAS well head using a high pressure hose. The DAS well head was equipped with a pressure gauge, a bleed valve (i.e., ball valve), and a rotameter (i.e., airflow meter). Figure 2-7 presents a schematic of the air sparge and SAS/DAS configuration.

2.4.3.2 SAS Pilot Test

The SAS well was tested at two separate pressures: 12 psi and 15 psi. In each case, 5 scfm was measured at the well head after approximately three hours. Once the flow was achieved, the pressure gauge at the well head was observed for back pressure and readings commenced at the surrounding wells or monitoring points. Depth to water readings, pressures, D.O., and PID readings were measured at the monitoring points during the test for each pressure and flow rate combination. See **Table 2-3** for data collected during the SAS Test.

2.4.3.3 DAS Pilot Test

Upon completion of the SAS test followed by the operation of the SVE in extracting vapors remaining from the SAS test, the DAS test commenced. The DAS well was also tested at two separate pressures: 15 psi and 19 psi. At 15 psi, 6.5 scfm was measured and at 19 psi, only 3.25 scfm was measured. Again, like the SAS test, flow was measured at the well head after approximately three hours. Once the flows were achieved, the pressure gauge at the well head was observed for back pressure and readings commenced at the surrounding wells or monitoring points. Depth to water readings, pressures, D.O., and PID readings were measured at the monitoring points during the test for each pressure and flow rate combination. See **Table 2-4** for data collected during the DAS Test.

2.4.4 DAS/SVE Test

The objective of this test was to determine the minimum pressure that can be introduced into the formation to obtain at least 3 scfm and to determine if the SVE was effective in capturing the vapors from sparging. The duration of the DAS/SVE test was approximately three hours. PID readings, vacuums, and depth to water measurements were taken at least three times during this test. See **Table 2-5** for data collected during the DAS/SVE Test.

2.4.5 SAS/SVE Test

Following the DAS/SVE test, the SAS/SVE test was started. The objective of this test was similar to the DAS/SVE test conducted prior. The duration of this test was approximately two hours. Again, PID readings, vacuums, and depth to water measurements were taken at least three times during this test. See **Table 2-5** for data collected during the SAS/SVE Test.

2.4.6 Combination SAS/DAS/SVE Pilot Test

2.4.6.1 SAS/DAS/SVE Step Injection Test

Following the completion of the aforementioned testing, the SAS/DAS/SVE test was implemented. The air compressor was connected to the well head of the SAS and DAS wells, while the vacuum pump operated on the SVE well to extract the stripped vapors for approximately one hour. A manifold system following the air compressor was configured to allow each well to be operated independently of the other. The manifold system was arranged for each well exactly as in the individual tests.

In order to understand the pressure and flow requirements for sparging, the pilot test was conducted in a step injection approach. Three different combinations of flow rates and pressures for each sparge well were tested. Therefore, based on the information collected from the previous tests, the following combinations of flow rates and pressures were tested.:

- DAS well at 17 psi / 7 scfm, SAS well at 10 psi / 5 scfm, and SVE at 40 inches water;
- DAS well at 18 psi / 7.5 scfm, SAS well at 18 psi / 7.5 scfm, and SVE at 40 inches water;
- DAS well at 20 psi / 2.75 scfm, SAS well at 21 psi / 3.75 scfm, and SVE at 30 inches water.

The pressure gauges at the well heads were observed for back pressure. PID readings and pressures were measured at the monitoring points to monitor changes between the various combinations. The depth to water was measured to document the effects of sparging and to examine mounding effects, if any. Aqueous samples were to be collected at the end of the test and analyzed for D.O. concentration in the SAS and DAS wells.

2.4.6.2 Evaluation of Data for 8 to 12 Hour AS/SVE Test

Following the completion of the combination SVE/SAS/DAS step injection test, an evaluation of the comprehensive field data was conducted. The data evaluation was conducted in accordance with the Quality Assurance Plan (QAP). The flow rate and pressure combination for the sparge wells was chosen based on the optimal combination exhibited in the prior SVE/SAS/DAS well pilot test: DAS well at 16 psi / 2.5 scfm, SAS well at 15 psi / 2.5 scfm, and SVE at 30 inches water.

2.4.6.3 Combination SAS/DAS/SVE Test for 8 to 12 Hours

Following system connection, the compressor and vacuum extraction pump were turned on, and flow rate tests commenced. The test was evaluated at one combination of flow rate and pressure for each sparge point for approximately ten hours. The test was conducted to determine any impedance that the shallow sparging well might have on the deep and vice versa.

During the test, the flow meters and vacuum/pressure gauges located at the VMPs, SMPs, DMPs, SVE, and AS wells were monitored. PID readings and depth to water table measurements were taken from each monitoring point. Vapor samples were collected every hour from the sample

port, using a Tedlar bag, for analysis using the PID. See Table 2-6 for data collected during the SAS/DAS Test.

2.4.7 Post-Pilot Testing Measurements

The post-pilot testing activities were similar to the collection of the baseline data. Specifically, the post-pilot testing measurements included:

- Collection of one groundwater sample from the DAS, SAS, SMP-1, -3, -4 and DMP-1, -3, -4 wells and MW-7 for laboratory analysis of aqueous phase VOC concentrations via EPA Method 8260A;
- Soil-gas sampling and field analysis using a PID with a 11.8 eV lamp; and
- Depth to water measurements from all monitoring points and sparge wells.

The collection of a groundwater sample each from DAS, SAS, SMP-1, -3, -4 and DMP-1, -3, -4 wells and MW-7 for field parameters (pH, conductivity, turbidity, D.O., temperature) was not conducted because of the equipment failure.

2.5 DATA COLLECTION AND QUALITY ASSURANCE

The following section describes the methods of sampling and analysis conducted during the pilot testing activities, which are in accordance with the QAP included under Appendix A in the approved work plan.

2.5.1 Groundwater Sampling

Groundwater samples were collected and sent to a certified laboratory, Severn Trent Laboratories, Inc. (STL) (NY Certification No. 10997) for VOC analysis using EPA Method 8260A. Samples remained on ice until the scheduled pick-up and were analyzed within the seven-day holding time. Sampling was conducted after removing three (3) well volumes from the well by using a peristaltic pump.

A total of 18 water samples (one water sample collected at the beginning and end of each test) were collected from the SAS, DAS, SMP-1, -3, -4, DMP-1, -3, -4, and MW-7. Note that the baseline samples did not meet the required 4°C when the laboratory received them due to a delinquency in the delivery service. However, the samples were analyzed because of the minimal head space in the vials. See **Table 2-7** for groundwater sampling analytical results.

2.5.2 Vapor Sampling

Vapor samples were collected using a Tedlar bag. Tedlar bag samples were analyzed using a PID. The PID contained an 11.8 eV lamp and a pump that could pull 3-inch Hg vacuum. Tedlar bag samples were purged three (3) times with vapor from the sample port on the vapor extraction skid prior to analysis. Two vapor samples were collected using a Tedlar bag and were sent to a certified laboratory, Pace Analytical (NY Certification No. 11542) for VOC analysis using EPA Method TO-14. Each sample was collected from the sample port prior to the vapor extraction skid using a new Tedlar bag. The samples were analyzed within the 48 hour holding time. See **Table 2-8** for vapor sampling analytical results.

2.5.3 Field Parameter Measurements

Groundwater samples were collected to measure physical parameters of the samples by a flow through cell and read by a field measuring unit (i.e., Horiba). The Horiba measures the following parameters: pH, conductivity, turbidity, dissolved oxygen, and temperature. Samples were collected in the flow through cell, which provided a less turbulent condition and analyzed immediately for the aforementioned parameters. Note that the Horiba read erratically prior to the implementation of the combination DAS/SAS/SVE test. Therefore, dissolved oxygen was not used as an primary indicator of air sparging effectiveness.

2.5.4 Other Field Measurements

Depth to water readings were measured using a field measuring unit (i.e., M-scope). The M-scope was used to measure the depth to water levels in all of the wells. Vacuum and pressure

readings were measured during the entire testing. The readings were measured using four (4) different Magnehelic gauges at the following ranges: 0 to 0.25 inches water, 0 to 0.5 inches water, 0 to 2 inches water, and 0 to 50 inches water. The readings were measured to determine a vacuum or pressure influence exhibited during sparging or vapor extraction. See Table 2-9 for depth to water measurements

3.0 RESULTS OF AS/SVE PILOT TESTS

3.1 **RESULTS OF THE AS/SVE PILOT TESTS**

The following section presents the results obtained from the AS/SVE pilot tests. Results obtained from the following individual pilot tests are presented:

- SVE Test;
- SAS Test;
- DAS Test;
- DAS/SVE Test;
- SAS/SVE Test; and
- Constant Rate DAS/SAS/SVE Test.

It is noted that although vacuum and pressure measurements are a primary indication of the effectiveness of the test being conducted, the measurements which were collected were analyzed in conjunction with other collected data (i.e., depth to water levels and vapor monitoring) by a series of evaluations.

3.2 SVE RESULTS

The first test conducted as part of the pilot testing program was on the SVE well. The following tests were conducted, measuring the VMPs for vacuum readings:

Initially, a vacuum of 40 inches water was applied at the SVE well head at a flow rate of 95 scfm. The vacuum was changed to 30 inches water at 92 scfm and again to 60 inches water at 108 scfm. VMP-3 and VMP-4 exhibited vacuum influence during the test, ranging from 0.005 inches water to 0.145 inches water. VMP-1 did not exhibit any vacuum and was slightly under pressure. Baseline VMP-2 readings indicated that the monitoring point was in a vacuum and changed to a pressure through the test. The highest vacuum influence was measured at VMP-4, located approximately 18 feet from the SVE well.

Depth to water measurements went unchanged from the baseline testing to the post-SVE test. The PID readings exhibited no significant changes from the baseline readings. However, as the vacuum was increased, the PID readings decreased. The COC concentrations were measured at the SVE well head using a PID. Measurements at the SVE well head ranged from 58 ppmv to 129 ppmv.

A second SVE pilot test was conducted two days following the initial test to determine if the vacuum rate used throughout the testing process was the optimal rate. These results are summarized below. The vacuum/pressure influences from this test were similar to the first SVE pilot test.

VMP-1 exhibited the highest pressure influence while VMP-4 showed the highest vacuum influence. The remaining two points remained unchanged at zero. The PID readings on all the monitoring points increased substantially from baseline readings. PID measurements at the SVE well head increased from 5 ppmv to 167 ppmv in two hours and then started decreasing gradually to 125 ppmv and stabilized. Conclusions of the SVE testing are discussed below.

Vapor monitoring of the vapor extraction skid was conducted throughout the SVE testing. Based on the observations of vacuum/pressure influences of the monitoring points, VMP-1 exhibited no vacuum influence at 12 feet and VMP-4 exhibited the highest influence at 18 feet. Therefore, the design of the horizontal well needs to be considered. VMP-1 was in line with the length of the screen where VMP-4 was perpendicular to the screen. COC concentrations ranged from 5 ppmv to 167 ppmv. After peaking at 167 ppmv, the concentrations stabilized at approximately 125 ppmv. Based on the results of the pilot testing and extrapolation of the data, the SVE testing determined that:

- The well cap of the horizontal well, if used in full-scale, must be notched to allow influence in that direction;
- At 30 to 40 inches water vacuum, the extracted air flow averaged approximately 92 scfm to 95 scfm; and
- The radius of influence of the vadose zone ranges from approximately 15 to 20 feet.

3.3 SAS RESULTS

All of the VMPs, except VMP-1, and DMPs exhibited no influence during the SAS test. VMP-1 exhibited 3.0 inches water pressure one time during the test and remained under pressure following the test. During this testing, most of the SMPs exhibited a pressure influence and returned to static conditions following the test.

During the testing, all of the SMPs had relatively constant PID readings throughout the test. The SMP readings ranged from 1.3 ppmv to 267 ppmv. The highest PID reading was measured in SMP-3 at five feet from the SAS well.

Conclusions of the SAS test are summarized below.

Only one of the VMPs exhibited pressure influence, VMP-1, at approximately 12 feet from the SAS well, and all of the SMPs exhibited pressure influence. No DMPs exhibited pressure influence during the test, which was expected. PID readings increased for the duration of the tests with SMP-3 at 5 feet exhibiting the highest readings.

3.4 DAS RESULTS

All of the VMPs, except VMP-1, and SMPs exhibited no influence during the DAS test. VMP-1 exhibited a maximum of 1.8 inches water pressure during the test and remained under pressure following the test. During this testing, most of the DMPs exhibited a pressure influence and returned to 0 inches water following the test. The highest pressure exhibited was at DMP-4 at 17 inches water.

During the testing, all of the SMPs had relatively constant PID readings throughout the test. The VMPs increased slightly in PID readings during the test. The highest reading was exhibited at VMP-4 at 344 ppmv. The DMP readings ranged from 1.5 ppmv to 31 ppmv. The highest PID reading was measured in DMP-3 at five feet from the SAS well.

Conclusions of the DAS test are summarized below.

Only one of the VMPs exhibited pressure influence, VMP-1, at approximately 12 feet from the DAS well, and all of the DMPs exhibited pressure influence. None of the SMPs indicated a pressure influence, which was expected. The highest influence was observed at DMP-4, 15 feet from the DAS well. PID readings increased for the duration of the tests with DMP-3 at 5 feet exhibiting the highest readings.

3.5 DAS/SVE RESULTS

A DAS/SVE pilot test was conducted at 16.5 psi and 3 scfm. Throughout the test, the SVE was run at approximately 30 inches water at a flow rate of approximately 92 scfm. The DAS/SVE testing resulted in a pressure influence at VMP-1 and VMP-4 with zero influence at the remaining two vapor points. MW-7 and SMP/DMP-1 indicated no influence while SMP/DMP-3 and SMP/DMP-4 exhibited a pressure influence. SMP-4 and DMP-3 had the highest pressure influences.

VOC measurements taken with the PID indicated that VMP-1 and VMP-4 had a significant increase from running SVE alone, whereas, VMP-2 and VMP-3 remained relatively constant and low at approximately 3.0 ppmv. The VOC readings at the SMPs all increased substantially when the DAS/SVE pilot test was initiated. However, the concentrations decreased as the test progressed. The PID readings of the DMPs behaved similarly to the SMPs.

The water level in DMP-4 rose to 1.38 feet bgs.

VOC concentrations were measured from the sample port on the vapor extraction skid using a PID. Readings ranged from increased from 125 ppmv during the SVE test to 147 ppmv when testing the DAS/SVE. The concentrations stabilized at approximately 106 ppmv. PID readings indicated an increase of approximately 20% when compared to readings obtained during previous SVE testing.

Post-pilot groundwater samples were collected at the conclusion of the integrated SAS/DAS/SVE pilot testing and compared to the baseline measurements. The results from the following wells indicated an increase in VOC concentrations: DAS, SMP-1, SMP-3, SMP-4, DMP-4, MW-7. However, the results of the remainder wells, SAS, DMP-1, and DMP-3, resulted in a decrease of total VOC concentrations. Table 2-7 presents the results of the groundwater sampling for both pre- and post-pilot testing. Appendix B presents the analytical results for the groundwater sampling.

Conclusions of the DAS/SVE pilot test are summarized below.

DMP-3 at 5 feet away and DMP-4 at 15 feet away exhibited the highest pressure influence when combined with the SVE. PID readings increased for the duration of the test and then tapered off. The depth to water measurements initially increased following the start-up of the test, causing SMP-3 at 5 feet from DAS to increase from 7 feet to 12 feet bgs.

Extrapolation of the data and evaluation of the collected data resulted in the following:

- Near-optimum conditions for sparging the deep zone were at a pressure of 16.5 psi and a flow rate of 3 scfm;
- The radius of influence of the deep sparging zone ranges from approximately 10 to 12 feet at the depth of sparging; and
- Mass removal rates ranged from 0.2 lbs/hr. to 0.3 lbs/hr. Subsequently, mass removal rates were greater than those observed from SAS/SVE testing discussed below;

3.6 SAS/SVE RESULTS

Results of the SAS/SVE pilot test are summarized below.

A SAS/SVE pilot test was conducted at 14 psi and 3 scfm. Throughout the test, the SVE parameters (i.e., vacuum rate) remained unchanged from the previous DAS/SVE test. Initially, the VMPs, SMPs, and DMPs exhibited no significant difference from the previous test.

However, VMP-1 at 12 feet away began exhibiting a vacuum influence one hour following the implementation of the test. Also, DMP-3 (5 feet) and DMP-4 (15 feet) eventually exhibited zero influence by the completion of the test.

PID measurements indicated an overall increase in concentrations at the SMPs and VMPs and a decrease at the DMPs. Depth to water measurements indicate the DMPs remained relatively steady throughout the test. The SMPs initially decreased as the SAS test was initiated.

COC concentrations were measured utilizing a PID. Readings ranged from 87 ppmv to 106 ppmv. PID indicated an decrease of approximately 20% when compared to readings obtained during DAS/SVE testing and a decrease of 30% when compared to the independent SVE pilot test.

Post-pilot groundwater samples were collected at the conclusion of the integrated SAS/DAS/SVE pilot testing and compared to the baseline measurements. The results from the following wells indicated an increase in VOC concentrations: DAS, SMP-1, SMP-3, SMP-4, DMP-4, MW-7. However, the results of the remainder wells, SAS, DMP-1, and DMP-3, resulted in a decrease of total VOC concentrations. Table 2-7 presents the results of the groundwater sampling for both pre- and post-pilot testing. Appendix B presents the analytical results for the groundwater sampling.

Conclusions of the SAS/SVE pilot test are summarized below.

SMP-3 (5 feet) and SMP-4 (15 feet) exhibited the highest pressure influence when combined with the SVE. PID readings increased for the duration of the test. The depth to water measurements initially decreased following the start-up of the test, but eventually stabilized.

Extrapolation of the data and evaluation of the collected data resulted in the following:

 Near-optimum conditions for sparging the shallow zone were at a pressure of 14 psi and a flow rate of 3 scfm;

- The radius of influence of the shallow sparging zone ranges from approximately 12 to 15 feet; and
- Mass removal rates ranged from approximately 0.17 lbs./hr. to 0.2 lbs./hr.

3.7 COMBINATION SAS/DAS/SVE RESULTS FOR 10 HOURS

The integrated SAS/DAS/SVE pilot test was conducted using 15 psi and 2.5 scfm at the SAS well head and 16 psi and 2.5 scfm at the DAS well head. The test was conducted for approximately ten (10)hours following the SAS and DAS tests. Throughout the test, the SVE was run at approximately 30 inches water with a flow rate of approximately 92 scfm. Initially the VMPs exhibited a pressure influence, after approximately eight hours of testing; the VMPs exhibited a vacuum influence, which was expected. The greatest pressure was exhibited in VMP-1, 12 feet from the SVE well. VMP-2, 25 feet from the SVE well, remained at 0 inches water throughout most of the test. The highest vacuum influence was observed at VMP-4, 18 feet away.

The PID readings of VMP-1 and VMP-4 increased by the end of the test while the remaining VMPs exhibited no change. The SMPs all decreased slightly and increased by the last measurement. The DMPs remained generally the same throughout the duration of the test.

The water levels in SMP/DMP-3 and SMP/DMP-4 both increased, which was an indication of mounding. However, noticeably, SMP-1 also increased slightly while DMP-1 decreased water elevation slightly. MW-7 decreased in water level elevation.

When conducting the SAS/DAS/SVE pilot test, the vapor monitoring readings were measured from the sample port on the vapor extraction skid. The PID readings were measured every hour and ranged from 0 ppmv to 2 ppmv.

In summary, the SAS/DAS/SVE pilot test determined that:

• Sparging at the shallow depth impeded the effectiveness of the deep air sparging. Air in the shallow depth hindered the vertical migration of the air sparging in the deep zone,

possibly causing the horizontal migration of the deep sparging. This conclusion was apparent by the low vapor concentrations measured at the sample port. Also, the SMPs did not exhibit a change in influence as more air was introduced into the formation, which in turn supports the conclusion that the air from the deep zone was being held down;

- Groundwater sampling results of the DAS well indicated a increase in VOCs between pre- and post-pilot testing, and a decrease in the SAS well. The decrease is indicative that during the combination test conducted prior to the DAS/SVE, the SAS is impeding on the DAS effectiveness; and
- Vacuum influence in the vadose zone was not inhibited when both zones were sparged simultaneously.

This section presents a summary of the findings resulting from the AS/SVE pilot testing. Fullscale design considerations are also presented such as well spacing and construction requirements, system requirements, vapor treatment, operation of the system, and enhancements.

4.1 SUMMARY OF RESULTS OF THE PILOT TESTING

The following is a summary of the relevant findings from the pilot test conducted from June 1 through 4, 1999 at the Photocircuits facility, in the vicinity of the hazardous waste storage area between the main building and the maintenance shop.

- Air Sparging/Soil Vapor Extraction (AS/SVE) was effective in both the shallow and deep treatment zones.
- Pulsing of shallow and deep air sparge wells appears to be an effective remedial approach since with both AS wells running simultaneously, the pressures in the shallow zone impede the effects of deep air sparging.
- Conventional SVE equipment can be used rather than high vacuum equipment.
- Mass removal rates via sparging for both the shallow and deep AS zones ranging from 0.17 lbs./hr to 0.31 lbs./hr.
- Sparging at the shallow depth impeded the effectiveness of the deep air sparging. Air in the shallow depth hindered the vertical migration of the sparge air in the deep zone, possibly causing the horizontal migration of the deep sparging. This conclusion is based on the low vapor concentrations measured at the sample port. Also, the SMPs did not exhibit a change in influence as more air was introduced into the formation, which in turn supports the conclusion that the air from the deep zone was being held down;
- Groundwater sampling results of the DAS well indicated a increase in VOCs between pre- and post-pilot testing, and a decrease in the SAS well. The decrease is indicative that during the combination test conducted prior to the DAS/SVE the SAS is impeding on the DAS effectiveness.

- Vacuum influence in the vadose zone was not inhibited when both zones were sparged simultaneously.
- Minimal perched water and mounding was encountered during AS/SVE testing.

Soil Vapor Extraction Only

- At 30 to 40 inches water vacuum, the extracted airflow of the vapor extraction system averaged approximately 92 to 95 scfm.
- The radius of influence (ROI) of the vadose zone ranges from approximately 15 to 20 feet.
- The design of any horizontal well system must be carefully considered in order to achieve the proper radial influence.

Shallow Air Sparging Only

- Near-optimum conditions for sparging the shallow zone were at a pressure of 14 psi and a flow rate of 3 cfm.
- The radius of influence of the shallow sparging zone ranges from approximately 12 to 15 feet.

Deep Air Sparging Only

- Near-optimum conditions for sparging the deep zone were at a pressure of 16.5 psi and a flow rate of 3 cfm.
- The radius of influence of the deep sparging zone ranges from approximately 10 to 12 feet.

Integrated Air Sparging/Soil Vapor Extraction

Sparging in the shallow zone impeded the effectiveness of the deep air sparging, which was apparent by the decrease in vapor concentrations measured at the sample port. Therefore, we recommend either pulsing of the shallow and deep wells to increase the effectiveness of the deep sparging or only deep sparge wells should be considered.

 Vacuum influence in the vadose zone was not inhibited when both zones were sparged simultaneously.

4.2 FULL-SCALE DESIGN CONSIDERATIONS

This section discusses considerations for full-scale design of an AS/SVE system located in the vicinity of the hazardous waste storage area between the main building and the maintenance shop. Each of the following design considerations is discussed below:

- > Well spacing and construction requirements of the SVE and AS points;
- System requirements;
- > Vapor treatment;
- \triangleright Operation of the AS/SVE; and
- \succ Enhancements to the AS/SVE.

4.2.1 Well Spacing and Construction Requirements

The following ROI are recommended for full-scale design:

- Between 15 and 20 feet for the Soil Vapor Extraction wells;
- > Between 12 and 15 feet for the Shallow Air Sparging wells; and
- > Between 10 and 12 feet for the Deep Air Sparging wells.

It is our recommendation to design a horizontal SVE well system or install SVE wells no deeper than 3.5 feet bgs. The high groundwater table in the area of the pilot test must be carefully considered. Also, the well cap of the horizontal wells, if used in full-scale, must be notched to allow influence in that direction. The Shallow and Deep Air Sparging wells should be screened similarly to the SAS and DAS wells constructed for the pilot study. In addition the option of eliminating SAS wells should be considered, based on the pilot test and the geology.

4.2.2 System Requirements

A conventional SVE and air system is recommended for full-scale design of an AS/SVE system. A vacuum blower able to achieve 25 inches to 60" inches water and a flow rate ranging from 85 scfm to 100 scfm per well would be sufficient. A compressor system able to achieve pressures ranging from 5 psi to 25 psi and flow rates of 2 scfm to 10 scfm per well is recommended.

Reduction of relative humidity to less than 50% is an important consideration for full-scale design. This would increase the life expectancy of the vapor treatment system. An air/water separator, dehumidifier or off-gas heat exchanger is recommended for control of the relative humidity.

4.2.3 Vapor Treatment

Based on the mass removal, and the NYSDEC air discharge criteria, for treatment of the vapors extracted from the SVE system is recommended. The system design should evaluate estimated carbon usage for vapor treatment and the practicality of thermal oxidation.

4.2.4 Operation of the AS/SVE

After evaluating the results of the AS/SVE pilot testing, it is recommended that the Deep and Shallow AS wells either be pulsed during operation of a full-scale AS/SVE system or that the SAS wells are eliminated. Under the pulsing scenario the SAS wells would be sparged followed by the DAS well sparging. The pulse interval and interval between sparging each zone will be incorporated into the design of the full-scale AS/SVE. Another alternative is individual operation of each AS well (i.e., each AS well operating individually). This alternative allows for any variations in the operation of the wells and respective zones or areas.

An alternative scenario would be to eliminate the SAS well and just utilize the DAS wells. We therefore, recommend that either an alternative will be effective in decreasing the ground water concentrations enough to support natural attenuation.

4.2.5 Enhancements

The results of the AS/SVE pilot testing indicate no need for enhancements for full-scale design of an AS/SVE system.

Well TypeDepth (feet bgs)Screen Inter (feet bgs)DAS Well3230 - 32		Screen Interval (feet bgs)	Material of Construction	Design Reference
			1 ¹ / ₂ -inch Sch 40 PVC riser 2-feet Sch 40 20 Slot screen Bottom of well threaded by Sch 40 PVC cap	Figure 2-3
SAS Well	22 20-22 3-inch Sch 40 PVC riser 2-feet Sch 40 20 Slot screen Bottom of well threaded by Sch 40 PVC cap PVC cap		Figure 2-3	
SVE	2.5	2	4-inch Sch 40 PVC riser 2 ¹ / ₂ -feet Sch 40 20 Slot screen	Figure 2-4
VMP1 VMP2 VMP3 VMP4	3.5	1.5 - 3.5	1 ¹ / ₄ -inch Sch 40 PVC riser 2-feet Sch 40 20 Slot screen	Figure 2-5
SMP1 SMP3	10 15	8-10 13-15	1 ¼-inch Sch 40 PVC riser 2-feet Sch 40 20 Slot screen	Figures 2-6
SMP4	15	13-15	1 ¹ / ₄ -inch Sch 40 PVC riser	Figure 2.7
DMP1 DMP3 DMP4	20 25 22	18-20 23-25 20-22	2-feet Sch 40 20 Slot screen	Figure 2-7

Table 2-1. Summary of Well and Monitoring Point As-Built Details

Deep Air Sparge Well DAS:

Shallow Air Sparge Well SAS:

Soil Vapor Extraction Well SVE:

Vapor Monitoring Point VMP:

Shallow-Depth Air Sparge Monitoring Point SMP:

Deep-Depth Air Sparge Monitoring Point DMP:

Sch:

Schedule (determines thickness)

Inner Diameter ID: Bgs: Below Ground Surface

Table 2-2 SVE Test

		ng Point Reading	S	
Comment	Time Well ID		Vacuum	Pos. Pressure
Pre-Test	1215 VMP1	5.0	not measured	0.000
	VPM2	4.4	<0.2	0.000
	VPM3	5.3	0.020	not meas
	VPM4	1372.0	0.005	not meas
40 " H2O	1251 VPM1	9.0	0.000	0.040
	VPM2	5.9	0.045	0.015
	VPM3	15.8	0.000	0.000
	VPM4	1017.0	0.075	not meas
	1327 VPM1	0.7	0.000	0.000
	VPM2	5.0	0.000	0.010
	VPM3	9.6	0.000	0.000
	VPM4	1004.0	0.055	not meas
	1400 VPM1	4.0	0.000	0.010
	VPM2	4.7	0.000	0.010
	VPM3	9.0	0.005	not meas
	VPM4	964.0	0.085	not meas
30 " H2O	1435 VPM1	1.6	0.000	0.010
	VPM2	4.7	0.000	0.020
	VPM3	12.7	0.005	not meas
	VPM4	181.0	0.070	not meas
	1517 VPM1	10.8	0.000	0.015
	VPM2	5.0	0.000	0.005
	VPM3	6.8	0.005	not meas
	VPM4	151.0	0.080	not meas
60 " H2O	1551 VPM1	2.5	0.000	0.005
	VPM2	4.4	0.000	0.003
	VPM3	6.5	0.003	not meas
	VPM4	140.0	0.145	not meas
	1635 VPM1	1.6	0.000	0.005
	VPM2	4.7	0.000	0.005
	VPM3	4.4	0.010	not meas
	VPM4	95.0	0.130	not meas
	1700 VPM1	not meas	0.000	0.010
	VPM2	not meas	0.000	0.005
	VPM3	not meas	0.010	0.000
	VPM4	not meas	0.130	0.000
	1735 VPM1	not meas	0.000	0.010
	VPM2	not meas	0.000	0.000
	VPM3	not meas	0.010	not meas
	VPM4	not meas	0.100	not meas
	1755 VPM1	not meas	0.000	0.005
	VPM2	not meas	0.000	0.000
	VPM3	not meas	0.010	not meas
	VPM4	not meas	0.100	not meas

Table 2-2 (continued) SVE Test

Time	Qin	Vin	Pout	Qout	Tpipe	Tcarbon
	cfm	inches H2O	inches H2O	cfm	F	F
1241	166	40	gauge not working	not measured	160	101
1325	950	40	gauge not working	not measured	158	115
1335	700	38.5	15	not measured	160	132
1412	108	39.5	16	not measured	160	130
1422	not measured	32	18	92	154	134
1515	not measured	30	19	94	153	130
1553	not measured	60	4	108	212	129
1647	not measured	60	4	109	208	135
1738	not measured	60	4	99	204	138
1807	not measured	61	2	-	224	130

Table	2-3
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	Shallow Air Sp	arge Well Test		
Comment	Time Well ID	· · · · · · · · · · · · · · · · · · ·	Vacuum	Pos. Pressure
Pre-Test	2137 VMP1	5.9	0.025	not meas
6/1/99	SMP1	2.9	0.000	0.060
	DMP1	3.0	0.000	0.000
	VMP2	4.4	0.000	0.000
	MW7	8.1	0.000	0.005
	VMP3	3.8	0.005	not meas
	SMP3	67.5	0.000	0.060
	DMP3	19.2	0.600	not meas
	VMP4	97.0	0.040	not meas
	SMP4	10.5	0.000	0.000
	DMP4	27.6	0.650	not meas
6/2/99	1042 VMP1	0.0	0.000	0,000
	SMP1	0.0	0.000	0.000
	DMP1	2.1	0.000	0.160
	VMP2	1.3	0.000	0.005
	MW7	2.9	0.000	0.005
	VMP3	0.0	0.000	0.003
1	SMP3	20.9	0.000	0.100
	DMP3	9.7	0.000	0.090
	VMP4	>2000	0.000	0.300
	SMP4	2.7	0.800	not meas
	DMP4	5.5	0.000	0.005
Start Test	1300			
Olune 1000	1315 SMP1	0.0	not meas	0.055
	SMP3	267.0	not meas	0.060
	SMP4	5.5	not meas	0.000
	1345 SMP1	1.3	not meas	0.075
	SMP3	254.3	not meas	0.040
	SMP4	3.3	not meas	0.055
	MW7	8.5	not meas	0.000
	1403 SMP1	2.5	not meas	0.080
	SMP3	228.5	not meas	0.040
	SMP3	4.5	not meas	0.000
		4.5 5.3		0.000
	MW7		not meas	
	DMP1	not meas	not meas	0.000 0.000
	DMP3 DMP4	not meas not meas	not meas not meas	0.000
	1420 VPM1	34.9	0.000	3.000
	VPM1	3.3	0.000	0.000
	VPM2	9.7	0.000	0.000
	VPM4	497.0	0.000	0.000
Stop Test	1510			
Stop Test	1512 VMP1	27.5	not meas	1.800
	SMP1	0.9	0.000	0.000
	DMP1	0.9	0.750	0.000
	VMP2	0.3	0.000	0.000
	MW7	4.3	0.000	0.000
		4.3 0.7	0.000	0.000
	SMP3	241.7	0.000	0.000
	DMP3	5.7	0.000	0.000
	VMP4	358.0	0.000	0.000
	SMP4	4.3	0.000	0.000
	DMP4	4.3 6.3	0.100	0.000
	SVE	0.3 19.5	not meas	not meas
	OVE	19.0	normeds	

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Table 2-4

Deep A	vir Spa	rge We	ell Test
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June 2, 1999 1640 VMP1 20.5 0.000 0.080			NAL-TH UN		p Air Sparge W		
Pre-Test/ Post-SVE purge DP1 11 0.7 0.000 0.000 VMP2 0.3 0.000 0.000 VMP3 2.1 0.000 0.000 SMP3 108.5 0.000 0.000 SMP3 108.5 0.000 0.000 VMP3 7.0 0.000 0.000 SMP3 7.0 0.000 0.000 VMP4 154.2 0.000 0.000 SMP4 17.9 0.000 0.230 DMP4 3.9 0.000 1.100 1727 0MP1 1.9 not meas 0.005 DMP4 6.9 not meas 0.005 1800 0MP1 1.5 not meas 1.000 DMP4 6.5 not meas 0.005 1800 0MP1 6.5 not meas 1.000 DMP4 6.5 not meas 0.005 1800 0MP1 6.5 not meas 1.000 DMP4 6.3 0.750 0.000 DMP4 5.5 0.000 0.000 DMP3 3.1 3.0 0.000 0.000 SMP3 6.12 0.000 0.000 DMP3 3.1 5.0 0.000 DMP3 3.1 5.05 not meas DMP3 3.1 5.05 not meas DMP3 3.1 5.05 not meas DMP3 3.1 5.05 not meas DMP4 1.5 7.750 0.000 DMP4 1.5 7.750 0.000 DMP4 1.5 7.750 0.000 DMP3 3.1 5.05 not meas DMP3 3.1 5.05 not meas DMP4 1.5 7.750 not meas DMP3 2.21 0.000 0.000 DMP4 2.251 2.9 0.010 not meas DMP3 0.10 9.000 0.000 DMP4 2.55 0.030 DMP3 0.000 0.000 DMP4 2.261 0.9 0.020 not meas DMP3 3.1 5.05 not meas DMP3 0.10 9.000 0.000 DMP4 0.9 0.470 not meas DMP3 0.10 0.9 0.000 0.000 DMP4 0.150 not meas DMP4 0.150 not meas DMP4 0.150 not meas DMP4 0.000 0.000 0.000 DMP4 0.250 not meas DMP4 0.000 0.000 0.000 DMP4 0.250 not meas DMP4 0.000 0.000 0.000 DMP4 0.000 0.000 0.	Comment	Time	Well ID	DTW	OVM reading		Pos. Pressure
Post-SVE purge DMP1 VMP2 1.1 0.100 - MW7 4.7 0.000 0.000 MW7 4.7 0.010 0.000 VMP3 108.5 0.000 0.000 VMP3 108.5 0.000 0.000 VMP4 154.2 0.000 0.000 VMP4 17.9 0.000 0.230 DMP4 3.9 0.000 0.230 DMP4 3.9 0.000 1.100 1727 DMP4 6.9 not meas 0.005 DMP4 6.9 not meas 0.005 DMP4 6.5 not meas 1.000 DMP4 6.5 not meas 1.000 DMP3 13.7 not meas 1.000 DMP4 6.5 not meas 0.000 NW7 3.0 0.000 0.000 NW7 3.0 0.000 0.000 NW7 2.1 0.000 0.000 NW7		1640					
VMP2 0.3 0.000 0.000 WM7 4.7 0.010 0.000 SMP3 108.5 0.000 0.000 DMP3 7.0 0.000 0.000 VMP3 7.0 0.000 0.000 VMP4 17.9 0.000 0.000 DMP4 3.9 0.000 1.100 DMP4 6.9 not meas 0.005 DMP4 6.9 not meas 0.005 DMP4 6.9 not meas 1.000 DMP4 6.5 not meas 1.000 DMP4 6.5 not meas 1.000 DMP4 6.5 not meas 1.000 DMP4 6.3 0.750 0.000 DMP1 2.7 0.000 0.000 DMP3 3.1.3 0.000 0.000 DMP3 3.1.3 0.000 0.000 DMP3 3.1.3 0.000 0.000 DMP4 5.5 0.100	Pre-Test/		SMP1				0.000
VMP2 0.3 0.000 0.000 VMP3 2.1 0.000 0.000 VMP3 2.1 0.000 0.000 DMP3 7.0 0.000 0.000 DMP4 154.2 0.000 0.000 VMP4 17.9 0.000 0.000 DMP4 3.9 0.000 1000 DMP3 4.3 not meas 2.005 DMP4 5.9 not meas 0.005 DMP3 13.7 not meas 0.005 DMP4 6.5 not meas 1.000 DMP3 13.7 not meas 1.000 DMP4 6.5 not meas 1.000 DMP4 2.7 0.000 0.000 VMP1 2.7 0.000 0.000 VMP2 2.7 0.000 0.000 VMP3 3.1.3 0.000 0.000 VMP3 3.1.3 0.000 0.000 VMP4 5.5 0.340	Post-SVE purge		DMP1		1.1	0.100	-
VMP3 DMP3 2.1 108.5 0.000 0.000 0.000 3.000 DMP3 VMP4 154.2 0.000 3.000 VMP4 154.2 0.000 0.000 DMP4 3.9 0.000 1.100 DMP4 3.9 0.000 1.100 DMP3 4.3 not meas 0.005 DMP4 6.9 not meas 0.005 1800 DMP1 1.5 not meas 0.005 1800 DMP3 13.7 not meas 0.005 DMP4 6.5 not meas 1.000 DMP4 6.5 not meas 1.000 DMP3 13.7 not meas 1.000 DMP4 6.5 not meas 1.000 DMP4 6.3 0.750 0.000 DMP4 6.3 0.750 0.000 DMP1 6.3 0.750 0.000 DMP1 2.1 0.000 0.000 DMP3 3.1.3 0.000 0.000 </td <td></td> <td></td> <td>VMP2</td> <td></td> <td>0.3</td> <td>0.000</td> <td>0.000</td>			VMP2		0.3	0.000	0.000
VMP3 DMP3 2.1 108.5 0.000 0.000 0.000 3.000 DMP3 VMP4 154.2 0.000 3.000 VMP4 154.2 0.000 0.000 DMP4 3.9 0.000 1.100 DMP4 3.9 0.000 1.100 DMP3 4.3 not meas 0.005 DMP4 6.9 not meas 0.005 1800 DMP1 1.5 not meas 0.005 1800 DMP3 13.7 not meas 0.005 DMP4 6.5 not meas 1.000 DMP4 6.5 not meas 1.000 DMP3 13.7 not meas 1.000 DMP4 6.5 not meas 1.000 DMP4 6.3 0.750 0.000 DMP4 6.3 0.750 0.000 DMP1 6.3 0.750 0.000 DMP1 2.1 0.000 0.000 DMP3 3.1.3 0.000 0.000 </td <td></td> <td></td> <td>MW7</td> <td>Í</td> <td></td> <td></td> <td></td>			MW7	Í			
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MW7 4.0 not meas 0.005 1800 DMP1 1.5 not meas 0.095 DMP4 6.5 not meas 17.000 DMP4 6.5 not meas 0.000 1825 VMP1 48.6 not meas 1800 DMP1 2.7 0.000 0.000 VMP2 2.7 0.000 0.000 VMP3 2.1 0.000 0.000 VMP3 3.1.3 0.000 0.000 VMP3 3.1.3 0.000 0.000 VMP4 344.0 0.000 0.000 SMP4 5.5 0.100 0.000 VMP4 5.5 0.100 0.000 VMP4 5.5 0.100 0.000 SMP4 5.2.1 0.000 0.000 VMP2 2.0 0.000 0.000 MW7 1.3 0.470 not meas DMP1 0.7 0.220 not meas DMP1 <td></td> <td></td> <td>DMP3</td> <td></td> <td>4.3</td> <td>not meas</td> <td></td>			DMP3		4.3	not meas	
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June 3 DMP3 DMP4 13.7 6.5 not meas not meas 1.000 0.000 1825 VMP1 48.6 not meas 0.000 1825 VMP1 2.7 0.000 0.000 DMP3 6.3 0.750 0.000 DMP1 6.3 0.750 0.000 DMP3 3.0 0.000 0.000 VMP2 2.7 0.000 0.000 VMP3 2.1 0.000 0.000 SMP3 61.2 0.000 0.000 DMP3 31.3 0.000 0.000 SMP4 55.5 0.100 0.000 DMP4 5.5 0.100 0.000 DMP1 1.3 0.470 not meas DMP1 1.3 0.470 not meas DMP3 3.1 >.05 not meas DMP4 1.5 1.7.50 not meas DMP4 1.5 1.5 0.340 SMP3 1.41.0 0.000 0.020			MW7		4.0	not meas	0.005
June 3 DMP3 DMP4 13.7 6.5 not meas not meas 1.000 0.000 1825 VMP1 48.6 not meas 0.000 1825 VMP1 2.7 0.000 0.000 DMP3 6.3 0.750 0.000 DMP1 6.3 0.750 0.000 DMP3 3.0 0.000 0.000 VMP2 2.7 0.000 0.000 VMP3 2.1 0.000 0.000 SMP3 61.2 0.000 0.000 DMP3 31.3 0.000 0.000 SMP4 55.5 0.100 0.000 DMP4 5.5 0.100 0.000 DMP1 1.3 0.470 not meas DMP1 1.3 0.470 not meas DMP3 3.1 >.05 not meas DMP4 1.5 1.7.50 not meas DMP4 1.5 1.5 0.340 SMP3 1.41.0 0.000 0.020		1800	DMP1	i	1.5	not meas	0.095
DMP4 6.5 not meas 17.000 1825 VMP1 48.6 not meas 0.000 SMP1 2.7 0.000 0.000 VMP2 2.7 0.000 0.000 VMP2 2.7 0.000 0.000 VMP3 2.1 0.000 0.000 VMP3 2.1 0.000 0.000 VMP3 31.3 0.000 0.000 VMP3 31.3 0.000 0.000 VMP4 32.1 0.000 0.000 VMP3 31.3 0.000 0.000 VMP4 52.1 0.000 0.000 SMP4 52.1 0.000 0.000 DMP1 0.7 0.020 not meas VMP3 1.9 0.000 0.000 SMP1 1.3 0.470 not meas VMP3 1.9 0.000 0.000 SMP4 238.0 0.000 0.000 SMP1 0.9		1		1			
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SMP1 2.7 0.000 0.000 DMP1 6.3 0.750 0.000 VMP2 2.7 0.000 0.000 WW7 3.0 0.000 0.000 WW73 2.1 0.000 0.000 VMP3 2.1 0.000 0.000 DMP3 31.3 0.000 0.000 DMP3 31.3 0.000 0.000 VMP4 344.0 0.000 0.000 SMP4 52.1 0.000 0.000 DMP4 5.5 0.100 0.000 DMP4 5.5 0.100 0.000 DMP1 0.7 0.020 not meas DMP1 0.7 0.020 not meas VMP2 2.0 0.000 0.000 MW7 2.0 0.010 not meas DMP4 1.5 17.750 not meas SMP3 3.1 >.05 not meas SMP4 238.0 0.0000		4005					
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Table 2-5

Combination AS/SVE Test									
Comment	Time	Well ID	DTW	OVM reading	Vacuum	Pos. Pressure			
June 3, 1999	1542	VMP1		84.2					
SVE Only		SMP1		2.1					
		DMP1		1.7					
		VMP2		2.3					
		MW7		7.1					
		VMP3		0.5					
		SMP3		393.0					
		DMP3		22.0					
		VMP4		216.1					
		SMP4		56.7					
		DMP4		23.1					
	1915	VMP1	ND	285.0	0.000	0.600			
	1015	SMP1	2.52	8.3	0.000	0.000			
		DMP1	3.00	8.3 7.3	0.000	0.000			
		VMP2	3.28	12.0	0.000	0.000			
		MW7	5.05	29.8	0.000	0.000			
		VMP3	7.71	3.8	0.000	0.000			
		SMP3	7.05	8270.0	0.000	0.300			
		DMP3	4.92	2417.0	0.000	0.080			
		VMP4	7.01	278.0	0.270	not meas			
		SMP4	6.96	523.0	0.000	0.150			
		DMP4	5.91	74.8	0.000	0.020			
S/SVE	1955	VMP1	ND	340.0	0.000	1.500			
		SMP1	4.80	7.3	0.000	0.000			
		DMP1	4.55	4.6	0.000	0.000			
		VMP2	2.48	13.0	0.000	0.000			
		MW7	5.32	20.4	0.000	0.000			
		VMP3	3.00	7.3	0.000	0.000			
		SMP3	7.05	7323.0	0.000	68.000			
		DMP3		7004.0	0.000	54.000			
		VMP4	3.32	315.0	0.000	0.030			
		SMP4		858.0	0.000	56.000			
		DMP4	1.38	104.0	0.000	1.000			
		SAS		17.0	not meas	not meas			
		DAS		21.3	not meas	not meas			
	2057	VMP1	ND	543.0	0.000	2.000			
		SMP1	4.68	4.7	0.000	0.000			
		DMP1	4.35	6.6	0.000	0.000			
		VMP2	2.45	11.0	0.000	0.000			
		MW7	5.85	15.7	0.000	0.000			
		VMP3	3.01	5.5	0.000	0.000			
		SMP3	12.61	3133.0	0.000	>100			
		DMP3		3909.0	0.000	87.000			
		VMP4	3.23	9966.0	0.000	0.450			
		SMP4		86.6	0.000	75.000			
		DMP4		100.0	0.000	5.500			

Combination AS/SVE Test

Table 2-5 (continued)

Comment	Time	Well ID	DTW	OVM reading	Vacuum	Pos. Pressure
June 3, 1999	2240	VMP1	ND	454.0	0.000	8.000
SAS/SVE Test		SMP1	3.18	4.6	0.000	0.000
		DMP1	4.22	2.7	0.000	0.000
		VMP2	2.40	8.3	0.000	0.000
		MW7	4.55	7.0	0.000	0.000
		VMP3	2.93	2.7	0.000	0.000
		SMP3	7.32	3316.0	0.000	4.000
		DMP3	4.69	7214.0	0.000	0.350
		VMP4	3.23	5260.0	1.850	3.500
		SMP4	3.18	255.0	0.000	0.250
		DMP4	4.67	50.7	0.000	2.000
	2341	VMP1	ND	327.0	1.750	not meas
	1	SMP1	4.41	1.8	not meas	0.000
		DMP1	4.42	1.8	0.000	0.000
		VMP2	2.39	4.6	0.000	0.000
		MW7	4.88	11.0	0.000	0.000
		VMP3	2.92	3.6	0.000	0.000
		SMP3	5.88	6966.0	0.000	0.010
		DMP3	5,35	2181.0	0.000	0.000
		VMP4	3.23	2939.0	not meas	0.150
		SMP4	3.53	868.0	not meas	1.000
		DMP4	5.18	57.4	0.000	0.000
June 4, 1999	0015	VMP1	DRY	399.0	1.750	not meas
		SMP1	4.53	2.7	0.000	0.000
		DMP1	4.43	1.8	0.000	0.000
		VMP2	2.44	2.7	0.000	0.000
		MW7	5.02	8.3	0.000	0.000
		VMP3	2.92	4.6	0.000	0.000
		SMP3	5.56	4140.0	0.000	0.010
		DMP3	3.33	1404.0	0.000	0.000
		VMP4	3.26	2216.0	not meas	0.650
	ł	SMP4	3.85	608.0	not meas	0.200
,		DMP4	5.23	26.9	0.000	0.000

Combination AS/SVE Test

Table 2-6

Combination SAS/DAS/SVE Test									
Time	Well ID	OVM	DTW	Vacuum	Pos. Pressure				
June 3, 1999	VMP1	13	DRY	0.000	6.000				
0415	SMP1	2.5	4.46	0.005	0.000				
	DMP1	0.3	3.08	0.005	0.000				
	VMP2	1.5	2.14	0.000	0.000				
	MW7	2.9	2.75	0.010	0.000				
	VMP3	0.7	2.21	0.000	0.020				
	SMP3	250	2.61	0.000	0.020				
	DMP3	415	not meas	1.550	0.000				
	VMP4	19.9	3.09	0.000	>120				
	SMP4	65	not meas	1.650	not meas				
	DMP4	20	not meas	0.000	>120				
0510	VMP1	8.7	DRY	0.000	5.500				
	SMP1	1.9	4.21	0.000	0.000				
	DMP1	0.9	3.25	0.000	0.000				
	VMP2	1.1	2.14	0.000	0.000				
	MW7	3,1	2.92	0.000	0.000				
	VMP3	0.7	2.22	0.000	0.015				
	SMP3	56.6	2.05	0.000	0.010				
	DMP3	129.5	not meas	1.650	>120				
	VMP4	24.7	3.09	1.800	>120				
	SMP4	36	not meas	1.700	>120				
	DMP4	not meas	not meas	not meas	not meas				
0615	VMP1	8	DRY	0.000	15.500				
	SMP1	1.7	3.98	0.000	0.000				
	DMP1	0.3	3.23	0.000	0.000				
	VMP2	0.5	2.14	0.000	0.000				
	MW7	1.3	3.09	0.000	0.000				
	VMP3	0	2.17	0.000	0.010				
	SMP3	57.4	1.66	0.000	0.060				
	DMP3	385	not meas	1.650	>120				
	VMP4	21.1	3.05	1.800	>120				
	SMP4	38.1	not meas	1.700	>120				
	DMP4	not meas	not meas	not meas	not meas				
0715	VMP1	9.7	DRY	0.000	16.000				
	SMP1	1.5	3.79	0.000	0.003				
	DMP1	0.5	3.29	0.000	0.000				
	VMP2	1.5	2.21	0.000	0.000				
1	MW7	1.5	3.31	0.000	0.000				
	VMP3	0	2.17	0.000	0.015				
	SMP3	58.5	1.48	0.000	0.250				
	DMP3	530	not meas	1.650	>120				
1	VMP4	26.1	3.07	0.000	92.000				
	SMP4	32.2	not meas	1.700	>120				
	DMP4	29	not meas	1.750	>120				

Combination SAS/DAS/SVE Test

Table 2-6 (continued)

Time	Well ID	OVM	DTW	Vacuum	Pos. Pressure
0815	VMP1	8,5	DRY	0.000	14.000
	SMP1	1.9	3.69	0.000	0.000
	DMP1	0.5	3.32	0.000	0.000
	VMP2	0.5	2.15	0.003	0.000
	MW7	1.3	3.37	0.000	0.003
	VMP3	0	2.18	0.000	0.020
	SMP3	42.4	1.41	0.000	0.000
	DMP3	875	not meas	1.600	>120
	VMP4	21.9	3.05	1.800	>120
	SMP4	23.7	not meas	1.700	>120
	DMP4	7.3	not meas	1.700	>120
915	VMP1	10.1	DRY	not meas	not meas
	SMP1	0.9	3.45	not meas	not meas
	DMP1	0.3	3.32	not meas	not meas
	VMP2	0.7	2.15	not meas	not meas
	MW7	0.5	3.38	not meas	not meas
	VMP3	0	2.15	not meas	not meas
	SMP3	37.1	1.27	not meas	not meas
	DMP3	1178	not meas	not meas	not meas
	VMP4	22.7	3.04	not meas	not meas
	SMP4	17.1	not meas	not meas	not meas
	DMP4	6.3	not meas	not meas	not meas
1015	VMP1	22.1	not meas	15.500	not meas
	SMP1	0.7	not meas	0.000	0.000
	DMP1	0.5	not meas	0.000	0.000
	VMP2	0.5	not meas	0.005	0.000
	MW7	1.5	not meas	0.003	0.005
	VMP3	0.3	not meas	0.000	0.010
	SMP3	39.5	not meas	0.000	0.100
	DMP3	1340	not meas	1.650	>120
	VMP4	29.2	not meas	1.800	>120
	SMP4	11.7	not meas	1.700	>120
	DMP4	5.1	not meas	1.655	>120
1210	VMP1	141.5	DRY	0.000	not meas
	SMP1	1.9	3.53	0.000	0.000
	DMP1	1.5	3.47	0.000	0.000
	VMP2	1.7	2.17	0.000	0.000
	MW7	4.9	3.64	0.005	0.000
	VMP3	3.9	2.12	0.000	0.020
	SMP3	505	1.42	0.000	0.000
	DMP3	205	not meas	1.605	>120
	VMP4	196.9	3.02	1.800	>120
	SMP4	60.1	not meas	1.605	>120
	DMP4	15.5	not meas	1.655	>120

Combination SAS/DAS/SVE Test

Table 2-7

Photocircuits AS/SVE Pilot Test **Groundwater Baseline Analysis** May 28, 1999 Glen Cove, New York

Sample Name		DAS	SAS	SMP-1	SMP-1DL	DMP-1	DMP-1DL	SMP-3	DMP-3
Sample ID		92234001	92234002	92234003	92234003DL	92234004	92234004DL	92234005	92234006
Date		05/28/1999	05/28/1999	05/28/1999	05/28/1999	05/28/1999	05/28/1999	05/28/1999	05/28/1999
Dilution	1	100	50	1	2	1	20	1000	200
Volatile Organic Compounds (ug/L)	POL								
Acetone	10	380 J	200 J	230 E	240 D	640 E	540 D	U	υ
Benzene	5.0	U	U	U) ป	U U	U	U	U U
Bromodichloromethane	5.0	U	U	U	ี บ	U	υ	U U) U
Bromoform	5.0	U	U	U	U U	ี ป	U	U	l u
Bromomethane	10	U	U	U	U U	U U	U U	U	U (
2-Butanone	10	U	U	84	88 D	630 E	540 D	U	U U
Carbon Disulfide	5.0	U	U	U	l U	20	U U	U U	U
Carbon Tetrachloride	5.0	U	(บ	U	U 1	37	U U	U U	2600
Chiorobenzene	5.0	U	ປ	U	U U	U	U U	U U	U U
Chlorodibromomethane	5.0	U	ี ป	U	U	U	U	U U	U U
Chloroethane	10	660 J	420 J	110	97 D	160	130 JD	U U	890 J
Chioroform	5.0	600	660	20	18 D	88	71 JD	U	3200
Chloromethane	10	U	U	U :	U U	U	U U	U	U U
1,1-Dichloroethane	5.0	7200	7900	240 E	220 D	1000 E	880 D	U	38000
1,2-Dichloroethane	5.0	U	U	U	U	(U	U	U	ιυ
1,1-Dichloroethene	5.0	U	υ υ	U	U U	U U	U U) U	U
Cis-1,2-Dichloroethene	5.0	U	υ	U	U	U) U	U	U
Trans-1,2-Dichloroethene	5.0	U	U	U	U U	U U	U U	U U	U
1,2-Dichloropropane	5.0	U	U U	U	U U	U	U U	U U	U U
Cis-1,3-Dichloropropene	5.0	U	j U	U U	U U	U	U U	(U	U U
Trans-1,3-Dichloropropene	5.0	U	. U	U U	U U	U	U [U U	U U
Ethylbenzene	5.0	U	U U	U U	U U	U U	U [U	U
2-Hexanone	10	U	U	U	U U	U U	U U	U	U U
4-Methyl-2-Pentanone	10	U	U U	U	U U	U	U U	U U	l u
Methylene Chioride	5.0	360 J	U	5	Į 7 JD	U	U U	3200 J	U
Styrene	5.0	U	U	U	U	U	U U	U U	U
1,1,2,2-Tetrachioroethane	5.0	U	U	U	{ U	U U	l u	U	U
Tetrachloroethene	5.0	U	U	30	25 D	4 J	U U	U U	U
Toluene	5.0	U	U	7	6 JD	73	U U	(U	U
1,1,1-Trichloroethane	5.0	9400	3400	48	40 D	280 E	240 D	U U	20000
1,1,2-Trichloroethane	5.0	U	υ	υ	U	U U	U U	U U	υ
Trichloroethene	5.0	U	U	20	18 D	U	υ	100000	U
Vinvi Chloride	10	Ū	U	29	20 D	10 J	υ	υ	1500 J
Xylenes (Total)	5.0	ŭ	Ū	U	Ú	4 J	U U	U	U

PQL: Method Practical Quantitation Limit

J: Estimated value.

U: Compound not detected, D: Diluted result.

DL: Diluted sample.

E: Value exceeded calibration range.

Table 2-7 (continued)

Photocircuits AS/SVE Pilot Test Groundwater Baseline Analysis May 28, 1999 Glen Cove, New York

Sample Name		SMP-4	SMP-4DL	SMP-4DL	DMP-4	DMP-4DL	MW7	TB052899	FB052899
Sample ID		92234007	92234007DL	92234007DL	92234008	92234008DL	92234009	92234010	92234011
Date		05/28/1999	05/28/1999	05/28/1999	05/28/1999	05/28/1999	05/28/1999	05/28/1999	05/28/1999
Dilution	1	10	100	250	5	10	10	1	1000
Volatile Organic Compounds (ug/L)	POL*					1			
Acetone	10	1000	2800 D	1200 JD	190	280 D	U	U 1	3 J
Benzene	5.0	U	U	U	U	U U	U	U	U
Bromodichloromethane	5.0	jυ	U	U	U U	U U	U	U	U
Bromoform	5.0	U	U	U	U U	U U	U U	U	U
Bromomethane	10	U	U	U	U	ίU	U	U	U
2-Butanone	10	U	U	U	U	U U	U U	U	U
Carbon Disulfide	5.0	U	U	U	U	U	U	U	U
Carbon Tetrachloride	5.0	U	U	U	1 U	U	U	U	U
Chlorobenzene	5.0	12 J	130 JD	U	U	9 JD	U	U U	U
Chlorodibromomethane	5.0	U U	U	U	U U	U	U	U	, u
Chloroethene	10	3400 E	7100 D	2300 JD	1200 E	1500 D	360	U	U
Chloroform	5.0	U	U U	U	U	U	65	U U	U
Chloromethane	10	U	U	U	U	U	U U	U U	U
1,1-Dichloroethane	5.0	5900 E	12000 Đ	7800 D	110	190 D	790	U	U 1
1,2-Dichioroethane	5.0	U	U	U	l u	U) U	υ] U
1,1-Dichloroethene	5.0	250	360 JD	U U	U U	U U	U	U U	U
Cis-1,2-Dichloroethene	5.0	15 J	U	U	U	U U	U	1 U	U
Trans-1,2-Dichloroethene	5.0	U	U	U	U	U U	U	U	U
1,2-Dichloropropane	5.0	U	U	U) U	U U	U	U U	U
Cis-1,3-Dichloropropene	5.0	U	U	U	(U	† U) U	ļu	U
Trans-1,3-Dichloropropene	5.0	U	U U	U	U	U U	ļυ	U U	U
Ethylbenzene	5.0	U	U	U	U	U U	U	U U	U
2-Hexanone	10	U	U	U	U U	U	U U	U	U
4-Methyl-2-Pentanone	10	U	U	U	U U	U U	U U) U	U
Methylene Chloride	5.0	21 J	65 JD	U	28	15 JD	36 J	ļυ	j 3 J
Styrene	5.0	U	U U	U	U	U	ן ט	l U	U
1,1,2,2-Tetrachloroethane	5.0	U	U	U U	U U	U	U	U	U
Tetrachloroethene	5.0	42 J	υ	U U	U	U U	U U	l u	U
Toluene	5.0	9 8	160 JD	U	U U	13 JD	U	U	U
1,1,1-Trichloroethane	5.0	18000 E	36000 ED	20000 D	22 J	310 D	U	l n	U U
1.1.2-Trichlorcethane	5.0	U) U	U	(U	U U	U	U	U
Trichloroethene	5.0	13 J	U U	U	U	jυ	υ	U	U
Vinyl Chloride	10	110	200 JD	U	U	U U	U	U	U
Xylenes (Total)	5.0	U	Ū	U	U	υ	<u> </u>	UU	U

PQL: Method Practical Quantitation Limit

J: Estimated value, U: Compound not detected, D: Diluted result.

DL: Diluted sample.

E: Value exceeded calibration range.

Table 2-7 (continued)

Photocircuits AS/SVE Pilot Test Groundwater Post-Test Analysis June 4, 1899 Glen Cove, New York

Sample Name	DAS	SAS	1MM	SMP1	SMP3	SMP4	DMP1	DMP3	DMP4
Sample ID	92261001	82261002	92261003	92261004	92261005	92261006	92261007	92261008	87761009
Date	06/04/1989	06/04/1999	06/04/1999	06/04/1999	06/04/1989	06/04/1999	06/04/1999	06/04/1999	06/07/1869
Dilution	<u>5</u>	ନ୍ତ	କ୍ଷ	ŝ	5000	<u>8</u>	9	22	8
Volatia Organic Compounds (ug/L) PQL									
Acetone 10	, ,	760	110 J	20	2	5	ន	5	82
Benzene 5.0		2	5	Þ	D	5	5	5	>
Bromodichloromethane 5.0	>	5	2	S	Þ	5	5	5	>
Bromoform 5.0	, ,	5	5	2	D		5	5	5
Bromomethane 10		5	5	5	5	5	Þ	C	Þ
2-Butanone 10	۰ ۱	D	5	5	2	2	5	5	2
Carbon Disuffide 5.0		2	2	Þ	c	Þ	5	>	<u> </u>
Carbon Tetrachloride 5.0		>	5	2	66000	5	5	2	∍
Chlorobenzene 5.0	- -	∍	5	5	2	2	5	5	5
Chlorodibromomethane 5.0		9	5	5	C	2	5	>	5
Chloroethane 10	1400	7 027	1100	282	2	L 068	120	2	100
Chloroform 5.0	1200	944	300	84	2	22	75	2000	2
Chioromethane 10		>	∍	5	5	5	5	5	>
	14000	5200	3600	260	29000	7300	870	24000	310
1,2-Dichloroethane 5.0	> 	5	5	2	2	5	Þ	2	Þ
1,1-Dichloroethene 5.0	1500	5	2	2	2	Þ	Þ	5	Þ
	>	5	5	5	D	5	5	>	>
Trains-1,2-Dichloroethene 5.0	2	>	-	5	5	5	5	5	>
	> 	>	5	5	5	5	2	Ð	∍
ene	⊃ 	>	5	2	Þ	5	Þ	∍	∍
Trans-1,3-Dichloropropene 5.0	⊃ 	5	2	5	5	2	5	5	5
•	> 	2	5)	- :	5:	.	5	5
2-Hexanone 10		5	5			5:	.)	5:
4-Methyl-2-Pentanone 10		5	5	5	_		2	2	>
Methylene Chloride 5.0	540	>	78 J	5	5	5	5	2	68
	⊃ 	>	Þ	5	∍	5	5	5	>
1,1,2,2-Tetrachloroethane 5.0	<u> </u>	5	5	5	5		<u> </u>	5	5
ŝ	<u> </u>	Þ	5	5	5	5	2	5	5
	_	5	5	5	5	5	1947 1	D	5
_	8006	2400	470	82	480000	18000	346	48000	
1,1,2-Trichloroethane 5.0		Ð	5	>		5		5	> :
Trichloroethene 5.0	>	Þ	∍	8	5		5	>	>
Vinyl Chloride 10	<u> </u>	5	∍	55	5	5	∍	>	>
Xytenes (Total) 5.0		D	D	0	0	0	D	0	

PQL: Method Practical Quantitation Limit J: Estimated value. U: Compound not detected.

Table 2-8

Photocircuits AS/SVE Pilot Test SVE Vapor Analysis Glen Cove, New York June 1999

GC/MS Volatiles - units ppmv	SVE-BASE	SVE-POST
Dichlorofluoromethane	ND	ND
Dichlorotetrafluoroethane	ND	ND
Trichlorofluoromethane	ND	ND
1,1,2-Trichlorofluoromethane	ND	ND
1,2-Dibromomethane	ND	ND
1,3,5-Trimethylbenzene	ND	ND
1,2,4-Trimethylbenzene	ND	ND
1,3-Dichlorobenzene	ND	ND
1,4-Dichlorobenzene	ND	ND
1,2-Dichlorobenzene	ND	ND
1,2,4-Trichlorobenzene	ND	ND
Hexachlorobutadiene	ND	ND
Benzene	ND	ND
Bromomethane	ND	ND
Carbon Tetrachloride	ND	ND
Chlorobenzene	ND	ND
Chloroethane	ND	ND
Chloroform	ND	ND
Chloromethane	ND	ND
1,1-Dichloroethane	0.16	2.4
1,2-Dichloroethane	ND	ND
1,1-Dichloroethene	ND	ND
Cis-1,2-Dichloroethene	ND	10
1,2-Dichloropropane	ND	ND
Cis-1,3-Dichloropropene	ND	NĎ
Trans-1,3-Dichloropropene	ND	ND
Ethylbenzene	ND	ND
Methylene Chloride	ND	ND
Styrene	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND
Tetrachloroethene	ND	11
Toluene	ND	ND
1,1,1-Trichloroethane	ND	2.8
1,1,2-Trichloroethane	ND	ND
Trichloroethene	ND	6
Vinyl Chloride	ND	15
m & p-xylenes	ND	ND
0-xylene	ND	ND

Table 2-9

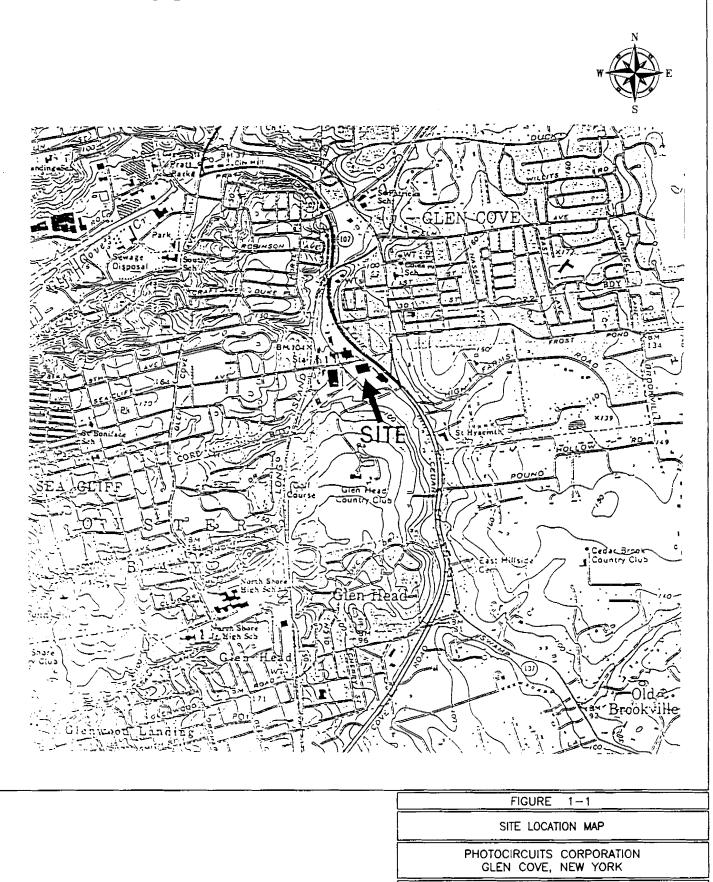
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DTW
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Table 2-9 (continued)

				DTW	
Date	Time	Well ID	DTW	DO	Comment
6/1/99	2000	DMP1		0.16	SVE Baseline DO
		DMP3		0.15	
		DMP4		0.15	
	1	MW7		0.11	
		SMP1		2.56	
		SMP3		0.29	
		SMP4		0.41	
		SAS		3.23	
		DAS		0.43	
6/2/99	0100	VMP1	DRY	Not Measured	Post SAS test (stopped at 2400, 6/1)
		SMP1	5.78	Not Measured	
		DMP1	4.65	Not Measured	
		VMP2	2.19	Not Measured	
		MW7	5.17	Not Measured	
1		VMP3	2.48	Not Measured	
		SMP3	7.13	Not Measured	
		DMP3	5.10	Not Measured	
		VMP4	3.20	Not Measured	
		SMP4	5.00	Not Measured	
	1	DMP4	4.90	Not Measured	
	i i	SAS	5.10	Not Measured	
		DAS	5.04	Not Measured	
6/2/99	0900	VMP1	DRY	Not Measured	SAS Re-test Baseline
		SMP1	4.94	1.13	
		DMP1	4.68	0.16	
		VMP2	2.28	Not Measured	
		MW7	5.29	0.22	
		VMP3	2.43		
		SMP3	5.23	1.53	
		DMP3	5.15	0.36	
		VMP4	3.24	Not Measured	
		SMP4	5.03	0.38	
	1	DMP4	4,93	0.39	
		SAS	4.93	Not Measured	
		DAS	4.98	Not Measured	
6/2/99	1420	VMP1	DRY	Not Measured	
		SMP1	5.92	Not Measured	
		DMP1	4.24	Not Measured	
		VMP2	2.31	Not Measured	
}		MW7	4.90	Not Measured	
		VMP3	2.41	Not Measured	
		SMP3	6.30	Not Measured	
1		DMP3	4.15	Not Measured	
ł		VMP4	2.28	Not Measured	
ļ		SMP4	2.86	Not Measured	
		DMP4	3.88	Not Measured	

Table 2-9 (continued)

				DTW	
Date	Time	Well ID	DTW	DO	Comment
6/2/99	1520	SMP1	5.59	1.89	Post SAS Re-test (stopped test at 1510)
		DMP1	4.60	0.01	
		MW7	5.13	0.36	
		SMP3	5.45	0.33	
		DMP3	5.14	0.51	
		SMP4	5.16	0.34	
		DMP4	4.97	0.62	
6/2/99	1850	VMP1	DRY	Not Measured	
	1	SMP1	6.54	Not Measured	
		DMP1	4.25	Not Measured	
		VMP2	2.30	Not Measured	
		MW7	4.70	Not Measured	
		VMP3	2.38	Not Measured	
		SMP3	8.64	Not Measured	
		DMP3	1.25	Not Measured	bubbling in well
		VMP4	3.17	Not Measured	
		SMP4	0.81	Not Measured	bubbling in well
		DMP4	1.17	Not Measured	bubbling in well
6/2/99	2020	VMP1	DRY	Not Measured	Post DAS Test
		SMP1	5.89	Not Measured	
		DMP1	6.56	Not Measured	
		VMP2	2.28	Not Measured	
		MW7	5.11	Not Measured	
		VMP3	2.46	Not Measured	
		SMP3	7.24	Not Measured	
		DMP3	5.23	Not Measured	
		VMP4	3.19	Not Measured	
	1	SMP4	5.25	Not Measured	
		DMP4	5.10	Not Measured	
6/4/99	930	VMP1	DRY	Not Measured	
		SMP1	4.79	Not Measured	
		DMP1	5.93	Not Measured	
		VMP2	2.39	Not Measured	
		MW7	6.04	Not Measured	
		VMP3	2.87	Not Measured	
		SMP3	5.47	Not Measured	
		DMP3	5.57	Not Measured	
		VMP4	DRY	Not Measured	
		SMP4	5.63	Not Measured	
		DMP4	5.39	Not Measured	
		DAS	5.38	Not Measured	
		SAS	6.00	Not Measured	
		SVE	1.34	Not Measured	



ciaren

Hart

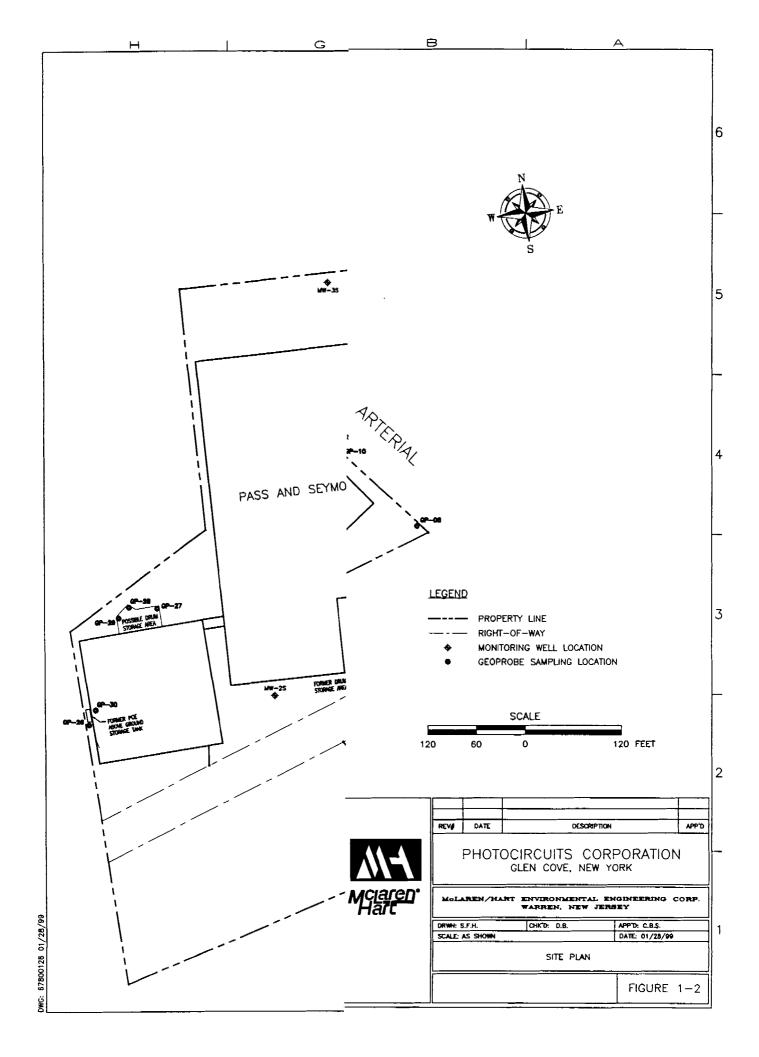
DRWN: D.B. SCALE: AS SHOWN ENVIRONMENTAL ENGINEERING

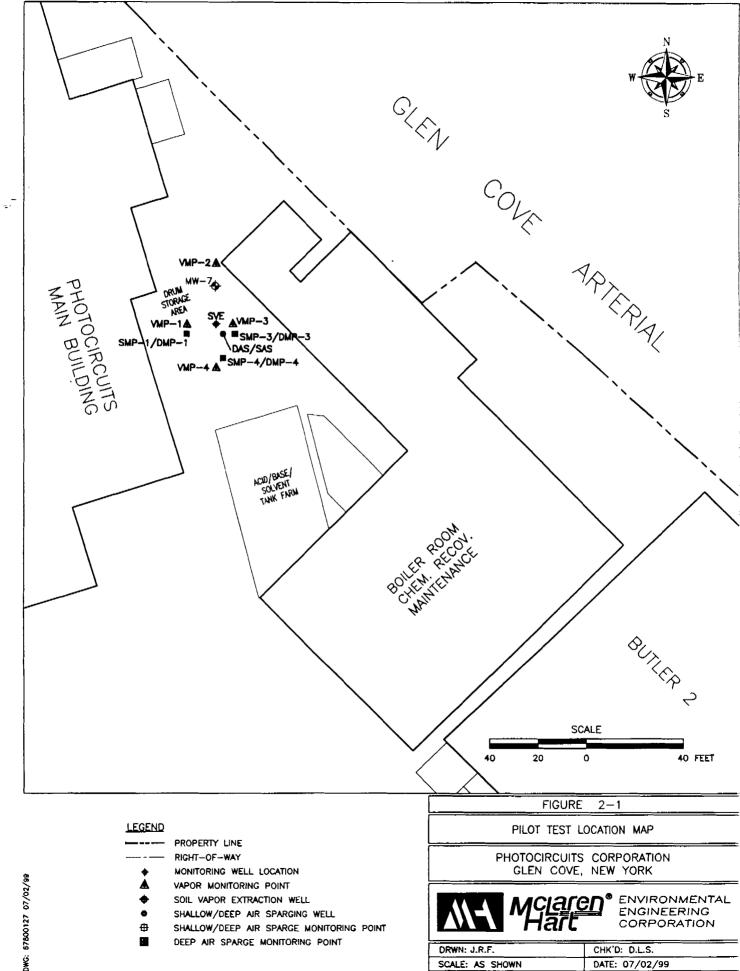
CORPORATION

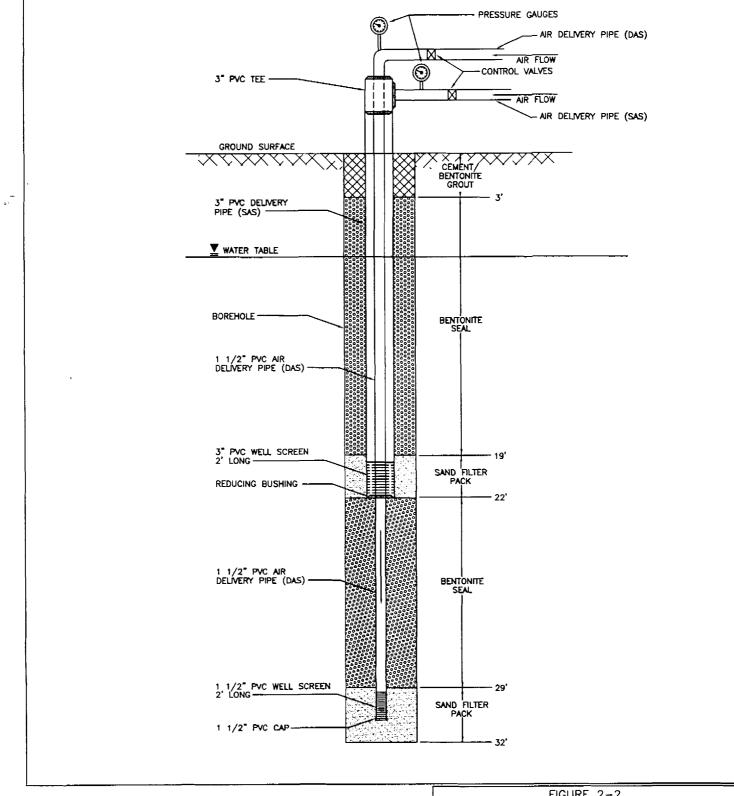
CHK'D: D.L.S.

DATE: 10/08/96

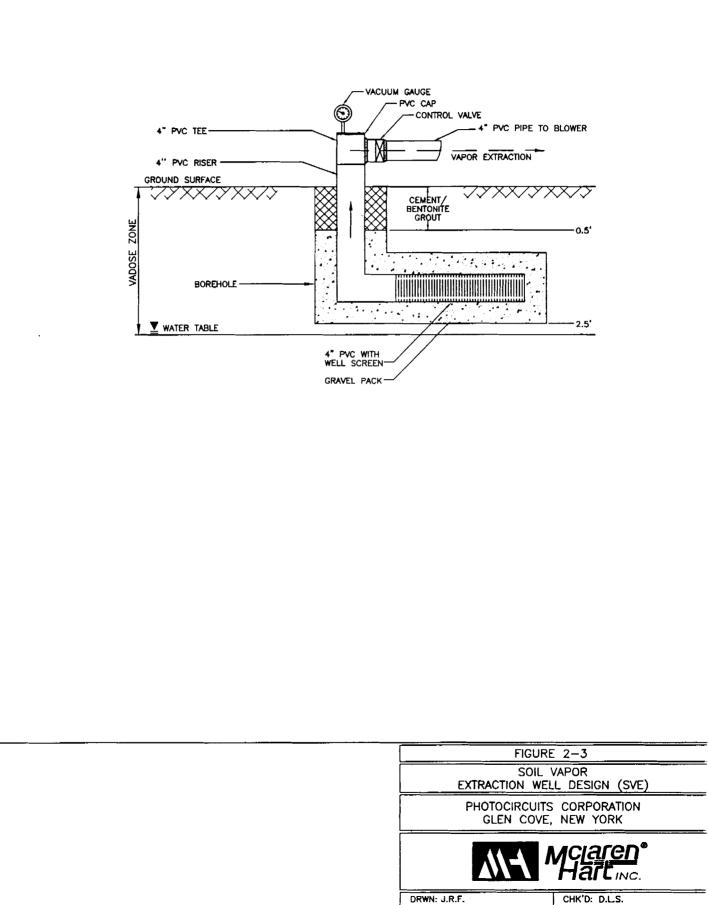
DWG: 67800126 07/02/99





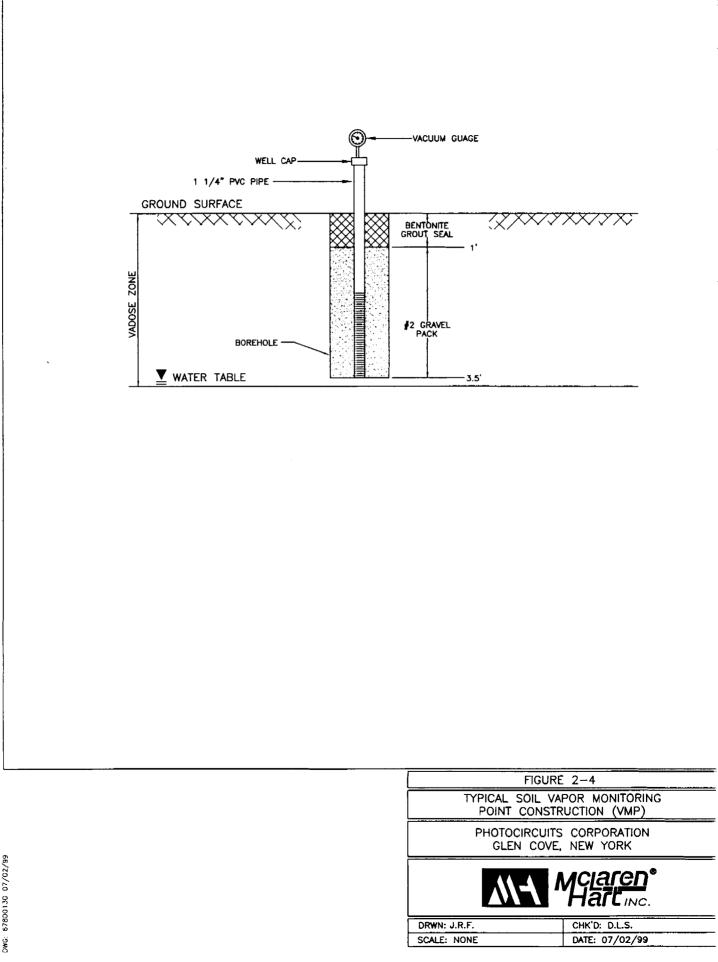


FIGU	RE 2-2
DEEP, AIR SPARGE	/SHALLOW WELL (DAS/SAS)
	TS CORPORATION /E, NEW YORK
M -	Mclaren [®] Hart ^{INC.}
DRWN: J.R.F.	CHK'D: D.L.S.
SCALE: NONE	DATE: 07/02/99



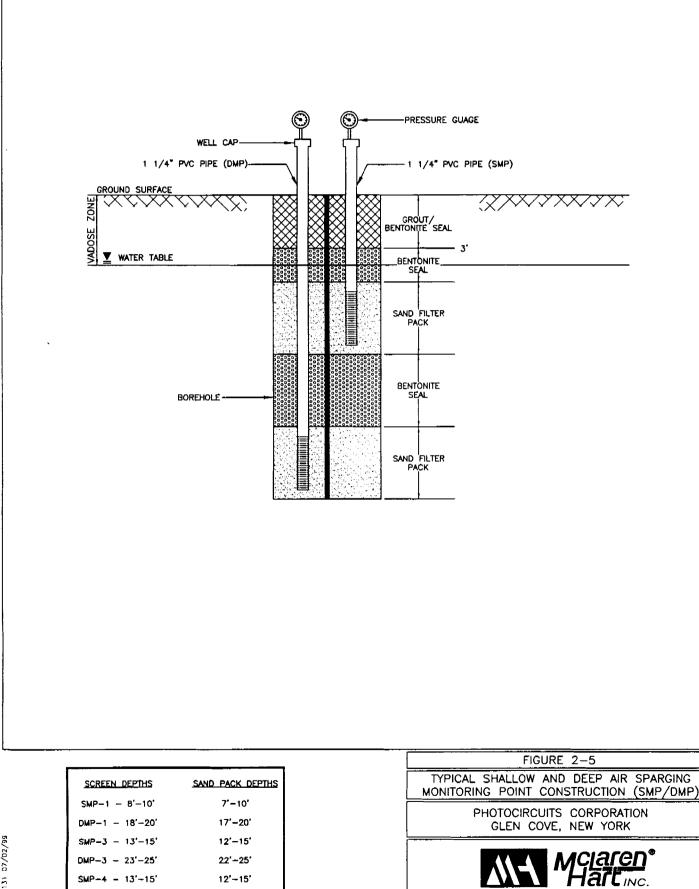
DATE: 07/02/99

SCALE: NONE



DWG: 67800130 07/02/99

..-



DRWN: J.R.F.

SCALE: NONE

CHK'D: D.L.S. DATE: 07/02/99

67800131 07/02/99 DWG:

DMP-3 - 23'-25'

SMP-4 - 13'-15'

DMP-4 - 20'-22'

22'-25'

12'-15'

19'-22'

APPENDIX A Monitoring Well Log for SAS/DAS

.

MONITORING WELL LOG

	MC MC	<u>aren</u>	SAS/		120806115001	Photocircuits,									
<u>N</u>	H a Ha	irt	Glen	on: Cove, New York		Deborah Schn									
LING E	QUIPMENT:	DRILLING (OR / DRILLER:	COMPLETION DATE:		PERMIT NUMBER:	-							
iger LL INSTA		Summit	t Drilling	, Inc./Todd Naugle	5/18/99-5/21/9 SAMPLING METHOD:	99	<u>_</u>	4							
S	ALLED?	1		Stem Auger		A and 2" Diamete	er Split Spoon (SS)								
	JRFACE ELEVAT		110110 44	STATIC WATER LEVEL:		NOTE:		1							
				8 feet bgs		PID readings w	ith 11.8 eV lamp	I							
БЕРТН	SAMPLE	REC.	BLOWS	1					- I .	WELL					
(FT.)	INTERVAL	(in,)	/12*	DESCRIPTION				MARKS	CONS						
				0"-10": Concrete 10"-14": Asphalt			0 ppmv								
	MA-1	18	ĺ												
							61 ppmv								
				36"-42": F-m gray SA	ND, some silt, tr. ç	gravel	14,4 ppmv								
		 		42"-48": F-m It. brow	in SAND, some silt.	, tr. gravel									
				 6"-12": F-m black SA	ND, little f-m grave	I	Damp, sheen present								
				12"-30": F-m black S						📖					
	MA-2	42					35.2 ppmv			📖					
	ł			30°-31": Dk brown-bl	ack GRAVEL		64 ppmv, adar	T							
				31 "-48": F-m black S.	AND, little gravel, li	ittle silt	Saturated								
							0"-12": Black colored	4 M/A TEO							
							U -12 : Black colored	JWATER							
		Į		12"-24": F-m black S	AND, little f-m grav	el, tr silt									
D	MA-3	48					77 ppmv								
T I				24"-30": M-c black S/ 30"-42": F-m black S/	-		> 1000 ppmv								
					into, some site										
2			<u> </u>	42"-48": F-m black S/		ttle c sand									
3		1		0"-24": M-c black SA	ND and f gravel		Pebbles & cobbles (di >1000 ppmv	fficult drilling)							
1	MA-4	48					>1000 ppmv								
5			1	24"-42": F-m black S/	AND, tr gravei		> 1000 ppmv								
5			ļ	42"-48": F-m brown-b	llack SAND, tr grav	el									
, ·				8"-24": M-c black GR/	AVEL and c sand										
							> 1000 ppmv								
3	MA-5	28		747 207 E 5 C 41			Dabbles 1 ashbis: 14	(figult drillic -)							
,				24"-30": F black SAN 30"-36": F black SAN			Pebbles & cobbles (di	mourt aniting)							
					2					000580					
	·							201 220							
	\setminus /						OVM not measured (2 Changed to piston poi								
	\bigvee						No sample from 20'-2	-							
2	\wedge														
3	/								SAS						
	· `														
+				6"-36": F-m black SAM	1D		30 ppmv								
							350 ppm:/								
ł			L	-1- # 1		WELL CONST									
E:	MA-1>	wacroco	re sam	pie # 1		Bentonite	RUCTION LEGEND	Plug							
				Ê		Screen		Cement/Bentonite							

Sand Pack

MONITORING WELL LOG (cont.)

DEPTH (FT.)	SAMPLE INTERVAL	REC. (in.)	BLOWS	DESCRIPTION	REMARKS	WELL CONSTRUCTION
	MA-6	30				
26				36*-46*: F-m dk gray SAND, little silt, little m-c gravel	250 ppmv	
27				46"-48": F-m dk gray SAND, some gravel, little silt		
28			14		Medium dense	
29	SS-1	11			59 ppmv at 291 21	
30				12"-20": F-m black SAND, little c sand 20"-24": F-m It brown-black SAND, little gravel	28 ppmv at 29' 6*/Dense 9 ppmv at 29' 10*	
11	SS-2	18	26	trace c. sand 6*-12*: F-m black SAND with 1* gravel	27 ppmv at 30' 9"/Medium Dense 58.1 ppmv at 31'	
12			37	12"-21": F-m It brown-brown SAND, little gravel 21"-24": F-m black SAND	49.4 ppmv at 311 4*/Dense 7.8 ppmv at 311 9*	
33				END OF BORING AT 32.0 ft		DAS
34						
35						
			Ì			
36						
37						
8						
9						
0						
1						
2						
3						
4			:			
5						
6						
.						
8						
9						
0						
1						
z						
3						
4						
	l ss-1 > s	Solit Soc			TRUCTION LEGEND	

APPENDIX B Groundwater Sampling Analytical Results

.



Severn Trent Laboratories 628 Route 10 Whippany, NJ 07981

NYSDEC CATEGORY A DATA PACKAGETel: (973) 428-8181 Fax: (973) 428-5222

SAMPLING DATE JUNE 4, 1999

MCLAREN HART

PROJECT: PHOTOCIRCUITS

PREPARED BY:

SEVERN TRENT LABORATORIES, INC. (STL)

(CERTIFICATION NUMBER 10997)

STL JOB NO: 20990-92261

VOLUME I OF I

Other Laboratory Locations:

۰.

149 Rangeway Road, North Billerica MA 01862
16203 Park Row, Suite 110, Houston TX 77084

55 South Park Drive, Colchester, VT 05446
 315 Fullerton Avenue, Newburgh NY 12550

Il East Oirve Road, Pensacola FL 32514

Westfield Executive Park, 53 Southampton Road, Westfield MA 01085
 200 Monroe Tumpike, Monroe, CT 06468

a part of Severn Trent Services Inc.



JUNE 23, 1999

۰.

20990-92261 MCLAREN HART, INC. 25 INDEPENDENCE BLVD. WARREN, NJ 07059

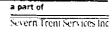
ATTENTION: DEB SCHNELL

The following samples were received for analysis by STL-NJ (NY Cert.#10997). These samples were received on and labeled as follows:

STL Sample No.:	Client ID:	Date Received
92261001	DAS	06/05/99
92261002	SAS	06/05/99
92261003	MW7	06/05/99
92261004	SMP1	06/05/99
92261005	SMP3	06/05/99
92261006	SMP4	06/05/99
92261007	DMP1	06/05/99
92261008	DMP3	06/05/99
92261009	DMP4	06/05/99
92261010	TB052899	06/05/99

DATA RELEASE AUTHORIZED BY:

Carl W. Armbruster Director of Operations





Severn Trent Laboratories 628 Route 10 Whippany NJ 07981

Tel: (973) 428-8181 Fax: (973) 428-5222

....

STL - NJ Lab Certifications

STL - NJ possesses the following regulatory certifications and is currently certified to perform analysis in accordance with regulations pertaining to these certifications. Certificates are on file at the laboratory.

State/Agency Certification	Lab ID Number
CLP Organics Contract	68D50011
Connecticut	PH0722
Maryland	195
New Jersey	14530
New York	10997
North Carolina	339
Pennsylvania	68-355
Rhode Island	178
West Virginia	258
USDA Permit	S-3295 Revised
Delaware	NJ323

Last Updated: 7/15/98

Other Laboratory Locations:

۰.

• 149 Rengening Rund, Horn Bassics 444 01862 • 16203 Park Row, Surke 110, Haustrian Tr. 77034 • 200 Hamar Rumane, Hamar CT 06468

120 Southcenter Court, Sunce 300, Manisume NC 27560

• 120 substanting function, some site, martine • 315 Futerian America, thereargh fit (2550 • (((all Olive Road, Pernanola FL 32514

a massive (massive Park SJ Standing an Aust, Massing and 01025)

a part of Seren Irent Services Inc

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VOLUME I																	
Case Narrative	•		•	-					•		•		-				1
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Chain-of-Custody				·	·	•											5
Volatiles		-	-		-												14

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ς. CASE NARRATIVE

۰.

Client: MCLAREN HART

Job No: 20990-92261

CASE NARRATIVE

VOLATILES:

The Methylene Chloride and Acetone detected in some of the samples is believed to be due to laboratory con.

SEMIVOLATILES:

No analysis was performed.

GAS CHROMATOGRAPHY:

No analysis was performed.

METALS:

No analysis was performed.

WET CHEMISTRY:

No analysis was performed.

SUBCONTRACTING:

No analysis was performed.

000003



ORGANICS ANALYSIS DATA AND SAMPLE QUALIFIERS Severn Trent Laboratories 628 Route 10 Whippany NJ 07981

Tel: (973) 428-8181 Fax: (973) 428-5222

DATA QUALIFIERS:

- U Indicates that the compound was analyzed for but not detected.
- J This qualifier indicates an estimated concentration. This qualifier is used (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL or PQL but greater than zero, and (3) when the retention time data indicate the presence of a compound that meets the pesticide/Aroclor identification criteria, and the result is less than meets the
- B This qualifier is used when the analyte is found in a method blank as well as the sample. It indicates possible sample contamination and warns the user to use caution when applying the results of this analyte.
- E Exceeds calibration curve
- A Indicates that a tentatively identified compound is a suspected Aldol-condensation product.
- N Indicates presumptive evidence of a compound. This qualifier is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all tentatively identified compound results. For generic classification of a tentatively identified compound, such as chlorinated hydrocarbon, the N code is not used.
- D This qualifier identifies all compounds identified in an analysis at a secondary dilution factor.
- P Indicates that the quantitative results from the two GC columns differed by more than 25 percent.

SAMPLE QUALIFIERS:

- DL Indicates that the analysis was performed at a secondary dilution.
- RE Rerun Indicates that the analysis is a reinjection or a reextraction and reanalysis, usually due to a failed QC element in the initial analysis.

Other Laboratory Locations:

149 Revenue Russ, Hart Brains MA 01862
 16203 Park Row, Surie (10, Hauston TX 11084)

16203 Park Raw, Suite (10, Hausson DX 1708 200 Marroe Europhe, Marrae CT 06468

+ LIERT Office Road, Personale FL 32514

· Vestiliat Cessore Perk, SJ Southerman Aura, Vestilat MA 01085

 ¹²⁰ Southcords Court, Suite 300, Marriquete NC 27560
 315 Futurium Austrie, Nandurgh NY 12550

METHODOLOGY SUMMARY

VOLATILE ORGANICS

۰.

EPA SW846 Method 8260B is used for the analysis of Volatile Organics. Helium is bubbled through a sample contained in a specifically designed purging chamber. The purgeables are efficiently transferred from the sample to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with Helium to desorb the purgeables onto gas chromatographic column. The gas chromatograph is а temperature programmed to separate the purgeables which are then detected with a mass spectrometer. The holding time for aqueous samples is fourteen (14) days from the date of collection, providing that the samples are preserved to pH < 2 with HCl (seven (7) days otherwise). The holding time for soil samples is also fourteen (14) days from collection.

CHAIN OF CUSTODY

Content: Dis Revise 10 Withings with 30 real Tel (1073) 428-222 CHAIN OF CUSTODY Client: Mc (14.00 / Hart 1 k.C.) Product 10 real		Severn Trent Laboratories					,	No. 58	5527	
O Client: Mc Louis Hart Milling (2) Client: Matheway Matheway <td< td=""><td></td><td>628 Route 10 Tel: (973) 428-8 Junuinited To Your Success Whippany NJ 07981 Fax:-(973) 428-5</td><td>3181 5222</td><td>CH</td><td>AIN OF C</td><td>USTODY</td><td></td><td></td><td>, (</td><td></td></td<>		628 Route 10 Tel: (973) 428-8 Junuinited To Your Success Whippany NJ 07981 Fax:-(973) 428-5	3181 5222	CH	AIN OF C	USTODY			, (
Image: Account of the contract:						/FIELI	D BOOK:		Pgof	-
3) Project Name/no: Whotbic/rcuits Inc. a) Client Contact: Dab Schwull b) Schwull c) STL Contact: Dab Schwull c) STL Contact: D) Schwall Contact Con	\bigcirc	Client: McLaren/Hart Inc.	#	11 Bill	MC		RIN	- Willing Folki	abiUse Only	
Client Contact: D.B. Schweld F POR BCROGG IS OD 100 Client Contact: D.B. Schweld Contact:	2	Project Name/no .: Photocircuits Inc.	0					JobiNo.	10201/00	
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16 10 <		DM P	41; 					021/001	aller Adjusting	黒
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(16) COMMENTS: (Please include hazards on site.) X Grove Viols Contain bubbles		P 206 0499 4 Washing 1925 Mary	<u>194</u>					091444		
(16) COMMENTS: (Please include hazards on site.) X Grow Viols Chlan bubbles		T B 0 6 0 4 9 9 8000 000	17						S. ILCULAVIA ENVI	
(6) COMMENTS: (Please include hazards on site.) * Some Viols Chlan bubbles			*							
(16) COMMENTS: (Please include hazards on site.) X SAVE Viols Chlan bubbles		14/9/2006/00 14/9/2006/00 14/9/2006/00 14/9/2006/00 14/9/2006/00 14/9/2006/2006/2006/2006/2006/2006/2006/20	Kia Ku							嬼
* Some Vials contain bubbles	6	COMMENTS: (Please include hazards on site.)	<u></u> -	_l, i.i.,				Under anthonories		
(1) Sand Land Company / Alal w/14 (1) Signalue (1) Cystodo Seal # (s) 6(12) Pate/Time	-								.2	
Considered by white the second of the second	(12)	Sampled By: Sampled By: And Company / Mclu	mer/H	A.	Signa	phill	Cristoc	Seal (s) 601-	Pate/Time 6C0 6/VE	ת
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Mtx = Matrix of Sample. (A1=Air, AQ=Aqueous, LE=Leachate, ML=Misc Liquid, MS=Misc Solids, OIL, SE=Sediment, SL=Sludge, SO=Soil)		Mix = Matrix of Sample. (Al=Air, AQ=Aqueous, LE	=Leach	ate, ML=N	disc Liquid, MS	=Misc Solids, OIL, 9	SE=Sediment, SL=S	ludge, SO=Soil)		0000

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.) See reverse for directions.

SEVERN TRENT LABORATORIES, Inc NEW JERSEY 00007 SAMPLE RECEIPT VERIFICATION FORM
JOB NUMBER: 522(21 CLIENT Mailen HOL DATE RECEIVED: 4/5/99
* OF SAMPLES
COOLER TEMPS • C (COOLER OUTSIDE 2-6 • C PRESER VED (ICED LUE ICE/ NONE IF OUTSIDE TEMP RANGE - WERE SAMPLES RECEIVED LESS THAN 4 HOURS FROM COLLECTION 7 YES NO
CHAIN OF CUSTODY PRESENT ABSENT PROPERLY SIGNED, DATED, TIME: YES NO SAMPLE TAGS: PRESENT ABSENT RECEIVED BY: DRIVER IF SHIPPED AIRBILL PRESENT#812704607012
COOLER RADIOACT. SCREEN BELOW 0.50 #R/hr YES NO(INFORM SAFETY OFFICER IMMED.) YESNO SAMPLE BOTTLES INTACT YESNO SAMPLE LABELS INTACT YESNO LABELS COMPLETE AND LEGIBLE (ID, DATE, TIME, SIGNATURE, PRESERVATIVE) YESNO SAMPLES RECEIVED WITHIN HOLDING TIME YESNO SAMPLES RECEIVED WITHIN HOLDING TIME YESNO SAMPLES PROPERLY PRESERVED YESNO SUFFICIENT SAMPLE VOLUME RECEIVED YESNO SUFFICIENT SAMPLE VOLUME RECEIVED YESNO DRINKING H20/TREATED H20 - CHECKED FOR RESIDUAL CHLORINENA NA NTIALDATE - RUSH REPORT ISSUED BY NA
INTIAL DATE - % MOISTURE PERFORMED BY NA INTIAL DATE - SAMPLE COMPOSITE PERFORMED BY NA
NOTE AND ITEMIZE BY SAMPLE AFFECTED, DISCREPANCIES AND NONCONFORMANCES FOUND: 54,05,000-Head Space in all 3 bts. 07-5 Head space in 26tb Did Not rectage Field Blank
PROJECT MANAGER INFORMED OF DISCREPANCIES :INTIALS DATENA
SUBCONTRACTING OF ANALYSIS REQUIRED _YES _NO SUB COC COMPLETED _YES _NO _NA SUBCONTRACTED SAMPLES SHIPPED _YES _NO CARRIER USED SAMPLE RECEIPT, LABELING AND STORAGE PROCEDURES PERFORMED BY : A MALANIAL
FINAL INSPECTION
BOTTLES CORRECTLY LABELED INTERNAL CHAIN OF CUSTODY INITIATED ALL SIGNATURES AND DATES COMPLETE YES NO ALL SIGNATURES AND DATES COMPLETE YES NO
CLIENT INFORMED OF DISCREPANCIES/NONCONFORMANCES BY PMDATETIME
NAME CLIENT REPRESENTATIVE INFORMED
CORRECTIVE ACTION REQUESTED BY CLIENT:
CORRECTIVE ACTION TAKEN:
PROJECT MANAGER APPROVED VERIFICATION FORM COMPLETE: UATE_

SEVERN TRENT LABORA TORIES, Inc NEW JERSEY PAGE I o	PAGE 1 OF	SEVERN TRENT LABORATORIES, Inc NEW JERSEY
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SAMPLE PRESERVATION VERIFICATION LOG SAMPLE CONTROL DEPARTMENT

JOB NUMBER : 92241	CLIENT: Mdglien/Hort	DATE RECEIVE	ED : <u>(/</u>	5/99
# OF SAMPLES : 10		•		

If pH is not within acceptable range, document actual pH in OTHER column

VOA ,	METALS	PHC	OIL & GREASE
D#pH 2 OTHER 2007ファレー 2007ファレー 2007ファレー 2007ファレー 2007 2017 2017 2017 2017 2017 2017 2017	ID # pH <2 OTHER	ID # pH <2 OTHER	ID # pH <2 OTHER
CYANIDE .	H2SO4 PRES. W.C.	H2SO4 PRES. W.C.	OTHER PRESERVATIVE
ID # pH >12 OTHER	ID # pH <2 OTHER	10 # pH<2 OTHER	ID # pH OTHER

COMMENTS: NOTE BY SAMPLE ID NUMBER - NON CONFORMANCES IN PH PRESERVATION:

PH PRESERVATION VERIFICATION PERFORMED BY : 12 Matur DATE

PROJECT MANAGER INFORMED OF NON CONFORMANCE : _____ YES INITIAL ____

	Severn Trent Laborator	ies
To Your Success INT	TERNAL CHAIN OF CUSTOD	Y CHRONICLE
	VOLATILES	
Job/Case Number: 9	2dll Sample IDs:	>1-10
Relinquished By:	Malania Date	Time: <u>(0/7/99</u>
Received By:	Date	Mime: 06/07/98 (115
I confirm that I have	performed the analysis below foll	lowing SOP quidelines:
ANALYST RETRIEVA		
		Returned
Sample No(s)	Analyst Signature	Date (So
001-010	S.Kinsur	
ANALYST RETRIEVA	AL: REANALYSIS:	
Sample No(s)	Analyst Signature	Date
001-0067		
PERCENT SOLIDS:		
Sample No(s)	Analyst Signature	Date
		·

I confirm that I have reviewed all associated data for this job:

REVIEWED BY:

itte

Signature

S. Illug

Date 6/15/19 r.h.sln-Data Release Authorized By:

AUTHORIZATION:

Group Leader/Lab Manager

Date

Employee Name	Signature	Initials
LABORATORY DIRECTOR		
Armbruster, Carl	and en and	Curt
LABORATORY MANAGER	0	
Hitt, Dewey	Newy & Rott	DOH
QA/QC MANAGER		
Heath, Timothy	Time M. Hote.	Tm4
ADMINISTRATION	\sim	
Bartley, Katrina	Altras Inethe	11B
Connelly, Joan -	Verillik	JMC
Davila, Nahir	Sea lin aris	N.D
Nadzan, Al	R Lalan	ach
Wood, Mary	Mary B. Und	mBu)
	<i>V</i>	
REPORTS PRODUCTION		
Cignarella, Christine	ievoile	CC.
Patel, Darshana	Dardyna Patel	<u> </u>
Roman, Richard	Richard Koman	R.R.
SYSTEMS		
Foti, Lisa	CHE CHE	
Gorden, Roger	Poger B. Dorten	(RTEG)
Molina, Maria	Maria Veletina	men

STL - NEW JERSEY SIGNATURE PAGE

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11

STL - NEW JERSEY SIGNATURE PAGE

Employee Name	Signature	Initials
PROJECT MANAGEMENT		
Brack, Joe		
Doster, Deanna	A. Jan	CAC-
Glenn, Dan		R
Pryor, Kelly	Kelly A. Durn	Kas
Trulick, Barbra	Bottain	Ē19
SAMPLE CONTROL		
Doeffinger, John	ighal Dach Leulen	al
Droz, Efrain	- 5 · · ·	Æ.
Malaniak, Rachel	Hochel Malarit	Res
BOTTLE PREP		
D'Achille, Al	april and le	aus
Reynolds, Ed	(2) Quard ()	Enn_
Sander, James	num bol	- BS
· · · · · · · · · · · · · · · · · · ·		
GC/MS VOLATILES		
Acierno, Mark	-70-	MUA
Klusey, Sylvanus	5. Min Sen	51L
Manlangit, Ferdie	127-	fras
Waldron, Stacey	3Waldron	Sa
GC/MS SEMIVOLATILES		
Hamernick, Richard	K. Hannal	Pft
Mauriello, Gregg	+ the my de	im
Schulze, Stephen	All Al	545
Seal, Sonia	Sonia Seal	55.
Wood, Brian	1 Mar Wood	/re

Page 2 of 4

STL - NEW JERSEY SIGNATURE PAGE Employee Name Signature Initials GAS CHROMATOGRAPHY nu Carlone, John Hankerson, Anthony Down Herrmann, Claus Hornberger, Kasie G ftm Lena, John Scott, Gordon GNS Tako, Lisa et Wechsler, David Dn~ METALS Chang, Grace Cousineau, Paul Terper Herpen, Lori Nadzan, Tim Schwartz, Robert hs5 WET CHEMISTRY KB Bene. Bielski, Kevin Jun Florance, Gerard G.f. Æ Kenneweg, John ERP Piatt, Ernest FIELD SERVICES Dippel, Edward Knudsen, Troy Murad, John

Page 3 of 4

STL	-	NEW	JERSEY	SIGNATURE	PAGE
-----	---	-----	--------	-----------	------

Employee Name	Signature	Initials
RADIOLOGICALS		
Fink, Daniel	2. a. and.	TITE:
Komanduri, Sreenivas	K ANDUNAS	R.z_
Nielsen, Erik	Mr. 1Cm	Ell
Zareian-Fink, Nahid	Nahit. Sweenm	N.ZF
	-	
· · · · · · · · · · · · · · · · · · ·		

REVISED 6/4/99

Page 4 of 4

VOLATILES

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MATRIX: <u>Water</u>

CLIENT : McLaren Hart

JOB No.: <u>92261</u>_____

VOLATILE ORGANIC ANALYSIS RESULTS

Quantitation Factor (QF)	1.00	1.00	1.00	100.00	50.00	Method Practical
Method Blank I.D.	J0668	10668	A8433	A8433	A8433	Quantitation Limits (PQL)*
<u>Lab I.D.</u>	990609J1	92261010	990615A1	92261001	92261002	
<u>Client I.D</u>	METHOD BLANK	18052899	METHOD BLANK	DAS	SAS	
Acetone	Ú	U	U	U.	760	10.0
Benzene	U	Ū	U	U	U	5.0
Bromodichloromethane	Ŭ	U	U	U	U	5.0
Bromoform	U	U	U	U	U	5.0
Bromomethane	Ŭ	U	U	U	Ų	10.0
2-Butanone	U	Ų	U	U	U	10.0
Carbon Disulfide	U	U	U	U	UU	5.0
Carbon Tetrachloride	U	U	U	Ű	U	5.0
Chlorobenzene	U	U	U	U	U	5.0
Chlorodibromomethane	U	U	U	U	ប	5.0
Chloroethane	U	U	U I	1400	220J	10.0
Chloroform	U	U	U	1200	440	5.0
Chloromethane	U	U	U	U	U	10.0
1,1-Dichloroethane	U	Ų	U	14000	5200	5.0
1,2-Dichloroethane	U	. U	U	U	U	5.0
1,1-Dichloroethene	U	U	U	1500	U	5.0
Cis-1,2-Dichloroethene	U	U	U	U	U	5.0
Trans-1,2-Dichloroethene	U	U	U	Ú	U	5.0
1,2-Dichloropropane	U	U		U	U	5.0
Cis-1,3-Dichloropropene	U	U	U	U	U	5.0
Trans 1,3-Dichloropropene	U	U	U	U	υ	5.0
Ethylbenzene	U	U	U	U	U	5.0
2-Hexanone	U	U	U	U	U	10.0
4-Methyl-2-Pentanone	U	U	U		U	10.0
Methylene Chloride	U U	U	U	540	U	5.0
Styrene	U	U	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	U	U	5.0
Tetrachloroethene	U	U	U	U	U	5.0
Toluene	U	Ū.	<u> </u>	Ú	U	5.0
1,1,1-Trichloroethane	U	U	U.	9000	2400	5.0
1,1,2-Trichloroethane	U	U	U	U	U	5.0
Trichloroethene	U	U	U	U	U	5.0
Vinyl Chloride	U	υ	U	Ų	U	10.0
Xylenes (Total)	U	U	UÍ	U		5.0

Units: ug/l

* Sample PQL (Practical Quantitation Limit) = Method PQL X QF

MATRIX: <u>Water</u>

JOB No.: <u>92261</u>

VOLATILE ORGANIC ANALYSIS RESULTS

<u>Lab I.D.</u>	A8433 92261003 MW7 110J U U U U	AB433 92261004 SMP1 200 U	A8433 92261006 SMP4	A8433 92261008 DMP3	A8433 92261009 DMP4	Quantitation Limits (PQL)*
<u>Client I.D</u> Acetone Benzene Bromodichloromethane Bromoform	MW7 110J U U U	SMP1 200 U U	SMP4	DMP3	DMP4	
Acetone Benzene Bromodichloromethane Bromoform	110J U U U	200 U U	U			
Benzene Bromodichloromethane Bromoform	U U U	U U		U		
Benzene Bromodichloromethane Bromoform	U U U	U U		U		
Bromodichloromethane Bromoform		U	<u> </u>		220	10.0
Bromoform	Ū			U	U	5.0
Bromoform	-		Ū	U	U	5.0
D comemo the need		0	U	U	U	5.0
a nononeruane		U	U	. บ	U	10.0
2-Butanone		U	Ű		U	10.0
Carbon Disulfide		U	U	U	Ų	5.0
Carbon Tetrachloride	Ú	U	U	U	U	5.0
Chlorobenzene	U		U	U U	U	5.0
Chlorodibromomethane	U	U	<u> </u>	Ū	U	5.0
Chloroethane	1100	260	8301	U	1000	10.0
Chloroform	300	- 49	620	2000	<u> </u>	5.0
Chloromethane	U	U	U	Ū	U	10.0
1,1-Dichloroethane	3500	560	7300	24000	310	5.0
1,2-Dichloroethane	úŢ	Ü I	U	U	Ų	5.0
1,1-Dichloroethene	U	Ű	U	U	U U	5.0
Cis-1,2-Dichloroethene	U I	<u> </u>	U	U	U	5.0
Trans-1,2-Dichloroethene	U	U	Ū Ū	Ű	U	5.0
1,2-Dichloropropane	U		U	UU	U	5.0
Cis-1,3-Dichloropropene	U	U	U	U	U	5.0
Trans-1,3-Dichloropropene		U	U U	U	U	5.0
Ethylbenzene		U	U	U	ี ป	5.0
2-Hexanone	U	U	U	U	U	10.0
4-Methyl-2-Pentanone	Ŭ	U	U	U	UU	10.0
Methylene Chloride	78J	U	U	U	68J	5.0
Styrene	<u> </u>	U	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U		U U	U	<u> </u>	5.0
Tetrachloroethene	U	U	U	U	U	5.0
Toluene	U	U	U	U	U	5.0
1,1,1-Trichloroethane	470	230	18000	48000	700	5.0
1,1,2-Trichloroethane	<u> </u>	<u> </u>	U	U	U	5.0
Trichloroethene	<u> </u>	82		<u> </u>	<u> </u>	5.0
Vinyl Chloride	U	92	Ú	U	U	10.0
Xylenes (Total)	U	<u> </u>	U		<u> </u>	5.0

Units: ug/l

* Sample PQL (Practical Quantitation Limit) = Method PQL X QF

MATRIX: <u>Water</u>

CLIENT : McLaren Hart

JOB No.: <u>92261</u>

VOLATILE ORGANIC ANALYSIS RESULTS

5000.00 10.00 Quantitation Factor (QF) Method Practical Quantitation Method Blank I.D. A8433 A8433 Limits (PQL)* Lab I.D. 92261005 92261007 SMP3 DMP1 Client 1.D 220 Acetone U I 10.0 Benzene U U 5.0 Bromodichloromethane Ū U 5.0 Bromoform u U 5.0 U Bromomethane U 10.0 2-Butanone Ū υ 10.0 Carbon Disulfide U U 5.0 Carbon Tetrachloride 66000 U 5.0 Chlorobenzene U υ 5.0 Chlorodibromomethane U Ū. 5.0 120 10.0 Chloroethane H Chloraform U 75 5.0 Chloromethane U 10.0 υ 59000 870 1,1-Dichloroethane 5.0 1,2-Dichloroethane 1,1-Dichloroethene UI 5.0 U Ü 11 5.0 Cis-1,2-Dichloroethene U υ 5.0 Trans-1,2-0ichloroethene U 5.0 U 1,2-Dichloropropane 11 TT 5.0 Cis-1,3-Dichloropropene U U 5.0 Trans-1,3-Dichloropropene U U 5.0 Ethylbenzene U 5.0 υī 11 10.0 2-Hexanone Ū. 4-Methyl +2-Pentanone U U 10.0 Methylene Chloride U 5.0 U 5.0 Styrene U. U 1,1,2,2-Tetrachloroethane U UT 5.0 Tetrachloroethene U 5.0 U 48.1 Toluene 11 5.0 480000 1,1,1-Trichloroethane 340 5.0 1,1,2-Trichloroethane υ U 5.0 Trichloroethene U U 5.0 Vinyl Chloride U 10.0 U Xylenes (Total) U UI 5.0 25

Units: ug/l

* Sample PQL (Practical Quantitation Limit) = Method PQL X QF



Severn Trent Laboratories 628 Route 10 Whippany, NJ 07981

Tel: (973) 428-8181

NYSDEC CATEGORY A DATA PACKAGE AXX (973) 428-5222

SAMPLING DATE MAY 28, 1999

MCLAREN HART

PROJECT: PHOTOCIRCUITS

PREPARED BY:

SEVERN TRENT LABORATORIES, INC. (STL)

(CERTIFICATION NUMBER 10997)

STL JOB NO: 20990-92234

VOLUME I OF I

Other Laboratory Locations:

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• 149 Rangeway Road, North Billerica MA 01862

15203 Park Row, Suite 110, Houston TX 77084

55 South Park Drive, Colchester, VT 05446
315 Fullerton Avenue, Newburgh NY 12550

IlEast Olive Road, Pensacola FL 32514

Westfield Executive Park, 53 Southampton Road, Westfield MA 01085

● 200 Monroe Tumpike, Monroe, CT 06468



JUNE 23, 1999

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20990-92234 MCLAREN HART, INC. 25 INDEPENDENCE BLVD. WARREN, NJ 07059

ATTENTION: DEB SCHNELL

The following samples were received for analysis by STL-NJ (NY Cert.#10997). These samples were received on and labeled as follows:

STL Sample No.:	Client ID:	Date Received
92234001	DAS	06/03/99
92234002	SAS	06/03/99
92234003	SMP-1	06/03/99
92234004	DMP-1	06/03/99
92234005	SMP-3	06/03/99
92234006	DMP-3	06/03/99
92234007	SMP-4	06/03/99
92234008	DMP-4	06/03/99
92234009	MW7	06/03/99
92234010	TB052899	06/03/99
92234011	FB052899	06/03/99

DATA RELEASE AUTHORIZED BY:

Carl W. Armbruster Director of Operations

TABLE OF CONTENTS

	PZ	AGE
VOLUME I		
Case Narrative	1	L
Qualifiers Code	3	}
Methodology Summary	•••••••••••••••	:
Chain-of-Custody	5	}
Volatiles	1	4

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Severn Trent Laboratories 628 Route 10 Whippany NJ 07981

Tel: (973) 428-8181 Fax: (973) 428-5222

STL - NJ Lab Certifications

STL - NJ possesses the following regulatory certifications and is currently certified to perform analysis in accordance with regulations pertaining to these certifications. Certificates are on file at the laboratory.

State/Agency Certification	Lab ID Number
CLP Organics Contract	68D50011
Connecticut	PH0722
Maryland	195
New Jersey	14530
New York	10997
North Carolina	339
Pennsylvania	68-355
Rhode Island	178
West Virginia	258
USDA Permit	S-3295 Revised
Delaware	NJ323

Last Updated: 7/15/98

Other Laboratory Locations:

* 149 Rangener Real, Horn Brinns Lik Old22 * 16203 Park Row, Swite 110, Hausson 12 77044 * 200 Harras Remaine, Kunnar CT 05453

120 Southerner Court, Suite 300, Mansume MC 27560

+ 315 Function America, Memoriagen NY 12550 + 11Cast Oline Road, Permagola FL 32514

a vertex Count Port 53 Sad writer Aust, Prestar 44 01055

a part of Seveni Irem Services Inc.

CASE NARRATIVE

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Client: McLAREN HART

Job No: 20990-92234

CASE NARRATIVE

VOLATILES:

Samples 92234003 (SMP-1), 92234004 (DMP-1), 92234007 (SMP-4) and 92234008 (DMP-4) have an initial analysis and dilution reported due to target compound concentrations exceeding the calibration range.

The Acetone and Methylene Chloride detected in samples 92234001 (DAS), 92234008 (DMP-4), 92234008DL (DMP-4) and 92234011 (FB052899) are believed to be due to laboratory contamination. The Acetone in samples 92234005 (SMP-3) and 92234009 (MW7) are believed to be due to laboratory contamination.

Sample 92234007 (SMP-4) has two dilutions reported, a one hundred and a two fifty fold. The one hundred fold dilution still has 1,1,1-trichloroethane exceeding calibration range. The two hundred and fifty fold dilution has no exceedences, but one internal standard area was outside of QC limits in the blank. This internal standard is not the internal used to quantitate 1,1,1trichloroethane.

SEMIVOLATILES:

No analysis was performed.

GAS CHROMATOGRAPHY:

No analysis was performed.

METALS:

No analysis was performed.

WET CHEMISTRY:

No analysis was performed.

SUBCONTRACTING:

No analysis was performed.



ORGANICS ANALYSIS DATA AND SAMPLE QUALIFIERS Severn Trent Laboratories 628 Route 10 Whippany NJ 07981

Tel: (973) 428-8181 Fax: (973) 428-5222

DATA QUALIFIERS:

- U Indicates that the compound was analyzed for but not detected.
- J This qualifier indicates an estimated concentration. This qualifier is used (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, (2) when the mass spectral and retention time data indicate the presence of a compound that meets the—volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL or PQL but greater than zero, and (3) when the retention time data indicate the presence of a compound that meets the pesticide/Aroclor identification criteria, and the result is less than the CRQL or PQL but greater than zero.
- B This qualifier is used when the analyte is found in a method blank as well as the sample. It indicates possible sample contamination and warns the user to use caution when applying the results of this analyte.
- E Exceeds calibration curve
- A Indicates that a tentatively identified compound is a suspected Aldol-condensation product.
- N Indicates presumptive evidence of a compound. This qualifier is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all tentatively identified compound results. For generic classification of a tentatively identified compound, such as chlorinated hydrocarbon, the N code is not used.
- D This qualifier identifies all compounds identified in an analysis at a secondary dilution factor.
- P Indicates that the quantitative results from the two GC columns differed by more than 25 percent.

SAMPLE QUALIFIERS:

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- DL Indicates that the analysis was performed at a secondary dilution.
- RE Rerun Indicates that the analysis is a reinjection or a reextraction and reanalysis, usually due to a failed QC element in the initial analysis.

Other Laboratory Locations:

· 200 Hanac Languic, Hanae CT 05468

• 315 Futurion Anorue, Nonlingth MY 12550 • 11Ept Olive, Road, Annuable FL 32514

· Martial Graphic Port, SJ Sand arten And Martines HA 01055

a part of Seveni Ticut Services like

^{• 149} Range-by Read, Horn Balarias 644,01862

^{# 16203} Park Row, Suite LLO, Hauston TX 77084

 ¹²⁰ Southcenter Court, Suite 300, Morriquite MC 27560

METHODOLOGY SUMMARY

VOLATILE ORGANICS

EPA SW846 Method 8260B is used for the analysis of Volatile Organics. Helium is bubbled through a sample contained in a specifically designed purging chamber. The purgeables are efficiently transferred from the sample to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with Helium to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a mass spectrometer. The holding time for aqueous samples is fourteen (14) days from the date of collection, providing that the samples are preserved to pH <2 with HCl (seven (7) days otherwise). The holding time for soil samples is also fourteen (14) days from collection.

CHAIN OF CUSTODY

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Severn Trent Laboratories 628 Route 10 Tel: (973) 428-8181

CULAIN OF CUCTODY

Committed To Your Success Whippany NJ 07981 Fax: (973) 428-5222			FIELD BOOK:		Pg of
Client: Miharin Hant #) Bill	ptcharen/ Han		For Lab Use Only
Project Name/no .: Photocircuits		To	26 Interindence burd	\$ \$ j	BNO PRODUCTION
Client Contact: Deb Schme M	1	PO#	Nance, NJ 07059 120806115001001		
		I	ANALYSIS REQUIRED	LE C	of Coolers : *** Saveras objet femp (s) *****
STL Contact: Gan Glenn O				A A A A A A A A A A A A A A A A A A A	Luštody Seal #(s) (2000) Date Due E-MERICAN
TAT: 1wk, 2wk, 3wk, OTHER 2WK					PM NON-CONTOR AL NO
Proj. Type: NJPDES, NPDES, ISRA, CLP, CERCLA, RCRA, A UST, ACO, MOA. OTHER N	D	.			reserved
Protocol: CLP, SW846, EPA 600	1 0			ା ାତି ଭିାତ	ontainerstermetvolum
DW, OTHER E	N				roken:
Reporting Type: NJ Reg Format, NJ Reduced Format, AND R CLP, Level II, Level I, Data Sum).)	-			Broken: Holding Time? It with a second
CLP, Level I, Level I (Data Sum), Other N CATA - Mclour USIC	VOZ (2			ogged By!
Client ID (10 CHAR) Date Time DMtx	·	\sim			DESCRIPTION
SAS /6557111 11		γ		02.1	
3MP-1 DHP-1 1545 1535 1535 1535 111111111111111111				03. 1	
SMP-3 1630 MINU				04.8	
D H P - 3 SM P - 4				······	5 m Break States
SMP-4 DMP-4 数数数145031366 14304366					一日、日、中国の市内市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市
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TB052899 FB052899		*			2 billingaduspace
				G IZ	A S RIMAN AND A S S S S S S S S S S S S S S S S S S
COMMENTS: (Please include hazards on site.)	L	I		<u> </u>	
* some vialo contain bubbles.					
Rrint Name and Company			Signature C' 1 A	Cystody Seal # (s)	_ Date/Time
		A	Jehab R. Selve	6445	5/28/99/ 1811
Received By:					
Relinquished By: Received By: Kachel Malaniak STL		D R	malaniot		4/3/99/10:0
Relinquished By:		-/6/-			
Received By:					/
Mtx = Matrix of Sample. (AI=Air, AQ=Aqueous, LE=Leac	chate,	, ML=Mi	sc Liquid, MS=Misc Solids, OIL, SE=Sedimer	t, SL=Sludge, SO=S	Soil)

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.) See reverse for directions.

927			RATORIES, I. I VERIFICAT				0006
JOB NUMBER : 977	CLIENT	Mcharen	HUTTDATER	RECEIVED	: 6/3/99		
		· ·			· <u> </u>		
OF SAMPLES 11 CUSTODY SEALS PRESENT	# OF COOLER	s_/ Roken ten	IPERATURE BLAN	K PRESENT	YES NO	0	
COOLER TEMPIS • C]] IF OUTSIDE TEMP RANGE - W	VERE SAMPLES RECEIVE	ED LESS THAN 4	HOURS FROM COL	LECTION 7	YES N	NE O	
CHAIN OF CUSTODY PRESENT	SENTIABSENT PRO	PERLY SIGNED ED BY: DRIVER	DATED, TIME :	_YES_NO) PRESENT	# 207124	307
COOLER RADIOACT, SCRE		YES_NO_	_(INFORM SA	FETY OFFI	CER IMMEI	D.)	
YESNO SAMPLE BO	DTTLES INTACT INTAINERS PER ANA	LYSIS USED					
TES NO SAMPLE LA							
ZYES NO LABELS CO			IME, SIGNATURE	E PRESER VA	ATTVE)		
YES_NO SAMPLES R							
YES NO SAMPLES PI	ROPERLY PRESERVE	U TER MATRIX	NA OL	10-726	H. hpad	spalp	
YES NO SUFFICIENT	SAMPLE VOLUME R	ECEIVED			/	1	
_YES_NO DRINKING H	120/TREATED H20 - C	HECKED FOR F	ESIDUAL CHLC	RINEN	A		
(DOCUMEN	T ON PH VERIFICATI	ON LOG FORM					
TNTTA I	DATE - RUSH REPO	את התווצצו דא		/ NA			
INTIAL	DATE - pHANALYS	LS PERFORMED	BY	∇_{NA}^{n}			
	DATE - % MOISTUR			THA			
INTIAL	DATE - SAMPLE CO	MPOSITE PERF	ORMED BY	_NA			
NOTE AND ITEMIZE BY S Samples 01, + 10	AMPLE AFFECTED, 26415 how 1	DISCREPANCIE 1 ead Spa	S AND NONCON	FORMANC	ES FOUND: _		
<u>Samples 01,+10</u>	2 btls have 1	read spa	Ц				
$\frac{Camples & b}{PROJECT} = \frac{b}{PROJECT}$	2 6Hs have 1	CIES :I	VITALS SUB COC COM	_DATE	NA		
Samples of the 10 PROJECT MANAGER INFOR SUBCONTRACTING OF AN	2 6Hs have 1	CIES :I	VTIALS	_DATE	NA		
Sumples of , + 10 PROJECT MANAGER INFO SUBCONTRACTING OF AN SUBCONTRACTED SAMPLI	2 6Hs have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED	<u>read</u> CIES :I _YESNO _YESNO	SUB COC COM CARRIER USEL	DATE	NA		
Sumples of , + 10 PROJECT MANAGER INFO SUBCONTRACTING OF AN SUBCONTRACTED SAMPLI	2 6Hs have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED	CIES :I YESNO YESNO XOCEDURES PE	SUB COC COM CARRIER USEL	DATE	NA		
Samples of , + 10 PROJECT MANAGER INFOR SUBCONTRACTING OF AN SUBCONTRACTED SAMPLE SAMPLE RECEIPT, LABELI	2 6Hs have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED ENG AND STORAGE PE	CIES :I _YESNO _YESNO ROCEDURES PE 	SUB COC COM CARRIER USEL RFORMED BY :	DATE PLETED	NA		1,
Samples of the formation of the formatio	2 6Hs have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED ING AND STORAGE PE	CIES :I YESNO YESNO NOCEDURES PE FINAL I	SUB COC COM CARRIER USEL RFORMED BY : INSPECTION	DATE PLETED	NA		18
Samples of the formation of an and the formation of t	2 6Hs have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED ING AND STORAGE PE BELED TODY INITIATED	CIES :I _YESNO _YESNO ROCEDURES PE 	CARRIER USEL REFORMED BY : INSPECTION NO REVIEWED, NO	DATE PLETED	NA		18
Cumples of , + 10 PROJECT MANAGER INFOR SUBCONTRACTING OF AN SUBCONTRACTED SAMPLI SAMPLE RECEIPT . LABELL BOTTLES CORRECTLY LAB INTERNAL CHAIN OF CUST ALL SIGNATURES AND DA	2. 6HS have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED ING AND STORAGE PE BELED RODY INITIATED TES COMPLETE	CIES:I YESNO _YESNO NOCEDURES PE FINAL I YESI YESI	SUB COC COM CARRIER USEL RFORMED BY : INSPECTION NO REVIEWED NO	DATE PLETED By M	NA	NA anda ATE-44	18
CLIENT INFORMED OF DISC	2. 6HS have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED ING AND STORAGE PE BELED FODY INITIATED TES COMPLETE CREPANCIES/NONCO	CIES :I 	SUB COC COM CARRIER USEL RFORMED BY : INSPECTION NO REVIEWED NO NO REVIEWED NO NO	DATE PLETED By M	NA TES NO - Mala Mala	TIME	18
CLIENT INFORMED OF DISC NAME CLIENT REPRESENT	2. 6HS have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED ING AND STORAGE PE BELED TODY INITIATED TES COMPLETE CREPANCIES/NONCO	CIES :I 	SUB COC COM CARRIER USEL RFORMED BY : INSPECTION NO REVIEWED NO NO BY PM	DATE PLETED By A	NA TES NO - Mala DATE DATE	TIME	18
Cumples of the formation of the formatio	2. 6HS have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED ING AND STORAGE PE BELED TODY INITIATED TES COMPLETE CREPANCIES/NONCO	CIES :I 	SUB COC COM CARRIER USEL RFORMED BY : INSPECTION NO REVIEWED NO NO BY PM	DATE PLETED By A	NA TES NO - Mala DATE DATE	TIME	18
NOTE AND ITEMIZE BY S. Samples of 1 + 10 PROJECT MANAGER INFOR SUBCONTRACTING OF AN SUBCONTRACTED SAMPLE SAMPLE RECEIPT . LABELL BOTTLES CORRECTLY LAB INTERNAL CHAIN OF CUST ALL SIGNATURES AND DA CLIENT INFORMED OF DISC NAME CLIENT REPRESENT CORRECTIVE ACTION REQ CORRECTIVE ACTION TAK	2. 6HS have 1 RMED OF DISCREPAN ALYSIS REQUIRED ES SHIPPED ING AND STORAGE PE BELED TODY INITIATED TES COMPLETE CREPANCIES/NONCO TATIVE INFORMED QUESTED BY CLIENT:	CIES :I 	SUB COC COM CARRIER USEL RFORMED BY : INSPECTION NO REVIEWED NO BY PM	DATE	NA TES NO - Mala DATE DATE	TIME	18
Cumples of , + 10 PROJECT MANAGER INFOR SUBCONTRACTING OF AN SUBCONTRACTED SAMPLI SAMPLE RECEIPT . LABELL BOTTLES CORRECTLY LAB INTERNAL CHAIN OF CUST ALL SIGNATURES AND DA CLIENT INFORMED OF DISC NAME CLIENT REPRESENT CORRECTIVE ACTION REQ	b+(s_haw(_) complete complete	CIES :I I NO 	VITIALS SUB COC COM CARRIER USEL RFORMED BY : INSPECTION NO REVIEWED, NO BY PM	DATE	NA TES NO - Mala DATE DATE	NA and TIMEFAX	11

SEVERN TRENT LABORATORIES, Inc NEW JERSEY	/ OF
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SAMPLE PRESERVATION VERIFICA	TION LOG
TJJJ34 SAMPLE CONTROL DEPARTME	TNE
IOB NUMBER: 12735 CLIENT: MChaven/Hon+	DATE RECEIVED : 4/3/99
# OF SAMPLES :	

If pH is not within acceptable range, document actual pH in OTHER column

VOA ,	METALS	PHC	OIL & GREASE
ID # pH <2 OTHER	ID # pH < OTHER	D # pH <≥ OTHER	ID # pH <2 OTHER
2337 2337 2337 2337 2337 2337 237 237 23	·	<u> </u>	
$\frac{\partial 2}{\partial 4} \rightarrow$		<u> </u>	
of v			
			· · · · · · · · · · · · · · · · · · ·
<u>68</u> <u>/</u>			
<u>04</u> <u> </u>	·		
	<u>-</u>	<u> </u>	
<u> </u>			
		· · · · · · · · · · · · · · · · · · ·	
CYANIDE -	H2SO4 PRES. W.C.	H2SO4 PRES. W.C.	OTHER PRESERVATIVE
CYANIDE ID # pH>12 OTHER	H2SO4 PRES. W.C. ID # pH <2 OTHER	$H_2SO4 PRES. W.C.$ ID # pH<2 OTHER	ID # pH OTHER
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

COMMENTS: NOTE BY SAMPLE ID NUMBER - NON CONFORMANCES IN PH PRESERVATION:

PH PRESERVATION VERIFICATION PERFORMED BY :

PROJECT MANAGER INFORMED OF NON CONFORMANCE : _____ YES INITIAL



Severn Trent Laboratories

INTERNAL CHAIN OF CUSTODY CHRONICLE <u>VOLATILES</u>

Job/Case Number: <u>92234</u>	Sample IDs:_00/-01/
Relinquished By:	Date/Time:
Received By:	Date/Time:
I confirm that I have performed the	analysis below following SOP quidelines:
ANALYST RETRIEVAL:	

			Returned Date (Soil)
Sample No(s)	Analyst Signature	Date	```
010,011	- Tuff	06/10/99	······
002-016,008,009,007			
ANALYST RETRIEVAL:	REANALYSIS:		
Sample No(s)	Analyst Signature	Date ,	
003,004,008,007	_ furt	26/11/49	
· · · · · · · · · · · · · · · · · · ·			
		· · · · · · · · · · · · · · · · · · ·	
			<u> </u>
PERCENT SOLIDS:			
Sample No(s)	Analyst Signature	Date	
		—	
······································			

I confirm that I have reviewed all associated data for this job:

REVIEWED BY:

Signature Inf

Date 06/14/99

Data Release Authorized By:

AUTHORIZATION:

Group Leader/Lab Manager

STL - NEW JERSEY SIGNATURE PAGE			
Employee Name	Signature	Initials	
LABORATORY DIRECTOR			
Armbruster, Carl	Canal de Carel	Curs	
LABORATORY MANAGER	A. W. A. A.	7011	
Hitt, Dewey	Newey & Nott	DOH.	
QA/QC MANAGER			
Heath, Timothy	From M. M.	Tm4	
ADMINISTRATION	λ_{i}		
Bartley, Katrina	Takena boetly	XIB	
Connelly, Joan 3	No Martin -	JAC	
Davila, Nahir	Sea his avin	N.D	
Nadzan, Al	al hairon	ach	
Wood, Mary	Mary B. Turod	mbu)	
REPORTS PRODUCTION			
Cignarella, Christine	1 ev and	CC.	
Patel, Darshana	Dardune Patel	<u>DP</u>	
Roman, Richard	Richard Homan	R.R.	
SYSTEMS			
Foti, Lisa	the A.	K	
Gorden, Roger	Poger B. Dorten	(CBO)	
Molina, Maria	Maria Valotina	Men	

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STL - NEW JERSEY SIGNATURE PAGE Signature Initials Employee Name PROJECT MANAGEMENT Brack, Joe Doster, Deanna Glenn, Dan Pryor, Kelly Trulick, Barbra SAMPLE CONTROL Doeffinger, John Droz, Efrain Malaniak, Rachel BOTTLE PREP D'Achille, Al Reynolds, Ed Sander, James GC/MS VOLATILES MUA Acierno, Mark Klusey, Sylvanus -1/1 n <Manlangit, Ferdie Waldron, Stacey GC/MS SEMIVOLATILES Hamernick, Richard an Mauriello, Gregg Schulze, Stephen 5CA Seal, Sonia Seal ß na Woo 1m Wood, Brian

Page 2 of 4

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STL - N	NEW JERSEY SIGNATURE PAGE	
Employee Name	Signature	Initials
GAS CHROMATOGRAPHY	21/11	
Carlone, John	him Julane	210
Hankerson, Anthony	fatting hoy Martinen	AT21
Herrmann, Claus	1) Agus Louise	1 de la companya de l
Hornberger, Kasie	Kuin a America	1451
Lena, John	a dec	De
Scott, Gordon	Don't D. Araut	GTIS
Tako, Lisa	Lina Jako	lt
Wechsler, David	ala hella	Dun
METALS		
Chang, Grace	S D Y	GC
Cousineau, Paul	the former	R
Herpen, Lori	Risiterpen	XA-
Nadzan, Tim	Ju 15.14	
Schwartz, Robert	Alt I hay	his
WET CHEMISTRY		
Bielski, Kevin	Deven Beese.	K.B
Florance, Gerard	Sur Perm	G.f.
Kenneweg, John	hu un	K
Piatt, Ernest	Einst R featt	ERP
FIELD SERVICES		
Dippel, Edward		END
Knudsen, Troy	- Jay Lumbra.	TE)
Murad, John	Ch Mall	25M

Page 3 of 4

STL - NEW JERSEY SIGNATURE PAGE

Employee Name	Signature	Initials
RADIOLOGICALS		
Fink, Daniel	S. a signal.	T.
Komanduri, Sreenivas	K FAULUAA	R 2
Nielsen, Erik	ann 10 mm	Keh
Zareian-Fink, Nahid	Name zweim	N.ZF
	_	
71 7		
		ISED 6/4/99

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RPDATA\MASTER\QCSIG.PG

VOLATILES

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	990609J1
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>990609J1</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>J0668</u>
Level: (low/med) <u>LOW</u>	Date Received:
% Moisture: not dec.	Date Analyzed: <u>06/11/99</u>
GC Column: <u>DB-624</u> ID: <u>0.32</u> (mm)	Dilution Factor: <u>1.0</u>
Soll Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l Q</u>

			<u> </u>
67-64-1	Acetone	10	U
71-43-2	Benzene	5	<u> </u>
75-27-4	Bromodichloromethane	5	U
75-25-2	Bromoform	5	<u> </u>
74-83-9	Bromomethane	10	<u> </u>
78-93-3		10	<u> </u>
75-15-0	2-Butanone Carbon Disulfide	5	<u> </u>
56-23-5		5	<u>U</u>
108-90-7	Carbon Tetrachloride	5	U
124-48-1	Chlorobenzene	5	
75-00-3	Chlorodibromomethane		U U
	Chloroethane	10	
67-66-3	Chloroform	5	U
74-87-3	Chloromethane	10	<u>U</u>
75-34-3	1,1-Dichloroethane	5	U
1:07-06-2	1,2-Dichloroethane	5	U
75-35-4	1,1-Dichloroethene	5	U
156-59-2	Cis-1,2-Dichloroethene	5	U
156-60-5	Trans-1,2-Dichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	Cis-1,3-Dichloropropene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
100-41-4	Ethylbenzene	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyi-2-Pentanone	10	U
75-09-2	Methylene Chloride	5	U
100-42-5	Styrene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
71-55-6	1,1,1-Trichloroethane	5	Ŭ
79-00-5	1,1,2-Trichloroethane	5	U
79-01-6	Trichloroethene	5	U
75-01-4	Vinyl Chloride	10	Ū
1330-20-7	Xylenes (Total)	5	U

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

VOLATILE ORGANICS ANALY	<u></u>
Lak Name: <u>STL-NJ</u>	990610A1
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>990610A1</u>
Sample wt/vol: $5 (g/mL)ml$	Lab File ID: <u>A8268</u>
Level: (low/med) <u>LOW</u>	Date Received:
<pre>% Moisture: not dec</pre>	Date Analyzed: <u>06/10/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>1.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>_____

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67 64 3			
67-64-1	Acetone	10	U
71-43-2	Benzene	5	Ŭ
75-27-4	Bromodichloromethane	5	U
75-25-2	Bromoform	5	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	Ŭ
75-15-0	Carbon Disulfide	5	Ŭ
56-23-5	Carbon Tetrachloride	5	U
108-90-7	Chlorobenzene	5	U
124-48-1	Chlorodibromomethane	5	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	5	U
137-06-2	1,2-Dichloroethane	5	U
75-35-4	1,1-Dichloroethene	5	U
156-59-2	Cis-1,2-Dichloroethene	5	U
156-60-5	Trans-1,2-Dichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	Cis-1,3-Dichloropropene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
100-41-4	Ethylbenzene	5	U
591-78-6	2-Hexanone	10	U
198-10-1	4-Methyl-2-Pentanone	10	U
75-09-2	Methylene Chloride	5	U
100-42-5	Styrene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
71-55-6	1,1,1-Trichloroethane	5	U
79-00-5	1,1,2-Trichloroethane	5	υ
79-01-6	Trichloroethene	5	U
75-01-4	Vinyl Chloride	10	<u> </u>
1330-20-7	Xylenes (Total)	5	U

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	990610A3
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>990610A3</u>
Sample wt/vol: 5 (g/mL)ml	Lab File ID: <u>A8306</u>
Level: (low/med) <u>LOW</u>	Date Received:
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>1.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>Q

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	1811-00-00-00-00-00-00-00-00-00-00-00-00-0		
67-64-1	Acetone	10	U
71-43-2	Benzene	10	<u> </u>
75-27-4	Bromodichloromethane	5	<u> </u>
75-25-2	Bromoform	5	U U
74-83-9			
78-93-3	Bromomethane	10	U
	2-Butanone	10	U
75-15-0	Carbon Disulfide	5	Ŭ
56-23-5	Carbon Tetrachloride	5	U
108-90-7	Chlorobenzene	5	U
124-48-1	Chlorodibromomethane	5	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5	U
71-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	5	U
107-06-2	1,2-Dichloroethane	5	U
75-35-4	1,1-Dichloroethene	5	U
156-59-2	Cis-1,2-Dichloroethene	5	U
156-60-5	Trans-1,2-Dichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	Cis-1,3-Dichloropropene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	
100-41-4	Ethylbenzene	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	
75-09-2	Methylene Chloride	5	U
100-42-5	Styrene	5	U
79-34-5	1,1,2,2-Tetrachloroethane		
127-18-4	Tetrachloroethene	5	Ū
108-88-3	Toluene	5	Ū
71-55-6	1,1,1-Trichloroethane	5	Ū
79-00-5	1,1,2-Trichloroethane		Ū
79-01-6	Trichloroethene	5	Ŭ
75-01-4	Vinyl Chloride	10	<u>u</u>
1330-20-7	Xylenes (Total)		<u> </u>

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	990611A1
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>990611A1</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8322</u>
Level: (low/med) <u>LOW</u>	Date Received:
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>1.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg)ug/l

0

CAS NO.	COMPOUND	(ug/L or ug/kg) <u>ug/I</u>	Q
67-64-1	Acetone	10	Ŭ
71-43-2	Benzene	S	Ū
75-27-4	Bromodichloromethane		Ū
75-25-2	Bromoform	5	Ū
74-83-9	Bromomethane	10	Ū
78-93-3	2-Butanone	10	U
75-15-0	Carbon Disulfide		U
56-23-5	Carbon Tetrachloride	5	U
108-90-7	Chlorobenzene	5	<u> </u>
124-48-1	Chlorodibromomethane	5	Ū
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5	
74-87-3	Chloromethane	1.0	Ū
75-34-3	1,1-Dichloroethane	5	U
177-06-2	1,2-Dichloroethane	5	U
75-35-4	1,1-Dichloroethene	5	Ū
156-59-2	Cis-1,2-Dichloroethene	5	U
156-60-5	Trans-1,2-Dichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	Cis-1,3-Dichloropropene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
100-41-4	Ethylbenzene	5	Ŭ
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
75-09-2	Methylene Chloride	5	Ŭ
100-42-5	Styrene	5	Ü
79-34-5	1,1,2,2"Tetrachloroethane	5	Ū
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	UU
71-55-6	1,1,1-Trichloroethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
79-01-6	Trichloroethene		<u> </u>
75-01-4	Vinyl Chloride	10	U
1330-20-7	Xylenes (Total)	51	<u> </u>

CAS NO. COMPOUND

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	990611A4
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>990611A4</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8351</u>
Level: (low/med) <u>LOW</u>	Date Received:
% Moisture: not dec.	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>1.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS:

(ug/L or ug/Kg)<u>ug/l</u>____

Q

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67 64 1				**
67-64-1	Acetone		10	<u> </u>
71-43-2	Benzene		5	U
75-27-4	Bromodichloromethane		5	Ŭ
75-25-2	Bromoform		5	Ŭ
74-83-9	Bromomethane		10	U
78-93-3	2-Butanone		10	Ü
75-15-0	Carbon Disulfide		5	U
56-23-5	Carbon Tetrachloride		5	U
108-90-7	Chlorobenzene		5	U
124-48-1	Chlorodibromomethane		5	U
75-00-3	Chloroethane		10	U
67-66-3	Chloroform		5	U
74-87-3	Chloromethane		10	U
75-34-3	1,1-Dichloroethane		5	U
107-06-2	1,2-Dichloroethane		5	U
75-35-4	1,1-Dichloroethene		5	<u> </u>
156-59-2	Cis-1,2 Dichloroethene		5	U
156-60-5	Trans-1,2-Dichloroethene		5	U
78-87-5	1,2-Dichloropropane		5	<u> </u>
10061-01-5	Cis-1,3-Dichloropropene		5	U
10061-02-6	Trans-1,3-Dichloropropene		5	Ū
100-41-4	Ethylbenzene		5	U
591-78-6	2-Hexanone		10	U
108-10-1	4-Methyl-2-Pentanone		10	U
75-09-2	Methylene Chloride		5	U
100-42-5	Styrene		5	U
79-34-5	1,1,2,2-Tetrachloroethane		5	U
127-18-4	Tetrachloroethene		5	Ū
108-88-3	Toluene		5	U
71-55-6	1,1,1-Trichloroethane		5	U
79-00-5	1,1,2-Trichloroethane		5	U
79-01-6	Trichloroethene		5	Ū
75-01-4	Vinyl Chloride		10	Ū
1330-20-7	Xylenes (Total)		5	

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	DAS
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234001</u>
Sample wt/vol: $5 (g/mL)ml$	Lab File ID: <u>A8318</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>100.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUNE

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67-64-1	Acetone	380	
71-43-2	Benzene	500	J
75-27-4	Bromodichloromethane	500	
75-25-2	Bromoform	500	U
74-83-9	Bromomethane	1000	
78-93-3	2-Butanone	1000	U
75-15-0			U
56-23-5	Carbon Disulfide	500	U
	Carbon Tetrachloride	500	U
108-90-7	Chlorobenzene	500	U
124-48-1	Chlorodibromomethane	500	U
75-00-3	Chloroethane	660	J
67-66-3	Chloroform	600	
74-87-3	Chloromethane	1000	U
75-34-3	1,1-Dichloroethane	7200	
107-05-2	1,2-Dichloroethane	500	U
75-35-4	1,1-Dichloroethene	500	U
156-59-2	Cis-1,2-Dichloroethene	500	Ŭ
156-60-5	Trans-1,2-Dichloroethene	500	U
78-87-5	1,2-Dichloropropane	500	U
10061-01-5	Cis-1,3-Dichloropropene	500	U
10061-02-6	Trans-1,3-Dichloropropene	500	U
100-41-4	Ethylbenzene	500	
51-78-6	2-Hexanone	1000	U
108-10-1	4-Methy ₁ -2-Pentanone	1000	U
75-09-2	Methylene Chloride	360	J
100-42-5	Styrene	500	U
79-34-5	1,1,2,2-Tetrachloroethane	500	Ŭ
127-18-4	Tetrachloroethene	500	Ū
108-88-3	Toluene	500	Ū
71-55-6	1,1,1-Trichloroethane	9400	
79-00-5	1,1,2-Trichloroethane	500	U
79-01-6	Trichloroethene	500	U
75-01-4	Vinyl Chloride	1000	U
1330-20-7	Xylenes (Total)	500	

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	SAS
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234002</u>
Sample wt/vol: <u>5 (g/mL)ml</u>	Lab File ID: <u>A8333</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>50.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

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67-64-1	Acetone	200	J
71-43-2	Benzene	250	
75-27-4	Bromodichloromethane	250	Ū
75-25-2	Bromoform	250	<u>_</u>
74-83-9	Bromomethane	500	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>
78-93-3	2-Butanone	500	<u>_</u>
75-15-0	Carbon Disulfide	250	<u>_</u>
56-23-5	Carbon Tetrachloride	250	Ū
108-90-7	Chlorobenzene	250	
124-48-1	Chlorodibromomethane	250	Ū
73-00-3	Chloroethane	420	
67-66-3	Chloroform	660	· · · · · · · · · · · · · · · · · · ·
74-87-3	Chloromethane	500	Ü
75-34-3	1,1-Dichloroethane	7900	
107-06-2	1,2-Dichloroethane	250	
75-35-4	1,1-Dichloroethene	250	Ū
156-59-2	Cis-1,2-Dichloroethene	250	U
156-60-5	Trans-1 2-Dichloroethene	250	Ū
78-87-5	1,2-Dichloropropane	250	Ū
10061-01-5	Cis-1,3-Dichloropropene	250	<u> </u>
10061-02-6	Trans-1,3-Dichloropropene	250	U
100-41-4	Ethylbenzene	250	Ū
591-78-6	2-Hexanone	500	U
108-10-1	4-Methvl-2-Pentanone	500	U
75-09-2	Methylene Chloride	250	U
1:00-42-5	Styrene	250	U
79-34-5	1,1,2,2-Tetrachloroethane	250	U
127-18-4	Tetrachloroethene	250	U
108-88-3	Toluene	250	U
71-55-6	1,1,1-Trichloroethane	3400	
79-00-5	1,1,2-Trichloroethane	250	Ū
79-01-6	Trichloroethene	250	U
75-01-4	Vinyl Chloride	500	
1330-20-7	Xylènes (Total)	250	Ū

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

SMP-1
Lab Sample ID: <u>92234003</u>
Lab File ID: <u>A8334</u>
Date Received: <u>06/03/99</u>
Date Analyzed: <u>06/11/99</u>
Dilution Factor: <u>1.0</u>
Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>__________

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67-64-1	Acetone	230	E
71-43-2	Benzene	5	<u>U</u>
75-27-4	Bromodichloromethane	5	<u> </u>
75-25-2	Bromoform	5	U
74-83-9	Bromomethane	10	<u>U</u>
78-93-3	2-Butanone	84	······
75-15-0	Carbon Disulfide	5	Ū -
56-23-5	Carbon Tetrachloride	5	<u>U</u>
108-90-7	Chlorobenzene	<u> </u>	
124-48-1	Chlorodibromomethane	5	<u>Ŭ</u>
75-00-3	Chloroethane	110	
67-66-3	Chloroform	20	
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	240	Ē
107-06-2	1,2-Dichloroethane	5	
75-35-4	1,1-Dichloroethene	5	<u> </u>
156-59-2	Cis-1,2-Dichloroethene	5	<u>U</u>
156-60-5	Trans-1,2-Dichloroethene	5	<u>Ū</u>
78-87-5	1,2-Dichloropropane	5	Ū
10061-01-5	Cis-1,3-Dichloropropene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	Ū
100-41-4	Ethylbenzene	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
75-09-2	Methylene Chloride	5	
100-42-5	Styrene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
127-18-4	Tetrachloroethene		
108-88-3	Toluene	7	
71-55-6	1,1,1-Trichloroethane	48	
79-00-5	1,1,2-Trichloroethane	5	U
79-01-6	Trichloroethene	20	
75-01-4	Vinyl Chloride	29	
1330-20-7	Xylenes (Total)	5	U

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	SMP-1DL
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234003DL</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8348</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>2.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l Q</u>

67-64-1	Acetone	240	D
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	Ū
74-83-9	Bromomethane	20	<u> </u>
78-93-3	2-Butanone	88	D
75-15-0	Carbon Disulfide	10	<u> </u>
56-23-5	Carbon Tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Chlorodibromomethane	10	U
75-00-3	Chloroethane	97	D
67-66-3	Chloroform	1.8	D
74-87-3	Chloromethane	20	U
75-34-3	1,1-Dichloroethane	220	D
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
156-59-2	Cis-1,2-Dichloroethene	10	U
156-60-5	Trans-1,2-Dichloroethene	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	Cis-1,3-Dichloropropene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
5-11-78-6	2-Hexanone	20	U
108-10-1	4-Methyl-2-Pentanone	20	U
75-09-2	Methylene Chloride	7	JD
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	25	D
108-88-3	Toluene	6	JD
71-55-6	1,1,1-Trichloroethane	40	D
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	18	D
75-01-4	Vinyl Chloride	20	D
1330-20-7	Xylenes (Total)	10	<u> </u>

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	DMP - 1.
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234004</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8335</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>1.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>uq/l</u>_____

67-64-1	Acetone	640	E
71-43-2	Benzene	5	<u>E</u>
75-27-4	Bromodichloromethane		
75-25-2	Bromoform	5	<u> </u>
74-83-9	Bromomethane	10	<u> </u>
78-93-3	2-Butanone	630	<u>E</u>
75-15-0	Carbon Disulfide	20	<u>C</u> ,
56-23-5	Carbon Tetrachloride	37	
108-90-7			
	Chlorobenzene	5	Ŭ
124-48-1	Chlorodibromomethane	5	U
75-00-3	Chloroethane	160	
67-66-3	Chloroform	88	
74-87-3	Chloromethane	10	Ŭ
75-34-3	1,1-Dichloroethane	1000	E
107-06-2	1,2-Dichloroethane	5	Ŭ
75-35-4	1,1-Dichloroethene	5	U
136-59-2	Cis-1,2-Dichloroethene	5	Ū
156-60-5	Trans-1,2-Dichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	Cis-1,3-Dichloropropene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
100-41-4	Ethylbenzene	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
75-09-2	Methylene Chloride	5	U
100-42-5	Styrene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
127-18-4	Tetrachloroethene	4	J
108-88-3	Toluene	73	<u> </u>
71-55-6	1,1,1-Trichloroethane	280	E
79-00-5	1,1,2-Trichloroethane	5	U
79-01-6	Trichloroethene	5	U
75-01-4	Vinyl Chloride	10	
1330-20-7	Xylenes (Total)	4	<u>_</u>
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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

DMP-1DL

Lab Name: <u>STL-NJ</u>	
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234004DL</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8347</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec.	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>20.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

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CONCENTRATION UNITS:

(ug/L or ug/Kg)<u>ug/l</u>

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67-64-1	Acetone	540	D
71-43-2	Benzene	100	T
75-27-4	Bromodichloromethane	100	Ū
75-25-2	Bromotorm	100	U
74-83-9	Bromomethane	200	U
78-93-3	2-Butanone	540	D
75-15-0	Carbon Disulfide	100	<u> </u>
56-23-5	Carbon Tetrachloride	100	U
1.08-90-7	Chlorobenzene		Ŭ
124-48-1	Chlorodibromomethane	100	U
75-00-3	Chloroethane	130	JD
67-66-3	Chloroform	71	JD
74-87-3	Chloromethane	200	- U
75-34-3	1,1-Dichloroethane	880	D
107-06-2	1,2-Dichloroethane	100	U
75-35-4	1,1-Dichloroethene	100	<u> </u>
156-59-2	Cis-1,2-Dichloroethene	100	U
156-60-5	Trans-1,2-Dichloroethene	100	U
78-87-5	1,2-Dichloropropane	100	U
10061-01-5	Cis-1,3-Dichloropropene	100	U
10061-02-6	Trans-1, 3-Dichloropropene	100	U
100-41-4	Ethylbenzene	100	U
591-78-6	2-Hexanone	200	U
108-10-1	4-Methyl-2-Pentanone	200	U
75-09-2	Methylene Chloride	100	U
100-42-5	Styrene	100	U
79-34-5	1,1,2,2-Tetrachloroethane	100	U
127-18-4	Tetrachloroethene	100	U
108-88-3	Toluene	100	υ
71-55-6	1,1,1-Trichloroethane	240	D
79-00-5	1,1,2-Trichloroethane	100	U
79-01-6	Trichloroethene	100	U
75-01-4	Vinyl Chloride	200	U
1330-20-7	Xvlenes (Total)	100	U

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

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Lab Name: STL-NJ	SMP-3
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234005</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8336</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec.	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>1000.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>

67-64-1	Acetone	10000	U
71-43-2	Benzene	5000	U
75-27-4	Bromodichloromethane	5000	U
75-25-2	Bromoform	5000	U
74-83-9	Bromomethane	10000	U
78-93-3	2-Butanone	10000	U
75-15-0	Carbon Disulfide	5000	U
56-23-5	Carbon Tetrachloride	5000	U
108-90-7	Chlorobenzene	5000	1 0
124-48-1	Chlorodibromomethane	5000	Ū
75-00-3	Chloroethane	10000	<u> </u>
67-66-3	Chloroform	5000	U
74-87-3	Chloromethane	10000	U
75-34-3	1,1-Dichloroethane	5000	U
107-06-2	1,2-Dichloroethane	5000	U
75-35-4	1,1-Dichloroethene	5000	U
156-59-2	Cis-1,2-Dichloroethene	5000	U
156-60-5	Trans-1,2-Dichloroethene	5000	<u> </u>
78-87-5	1,2-Dichloropropane	5000	U
10061-01-5	Cis-1,3-Dichloropropene	5000	U
10061-02-6	Trans-1,3-Dichloropropene	5000	Ū
100-41-4	Ethylbenzene	5000	Ū
591-78-6	2-Hexanche	10000	U
108-10-1	4-Methy1-2-Pentanone	10000	U
75-09-2	Methylene Chloride	3200	J
100-42-5	Styrene	5000	U
79-34-5	1,1,2,2-Tetrachloroethane	5000	U
127-18-4	Tetrachloroethene	5000	U
108-88-3	Toluene	5000	Ŭ
71-55-6	1,1,1-Trichloroethane	5000	U
79-00-5	1,1,2-Trichloroethane	5000	U
79-01-6	Trichloroethene	100000	
75-01-4	Vinyl Chloride	10000	U
1330-20-7	Xylenes (Total)	5000	U
1330-20-7			

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IA VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	DMP - 3
Job No. : <u>92234</u>	L
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234006</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8346</u>
Level: (low/med) LOW	Date Received: <u>06/03/99</u>
% Moisture: not dec.	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>200.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>_____

67-64-1	Acetone	2000	IJ
71-43-2	Benzene	1000	U
75-27-4	Bromodichloromethane	1000	<u> </u>
75-25-2		1000	U
74-83-9	Bromoform		
78-93-3	Bromomethane	2000	U
	2-Butanone	2000	Ŭ
75-15-0	Carbon Disulfide	1000	U
56-23-5	Carbon Tetrachloride	2600	
108-90-7	Chlorobenzene	1000	U
124-48-1	Chlorodibromomethane	1000	U
75-00-3	Chloroethane	890	J
67-66-3	Chloroform	3200	
74-87-3	Chloromethane	2000	U
75-34-3	1,1-Dichloroethane	38000	
107-06-2	1,2-Dichloroethane	1000	U
75-35-4	1,1-Dichloroethene	1000	U
156-59-2	Cis-1,2-Dichloroethene	1000	U
156-60-5	Trans-1,2-Dichloroethene	1000	U
78-87-5	1,2-Dichloropropane	1000	U
1.061-01-5	Cis-1,3-Dichloropropene	1000	U
10061-02-6	Trans-1,3-Dichloropropene	1000	U
100-41-4	Ethylbenzene	1000	U
591-78-6	2-Hexanone	2000	U
108-10-1	4-Methyl-2-Pentanone	2000	U
75-09-2	Methylene Chloride	1000	U
100-42-5	Styrene	1000	U
79-34-5	1,1,2,2-Tetrachloroethane	1000	U
127-18-4	Tetrachloroethene	1000	U
108-88-3	Toluene	1000	U
71-55-6	1,1,1-Trichloroethane	20000	
79-00-5	1,1,2-Trichloroethane	1000	U
79-01-6	Trichloroethene	1000	
75-01-4	Vinyl Chloride	1500	
1330-20-7	Xvlenes (Total)	1000	<u> </u>

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	SMP-4
Hab Name: <u>511-NU</u>	
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234007</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>J0670</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>DB-624</u> JD: <u>0.32</u> (mm)	Dilution Factor: <u>10.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>_____

67-64-1	Acetone	1000	
71-43-2	Benzene	50	Ŭ
75-27-4	Bromodichloromethane	50	U
75-25-2	Bromoform	50	Ū
74-83-9	Bromomethane	100	U
78-93-3	2-Butanone	100	U
75-15-0	Carbon Disulfide	50	U
56-23~5	Carbon Tetrachloride	50	U
108-90-7	Chlorobenzene	12	J
124-48-1	Chlorodibromomethane	50	U
75-00-3	Chloroethane	3400	Ê
67-66-3	Chloroform	50	U
74-87-3	Chloromethane	100	U
75-34-3	1,1-Dichloroethane	5900	E
107-06-2	1,2-Dichloroethane	50	U
75-35-4	1,1-Dichloroethene	250	
156-59-2	Cis-1,2-Dichloroethene	15	J
156-60-5	Trans-1,2-Dichloroethene	50	Ŭ
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	Cis-1,3-Dichloropropene	50	Ŭ
10051-02-6	Trans-1,3-Dichloropropene	50	U
100-41-4	Ethylbenzene	50	U
591-78-6	2-Hexanone	100	U
108-10-1	4-Methyl-2-Pentanone	100	U
75-09-2	Methylene Chloride	21	J
100-42-5	Styrene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
127-18-4	Tetrachloroethene	42	J
108-88-3	Toluene	98	
71-55-6	1,1,1-Trichloroethane	18000	E
79-00-5	1,1,2-Trichloroethane	50	U
79-01-6	Trichloroethene	13	J
75-01-4	Vinyl Chloride	110	
1330-20-7	Xylenes (Total)	50	U

Lab Name: <u>STL-NJ</u>	SMP-4DL
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234007DL</u>
Sample wt/vol: <u>5(g/mL)ml</u>	Lab File ID: <u>A8354</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>250.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS:

(ug/L or ug/Kg)<u>uq/l</u>____

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67-64-1	Acetone	1200	JD
71-43-2	Benzene	1200	<u>U</u>
75-27-4	Bromodichloromethane	1200	Ū
75-25-2	Bromoform	1200	<u> </u>
74-83-9	Bromomethane	2500	<u> </u>
78-93-3	2-Butanone	2500	<u>U</u>
75-15-0	Carbon Disulfide	1200	
56-23-5	Carbon Tetrachloride	2700	<u>0</u>
108-90-7	Chlorobenzene	1200	0
124-48-1	Chlorodibromomethane	1200	
75-00-3	Chloroethane	2300	JD
67-66-3	Chloroform	1200	<u></u>
74-87-3	Chloromethane	2500	<u>U</u>
75-34-3	1,1-Dichloroethane	7800	0
107-06-2	1,2-Dichloroethane	1200	<u>U</u>
75-35-4	1,1-Dichloroethene	1200	U
1:6-59-2	Cis-1,2-Dichloroethene	1200	<u> </u>
156-60-5	Trans-1,2-Dichloroethene	1200	<u> </u>
78-87-5	1,2-Dichloropropane	1200	U
10061-01-5	Cis-1,3-Dichloropropene	1200	<u> </u>
10051-02-6	Trans-1,3-Dichloropropene	1200	<u> </u>
100-41-4	Ethylbenzene	1200	<u> </u>
591-78-6	2-Hexanone	2500	
108-10-1	4-Methyl-2-Pentanone	2500	
75-09-2	Methylene Chloride	1200	— <u> </u>
100-42-5	Styrene	1200	<u>u</u>
79-34-5	1,1,2,2-'Tetrachloroethane	1200	-
127-18-4	Tetrachloroethene	1200	Ū
108-88-3	Toluene	1200	
71-55-6	1,1,1-Trichloroethane	20000	
79-00-5	1,1,2-Trichloroethane	1200	<u>0</u>
79-01-6	Trichloroethene	1200	
75-01-4	Vinyl Chloride	2500	
1330-20-7	Xylenes (Total)	1200	U

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

626000

Lab Name: <u>STL-NJ</u>	SMP-4DL
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234007DL</u>
Sample wt/vol: $5 (g/mL) ml$	Lab File ID: <u>J0672</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec.	Date Analyzed: <u>06/11/99</u>
GC Column: <u>DB-624</u> ID: <u>0.32</u> (mm)	Dilution Factor: <u>100.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>_____

67-64-1 Acetone 2800 D 71-43-2 Benzene 500 U 75-27-4 Bromodichloromethane 500 U 75-25-2 Bromodichloromethane 500 U 75-25-2 Bromodichloromethane 500 U 75-25-2 Bromomethane 1000 U 75-25-3 Carbon Disulfide 500 U 75-15-0 Carbon Tetrachloride 500 U 108-90-7 Chlorodibromomethane 500 U 108-90-7 Chlorodibromomethane 500 U 75-00-3 Chlorodibromomethane 500 U 75-01-3 Chlorodibromomethane 7100 D 75-02-3 Chlorodethane 500 U 75-35-4 1,1-Dichloroethane 500 U 75-35-4 1,2-Dichloroethene 500 U 156-60-5 Trans-1,2-Dichloroethene 500 U 10661-01-5 Cis-1,3-Dichloropropene 500 U				
71-43-2 Benzene 500 U 75-27-4 Bromodichloromethane 500 U 75-25-2 Bromodichloromethane 500 U 75-25-2 Bromomethane 1000 U 74-83-9 Bromomethane 1000 U 75-25-2 Carbon Disulfide 500 U 75-15-0 Carbon Tetrachloride 500 U 75-25-3 Carbon Tetrachloride 500 U 75-15-0 Carbon Tetrachloride 500 U 75-25-1 Chlorobenzene 130 JD 124-48-1 Chlorodibromomethane 500 U 75-00-3 Chloroethane 7100 D 67-66-3 Chloroethane 1000 U 75-34-3 1,1-Dichloroethane 1000 U 75-35-4 1,1-Dichloroethene 500 U 156-60-5 Trans-1,2-Dichloroethene 500 U 10061-01-5 Cis-1,3-Dichloropropene 500 U 10061-02-6 Trans-1,3-Dichloropropene 500 U <	57-54-1	Acetone	2800	
75-27-4 Bromodichloromethane 500 U 75-25-2 Bromoform 500 U 74-83-9 Bromomethane 1000 U 73-93-3 2-Butanone 1000 U 75-15-0 Carbon Disulfide 500 U 56-23-5 Carbon Tetrachloride 500 U 108-90-7 Chlorobenzene 130 JD 124-48-1 Chlorodibromomethane 500 U 75-00-3 Chlorodethane 500 U 74-87-3 Chlorodethane 500 U 75-34-3 1,1-Dichloroethane 1000 U 75-35-4 1,1-Dichloroethane 500 U 107-06-2 1,2-Dichloroethene 360 JD 156-59-2 Cis-1,2-Dichloroethene 500 U 10661-01-5 Trans-1,2-Dichloropopane 500 U 10061-02-6 Trans-1,3-Dichloropropene 500 U 100-14 Ethylbei.zene 500 U 100-41-4 Ethylbei.zene 500 U 100-42-5 <td></td> <td></td> <td></td> <td></td>				
75-25-2 Bromoform 500 U 74-83-9 Bromomethane 1000 U 73-93-3 2-Butanone 1000 U 75-15-0 Carbon Disulfide 500 U 56-23-5 Carbon Tetrachloride 500 U 108-90-7 Chlorobenzene 130 JD 124-48-1 Chlorodibromomethane 500 U 75-00-3 Chlorodibromomethane 500 U 74-87-3 Chloronethane 1000 U 75-34-3 1,1-Dichloroethane 1000 U 75-35-4 1,1-Dichloroethane 500 U 1067-66-5 Trans-1,2-Dichloroethene 500 U 107-06-2 1,2-Dichloroethene 500 U 1056-60-5 Trans-1,2-Dichloroethene 500 U 10061-01-5 Cis-1,3-Dichloropropene 500 U 10061-02-6 Trans-1,3-Dichloropropene 500 U 10061-02-6 Trans-1,3-Dichloropropene 500 U 100-42-6 Trans-1,3-Dichloropropene 500 U <td></td> <td></td> <td></td> <td>. L</td>				. L
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56-23-5 Carbon Tetrachloride 500 U 108-90-7 Chlorobenzene 130 JD 124-48-1 Chlorodibromomethane 500 U 124-48-1 Chlorodibromomethane 500 U 124-48-1 Chlorodibromomethane 7100 D 67-66-3 Chloroform 500 U 74-87-3 Chloromethane 1000 U 75-34-3 1,1-Dichloroethane 1000 U 75-35-4 1,1-Dichloroethane 500 U 156-59-2 Cis-1,2-Dichloroethene 360 JD 156-60-5 Trans-1,2-Dichloroethene 500 U 1061-01-5 Cis-1,3-Dichloropropane 500 U 10061-02-6 Trans-1,3-Dichloropropene 500 U 10061-02-6 Trans-1,2-Pentanone 1000 U 91-78-6 2-Hexanone 1000 U 108-10-1 4-Methyl-2-Pentanone 1000 U 75-09-2 Methylene Chloride 65 JD 100-42-5 Styrene 500 U <td></td> <td></td> <td></td> <td></td>				
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74-87-3 Chloromethane 1000 U 75-34-3 1,1-Dichloroethane 12000 D 107-06-2 1,2-Dichloroethane 500 U 75-35-4 1,1-Dichloroethene 360 JD 156-59-2 Cis-1,2-Dichloroethene 500 U 156-60-5 Trans-1,2-Dichloroethene 500 U 10061-01-5 Cis-1,3-Dichloropropane 500 U 10061-02-6 Trans-1,3-Dichloropropene 500 U 100-41-4 Ethylbel.zene 500 U 100-41-4 Ethylbel.zene 500 U 100-41-4 Ethylbel.zene 500 U 100-41-4 Ethylbel.zene 500 U 100-42-5 Styrene 1000 U 75-09-2 Methylene Chloride 65 JD 100-42-5 Styrene 500 U 127-18-4 Tetrachloroethane 500 U 127-18-4 Tetrachloroethane 36000 ED 73-00-5 1,1,2-Trichloroethane 500 U <t< td=""><td></td><td></td><td></td><td></td></t<>				
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591-78-6 2-Hexanone 1000 U 108-10-1 4-Methyl-2-Pentanone 1000 U 75-09-2 Methylene Chloride 65 JD 100-42-5 Styrene 500 U 79-34-5 1,1,2,2-Tetrachloroethane 500 U 127-18-4 Tetrachloroethene 500 U 108-88-3 Toluene 160 JD 71-55-6 1,1,1-Trichloroethane 36000 ED 79-01-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	10061-02-6	Trans-1,3-Dichloropropene		U
108-10-1 4-Methyl-2-Pentanone 1000 U 75-09-2 Methylene Chloride 65 JD 100-42-5 Styrene 500 U 79-34-5 1,1,2,2-Tetrachloroethane 500 U 127-18-4 Tetrachloroethene 500 U 108-88-3 Toluene 160 JD 71-55-6 1,1,1-Trichloroethane 36000 ED 79-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	100-41-4	Ethylber.zene	500	U
75-09-2 Methylene Chloride 65 JD 100-42-5 Styrene 500 U 79-34-5 1,1,2,2-Tetrachloroethane 500 U 127-18-4 Tetrachloroethene 500 U 108-88-3 Toluene 160 JD 71-55-6 1,1,1-Trichloroethane 36000 ED 79-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	591-78-6	2-Hexanone	1000	U
100-42-5 Styrene 500 U 79-34-5 1,1,2,2-Tetrachloroethane 500 U 127-18-4 Tetrachloroethene 500 U 108-88-3 Toluene 160 JD 71-55-6 1,1,1-Trichloroethane 36000 ED 79-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	108-10-1	4-Methyl-2-Pentanone	1000	U
79-34-5 1,1,2,2-Tetrachloroethane 500 U 127-18-4 Tetrachloroethene 500 U 108-88-3 Toluene 160 JD 71-55-6 1,1,1-Trichloroethane 36000 ED 79-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	75-09-2	Methylene Chloride	65	JD
127-18-4 Tetrachloroethene 500 U 108-88-3 Toluene 160 JD 71-55-6 1,1,1-Trichloroethane 36000 ED 73-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	100-42-5	Styrene	500	U
108-88-3 Toluene 160 JD 71-55-6 1,1,1-Trichloroethane 36000 ED 79-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	79-34-5	1,1,2,2-Tetrachloroethane	500	U
108-88-3 Toluene 160 JD 71-55-6 1,1,1-Trichloroethane 36000 ED 79-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	127-18-4		500	Ū
79-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	108-88-3		160	JD
79-00-5 1,1,2-Trichloroethane 500 U 79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD	71-55-6	1,1,1-Trichloroethane	36000	ED
79-01-6 Trichloroethene 500 U 75-01-4 Vinyl Chloride 200 JD				
75-01-4 Vinyl Chloride 200 JD				Ū
				•
	1330-20-7	Xylenes (Total)	500	UU

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	DMP-4
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234008</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8339</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>5.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>__________

CAS NO.	COMPOUND	(ug/L or ug/Kg) <u>ug/l</u>	Q
67-64-1	Acetone	190	
71-43-2	Benzene	25	<u> </u>
75-27-4	Bromodichloromethane	25	U
75-25-2	Bromoform	25	U
74-83-9	Bromomethane	50	Ū
78-93-3	2-Butanone	50	1 U
75-15-0	Carbon Disulfide	25	U
56-23-5	Carbon Tetrachloride	25	1 U
108-90-7	Chlorobenzene	25	U
124-48-1	Chlorodibromomethane	25	U
75-00-3	Chloroethane	1200	E
57-55-3	Chloroform	25	T U
74-87-3	Chloromethane	50	<u> </u>
75-34-3	1,1-Dichloroethane	110	
107-06-2	1,2-Dichloroethane	25	T
75-35-4	1,1-Dichloroethene	25	U
156-59-2	Cis-1,2-Dichloroethene	25	U
156-60-5	Trans-1,2-Dichloroethene	25	U U
78-87-5	1,2-Dichloropropane	25	U
10061-01-5	Cis-1,3-Dichloropropene	25	U
10061-02-6	Trans-1, 3-Dichloropropene	25	U
100-41-4	Ethylbenzene	25	U
591-78-6	2-Hexanone	50	U
108-10-1	4-Methyl-2-Pentanone	50	U
75-09-2	Methylene Chloride	28	
100-42-5	Styrene	25	Ū
79-34-5	1,1,2,2-Tetrachloroethane	25	U
127-18-4	Tetrachloroethene	25	U
108-88-3	Toluene	25	U
71-55-6	1,1,1-Trichloroethane	22	Ĵ
79-00-5	1,1,2-Trichloroethane	25	Ŭ
79-01-6	Trichloroethene	25	U
75-01-4	Vinyl Chloride	50	Ũ
1330-20-7	Xylenes (Total)	25	Ŭ

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

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CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)ug/l

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67-64-1	Acetone	280	D
71-43-2	Benzene	50	U U
75-27-4	Bromodichloromethane	50	Ū
75-25-2	Bromoform	50	<u> </u>
74-83-9	Bromomethane	100	<u> </u>
78-93-3	2-Butanone	100	<u> </u>
75-15-0	Carbon Disulfide	50	U
56-23-5	Carbon Tetrachloride	50	<u> </u>
108-90-7	Chlorobenzene	9	JD
124-48-1	Chlorodibromomethane	50	UU
75-00-3	Chloroethane	1500	D
67-66-3	Chloroform	50	<u>U</u>
74-87-3	Chloromethane	100	Ū
75-34-3	1,1-Dichloroethane	190	
107-06-2	1,2-Dichloroethane	50	<u> </u>
75-35-4	1,1-Dichloroethene	50	
156-59-2	Cis-1,2-Dichloroethene	50	<u> </u>
156-60-5	Trans-1,2-Dichloroethene	50	<u> </u>
78-87-5	1,2-Dichloropropane	50	<u>U</u>
10061-01-5	Cis-1,3-Dichloropropene	50	<u> </u>
10061-02-6	Trans-1.3-Dichloropropene	50	
100-41-4	Ethylbenzene	50	<u>U</u>
591-78-6	2-Hexanone	100	U
108-10-1	4-Methyl-2-Pentanone	100	<u>U</u>
79-09-2	Methylene Chloride	15	JD
100-42-5	Styrene	50	
79-34-5	1,1,2,2-Tetrachloroethane	50	Ū
127-18-4	Tetrachloroethene	50	U
108-88-3	Toluene	13	JD
71-55-6	1,1,1-Trichloroethane	310	D
79-00-5	1,1,2-Trichloroethane	50	
79-01-6	Trichloroethene	50	
75-01-4	Vinyl Chloride	100	Ū
1330-20-7	Xylenes (Total)	50	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

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Lab Name: <u>STL-NJ</u>	
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234009</u>
Sample wt/vol: $5 (g/mL)ml$	Lab File ID: <u>A8340</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec	Date Analyzed: <u>06/11/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>10.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>Q

67-64-1	Acetone	100	U
71-43-2	Benzene	50	<u> </u>
75-27-4	Bromodichloromethane	50	<u>U</u>
75-25-2	Bromoform	50	<u> </u>
74-83-9	Bromomethane	100	U
78-93-3	2-Butanone	100	<u> </u>
75-15-0	Carbon Disulfide	50	<u> </u>
56-23-5	Carbon Tetrachloride	50	<u> </u>
108-90-7	Chlorobenzene	50	Ŭ
124-48-1	Chlorodibromomethane	50	Ū
75-00-3	Chloroethane	380	
67-66-3	Chloroform	65	
74-87-3	Chloromethane	100	U
75-34-3	1,1-Dichloroethane	790	
107-06-2	1,2-Dichloroethane	50	U
75-35-4	1,1-Dichloroethene	50	U
155-59-2	Cis-1,2-Dichloroethene	50	Ū
156-60-5	Trans-1,2-Dichloroethene	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	Cis-1,3-Dichloropropene	50	U
10061-02-6	Trans-1,3-Dichloropropene	50	U
100-41-4	Ethylbenzene	50	U
591-78-6	2-Hexanone	100	U
108-10-1	4-Methyl-2-Pentanone	100	<u> </u>
75-09-2	Methylene Chloride	36	J
100-42-5	Styrene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
127-18-4	Tetrachloroethene	50	U
108-88-3	Toluene	50	U
71-55-6	1,1,1-Trichloroethane	50	U
79-00-5	1,1,2-Trichloroethane	50	υ
79-01-6	Trichloroethene	50	U
75-01-4	Vinyl Chloride	100	U
1330-20-7	Xylenes (Total)	50	Ū

CAS NO. COMPOUND

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1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	TB052899
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234010</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8272</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec.	Date Analyzed: <u>06/10/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>1.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg)ug/1

TB052899

CAS NO.	COMPOUND	(ug/L or ug/Kg) <u>ug/l</u>	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	5	U
75-27-4	Bromodichloromethane	5	U
75-25-2	Bromoform	5	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	<u> </u>
75-15-0	Carbon Disulfide	5	U
56-23-5	Carbon Tetrachloride	5	U
108-90-7	Chlorobenzene	5	U
124-48-1	Chlorodibromomethane	5	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	5	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	5	U
107-05-2	1,2-Dichloroethane	5	Ū
75-35-4	1,1-Dichloroethene	5	U
155-59-2	Cis-1,2-Dichloroethene	5	U
156-60-5	Trans-1,2-Dichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	Cis-1,3-Dichloropropene	5	U
10061-02-6	Trans-1, 3-Dichloropropene	5	U
100-41-4	Ethylbenzene	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
75-09-2	Methylene Chloride	5	U
100-42-5	Styrene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
71-55-6	1,1,1-Trichloroethane	5	U
79-00-5	1,1,2-Trichloroethane	5	Ū
79-01-6	Trichloroethene	5	U J
75-01-4	Vinyl Chloride	10	U
1330-20-7	Xylenes (Total)	5	U

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>STL-NJ</u>	FB052899
Job No. : <u>92234</u>	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: <u>92234011</u>
Sample wt/vol: <u>5</u> (g/mL) <u>ml</u>	Lab File ID: <u>A8285</u>
Level: (low/med) <u>LOW</u>	Date Received: <u>06/03/99</u>
% Moisture: not dec.	Date Analyzed: <u>06/10/99</u>
GC Column: <u>RTX-624</u> ID: <u>0.53</u> (mm)	Dilution Factor: <u>1000.0</u>
Soil Extract Volume:(uL)	Soil Aliquot Volume:(uL)

CAS NO. COMPOUND

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CONCENTRATION UNITS: (ug/L or ug/Kg)<u>ug/l</u>_____

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67-64-1	Acetone	3	J
71-43-2	Benzene	5000	Ū
75-27-4	Bromodichloromethane	5000	Ū
75-25-2	Bromoform	5000	Ū
74-83-9	Bromomethane	10000	Ū
78-93-3	2-Butanone	10000	U
75-15-0	Carbon Disulfide	5000	U
56-23-5	Carbon Tetrachloride	5000	Ū
108-90-7	Chlorobenzene	5000	U
124-48-1	Chlorodibromomethane	5000	U
75-00-3	Chloroethane	10000	U
67-66-3	Chloroform	5000	U
74-87-3	Chloromethane	10000	U
75-34-3	1,1-Dichloroethane	5000	U
107-05-2	1,2-Dichloroethane	5000	U
75-35-4	1,1-Dichloroethene	5000	Ū
156-59-2	Cis-1,2-Dichloroethene	5000	U
156-60-5	Trans-1,2-Dichloroethene	5000	U
78-87-5	1,2-Dichloropropane	5000	U
10061-01-5	Cis-1,3-Dichloropropene	5000	U
10061-02-6	Trans-1,3-Dichloropropene	5000	U
100-41-4	Ethylbenzene	5000	U
<u>591-78-6</u>	2-Hexanone	10000	U
108-10-1	4-Methyl-2-Pentanone	10000	Ũ
75-09-2	Methylene Chloride		J
100-42-5	Styrene	5000	U
79-34-5	1,1,2,2-Tetrachloroethane	5000	U
127-18-4	Tetrachloroethene	5000	Ŭ
108-88-3	Toluene	5000	U
71-55-6	1,1,1-Trichloroethane	5000	U
79-00-5	1,1,2-Trichloroethane	5000	U
79-01-6	Trichloroethene	5000	U
75-01-4	Vinyl Chloride	10000	U
1330-20-7	Xylenes (Total)	5000	<u> </u>

APPENDIX C Vapor Sampling Analytical Results

Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

June 11, 1999

Ms. Deborah Schnell Mc Laren / Hart 25 Independence Blvd. Warren, NJ 07059

RE: Pace Project Number: 1015011 Client Project ID: Photo Circuits

Dear Ms. Schnell:

Enclosed are the results of analyses for sample(s) received on June 3, 1999. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Carolyne That

Carolynne Trout Project Manager

Enclosures



Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607**-**1700 Fax: 612-607-6444

DATE: 06/11/99 PAGE: 1

Mc Laren / Hart 25 Independence Blvd. Warren. NJ 07059 Pace Project Number: 1015011 Client Project ID: Photo Circuits

Attn: Ms. Deborah Schnell Phone: 908-647-8111

Solid results are reported on a wet weight basis

race Sample No: Client Sample ID:	101301497 SVE-BASE			Date Collec Date Recei		06/01/99 06/03/99	, , , , , , , , , , , , , , , , , , , ,	Matrix: Air
Parameters		Results	Units	PRL	Analyze	d Analyst	CAS#	Footnotes
		· · · - <i></i>						

GC/MS Volatiles

GC/MS VOCs, in Air	I	Method: TO-14	Source		Prep	Method: TO-14 Source
Dichlorodifluoromethane	ND	ppmv	0.1	06/03/99	RJS	75-71-8
Chloromethane	ND	ppmv	0.1	06/03/99	RJS	74-87-3
Dichlorotetrafluoroethane-F114	ND	ppmv	0.1	06/03/99	RJS	76.14.2
Vinyl Chloride	ND	ppmv	0.5	06/03/99	RJS	75-01-4
Bromomethane	ND	ppmv	0.5	06/03/99	RJS	74-83-9
Chloroethane	ND	ppmv	0.5	06/03/99	RJS	75-00-3
Trichlorofluoromethane	ND	ppmv	0.1	06/03/99	RJS	75-69-4
1,1.Dichloroethene	ND	ppmv	0.1	06/03/99	RJS	75-35-4
1,1,2.Trichlorotrifluoroethane	ND	ppmv	0.1	06/03/99	RJS	76-13-1
Methylene Chloride	ND	ppmv	0.5	06/03/99	RJS	75-09-2
1.1-Dichloroethane	0.16	ppmv	0.1	06/03/99	RJS	75-34-3
cis-1,2-Dichloroethene	ND	ppmv	0.1	06/03/99	RJS	156-59-2
Chloroform	ND	ppmv	0.1	06/03/99	RJS	67-66-3
1,1,1.Trichloroethane	ND	ppmv	0.1	06/03/99	RJS	71-55-6
1,2-Dichloroethane	ND	ppmv	0.1	06/03/99	RJS	107-06-2
Benzene	ND	ppmv	0.1	06/03/99	RJS	71-43-2
Carbon Tetrachloride	ND	ppmv	0.1	06/03/99	RJS	56-23-5
1,2·Dichloropropane	ND	ppmv	0.1	06/03/99	RJS	78-87-5
Trichloroethene	ND	ppmv	0.1	06/03/99	RJS	79-01-6
cis-1,3-Dichloropropene	ND	ppmv	0.1	06/03/99	rjs	10061.01.5
trans.1,3-Dichloropropene	ND	ppmv	0.5	06/03/9 9	RJS	10061-02-6
Toluene	ND	ppmv	0.1	06/03/99	RJS	108-88-3
1,1,2-Trichloroethane	ND	ppmv	0.1	06/03/99	RJS	79-00-5
1,2-Dibromoethane	ND	ppmv	0.1	06/03/99	RJS	106-93-4
Tetrachloroethene	ND	ppmv	0.1	06/03/99	rjs	127.18.4
Chlorobenzene	ND	ppmv	0.1	06/03/99	RJS	108-90-7

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

DATE: 06/11/99 PAGE: 2

Pace Project Number: 1015011 Client Project ID: Photo Circuits

Pace Sample No: 101301 Client Sample ID: SVE-BA			Date Collec Date Recei		6/01/99 6/03/99		Matrix: Air
Parameters	Results	Units	PRL	Anal yzec	I Analyst	CAS#	Footnotes
Ethylbenzene	ND		0.1	06/03/99	RJS	100-41-4	•••••
M&P-Xylene	ND	ppmv	0.1	06/03/99	RJS	7816-60-0	
0-Xylene (1,2-Dimethylben	zene) ND	ppmv	0.1	06/03/99	RJS	95-47-6	
Styrene	ND	ppmv	1	06/03/99	RJS	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ppmv	0.1	06/03/99	RJS	79-34-5	
1,3,5-Trimethylbenzene	ND	ppmv	0.1	06/03/99	RJS	108-67-8	
1,2,4-Trimethylbenzene	ND	ppmv	0.1	06/03/99	RJS	95-63-6	
1.3-Dichlorobenzene	ND	ppmv	0.1	06/03/99	RJS	541-73-1	
1,4-Dichlorobenzene	ND	ppmv	0.1	06/03/99	RJS	106-46-7	
1,2-Dichlorobenzene	ND	ppmv	0.1	06/03/99	RJS	95-50-1	
1,2,4-Trichlorobenzene	ND	ppmv	0.1	06/03/99	RJS	120.82.1	
Hexachlorobutadiene	ND	ppmv	0.1	06/03/99	RJS	87-68-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

DATE: 06/11/99 PAGE: 3

Pace Project Number: 1015011 Client Project ID: Photo Circuits

Pace Sample No: Client Sample ID:	101301505 SVE • POST			Date Collec Date Recei)6/01/99)6/03/99	I	Matrix: Air
Parameters		Results	Units	PRL	Analyze	d Analyst	CAS#	Footnotes

GC/MS Volatiles

GC/MS VOCs, in Air	Met	hod: TO·14	Source		Prep	Method: TO-14 Source
Dichlorodifluoromethane	ND	ррти	2	06/03/99	RJS	75-71-8
Chloromethane	ND	ррпи	2	06/03/99	RJS	74-87-3
Dichlorotetrafluoroethane-F114	ND	ppmv	2	06/03/99	RJS	76-14-2
Vinyl Chloride	15	ppmv	10	06/03/99	RJS	75-01-4
Bromomethane	ND	ppmv	10	06/03/99	RJS	74.83.9
Chloroethane	ND	ppmv	10	06/03/99	RJS	75-00-3
Trichlorofluoromethane	ND	ppmv	2	06/03/99	RJS	75-69-4
1,1-Dichloroethene	ND	ppmv	2	06/03/99	RJS	75-35-4
1,1,2-Trichlorotrifluoroethane	ND	ppmv	2	06/03/99	RJS	76-13-1
Methylene Chloride	ND	ppmv	10	06/03/99	RJS	75-09-2
1,1-Dichloroethane	2.4	ppmv	2	06/03/99	RJS	75-34-3
cis-1,2·Dichloroethene	10	ppmv	2	06/03/99	RJS	156-59-2
Chloroform	ND	ppmv	2	06/03/99	RJS	67-66-3
1,1,1-Trichloroethane	2.8	ppmv	2	06/03/99	RJS	71-55-6
1.2-Dichloroethane	ND	ppmv	2	06/03/99	RJS	107-06-2
Benzene	ND	ppmv	2	06/03/99	RJS	71-43-2
Carbon Tetrachloride	ND	ppmv	2	06/03/99	RJS	56-23-5
1,2-Dichloropropane	ND	ppmv	2	06/03/99	RJS	78-87-5
Trichloroethene	6.0	ppmv	2	06/03/99	RJS	79-01-6
cis-1,3-Dichloropropene	ND	ppmv	2	06/03/99	RJS	10061-01-5
trans-1,3-Dichloropropene	ND	ppmv	10	06/03/99	RJS	10061-02-6
Toluene	ND	ppmv	2	06/03/99	RJS	108-88-3
1,1,2-Trichloroethane	ND	ppmv	2	06/03/99	RJS	79-00-5
1,2-Dibromoethane	ND	ppmv	2	06/03/99	RJS	106-93-4
Tetrachloroethene	11	ppmv	2	06/03/99	RJS	127-18-4
Chlorobenzene	ND	ppmv	2	06/03/99	RJS	108-90-7
Ethylbenzene	ND	ppmv	2	06/03/99	RJS	100-41-4
M&P-Xylene	ND	ppmv	2	06/03/99	RJS	7816-60-0
O-Xylene (1,2.Dimethylbenzene)		ppmv	2	06/03/99	RJS	95-47-6
Styrene	ND	ppmv	20	06/03/99	RJS	100-42-5
1,1,2,2-Tetrachloroethane	ND	ppmv	2	06/03/99	RJS	79-34-5
1,3,5-Trimethylbenzene	ND	ppmv	2	06/03/99	RJS	108-67.8
1.2.4-Trimethylbenzene	ND	ppmv	2	06/03/99	RJS	95-63-6
1.3-Dichlorobenzene	ND	ppmv	2	06/03/99	RJS	541-73-1
1,4-Dichlorobenzene	ND	ppm∨	2	06/03/99	RJS	106-46-7
1.2-Dichlorobenzene	ND	ppmv	2	06/03/99	RJS	95-50-1

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

DATE: 06/11/99 PAGE: 4

Pace Project Number: 1015011 Client Project ID: Photo Circuits

Pace Sample No: Client Sample ID:	101301505 SVE∙POST			Date Collec Date Recei		5/01/99 5/03/99	Ņ	latrix: Air
Parameters		Results	Units	PRL	Analyzed	Analys	t CAS#	Footnotes
1,2,4-Trichlorobe Hexachlorobutadio	enzene	ND ND	ppmv ppmv	2 2	06/03/99 06/03/99		120•82-1 87-68-3	••••



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> Tel: 612-607-1700 Fax: 612-607-6444

DATE: 06/11/99 PAGE: 5

Pace Project Number: 1015011 Client Project ID: Photo Circuits

PARAMETER FOOTNOTES

- ND Not Detected
- NC Not Calculable

PRL Pace Reporting Limit



Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

QUALITY CONTROL DATA

DATE: 06/11/99 PAGE: 6

Pace Project Number: 1015011 Client Project ID: Photo Circuits

Attn: Ms. Deborah Schnell Phone: 908-647-8111

Mc Laren / Hart

Warren, NJ 07059

25 Independence Blvd.

Batch ID: 25458QC Batch Method: TO-14 Sourcesiysis Method: TO-14 SourceAnalysis Description: GC/MS VOCs, in AirAssociated Pace Samples:101301497101301505

METHOD BLANK: 101303725 Associated Pace Samples:

Associated race samples.	101301497	101301505		
	101001107	Method		
		Blank		
Parameter	Units	Result	PRL	Footnotes
Dichlorodifluoromethane	ppmv	ND	0.1	
Chloromethane	ppmv	ND	0.1	
Dichlorotetrafluoroethane-F114	4 ppmv	ND	0.1	
Viny) Chloride	ppmv	ND	0.5	
Bromomethane	ppmv	ND	0.5	
Chloroethane	ppmv	ND	0.5	
Trichlorofluoromethane	ppmv	ND	0.1	
1,1-Dichloroethene	ppmv	ND	0.1	
1,1,2 Trichlorotrifluoroethan	e ppmv	ND	0.1	
Methylene Chloride	ppmv	ND	0.5	
1,1-Dichloroethane	ppmv	ND	0.1	
cis-1,2-Dichloroethene	ppmv	ND	0.1	
aloroform	ppmv	ND	0.1	
1,1,1-Trichloroethane	ppmv	ND	0.1	
1,2-Dichloroethane	ppmv	ND	0.1	
Benzene	ppmv	ND	0.1	
Carbon Tetrachloride	ppmv	ND	0.1	
1,2-Dichloropropane	ppmv	ND	0.1	
Trichloroethene	ppmv	ND	0.1	
cis-1,3-Dichloropropene	ppmv	ND	0.1	
trans-1,3-Dichloropropene	ppmv	ND	0.5	
Toluene	ppniv	ND	0.1	
1,1,2-Trichloroethane	ppmv	ND	0.1	
1,2-Dibromoethane	ppmv	ND	0.1	
Tetrachloroethene	ppmv	ND	0.1	

REPORT OF LABORATORY ANALYSIS

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> Tel: 612-607-1700 Fax: 612-607-6444

QUALITY CONTROL DATA

DATE: 06/11/99 PAGE: 7

Pace Project Number: 1015011 Client Project ID: Photo Circuits

METHOD BLANK: 101303725		<u> </u>		
Associated Pace Samples:	01301497	101301505		
-		Method		
		Blank		
Parameter	Units	Result	PRL	Footnotes
Chlorobenzene	 ppmv	 ND	0.1	
Ethylbenzene	ppmv	ND	0.1	
Yylene	ppmv	ND	0.1	
<pre>xylene (1,2-Dimethylbenzene)</pre>	ppmv	ND	0.1	
Styrene	ppmv	ND	1	
1,1,2,2-Tetrachloroethane	ppmv	ND	0.1	
1,3,5.Trimethylbenzene	ppmv	ND	0.1	
1,2,4 Trimethylbenzene	ppmv	ND	0.1	
1,3-Dichlorobenzene	ppmv	ND	0.1	
1,4-Dichlorobenzene	ppmv	ND	0.1	
1,2-Dichlorobenzene	ppmv	ND	0.1	
1,2,4-Trichlorobenzene	ppmv	ND	0.1	
Hexachlorobutadiene	ppmv	ND	0.1	

LABORATORY CONTROL SAMPLE: 101303717

Parameter	Units	Spike Conc.	LCS Result	Spike ∦ Rec	Footnotes
Dichlorodifluoromethane	ppmv	0.5250	0.6507	124	
Chloromethane	ppmv	0.5000	0.5562	111	
Dichlorotetrafluoroethane-F114	ppmv	0.5950	0.6618	111	
Vinyl Chloride	ppmv	0.5000	0.5303	106	
Bromomethane	ppmv	0.5000	0.5702	114	
Chloroethane	ppmv	0.5000	0.6000	120	
Trichlorofluoromethane	ppmv	0.5550	0.6186	111	
1,1-Dichloroethene	ppmv	0.5000	0.5549	111	
1,1,2-Trichlorotrifluoroethane	ppmv	0.5600	0.6246	112	
Methylene Chloride	ppmv	0.5650	0.6405	113	
1,1-Dichloroethane	ppmv	0.5000	0.5620	112	
cis-1,2-Dichloroethene	ppmv	0.5000	0.5806	116	
Chloroform	ppmv	0.5000	0.5550	111	
1,1,1-Trichloroethane	ppmv	0.4550	0.5082	112	
1.2-Dichloroethane	ppmv	0.4250	0.4657	110	
Benzene	ppmv	0.4500	0.5076	113	
Carbon Tetrachloride	ppmv	0.4450	0.4954	111	
1,2-Dichloropropane	ppmv	0.3900	0.4280	110	
Trichloroethene	ppmv	0.4400	0.4831	110	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

QUALITY CONTROL DATA

DATE: 06/11/99 PAGE: 8

Pace Project Number: 1015011 Client Project ID: Photo Circuits

LABORATORY CONTROL SAMPLE: 101	303717				·• · · ·
		Spike	LCS	Spike	
Parameter	Units	Conc.	Result	X Rec	Footnotes
cis.1,3-Dichloropropene	ppmv	0.5000	0.5816	116	
trans.1,3-Dichloropropene	ppmv	0.5000	0.5639	113	
Toluene	ppmv	0.5000	0.5539	111	
1.1.2-Trichloroethane	ppmv	0.4150	0.4987	120	
1,2-Dibromoethane	ppmv	0.4550	0.4950	109	
etrachloroethene	ppmv	0.5000	0.5483	110	
Unlorobenzene	ppmv	0.4400	0.4754	108	
Ethylbenzene	ppmv	0.4400	0.4757	108	
M&P·Xylene	ppmv	0.8000	0.8926	112	
0-Xylene (1,2.Dimethylbenzene)	ppmv	0.3950	0.4092	104	
1,1,2,2.Tetrachloroethane	ppmv	0.3950	0.3250	82.3	
1.3.5 Trimethylbenzene	ppmv	0,5000	0.4884	97.7	
1.2.4-Trimethylbenzene	ppmv	0.5000	0.4675	93.5	
1,3.Dichlorobenzene	ppmv	0.2650	0.2534	95.6	
1,4·Dichlorobenzene	ppmv	0.3200	0.2847	89.0	
1,2·Dichlorobenzene	ppmv	0.5000	0.4089	81.8	
1,2,4-Trichlorobenzene	ppmv	0.2250	0.2027	90.1	
Hexachlorobutadiene	ppmv	0.1400	0.1382	98.7	

SAMPLE DUPLICATE: 101303733

			Dup.		
Parameter	Units	101301505	Result	RPD	Footnotes
••••••					
Dichlorodifluoromethane	ppmv	ND	ND	NC	
Chloromethane	ppmv	ND	ND	NC	
Dichlorotetrafluoroethane-F114	ppmv	ND	ND	NC	
Vinyl Chloride	ppmv	15.00	15.00	1	
Bromomethane	ppmv	ND	ND	NC	
Chloroethane	ppmv	ND	ND	NC	
Trichlorofluoromethane	ppmv	ND	ND	NC	
1,1-Dichloroethene	ppmv	ND	ND	NC	
1,1,2-Trichlorotrifluoroethane	ppmv	ND	ND	NC	
Methylene Chloride	ppmv	ND	ND	NC	
1,1.Dichloroethane	ppmv	2.400	2.500	2	
cis-1,2-Dichloroethene	ppmv	10.00	7.300	32	1
Chloroform	ppmv	ND	ND	NC	
1,1,1.Trichloroethane	ppmv	2.800	2.500	10	
1,2 Dichloroethane	ppmv	ND	ND	NC	
Benzene	ppmv	ND	ND	NC	
Carbon Tetrachloride	ppmv	ND	ND	NC	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

QUALITY CONTROL DATA

DATE: 06/11/99 PAGE: 9

Pace Project Number: 1015011 Client Project ID: Photo Circuits

SAMPLE DUPLICATE: 101303733					
Parameter	Units	101301505	Dup. Result	RPD	Footnotes
1,2.Dichloropropane	ppmv	ND	ND	NC	
Trichloroethene	ppmv	6.000	5.800	2	
cis-1,3-Dichloropropene	ppmv	ND	ND	NC	
trans.1,3-Dichloropropene	ppmv	ND	ND	NC	
Toluene	ppmv	ND	ND	NC	
1.2-Trichloroethane	ppmv	ND	ND	NC	
Dibromoethane	ppmv	ND	ND	NC	
letrachloroethene	ppmv	11.00	12.00	5	
Chlorobenzene	ppmv	ND	ND	NC	
Ethylbenzene	ppmv	ND	ND	NC	
M&P-Xylene	ppmv	ND	ND	NC	
0-Xylene (1.2-Dimethylbenzene)	ppmv	ND	ND	NC	
Styrene	ppmv	ND	ND	NC	
1,1,2,2-Tetrachloroethane	ppmv	ND	ND	NC	
1,3,5-Trimethylbenzene	ppmv	ND	ND	NC	
1,2,4-Trimethylbenzene	ppmv	NÐ	ND	NC	
1,3-Dichlorobenzene	ppmv	NÐ	ND	NC	
1,4-Dichlorobenzene	ppmv	ND	ND	NC	
1,2-Dichlorobenzene	ppmv	ND	ND	NC	
1,2,4.Trichlorobenzene	ppmv	ND	ND	NC	
Hexachlorobutadiene	ppmv	ND	ND	NC	

REPORT OF LABORATORY ANALYSIS

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> Tel: 612-607-1700 Fax: 612-607-6444

DATE: 06/11/99 PAGE: 10

Pace Project Number: 1015011 Client Project ID: Photo Circuits

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

- ND Not Detected
- NC Not Calculable
- PRL Pace Reporting Limit
- RPD Relative Percent Difference
- [1] The calculated RPD was outside QC acceptance limits.



	Laboratories Tel. (973) 428-81 07981 Fax: (973) 428-82	81	СH/	IN OF CUSTODY	101-50	// №. 56526
· · · · · · · · · · · · · · · · · · ·	<u> </u>		CI17	FIELD BOO		Pg of
1) Client: Mcharen Har	+	#	(14) Bill To	Micharin/Hart 90 Debic	schnell	For Lab Use Only
2 Project Name/no.: Plus	civairts	0		25 Indipendence Bl Warren NJ 07059		Job No.
3 Client Contact: Deb Sc	hnell	F	PO#	120806115001001		# of Coolers:
1) SEContact: JUlie	201 ple	C O		(5) ANALYSIS REQUIRED		A Custody Seal #(s)
5 TAT: 1wk (2wk) 3wk, 07	THER	N T				B Date Due:
6 Proj. Type: NJPDES, NPDES, UST, ACO, MOA		Â				I PM NON-CONFORMANCE D Preserved:
7 Protocol: CLP, SW846, EPA		N				Container: Volume:
B Reporting Type: NJ Reg Fo		E R	1			Broken: Initials: Holding Time:
CLP, Leve Other	II, Level I (Data Sum),	S	10-			Other: Logged By:
9 Client ID (10 CHAR) SNE - BASE	(B)Date (1)Time (12)Mtx 611(91) 1225 - 41	(13)	F		· · · · · · · · · · · · · · · · · · ·	DESCRIPTION
SV2- p05T	6/1199 1635 AI					101301505
	F G					
F						
(16) COMMENTS: (Please inclue	le hazards on site.)					
Print Nam	e and Gompany I			Signature A.	Custody Sea	al # (c) . Data/Time
I Sampled By: Dep Schut	11 My aven-Haut		<u>↓ </u>	Signature Schill		6/109/163
Received By:	t pace		<u> </u> ℓ	uoligne that		613149093
Relinquished By:	·,··					/
Received By:	J=Air. AO=Aqueous. LE=	Leach	1 ate. ML=Mi	 c Liquid, MS=Misc Solids, OIL, SE=Sed	iment. SL=Sludø	e. SO=Soil)

(Copies: White and yellow copies should accompany samples to STL. The pink copy should be retained by the client.) See reverse for directions.

APPENDIX D Monitoring Well Logs

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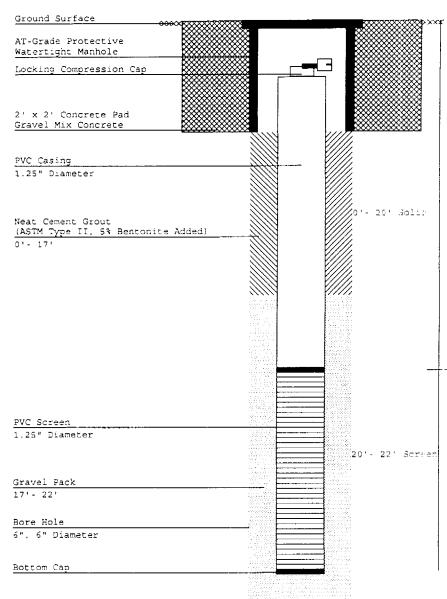
	RILLING NTAL SPECIALIS					
			WB	LL LOG		
	ircuits Corp, 31	RILLED: 05/24/1999 . Sea Cliff Avenue, , . Sea Cliff Avenue, ,	COORD #2: Glen Cove, NY		IT #1: IT #2:	
INNER CASING: DIAMETER: LENGTH: SET WELL: GRAVEL PK SZ: DRILLER:	1.25" 20' 22' Morie #2 John Vogt)' MENT METHOD: Pumj	•	2: 1.25" 2' .020 CASING SEAL:	Portland
	OW BLOWS PE ON SAMPL	IR 6"	Ground Surface		OPEN HOLE:	
- REMARKS / SOI	LS IDENTIFICATIO	N	AT-Grade Prote Watertight Man			
0'- 22' Blac			Locking Compre.	ssion Cap		
			2' x 2' Concre Gravel Mix Conc			
			PVC Casing 1.25" Diameter	<u> </u>		

Chimney Rock Road, Bldg. 9W Bound Brook, NJ 08805 Telephone: (908) 722-4266 Toll Free: (800) 242-6648 FAX: (732) 356-1009 http://www.summitdrilling.com email: info@summitdrilling.com

> COUNTY: XSTREET:

USE: Monitor

DRILLING METHOD: Auge: SAMPLING METHOD: HOLE DIA: 5", 5" TOTAL DEPTH: 22'



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DRILLING CO.,	INC.

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ENVIRONMENTAL SPECIALISTS

WELL LOG

	WELL LOG		
WELL: SAS/DAS DATE DRILLED: 09 SITE: Photocircuits Corp, 31 Sea Clifi DWNER: Photocircuits Corp, 31 Sea Clifi	COORD #2: Avenue, , Glen Cove, NY	PERMIT #1: PERMIT #2:	COUNTY: XSTREET: USE: Monitor
LIST CASING: PVC 2nd CA DIAMETER: 3" DIAMET LENGTH: 20' LENGTH SET WELL: 32' GAL PR	ASING: PVC SCREE "ER: 1.5" SCREE I: 30' DIAME LENGT CR MIN: 1/2 LENGT	EN TYPE 1: PVC EN TYPE 2: PVC ETER: 3" 1.5" EH 1: 2' CH 2: 2' SIZE: .020 CASING SEAL: Por OPEN HOLE:	DRILLING METHOD: Auge: SAMPLING METHOD: HOLE DIA: 10", 10" TOTAL DEPTH: 32'
DEPTH BELOW BLOWS PER 6" SURFACE ON SAMPLER FROM - TO			
······	Ground Surface		
REMARKS / SOILS IDENTIFICATION	AT-Grade Protective Watertight Manhole		
<pre>'- 10" Concrete. 0"- 14" Asphalt. 4"- 16' M/c sand little gravel. 6'- 19' Coarse gravel. 9'- 26' M/c sand little gravel.</pre>	Locking Compression C 2'x2' Concrete Pad Gravel Mix Concrete		
6'- 28' Gravel.			PVC Casing
3'- 32' Fine sand.	<u>PVC Casing</u> 3" Diameter		1.5" Di unette
			Solid
	Neat Cement Grout		0'-3)'
	(ASTM Type II,5% Bent 0'- 19'	onice Added)	<u>Solid</u>
		an - Maart Arean - Arean Arean - Arean	Screen
			20'- 22
	Bore Hole		
	10", 10" Diameter		
	Gravel Pack		
	19'- 22'		
	Grout		
	22'- 29'	1997 - 1997 - 1997 - 1999 - 1997 - 1999 - 1997 - 1999 -	
	Gravel Pack		
	29'- 32'		
	PVC Screen 3" 1.5" Diameter		Screan
	3" I.5" Dlameter		30' · 32
	Bottom Cap		



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ENVIRONMENTAL SPECIALISTS

SUBSURFACE INVESTIGATION

WELL: SAS/DAS SITE: Photoci: SWNER: Photoci:		-	Cliff A	venue, , G		05/18/1999	FINISH	DATE:	05/18/1999	XS	ANDON DATE: 00/00/0000 FREET: JNTY:
AMPLE HAMMER W RILLER: Jeff N				MPLE HAMME LPER:	R FALL:		I. D. COORD				
	ĸ	EY TO SAM	PLE CODE	S				CLA	SSIFICATIO	N OF MA	TERIAL
	SS	- Split Sp	poon Sam	ple			5	- Fine		And -	35 - 50 %
	U	- Undis, S	Shelby T	ube			м	- Medi	шm	Some -	20 - 35 %
	P	- Piston ?	Type Sam	ple			С	- Cour	se	Little	- 10 - 20 %
									_	Trace -	- 0 - 10 %
	DEPT	H OF		BLOWS	ON					·	
SAMPLE	SAMPLE	(FT)	TYPE	SAMPLER	PER 6"						
NO.	FROM	то	SAMPLE	SAMPLER	Q.D.			REMAR	KS / SOILS	IDENTI	FICATION
1	0'	4 '	MA	Geoprobe							
2	4 '	8'	MA	Geoprobe		0'- 6' B	rown f/r	n sand	little c/f	gravel.	
3	8'	12'	MA	geoprobe		6'- 10' i	Dark gre	ey grad	ing.		
4	12'	16'	MA	Geoprobe		10'- 15'	Dark gi	rey f/c	sand some	fine gr	avel.
5	16'	20'	MA	Geoprope		15'- 17'	Brown i	f/c san	d some fine	e gravel	. little silt.
6	23'	27'	MA	Geoprobe		17'- 19'	Dark b:	rown f/	c sand & gi	avel li	ttle silt.
							-	- I			

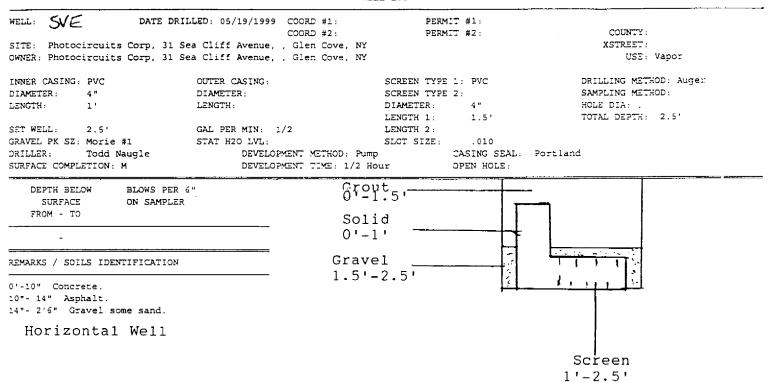
19'- 27' Brown f/c sand little fine gravel.



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ENVIRONMENTAL SPECIALISTS

WELL LOG



DRILLING CO., INC.				Bound Brook, Telephone: Toll Free: FAX: http://www.s	
ENVIRONMENTAL SPECIALISTS					
	WEI	L LOG			
WELL: VMP1 DATE DRILLED: 05/24/1999	COORD #1: COORD #2:		IT #1: IT #2:	COUNTY :	<u> </u>
SITE: Photocircuits Corp, 31 Sea Cliff Avenue, OWNER: Photocircuits Corp, 31 Sea Cliff Avenue,	, Glen Cove, NY	E EAD		XSTREET: USE: M	onitor
INNER CASING: PVC OUTER CASING: DIAMETER: 1.25" DIAMETER: LENGTH: 1' LENGTH:		SCREEN TYPE SCREEN TYPE DIAMETER:	2: 1.25"	DRILLING METHO SAMPLING METHO HOLE DIA: 6",	D; 5"
				TOTAL DEPTH:	
DEPTH BELOW BLOWS PER 6" SURFACE ON SAMPLER FROM - TO					
-	Ground Surface		~		***
REMARKS / SOILS IDENTIFICATION	AT-Grade Protec <u>Watertight Manh</u>				
0'- 3' Brown sand.	Locking Compres	sion Cap			
	2' x 2' Concret Gravel Mix Conc				
	PVC Casing 1.25" Diameter				
·	Neat Cement Gro (ASTM Type II, 0'- 5"		Added)	0'- 1	Solid
	PVC Screen				
	1.25" Diameter			1'- 3'	Soreer.
	Gravel Pack 6"- 3'	,			
	<u>Bore Hole</u> 6", 6" Diameter				
	<u>Bottom Cap</u>				ĺ

Gum	報会
DRILLING CO.,	INC.
ENVIRONMENTAL SPECIALISTS	í

Chimney Rock Road, Bldg. 9W Bound Brook, NJ 08805 (908) 722-4266 (800) 242-6648 (732) 356-1009 Telephone: Toll Free: FAX: http://www.summitdrilling.com email: info@summitdrilling.com

		WEI	L LOG		
		24/1999 COORD #1: COORD #2:	PERMIT #1: PERMIT #2:		COUNTY :
		Avenue, , Glen Cove, NY Avenue, , Glen Cove, NY			XSTREET: USE: Monitor
INNER CASING: PVC DIAMETER: 1.25" LENGTH: 3'	OUTER C DI AMETE LENGTH :		SCREEN TYPE 1: PVC SCREEN TYPE 2: DIAMETER: 1.2 LENGTH 1: 2'	5" S.	RILLING METHOD: Auge: AMPLING METHOD: DLE DIA: 5", 5" DTAL DEPTH: 10'
SET WELL: 10' GRAVEL PK SZ: Morie #2 DRILLER: John Vog SURFACE COMPLETION: M	2 STAT H2 Jt		LENGTH 2: SLOT SIZE: .02 CASING	20 3 SEAL: Portland	
DEPTH BELOW E	BLOWS PER 6" DN SAMPLER				
_		Ground Surface			
REMARKS / SOILS IDENTI	FICATION	AT-Grade Protec Watertight Manh	m		
0'- 10' Black fine sa	and .	Locking Compres	sion Cap		
		2' x 2' Concret Gravel Mix Conc			
		PVC Casing			
		1.25" Diameter			
			ut 5% Bentonite Added)		0'- 3' Solid
		0'- 5'			
•					
		PVC Screen			
		1.25" Diameter			
		<u>Gravel Pack</u> 5'- 10'			
		Bore Hole			
		6", 6" Diameter			
		Bottom Cap			



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ENVIRONMENTAL SPECIALISTS

	WELL LOG	
ELL: DMP1 DATE DRILLED: 05/2		MIT #1: MIT #2: COUNTY:
ITE: Photocircuits Corp, 31 Sea Cliff A		XSTREET :
WNER: Photocircuits Corp, 31 Sea Cliff A	venue, , Glen Cove, NY	USE: Monitor
NNER CASING: PVC OUTER CA		DE 1: PVC DRILLING METHOD: Auger
IAMETER: 1.25" DIAMETER		
ENGTH: 18' LENGTH:	DIAMETER: Length 1:	
ET WELL: 20' GAL PER	MIN: 1/2 LENGTH 2:	
RAVEL PK SZ: Morie #2 STAT H2C		
	DEVELOPMENT METHOD: Pump DEVELOPMENT TIME: 1/2 Hour	CASING SEAL: Portland OPEN HOLE:
DEPTH BELOW BLOWS PER 5"		
SURFACE ON SAMPLER		
FROM - TO	Ground Surface	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-		
	AT-Grade Protective Watertight Manhole	
EMARKS / SOILS IDENTIFICATION	Locking Compression Cap	
'- 20' Black fine sand.	Tockfuld completerion cap	
	2' x 2' Concrete Pad	
	Gravel Mix Concrete	
	PVC Casing	
	1.25" Diameter	
		0'- 15' Split
	Neat Cement Grout	
	(ASTM Type II, 5% Bentonit 0'- 15'	
•		
	DVG General	
	PVC Screen 1.25" Diameter	
		18'- 20' Screen
	Gravel Pack	
	15'- 20'	
	Bore Hole	
	6", 6" Diameter	
	Bottom Cap	

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ENVIRONMENTAL SPECIALISTS

		L LOG		
WELL: VMP2 DATE DRILLED: 05/18/1999 SITE: Photocircuits Corp, 31 Sea Cliff Avenue, DWNER: Photocircuits Corp, 31 Sea Cliff Avenue,	COORD #2: , Glen Cove, NY	PERMIT PERMIT		COUNTY: XSTREET: USE: Vapor
INNËR CASING: PVC OUTER CASING: DIAMETER: 1.25" DIAMETER: LENGTH: 1.5' LENGTH:		LENGTH 1:		DRILLING METHOD: Auge: Sampling Method: Hole DIA: 6", 6" TOTAL DEPTH: 3.5'
			.020 ASING SEAL: Portla PEN HOLE:	and
DEPTH BELOW BLOWS PER 6" SURFACE ON SAMPLER FROM - TO				
	Ground Surface			
	AT-Grade Protec Watertight Manh			
REMARKS / SOILS IDENTIFICATION	Locking Compres	К		
)'- 3'6" Grey f/c sand some silt.				
	2' x 2' Concret	e Pad		
	Gravel Mix Conc			
	<u>PVC Casing</u> 1.25" Diameter			- ////
				0'- 1.5' Sel:d
	Neat Cement Gro (ASTM Type II,		ded:	
	0'- 1'			
	PVC Screen			
	1.25" Diameter			
				1.5'- 3.5' Screba
	Gravel Pack			
	1'- 3.5'			
	Bore Hole			
	6", 6" Diameter			
	Bottom Cap			

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ENVIRONMENTAL SPECIALISTS					
	WEI	LL LOG			
ELL: VMP3 DATE DRILLED: 05/18/1999 DATE DRILLED: 05/18/1999 DATE DRILLED: 05/18/1999 DATE DRILLED: 05/18/1999 DATE DRILLED: 05/18/1999 DATE DRILLED: 05/18/1999	COORD #2: , Glen Cove, NY		MIT #1: MIT #2:		COUNTY: XSTREET: USE: Vapor
	1/2		E 2: 1.25" 2'	SAM Hole Tota	LING METHOD: Auge: LING METHOD: DIA: 6", 6" L DEPTH: 3.5'
DEPTH BELOW BLOWS PER 6" SURFACE ON SAMPLER FROM - TO	Ground Surface				
-	AT-Grade Protec	tive	**		
EMARKS / SOILS IDENTIFICATION	Watertight Manh	ole		·	
0'- 3'6" Grey f/c sand some silt.	Locking Compres	sion Cap			
	2' x 2' Concret Gravel Mix Conc				
	PVC Casing 1.25" Diameter				
	Neat Cement Gro <u>(ASTM Type II,</u> 0'- 1'		Added)		0'- 1.5' Solid
·					
	<u>PVC Screen</u> 1.25" Diameter				1.5'- 3.5' Ser≄sa
	Gravel Pack 1'- 3.5'				
	Bore Hole 6", 6" Diameter	9 8			
	Bottom Cap				1

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ENVIRONMENTAL SPECIALISTS

WELL LOG

			WEL	L LOG			
ELL: SMP3		LLED: 05/18/1999 ea Cliff Avenue,	COORD #2:		T \$1: T #2:		COUNTY: XSTREET:
WNER: Photocircuit	s Corp, 31 S	ea Cliff Avenue,	, Glen Cove, NY				USE: Vapor
NNER CASING: PVC IAMETER: 1.25" ENGTH: 13'		OUTER CASING: DIAMETER: LENGTH:		SCREEN TYPE SCREEN TYPE DIAMETER: LENGTH 1:	2: 1.25"	s F	DRILLING METHOD: Auge: SAMPLING METHOD: HOLE DIA: 6", 6" HOTAL DEPTH: 15'
ET WELL: 15' RAVEL PK SZ: Morie RILLER: Jeff JRFACE COMPLETION;	#2 Marchesi			LENGTH 2: SLOT SIZE:	. 020		
DEPTH BELOW SURFACE FROM - TO	BLOWS PER ON SAMPLER					, <u>;</u>	
			Ground Surface		~***********		~~~
- EMARKS / SOILS IDE	NTIFICATION		AT-Grade Protec Watertight Manh				
· · · · · · · · · · · · · · · · · · ·			Locking Compres	sion Cap			
'-15' Brown-grey embedded	f/c sand som fine gravel.	e silt		······································			
			2' x 2' Concrete Gravel Mix Conc				
			PVC Casing 1.25" Diameter				
			· 1,25 Diameter				
			Neat Cement Grou	12			0'+ 13' Soli:
			(ASTM Type II, S		Added)		
			0'- 10'				
			PVC Screen 1.25" Diameter				
							13'- 15' Soreen
			Gravel Pack				
			10'- 15'				
			Bore Hole 6", 6" Diameter	· .			
			o', o' Diameter				
			Bottom Cap				
							en en generale de la composition de la composi
						and the second	

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ENVIRONMENTAL SPECIALISTS

WELL: DMP3 DATE DRILLED: 05/18/1999 SITE: Photocircuits Corp, 31 Sea Cliff Avenue, WNER: Photocircuits Corp, 31 Sea Cliff Avenue,	COORD #2: , Glen Cove, NY	PERMIT #1: PERMIT #2:		COUNTY: XSTREET: USE: Vapor
INNER CASING: PVC OUTER CASING: DIAMETER: 1.25" DIAMETER: JENGTH: 23' LENGTH: DET WELL: 25' GAL PER MIN:	1/2	SCREEN TYPE 1: PV SCREEN TYPE 2: DIAMETER: 1. LENGTH 1: 2' LENGTH 2:	25"	DRILLING METHOD: Auge: Sampling Method: Hole DIA: 6", 6" Total DEPTH: 25'
	23' DPMENT METHOD: Pump DPMENT TIME: 1/2 Ho	CASIN	20 G SEAL: Portla HOLE:	nd
DEPTH BELOW BLOWS PER 6" SURFACE ON SAMPLER FROM - TO				
	Ground Surface			
MARKS / SOILS IDENTIFICATION	AT-Grade Protect Watertight Manho			
"-25' Brown-grey f/c sand some silt embedded fine gravel.	Locking Compres	KXXX		
	2' x 2' Concrete Gravel Mix Conce			
	PVC Casing			_ /////
	1.25" Diameter			0'- 23' Solin
	Neat Cement Grou (ASTM Type II, 5 0'- 20'	ut 5% Bentonite Added	<u>, </u>	J'- 23' A311
	PVC Screen			
	1.25" Diameter			23'- 25' Sorten
	Gravel Pack 20'- 25'			
	Bore Hole 6", 6" Diameter			
	or, or Diameter			
	Bottom Cap			

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LITE: Photocleroits Corp. 31 Sea Cliff Avenue. : Gles Cave, NY LITE: Photocleroits Corp. 31 Sea Cliff Avenue. : Gles Cave, NY LITE: Manifer Market Part 1: LITE: Market Part 1: L				WEI	L LOG		
<pre>LAMPER: 1.25" DiAmpere: SCRENTYPE 2. EAMPLING METHOD: NOTIFIE: LINGTH 1: 2: TOTAL DEFT: 3' HALL DET MELL 3' DAL PER MIN: 1/2 LEMPER: LINGTH 1: 2' TOTAL DEFT: 3' HALL DET MELL 3' DAL PER MIN: 1/2 LEMPER: LINGTH 2: LINGTH 2</pre>		Corp, 31 Se	a Cliff Avenue,	COORD #2: , Glen Cove, NY			XSTREET:
SCRACE OK SAMPLES FROM TO PRAKE / SOLIS IDENTIFICATION (- 3' Brown sand. PVC Casing 1.25' Concrete Pad Cravel Mix Concrete Pad Cravel Mix Concrete PVC Casing 1.25' Diameter Neas Common Grout (ASTM Type II, SB Remionite Added) () - 5' . PVC Screen 1.55' Diameter 1	LENGTH: 1' SET WELL: 3' GRAVEL PK SZ: Morie DRILLER: John V	#2 `ogt.	DIAMETER: LENGTH: GAL PER MIN: 1 STAT H20 LVL: 3 DEVELOP	, MENT METHOD: Pump	SCREEN TYPE DIAMEIER: LENGTH 1: LENGTH 2: SLOT SIZE:	2: 1.25" 2' .020 CASING SEAL:	SAMPLING METHOD: HOLE DIA: 6", 6" TOTAL DEPTH: 3'
EXARXS / SOILS IDENTIFICATION EXARXS / SOILS IDENTIFICATION AT-Grade Protective AT-Grade Protective AT-Grade Protective Idexing Compression Cap Decking Compression Cap PVC Casing 1.25* Diameter 1.25* Diameter Neat Cement Grout (ASTM Type II, 5% Renomize Added) 7*- 1* Soilid PVC Screen 1.25* Olameter 1.25*	SURFACE		1				
HAARS / SOLS IDENTIFICATION Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribute Attribu				Ground Surface		**	
<pre>2' 3' Brown sand. 2' x 2' Concrete Pad Gravel Mix Concrete PVC Casing 1.25' Diameter Neat Coment Grout (ASYM Type II, 5% Benjonite Added) 0'- 1' Solid PVC Screen 1.25' Diameter 1.2</pre>	REMARKS / SOILS IDEN	TIFICATION	<u></u>				
Gravel Max Concrete PVC Casing 1.25" Diameter Neat Coment Orout IASTM Type II, 51 Bentonite Added) G'* 5" PVC Screen 1.25" Diameter 1.25" Diameter 1.25" Diameter 1.25" Diameter 1'* 3' Street	0'- 3' Brown sand.			Locking Compres	sion Cap		
1.25" Diameter Neat Cement Grout (ASTM Type II, 5% Bentonite Added) 0'- 1' Solid D'- 1' Solid D							
Neat Coment Grout (ASTM Type II, 5% Bentonite Added) 31- 5" PVC Screen 1.25" Diameter 1.3" Street Gravel Pack 5'- 3' Bore Hole 6", 6" Diameter Bottom Cap							
Near Cemen Grout (ASTW Type II, 5% Bantonite Added) 0'- 5" PVC Screen 1.25" Diameter 1'- 3' Street Gravel Pack 5"- 3' Bore Hole 6", 6" Diameter Bottom Cap				1.25" Diameter			
1.25" Diameter Gravel Pack 6"- 3' Bore Hole 6". 6" Diameter Bottom Cap				(ASTM Type II,		Added)	0'- 1' Solid
1.25" Diameter Gravel Pack 6"- 3' Bore Hole 6". 6" Diameter Bottom Cap							
1.25" Diameter Gravel Pack 6"- 3' Bore Hole 6". 6" Diameter Bottom Cap							
Gravel Pack 6"- 3' Bore Hole 6", 6" Diameter Bottom Cap							
6"- 3' Bore Hole 6", 6" Diameter Bottom Cap							
Bore Hole 6", 6" Diameter Bottom Cap							
Bottom Cap							
				o", 6" Diameter			
				Bottom Cap			

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ENVIRONMENTAL SPECIALISTS

	WEI	L LOG		
NELL: SMP4 DATE DRILLED: 05/24/199 SITE: Photocircuits Corp, 31 Sea Cliff Avenue DWNER: Photocircuits Corp, 31 Sea Cliff Avenue	COORD #2: , , Glen Cove, NY	PERMIT #1: PERMIT #2:	COUNTY: XSTREET: USE: Monitor	
INNER CASING: PVC OUTER CASING: DIAMETER: 1.25" DIAMETER: LENGTH: 1.3' LENGTH:		SCREEN TYPE 1: PVC SCREEN TYPE 2: DIAMETER: 1.25" LENGTH 1: 2'	DRILLING METHOD: Auge: SAMPLING METHOD: HOLE DIA: 6", 6" TOTAL DEPTH: 15'	
SET WELL: 15' GAL PER MIN: SRAVEL PK SZ: Morie #2 STAT H2O LVL: DRILLER: John Vogt DEVEL SURFACE COMPLETION: M DEVEL	20' OPMENT METHOD: Pump	LENGTH 2: SLOT SIZE: .020 CASING SE; ur OPEN HOLE.	AL: Portland :	
DEPTH BELOW BLOWS PER 6" SURFACE ON SAMPLER FROM - TO				
	Ground Surface			×
	AT-Grade Protec Watertight Manh			
0'- 15' Black fine sand.	Locking Compres			
	2' x 2' Concret Gravel Mix Conc			
	PVC Casing			
	1.25" Diameter			
	Neat Cement Gro (ASTM Type II, 0'- 10'	it 5% Bentonite Added)	0'- 13' Salin	
	0.7 10.			
	PVC Screen			
	1.25" Diameter		13'- 15' Sorter.	
	<u>Gravel Pack</u> 10'- 15'			
	<u>Bore Hole</u> 6", 6" Diameter			
	Bottom Cap			

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ENVIRONMENTAL SPECIALISTS

	WELI	LOG	
ELL: DMP4 DATE DRILLED: 05/24/199 HTE: Photocircuits Corp, 31 Sea Cliff Avenue WNER: Photocircuits Corp, 31 Sea Cliff Avenue	COORD #2: ;, , Glen Cove, NY	PERMIT #1: PERMIT #2:	COUNTY: XSTREET: USE: Monicor
	1/2		SAMPLING METHOD: Hole DIA: 5", 5" Total depth: 22'
DEPTH BELOW BLOWS PER 6" SURFACE ON SAMPLER			
FROM - TO	Ground Surface		
-	AT-Grade Protect	cive	
EMARKS / SOILS IDENTIFICATION	Watertight Manho	KXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
'- 22' Black fine sand.	Locking Compress	sion Cap	
	2' x 2' Concrete Gravel Mix Concr		
	PVC Casing		
	1.25" Diameter		
		it S% Bentonite Added)	0'- 20' 3511.
	0'- 17'		
	<u>PVC Screen</u> 1.25" Diameter		
			20'- 22' Scrien
	Gravel Pack		
	17'- 22'		
	Bore Hole		
	6", 6" Diameter		
	Bottom Cap		
	<u> </u>		